

OPUS STATION

CITY OF MINNETONKA

SOUTHWEST CORRIDOR INVESTMENT FRAMEWORK
TRANSITIONAL STATION AREA ACTION PLAN



Hoisington Koegler Group Inc.



SOUTHWEST LRT
community works
www.swlrtccommunityworks.org



ABOUT THIS CHAPTER:

The Transitional Station Area Action Plans are the product of a Hennepin County led effort to help communities along the Southwest LRT corridor prepare for SW LRT's opening day in 2018 and beyond.

An individualized plan has been created for each of the 17 stations in the Southwest corridor, each plan comprising a chapter in the larger Southwest Corridor Investment Framework. The station area action plans suggest ways to build on local assets, enhance mobility, identify infrastructure needs, and capitalize on promising opportunities for development and redevelopment near each station.

Plan Components:

INTRODUCTION 13-2

A brief overview of the station location and its surroundings

WHERE ARE WE TODAY? 13-4

A description of existing conditions in the station area, including:

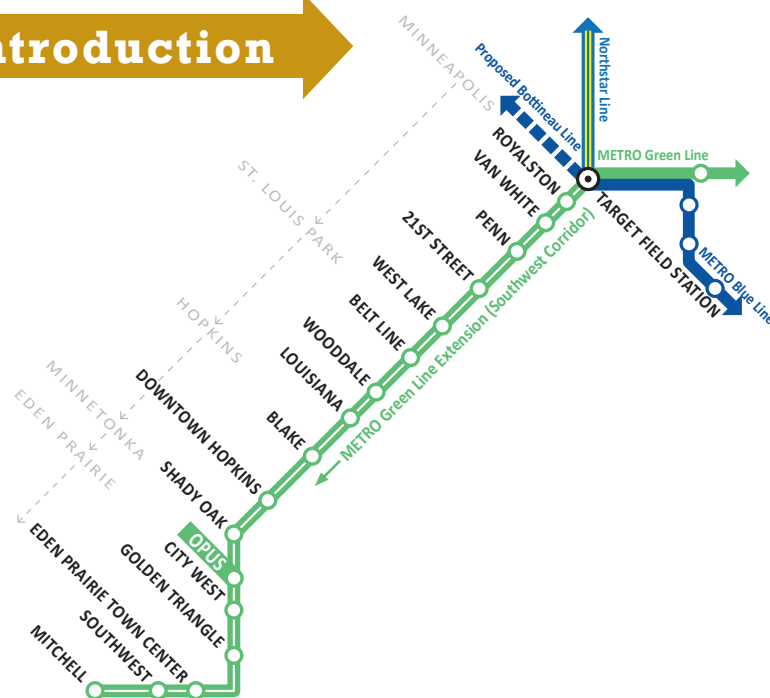
- » Land Use
- » Transit Connections
- » Access + Circulation Issues (Bike, Ped, and Auto)
- » Infrastructure Needs

WHERE ARE WE GOING? 13-8

This section presents a number of recommendations for the station area in anticipation of opening day needs and the long-term TOD environment. This includes:

- » Access + Circulation Plan
- » Station Area Site Plan
- » Infrastructure Plan
- » Development Potential
- » Summary of Key Initiatives

Introduction



OPUS STATION WITHIN THE CORRIDOR:

A prestigious employment area connected to the station via an extensive network of trails and centered upon a walkable mixed-use core.

EMPLOYMENT The Opus station is a major employment center located near Highway 169, Highway 62, and Shady Oak Road (see Place Types discussion beginning on p. 1-19). It is the largest employment center in Minnetonka and home to many high-profile businesses including United Health Group, Comcast, and American Family Insurance. The station will be an important stop for the thousands of employees that commute to the Opus Business Park from surrounding areas.

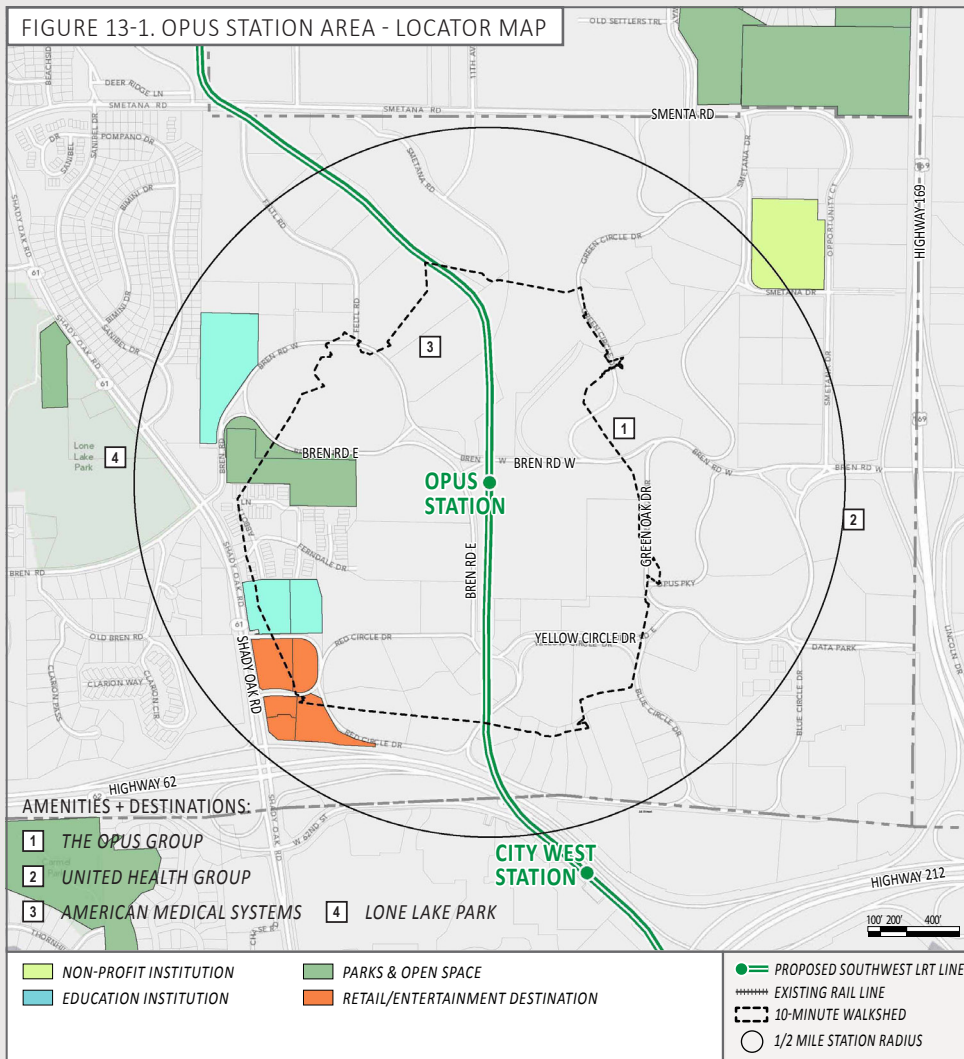
TRAIL CONNECTIONS The area is characterized by a 6-mile trail network which gives the area a park-like feel, and a distinctive looped roadway network that links employment buildings with hotels, retail establishments, and local residential neighborhoods in the surrounding area. The trail system can be accessed off Smetana Road and Shady Oak Road at Red Circle Drive. Along with providing area employees with a space for passive recreation and exercise, the trails provide important connections to areas throughout the business park and beyond, however, it rarely connects to the front doors of the businesses.

NEIGHBORHOODS Residential areas are located within the business park in the north and east areas, including a mix of apartments, condominiums, and townhomes. Additional residential density will occur in the area over time and will generate transit ridership. While these areas are not transit-supportive in nature, they are all linked to the station via the extensive trail network.

Station Location

The Opus station is located in the center of the Opus Business Park, a major employment center with a mix of light industrial, office, housing, hotel accommodations, retail, and restaurants in the station area.

The area is characterized by its campus-like setting, circuitous one-way road network, and off-street trail system. The Opus station is anticipated to serve local businesses and residents in the area. This station has strong potential to be a transit stop for reverse commuters.



NOTE: 10-minute walkshed approximates the area accessible within a 10-minute walk from the station platform using only the existing sidewalk/trail network. See Glossary for walkshed assumptions and methodology.

OPUS STATION AREA TODAY:



West entrance on Shady Oak Road



Existing office



Local wetland



Existing trail underpass

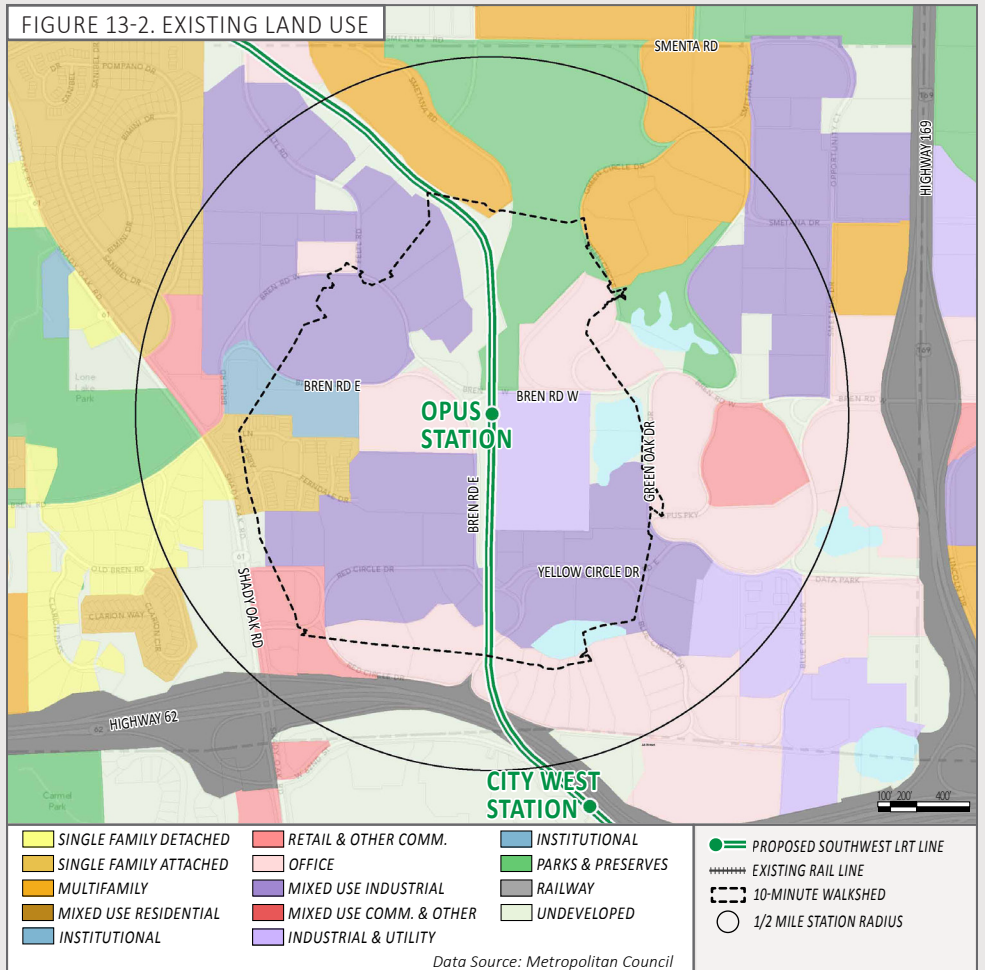
Where Are We Today?

The following section describes the station area's **EXISTING CONDITIONS**, including the local context, land uses, transit and transportation systems, pedestrian and bicycle facilities, assets, destinations, and barriers to accessing the station. This analysis of current conditions presents key issues and opportunities in the station area and informs the recommendations for future station area improvements.

NOTE: Existing conditions maps are based on data provided by Hennepin County and local municipalities. The data used to create each map is collected to varying degrees of accuracy and represents infrastructure and conditions at varying points in time. Actual conditions may vary slightly from what is shown.

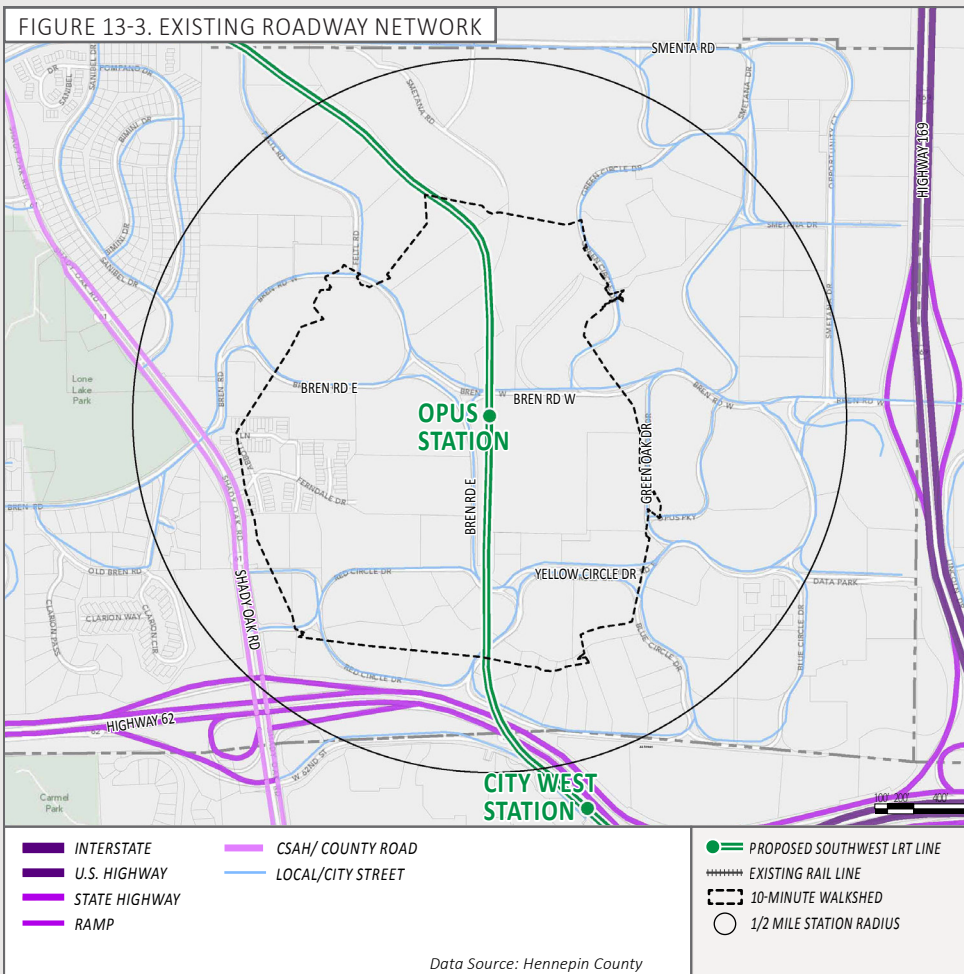
Land Use

The Opus station area is an important employment center with a mix of industrial, light industrial, and office uses. These are the predominant uses in the area, however, there are other uses that will potentially benefit from LRT transit, including nearby residential, hotel, and retail/commercial uses located near Shady Oak Road and Highways 62 and 169. There is also a fair amount of park and open space located to the north of the Opus station.



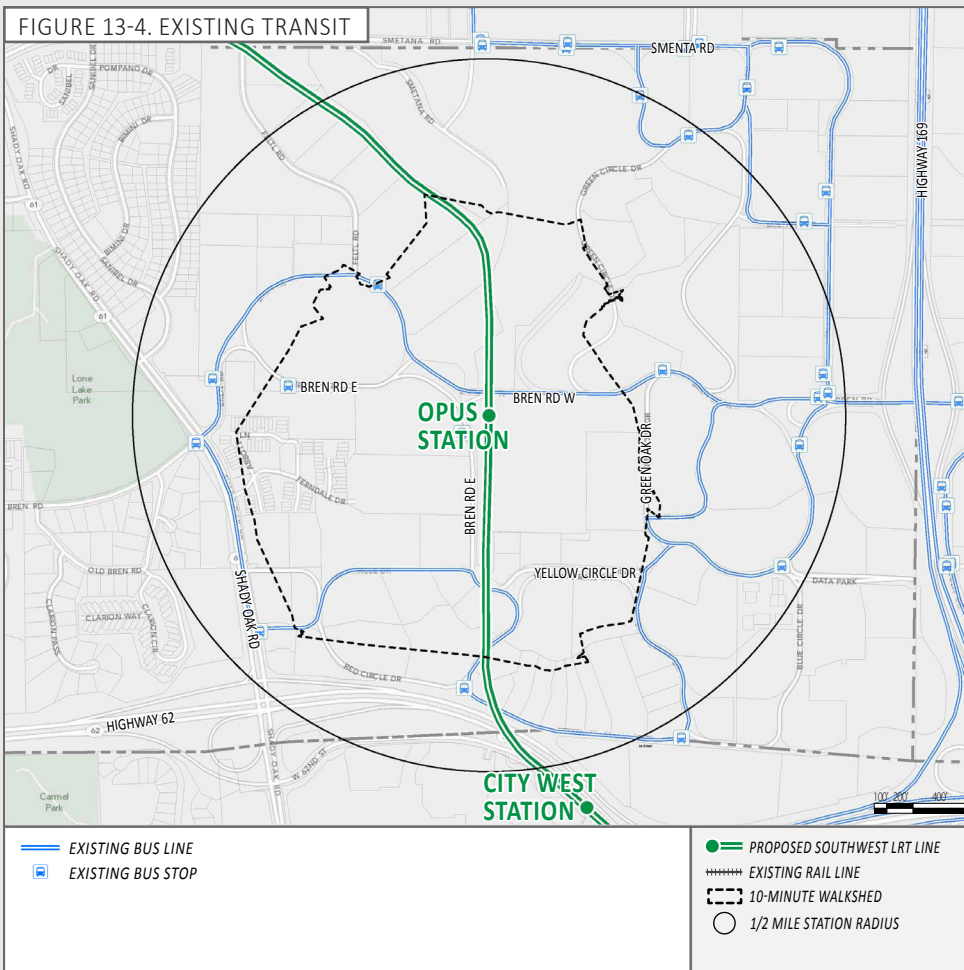
Roadway Network

The roadway network near the Opus station is a circuitous, one-way road network. It presents challenges to uninitiated motorists, pedestrians, and bicyclists. Roadways are limited and block sizes are large. Major roadways in the area include Shady Oak Road, located about a half-mile to the west of the station, Highway 62, located about a half-mile to the south of the station, and Highway 169, located about a half-mile to the east of the station.



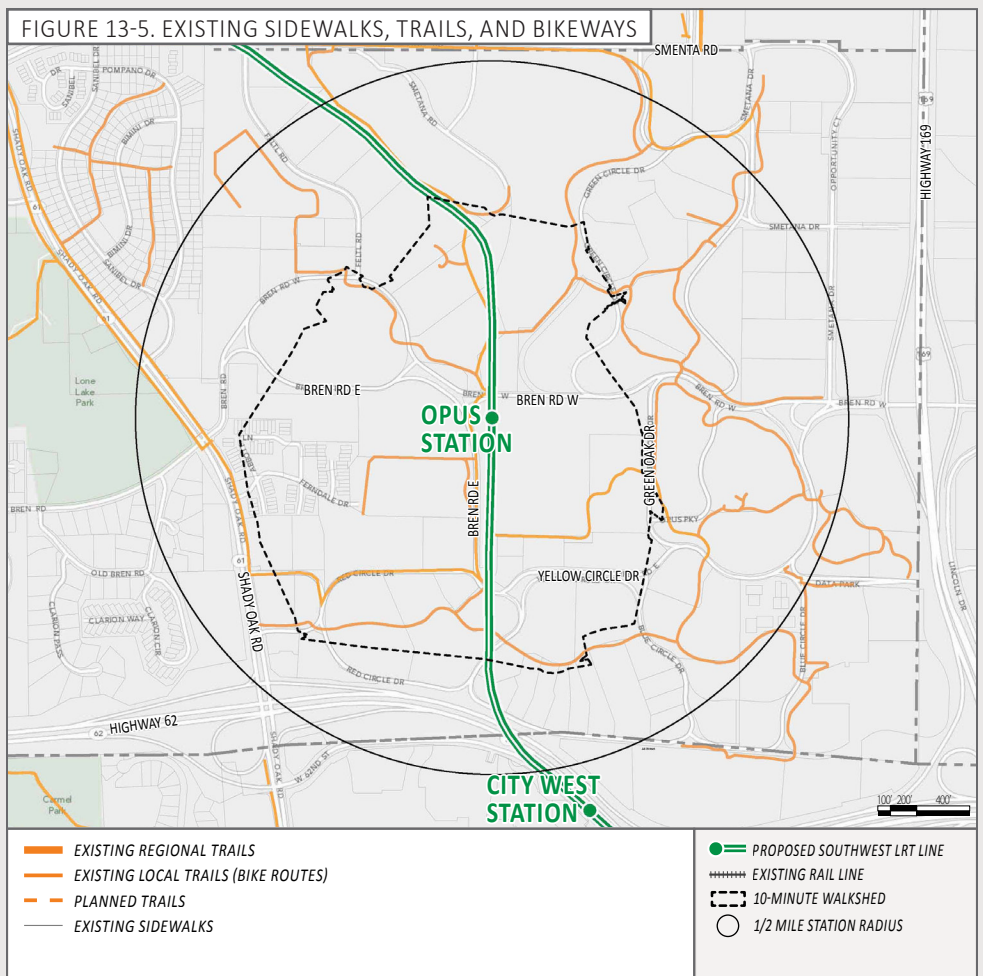
Transit

Existing bus service near the Opus station includes bus route #12, which runs along Bren Road West, with bus stops on Bren Road West and Bren Road East near the proposed station platform. In addition to public bus transit, some local businesses offer a circulator bus shuttle service.



Sidewalk, Trails and Bikeways

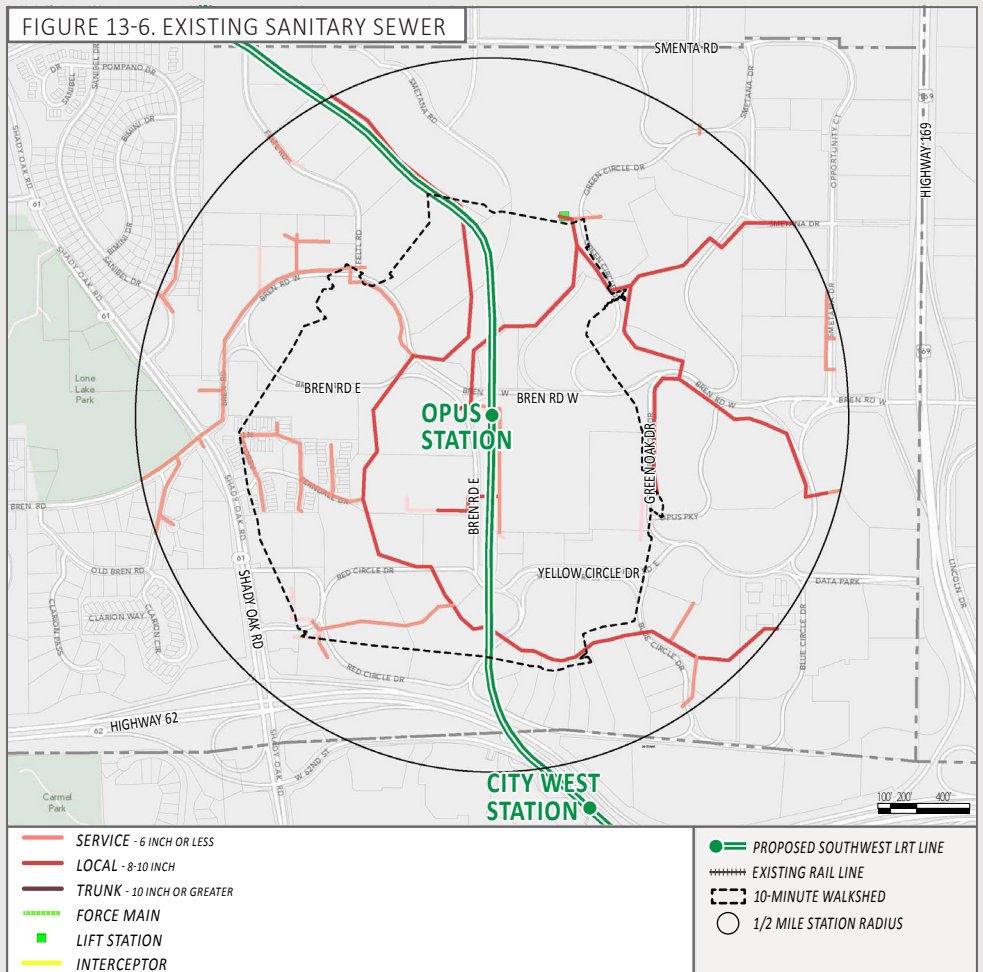
The sidewalk system in the Opus station area is extremely limited. The off-street multi-use trail system that runs throughout the Opus campus offers connections to most areas and businesses. While trail access is generally good, many businesses lack trail connections to building entries. The existing trail network in the area offers grade separation from roadways, reducing conflicts between trail users and motorists.



Existing Sanitary Sewer

Sanitary sewer infrastructure consists of a collection of gravity flow sewer mains, lift stations, and pressurized forcemains that transport sewage to a wastewater treatment plant (WWTP). An efficient collection system has the capacity to accommodate all of the existing land uses within its particular sewershed. Beyond capacity, the material and age of pipes within a system can also impact a system's effectiveness.

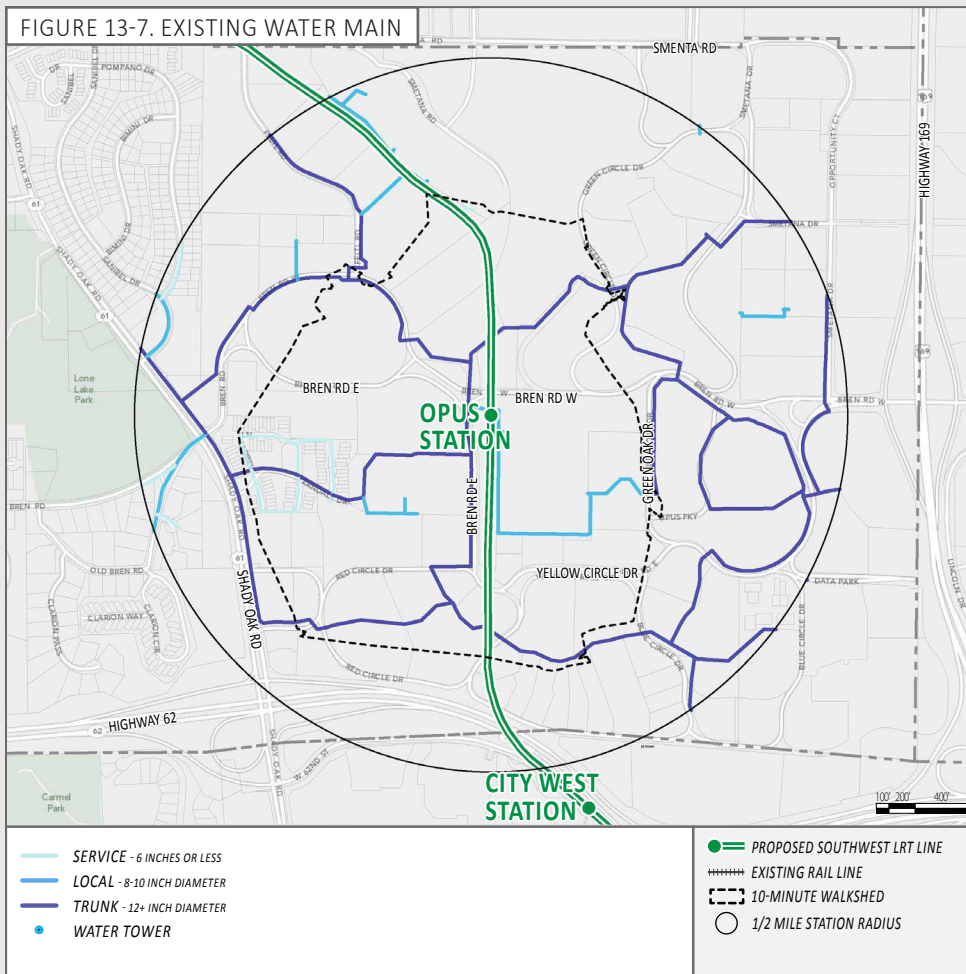
Sanitary sewer infrastructure within the project area is typically maintained by either the City of Minnetonka or by the Metropolitan Council Environmental Services (MCES) Division. MCES maintains a series of interceptor trunk sewers which collect sewage at key locations and convey sewage across community boundaries to regional WWTPs. Wastewater from the station area is treated by the MCES Blue Lake WWTP located in Shakopee.



Existing Water Main

Water main distribution systems serve to supply potable water to individual properties and to support fire suppression throughout the community. A well-designed system can maintain adequate pressure to support demand of individual properties and provide high flow rates to fire hydrants/fire suppression systems in emergency situations. Because of the complexity of water distribution networks and the importance of pressure, flow, and water quality, City water system models are used to evaluate a system's adequacy. The material and age of the system's water mains can also be factors in system breaks, leaks, and pressure and flow degradations.

Water pressure and flow rates can be influenced by: the size of water main serving an area, proximity and elevation relative to a water tower, proximity to a trunk water main with high flow capacity, if the main creates a loop, the demand of adjacent land uses, and the condition of the main.

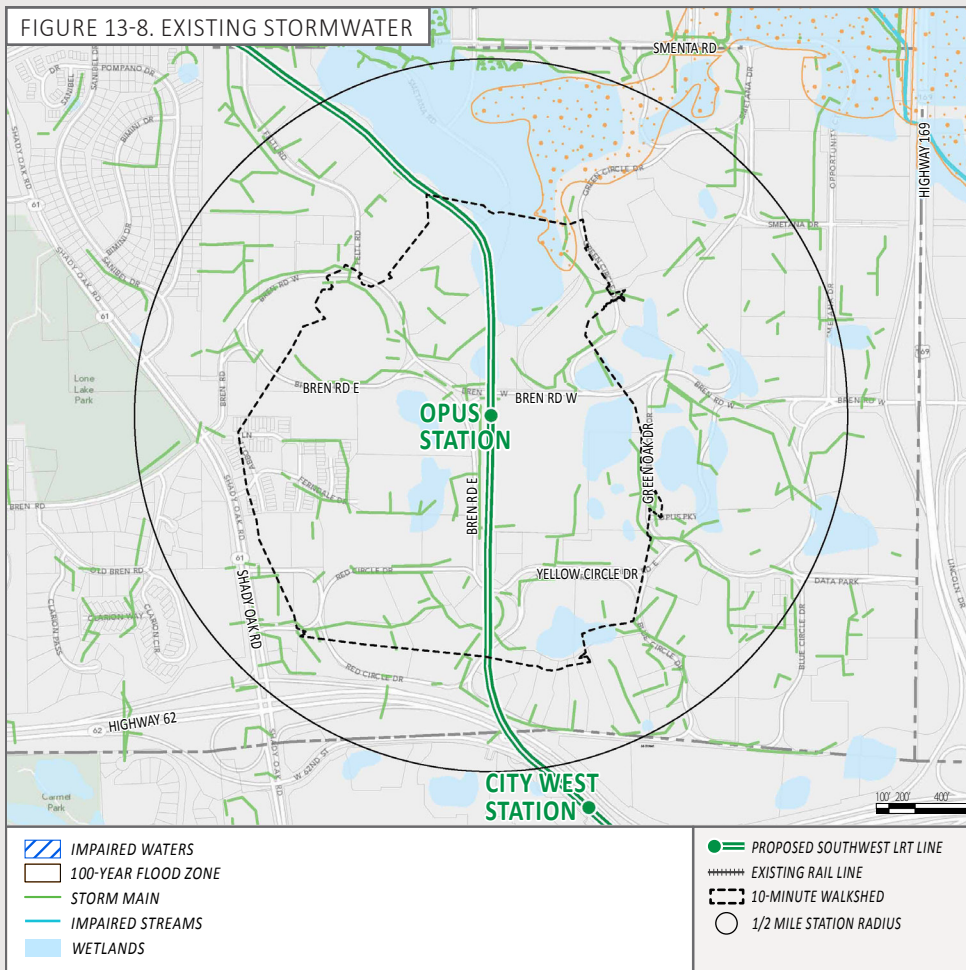


Stormwater

Opus station is located in Nine Mile Creek Watershed District. A significant portion of the drainage is directed north into wetlands and then into Nine Mile Creek. The creek is impaired by chloride and fish biology. In addition, there are numerous wetlands throughout the area, many of which receive piped stormwater. The 100-year floodplain from the creek extends into the north portion of the walk zone.

Discharging within one mile of impaired water may trigger additional National Pollution Discharge Elimination System measures which require additional stormwater management. For impaired waters with a Total Maximum Daily Load, the requirements may increase further. Zoning requirements for areas within the 100-year floodplain may limit development/redevelopment potential.

Any development/redevelopment is anticipated to improve existing drainage as a result of enforcing City and Watershed requirements.



Where Are We Going?

The plans and diagrams on the following pages illustrate a range of recommendations for infrastructure improvements, station amenities, and potential redevelopment opportunities within the station area.

The ACCESS AND CIRCULATION PLAN shown in Figure 13-9 provides a high level view of how future transit, automobile, bike, and pedestrian systems will connect to the station area and its surroundings.

Figure 13-10 illustrates the STATION AREA IMPROVEMENTS that will facilitate access to and from the station and catalyze redevelopment in the station area. This includes opening day and long-term station area improvements

Figure 13-11 focuses on OPENING DAY STATION AREA IMPROVEMENTS only. These recommendations represent the improvements necessary to enhance the efficient function of the transit station, roadways, pedestrian and bicycle connections, and transit connections on opening day in 2018.

Station Area Improvements

The discussion below outlines a range of future station area improvements. While some of the identified improvements may be constructed as part of the LRT project itself, other improvements must be funded, designed and constructed by other entities and will require coordination between the City, County, and Metro Transit as well as local stakeholder and community groups.

ROADWAYS

Opening Day Improvements:

- » Rely primarily on the existing street and block network to support pedestrians and cyclists. No new roadways are anticipated for opening day.
- » Select roadway changes near the LRT station (noted below as long-term improvements) could be constructed by opening day to provide better traffic flow into and out of the area. Such improvements include the reversal of traffic flow on Red Circle Drive and/or Green Oak Drive. As of December 2013, these improvements are not part of the SW LRT anticipated base project scope and are not slated for opening day implementation (subject to change).

Long-Term Improvements:

- » Over time, introduce new roads near the station platform. These new roads should be organized to create smaller blocks for future development and intensification near the transit station as well as enhance connections to the stations. Consider two-way movement near the station on these new roads to calm traffic near the station.
- » Other future roadway changes near the LRT station include minor realignment and routing changes to Opus Parkway, Yellow Circle Drive, Blue Circle Drive, Green Oak Drive, Red Circle Drive, Bren Road East and Bren Road West, based upon a recent Opus Area Traffic Study prepared for the City of Minnetonka by WSB & Associates.

PEDESTRIAN CONNECTIONS

Opening Day Improvements:

- » Extend the path connections from bus stops, Park and Ride, and Kiss and Ride locations to the proposed LRT station platform.
- » Develop a new grade-separated crossing of Bren Road East leading to and from the north end of the station platform.
- » Locate wayfinding signage at the station and key decision making points along the path network away from the station to direct people to area businesses, homes, and other destinations.
- » Initiate path improvements throughout the network (as shown in Figure 13-9) including pedestrian-oriented lighting and underpass improvements.



Multi-use path connections



Pedestrian-oriented lighting and streetscape enhancements



Example of public plaza

TRANSIT CONNECTIONS

Opening Day Improvements:

- » Provide new bus facilities near the station platform for connecting bus routes.
- » Develop a place for an employer-operated shuttle pick-up and drop-off.

BIKE CONNECTIONS

Opening Day Improvements:

- » Provide bike parking to the east of the northern entrance to the platform where it is easily accessible to trail users and is highly visible.
- » Explore the potential for bike share facilities at the station and key destinations away from the station to support riding to work from the station.

KISS AND RIDE

Opening Day Improvements:

- » Develop a Kiss and Ride / Shuttle loop near the station platform.

PARK AND RIDE

Opening Day Improvements:

- » Develop a small temporary Park and Ride facility to the northeast of the station with the intent of redeveloping the site over time.

STATION AMENITIES (*Beyond SW LRT Base Project Scope*)

Opening Day Improvements:

- » Wayfinding – include signage and wayfinding near the station area platform, the Park and Ride/Kiss and Ride facility, and along trails near the station.
- » Seating – provide comfortable and durable seating near the station platform and at the Park and Ride facility.

- » Lighting – provide adequate lighting for the safety of pedestrians, bicyclists, and motorists near the station platform, at the Park and Ride facility, and near the Kiss and Ride/shuttle drop-off.
- » Plaza – provide a public plaza area near the station platform to provide transit users with a paved queue area to wait for LRT trains, gather, and move about the station area.
- » Bike Facilities – provide bicycle parking, lockers, and bike share facilities in a highly visible area near the station platform.
- » Public Art – provide public art in the station area.

POTENTIAL DEVELOPMENT

Long-Term Improvements:

- » See the “Development Potential” discussion on page 13-16 for more on long-term development opportunities.

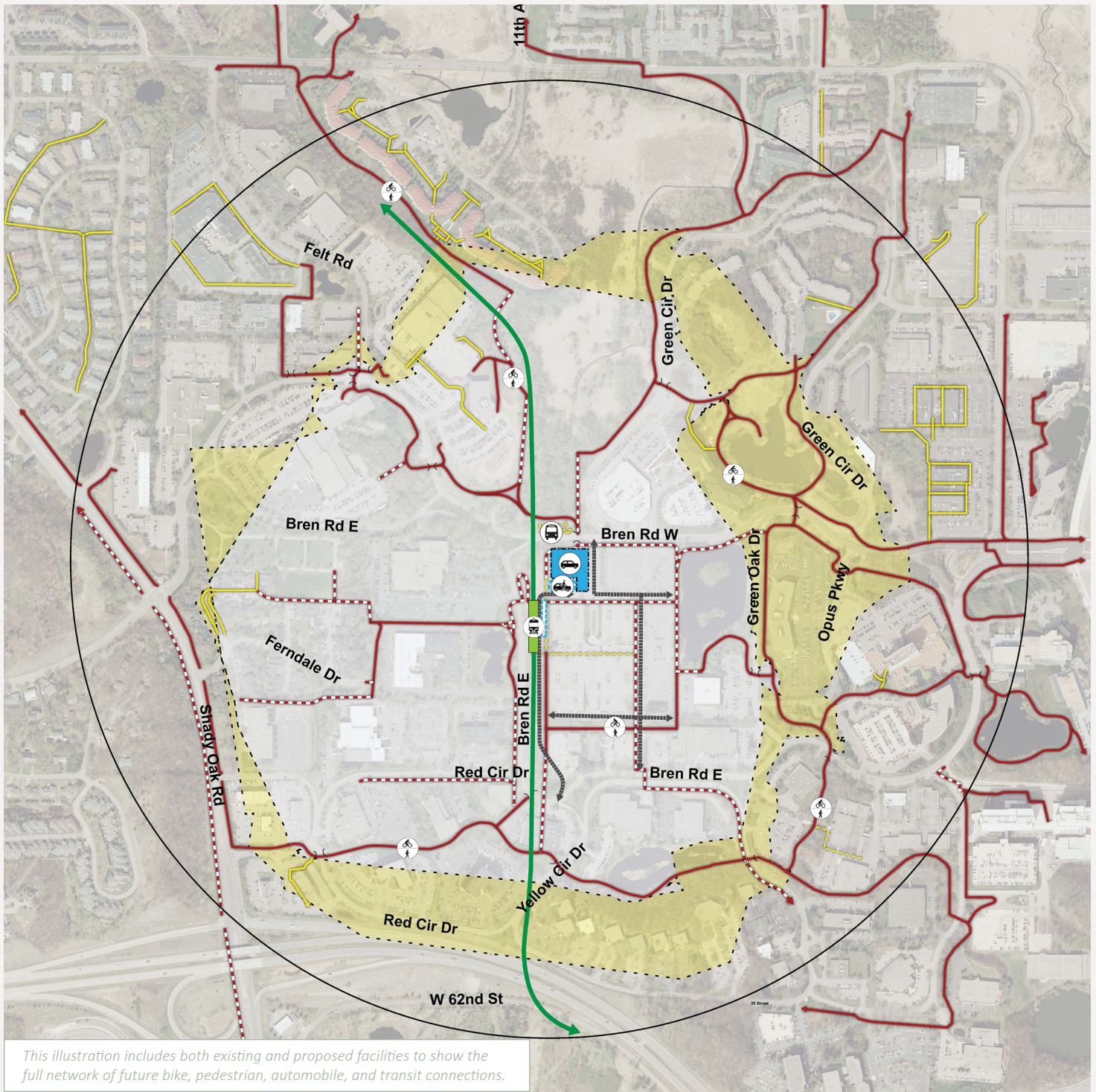
UTILITIES

- » See the “Station Area Utility Plan” beginning on page 13-18 for all utility recommendations.

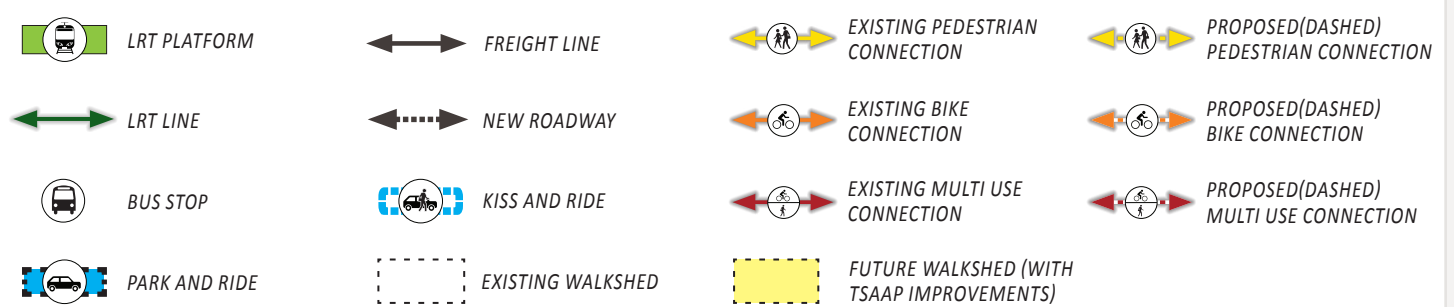
FIGURE 13-9. ACCESS + CIRCULATION PLAN

WHERE ARE WE GOING?

OPUS

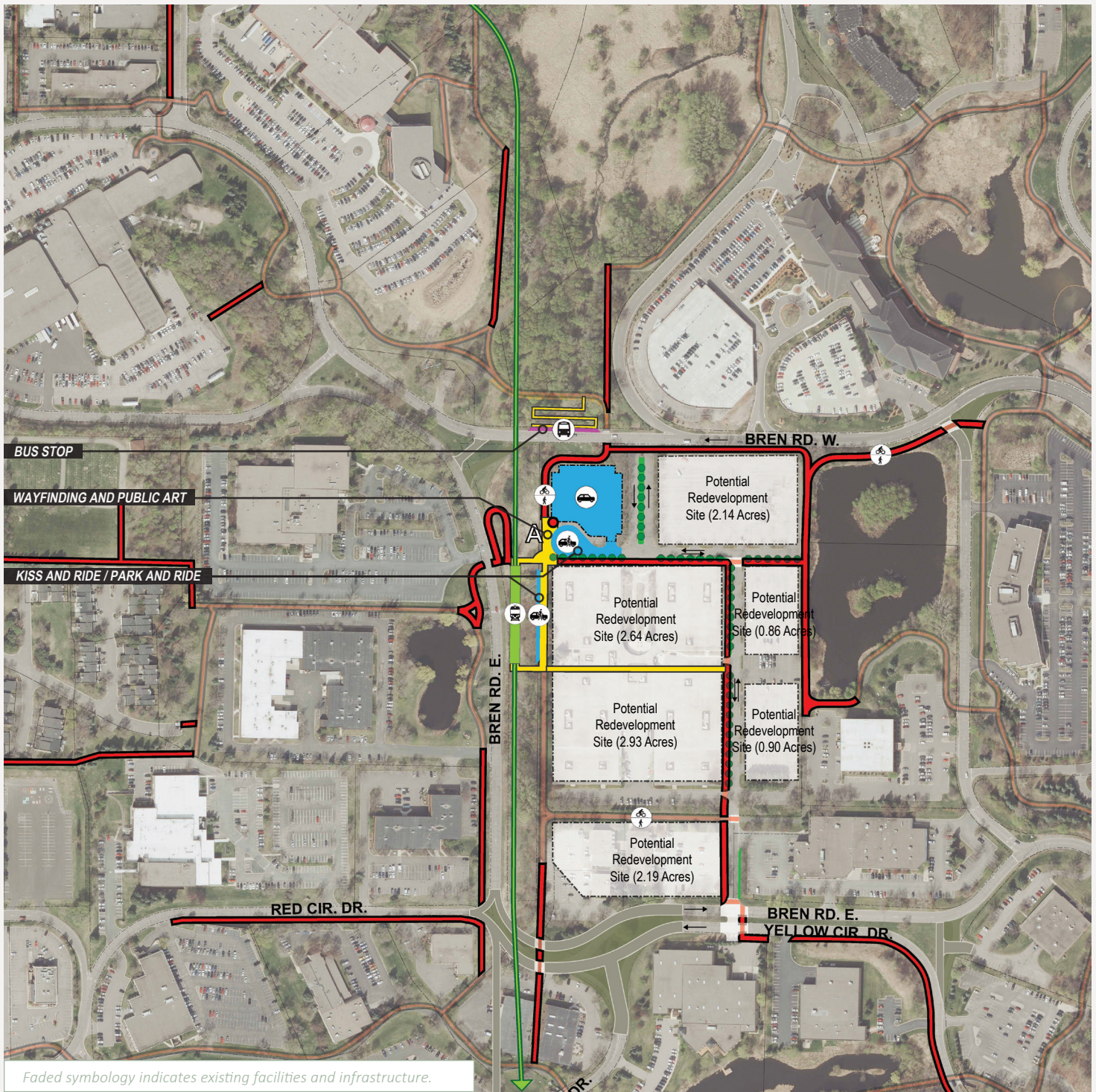


This illustration includes both existing and proposed facilities to show the full network of future bike, pedestrian, automobile, and transit connections.



NOTE: Existing walkshed approximates the area accessible within a 10-minute walk from the station platform using only the existing sidewalk/trail network. Future walkshed incorporates all proposed improvements to the sidewalk/trail network. Walksheds are based on GIS modeling and available sidewalk/trail information- and may not reflect exact on-the-ground conditions. See Glossary for detailed explanation of walkshed assumptions and methodology.

FIGURE 13-10. STATION AREA IMPROVEMENTS



Faded symbology indicates existing facilities and infrastructure.

- | | | | | | | | |
|--|--------------|--|-------------------------------------|--|-------------------------------------|--|----------------------------|
| | LRT PLATFORM | | NEW SIDEWALK / SIDEWALK IMPROVEMENT | | NEW ROADWAY | | BIKE PARKING |
| | FREIGHT LINE | | ON STREET BIKE INFRASTRUCTURE | | STREETSCAPE | | WAYFINDING |
| | BUS STOP | | MULTI-USE PATH | | PARK AND RIDE | | PUBLIC ART OPPORTUNITY |
| | BUS SHELTER | | NEW CROSSING / CROSSING IMPROVEMENT | | KISS AND RIDE | | POTENTIAL DEVELOPMENT SITE |
| | | | NEW SIGNALIZED INTERSECTION | | PLAZA SPACE / BUILDING SETBACK AREA | | |

FIGURE 13-11. OPENING DAY STATION AREA IMPROVEMENTS

WHERE ARE WE GOING?

OPUS



- | | | | | | | | |
|--|--------------|--|-------------------------------------|--|-------------------------------------|--|----------------------------|
| | LRT PLATFORM | | NEW SIDEWALK / SIDEWALK IMPROVEMENT | | NEW ROADWAY | | BIKE PARKING |
| | FREIGHT LINE | | ON STREET BIKE INFRASTRUCTURE | | STREETSCAPE | | WAYFINDING |
| | BUS STOP | | MULTI-USE PATH | | PARK AND RIDE | | PUBLIC ART OPPORTUNITY |
| | BUS SHELTER | | NEW CROSSING / CROSSING IMPROVEMENT | | KISS AND RIDE | | POTENTIAL DEVELOPMENT SITE |
| | | | NEW SIGNALIZED INTERSECTION | | PLAZA SPACE / BUILDING SETBACK AREA | | |

THIS SPACE INTENTIONALLY LEFT BLANK

Opening Day Improvements

The following tables and diagrams outline the proposed improvements to be implemented in advance of SW LRT's opening day in 2018. Table 13-1 and Figure 13-12 show opening day improvements that are part of the SW LRT anticipated base project scope; these improvements will be part of the overall project cost for construction of the LRT line. Table 13-2 and Figure 13-13 include opening day improvements that are recommended as part of the Southwest Corridor Investment Framework and are beyond SW LRT's anticipated base project scope.

TABLE 13-1. SOUTHWEST LRT ANTICIPATED BASE PROJECT SCOPE - OPENING DAY STATION AREA IMPROVEMENTS

PLAN KEY	IMPROVEMENT	PROJECT LOCATION	PROJECT NOTES
A	LRT Platform	Along the east side of Bren Rd. E.	Includes related LRT infrastructure
B	Park and Ride	Northeast of station platform	Approx. 90 stall surface lot, leased (includes private shuttle stop/turnaround)
C	Kiss and Ride	Northeast of station platform	Dropoff area and turnaround within Park and Ride lot
D	Bus Facilities	Bren Rd. W., north of park and ride	New bus bay on Bren Rd W. for 2 bus routes
E	Roadways	Intersection of Bren Rd. E and Bren Rd. W.	Realigned left turn lane from Bren Rd. W. to Bren Rd. E.
F	Sidewalk/Trail	Bren Rd. E., west of LRT station platform	Grade separated trail crossing
G	Sidewalk/Trail	Bren Rd. W., north of park and ride	ADA access ramp to existing grade separated trail crossing of Bren Rd. W.
H	Bike Facilities	Near station platform	Allowance for bike storage
I	Wayfinding	Near station platform	Allowance
J	Landscaping	Near station platform	Allowance
K	Water*	Varies	New water service and fire hydrant to station
L	Utilities*	Varies	Adjustment of existing utilities w/in project area
M	Stormwater management*	Varies	Allowance

Note: Anticipated Southwest LRT Base Project Scope as of December 2013 (subject to change)

* Improvement not symbolized on opening day figures (exact location to be determined as part of the base project scope)

TABLE 13-2. SOUTHWEST CORRIDOR INVESTMENT FRAMEWORK (TSAAP) - OPENING DAY STATION AREA IMPROVEMENTS

PLAN KEY	IMPROVEMENT	PROJECT LOCATION	PROJECT NOTES	PRIORITY
1	Park and Ride	Northeast of station platform	Enhanced planting areas/trees	Secondary
2	Roadways	Red Circle Drive Reversal	New connections associated with reversing the traffic flow.	Primary
3	Sidewalk/Trail	Varies	Multi-use trails to complete gaps in trail system w/in 10 min walkshed	Secondary
4	Intersection Enhancement	Bren Rd. E. and Yellow Circle Dr., southeast of station platform	Grade separated crossings	Secondary
5	Bike Facilities	Near station platform	Bike parking, lockers, pump station and bike share facilities (beyond SPO improvements)	Primary
6	Wayfinding	Near station platform and park and ride	Signage and wayfinding (beyond SPO improvements)	Primary
7	Stormwater management	Near station platform and park and ride	Green infrastructure (beyond SPO improvements)	Primary
8	Public Art	Near station platform and park and ride	Public art (beyond SPO improvements)	Secondary
9	Public Plaza	Near station platform	Public plaza with paving, seating, plantings, lighting, and signage (beyond SPO improvements)	Secondary
10	Sanitary Sewer	Near station platform	Upsize existing 8-inch sanitary sewer to 10-inch minimum in conjunction with LRT rail construction	Primary

FIGURE 13-12. SOUTHWEST LRT ANTICIPATED BASE PROJECT SCOPE - OPENING DAY STATION AREA IMPROVEMENTS

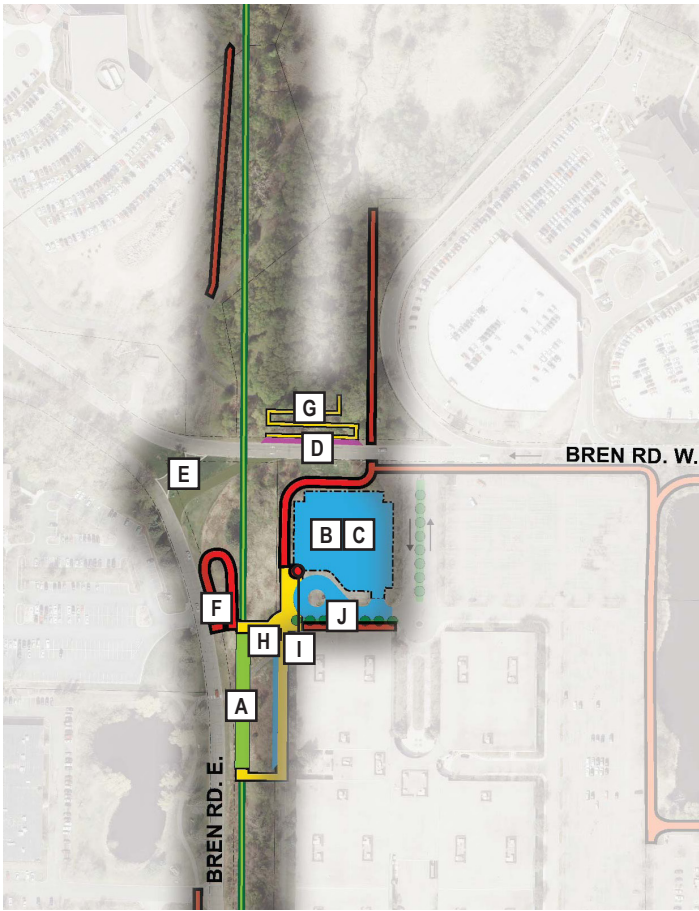
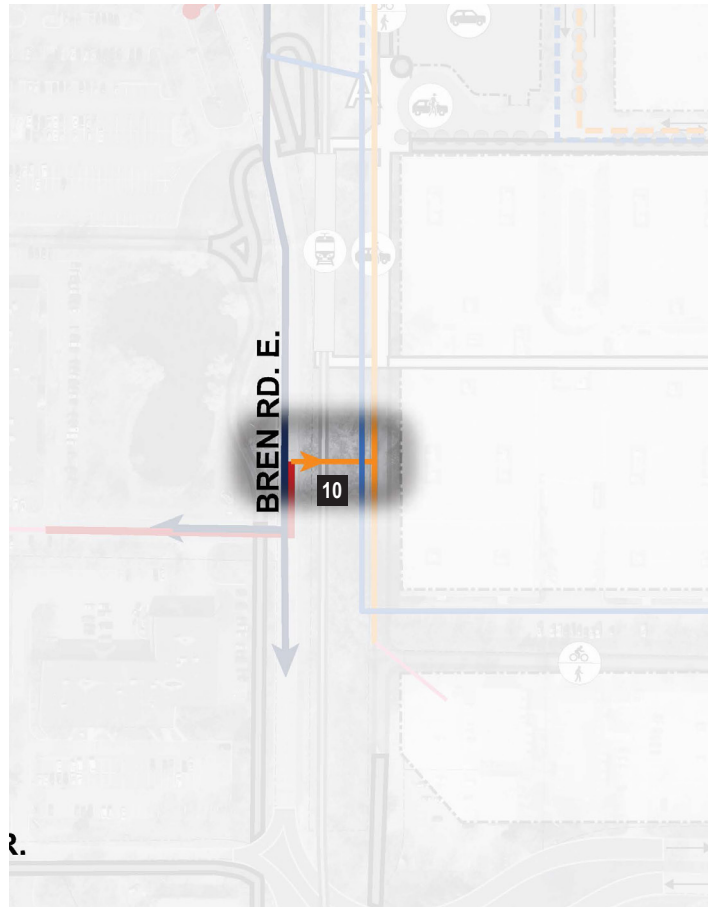
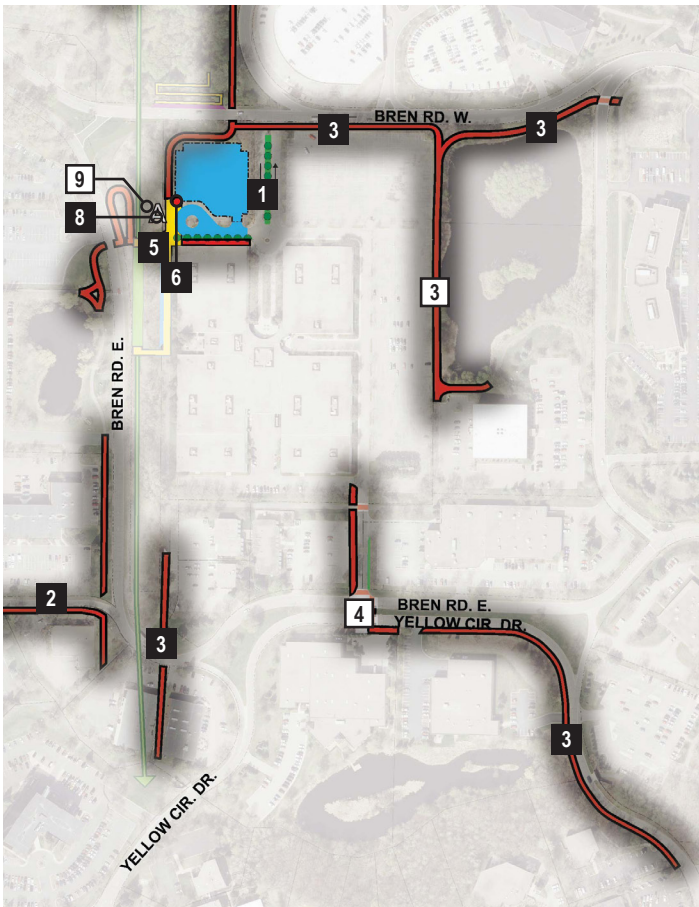


FIGURE 13-13. SOUTHWEST CORRIDOR INVESTMENT FRAMEWORK (TSAAP) - OPENING DAY STATION AREA IMPROVEMENTS



PRIMARY PRIORITY # SECONDARY PRIORITY

Development Potential

OVERVIEW

Key factors at the Opus station that present opportunities for future redevelopment include the presence of older, low-rise, light industrial buildings near the proposed station platform that may be ripe for redevelopment into more intense, mixed-use.

The land uses in the Opus station area include a mix of office, light industrial, commercial/retail, residential, hotel, and park/open space uses. Several underutilized industrial sites present opportunities for future redevelopment in the area. The property directly east of and adjacent to the proposed station platform presents an opportunity for higher density and mixed land uses.

Key challenges that should be addressed to facilitate development potential include land uses, additional roadways and existing roadway improvements, smaller block sizes near the station, trail connectivity in the station area, and wayfinding.

LAND USES

Development potential for the Opus station area could include a mix of office, light industrial, residential, hotel, and retail uses.

PLANNING STRATEGIES

Strategies that should be considered to facilitate future development in the station area include the introduction of a finer grain of streets and block sizes to enhance station mobility and set up a framework for higher density development near the station. Streetscape and trail improvements connecting the station area with potential development sites, local destinations, neighborhoods, and bus transit facilities will enhance development potential in the area.

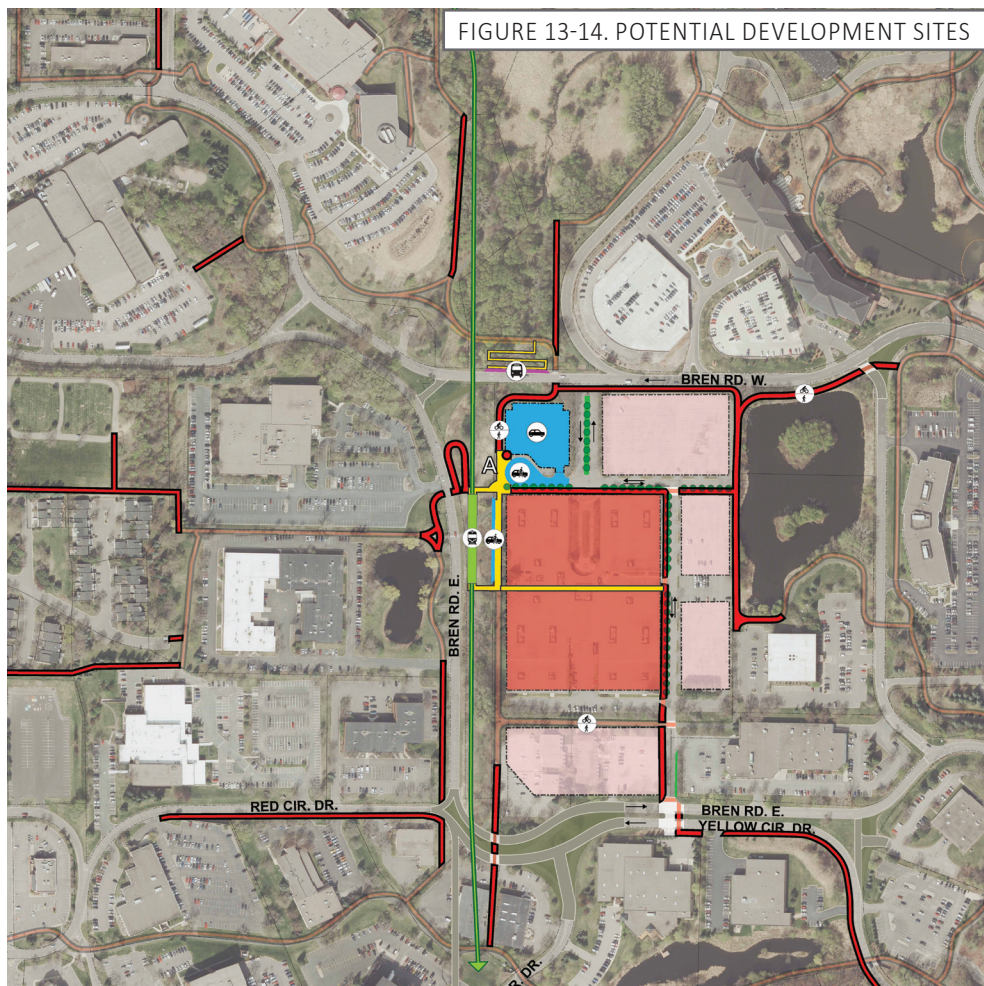


FIGURE 13-14. POTENTIAL DEVELOPMENT SITES

FUTURE LAND USE:

- RETAIL & OTHER COMMERCIAL
- OFFICE

Key Considerations for Change and Development Over Time

Development within the station area should focus on increasing density and mix of uses and creating a walkable street and block network within the Bren Road loop that can connect pedestrians via paths to more remote offices throughout station area. Key considerations should include:

BUILT FORM AND LAND USE

- » Introduce higher density office, hotel, and commercial development with active street level uses facing the station and key pedestrian routes leading to and from the station.
- » Design new buildings in the Bren Road loop to enhance pedestrian access by orienting them towards the street and locating them as close to the street line as possible.
- » In employment buildings with manufacturing uses, locate the office components adjacent to pedestrian paths, streets and/or open spaces where they can contribute to street life and promote more “eyes on the street”.
- » Should the Merchandise Mart site be redeveloped, ensure new development establishes a new east-west pedestrian connection linking the southern end of the station platform with areas to the east.
- » Design and size the Park and Ride facility so that it has the potential to be redeveloped with higher density uses over time.
- » Design parking structures to reflect the characteristics of more active building types by screening diagonal ramps, screening parked cars from view, and when next to a street incorporating active uses at street level.

PUBLIC REALM

- » Restrict outdoor storage within the station area so that it does not detract from the image of the area or discourage new higher density employment uses.
- » Initiate pathway improvements including pedestrian-oriented lighting, underpass enhancements, and wayfinding at key decision-making points along all paths leading to and from the station.

MOBILITY

- » Develop a new walkable street and block pattern on the lands within the Bren Road loop including a new two-way street system connecting Bren Road East with Bren Road West to create an address for new development.
- » Extend the existing multi-use path network into the Bren Road Circle from all sides and connect the path extensions to the LRT platform.
- » Minimize the impact of parking and circulation on pedestrians by locating parking in structures or to the rear or side of new buildings, and consolidating access and service drives.

- » Parking access, loading, and servicing elements should be shielded and located to the rear of the building.
- » Limit vehicular access points along Bren Road.



Office development that fronts the street



Shielded loaded bays to the rear of the building



Pedestrian path through development

Station Area Utility Plan

OVERVIEW

The station area utility plan and strategies recommended below were developed by considering future transit-oriented development within the station area, as depicted by the Station Area Improvements Plan (Figure 13-10). Minnetonka will need to apply these localized recommendations to the city wide system to ensure that the potential development/redevelopment will not be limited by larger system constraints. Existing models or other methods can be used to check for system constraints in the station areas.

Minnetonka should also consider reviewing the condition of their existing utilities in the station development area. The station construction would provide Minnetonka an opportunity to address any utilities needing repairs. Once the larger system has been reviewed for system constraints, Minnetonka will be able to accurately plan for necessary utility improvements in their city Capital Improvement Program (CIP). All utilities located beneath the proposed LRT rail or station platform should be encased prior to the construction of these facilities. The cost associated with encasing these facilities is assumed to be a project cost and is not included in potential improvements identified for the City of Minnetonka CIP.

APPROACH

Utility improvement strategies are outlined in this report for the ultimate station area development (2030), as well as improvements which should be considered prior to opening day anticipated in 2018. Although recommendations are categorized in one of these two timeframes, Minnetonka should weigh the benefits of completing more or less of these improvements as land becomes available for future development. Minnetonka should take the utility analysis a level further and model future utilities in their city utility system models.

The proposed development and redevelopment areas were evaluated based on Metropolitan Commission Sewer Availability Charge (SAC) usage rates and estimated flows. Estimated flows for one possible development scenario in this area indicate that internal to the station area, no more than eight inch pipe are necessary to serve the mix of proposed and existing development. Each utility system should still be reviewed to identify capacity and demand constraints to the larger system associated with increase in flows from the proposed developments and existing developments in the area. Minnetonka should anticipate the construction of new municipal utilities in conjunction with new or realigned roadways.

GENERAL RECOMMENDATIONS - SANITARY SEWER

Sanitary sewer recommendations for station area improvements include opportunities for Minnetonka to improve the existing sanitary sewer network, without necessarily replacing existing sanitary sewers. When recommendations for “improving” existing sanitary sewer are noted, Minnetonka should consider the level to which each specific sewer should be improved. Methods of improvement could include: lining the existing sewer, pipe joint repair, sewer manhole repair, relocation, and complete replacement.

The following items should be evaluated prior to opening day of the station, although action may not be required until necessary for development:

- » Televising existing sewer mains in the station area and proposed development area to determine the condition of the sewer mains, susceptibility for backups or other issues and evaluate for Infiltration and Inflow (I&I).
- » Locations of known I&I. If previous sewer televising records, city maintenance records, or an I&I study have shown problems, the city should consider taking measures to address the problem.
- » The age and material of existing gravity and/or forcemain sanitary sewer in the identified station area. If the lines are older than the material’s typical design life or materials which are susceptible to corrosion relative to soils in the area, the city should consider repairing, lining or replacing the mains.
- » Locations of known capacity constraints or areas where city sewer models indicate capacity issues. If there are known limitations, the city should further evaluate the benefit of increasing pipe sizes.
- » City sewer system models (existing and future). A review of these models with future development would assist Minnetonka in determining if sewers in the project area should be increased to meet existing or future city system needs.
- » Existing sewer pipes should be relocated or encased in areas where they cross or are immediately adjacent to the LRT line/station.

GENERAL RECOMMENDATIONS - WATER MAIN

Water main recommendations for station area improvements also include opportunities for Minnetonka to improve the existing water system network. Creating loops in the network can help prevent stagnant water from accumulating along water main stubs, and creating loops of similar sized water main provides the city a level of redundancy in their water network. Redundancy helps reduce the impacts to the community during system repairs, and also helps stabilize the pressure in the network.

The following items should be evaluated prior to opening day of the station, although action may not be required until necessary for development:

- » The age and material of the existing mains in the identified station area. If the mains are older than the materials typical design life or materials which are susceptible to corrosion relative to soils in the area, the city should consider replacing the main.
- » Locations of previous water main breaks. If water main breaks repeatedly occur in specific areas, the city should consider replacing or repairing the main.
- » Locations with known water pressure issues or areas where city models indicate low pressure. If there are known limitations (for either fire suppression or domestic uses), the city should further evaluate the benefit of increasing main sizes.
- » Locations with known or potential water quality issues. If there are mains known to be affecting the water quality (color, taste, odor, etc.) of their system, Minnetonka should consider taking measures to address the problem affecting water quality.
- » City water system models (existing and future). A review of these models with future development would assist Minnetonka in determining if mains in the project area should be improved to meet existing or future city system needs based on demand constraints.
- » Existing water main pipes should be relocated or encased in areas where they cross or are immediately adjacent to the LRT line/station.

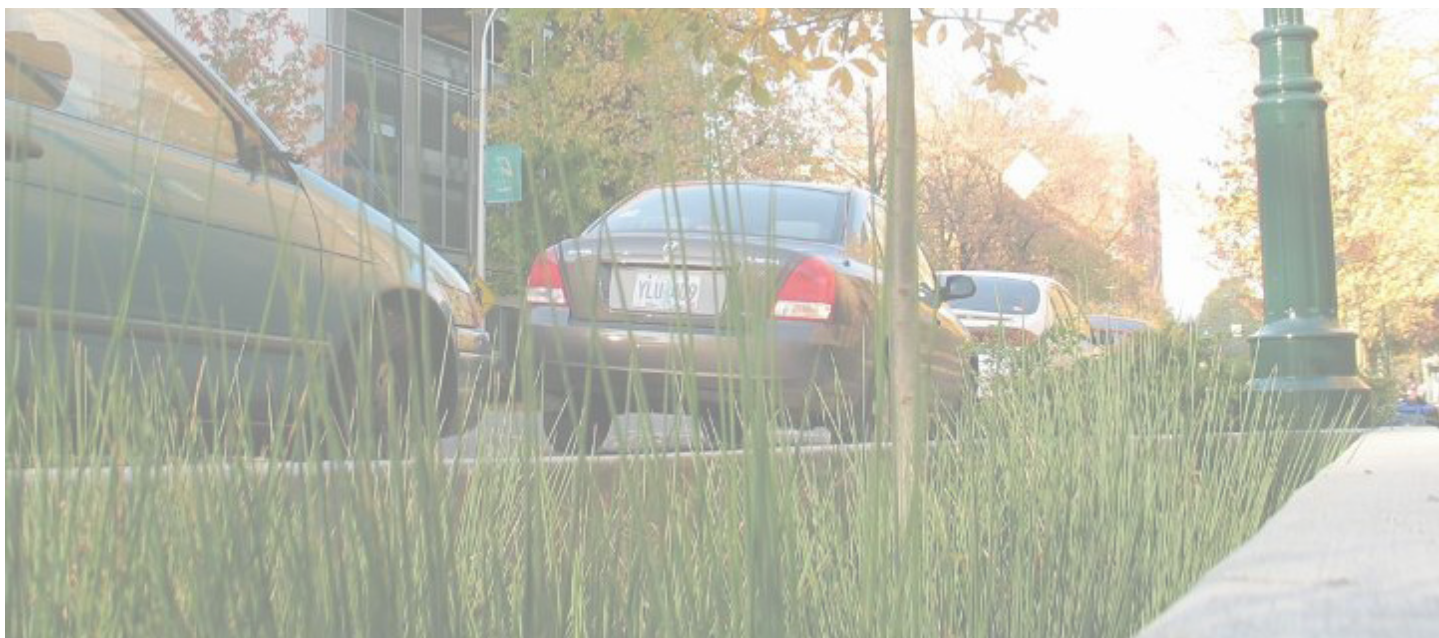
GENERAL RECOMMENDATIONS – STORM SEWER

Local storm sewer improvements are recommended to be completed in conjunction with other improvements in the station area. Improvements which will likely require storm sewer modifications include: roadway realignments, roadway extensions, and pedestrian sidewalk/street scape improvements. Storm sewer improvements may consist of: storm sewer construction, manhole reconstruction, drain tile extensions, storm sewer relocation, and complete replacement. These local storm sewer improvements are included as part of the overall cost of roadway and streetscape improvements recommended in this plan. Where roadway/streetscape improvements are part of the SW LRT anticipated base project scope, associated storm sewer improvements are assumed to be a project cost. Minnetonka should also consider coordinating with the local watershed district and other agencies to review the condition of and capacity of existing trunk storm sewer systems serving more regional surface water needs.

STORMWATER BEST MANAGEMENT PRACTICES

There are numerous stormwater best management practices (BMPs) that can be used to address stormwater quality and quantity. As part of this project, BMP guides were developed for four stations (Royalston, Blake, Shady Oak, and Mitchell) which exemplify the range of development intensity and character in the urbanized environment along the Southwest LRT Corridor. The recommendations and practices identified in each of the four BMP guides are applicable to various stations along the corridor.

Potential stormwater management strategies for this station area may be similar to those shown in the BMP guide for the Shady Oak station (see p. 12-28). Minnetonka should consider implementing applicable best management practices similar to those in the Shady Oak Station BMP guide. Stormwater management recommendations should be constructed in conjunction with public and private improvements and future development/redevelopment in the station area.



Station Area Utility Plan (Continued)

STATION AREA UTILITY RECOMMENDATIONS

Utility recommendations (illustrated in Figure 13-15) are based on a localized analysis of proposed development. It is recommended that the City of Minnetonka take this analysis a step further and review system constraints to the existing and future sanitary sewer and water main systems using existing sewer CAD or water CAD models, or other methods of modeling these systems.

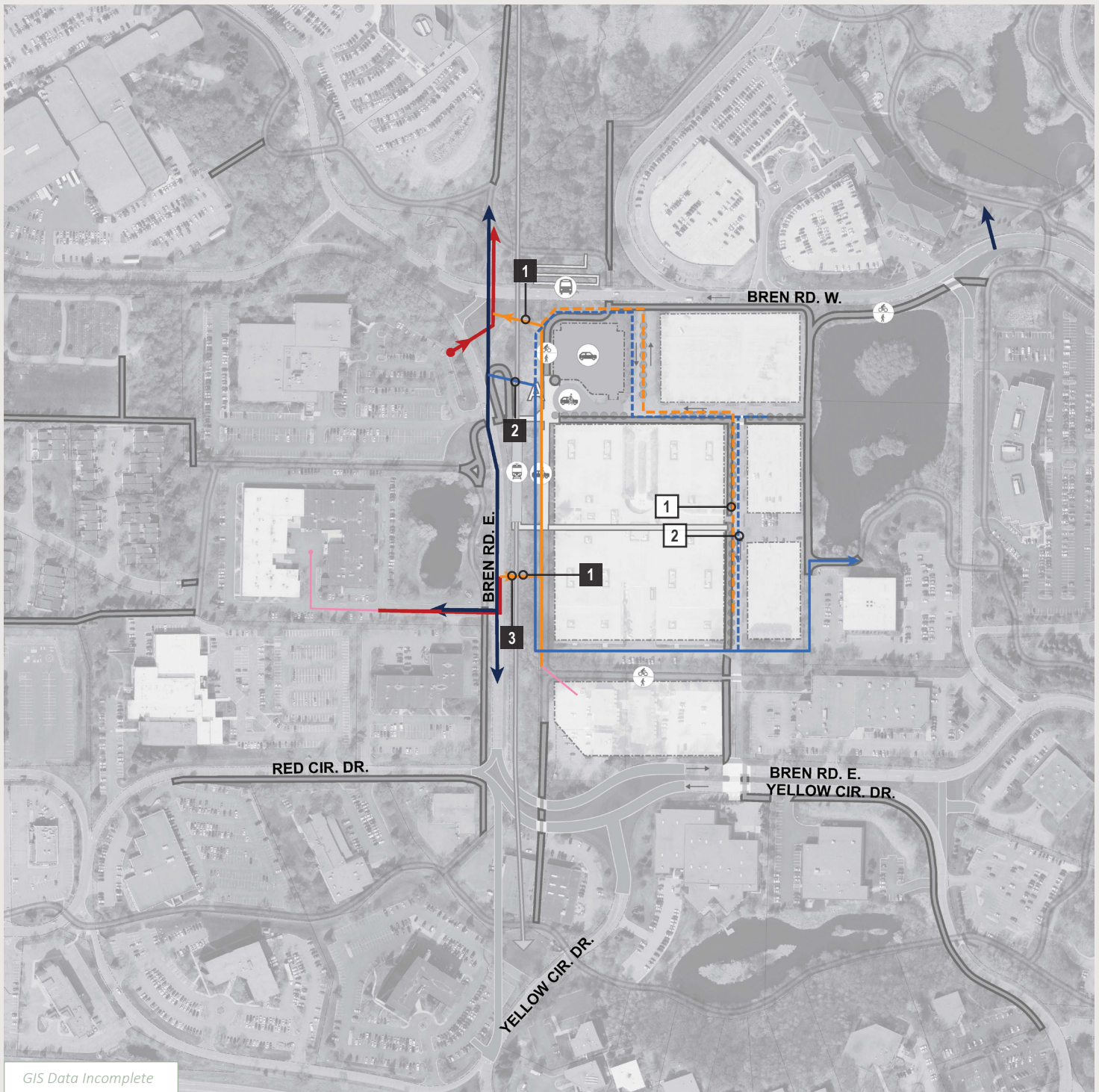
Opening Day Recommendations:

1. Encase existing sanitary sewer crossing the LRT rail construction.
2. Encase existing water main crossing the LRT rail construction.
3. Consider upsizing existing 8-inch sanitary sewer crossing Bren Road E. to 10-inch minimum in conjunction with LRT rail construction (confirm with City model).

Long-Term Recommendations:

1. Construct 8-inch minimum sanitary sewer in conjunction with roadway construction of new streets east of the station.
2. Construct 8-inch minimum water main in conjunction with roadway reconstruction/construction of new streets east of the station.

FIGURE 13-15. STATION AREA UTILITY PLAN



GIS Data Incomplete

OPENING DAY RECOMMENDATION

LONG-TERM RECOMMENDATION

— EXISTING UTILITIES

- - - PROPOSED UTILITIES

— SERVICE SANITARY

— LOCAL SANITARY

— TRUNK SANITARY

— MCES SANITARY INTERCEPTOR

— SANITARY SEWER FORCEMAIN

■ LIFT STATION

— SERVICE WATER MAIN

— LOCAL WATER MAIN

— TRUNK WATER MAIN

● WATER TOWER

THIS PAGE INTENTIONALLY LEFT BLANK