







SAINT PAUL
The Most Livable City in America

West Side Flats

MASTER PLAN & DEVELOPMENT GUIDELINES

DRAFT FOR PUBLIC REVIEW

DECEMBER 5, 2014

ACKNOWLEDGMENTS

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1 PREFACE

THE OPPORTUNITY

The West Side Flats provides a unique opportunity to revitalize a large urban riverfront area on the Mississippi River and directly across the river from downtown Saint Paul. Located in a natural floodplain that was once a large sand bar between the river valley's bluffs, the West Side Flats gets its name from being on the "west side" of the river and part of the larger West Side neighborhood. The West Side Flats encompasses the entire floodplain area between the river's western edge and the river's terraces and bluffs; the West Side Flats study area in this Master Plan encompasses approximately 120 acres of urban land between Wabasha Street, Plato Boulevard, Lafayette Road/Highway 52, and the Mississippi River. While much of this area has suffered from disinvestment over the last several decades and is currently the location of a substantial amount of vacant land, the Flats holds great promise to be transformed into a riverfront urban village that complements the greater West Side community and reconnects it to the river. A mix of residential, commercial, industrial, office, institutional, entertainment and recreational uses will fill in this "hole in the urban fabric" of Saint Paul, and revitalize this long-neglected segment of the Mississippi riverfront.

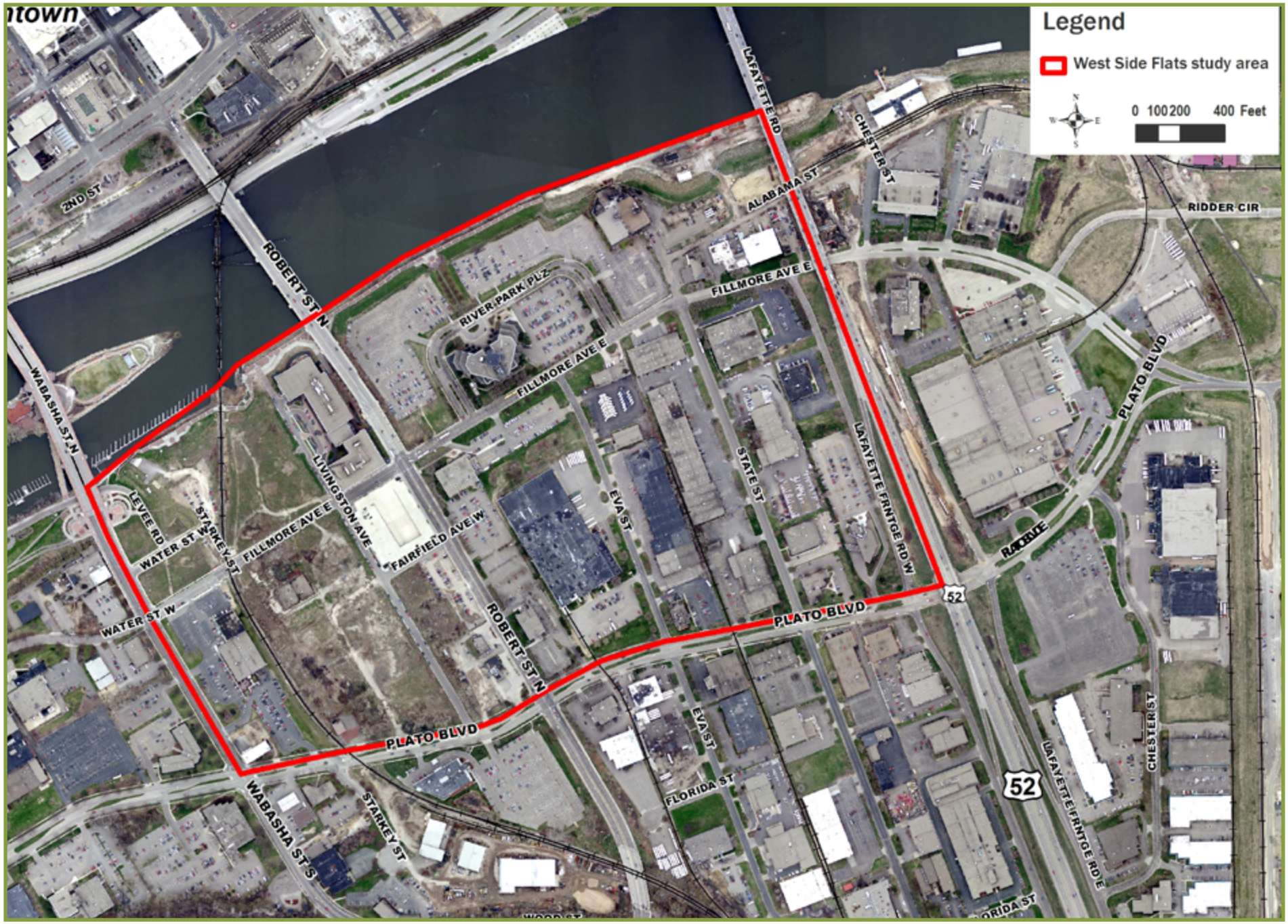
The *West Side Flats Master Plan & Development Guidelines* are rooted in strong, deeply-held visions shared by the larger West Side community and the city as a whole. Building upon these existing river- and neighborhood-related visions, the Master Plan refines the overarching vision of Saint Paul as a city on both sides of the Mississippi River, where the river connects, rather than separates, neighborhoods.

PLAN PURPOSE

The purpose of the *West Side Flats Master Plan & Development Guidelines* is to guide future private development and public infrastructure projects in the West Side Flats area. This document is an update of the 2001 *West Side Flats Master Plan & Development Guidelines*. City staff and community use of the Master Plan over the past 12 years has shown the need to update the Master Plan to address issues relating to land use, urban design and stormwater management.

LAND USE & URBAN DESIGN

Based on experience with the 2001 Master Plan, it was felt that a more flexible master plan is needed to provide more meaningful direction to developers in a time of market volatility and limited public funding capacity. Previous plan guidance on land uses, lot coverages, building heights, and parking management were found to be too prescriptive in a volatile real estate market. While the fundamental



This 2011 aerial photo shows the West Side Flats study area and its surrounding context.

urban design goals and principles of the 2001 Master Plan (including those relating to the street and block pattern, height and density gradients, and open space network) have stood the test of time, it was deemed desirable to take a fresh look at some of the Master Plan's land use and development expectations, and explore opportunities for a more flexible planning and regulatory approach.

The planning area for this updated plan was also expanded to include the area east of Robert Street to Lafayette Road/Highway 52. Much of this area's riverfront land was the subject of a major development proposal in 2004, which resulted in neighborhood and City staff frustration that a small area plan was not in place to better react to development proposals and proactively guide development. This area is likely to undergo development pressure in the next 5-10 years, especially at the river's edge, as the overall market improves and development interest gains momentum in the West Side Flats.

STORMWATER MANAGEMENT

On the West Side Flats, stormwater conveyance is complex, given its location adjacent to the Mississippi River and behind a levee, as well as the presence of a high water table. The 2001 *West Side Flats Master Plan* did not explore stormwater management in any great detail, requiring the issue to be addressed on a project-by-project basis rather than as a system. This updated Master Plan analyzes stormwater management in more detail by incorporating stormwater Best Management Practices and better integrating stormwater resources into considerations of land use, density and urban form.

HISTORY OF WEST SIDE FLATS

The West Side Flats has a long history of attracting immigrant residents, businesses, and river flooding. As a floodplain lying between the Mississippi River valley's bluffs, the West Side Flats became home to businesses and market places in the late 1800s due to its river and railroad connections, as well as a riverfront neighborhood for the growing city of Saint Paul. Immigrants who originally settled in the Flats, as well as those who followed them, eventually expanded the West Side neighborhood south to the terraces and bluffs above the river's floodplain.

For several decades, businesses and housing grew side by side in the West Side Flats. However, frequent river flooding resulted in significant deterioration of the buildings and landscape. The City had ongoing concerns about the deteriorating physical conditions in the West Side Flats throughout the first half of the 20th century.

In the 1920s, the City built both the municipal airport and municipal barge terminal in the West Side Flats. Following the 1952 flood, the worst in history, planning began for a new levee and redevelopment of the Flats to an industrial park. In the late 1950s, the new levee and floodwall were built. In the 1960s, residents and businesses were relocated, most buildings in the West Side Flats were removed, and Riverview Industrial Park was developed.

In recent years, freight and passenger travel has shifted from the river and railroads to highways



West Side Flats, 1953

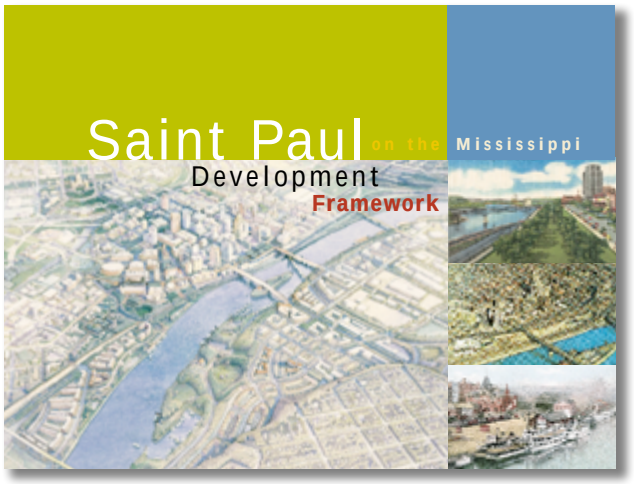


View from West Side bluff, 1900

and airways. While much of the area has suffered from disinvestment in recent decades, the Flats holds great promise to be transformed once again as a riverfront urban village and job center that complements the larger West Side community and reconnects it to the Mississippi River.

PLANNING FOUNDATIONS

Over the last two decades, Saint Paul has pursued riverfront revitalization planning to reconnect the City's neighborhoods to the river. Beginning with the *Saint Paul on the Mississippi Development Framework* (1997), the City has recognized its changing relationship with the Mississippi River, and the need to plan for adjacent land uses, street patterns, development densities and public open space connections that take best advantage of a river that is now an environmental, economic, cultural, historic, natural, and recreational resource.



SAINT PAUL ON THE MISSISSIPPI DEVELOPMENT FRAMEWORK

The Framework first introduced the concept of the greater West Side community as a series of linked urban villages where people live, work and play. Each urban village, of which the West Side Flats is one, was seen as having a clearly-identified focus, high-quality architecture, well-designed public spaces, diverse housing opportunities and a vibrant local economy, with the Mississippi River as an integral part of each neighborhood. The overall development goal of the Flats is to extend and reconnect the greater West Side community to the river. Key concepts in the Framework include:

- natural stormwater management
- protection of key river valley views
- a "green armature" that forms a network of connected green spaces
- small business incubator, industrial, and live/work uses east of Robert Street
- a mix of uses between Robert and Wabasha Streets
- residential and commercial uses at the river's edge that interact with the Esplanade
- a fine-grained street and block network
- balanced modes of movement

The Framework also includes 10 principles to promote a more holistic approach to city-building. These principles remain timely and underpin the updated Master Plan and Development Guidelines:

1) **Evoke a sense of place.**

   Leverage the West Side Flats' key physical qualities to create a unique urban village on the Mississippi River.

2) **Restore and establish the unique urban ecology.**

   Re-establish a balance between built and natural systems in order to restore degraded natural systems.

3) **Invest in the public realm.**

   Design streets, sidewalks, trails, parks and the river's edge as a connected network that will create a vibrant public realm and a sense of security, and attract private investment.

4) **Broaden the mix of uses.**

   Create a more vibrant urban village by encouraging people to live, work and walk in their neighborhood, and by fostering synergy between activities.

5) **Improve connectivity.**

   Connect individual built and natural elements to a larger network. By removing barriers to movement (such as changes in topography, rail lines, and poorly-connected street networks) and improving both physical and visual connections.

6) **Ensure that buildings support broader city-building goals.**

   Rigorously identify and promote elements of building design that contribute to building a vibrant streetscape and city.

7) **Build on existing strengths.**

   Take best advantage of the West Side Flats' unique location, physical setting, natural beauty, and development potential.

8) **Preserve and enhance heritage resources.**

   Recognize the diverse range of historic resources - buildings, landscapes, monuments, geological and topographic features - within the West Side Flats; preserve them; and, where possible, creatively adapt them for new uses and expanded significance.

9) **Provide a balanced network for movement.**

   Create a balanced movement system for automobiles, public transit, pedestrians and bicyclists.

10) **Foster public safety.**

    Design streets, parks and public spaces to be active for longer hours of the day.



Vision of West Side Flats urban village from Framework, 1997



WEST SIDE COMMUNITY ORGANIZATION'S PRINCIPLES FOR RIVERFRONT DEVELOPMENT

The West Side Community Organization (WSCO) uses four principles to guide revitalization of the West Side Flats:

ACCESSIBILITY

» Riverfront development shall be consistent with a community vision of pedestrian corridors buffered from traffic that invite residents to enjoy affordable activities on the riverfront in all seasons.

CONNECTEDNESS

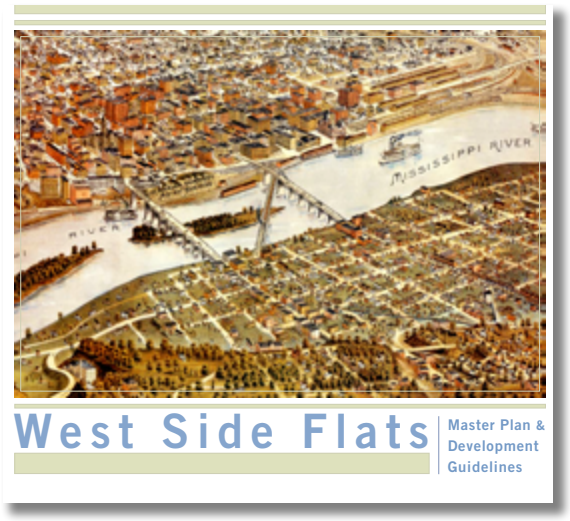
» Riverfront development shall incorporate the character and culture of the West Side. Projects must provide a clear and definite connection with the aesthetics and spirit of the existing neighborhood. In addition, development should enhance transportation and relational linkages between the West Side and other riverfront communities.

OPPORTUNITY

» Riverfront development shall provide job and business opportunities for West Side residents and community development opportunities for the neighborhood as a whole through such projects as business incubators, youth development and educational activities, and the establishment of a community trust fund.

QUALITY

» Riverfront development shall respect that the West Side is first and foremost a place where people live, thereby protecting the residents' ability to peacefully enjoy their homes and neighborhood.



WEST SIDE FLATS MASTER PLAN AND DEVELOPMENT GUIDELINES

The original *West Side Flats Master Plan and Development Guidelines* was adopted in 2001 to guide the development of a mixed-use urban village in the 40-acre area bounded by Wabasha Street, Plato Boulevard, Robert Street and the Mississippi River. A collaboration of WSCO, Neighborhood Development Alliance, Riverview Economic Development Association, Saint Paul Riverfront Corporation, Saint Paul on the Mississippi Design Center and City of Saint Paul, the Plan contains a thoroughfare plan, regulating plan, building typology plan, parking plan, stormwater management plan, public realm plan, urban standards, architectural standards and landscape standards.

The key urban design and land use principles in the 2001 Master Plan include:

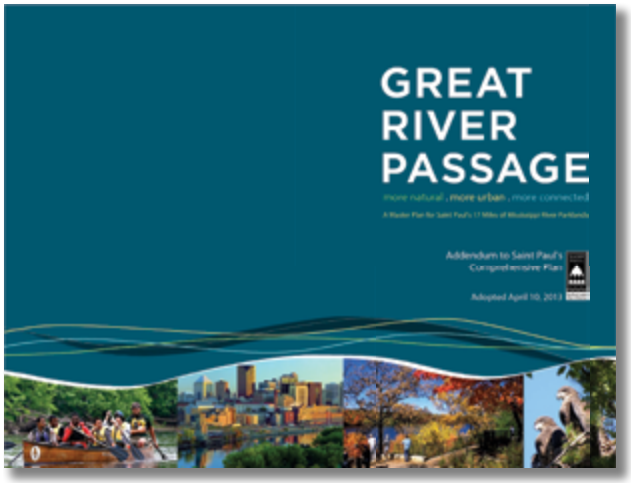
- mix of uses
- connected grid of public, multi-purpose streets
- urban-scaled blocks

- mix of housing types, prices and sizes
- prominent public realm of Riverfront Esplanade, green streets, parks and open spaces
- sustainable design
- natural stormwater management
- connections between the river's edge, West Side Flats Urban Village and greater West Side
- protection of important views and view corridors

GREAT RIVER PASSAGE MASTER PLAN

The Great River Passage Master Plan was adopted by the City Council in 2013. The Master Plan identifies transformative recreation and leisure opportunities along the river and balances them with protection and restoration of natural resources, adding value to adjacent land uses while respecting community and neighborhood desires for better access to the river. Based on the Master Plan's three guiding principles - More Natural, More Urban, More Connected - four strategies were identified specifically focused on the West Side Flats study area:

1) improve the river's edge to connect new development;
2) create neighborhoods that connect to the river;
3) establish green connections to the river; and
4) explore the intensification and diversification of land uses in Riverview Industrial Park.



The Master Plan envisions a vibrant urban riverfront pedestrian promenade - Levee Riverwalk - extending from Harriet Island Regional Park to the Lafayette Bridge as a way to reconnect the West Side to the river and create an attractive riverfront destination. Supporting a vibrant West Side riverfront, green connections in the form of linear open spaces are envisioned to link neighborhoods and employment centers to the river, creating multiple benefits for the City, neighborhoods, and employment areas. The Master Plan's recommendations for the West Side Flats focus on bringing public space and complementary development close to the river's edge to activate the riverfront, and link it to the redeveloping neighborhoods and employment centers in the river corridor. An urban mix of land uses, development intensities, block and street patterns, and open space connections is desirable to support this vision of a vibrant riverfront and revitalized riverfront neighborhoods.

View of future potential development patterns in the West Side Flats.



2 COMMUNITY OUTREACH & ENGAGEMENT

The West Side Flats' location along a river much beloved by the larger Saint Paul community, on ground with ties to generations of West Siders, and just across the river from downtown Saint Paul, demands that community input be a vital element of this long-term master plan for the area. In addition, the choices made in this Master Plan will have a lasting impact on the health and vitality of the West Side community, Mississippi River, downtown Saint Paul, and the city in general. Establishing community support to create and implement a long-term master plan effectively begins with meaningful involvement of the community throughout the planning process. As a result of listening to community members, the Master Plan is intended to reflect the community's interests and values.

Given the Master Plan's potential to produce highly-local benefits, as well as more geographically-dispersed benefits, and its importance to the local community as well as the city as a whole, it was vital that the Master Plan's community engagement strategy recognize and respond to these two scales in approach.

Strategies for community participation were built around two fundamental components: outreach and community involvement. **Outreach** involved reaching out to the community with project information, updates, key findings, recommendations and, most importantly, invitations to participate in the planning process. **Community engagement** involved active participation of the public and project stakeholders in helping shape plan outcomes. Together, these strategies aimed to provide timely and relevant information, encourage participation, and lay a foundation for continuing civic engagement.

Outreach: The West Side Flats master planning effort was organized to reach out to the full spectrum of Saint Paul residents; however, the majority of effort was targeted to key and impacted West Side constituencies, including communities underserved by mainstream media.

Community engagement: The master planning approach was devised as an iterative process that combined the project team's incremental development of the plan with ongoing feedback loops with the community. A series of community task force meetings, public open houses, stakeholder meetings, and on-line tools allowed the community and key stakeholders to establish the fundamental principles that form the basis of plan initiatives, while at the same time offering stakeholders the opportunity to react to ideas as they evolved.



West Side Flats Design Charrette held in May 2013 at Holman Field Airport



Community Open House held on November 20, 2013, at Wellstone Center

The Master Plan's outreach and community engagement techniques included the following:

PROJECT MANAGEMENT TEAM (PMT)

The PMT consisted of City Staff members representing the Departments of Planning and Economic Development, Public Works, and Parks & Recreation; the consultant team; and the Saint Paul Design Center. The role of the PMT was to provide background data; information and knowledge; direction for the Master Plan's vision; and feedback on the proposed Master Plan elements, strategies and development guidelines.

COMMUNITY TASK FORCE (CTF)

The CTF consisted of representatives from the community, including residents, business owners, property owners and advocacy groups. The CTF generally met monthly with the project planning team throughout the planning process. While its primary role was community involvement (providing direct project feedback to the project planning team), the CTF was also expected to provide project updates to a broad base of constituencies and bring feedback to the CTF.



Community Open House held on November 20, 2013, at the The Wellstone Center

STAKEHOLDER MEETINGS

The project team facilitated four focused stakeholder meetings during February and March 2013. The four "key stakeholder" groups were:

- Community-Based Organizations - WSCO, NeDA, Hispanic Tiempo, and the Saint Paul City Artist-in-Residence.
- River/Environmental Organizations - the U.S. Army Corps of Engineers, Lower Mississippi River Water Management Organization, Friends of the Mississippi River, Minnesota Department of Natural Resources, National Park Service/Minnesota National River & Recreation Area, and Audubon Minnesota.
- Business Owners - Brown & Bigelow, Upper River Services, Great River Office Products, El Burrito Mercado, Wellington Management, Paramount Real Estate, Welsh Companies/Colliers Int'l, and the Saint Paul Port Authority.
- Transportation - the City, Metro Transit, MN DOT Highways, and MN DOT Aeronautics.

These stakeholder meetings were conducted to determine perspectives and insights regarding the West Side Flats development strategies, business improvement needs, access and connection needs, physical improvements, views, business mix, business opportunities, residential concerns, retail issues, public art and public space needs, environmental concerns, and infrastructure needs.

DESIGN WORKSHOP

A two-day design workshop involving the CTF, PMT, and project consultant team was conducted on May 1-2, 2013. The workshop was used to accelerate the site design process by enabling the project's team members to intensively explore the plan area's issues, opportunities, and big ideas fundamental to the planning process. It also provided a valuable opportunity to achieve early consensus on the most worthy approaches for updating the *West Side Flats Master Plan.*

DEVELOPER ROUNDTABLES

Two Developer Roundtables were conducted during the project to allow development professionals/experts the opportunity to learn about, discuss, and provide input relating to the *West Side Flats Master Plan*. The Developer Roundtables included developers from the residential (market, affordable, artist), commercial, office, and mixed-use sectors.

The first Developer Roundtable was held in April 2013 to identify issues with the current (2001) WSF plan, discuss development market forces that might influence redevelopment decisions, and advise on how to create an effective master plan and development guidelines.

The second Developer Roundtable was held in November 2013 to review the draft master plan. For both Developer Roundtables, the emphasis was on testing market receptiveness to the Master Plan's recommendations and learning how best to implement them.

LISTENING SESSIONS

The PMT reached out to underrepresented groups in the West Side community that may not be comfortable or have the ability to attend more traditional planning input forums. The purpose of the listening sessions was to share the project's progress with participants and receive their reactions to the ideas being proposed. Listening sessions were conducted at Torre De San Miguel and Bluff Park Homes.

COMMUNITY OPEN HOUSES

Two community open houses were conducted. The first open house was held in April 2013 to initiate the planning process, and seek input regarding needs and aspirations for the future of the West Side Flats. The second open house was held in November 2013 near the end of the planning process to gain community feedback on the proposed master plan's directions and the development guidelines.

WSCO MEETINGS

The West Side Community Organization (WSCO) represents the interests of District 3 (where the project area is located). City staff met regularly with WSCO's Riverfront, Development and Land Use (RDLU) Committee throughout the planning process to provide general updates on the planning process and bring concerns, issues, etc. back to the project planning team. The project leads met twice with the WSCO Board to gain input on the West Side community's vision, goals, values, objectives and desired plan outcomes; and to receive feedback on plan progress and proposed recommendations. WSCO was also an important project partner in reaching out to West Side residents and businesses throughout the project.

CITY'S WEBSITE

A website was set up to provide project information and solicit community input. The website was routinely updated to contain information on project background, interim and final products, community feedback summaries, project contacts and information about community participation opportunities. It also utilized Open Saint Paul to conduct on-line questionnaires to solicit input.



3 VISION & GUIDING PRINCIPLES



VISION:

21ST CENTURY RIVERFRONT URBAN VILLAGE

The West Side Flats will emerge as a thriving riverfront urban village that connects the larger West Side community to the Mississippi River and downtown Saint Paul. With its unique location in the Mississippi River floodplain, the presence and movement of water will be reflected in land use patterns, street design, building massing, stormwater features, and public realm design. The West Side Flats will have strong physical and visual connections to the river's edge and bluffs, walk/bike-friendly streets, a well-designed network of public spaces, restored natural systems, urban neighborhood design, a complementary mix of high-quality and human-scaled buildings, a variety of housing types and public art. The West Side Flats will recapture its identity as a place that welcomes and integrates a broad mix of people, cultures and destinations into a vibrant mixed-use community. By restoring a more balanced mix of neighborhood, business and natural systems, it will be a model for economic, environmental and social sustainability. The employment-oriented district will continue to provide high-paying commercial/industrial job opportunities for the region and local residents, as it evolves into a more diverse, higher-intensity, and visually attractive business district over time.



City of Owensboro, Ohio, Riverfront. Image credit: EDSA, http://www.edsaplan.com/en/node/911

Guiding Principles

1) Integrate a broad **mix of complementary land uses** throughout the neighborhood that offer people opportunities for living, working, commerce, entertainment and recreation.

2) Promote a **diverse mix of housing types** that welcome residents of all ages, incomes, household types and cultural backgrounds.

3) Re-establish an urban neighborhood **block and street pattern** that provides urban-scale development parcels, a robust network of attractive public streetscapes, and increased connectivity for all transportation modes.

4) Create a **prominent public realm** that links the Riverfront Esplanade, bluffs, parks, open spaces and streets into a green space framework; provides opportunities for community gathering and public art; and connects to the regional system of trails, parks and open spaces.

5) Sensitively **integrate stormwater runoff** into the neighborhood's green infrastructure system of streets, public open spaces and private yards as a valuable natural resource, visual asset and unique neighborhood identity element.

6) Provide a balanced, convenient, safe and comfortable **network for movement** within, to and from the neighborhood, including walking, biking, vertical circulation (e.g. bluffs to flats, levee to water), driving and transit.

7) Encourage a **variety of building heights and massing**, while preserving important views and creating new views of the river, bluffs and community landmarks.

8) Create an **urban ecology** that balances sustainable urban and natural systems, including tree canopy, green streets, native vegetation, and cleanup of contaminated soils.

9) Improve the business functionality, land use diversity and visual character of the **commercial/industrial employment** district east of Robert Street to provide high-paying job opportunities (especially for West Side residents) and complement the larger West Side Flats neighborhood.

10) Support community **cultural development** opportunities that reflect and respond to the larger West Side neighborhood's past, present and future, engaging artists and creative communities in all phases of West Side Flats redevelopment.

11) Create a **unique and welcoming public edge** along the riverfront that invites walking, cycling and gathering places for all in all seasons.

12) **Engage all members** of the West Side community in on-going plan implementation.



4 EXISTING CONDITIONS

Existing Land Use

The West Side Flats study area includes the following land uses:

- Between Wabasha and Robert streets - commercial and industrial along Robert and Wabasha, and new housing at the Wabasha Bridgehead, with approximately half of the land vacant;
- East of Robert & north of Fillmore - commercial west of State Street, industrial east of State Street;
- East of Robert & south of Fillmore - primarily industrial with some commercial along major streets.

Based on the City's Existing Land Use Map, the West Side Flats study area overall is comprised of approximately 40% industrial, 30% commercial, 25% vacant, and 5% new residential.

The existing commercial and industrial land uses are generally characterized by large surface parking lots and low lot coverages.

The first reintroduction of residential land use into the study area is a high-density residential building at Wabasha and Fillmore.

The Saint Paul Port Authority (SPPA) designates the area as the Riverview (east of Robert) and Riverview West (west of Robert) business centers. Approximately 140 industrial and commercial businesses and 4,800 jobs exist within these two business centers, which extend beyond the project study area.

Figure 3.1. Existing Land Use Map (*Saint Paul 2030 Comprehensive Plan*)

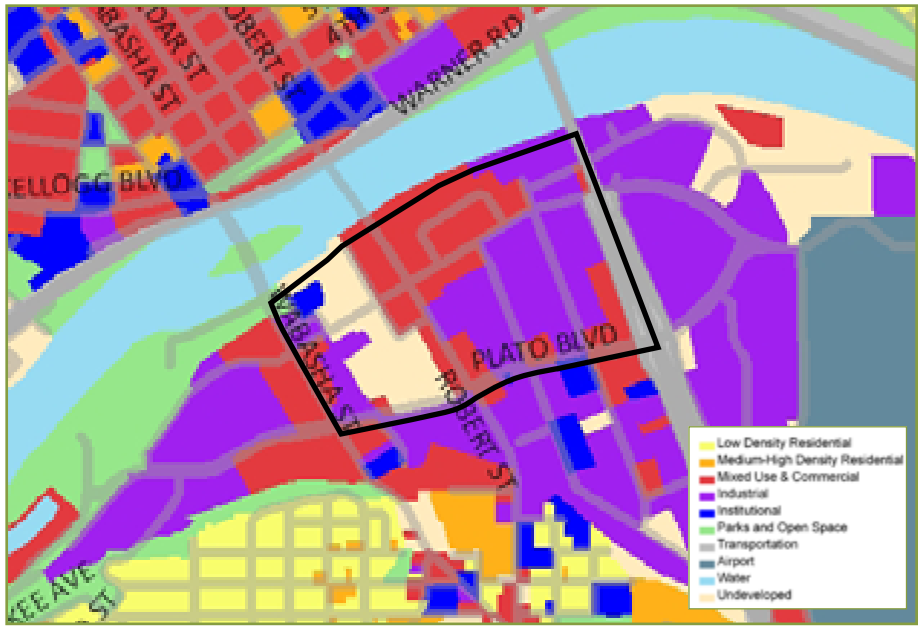
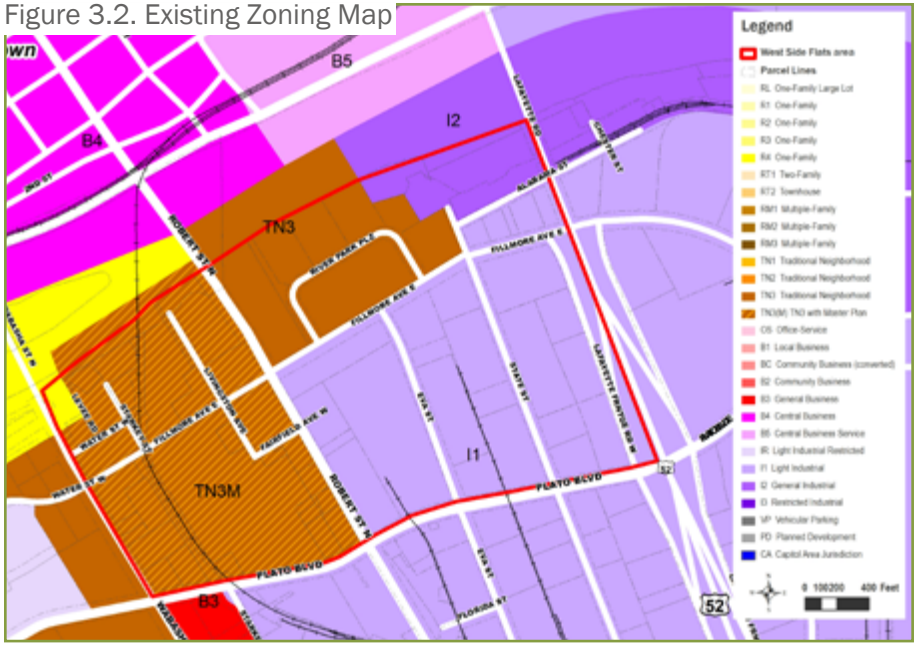


Figure 3.2. Existing Zoning Map



Zoning

Existing zoning in the West Side Flats study area consists of:

T3M – TRADITIONAL NEIGHBORHOOD WITH MASTER PLAN

Between Wabasha and Robert streets from the riverfront to Plato Blvd. The T3 zoning district is intended to provide for higher-density pedestrian- and transit-oriented mixed-use development. Limited production and processing uses are allowed as well. T3 is intended for sites large enough to support:

- a mix of uses including residential, commercial, civic and open space in close proximity to each other;
- a mix of housing styles, types and sizes to accommodate households of varying sizes, ages and incomes;
- a system of interconnected streets and paths that offer multiple routes for motorists, pedestrians and bicyclists, and are connected to existing and future streets; and
- a system of open space resources and amenities, and incorporation of environmental features into the design of the neighborhood.

The "M" designation indicates that this area is also subject to an approved master plan; in this case, the *West Side Flats Master Plan and Development Guidelines.*

T3 – TRADITIONAL NEIGHBORHOOD

East of Robert Street and north of Fillmore Avenue, along the riverfront. This area is not covered by the 2001 *West Side Flats Master Plan*.

R4 – ONE-FAMILY

A very small area located near the Wabasha Bridge and the riverfront. The R4 one-family residential district provides for an environment of predominantly low-density, one-family dwellings along with civic and institutional uses, public services and utilities that serve the residents in the districts. It is used here for Harriet Island Regional Park.

I1 – LIGHT INDUSTRIAL

Bounded by Robert (west), Plato (south), Lafayette/Hwy 52 (east), and Fillmore (north); extends up to Alabama Street between State Street and Hwy 52. The I1 light industrial district is intended to accommodate wholesale, warehouse, and industrial operations whose external physical effects are restricted to the area of the district and in no manner affect surrounding districts in a detrimental way. The I1 district is intended to permit, along with other specified uses, the manufacturing, compounding, processing, packaging, assembly, or treatment of finished or semifinished products from previously prepared material.

I2 – GENERAL INDUSTRIAL

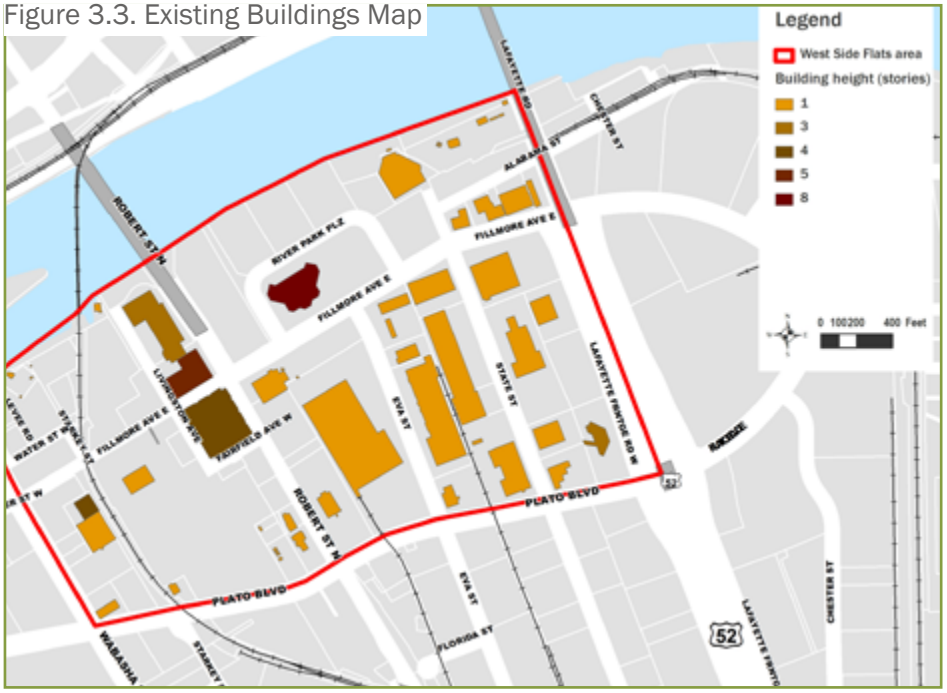
Just west of the Lafayette Bridge/Hwy 52 and north of Fillmore Avenue. The I2 general industrial district is intended primarily for manufacturing, assembling and fabrication activities, including large scale or specialized industrial operations whose external effects will be felt in surrounding districts. The I2 district is intended to permit the manufacturing, processing and compounding of semifinished products from raw material and prepared material. The processing of raw material in bulk form to be used in an industrial operation is a permitted use in the I2 district.

Built Form

Existing development in the West Side Flats is generally characterized by large blocks, large parcels with low-rise industrial and commercial buildings, and low lot coverages. Large surface parking lots typically surround buildings and dominate street frontages; therefore, most buildings are set back from the street and do not frame the street as an attractive, public environment. Large vacant parcels lie between buildings, creating a discontinuous and vacant environment along the streets.

Many of the industrial and commercial buildings are older and have not been adapted to keep up with contemporary industrial business needs. The exterior building design and materials of many of these buildings contributes little to a neighborhood identity. Newer buildings (U.S. Bank and West Side Flats Apartments) have been designed to better address the street, and have been built with materials and façade treatments that contribute to a more positive neighborhood identity.

Figure 3.3. Existing Buildings Map



Street System

The existing street system serving the West Side Flats includes the following major streets:

- Lafayette Road/US Hwy 52 (Principal Arterial)
- Robert Street/MN Hwy 952 (A-Minor Arterial)
- Wabasha Street (B-Minor Arterial)
- Plato Boulevard/CSAH 40 (B-Minor Arterial)

These streets provide access to and from the West Side Flats from the West Side community, downtown Saint Paul, and the region. The Wabasha, Robert and Lafayette bridges provide crossings of the Mississippi River.

U.S. Highway 52 is a major commuter route between downtown Saint Paul and areas south of the city. Wabasha and Robert are major commercial/industrial corridors, connecting north-south to District del Sol and downtown. Plato is a commercial/industrial, divided boulevard connecting east-west to Harriett Island Regional Park and Holman Field/Downtown Airport. Hwy 52, Robert, Plato, Fillmore (east of Robert), and Wabasha are designated truck routes.

The local street system consists of large blocks and few streets and sidewalks, creating major challenges for pedestrian movement in the area. Many of the streets east of Robert Street are sized to accommodate truck movements.

Figure 3.4. Existing Roadways Map

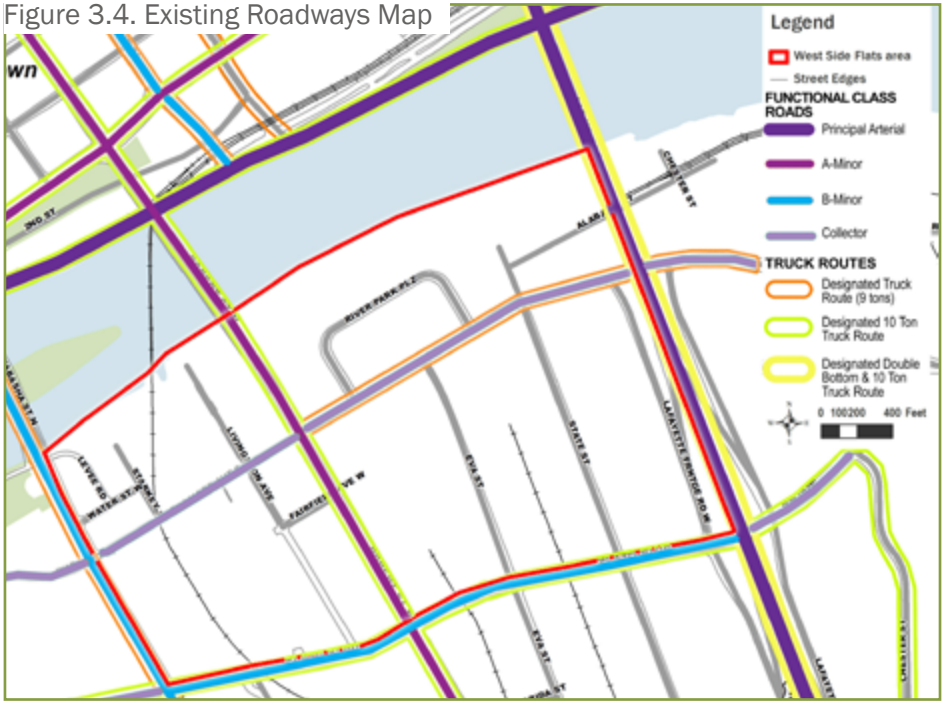


Figure 3.5. Existing & Planned Transit Map



Figure 3.6. Pedestrian & Bicycle Circulation Map



Transit System

Existing transit service in the West Side Flats includes local and express bus routes served by Metro Transit, including routes 67, 68, 71, 75, 94 and 452. Bus stops and associated bus facilities (shelters, seating and signage) exist along Wabasha and Robert streets, Plato Boulevard, Fillmore Avenue and River Park Plaza. The busiest stops are those located along Wabasha and Robert streets. Current transit studies are looking at adding bus rapid transit (BRT) to Lafayette Road/Hwy 52 or Robert Street, and streetcar service to Robert Street.

Pedestrian and Bicycle Circulation

Existing pedestrian facilities in the West Side Flats are limited to major streets (Robert, Wabasha, Plato), River Park Plaza, portions of Fillmore and Livingston, and along the Riverfront Esplanade. The pedestrian system today is discontinuous. Many of the streets east of Robert Street lack sidewalks.

Bikeways are limited. On-street bike lanes exist on portions of Wabasha Street. Bikeways will be added to Highway 52 as part of its reconstruction. A multi-use trail is planned for Plato Boulevard.

The Riverfront Esplanade is well-designed and includes attractive and durable features – stone walls, seating, lighting. The Esplanade connects with Harriett Island Regional Park to the west, but terminates abruptly near Upper River Services at its eastern end.

Vertical circulation exists at the south end of the Wabasha Street Bridge, connecting pedestrians and bicyclists to the Esplanade and downtown.

Parks and Open Spaces

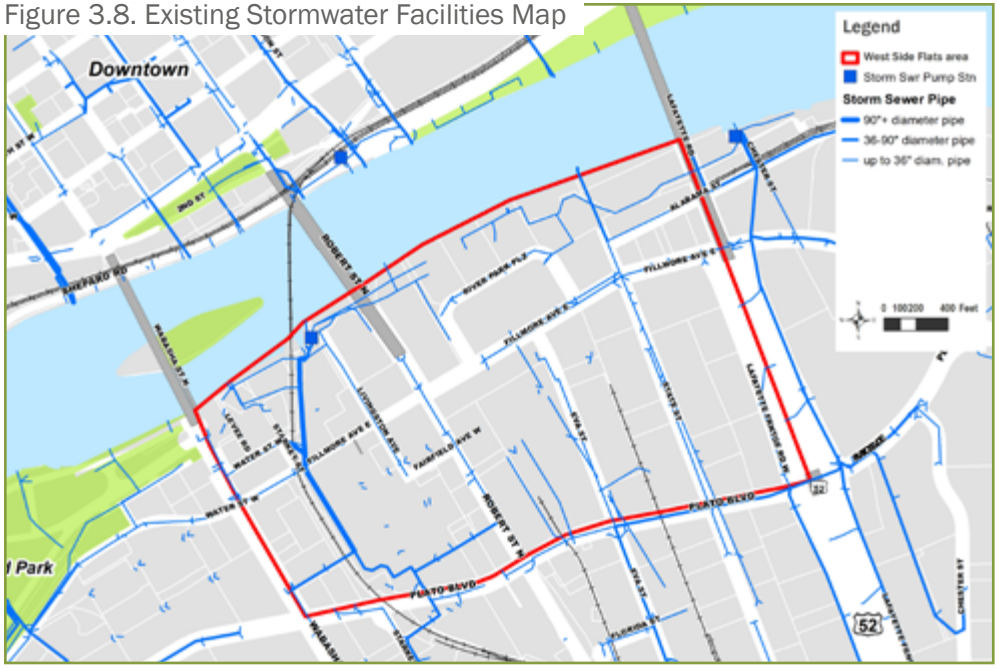
There are currently no designated park or open spaces within the West Side Flats study area, with the exception of the Riverfront Esplanade. Since development and connections to the Riverfront Esplanade are limited currently, this public riverfront space is very underutilized. Harriet Island Regional Park (which includes Raspberry Island) is located immediately to the west of the study area. Raspberry Island's park space is accessed from the Wabasha Street Bridge.

There are, however, several City parks located in the vicinity of the West Side Flats study area, including, Kellogg Mall, Culture Park, Upper Landing Park and Lower Landing Park just across the river in downtown. Existing parks in the West Side neighborhood, above the bluff, include El Rio Vista Park, Parque Castillo, Prospect Terrace Park and Kidd Park. Each of these parks plays a unique role in the park system, attracting people from the neighborhood, city and region.

Figure 3.7. Existing Parks & Open Spaces Map



Figure 3.8. Existing Stormwater Facilities Map



Stormwater System

The current stormwater system consists of a network of underground pipes that discharge stormwater directly into the river without treatment. Major stormwater pipes (84" and 90") run along the east side of the rail line. When the river is at high flood stage, the West Side Flats area is also served by two stormwater lift stations that lift stormwater runoff over the levee. Located just inside the levee, the Custer Street lift station is one block west of Robert Street and the Chester Street lift station is just east of Highway 52. Further investigations, such as videotaping of the pipe system, will be necessary to fully understand the system's condition.

The West Side Flat's physical environment has several unique features related to stormwater management, many of which are directly or indirectly related to the site's location in a floodplain along the Mississippi River:

- *The planned development area is protected by a levee.*
- *The levee system has setbacks/maintenance requirements.*
- *The high water table (15'-18' down) will likely fluctuate to even higher levels based on different river stages.*
- *The depth of fill varies (8'-10') over sandy deposits (ancient river deposits) with clayey layers.*
- *Previous land uses have left behind suspected contaminated soils.*
- *Lift stations are needed for stormwater at high river stages.*

These physical constraints must also be considered in planning and designing future stormwater management techniques and infrastructure.

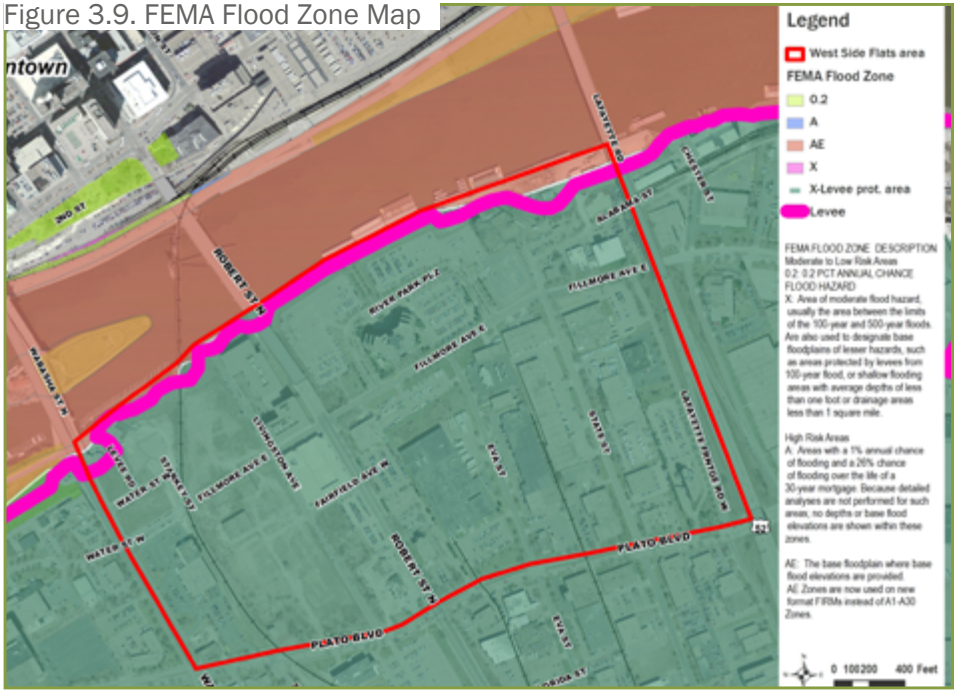
The stormwater system is a key factor in future planning for the West Side Flats for several reasons. The West Side Flats is located adjacent to the regionally and nationally significant Mississippi River, which is also the destination of the area's stomwater runoff. The Mississippi River is designated as an impaired public water by the Minnesota Pollution Control Agency for its current water quality. The study area is protected from river flooding by a levee system. Past land uses reflected the working nature of the river rather than protecting its water quality for environmental and recreational purposes. However, future land uses will likely emphasize strong connections to the river as a unique natural asset for those living, recreating, and working in the West Side Flats. Rather than the stormwater system being entirely underground as it is today, contemporary stormwater techniques offer great potential for reducing stormwater runoff, improving the river's water quality, and creating attractive above-ground stormwater amenities that are integrated into the community.

River Floodplain

The West Side Flats is located in an area that was once plagued with frequent flooding. In the 1950s, after decades of flooding problems in the West Side Flats, the Saint Paul Port Authority and Saint Paul Housing and Redevelopment Authority assembled land to remove residential uses from the area, and develop the area for industrial use. Construction of a new levee was critical to protecting future redevelopment from flooding. Flood risk was significantly reduced by creating the Upper Levee. The Levee minimizes flood activity up to river levels that have a less than 1% change of occurring in any given year.

Groundwater levels still remain an issue, however, particularly for higher-density development that requires structured parking. Soil tests reveal the groundwater table is roughly 15 feet below ground level. Another development impact in the area is levee setbacks, which require development to occur outside the levee easement or 15 feet back from the toe of the levee, whichever is greater.

Figure 3.9. FEMA Flood Zone Map



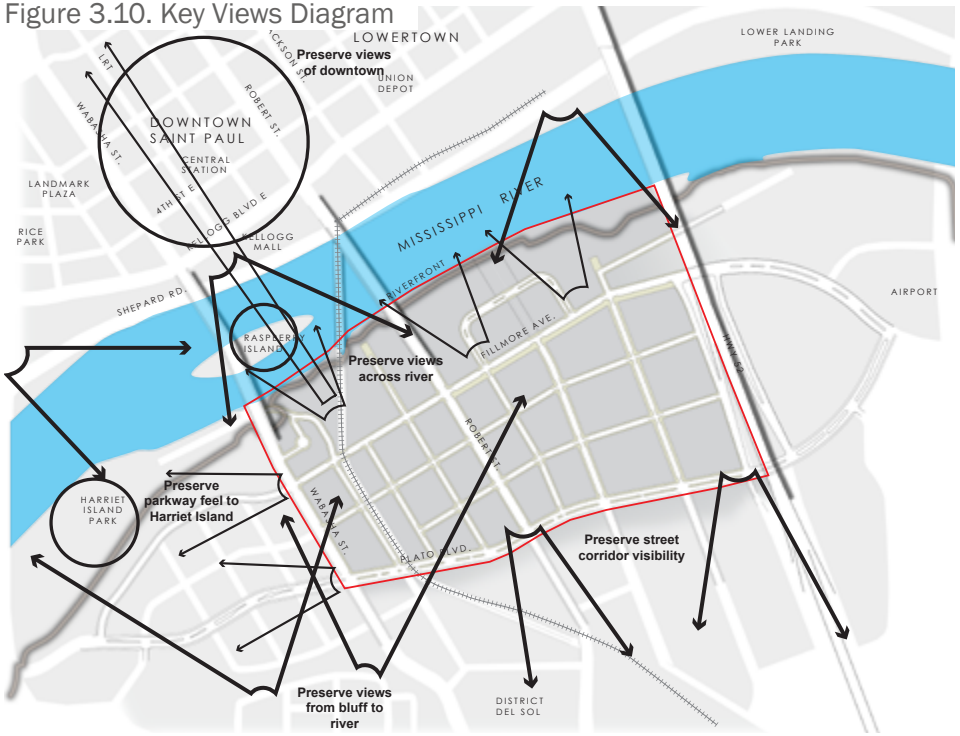
River Views & Topography

The West Side Flats' location along the Mississippi River affords great views of the river valley. Key views that are valued by the West Side community include the bluffs on both sides of the river, the river channel and edge, bridges, the downtown skyline, and the State Capitol. From the West Side, key viewing points are the Riverfront Esplanade, Harriet Island Regional Park, the bridgeheads (Wabasha and Robert), Prospect Terrace Park, and major street corridors. Views of the West Side Flats are also important, particularly from the West Side bluffs and downtown Saint Paul.

The West Side Flats lies entirely within the Mississippi National River and Recreation Area (MNRRA), which is part of the National Park Service, and the Mississippi River Corridor Critical Area, a joint local and state program for coordinating planning and management of the river corridor.

As development occurs in the West Side Flats, existing views will necessarily change. Planning and designing new development will need to consider impacts on key views from and of the area.

Figure 3.10. Key Views Diagram





5 MASTER PLAN

Overview

The Master Plan provides guidance for site redevelopment and infrastructure projects, both public and private, so that they contribute to achieving the long-term vision laid out for the West Side Flats in Chapter 2.

This master plan consists of the following elements:

- Land Use
- Urban Design and Sustainability
- Street System
- Transit System
- Pedestrian and Bike Circulation
- Parks and Open Spaces
- Green Infrastructure
- Public Art

Each element of the Master Plan consists of a narrative, visual plan diagram, and strategies. The elements are inextricably connected, so coordination between them is critical to achieving the vision and guiding principles of the Master Plan.



Pittsburg riverfront. Image credit: David B. Stinson

Land Use

From its original development in the late 1800s to the 1960s, the West Side Flats was a vibrant urban village, home to industries, commercial businesses, and a riverfront residential neighborhood. For the past 50 years, the West Side Flats has been primarily an industrial and commercial area. The land uses and development forms of the Riverview and Riverview West industrial parks, east and west of Robert Street respectively, have resulted in disconnecting the West Side community from the river. As the West Side Flats continues to evolve from an industrial park to a 21st Century urban village and Employment Center, it is envisioned as a place that weaves together a balanced mix of land uses. The Land Use element of the Master Plan provides guidance for a mix of future land uses that complement each other, including residential, commercial, industrial, office, civic/institutional, and park/open space.

Attracting people to live in the West Side Flats will demand that the mix and pattern of future land uses create a truly livable and vibrant neighborhood. This new neighborhood should also serve to reconnect the West Side community above the bluff to the river. As a new urban neighborhood, land uses and development forms need to meet 21st century demographic and lifestyle trends. Homes, stores, services, restaurants, jobs, institutions and recreational facilities need to be located in convenient proximity to each other. Land use patterns and densities should be oriented to walking, bicycling, transit, as well as automobile travel.

In order to create an economically sustainable city and West Side community, it will be important to retain and grow industrial/commercial businesses, jobs and tax base in the West Side Flats. Today, there are approximately 140 existing industrial and commercial businesses and 4,800 jobs in the West Side Flats, including both the Riverview and Riverview West industrial parks. Riverview West includes primarily commercial land uses, some industrial, and a significant amount of undeveloped land. Riverview is a mix of industrial and commercial land uses. Existing development in Riverview and Riverview West is characterized by large blocks, large single-story buildings, low lot coverage, large surface parking areas, and large vacant parcels. The vision for the West Side Flats encompasses a broader mix of land uses, retention and growth of jobs, higher development densities, and appropriate transitions between neighborhood and employment land uses.

Land Use Character Areas

In order to create a more balanced community in the West Side Flats, the Master Plan establishes four land use character areas:

- Mixed-Use Corridor
- Mixed Residential
- Employment Center
- Major Parks & Open Spaces

MIXED-USE CORRIDORS

Mixed-Use Corridors will be located along the primary activity thoroughfares in the West Side Flats, including:

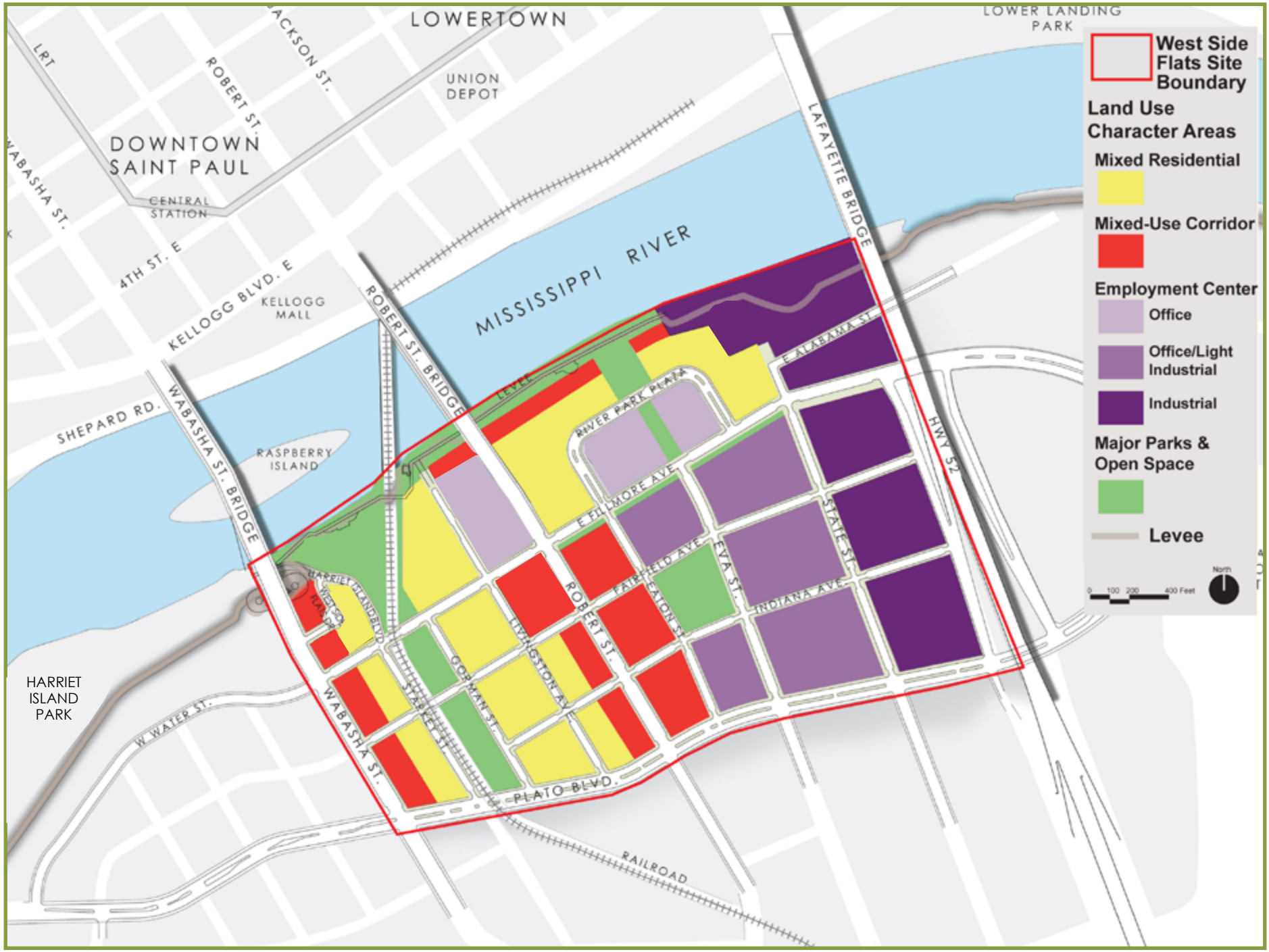
- Robert Street
- Wabasha Street
- Riverfront Esplanade

Mixed-Use Corridors have a broad mix of land uses, such as residential, retail, restaurants, office, civic/institutional. Residential land uses will encompass a range of housing types. Street-level uses should be predominantly non-residential, preferably a mix of retail and restaurant businesses that serve the needs of local residents and employees, and contribute to a vibrant environment on the street/Esplanade. Above street level, Wabasha Street is anticipated to have predominantly residential uses, while Robert Street is anticipated to be predominantly residential on the west side and office on the east side (above street level). Robert Street has been identified as a potential streetcar line, which reinforces the need for a mix of land uses and higher densities that will benefit high-quality transit services. Land uses fronting onto the Riverfront Esplanade are also anticipated to be predominantly residential above street level. Both residential and non-residential land uses should be at development densities that support transit use, as well as a convenient walking/biking environment.

The central portion of the Riverfront Esplanade is envisioned for mixed-use with retail, restaurant, service or entertainment uses fronting onto the Esplanade. Along the Riverfront Esplanade, including Harriet Island Regional Park, the land use character changes as you go west to east but can be complementary and create a vibrant urban riverfront. From west to east, the riverfront land use character will be:

- Harriet Island Regional Park - Recreational

Figure 5.1. Land Use Plan



- Wabasha Street to Livingston Street - Residential and Park/Greenway
- Livingston Street to State Street - Mixed Use
- East of State Street - Working Riverfront

MIXED RESIDENTIAL

Mixed Residential areas are envisioned on either side of the linear greenway, between Wabasha and Robert streets, and along the riverfront north of Fillmore. Land use within the Mixed Residential areas should be primarily residential, including a range of housing types, densities, and price points. The range of housing types should address the needs and desires of people of different ages, family sizes, cultures, and incomes. Residential land uses should be at development densities that support transit use, as well as a convenient walking/biking environment. Residential land uses should also complement, capitalize on, and orient to the desirable riverfront and greenway open space amenities.

EMPLOYMENT CENTER

The existing Riverview Industrial Park, east of Robert Street, can evolve into a more diverse jobs-rich West Side Flats Employment Center organized around reconfigured blocks and streets. The Master Plan reconfigures the current industrial area of superblocks and a limited street network to a more connected street network and relatively smaller blocks, which is more conducive to a mix of contemporary industrial, office and commercial uses. The existing streets (Plato, Fillmore, State and Eva) are supplemented with new streets, including Eaton Street (north-south), Fairfield Avenue, and Indiana Avenue (east-west). This area has significant growth potential for existing and new businesses on underutilized sites, including large surface parking lots. Reinvigorating the West Side's economy could include supporting commercial/industrial start-ups, expansion of existing businesses, and attracting innovative companies that will value the proximity to an emerging urban village and the river corridor's natural amenities. Green infrastructure in the Employment Center can also function as buffers between industrial uses, residential uses, and the public realm, such as the planned green space along Fillmore Avenue, park east of Robert Street, green finger connection along Eva Street, and green street design in general.

MAJOR PARKS AND OPEN SPACES

Major parks and open spaces are planned as a network of green spaces connecting neighborhood and Employment Center uses to the riverfront, as well as connecting the greater West Side community to the riverfront with linear greenways across the Flats. The network consists of three major components:

- Riverfront Esplanade
- West Side Flats greenway (west of Robert St)
- Eva Street greenway and park (east of Robert St)

While the Riverfront Esplanade is largely in place, the two proposed greenways along the freight rail line (west) and Eva Street (east) are concepts that will need to be explored further to address the relationship to an active rail line, park/recreational needs of Employment Center, property acquisition, and the integration of stormwater features.



View looking north showing future potential development character along Robert Street.


JOYBAKER

View looking north illustrating future potential development character along the existing railroad tracks and future West Side Flats Greenway.





LAND USE STRATEGIES

LU1) Plan and design development projects to be compatible with a variety of adjacent land uses. As properties redevelop over time, planning and designing new projects that fit in with a mix of residential, office, industrial, retail, restaurant, services, civic/institutional, and recreation uses to serve the needs of residents, employees, and visitors of the neighborhood is desired. Some uses are appropriate to be mixed within a building, others within a block, and others across the street.

LU2) Promote active commercial, civic, and institutional land uses at street level within buildings facing Mixed-Use Corridors, including the Riverfront Esplanade. In order to create active and interesting environments for people on the community's main streets, street level uses should be non-residential uses that are open for business throughout the day and evening as much as possible.

LU3) Attract a broad range of housing types, densities, and developers. Since residential land uses have been absent from the West Side Flats for the past 50 years, there is a significant opportunity to create a new neighborhood with a broad range of housing options.

LU4) Manage the neighborhood's overall density to support strong transit, pedestrian, and biking environments. The neighborhood's overall residential and non-residential development should occur at sufficient densities to attract and maintain convenient urban amenities, such as a healthy mix of retail, services and restaurants, high-frequency transit, pedestrian/bike network, and parks.

LU5) Cultivate stronger relationships between Employment Center businesses, new residents and employees on the West Side Flats, as well as the greater West Side community. Efforts are already underway in the neighborhood to better match residents with local jobs; these efforts should be strengthened.

LU6) Improve the physical environment of the West Side Flats Employment Center. Landscaping, streetscape improvements, utility and infrastructure investments, aesthetic upgrades to building exteriors, and public art will enhance the appearance and function of existing businesses, attract future private investment in the Employment Center, create safe and comfortable connections to the river for the greater West Side community, and offer active and healthy lifestyle options for employees.





LU7) Reuse selected older industrial buildings that no longer meet the needs of more conventional industrial users but that have the potential for high job density. Selected buildings may be adaptable for smaller, artisanal, creative enterprises that promote entrepreneurship, business incubation, artistic endeavor and eclectic urban design. Careful adaptation of such buildings will help create a "buzz" for the industrial/office area.

LU8) Promote redevelopment of vacant and underutilized sites to benefit existing businesses, attract new businesses, and create an Employment Center that is more urban in character. Redevelopment should maximize both economic development and neighborhood revitalization goals, which will entail exploring new models for creating an urban Employment Center. Many existing businesses have large surface parking lots that are no longer needed and could be put to more productive uses. Redevelopment of large surface parking lots and other sites with development potential offer opportunities to grow businesses, add businesses, and reduce the negative impacts of the predominance of parking lots existing today.

LU9) Increase and strengthen land use diversity, building density, and job-creation potential in the Employment Center, while supporting the existing industrial/office job base. Redevelopment projects will need to improve the Employment Center's character for West Side businesses and residents. Encouraging a broader mix of employment uses and increased development density will increase the city's employment and tax base. Some of the new uses may be of a residential or live/work nature.

LU10) Improve the design of new industrial buildings and sites. Well-designed new industrial buildings and sites are vital to enhancing property values, better integrating the Employment Center into the urban fabric of the West Side Flats, and creating a desirable Employment Center that continues to attract new development and investment. Effective parking management and design will be necessary to prevent the creation of new large surface parking areas.

Urban Design & Sustainability

Even though the West Side Flats sits in a dramatically urban location along the downtown portion of the Mississippi River corridor, its current environment is generally commercial/industrial and low-density in character. The West Side Flats' current development character was primarily set by its redevelopment as the Riverview Industrial Park, which began in the 1950s. This development pattern stands in stark contrast to its original development character, which was that of a truly mixed-use neighborhood, including residential, commercial and industrial uses set in a traditional urban street grid.

This Master Plan seeks to create a more urban neighborhood and Employment Center built around the following urban elements:

- an urban Riverfront Esplanade with attractive gathering places, incredible views of the river valley and downtown Saint Paul, and connections to regional parks, trails and open spaces;
- urban parks and open spaces, including the West Side Flats Greenway, Eva Street Greenway and Park, and urban plazas;
- urban street grid with "complete streets" that are multi-functional in terms of balancing a variety of travel modes, creating vibrant streetscapes, and integrating natural features; and
- part of the West Side community, an urban neighborhood in close proximity to downtown Saint Paul.

The proposed urban design character of the West Side Flats is patterned after many of Saint Paul's great traditional neighborhoods, along with contemporary thinking about what makes a great neighborhood. A mix of land uses and building types create a more interesting and vibrant place to live, work, shop, and play. The traditional urban grid of streets and blocks provides a canvas for placing and designing buildings that have an interactive relationship with the public realm of streets, parks, and natural open spaces. The public realm creates the framework for buildings, and buildings frame the public realm. A variety of building heights, massings, placements, forms and facades that complement each other creates a more urban environment. Managing parking is a critical element in designing buildings and a public realm that are urban, attractive, comfortable, and convenient.

Figure 5.2. Urban Design Diagram









URBAN DESIGN STRATEGIES

UD1) Design sites and buildings to fit the overall scale and diverse form of an urban riverfront neighborhood. New development should consist of a range of building types and sizes that are appropriate to the particular context and character of each district within the West Side Flats, as well as the broader West Side community. Building height and character should vary to create more interest in the built form of the neighborhood. There should be appropriate transitions of scale between new and existing buildings. Building design should also be sensitive to natural features in the river valley, including views of the river valley and the bluffs.

UD2) Place and design buildings to create an urban streetscape and open space environment. The relationship of buildings to the street and open spaces is vitally important to creating pedestrian-friendly, attractive and safe streets and parks in the West Side Flats. Continuous facades contribute to a strong and understandable streetscape. They also put "eyes on the street," which helps to keep streets and parks safe and well-used.

UD3) Provide a network of community open spaces and gathering places. A well-designed network of community open spaces will enhance the neighborhood's livability, foster community interaction, promote healthy lifestyle choices, and provide green spaces for managing stormwater. The community open space network also offers structure and organization for the overall neighborhood. The Master Plan's public spaces include the Riverfront Esplanade, riverfront park, linear greenways, neighborhood parks, sidewalks, and trails, as well as the adjacent Harriet Island/Raspberry Island Regional Park. Small plazas and courtyards, both public and private, are encouraged as part of future redevelopment sites and street improvements.

UD4) Create a vibrant, urban and public Riverfront Esplanade that is connected to the neighborhood. The riverfront is an important city, community and neighborhood asset. Public access to the riverfront should be maintained and enhanced. The Esplanade represents a significant public investment and provides public access to the riverfront. The Plan promotes building uses and forms along the Esplanade that will create a memorable and vibrant public experience. Restaurants, shops and services that generate foot traffic and provide places for people to gather and socialize along the riverfront are encouraged.





UD5) Manage and design parking solutions that enhance the urban environment. The West Side Flats is characterized by vacant and underutilized lots, including a large number of surface parking lots. As redevelopment and infill occur, parking should be accommodated in parking structures behind, within or under the primary buildings they serve. Free-standing parking structures that abut the street should be wrapped with active ground-level uses that contribute to a vibrant streetscape or screened to soften the visual appearance of the structure. Parking should be shared between various uses. On-street parking should be provided and utilized to meet parking requirements.

Figure 5.3. Conceptual Riverfront Cross Section







SUSTAINABILITY

Sustainability is incorporated into each element of the Master Plan. The Master Plan promotes a holistic approach to sustainable redevelopment of the West Side Flats. The future neighborhood should be an economically, socially and environmentally sustainable place for people to live, work, shop and play. The Plan's sustainability strategies are:

ECONOMIC

- Provide a mix of land uses – residential, office, industrial, retail, civic, and institutional- in close proximity to each other.
- Encourage greater densities of development.
- Promote job retention and creation by incorporating a broader range of and higher-density employment uses.
- Provide a mix of housing choices – types, sizes and costs.
- Create development patterns that enable a broad range of transportation choices.

SOCIAL

- Provide affordable housing choices.
- Extend existing West Side neighborhood patterns and connections to the river.
- Provide public gathering spaces – parks, plazas and open spaces.
- Support public art opportunities.
- Expand mobility options - sidewalks, trails, bikeways, transit, carpooling.
- Provide civic and institutional land uses.
- Provide community gardens.
- Promote healthy lifestyle choices.
- Embrace diversity.

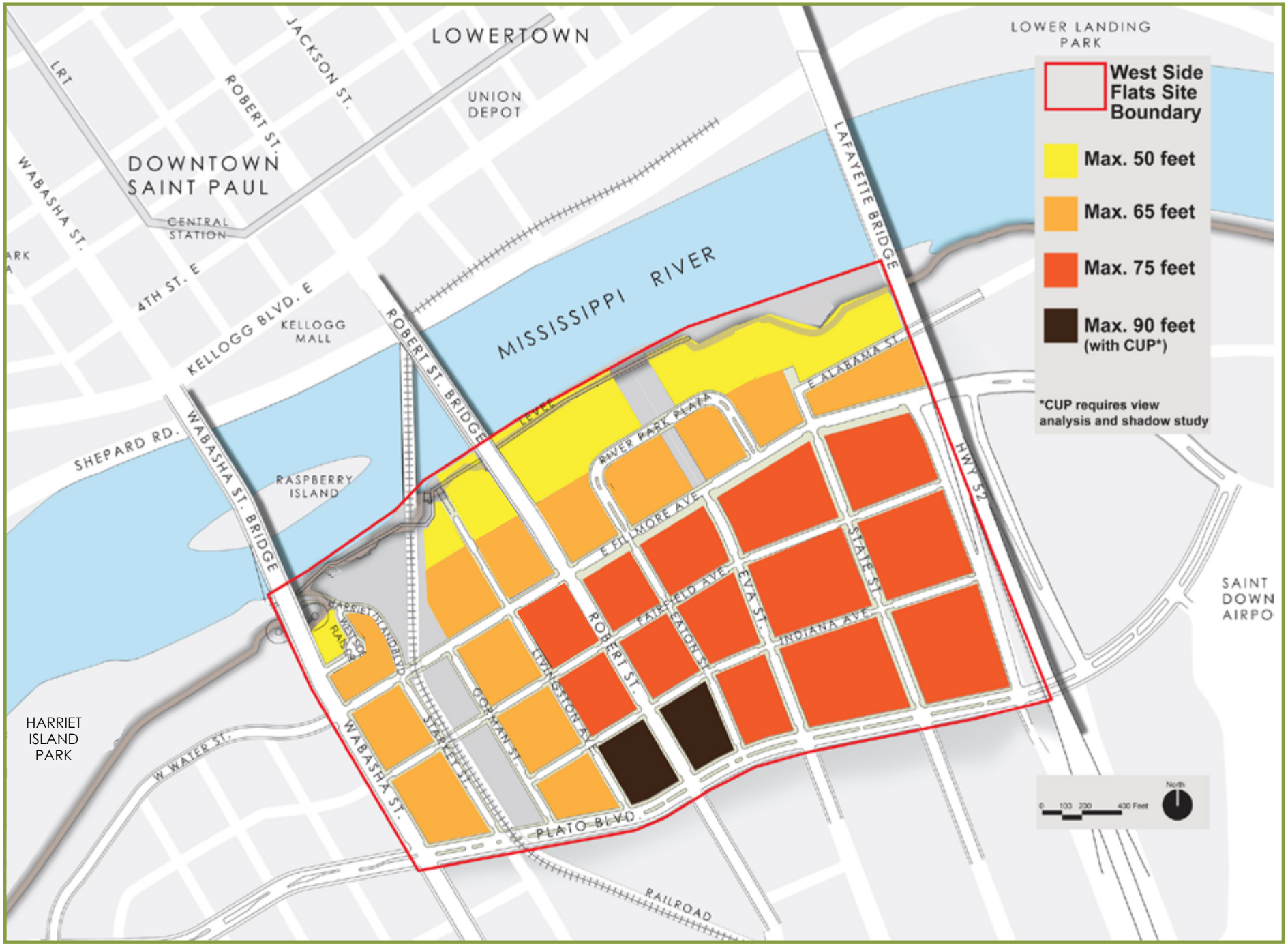
ENVIRONMENTAL

- Promote redevelopment/infill of vacant, underutilized and brownfield sites.
- Encourage compact, mixed-use development patterns.
- Provide multi-modal transportation facilities for vehicles, transit, bicycles and pedestrians.
- Build green infrastructure facilities to manage stormwater runoff.
- Encourage water conservation – water use, reuse, stormwater management.
- Encourage energy conservation/efficiency – building materials, design and orientation, site features and furnishings, building reuse.
- Promote or provide recycling and reuse programs.
- Provide community gardens/permaculture.
- Integrate the "urban forest" into public and private development.
- Develop a system of parks and open spaces.
- Promote renewable energy alternatives.





Figure 5.4. Acceptable Maximum Building Heights



Street System

Generations ago, urban streets were more multi-functional, serving not only as transportation routes but as the front yards and public squares of neighborhoods and cities. People on foot, bicycles and streetcars shared the street with pushcart vendors, outdoor markets, children playing, and neighbors socializing. As vibrant as those traditional urban streets were, their heavy use created a variety of problems for safety, sanitation and mobility. As the automobile emerged as the dominant travel mode, street design shifted its focus primarily toward automobile movement. The focus on automobiles resulted in unsustainable development patterns, fewer transportation choices, increased noise and air pollution, and creation of greenhouse gases, as well as a decline in social and economic activity on the street.

Best practices over the last ten years have emphasized a more balanced approach to street design, giving equal weight to transportation, community, and environmental goals. Communities have also learned that investment in high-quality streets can yield benefits well beyond mobility: community identity, public health, environmental sustainability, and economic vitality.

Building on the street system plan of the 2001 *West Side Flats Master Plan* restores a more traditional street grid within the West Side Flats, both west and east of Robert Street. A Complete Streets network is envisioned, with Robert Street as a mixed-use "seam" street that weaves together the predominantly residential land uses west of Robert Street with the predominantly commercial and industrial uses east of Robert Street. The future street system is based on a hierarchy of street types, consisting of:

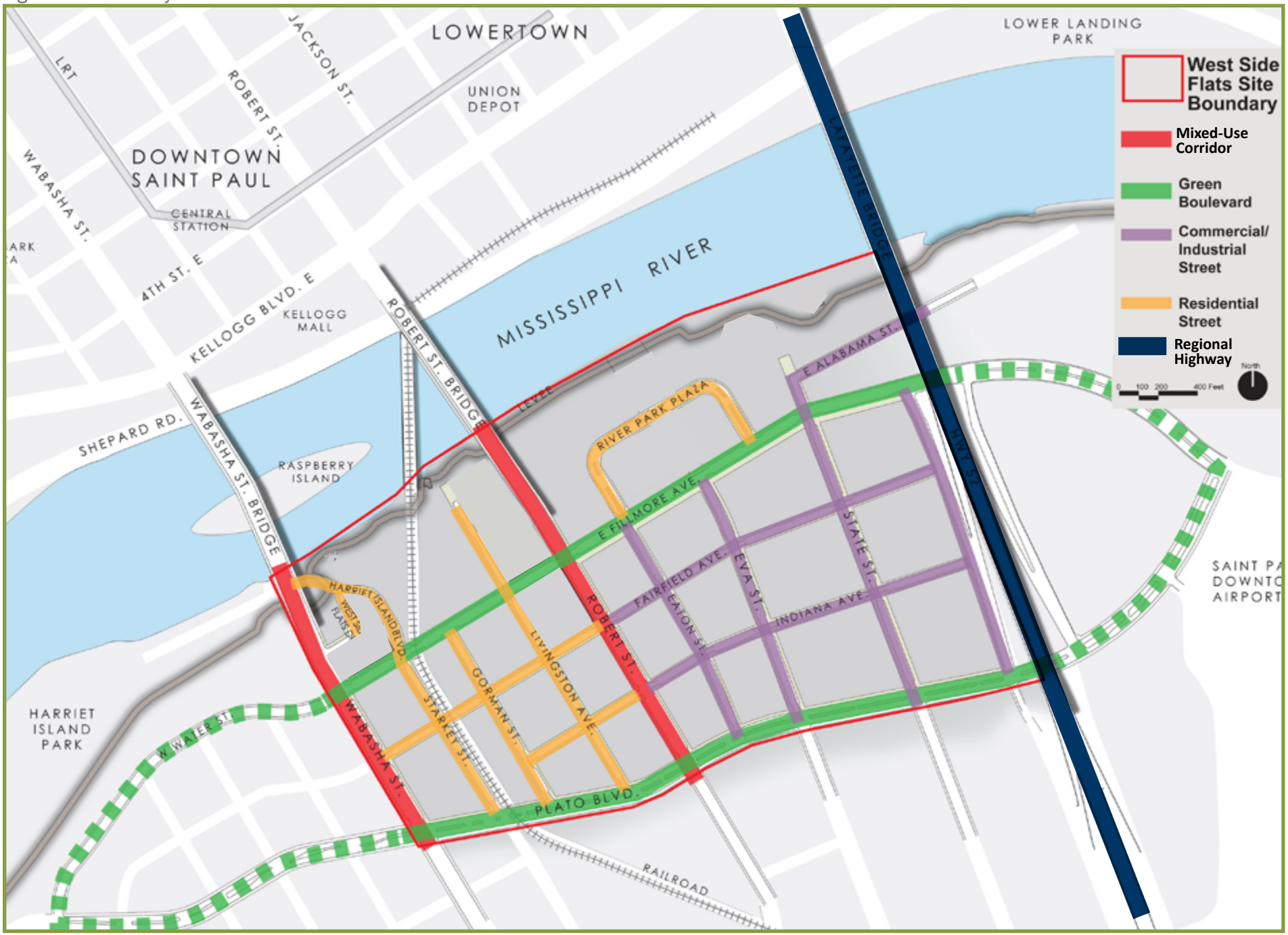
- Mixed-Use Corridors
- Green Boulevards
- Residential Street
- Commercial/Industrial Street

Key north-south streets are Robert and Wabasha, which connect the greater West Side community to the riverfront and across the river to downtown Saint Paul. Key east-west streets are Fillmore Avenue and Plato Boulevard, which connect to Harriet Island Regional Park, Holman Field, and the commercial/industrial Employment Center in the West Side Flats. Fillmore and Plato connect at both their east and west ends to create a loop street system through the entire West Side Flats.

The Master Plan recommends a series of street system improvements, aimed at providing a complete and connected street network that enhances mobility and connectivity in the area, creates new development opportunities, promotes more compact development patterns and improves environmental conditions. In general, Complete Streets design in the West Side Flats encompasses the following elements:

- building facades that frame the street
- active ground-level uses fronting along Wabasha and Robert
- setbacks between public sidewalks and residential buildings
- streets designed for multi-modal transportation options
- gateways at intersections along Wabasha and Robert to create a sense of arrival into the neighborhood
- multi-modal nodes at intersections with Wabasha and Robert
- clear articulation of pedestrian and bicycle zones, including on-street bike lanes
- green infrastructure within the public right-of-way to manage stormwater and increase tree canopy
- raingarden planting areas in medians and tree-lawn areas
- public art at gateways
- attractive and durable street furnishings and lighting
- regional trail along Plato Boulevard, consistent with the City's current trail planning effort
- on-street parking along Fillmore Avenue
- safe and convenient pedestrian crossings, including bumpouts at intersections
- limited curb-cuts to maintain continuity along block faces and avoid interrupting pedestrian flows
- fewer curb-cuts on Plato Boulevard to reduce conflicts between vehicles and bicycles on the regional trail

Figure 5.5. Street System Plan







STREET SYSTEM STRATEGIES

S1) Restore a traditional urban street grid in conjunction with redevelopment planning. The Street System Plan shown in figure 5.5 illustrates a finer-grained street network than currently exists in the Flats. This traditional urban street pattern is guided by the historic street grid that once existed in the West Side Flats. The street pattern planned for the West Side Flats will enhance connectivity and livability in the West Side community by providing the following benefits:

- smaller block sizes and more compact development patterns
- pedestrian-friendly, walkable neighborhood
- connections to major destinations, such as the Riverfront Esplanade, bluffs, District del Sol, Harriet Island Regional Park, future West Side Flats Greenway, and transit stops
- traffic calming
- dispersed traffic
- new development opportunities
- connections to the regional street network

S2) Establish a hierarchy of street types to guide street design. The proposed street system includes a variety of street types, including regional highway, mixed-use corridors, green boulevards, residential streets, and commercial/industrial streets. Each street type serves a different role in the neighborhood, community and region and has different design characteristics. These street types are described below:

- **Mixed-Use Corridors (Wabasha Street, Robert Street)**

Wabasha and Robert are vital links to destinations in the West Side community, downtown Saint Paul and the region. Their role in the West Side Flats street network is significant for connecting people to the riverfront, across the river, and a vibrant mix of land uses. They are important gateway streets, so it is important to create strong relationships between ground-level uses and these two key streets. With the expanded planning area, Robert Street becomes an important central spine connecting land use districts, and a focal point for private development and transit investment.

- **Green Boulevards (Plato Boulevard, Fillmore Avenue)**

Plato Boulevard and Fillmore Avenue connect to Harriet Island Regional Park to the west and Riverview Industrial Park, Holman Field and SH52/ Lafayette to the east. They are broad, tree-lined, landscaped boulevards that transect different sub-districts within the West Side Flats. They are important corridors for multiple modes of transportation and play a key role in managing stormwater runoff, reducing the urban heat island effect, and promoting





improved water quality.

- **Regional Highway (Lafayette Road/Highway 52)**

Lafayette Road/Highway 52 is a vital regional transportation link, particularly for businesses in the West Side Flats.

- **Commercial/Industrial Streets (Eva Street, State Street, Indiana Avenue, Fairfield Avenue, Alabama Street)**

The local streets east of Robert Street and south of Fillmore Avenue will primarily provide access to commercial and industrial businesses. These are low-traffic streets with slower speeds. While it is important that they be designed to accommodate truck traffic, they should also be designed for pedestrians and bicycles. They should include tree plantings, landscaping, and stormwater infiltration features. Eva and State are planned to be "green fingers" providing north-south connections for the greater West Side community to the river.

- **Residential Streets (River Park Plaza, Starkey Street, Gorman Street, Livingston Street, Fairfield Avenue, Indiana Avenue)**

The local streets between Robert and Wabasha will primarily provide access to residences. These are low-traffic streets with slower speeds. They should be designed with the pedestrian as a focus, but also accommodate bike and auto movement. They should include tree plantings, landscaping, stormwater infiltration features, and on-street parking.

S3) Design and build Complete Streets. Complete street networks are designed to be safer for pedestrians and bicyclists, slow vehicle traffic, and improve air and water quality. They are designed with all users in mind – including bicyclists, public transit vehicles and riders, and pedestrians of all ages and abilities. The design of streets in the West Side Flats are an important part of the West Side community's livability. They ought to be for everyone, whether young or old, motorist or bicyclist, walker or wheelchair user, bus rider or shopkeeper. They should provide a green environment with trees, plantings and stormwater features.

S4) Incorporate public art opportunities into streetscape design. The West Side community's ties to arts and culture can be seen and experienced on its streets today, particularly in District del Sol, where unique site furnishings and public art are evident. Redevelopment of the West Side Flats should continue that tradition and incorporate public art opportunities into street design, such as poetry in sidewalks, artist-designed fixtures, signage, seating, bus shelters, etc. Streetscape design should also provide space for arts and cultural activities. Refer to pages 60-63 for Arts Opportunities guidance for the West Side Flats.

Transit System

Travel by public transit should be accessible, attractive, safe and comfortable for everyone living, working and visiting the West Side Flats. Future transit improvements are currently being explored in the West Side Flats that would improve service frequency, increase land values and enhance livability of the West Side community. Robert Street and Lafayette Road/Hwy 52 are potential candidates for bus rapid transit (BRT) service, with Robert Street also being looked at as a candidate for streetcar transit service. These transit investments also have the potential to catalyze development interest in the West Side Flats.

The West Side Flats' location just across the river from downtown offers proximity to the multi-modal stations in downtown as part of the Green Line LRT. Central Station is located between Wabasha and Robert at 4th Street and Union Depot Station is located just two blocks east of Robert.

Existing bus routes serving the West Side Flats include stops along Wabasha and Robert streets at Plato Boulevard and Fillmore Avenue. These existing bus station areas should be enhanced and developed as multi-modal nodes, where multiple modes of transportation can be accessed, including bus and streetcar service, pedestrian, bicycle and automobile travel. All modes of transportation should be served at each node; facilities should be included to make them safe, comfortable, attractive and convenient.

TRANSIT STRATEGIES

T1) Provide public transit service on all major streets through the West Side Flats. Bus routes should continue to run on Robert and Wabasha Streets, Fillmore Avenue, Plato Boulevard, and Lafayette Road/Hwy 52. Transit facilities along these routes should be added and/or improved to encourage more people to use transit.

T2) Continue to explore the potential for bus rapid transit and/or streetcar. Bus rapid transit (BRT) and, in particular, streetcar transit along Robert Street would be a valuable catalyst for new private investment in the Flats. The City and West Side community should continue to pursue the potential for improved transit service along Robert Street that can connect north to the Green Line LRT in downtown and south to destinations and communities along the Robert Street corridor.



Figure 5.6. Transit Plan







T3) Develop multi-modal nodes. Existing transit stops are located along Wabasha and Robert, at Plato and Fillmore. These transit stops should be planned for and designed to serve as multi-modal nodes, where various forms of transportation interchange. These nodes will be located within a 5-minute walk for everyone living and working in the West Side Flats, and include amenities to enhance the transit experience.

T4) Enhance mobility to the multi-modal nodes. Improve the transit experience and increase ridership by ensuring that all modes of transportation have safe, comfortable and convenient access to the multi-modal nodes. Provide sidewalk, trail, bikeway and roadway access to each node. Design the routes with lighting, seating and shelter. Enhance intersection crossings and provide wayfinding for orientation.

T5) Provide transit-supportive facilities at the multi-modal nodes. Each multi-modal node should be well-designed with transit-supportive facilities to enhance the experience and safety of transit users. These nodes should be designed to include the following elements:

- plaza space/paving
- shelter (with climate control)
- signage/wayfinding/information kiosk
- lighting
- seating
- bike facilities (parking, lockers, pump stations and bikeshare)
- communications (emergency phone)
- surveillance cameras
- public art

T6) Encourage transit supportive uses along Wabasha and Robert streets. High-density, compact and mixed uses will ensure greater transit ridership and, in turn, will benefit from the investment in new and improved transit service. Development should include high-density housing and employment uses with active ground-level uses. Buildings adjacent to the transit hubs should be designed to support an active public realm.

T7) Consider the reduction of parking spaces for development projects to encourage transit use. To optimize planned and potential transit service improvements in the West Side Flats and downtown, the City and developers should collaborate on opportunities to reduce the amount of parking provided for development projects. Designing development projects to orient more to the nearby transit services translates into a need for less parking, which can attract transit riders to choose the West Side Flats as a place to live or work.

Pedestrian and Bike Circulation

Neighborhoods that emphasize mixed land use, high density, street connectivity, and walk/bike-friendly environments have a positive effect on walking and biking as travel choices. People who live in areas that contain a tight grid of streets and a mixture of land uses walk more, use transit more, and take fewer trips with their automobiles, leading to environmental and health benefits.

Redeveloping the West Side Flats into a more urban neighborhood will require public improvements to serve new development. These infrastructure improvements will provide the opportunity to create a walkable and bike-friendly neighborhood. The new road system should be designed to serve a variety of needs: move people; encourage compact development patterns; and serve pedestrians, bikes, transit and cars. Parks and open spaces should be designed to include sidewalks and trails that connect with sidewalks and the Esplanade to complete the pedestrian and bicycle movement network.

The Pedestrian and Bike Circulation Plan (Figure 5.7) illustrates a comprehensive and connected system of sidewalks, trails, and bikeways for the West Side Flats.



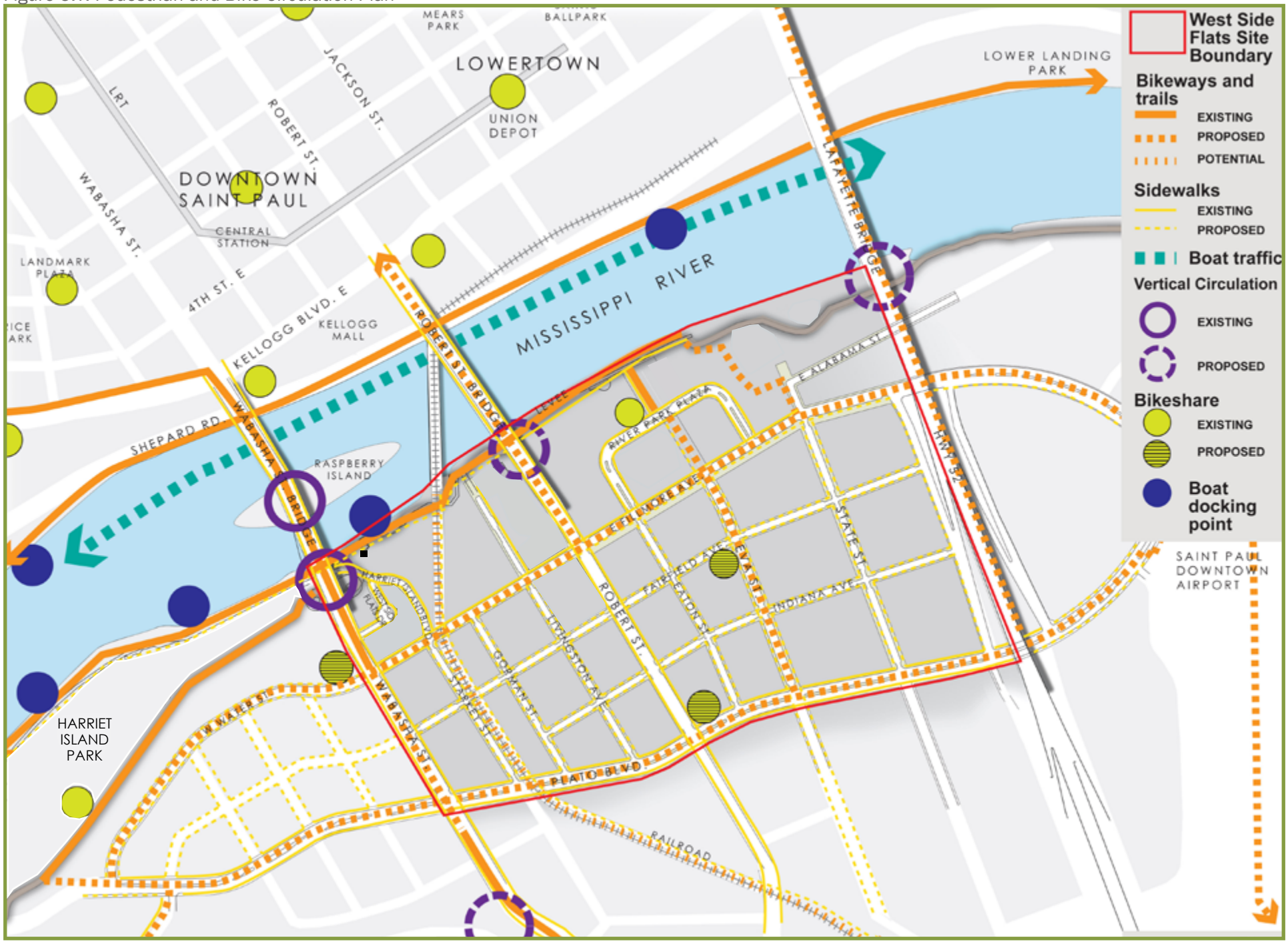
PEDESTRIAN AND BIKE STRATEGIES

PB1) Design and build a connected street system with sidewalks, trails and bikeways. Development of a traditional urban street grid in the West Side Flats provides the opportunity to build new sidewalks, trails and bikeways. The connected street pattern will provide multiple choices for pedestrian and bike movement. All new streets should include sidewalks designed to provide a safe and comfortable pedestrian environment, and access to homes and businesses. Trails and bikeways will complement the sidewalk system and connect to regional systems.

PB2) Connect pedestrian and bike facilities to the regional recreational system. The pedestrian and bike system should connect to the regional system of trails and bikeways, particularly the connections along the riverfront, Plato Boulevard, Robert Street and Wabasha Street.

PB3) Design the streets to be pedestrian- and bike-friendly. Developments that emphasize mixed land use, high density, street connectivity, and pedestrian environments have a positive effect on

Figure 5.7. Pedestrian and Bike Circulation Plan







walking and biking as travel choices. Compact development patterns with active ground level uses are encouraged. Streetscapes should be designed to be safe, comfortable and attractive for pedestrians and bicyclists, including the following elements:

- well-designed and continuous sidewalks and trails
- clearly articulated bikeway facilities (bike lanes, cycle tracks, bike boxes, markings, signage, parking, lockers and pump stations)
- safe, well-marked and signaled pedestrian crossings
- intersection bumpouts – to shorten the crossing distance for pedestrians
- on-street parking – to calm traffic and provide a barrier between cars and pedestrians
- seating, shelter and lighting
- trees and plantings – human comfort, environmental and aesthetic benefits

PB4) Enhance pedestrian and bike connections to the riverfront. There are several opportunities to connect people to the riverfront. Pedestrians and bicyclists should be able to connect to the riverfront at the Wabasha Street, Robert Street and Lafayette Road/Hwy 52 bridges; the proposed greenways; and the north end of Livingston Avenue. Vertical circulation at the Robert Street and Lafayette Road/Hwy 52 bridges should be explored.

PB5) Provide bike facilities at the multi-modal nodes. The Transit System Plan identifies proposed multi-modal nodes along existing bus routes on Wabasha and Robert, at Plato Boulevard and Fillmore Avenue. Each transit hub should be designed to include bike-friendly amenities, such as:

- bicycle parking and locker/storage bin
- bikeshare (i.e. Nice Ride)
- pumping station
- signage/wayfinding/information
- drinking fountain
- seating and shelter
- lighting

PB6) Pursue the potential for vertical connections at the bridges and the bluffs. Maximizing connections to the river, the bluffs and the greater West Side community is greatly enhanced by incorporating vertical circulation at each bridgehead and along the bluffs. New connections at the Robert Street and Lafayette Road/Hwy 52 bridges would enhance access to the riverfront and create interlinked loop trails with downtown Saint Paul.

Parks and Open Spaces

Parks and open spaces are critical to creating and sustaining a quality, livable community. In order for the West Side Flats to redevelop into a neighborhood, attracting a significant residential population and increasing its employment population, it will need parks and open spaces that serve neighborhood needs. The West Side Flats can learn from Saint Paul's many great neighborhoods that are planned around public squares, parks, and parkways. The *Saint Paul on the Mississippi Development Framework* calls for riverfront redevelopment that creates "urban villages organized around green squares or small parks connected by a network of green streets, pathways and natural corridors." The West Side Flats can build upon the existing Riverfront Esplanade as its front door and the Harriet/Raspberry Island Regional Park next door. Since the West Side Flats lies entirely within the Mississippi National River and Recreation Area (MNRRA), it has a unique opportunity to create a vibrant neighborhood literally within a park setting.

The Parks and Open Spaces Plan diagram shown in Figure 5.8 illustrates the key parks and open space concepts for the West Side Flats, which are:

- Riverfront Esplanade - embracing the Riverfront Esplanade as a prominent neighborhood and city gathering place on the river, as well as being part of a regional and national recreation destination;
- Riverfront Park - creating an iconic neighborhood riverfront park as part of a riverfront "central park" encompassing both sides of the river and the Wabasha and Robert Street bridges;
- West Side Flats Greenway - reconnecting the West Side community to the riverfront by creating a multi-functional greenway adjacent to the existing rail line west of Robert Street;
- Eva Street Greenway and Park - providing a greenway connection to the riverfront through the Employment Center east of Robert Street, including a public square within the Employment Center;
- Fillmore Avenue Greenway - providing a multi-functional green space along the south side of Fillmore Avenue.

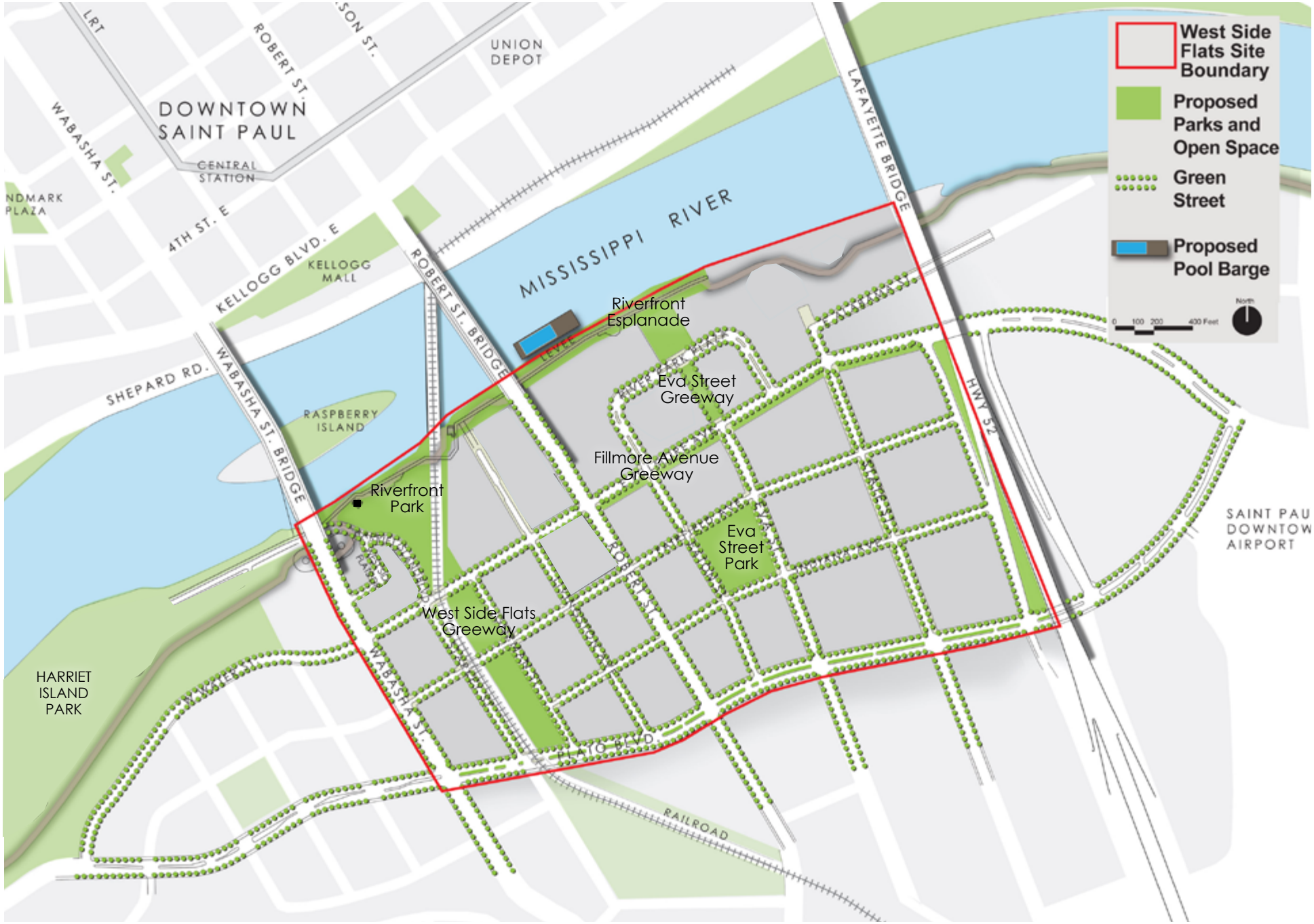
In addition, site redevelopment and street improvement projects are encouraged to provide small plazas and courtyards throughout the neighborhood. Trails, sidewalks, and vertical connections to the river bluffs and bridges are also a key part of the parks and open spaces network.

A well-designed parks and open spaces network will provide a legible physical framework for the neighborhood; enhance riverfront connections to the riverfront, bluffs, Harriet/Raspberry Island Regional Park, District del Sol, and downtown; provide places for people to gather and recreate; create open space amenities that attract new development and private investment; promote healthy lifestyles; improve air, soil and water quality; reduce the heat island effect; and expand the presence of native vegetation and wildlife habitat.





Figure 5.8. Parks and Open Spaces Plan







PARKS AND OPEN SPACES STRATEGIES

POS1) Create "green finger" connections to the riverfront. The Master Plan includes "green fingers" (greenways, parks, boulevards, and landscape easements) to enhance physical and visual connections to the riverfront. West of Robert Street, a broad greenway adjacent to the existing freight rail line will connect through the future neighborhood to the river. East of Robert Street, a greenway and park along Eva Street will provide a connection through the Employment Center to the river.

POS2) Enliven the Riverfront Esplanade. The existing public Riverfront Esplanade is very underutilized. Access to the Esplanade exists at the Wabasha bridgehead, the north end of Livingston Avenue, and from private property (currently surface parking lots) east of Robert Street. Future greenways will enhance public access to the Esplanade and create new park spaces that can activate the riverfront. Vertical connections to the river from the Robert Street Bridge would enhance access to the riverfront and support a loop connection to downtown open spaces. Development that activates the riverfront, providing places for gathering and dining, is highly encouraged.

POS3) Provide well-designed public gathering spaces. The Master Plan includes several places within convenient walking distance for every member of the community to gather and recreate, including the Riverfront Esplanade, greenways, and neighborhood parks. The broad greenways not only enhance access to the river; they also provide park spaces where residents, employees, and visitors can gather and play, and provide space for above-ground stormwater management. Public spaces should be designed and programmed to foster community gathering, including places for people to sit, shelter from the sun and rain, play areas, and flexible green spaces. The Esplanade offers a tremendous opportunity for new development to embrace the riverfront and provide people an attractive place to gather along its edge.

POS4) Integrate park design with stormwater management needs. The public realm, including greenways, parks and streetscapes, should be designed and implemented to assist with the management of stormwater. Parks, open spaces and streetscapes can be designed to infiltrate, hold, and reuse stormwater, resulting in reduced infrastructure needs, increased water conservation, and improved water quality. Types of stormwater features to consider include rain gardens, permeable pavement, structural soils, and tree trenches. The West Side Flats Greenway is a prime opportunity to incorporate stormwater management into public space.





POS5) Activate parks and open spaces with public art. Parks and open spaces provide a great opportunity to showcase public art and cultural events. They should be designed to include opportunities for sculptures, water features, events, artist-designed gateways, landscape art, play structures, shelters, plazas, fixtures, signage, and seating. Programming should include performances and events, such as arts and craft markets, concerts, open-mike events, plays and film screenings. Performers, street artists, magicians, jugglers, food trucks and vendor carts should be encouraged to participate. An "art park" concept should be considered for the Riverfront Park.

POS6) Explore opportunities for community gardens. Park and open space planning and design should explore opportunities to include temporary and permanent locations for community gardens. Community gardens are good for the environment, enhance habitat, improve canopy cover, bring people together, and encourage healthy lifestyles. Community gardens could be developed as interim uses until development occurs on vacant sites, as well as programmed and designed as permanent features into the parks and greenways. Community gardens should be designated areas with storage sheds and a water source.

POS7) Program and maintain parks and open spaces. Parks and open spaces should be programmed and maintained to serve the needs of the community, and complement the broader riverfront parks and open spaces system (Harriet Island/Raspberry Island Regional Park, Kellogg Mall, Culture Park, Lower Landing Park, and Upper Landing Park). The following are key programming and maintenance elements for parks and open spaces:

- park furnishings - special paving, shelters, seating
- event spaces - from formal (amphiteater) to informal (open plaza)
- community gardens
- public art features
- stormwater features that harvest and reuse water
- tree plantings and landscaping
- flexible lawn areas
- sidewalks and trails
- wayfinding – information kiosks, interpretive signage, etc.
- lighting – pathways and gathering spaces

A well-maintained park system will be healthy, attractive, safe and well-used. Maintenance of parks and open spaces is critical to long-term sustainability of the investment in the park system.

Green Infrastructure

Throughout the master planning process, there was support for pursuing functional and visible integration of stormwater into the design ethic and landscape of the West Side Flats Urban Village. Since the West Side Flats is located adjacent to the Mississippi River, an impaired public water, revitalization of this land should be designed to improve the river's water quality. This vision reflects a new approach toward stormwater management nationally, often called "green infrastructure." The conventional approach of moving water away from this area underground and "out-of-site" as quickly as possible is no longer the goal. In order to be good stewards of stormwater runoff and better protect the river's water quality, this new approach views stormwater as a resource to improve environmental health and neighborhood livability. Green infrastructure uses visible processes to naturally capture and treat the stormwater runoff near the source. When properly managed, the river's water quality will be improved, groundwater protected, and visible amenities added to the neighborhood.

In addition to the evolving science and regulatory changes for managing stormwater, there is a strong ethic and sense of identity for the West Side Flats to coordinate innovative practices for stormwater with urban ecological enhancements and quality green spaces. The future urban and dense development pattern of the West Side Flats provides opportunities for visibly incorporating stormwater into streets and public spaces for economies of scale and for maximizing the potential of limited and valuable urban land. In addition to their core function of improving water quality, urban landscapes utilizing green infrastructure can provide air quality, temperature, ecological habitat and aesthetic benefits.

Figures 5.9 - 5.12 illustrate how using stormwater as a resource can be approached functionally and aesthetically in the revitalization of the West Side Flats. Figure 5.9 shows the recommended green infrastructure system for stormwater flows and multi-functional open spaces that utilizes stormwater best management practices, including water infiltration, filtration, and reuse. Figures 5.10 - 5.12 show the recommended visible green infrastructure system of green boulevards, fingers and streets, using techniques such as tree trenches, raingardens, park-based water features, and permeable pavers.








STOP







GREEN INFRASTRUCTURE STRATEGIES

GI1) Incorporate stormwater into the urban landscape. Several aspects of green infrastructure and multiple uses of urban spaces, or "stacked infrastructure," provide opportunities in the West Side Flats to incorporate new stormwater approaches. These approaches should provide multiple benefits and can often be more cost effective than traditional approaches. The many ways to visibly integrate stormwater into the West Side Flats include:

- street rights-of-way
- public parks/open spaces
- multi-value facilities/landscapes using green/vegetative stormwater practices
- Great River Passage green connections
- meeting standards on-site by development or, when practical with funding, combining into a regionalized system

GI2) Establish a comprehensive stormwater management system. A comprehensive approach for stormwater management should be integrated into the street network, park systems planning, public art opportunities, bike/pedestrian connectivity, and green connections of the region ("green fingers") using a three-tiered hierarchy:

- **Green Fingers/Corridors** – regional treatment in parks and open space connections between the river, bluffs and West Side neighborhoods - recreation, multi-modal transportation, and ecological connections:
  - » linear parks
  - » block parks
  - » major north-south roads
- **Green Boulevards –** local connections - internal and regional (riverfront and Plato Boulevard) trail loops, intercepting runoff flow paths to the river:
  - » River Esplanade
  - » Fillmore Avenue
  - » Plato Boulevard
- **Green Streets** – woven into internal street network with stormwater best management practices:
  - » commercial/industrial streets
  - » residential streets





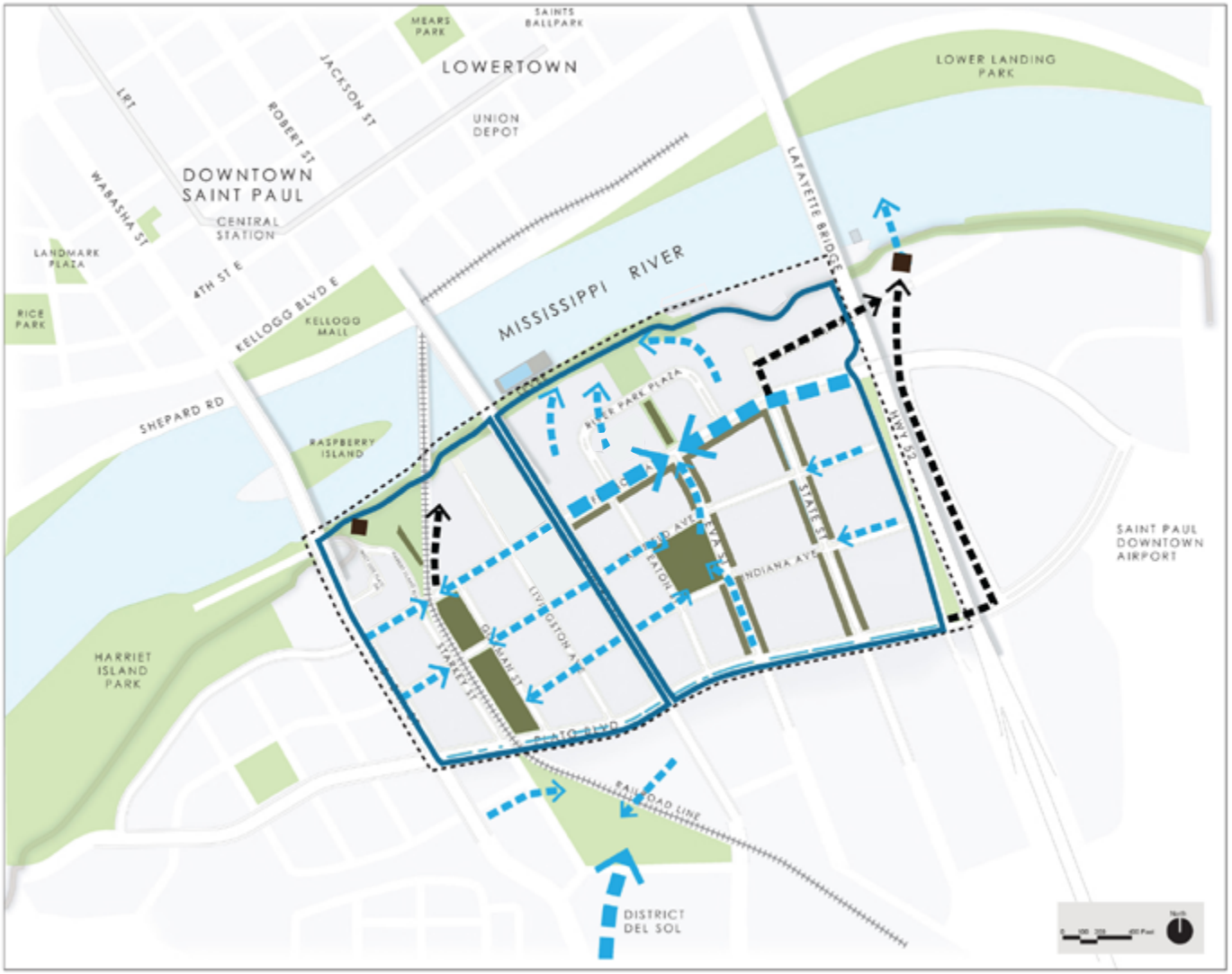
Site-by-site improvements under current regulations could be implemented to complement this framework in terms of location and method of treatment. In cases where there is alignment of public and private goals and needs, the facilities could be designed together as a system to maximize benefits (e.g., urban green space amenities), maximize highest and best use of the land, and realize economies of scale for cost savings.

One example of how shared facilities can accommodate stormwater needs, while providing amenities, is in the proposed West Side Flats Greenway along the existing rail corridor. The location along the railroad already represents a place where stormwater is concentrated via a large stormwater system. This provides two advantages: 1) there are existing easements in the area, thus reducing land acquisition needs; 2) for larger, flood flows, excess flow that may disturb the park setting can be routed to the existing storm sewer nearby.

The West Side Flats Greenway could include features that provide a maximum of benefits for infrastructure, protection of the river, and amenities for the community. The system in the park should be used to treat runoff from a larger area. Features of the system could include:

- Irrigation system using stormwater for green spaces and turf – highly-maintained green space, reduced irrigation costs, treating runoff to meet/exceed standards.
- Urban stream as focal point/amenity – using seeps and springs of the bluff area, plus augmentation with treated stormwater, for low-cost water source and treatment.
- Urban water park features - using seeps and springs of the bluff area, plus augmentation with treated stormwater, for low-cost water source and treatment.
- Greenscape stormwater features such as rain gardens, tree trenches, and wetlands.

Figure 5.9. Stormwater Routing/ Flows



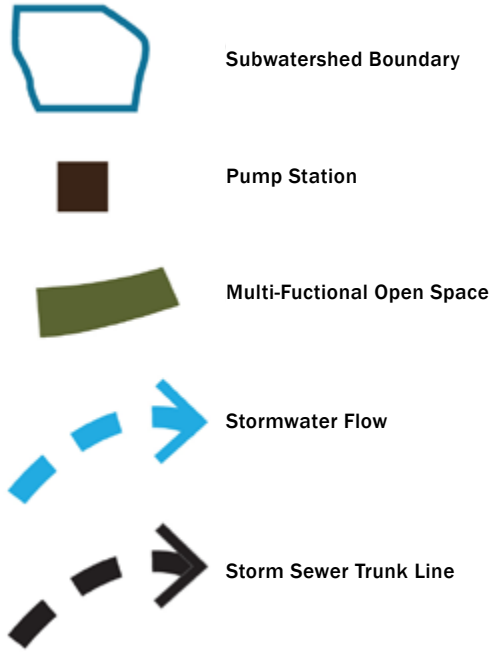


Figure 5.10. Green Boulevards







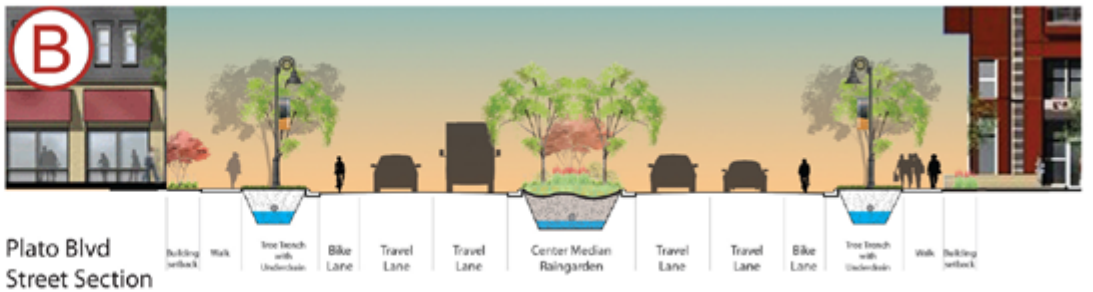








Filmore Street Section



Plato Blvd Street Section

Figure 5.11. Green Fingers













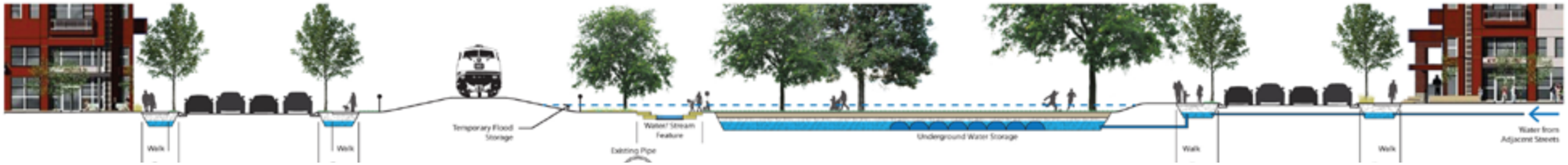


Figure 5.12. Green Streets



Arts Opportunities

The West Side Flats is like no other site in the region. It can achieve an attractive, unique identity through thoughtful and strategic integration of art and artists. The Flats offers a unique opportunity to create a new kind of place in an area rich with history, situated in one of the most scenic settings in Minnesota, and surrounded by one of the nation's hottest cultural destinations: the Twin Cities. The West Side community has a long history tied to arts and culture. Redevelopment of the Flats offers the opportunity to connect the new neighborhood with its past through public art. The Master Plan offers a comprehensive plan for integrating public art into the design and identity of the neighborhood.

In addition to the Master Plan's Guiding Principles and the overarching Vision for the West Side Flats, the potential for developing specific strategies per parcel is critical to consider at this important pre-development stage. Seeking the highest and best use of each parcel is important, as is the coordinated effort to connect all the parcels into a perfect mix, a blending of experiences, attractions, offerings and opportunities.

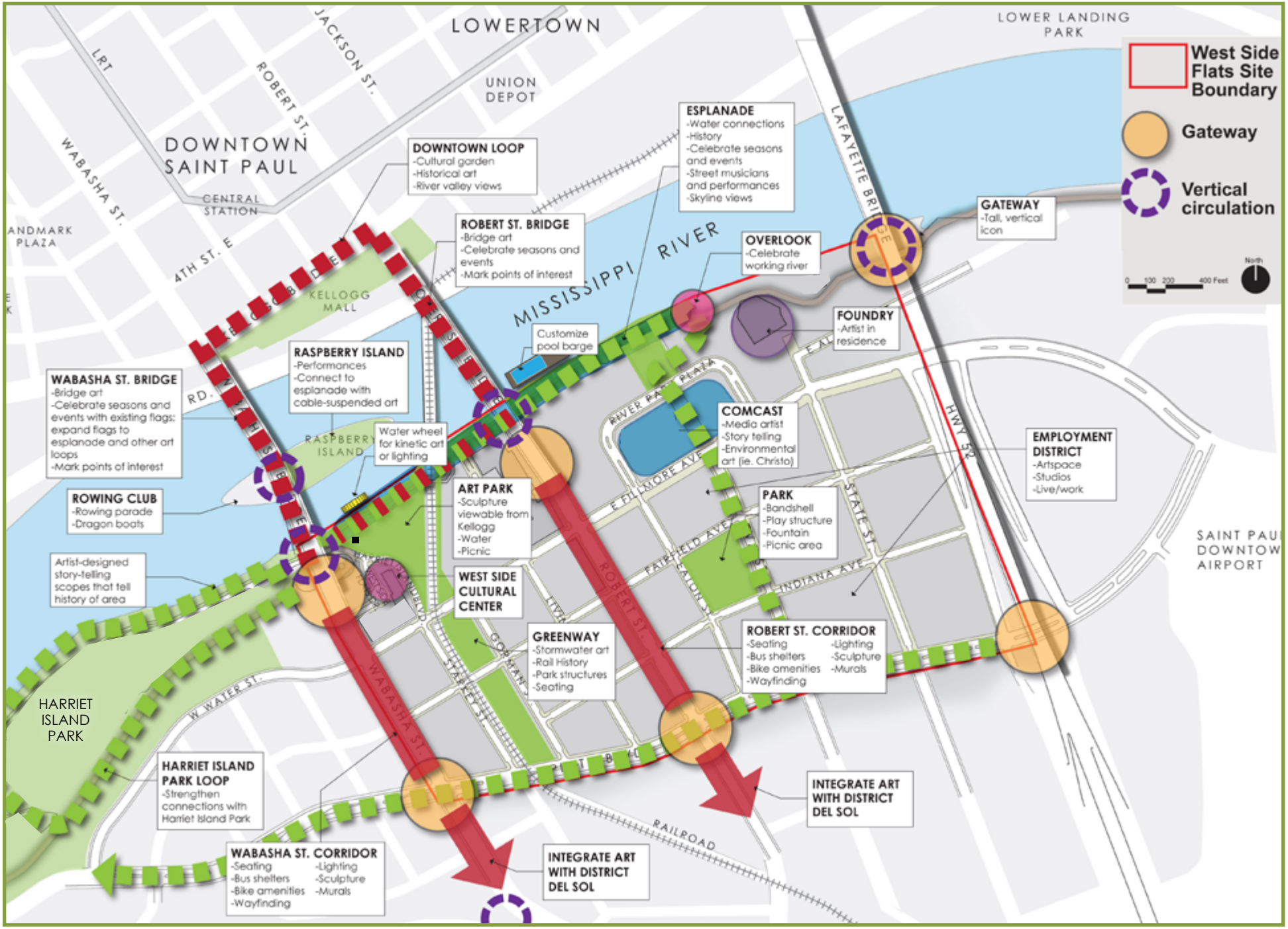
Public artists are pioneers. They excel at collaborating, experimenting and creating new experiences for communities. The West Side Flats offers an abundance of raw materials from which to create a unique, sustainable and exciting place, with a vibe all its own. To realize the goal of an arts-infused West Side Flats, it is critical to involve artists and arts organizations during the early phases of redevelopment and throughout subsequent phases, building vested interest and ensuring long-term commitment.

The Arts Opportunities diagram on the next page offers ideas for integrating art and artists into the redevelopment of the West Side Flats. These ideas build on Saint Paul's public art legacy, particularly the strong presence of public art in District del Sol and downtown. The concepts include, but are not limited to, a West Side Cultural Center in the West Side Flats, a series of riverfront public art features, gateway areas, corridor streetscape elements, vertical circulation elements, loop routes and wayfinding, infrastructure-related art (e.g. stormwater management), public art in parks, and business/artist collaborations.





Figure 5.13. Arts Opportunities







Will Natzell, Night Blooms, Mill Ruins Park, Northern Spark, 2012. Photo: Patrick Kelley

PUBLIC ART STRATEGIES

PA1) Build on existing public art initiatives in the surrounding area. From downtown's Kellogg Mall and Culture Park to Raspberry Island to District del Sol, a tremendous amount of thinking and planning, investment and engagement over the past 20 years has resulted in a diverse collection of public art projects that respect or respond to their context. Future efforts should be informed by these efforts and set new ambitions specific to the West Side Flats environment.

PA2) Tell stories and preserve memories of the West Side's rich history. The West Side is rich with history. Art projects — including visual, literary, performance and media arts — should tap into historical references, beyond informative signs or plaques. It is critical to recognize American Indian settlers, former residents and businesses, special events and more. Historical references should be manifested in a multitude of ways; interactive elements can enhance the experience. The stories of the West Side should also address its ecology, artifacts and environmental history.

PA3) Embrace and celebrate the river. The river should be engaged and embraced in creative ways to heighten the visibility of — and attract visitors to — the West Side Flats. The river offers an abundance of opportunities to host artworks, arts events and artist-designed amenities. The river can also be used to generate electrical power for kinetic sculptures, lighting projects, and fountains that are visible from downtown.

PA4) Provide incentives for artists of all disciplines to live, work and present in the area. The West Side Flats offers opportunities to attract artists of all disciplines to utilize vacant or underutilized buildings and industrial spaces. Bringing artists in early on is a stimulus for other types of developments, such as cafes, brewpubs, coffeehouses and arts venues. Recognizing growing interest nationally in "participatory culture," it is vital to plan spaces for social activities. This could include temporary festivals, street painting events, concerts, pageants, and flea markets.





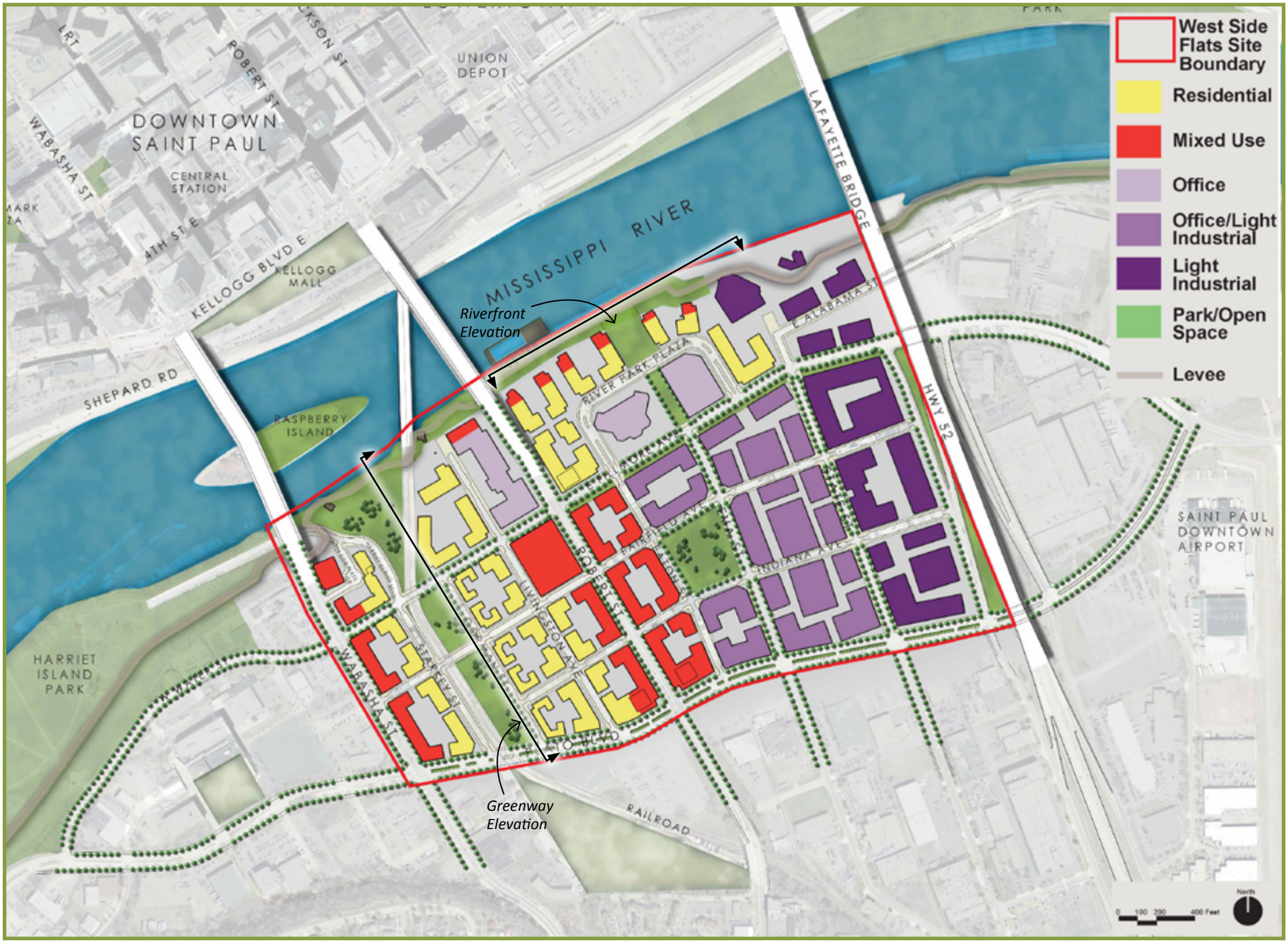
PA5) Incorporate artist-designed streetscape elements. To help create the West Side Flats' unique character, its streetscape elements, such as benches, bike racks and tree grates, should be custom-designed and -fabricated using local artists and local facilities. Custom fixtures can reference local history and culture, and add whimsy to the streetscape. Artists-in-residence—both short- and long-term—can work with local industries to address the broad range of objectives outlined in this plan, as well as add a creative vibe to the neighborhood.

PA6) Inspire pedestrian movement and exploration. To spur economic development, public art and artist-led activities can stimulate the movement of people throughout the West Side Flats. Creative, pedestrian-friendly wayfinding can encourage exploration and discovery. The City's popular Sidewalk Poetry program should be extended to the West Side Flats. Temporary displays of sequentially-sited, photogenic street-side art installations can attract families and cultural tourists.

PA7) Stimulate public/private partnerships. The key to establishing sustainable cultural development in the West Side Flats is finding common ground among arts/cultural stakeholders and private developers. There are more than 30 arts and cultural organizations in the region that have ties to the West Side; corporations, foundations, local government and neighborhood groups should be invited to join in the effort. A good starting point is establishing an arts and cultural "hub," including an art center with a multi-purpose, outdoor art park. An arts and culture plan should be developed, incorporating the proposed West Side Art Center as a catalyst for growing arts in the neighborhood.

PA8) Employ best practices for creative placemaking, green thinking and community engagement. Public art, as a product and a process, contributes to good placemaking. Artists and program planners should consider the context of the area; address historic, cultural and environmental issues; and bring stakeholders together to co-create this new neighborhood. Artists can bring innovative solutions to beautifying facades and stormwater treatment areas. They can enliven in-fill sites and connect community members in meaningful ways. To help initiate creative placemaking in the West Side Flats, local resources and expertise should be used.

Figure 5.14. Illustrative Plan



Illustrative Plan

The Illustrative Plan brings together the elements of the Master Plan, described in the previous master plan sections, to illustrate the preferred development pattern, including land uses, streets, buildings, parking, parks, open space connections, and green infrastructure. The plan view shows the restored urban street grid with a mix of land uses in close proximity to each other, and buildings oriented to public streets and open spaces. Key public realm elements are the Riverfront Esplanade, Harriet Island Regional Park (including Raspberry Island), West Side Flats Greenway, Eva Street Park, and "green finger" connections to the riverfront. These signature public spaces, along with the streets, are opportunities for designing shared stacked-function green infrastructure.

The illustrative elevations below and on the next page illustrate the preferred development character along the riverfront and the West Side Flats Greenway, showing building form, spacing, massing, heights, facades, and orientation to these signature public spaces, as well as public streets. The illustrative bird's eye perspective on the next page provides a three-dimensional view of the preferred development pattern and character for the West Side Flats.

This Illustrative Plan is not intended to represent a specific development proposal. It is intended to illustrate the general direction for building configuration and orientation, land use, off-street parking and public realm. The exact location of new streets and parks will be determined as redevelopment occurs.

Figure 5.15. Illustrative Elevation - Riverfront View from Warner Road



Figure 5.16. Illustrative Elevation - View along West Side Flats Greenway, looking east



Figure 5.17. Illustrative Bird's Eye Perspective

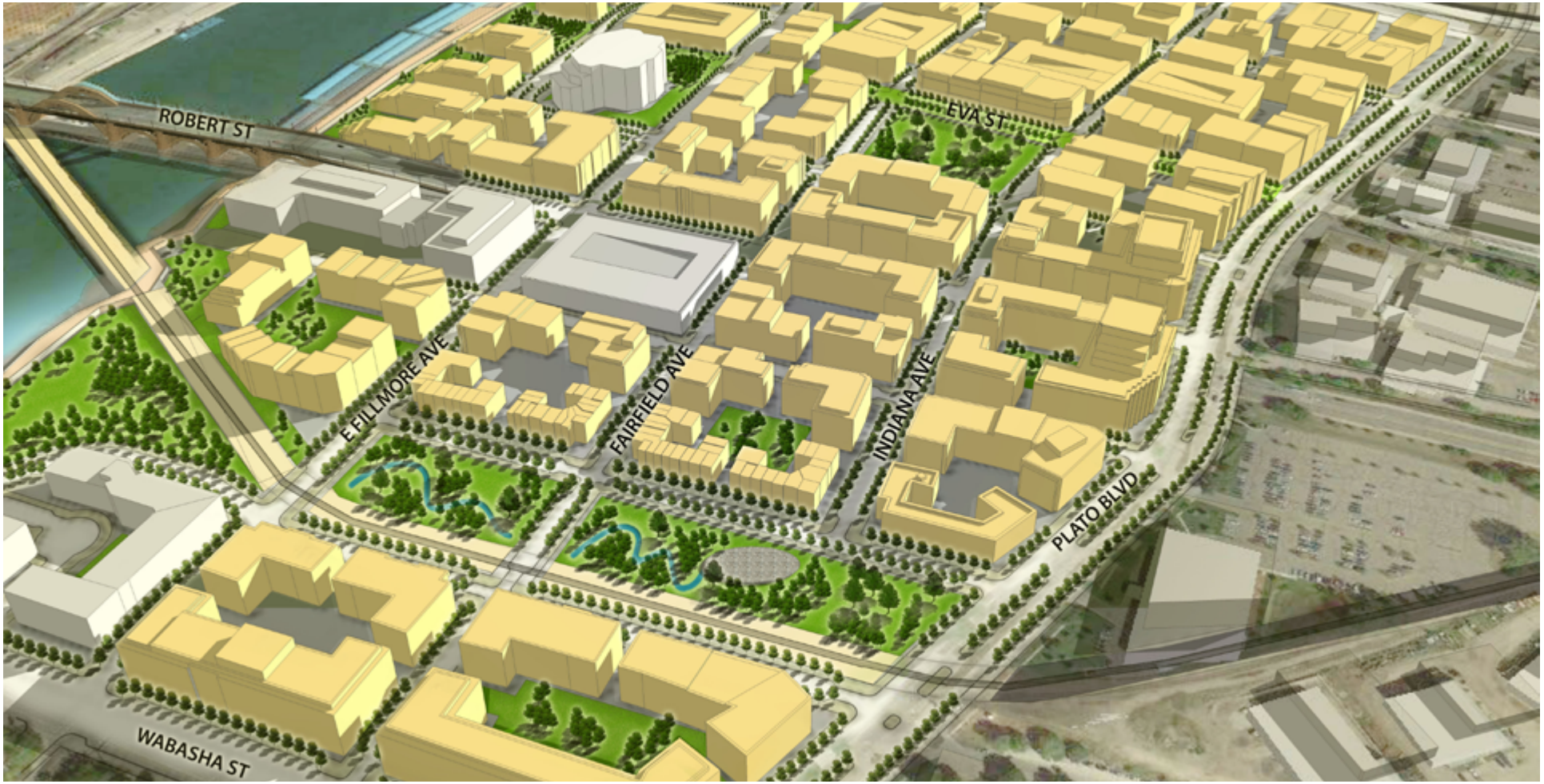


Figure 5.18. Illustrative Elevation - View along West Side Flats Greenway, looking east



Fillmore Ave *Fairfield Ave* *Indiana Ave* *Plato Blvd*

6 DEVELOPMENT GUIDELINES

Purpose and Intent

The purpose of these development guidelines is to provide a proactive tool for communicating and achieving the future vision and desired character of the West Side Flats. They are intended to assist the community, property owners, developers, design professionals and City staff as they reinvest in and design development projects, public spaces, and public infrastructure. These development guidelines are in addition to the design standards contained in the City's Traditional Neighborhood Districts. As a set of guidelines rather than requirements, they are intended to provide direction for future development, while leaving room for individual expression and flexibility to enable creative development projects.



Organization of the Guidelines

The development guidelines are organized into the following categories:

- Streets
- Site Development
- Buildings
- Parking
- Stormwater/Water Quality
- Utilities
- Public Art



Streets

General street development guidelines address pedestrian facilities, bike facilities, transit facilities, landscaping, street furnishings, lighting and wayfinding. Specific street development guidelines establish the recommended width dimensions, such as total right-of-way, street pavement, lanes (travel, turn, parking), sidewalks, and bike lanes. They also recommend street design features, such as street trees, planting/rain garden areas, intersection bump-outs, streetscape furnishings, lighting, pedestrian crossings, signage/wayfinding, and public art. Specific development guidelines have been established for the following streets:

- Robert Street
- Wabasha Street
- Fillmore Avenue
- Plato Boulevard
- State Street
- Eva Street
- Typical Commercial/Industrial Street
- Typical Residential Street



ROBERT STREET (EXISTING 80' R.O.W.)

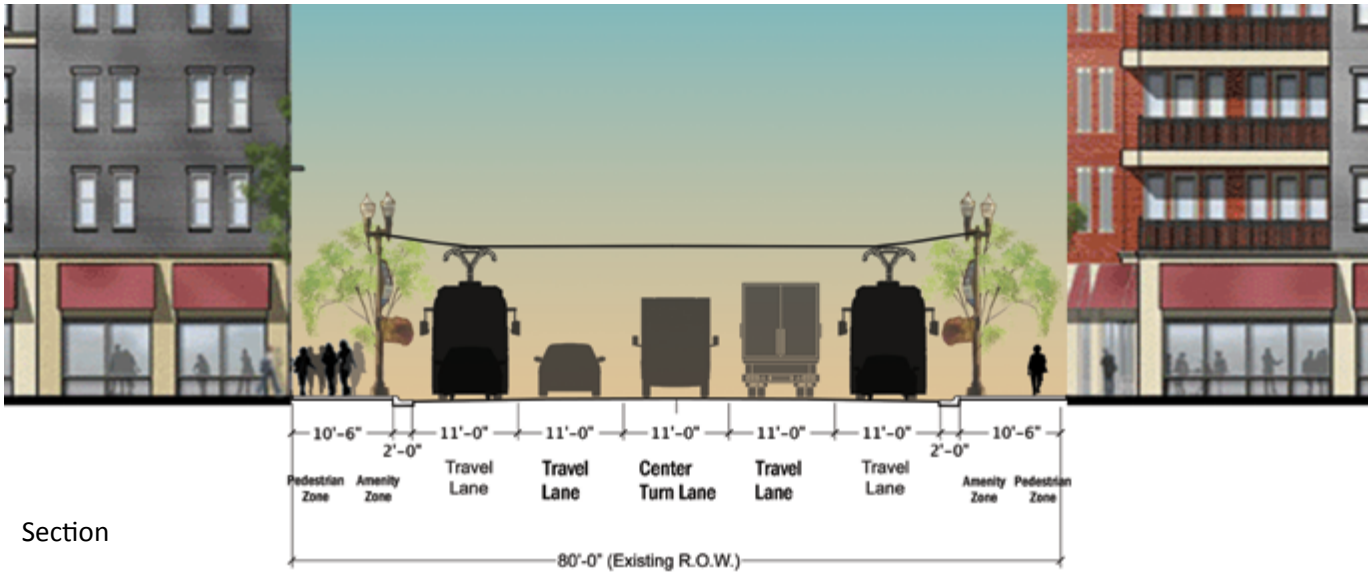


DIMENSIONAL CRITERIA

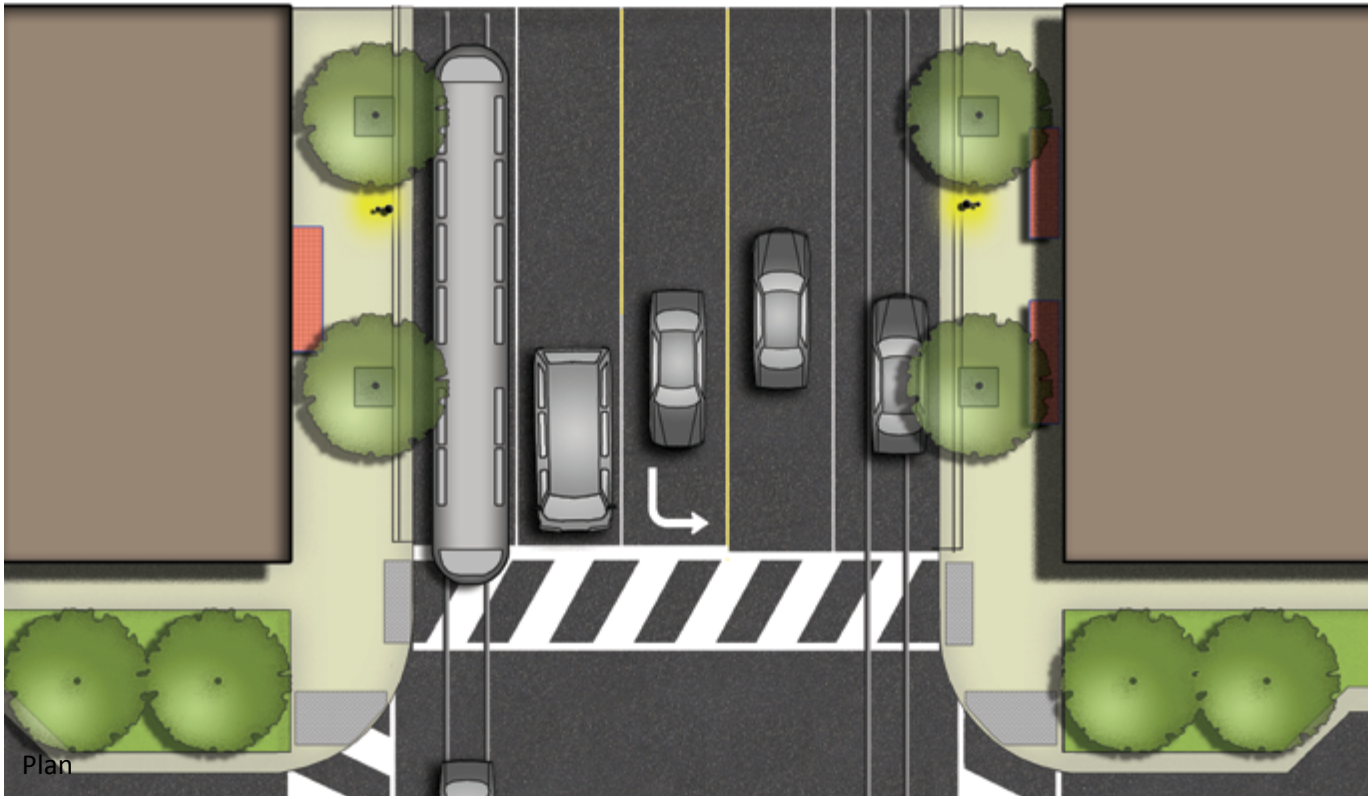
- 80 feet — Right-of-Way Width
- 55 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 10'-6" — Sidewalk Width (both sides)

DESIGN FEATURES

- Sidewalks
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Multi-modal nodes (bicycle facilities, shelters, seating, signage, lighting)
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

ROBERT STREET (PROPOSED 95' R.O.W.)

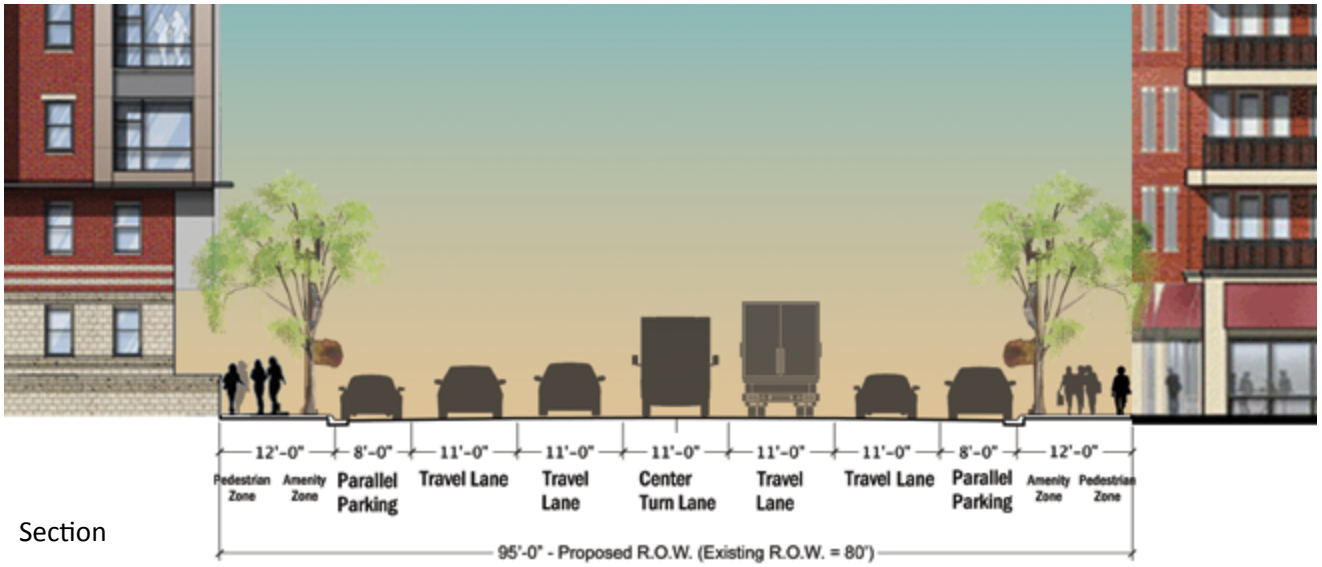


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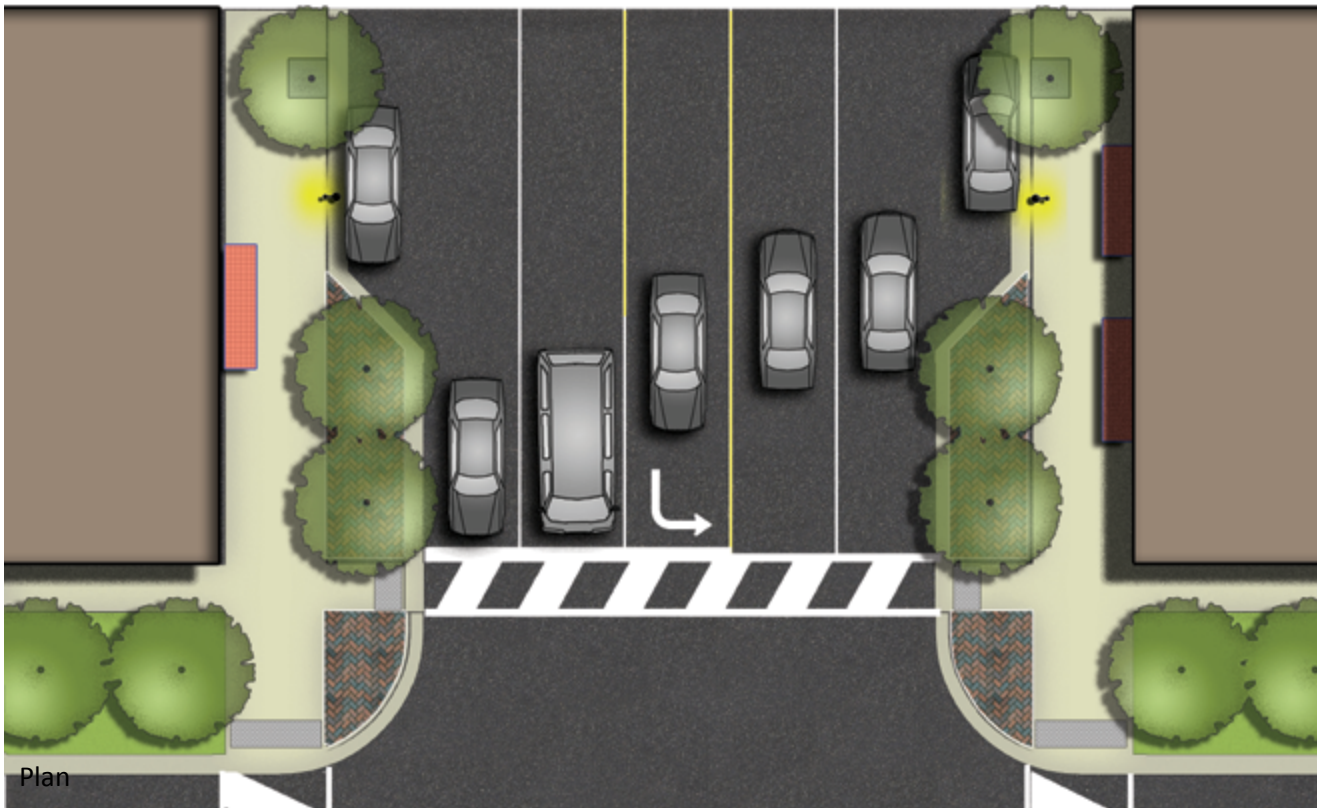
- 95 feet — Right-of-Way Width
- 71 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 12'-0" — Sidewalk Width (both sides)

DESIGN FEATURES

- Sidewalks
- On-Street Parallel Parking
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Multi-modal nodes (bicycle facilities, shelters, seating, signage, lighting)
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

ROBERT STREET (PROPOSED 95' R.O.W. WITH PUBLIC TRANSIT)

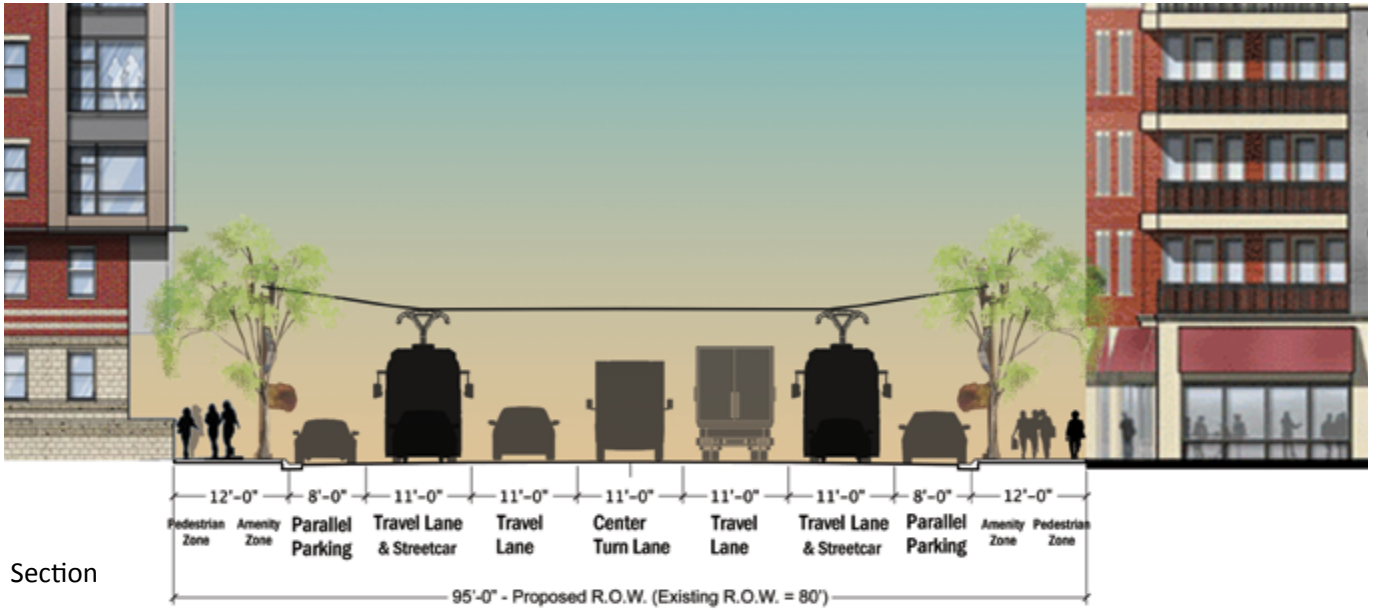


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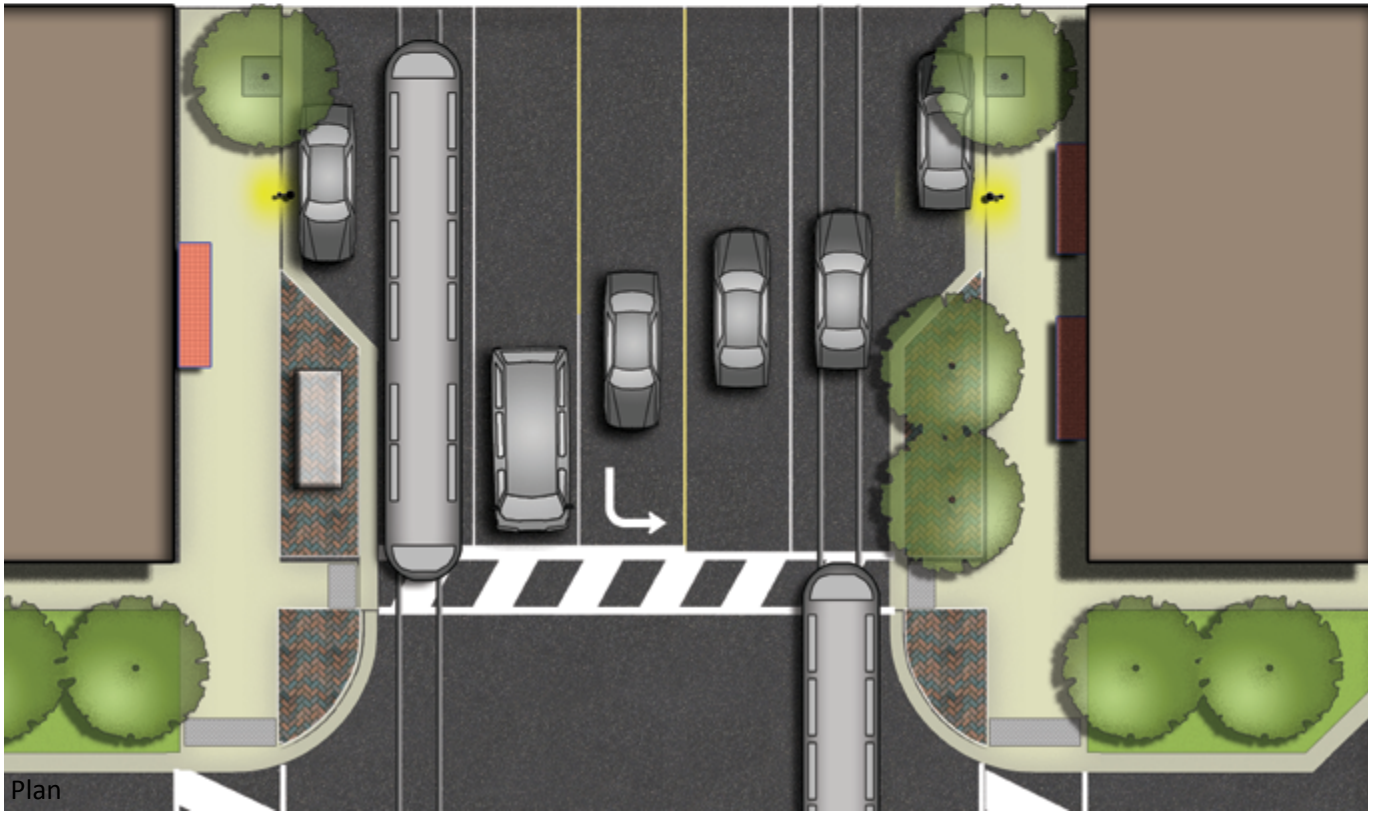
- 95 feet — Right-of-Way Width
- 71 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 12'-0" — Sidewalk Width (both sides)

DESIGN FEATURES

- Sidewalks
- Streetcar or Bus Rapid Transit Lanes, Facilities and Stations
- On-Street Parallel Parking
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Multi-modal nodes (bicycle facilities, shelters, seating, signage, lighting)
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

WABASHA STREET (EXISTING 100' R.O.W. WITH CENTERLINE MOVED TO CENTER OF R.O.W.)

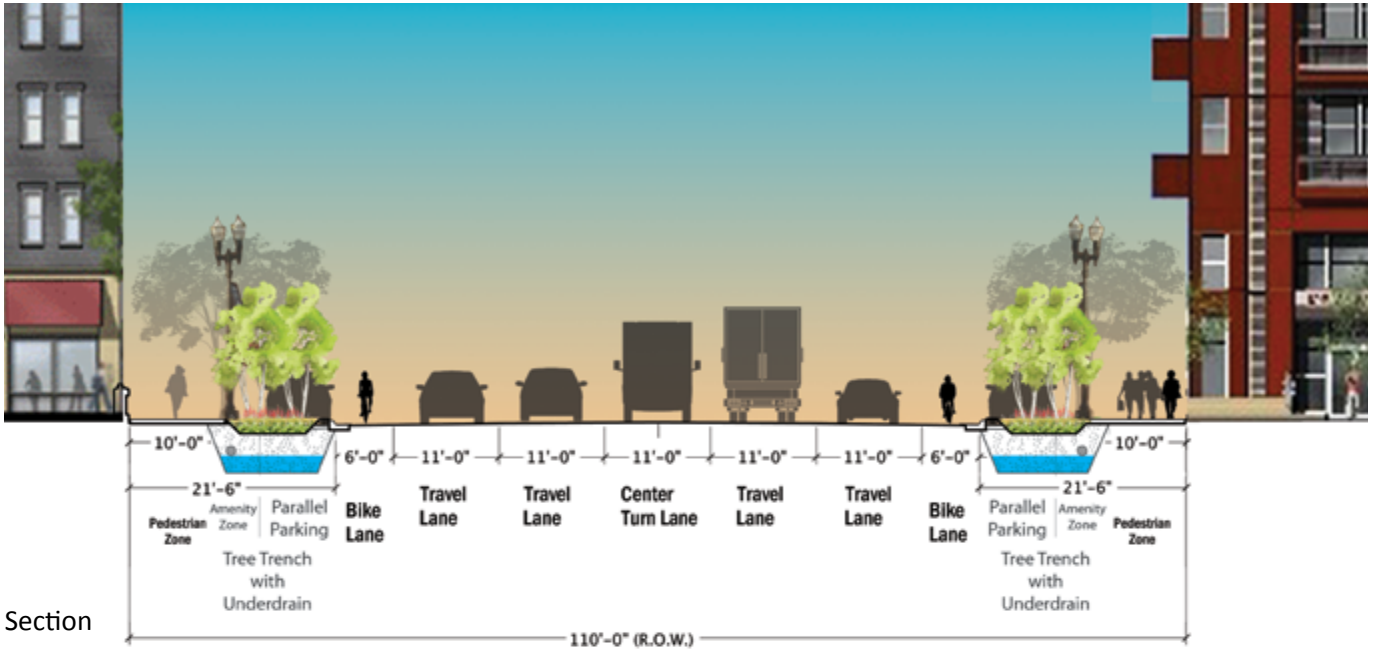


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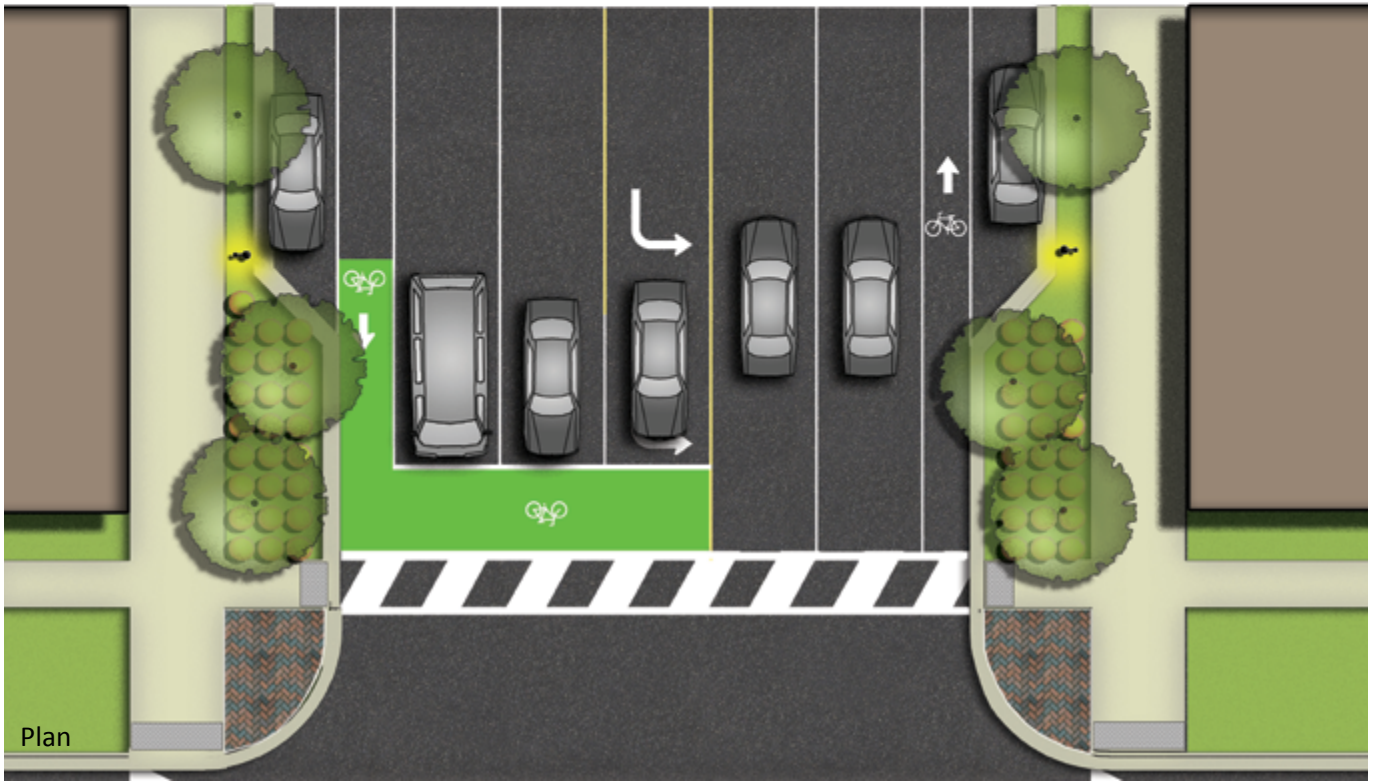
- 100 feet — Right-of-Way Width
- 80 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 10'-0" — Sidewalk Width (both sides)

DESIGN FEATURES

- Sidewalks
- On-Street Parallel Parking
- Bicycle Lanes, Bike box
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Multi-modal nodes (bicycle facilities, shelters, seating, signage, lighting)
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

FILLMORE AVENUE (WEST OF ROBERT STREET WITH PROPOSED 70' R.O.W.)

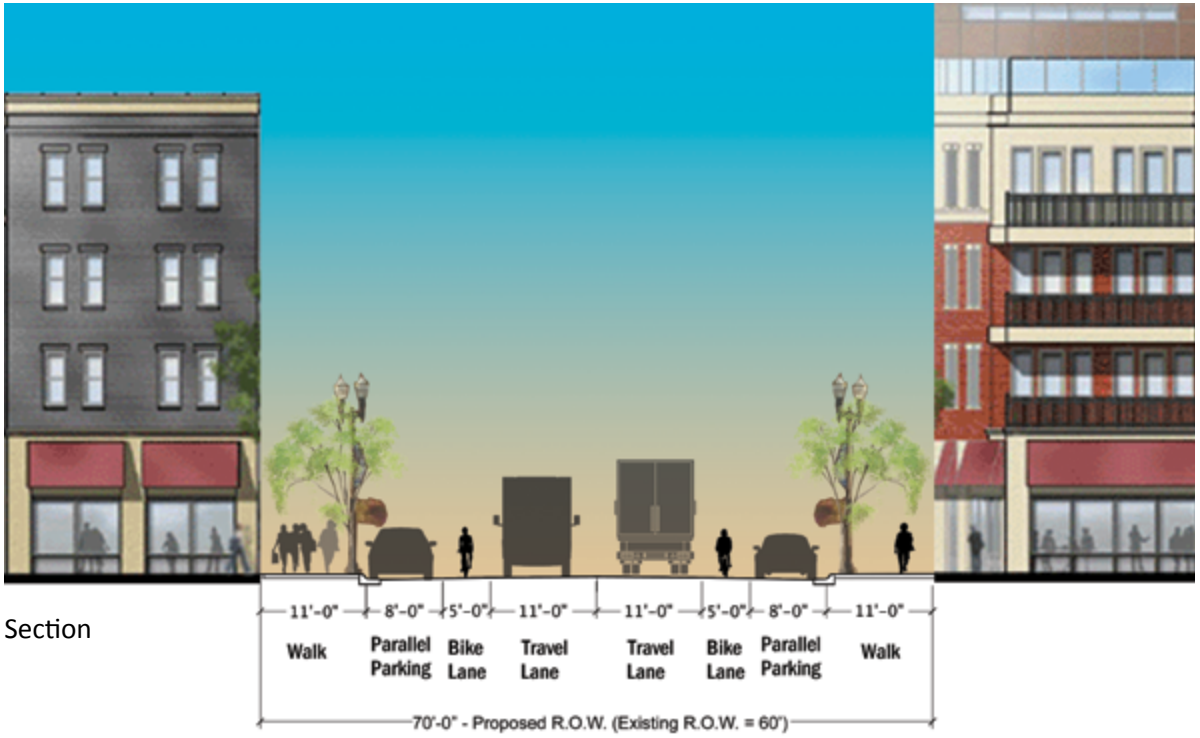


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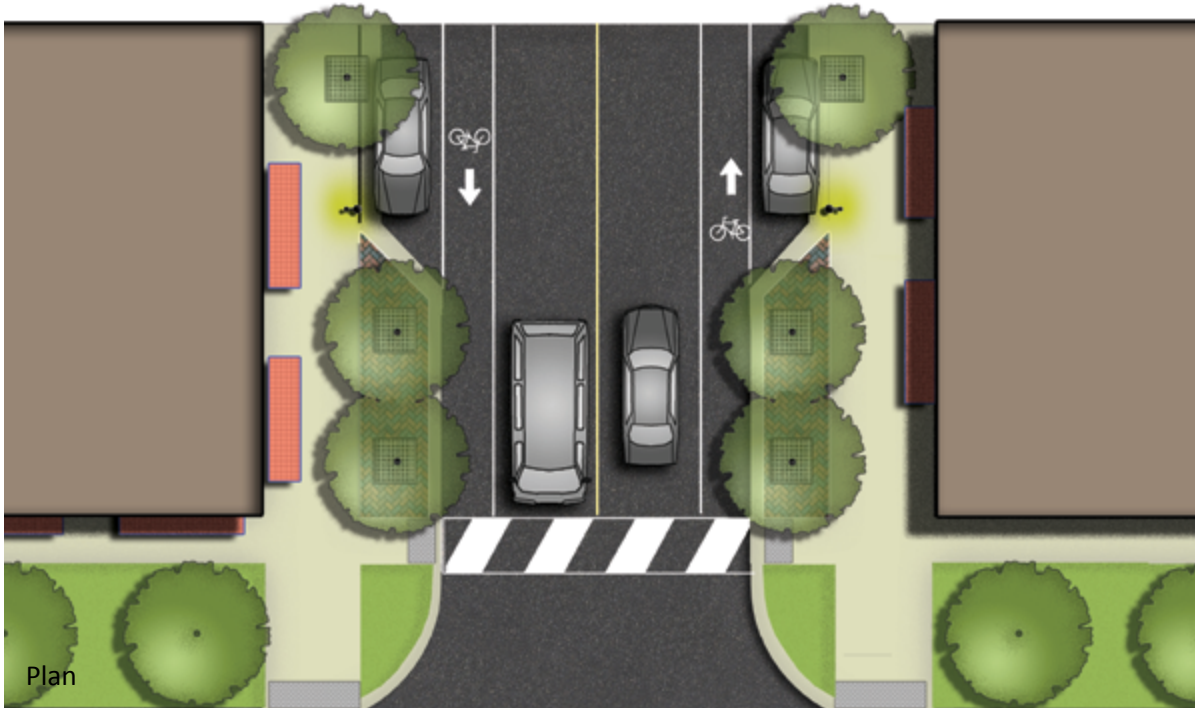
- 70 feet — Right-of-Way Width
- 48 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 11'-0" — Sidewalk Width (both sides)

DESIGN FEATURES

- Sidewalks
- On-Street Parallel Parking
- Bicycle Lanes
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Multi-modal nodes (bicycle facilities, shelters, seating, signage, lighting)
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

FILLMORE AVENUE (EAST OF ROBERT STREET WITH EXISTING 100' R.O.W.)

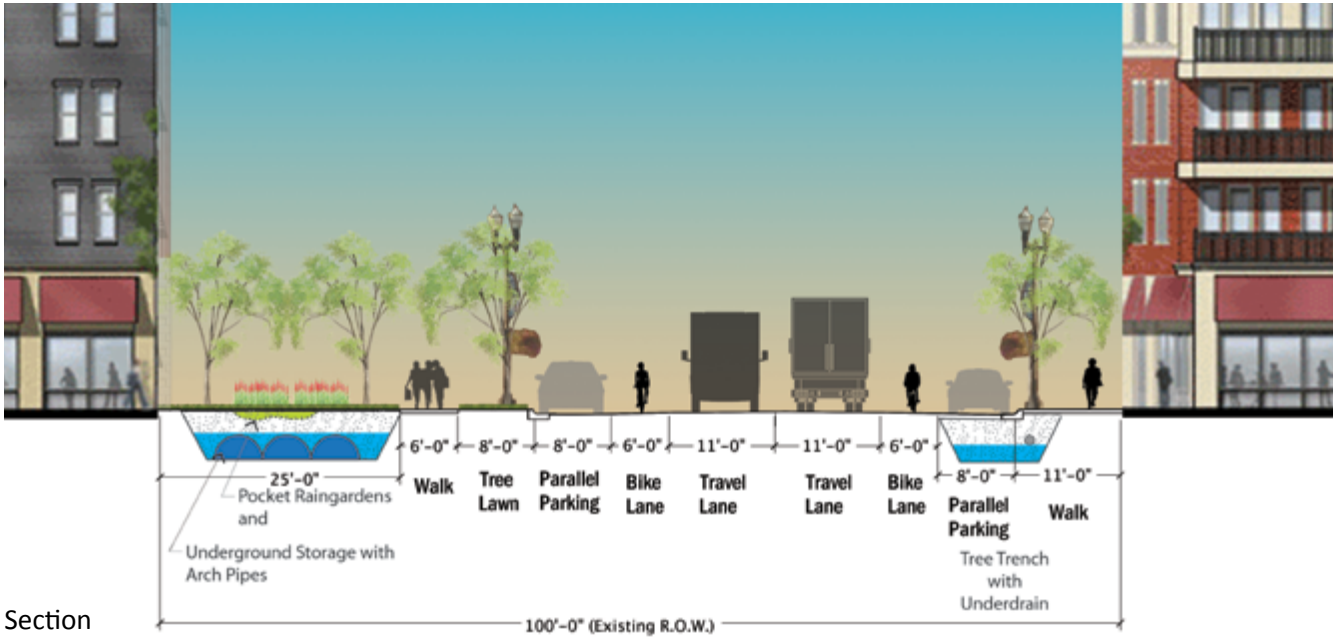


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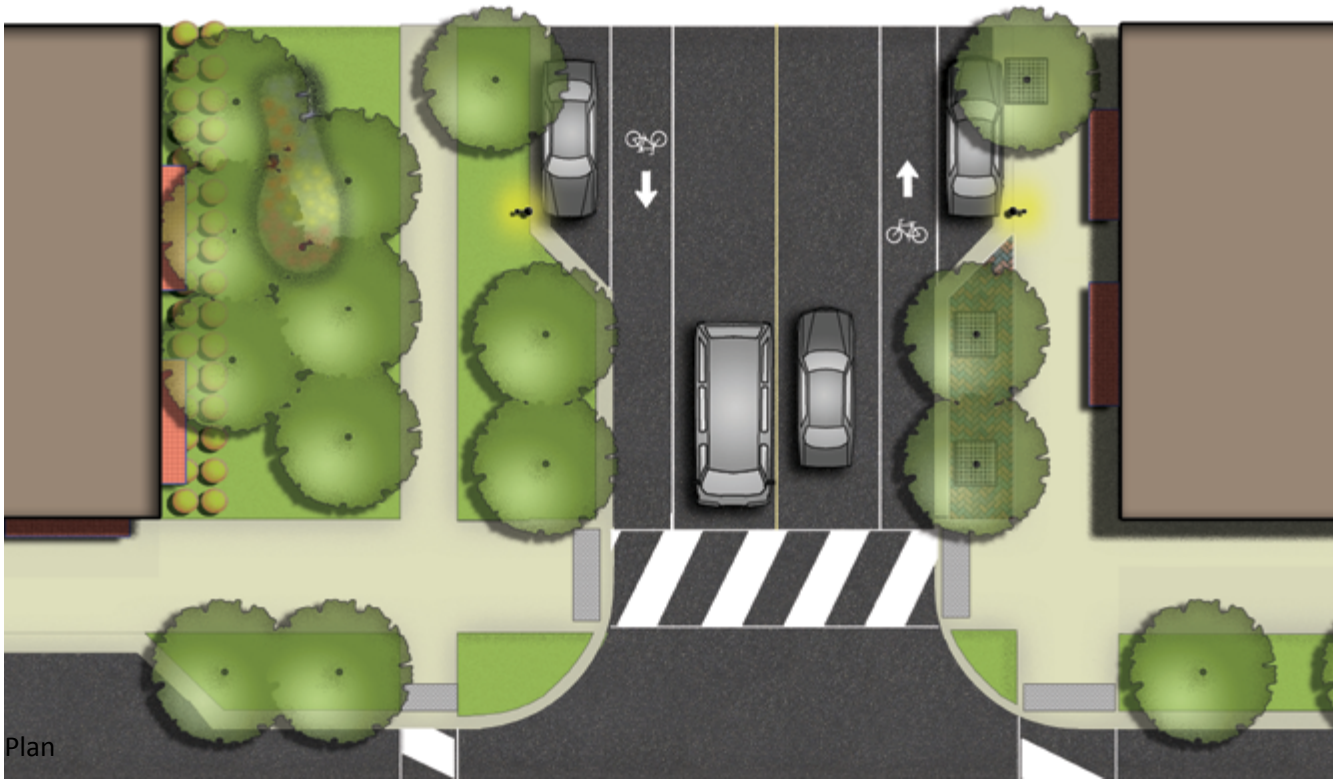
- 100 feet — Right-of-Way Width
- 50 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 11'-0" — Sidewalk Width (North side of street)
- 6'-0" — Sidewalk Width (South side of street)

DESIGN FEATURES

- Sidewalks
- On-Street Parallel Parking
- Bicycle Lanes
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Underground Stormwater Storage
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Multi-modal nodes (bicycle facilities, shelters, seating, signage, lighting)
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

PLATO BOULEVARD WITH CYCLE TRACK OPTION (EXISTING 110' R.O.W.)

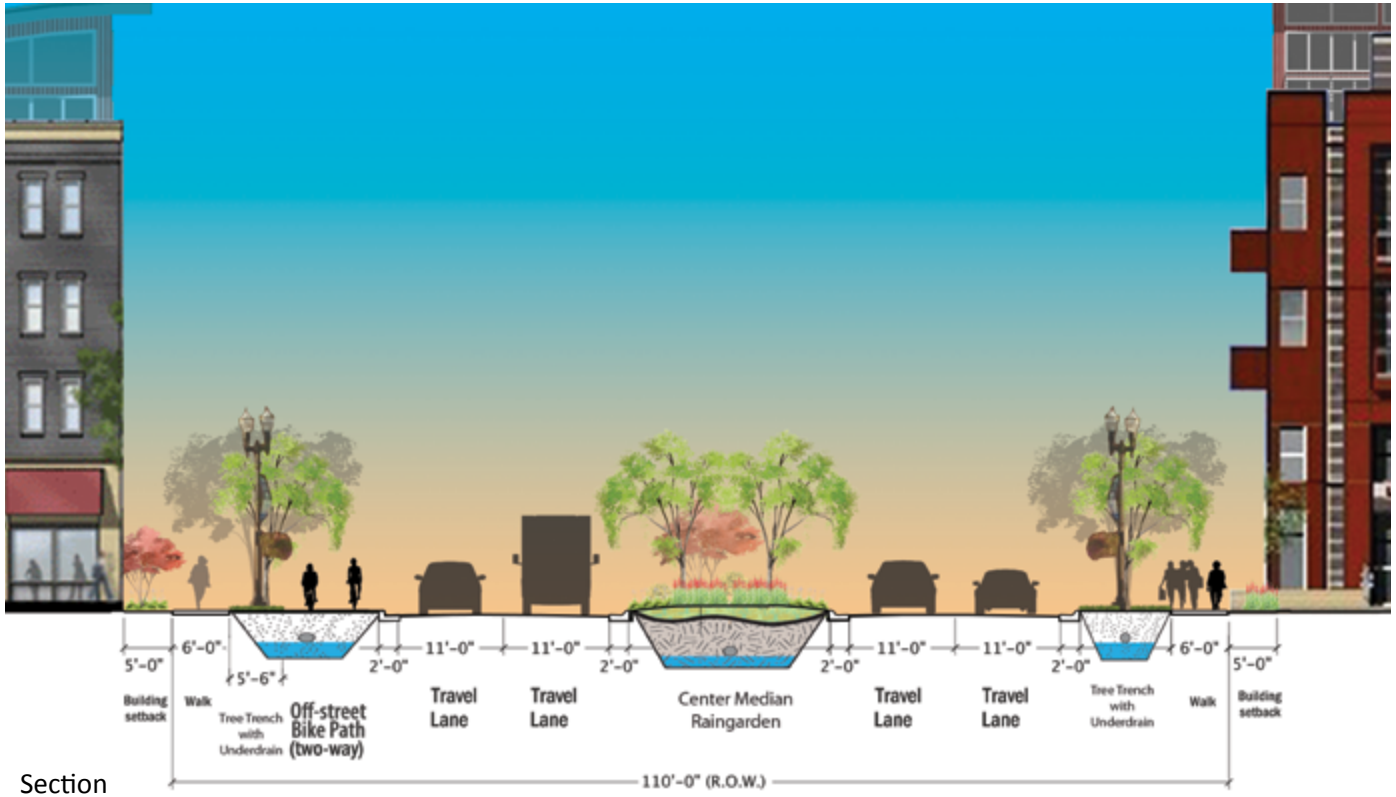


DIMENSIONAL CRITERIA

- 110 feet — Right-of-Way Width
- 44 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 6'-0" — Sidewalk Width (both sides of street)
- 10'-0" — Off-street Bike Path
- 21'-0" — Planted Median

DESIGN FEATURES

- Sidewalks
- Cycle Track (two-way)
- Planted Median
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Multi-modal nodes (bicycle facilities, shelters, seating, signage, lighting)
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

PLATO BOULEVARD WITH MULTI-USE TRAIL OPTION (EXISTING 110' R.O.W.)

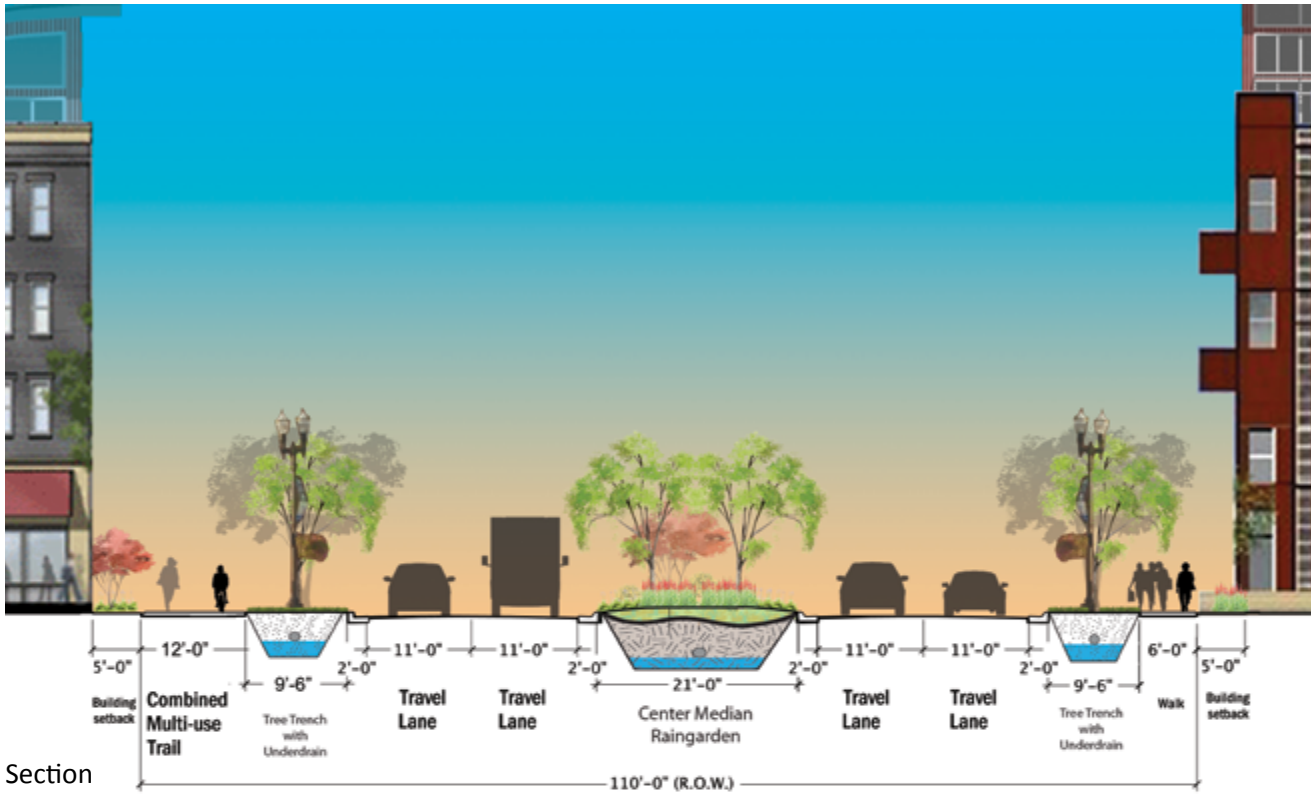


DIMENSIONAL CRITERIA

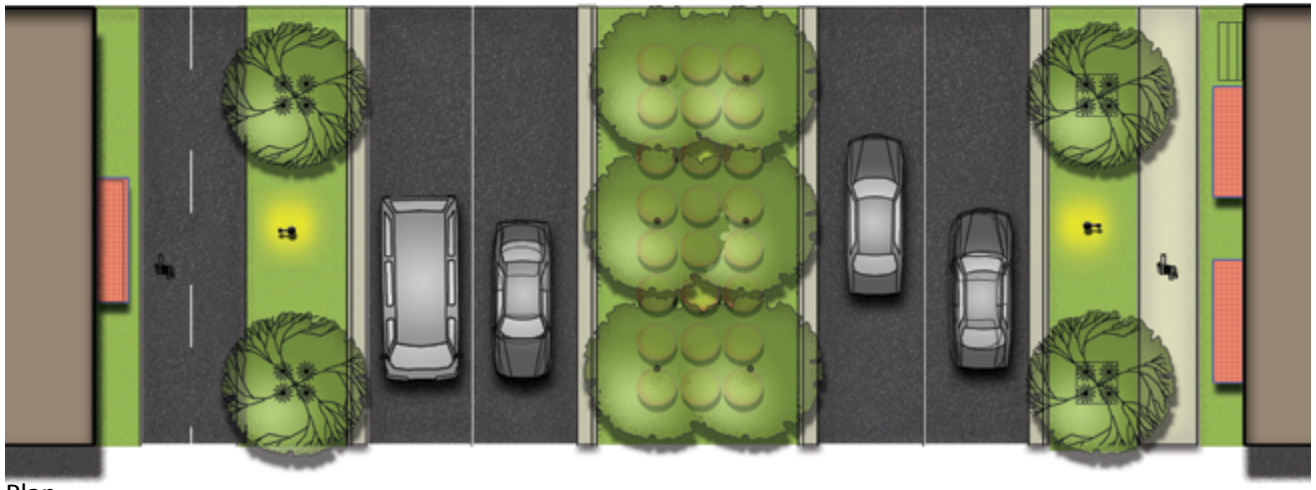
- 110 feet — Right-of-Way Width
- 44 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 6'-0" — Sidewalk Width (South side of street)
- 12'-0" — Combined Multi-Use Trail (two-way)
- 21'-0" — Planted Median

DESIGN FEATURES

- Sidewalks
- Combined Multi-Use Trail (two-way)
- Planted Median
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Multi-modal nodes (bicycle facilities, shelters, seating, signage, lighting)
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

STATE STREET (EXISTING 80' R.O.W.)

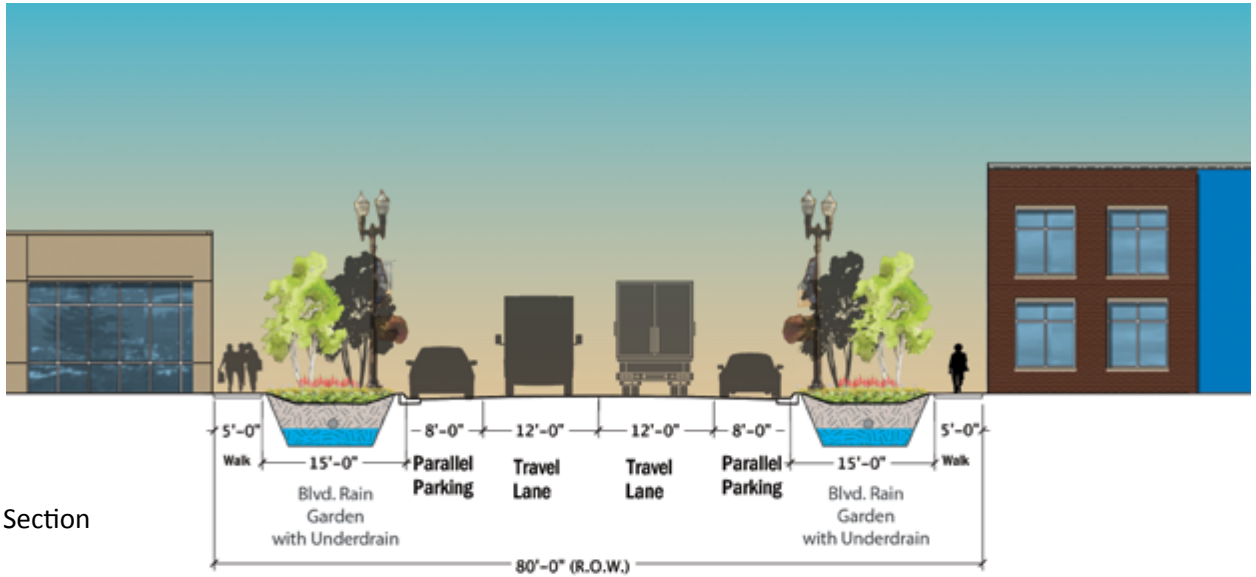


DIMENSIONAL CRITERIA

- 80 feet — Right-of-Way Width
- 40 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 5'-0" — Sidewalk Width (both sides of street)

DESIGN FEATURES

- Sidewalks
- On-Street Parking
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

EVA STREET (EXISTING 80' R.O.W.)

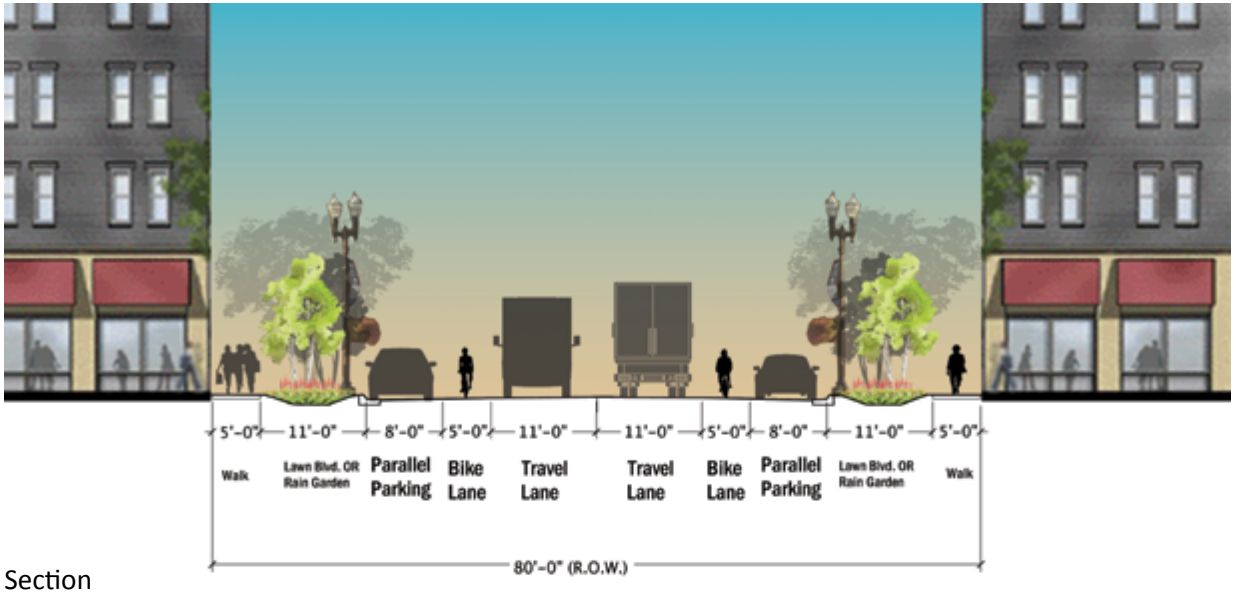


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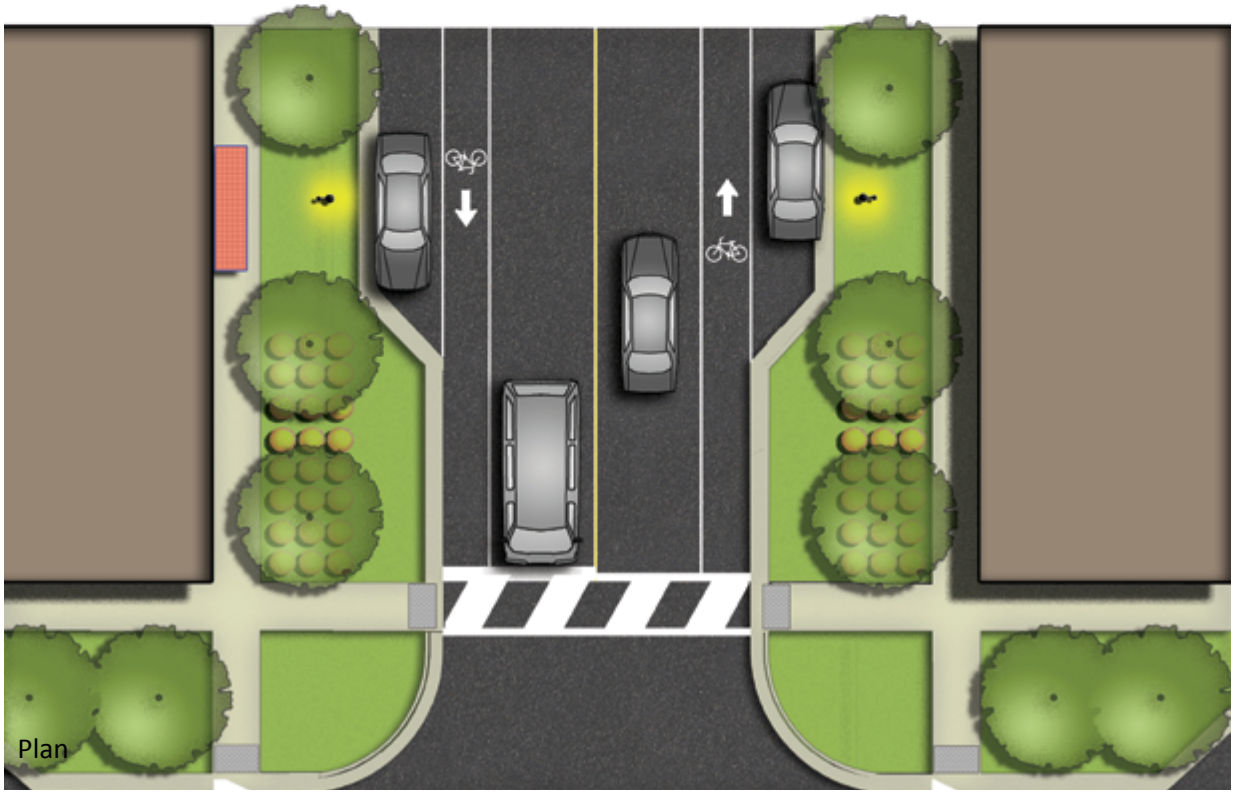
- 80 feet — Right-of-Way Width
- 48 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 5'-0" — Sidewalk Width (both sides of street)

DESIGN FEATURES

- Sidewalks
- On-Street Parking
- Bicycle Lanes
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage/Wayfinding
- Street and Pedestrian Lighting
- Public Art
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan

TYPICAL COMMERCIAL/INDUSTRIAL STREET (PROPOSED 60' R.O.W.)



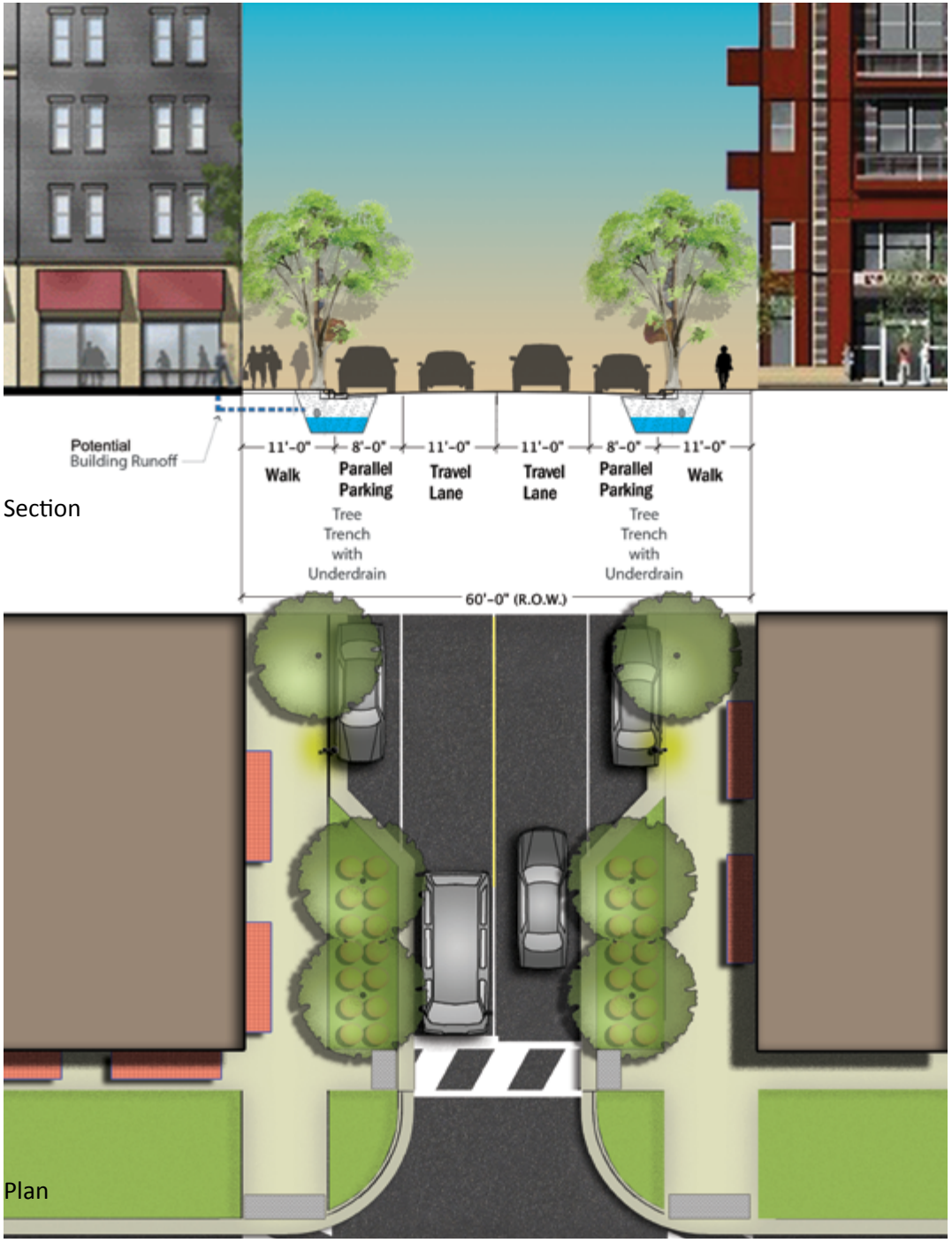
DIMENSIONAL CRITERIA

- 60 feet — Right-of-Way Width
- 38 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 11'-0" — Sidewalk Width (both sides of street)

DESIGN FEATURES

- Sidewalks
- On-Street Parking
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage
- Street and Pedestrian Lighting
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)

Note: City design standard requires connection to storm sewer main



Section

Plan

TYPICAL RESIDENTIAL STREET (PROPOSED 60' R.O.W.)

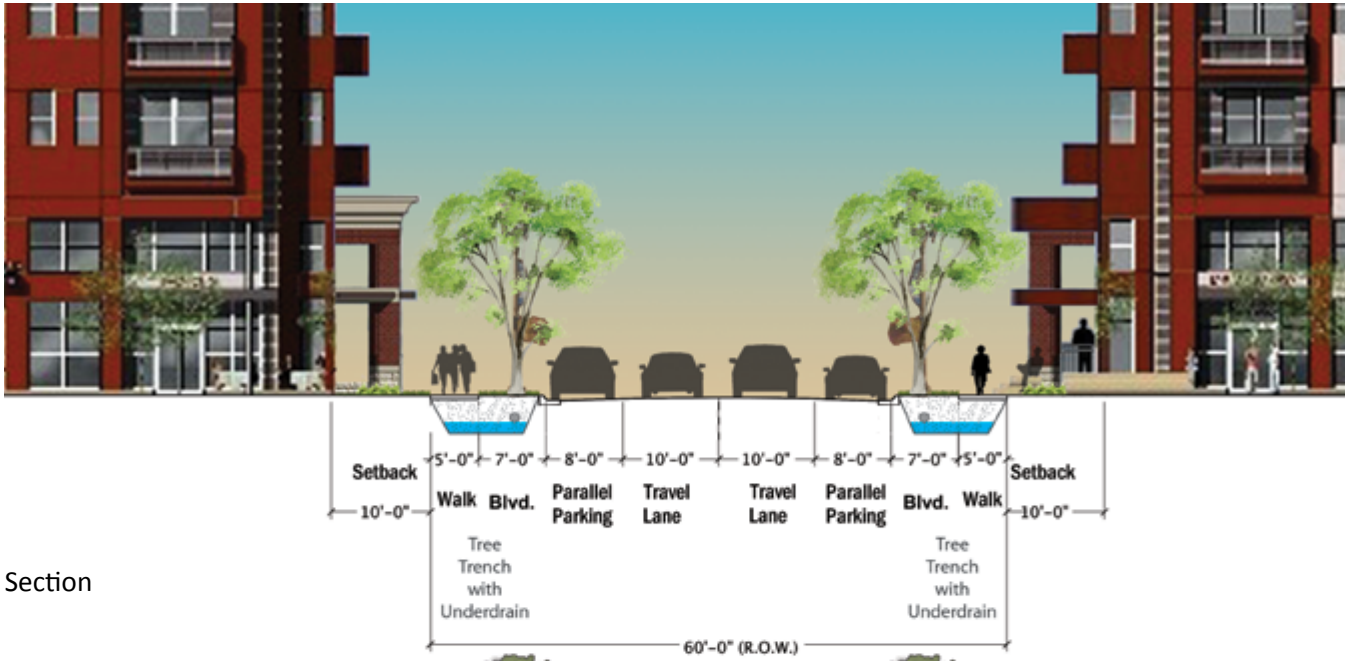


DIMENSIONAL CRITERIA

- 60 feet — Right-of-Way Width
- 36 feet — Pavement Width (2-way)
- 30'-40' o/c — Street Tree Spacing
- 5'-0" — Sidewalk Width (both sides of street)

DESIGN FEATURES

- Sidewalks
- On-Street Parking
- Intersection Bumpouts
- Street Trees/Plantings/Raingardens
- Streetscape Furnishings (seating, planters, trash receptacles, bicycle racks)
- Signage
- Street and Pedestrian Lighting
- Pedestrian-Friendly Crossings (markings, countdown traffic signals, ADA features)



Section



Plan







Pedestrian Facilities

1) On blocks facing Mixed-Use Corridors and the Riverfront Esplanade, the pedestrian zone should be expanded to accommodate higher pedestrian traffic levels and allow sufficient space for street furnishings, lighting, landscaping, and outdoor dining.
2) The number of curb cuts should be minimized to retain level sidewalk surfaces and reduce pedestrian-vehicle movement conflicts.
3) Frequent pedestrian connections to the Riverfront Esplanade and linear greenway(s) should be provided as part of the pedestrian system.
4) The local pedestrian network should have good connections to the regional park, open space and trail system.
5) Curb bump-outs should be provided at street intersections, wherever feasible, to shorten crosswalk distances, calm traffic, provide areas for street furnishings/landscaping, and delineate limits of on-street parking.
6) Walk/bike crossings should be clearly marked at arterial and collector street intersections with reflective paint markings, special paving materials, activated pedestrian crossing signals, and/or signage alerting motorists to the walk/bike crossing.
7) High-quality pedestrian crossing signals should be added at key signalized intersections, including pedestrian countdown signals that are automated, have non-visual formats (e.g. audible and/or vibrating surfaces), and sequence timing of pedestrian crossing signal ahead of vehicle signals (e.g. right turn and left turn arrows).

Bike Facilities

1) The potential for adding marked bike boxes, to provide space for bicyclists to stop and make left turns, should be explored at signalized intersections.
2) Frequent bike connections to the Riverfront Esplanade and linear greenway(s) should be provided as part of the bike system.
3) Bike parking/storage facilities should be provided at or near public facilities (including civic buildings, parks, transit shelters/stops), along Mixed-Use Corridors, and at other major destinations.
4) Free bike maintenance stations, providing tools such as a tire pump, tire air guage, tire levers, tools, etc., should be considered along major bike routes and at transit hubs.
5) Expansion of bike sharing facilities (e.g. Nice Ride) should be promoted for key destinations as redevelopment occurs.

Transit Facilities

1) Transit stop facilities should be sited and designed as integral elements of the streetscape with design features (e.g. materials, patterns and colors) that communicate the character of the West Side Flats.
2) At transit stops, the pedestrian zone should be expanded to accommodate higher pedestrian traffic levels, waiting space for transit riders, and transit stop furnishings.
3) A heated shelter, seating, lighting and bike parking should be provided at major transit stops.
4) Transit stop furnishings made of durable (recycled when possible), easily maintained/ repaired, and locally available materials should be used whenever feasible.
5) The City's public art initiative should be incorporated into the design of transit stops, particularly shelters, to create a strong sense of identity at these major street nodes.



Landscaping

1) Street trees should be planted at regular intervals appropriate to the root structure and canopy of the tree species chosen.
2) A minimum of two tree species should be planted per block face.
3) A similar mix of street tree species and spacing should be installed on both sides of the street along a given block.
4) Native tree and plant species should be used, wherever possible, to protect and restore the unique character and environmental qualities of the Mississippi River Valley, reduce maintenance, reduce carbon emissions, and reduce the urban heat island effect.
5) Low-maintenance/drought-tolerant plants and trees should be planted to reduce irrigation needs; consider allowing exceptions for higher-maintenance materials in areas with high pedestrian traffic and community gathering spaces.
6) The use of turf grass should be minimized for planted areas directly adjacent to public streets.
7) Artificial plant materials should not be used as part of landscaping.
8) Structural soils should be used where street trees are planted within paved areas (e.g. sidewalks, plazas, and parking lots) to support deep tree root growth beneath the paved area, and to prevent heaving of sidewalks, plazas, curbs, and gutters.
9) Flowering plants in hanging baskets or planters should be installed along Mixed-Use Corridors to create a welcoming pedestrian environment and contribute to the unique identity of the West Side Flats.











10) On Mixed-Use Corridors and Commercial/Industrial Streets, plant materials should be selected that minimize visual obstruction of businesses facing the street.

11) Plant materials, fencing, or landscape improvements should not encroach into the sight lines of any street intersection or driveway.

Street Furnishings/Lighting/Wayfinding

1) Street furnishings (benches and seating, trash/recycling receptacles, bollards, bike racks, kiosks, etc.) should be provided at transit stops, building entry areas, parks, plazas, the Riverfront Esplanade, and along mixed-use and commercial streets.

2) A consistent design palette (style, materials and color) of street furnishings should be used to make them visually interesting, reinforce the character of the Riverfront Esplanade, West Side and Saint Paul, and to create a strong sense of community identity.

3) Street furnishings should be provided to enhance the comfort, accessibility, safety, and functionality of the streetscape.

4) Street furnishings made of durable (recycled when possible), easily maintained/repaired, and locally available materials should be used whenever feasible.

5) Street light poles that accommodate banners, flower baskets, and holiday decorations should be installed to improve the visual character and identity of the street.

6) A complementary mix of pedestrian-scale street light fixtures should be provided to enhance the unique character of the Riverfront Esplanade, mixed-use/commercial streets, and residential streets.

7) Lighting fixtures should be designed to minimize visibility of light bulbs by pedestrians and light pollution in general.

8) A system of wayfinding features should be incorporated into the public realm to attract walking, bicycling, and transit usage, e.g. wayfinding signs at major intersections, transit stops, Mixed-Use Corridors, parks, plazas, and open spaces.

Site Development

General

1) New and infill development should integrate a mix of complementary land uses, including residential, commercial, civic, and Employment Center uses, thereby reducing the number of vehicular trips, shortening travel distances, increasing non-vehicular travel (walking, biking, and transit), and improving air quality.

2) Development of blocks, sites, and streets should be designed to encourage use of non-vehicular transportation alternatives, including walking, biking, bikesharing, transit, carpooling, carsharing, and electric vehicles. For example, bike racks/storage and electric vehicle charging stations should be considered for parking areas.

3) Transit stop facilities should be integrated into private development projects.

4) Site and building design should incorporate the principles of Crime Prevention Through Environmental Design (CPTED) to reduce the potential for and perception of crime, and improve the neighborhood's livability.

5) Site development should incorporate a strong relationship between the building(s) and the public street or Riverfront Esplanade to ensure that the development is a positive contributor to placemaking in the West Side Flats.

6) New and infill development projects are encouraged to use locally-available building materials to reduce carbon emissions produced by the transport of the construction materials.

7) Site development and building construction are encouraged to minimize the amount of materials used on a given project. Development projects should seek to minimize waste to landfills and explore options to discard excess materials for local reuse. New development should utilize durable building materials with longer life spans.

8) Individual business operations should be planned and/or modified to ensure waste materials are sorted for recycling and reuse. Local waste management haulers should be approached to ensure facilities and resources are adequate to accommodate the recyclable materials generated from the business and residential uses.

9) Landscaping material and organic waste should be composted or reused. Options should be explored to provide composting on individual project sites, a central district facility, or collection by the local waste management hauler.









Landscaping

1) The ratio of planted surfaces to non-planted surfaces should be maximized to reduce unnecessary hard surface cover wherever possible, in order to enhance the river flyway, restore the urban forest, reduce the urban heat island effect, and improve water quality.
2) Landscaped plazas, courtyards and gardens should be incorporated into site design.
3) Native plant and tree species should be used as part of new development to protect and restore the unique character and environmental qualities of the Mississippi River Valley, reduce maintenance, reduce carbon emissions, and reduce the urban heat island effect.
4) Landscaping should be placed along exterior building walls to provide shade and cooling.

Lighting

1) In order to minimize light pollution, building lighting should be used only for safe illumination of building entries, service/delivery areas, and pedestrian/vehicle movement areas.
2) Lighting at building entries, service/delivery areas and pedestrian/vehicle movement areas should be limited to low-wattage downcast or cut-off fixtures that may remain on throughout the night.
3) Service/delivery/storage area lighting should be confined to the service/delivery/storage area boundaries and enclosure walls. No spill-over light should occur outside of the service/delivery/storage area. Lighting sources should not be visible from the street.
4) Accent lighting should be limited to indirect lighting of specific signage, architectural and landscape features only; lighting should not exhibit or advertise the building itself. Unshielded bulbs or exposed neon lighting should not be used to accentuate building signage, architectural and landscape features.

Service, Delivery and Storage Areas

1) Service, delivery and storage areas should be sited so that views of them from adjacent properties, streets, open spaces and pathways are minimized.
2) Landscaping and architectural screening should be used to minimize visual impacts of service, delivery and storage areas.
3) Signage should clearly identify service and delivery entrances to discourage the use of main building entries for these purposes.

Water Conservation

1) On-site collection of rain water for irrigation and toilet flushing purposes is encouraged.
2) On-site irrigation facilities should be designed with water efficient systems.

Buildings

Building Placement & Setbacks/Frontages

1) Buildings should be sited and designed to frame and preserve views to and from the river valley from public rights-of-way.
1) Riverfront buildings should face and be built up to the Riverfront Esplanade edge.
2) Residential buildings should incorporate a transition zone between private space and the public sidewalk/Riverfront Esplanade. Possible transition techniques include a change in grade, stoop, stairway, porch, deck, or landscaping.
3) Recessed building frontages for front door entries, outdoor seating, plazas and public art are encouraged along Mixed-Use Corridors and the Riverfront Esplanade.
4) Buildings located on corner lots of the Riverfront Esplanade and connecting streets/ pathways should be oriented to both public rights-of-way.
5) Buildings adjacent to transit stations/stops should be placed to shape outdoor spaces/ plazas.
6) Buildings located at key street intersections and viewsheds should have the appropriate scale and placement to create attractive and identifiable gateways.
7) Buildings should be sited to maximize energy performance.

Building Heights & Massing

1) Buildings should be designed at the appropriate scale to frame and enclose the street, which is achieved by a building height that is proportionate to the width of the adjoining street. A ratio of street width to building height of 1:2 creates a strong “room-like” street, while a 1:3 ratio provides good street definition and proportion. Shorter buildings of one story facing broad streets will not achieve the desired relationship.
2) Buildings should generally be lower in height along the riverfront and increase in height as they approach Fillmore Avenue.
3) Buildings should be taller at gateways and neighborhood edges to match the scale and intensity of arterial and collector streets.













4) Along Mixed-Use Corridors including the Riverfront Esplanade, buildings should be designed with stepbacks for upper stories in order to present a pedestrian-scale base at street level and the Riverfront Esplanade level.

5) Building heights along Plato Boulevard should be varied to prevent the creation of a wall of taller buildings along the street that does not provide an appropriate transition to the lower-scale development south of Plato Boulevard and in District del Sol.

6) Building heights and roof treatments should vary from block-to-block in order to achieve a rich mix of building heights and diversify the visual character of the area.

7) Building massing should reinforce the character and importance of the adjacent street or open space.

8) Building massing should create an overall appearance of multiple structures, building fronts, and tenants along a block face. A single, large, dominant building mass should be avoided. Where large structures are required, mass should be broken up through the use of street-level setbacks, projecting and recessed elements, upper-level stepbacks, and similar design techniques. Changes in mass shall be related to entrances, the integral structure, and/or the organization of interior spaces and activities, and not merely for cosmetic effect.

9) Buildings should generally be designed with a perpendicular orientation toward the riverfront and bluff face, in order to preserve views through the West Side Flats to and from the riverfront and bluff face. Multiple buildings with narrower and/or articulated facades facing the river are preferred over longer and flatter building facades that may generally block views from the public realm and other buildings.

10) Individual buildings should be designed with a scale that maximizes views of the river valley for the greater community (e.g. views from a variety of distances, the public realm, and other buildings).

11) Building design techniques should address the West Side Flats' location within a migratory flyway.

12) Riverfront buildings should consider incorporating courtyards facing the riverfront in order to prevent creation of a "wall" along the riverfront. These semi-public courtyards should be designed as active spaces, with windows overlooking them, well-defined building entrances, multiple entries, and sunlight penetration, to the extent possible.

13) Multi-tenant buildings should be designed with breaks in the building mass to allow pedestrian access between the front (street) and rear (parking) side of the building.

Building Form & Façade

1) A building's form and facade features should reflect contemporary architectural design and construction technologies or contemporary interpretations of traditional architectural styles, as opposed to nostalgic imitations of past architectural styles.

2) Each building should have one or more clearly visible and identifiable "front doors" that address all public streets, sidewalks, public open spaces, and semi-public courtyards (where relevant). Buildings along the Riverfront Esplanade should have "front doors" oriented to both the Riverfront Esplanade and adjacent public streets.

3) Ground-floor residences that adjoin a public street or open space should provide direct resident access to the public street or open space.

4) Major building entries should be connected to the sidewalk/Riverfront Esplanade by the most direct route practical.

5) Building entries should be emphasized through projecting or recessed forms, display windows, architectural detail, awnings, color, materials, lighting, and signage as appropriate.

6) Building design should emphasize a human scale at ground level, at entryways, and along street frontages through the creative use of windows, doors, columns, canopies, and awnings or other architectural elements.

7) Building facades should include multiple changes in building materials, parapet heights, fenestration, and other elements which create variety in the building façade.

8) Functional balconies should be considered for buildings along streets and open spaces to create interest and variety in building façades as well as putting more "eyes on the street."

9) Buildings should be designed to enhance the overall pedestrian character of the street, such as providing edges or enclosure to the street and open spaces along it, creating linkages and gateways, reinforcing pedestrian connections and framing or terminating views.

10) Variations in a building's front facade treatment should be continued to its roof line and front and rear facades to reduce the perceived size of the building.

11) Blank exterior walls should be avoided. Where this is not possible, these walls should incorporate decorative features, such as architectural detailing, variations in building materials, art panels, murals, and plantings.

12) Street-level windows should be made of non-tinted glass.

13) Building facades should incorporate bird-friendly architectural techniques (e.g. minimize reflectivity and transparency) to minimize the potential for bird collisions with glass facades.













14) Roofscapes should be designed as important elements of new buildings, given the proximity of bluff-top neighborhoods (West Side and Downtown) that will be "looking down" on the West Side Flats.

15) Mechanical equipment should be installed, whenever feasible, on the building's roof so that it is not visible and audible at the pedestrian level and from public rights-of-way. Rooftop mechanical systems, and head houses for elevators and stairs, should be enclosed and concealed from view.

Building Energy Efficiency

1) Wherever possible, buildings should be sited, oriented, and designed to capitalize on solar exposure to lessen energy demands.

2) Buildings should be sited to minimize east and west exposures, where feasible, and incorporate overhangs and appropriate shading components to minimize solar heat gains.

3) Buildings should be designed to incorporate and support passive heating, cooling and ventilation strategies.

4) Opportunities to incorporate renewable energy sources, including solar, biomass, and geothermal, in building design should be explored to off-set energy consumption and reduce carbon emissions. A site within the Employment Center dedicated to neighborhood-scale renewable energy production, such as solar or biomass, should be explored.

5) Buildings should be constructed with water efficient utilities (e.g. toilets, sinks, showers).

6) All new buildings or major upgrades to existing buildings should comply with the most current sustainability standards.

7) In order to achieve higher window-to-wall-area ratios, high-performance windows, a double facade, or external shading techniques should be incorporated into building design.

8) An air-tight building envelope should be used to minimize uncontrolled infiltration.

9) Heat-recovery ventilation should be used during heating season only, while natural ventilation and cooling should be used throughout the rest of the year.

10) Clear glass with good insulating value (low U-value with low e-coating) for windows and doors should be used; solar heat gains should be mitigated with external shading and passive cooling by natural ventilation.

11) Internal heat gains should be removed with passive elements (e.g. natural ventilation).

12) Overhangs should be incorporated to provide shading for south-facing windows.

13) Operable external shading should be incorporated on east-, south- and west-facing windows.

14) Thermal mass that is exposed to air-conditioned space should be used and combined with other passive elements to achieve its full energy-savings and comfort potential.

15) Buffer spaces should be incorporated on all exposures whenever possible to optimize comfort and reduce both peak load and overall heating and cooling energy requirements.

16) Cooling by natural ventilation should be designed into all building types.

17) Heating and cooling strategies should strategically combine passive elements to optimize comfort and minimize overall energy use.

18) Cool roofs, including white roofs, should be incorporated into building design as a way to reflect sunlight and reduce the amount of solar heat conducted into a building through its roof.

19) Building placement and configuration should be optimized to achieve maximum energy performance.

20) Existing industrial buildings should be retrofitted for improved energy efficiency as part of reusing and reinvesting in them for contemporary commercial/industrial uses.

21) New buildings should be designed for long-term adaptability.









Parking

1) Parking for new buildings should be provided in parking structures where possible, with a minimal amount of surface parking for visitors. Parking building massing should create an overall appearance of multiple structures, building fronts, and tenants along a block face. A single, large, dominant building mass should be avoided. Where large structures are required, mass should be broken up through the use of street level setbacks, projecting and recessed elements, upper level stepbacks, and similar design techniques.

2) New development should pursue strategies to reduce the amount of parking provided.

3) Shared use of parking spaces between uses and/or properties should be maximized.

4) Structured parking should be provided in mixed-use buildings, where parking is not the sole use.

5) Public parking facilities should be easily accessible and identifiable. District signage should be utilized to identify public parking facilities.

6) Entrances to private parking facilities should generally be located on secondary streets in order to maintain building continuity along Mixed-Use Corridors.

7) The presence of structured parking entrances should be minimized so that they do not dominate the street frontage of a building. Possible techniques include recessing the entry, extending portions of the structure over the entrance using screening and landscaping, using the smallest curb cut possible, and subordinating the parking entrance to the pedestrian entrance in terms of prominence on the streetscape.

8) Above-grade parking structures should fit with the character of surrounding buildings through the use of complementary exterior wall materials, treatments, forms, articulation, fenestration, patterns, and colors. Even though these buildings store automobiles, they should appear to be part of a collection of neighborhood buildings along the street.

9) Above-grade parking structures should contain commercial/retail uses at street level where possible. Where this is not possible, landscaping and other screening devices are encouraged to buffer parking structures from pedestrian view.

10) Parking facilities should be designed to minimize impacts of vehicle headlights on residential units.

11) Existing above-grade parking structures should be retrofitted for improved energy efficiency.

12) Provision of electric vehicle charging stations in all development projects should be explored.

Stormwater/Water Quality

1) State-of-the-art techniques should be considered for collecting, filtering and treating stormwater runoff, whenever feasible.

2) Treatment of stormwater from public infrastructure (streets, sidewalks, parks, etc.) should be designed to meet federal, state and local stormwater standards, including water quality, volume and rate control.

3) Stormwater runoff should be sufficiently filtered and treated to ensure that the resulting runoff into the Mississippi River is of the highest possible quality to improve the river's water quality and people's experience of the Riverfront Esplanade.

4) Regional stormwater treatment opportunities should be integrated into park and open space areas, including the West Side Flats "green fingers" and Greenway, which complement recreational, multi-modal transportation, and ecological connections between the neighborhood and the river's edge.

5) Non-traditional swales with natural meanders and stone check dams should be installed to slow stormwater runoff and create natural visual amenities for the neighborhood.

6) Tree trenches should be installed as part of new and reconstructed streets with planted boulevards to improve stormwater management.

7) Porous pavers should be installed in hard surface areas to increase stormwater infiltration.

8) Stormwater pond edges should be planted with native plantings to discourage clustering of geese on sodded areas and contribute to restoration of the area's natural landscape.

9) The harvesting and reuse of stormwater irrigation and toilet flushing purposes should be explored.

10) The stormwater management system should be integrated with the public street and open space systems to provide unique public and private amenities and maximize use of valuable urban land for development.

11) Attractive rain garden and bio-retention systems should be incorporated into site design to collect and filter stormwater, including private and public sites (e.g. streetscapes, plazas, parks and parking lot islands).

12) Green roofs should be used in new building construction to reduce the amount of stormwater runoff.

13) Construction sites during the various phases of redevelopment should be designed to minimize impacts on water quality in stormwater drainage areas adjacent to the construction sites.







Utilities

1) As streets are reconstructed, existing above-ground utilities should be relocated below ground within the public street rights-of-way whenever feasible.
2) The visual aesthetics of above-ground utility structures should be enhanced with landscaping, fencing or other approved screening devices.
3) Any new visible utility structures, particularly water-related, should be designed with interpretive features that enable citizens to better recognize and understand the functions of public infrastructure and reinforce the West Side Flats' unique sense of place.
4) Above-ground utility structures should be located away from and screened from major pedestrian and gathering areas, building entrances, windows and stormwater drainage areas where feasible.
5) Extending recycled water service lines to the West Side Flats area should be considered, as well as providing incentives to encourage new development to connect to recycled water lines for irrigation and other uses.
6) Expansion of District Energy Saint Paul should be considered for the neighborhood's heating and cooling infrastructure.

Public Art

1) Existing and new spaces, such as parking lots, plazas, parks and temporary street closings, that allow artists and audiences to interact in a participatory, temporary and somewhat unstructured manner should be created within the West Side Flats. Public art events could include temporary festivals, street painting events, concerts, pageants and flea markets.
2) Undeveloped, underutilized and vacant spaces should be used during the various phases of redevelopment in the West Side Flats for alternative and temporary art spaces. Artists should be involved in planning, design, construction, marketing, and maximizing these temporary public art spaces.
3) Artists should be engaged to create a West Side Flats "vibe" by activating social spaces and visually enhancing areas that lack visual interest.
4) Artists should be engaged to identify innovative, unique and green approaches for the various phases of redevelopment in the West Side Flats.
5) An artists-in-residence program should be promoted for establishing, integrating and maintaining a strong public art presence in the West Side Flats.

6) The creation of signature public art works at gateway sites and other major destinations should be promoted to create visible landmarks that draw attention from near and far, including from downtown and the surrounding bluffs.

7) The river should be embraced in public art works and programming as a way to increase visibility of and interest in the West Side Flats as a unique place.

8) Pedestrian-friendly wayfinding should be created as an integral component of the public art plan to encourage audiences to move from one area to another within the West Side Flats.

9) Artists should be engaged in creating unique, customized public realm furnishings, such as transit shelters, seating, bike racks, tree grates and light fixtures, etc.

10) Public art should be a tool for tapping into the West Side Flats' unique social and environmental history. Historical references can be manifested in a multitude of ways, from well-designed and informative signs or plaques to sculpted figures reenacting an historic scene to motion-activated speakers that offer a poetic narration.

11) Demonstration projects should be used to attract attention to what's happening in the West Side Flats, such as temporary visual and performance art events.

12) The City's public art policies and guidelines should be used to maximize the potential of art projects in the public realm and the design of public infrastructure, such as parks, trails, stormwater management, and transit facilities.

13) Public-private partnerships should be leveraged to create public art that enhances public infrastructure and open spaces, and maximize synergy with other developers, both public and private.

14) Innovative funding sources from both the public and private sectors should be sought to augment public art resources, such as partnerships with non-profits and crowd-funding events.

15) Media coverage of the West Side Flats should be sought through innovative, colorful, or community-engaged public art projects.

16) New technologies, such as Quick Response (QR) codes and geo-locational applications, should be embraced to allow audiences to access information about public art and other events going on in the West Side Flats.







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7 IMPLEMENTATION

Guidance on implementation is an essential component of the *West Side Flats Master Plan* in order for the Plan to be actionable and achievable. This chapter identifies the recommended actions for implementing the vision, guiding principles and strategies of the Master Plan.



Recommended Amendments to City Policies & Regulations

Implementation of the *West Side Flats Master Plan* will require updates to City policies and regulations, including the Comprehensive Plan and Zoning Ordinance. The intent is for the Master Plan and Zoning Ordinance to provide more flexibility for development in the West Side Flats.

1) Update the Parks and Recreation System Plan to reflect West Side Flats park and recreation needs.

2) Evaluate the existing Riverfront Renaissance TIF district to determine if amendments are necessary, such as expansion east of Robert Street or extension of the decertification date.

3) Rezone the area east of Robert Street and north of Fillmore Ave from T3 to T3M, so that it is covered by the *West Side Flats Master Plan*.

4) Rezone the parcels on the east side of Robert Street between Fillmore Avenue and Plato Boulevard to T3M. Robert Street is being planned for future high-frequency transit improvements, either BRT or streetcar, and is the West Side community's primary north-south thoroughfare.

5) Rezone blocks between Eaton Street (proposed new street east of Robert Street), Plato Boulevard, Lafayette Road/Hwy 52, and Fillmore Ave/Alabama Ave from I1 to ITM. The revitalization of the area east of Robert Street as a jobs-rich Employment Center that is more integrated into the surrounding West Side community and contributes to reconnecting the neighborhood to the river requires that the area be rezoned to a more compatible zoning district. The intent of the IT district is to provide areas for a mix of business types, including light industrial, office, and commercial that are compatible with nearby residential and traditional neighborhood districts, parks, and parkways. The IT zoning district will enable a broader mix of businesses in the area, and regulate future business development to be



more compatible with the future urban village along the riverfront and to the west. The IT zoning regulations require compliance with specific design standards so that industrial land uses are appropriately designed to fit in with adjacent urban village areas.

6) Amend the Zoning Ordinance to allow for non-Traditional Neighborhood Districts to have an (M) designation, so that all parcels within the West Side Flats study area are covered by the *West Side Flats Master Plan.*

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Figure 7.1. Existing Zoning

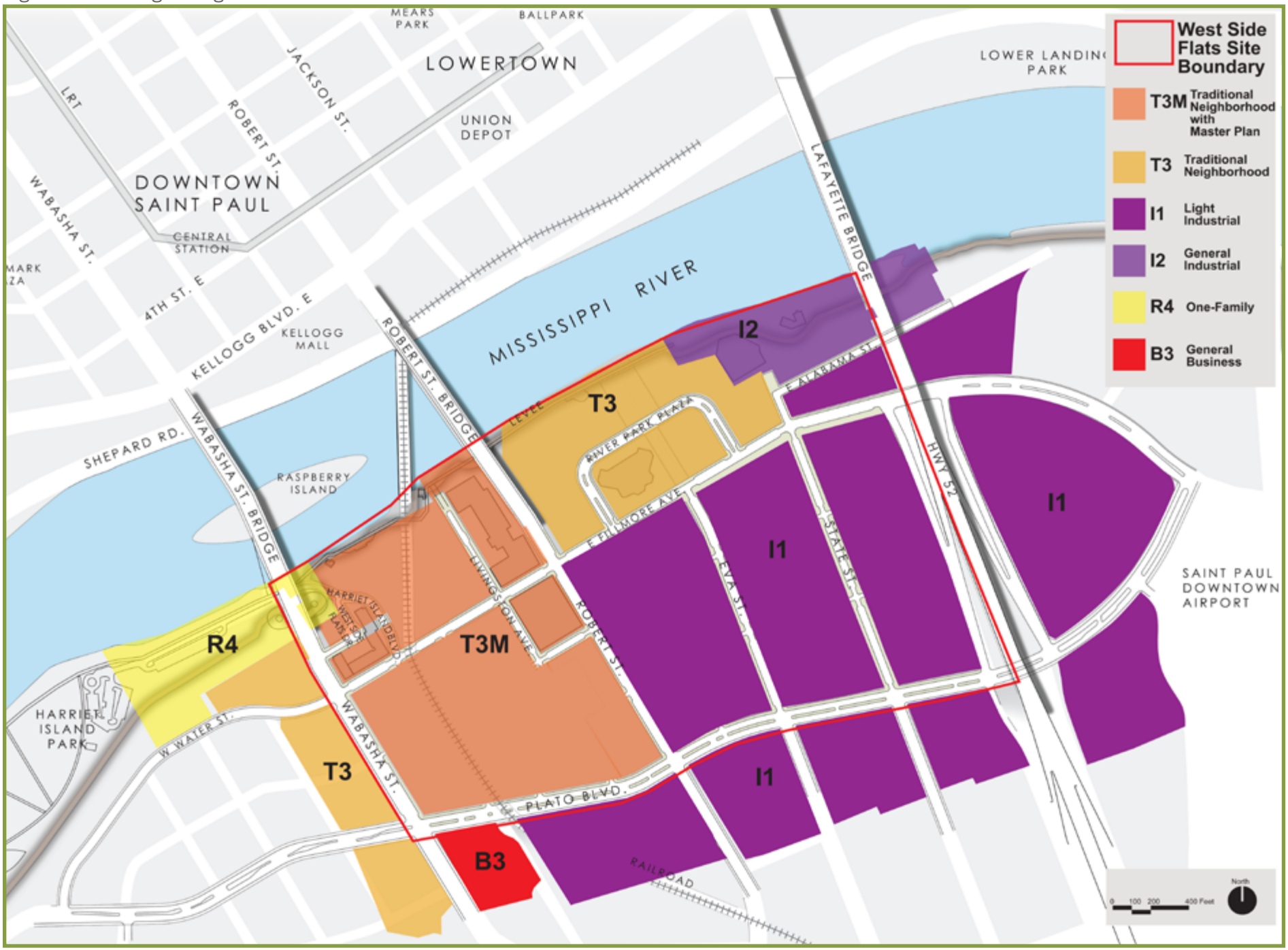
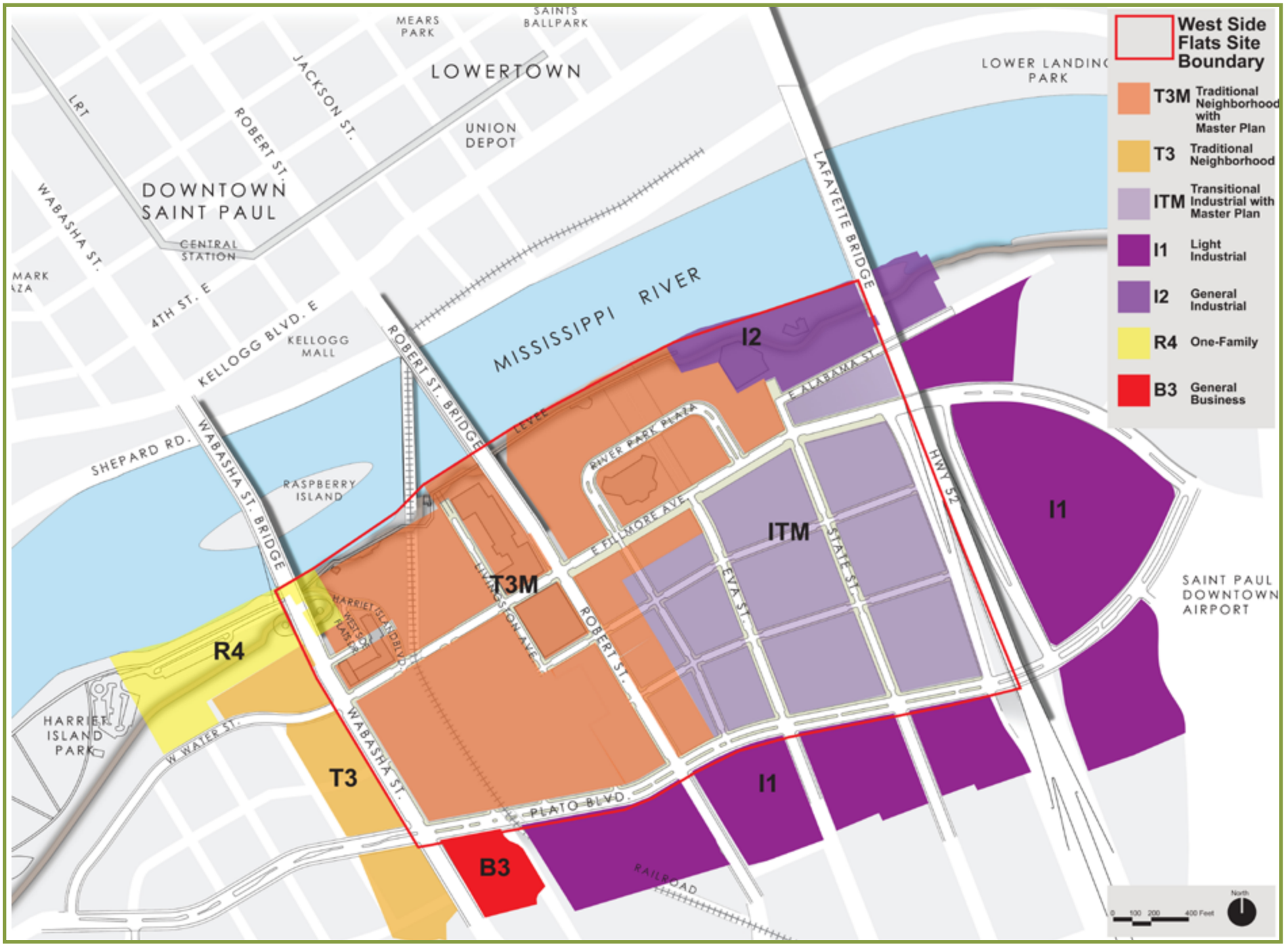


Figure 7.2 Proposed Zoning





Recommended Implementation Actions

These implementation actions essentially serve as the community's "to do list" for pursuing reinvestment and redevelopment in the West Side Flats over the next several years. Some of these actions will be clearly-defined improvement projects that have a start and end point. Other actions will be ongoing or recurring initiatives that will bring more incremental improvements to the West Side Flats. Within each of these phases, the recommended actions are not listed in priority sequence. These recommended implementation actions are organized into the following categories:

- Land Use & Development
- Street System
- Pedestrian and Bike Facilities
- Transit
- Parks & Open Spaces
- Stormwater
- Public Art

Land Use & Development

1) Establish an ongoing dialogue with property owners to promote redevelopment of vacant, underutilized, and contaminated land consistent with the *West Side Flats Master Plan*.

2) Evaluate the financial feasibility of City acquisition of vacant properties to assemble land for a future master developer(s).

3) Conduct a parking study for the entire West Side Flats study area to identify potential opportunities for improving parking management, consolidating underutilized parking lots, and creating infill development sites.

4) Develop a partnership between Riverview Industrial Park property owners, businesses, the Port Authority, and the City to identify, coordinate and fund improvements to sites, gateways, and infrastructure.

5) Partner with the Saint Paul Port Authority to identify and promote appropriate reuses of vacant industrial buildings.

6) Investigate the potential for establishing a Special Assessment District for the entire West Side Flats study area to provide funding for public infrastructure improvements.

7) Develop a district marketing program for the West Side Flats that creates a compelling identity and "brand" to attract investment and redevelopment.



Street System

1) Establish an ongoing dialogue with property owners to promote improvements to the street network, including construction of new streets and reconstruction of existing streets.

2) Create a West Side Flats Streetscape Master Plan.

3) As redevelopment occurs, design, acquire right-of-way for, and construct recommended new streets.

4) Acquire additional right-of-way along Robert Street.

5) Redesign and reconstruct existing streets in conjunction with phasing of redevelopment and infill development projects.

Pedestrian & Bike Facilities

1) Construct the regional trail connection planned for Plato Boulevard to improve the West Side Flat's connection to the regional trail system.

2) Plan, design and construct trail connections to the Riverfront Esplanade, including potential vertical connections at bridgeheads.

3) Investigate potential for adding vertical connections between the West Side Flats and the bluff top.

4) Redesign existing streets to add sidewalks, trails, and bike lanes.

5) Pursue expansion of bikesharing facilities.



Transit System

1) Continue planning Robert Street as a potential streetcar or bus rapid transit (BRT) corridor.

2) Plan and design high-quality transit node facilities along Robert Street and Wabasha Street.

3) Work with Metro Transit to improve bus services, including connections to the Green Line LRT stations and transit shelters at key intersections.



West Side levee riverwalk vision, Great River Passage Master Plan, 2012



Parks & Open Space

1) Plan, design, and construct the West Side Flats Greenway adjacent to the rail line. This effort will require building a partnership with the Union Pacific Railroad Company to coordinate planning and design of the Greenway and trail. The Greenway should be a multi-functional amenity that serves as a stormwater management resource as much as a recreational space.

2) In the shorter-term, construct the portion of the West Side Flats Greenway north of Fillmore Ave on land currently owned by the Saint Paul Housing & Redevelopment Authority as a catalyst project for both park and stormwater management functions. The City should acquire the land for constructing the portion of the West Side Flats Greenway south of Fillmore Ave.

3) Plan, design, and construct the recommended block park in the Employment Center east of Robert Street.

4) Partner with Riverview Industrial Park property owners and the Saint Paul Port Authority to develop green finger connections to the riverfront.

5) Plan, design, and construct the Eva Street Greenway.

6) Add an overlook feature at the east end of the Riverfront Esplanade.

7) Prioritize dedication of funds for park development, rather than land, in the West Side Flats to finance land acquisition and construction of the West Side Flats Greenway.

Green Infrastructure

1) Obtain funding and prepare feasibility studies to quantify the service benefits of integrated stormwater/open space development, such as along the linear greenways.

2) Identify pilot/demonstration project(s) for innovative stormwater reuse solutions to quantify a sustainable infrastructure approach, such as that used by the Center for Neighborhood Technology and/or utilizing an infrastructure rating system (e.g. Envision Sustainable Infrastructure Rating System).

3) Conduct a stormwater financing impact analysis to determine and understand how to balance public and private sector financing impacts. Develop a framework to structure public-private partnerships for the design and construction of stormwater infrastructure, including revenue generation mechanism (e.g. tax district), cost allocation and recovery methods, license agreements for ownership and maintenance, and plan review/approval.

4) Utilize and/or modify existing stormwater guidance tools as needed to help inform stormwater compliance at development sites, such as the Water Quality Manual, Green Line TOD Guidebook.

5) Develop and promote a consistent public art theme that can be integrated with stormwater management, such as the proposed public art concept for the Green Line LRT corridor.

Public Art/Community Character

1) Develop an inventory of existing artistic, cultural, and historic assets in the West Side Flats.
2) Explore opportunities for artists to collaborate with businesses, such as Pier Foundry.
3) Explore opportunities for artist studios in vacant office and industrial space.
4) Reach out to arts organizations, such as Walker Art Center, Northern Spark and Forecast Public Art, to explore the potential for West Side Flats as a temporary event site.
5) Explore the potential for a future West Side Cultural Center near the riverfront.
6) Reach out to developers, such as Sherman Associates and U.S. Bank, to consider incorporating art into their sites.
7) Work with the City's Artist-in-Residence program to identify a riverfront "attention getter" public art feature, e.g. water, light, etc.
8) Use the Master Plan as a resource to implement the City's Public Art Ordinance in the design of public infrastructure and major redevelopment projects.



Ariocha Arts. In Habit: Living Patterns. Central Avenue bridge underpass. Northern Spark. 2012. Photo: Patrick Kelley.

Partnership & Financing Considerations

Partnerships

The ultimate success of the plan will depend on the City's partnerships and collaboration with key public and private stakeholders.

Key public sector partners include:

- Saint Paul Port Authority – Riverview Industrial Park, redevelopment
- Saint Paul Housing and Redevelopment Authority – land owner, housing development, redevelopment, land assembly
- West Side Community Organization (WSCO) - community engagement, visioning



- Army Corps of Engineers – levee
- Mn DOT - Lafayette Road/Hwy 52, Robert Street, historic Robert Street Bridge
- Ramsey County – Plato Blvd/CSAH 40
- Metropolitan Council – planning, funding
- Metro Transit – transit system, connections to Green Line LRT, potential BRT/streetcar
- MN DNR - Mississippi River Critical Area
- National Park Service/Minnesota National River & Recreation Area
- Lower Mississippi River Water Management Organization (LMRWMO) – stormwater
- Educational institutions, e.g. Saint Paul Technical College

Potential private sector partners include:

- Saint Paul Riverfront Corporation
- Saint Paul Foundation
- Union Pacific Railroad Company
- Upper River Services
- Major businesses, such as U.S. Bank, Comcast, Nasseff Mechanical Contractors, Saint Paul Pioneer Press, Vomela
- Major property owners

Potential non-governmental organization partners include:

- Neighborhood Redevelopment Alliance
- Neighborhood House/Wellstone Center
- Friends of the Mississippi River
- Great River Greening
- Saint Paul Foundation
- Audubon Minnesota

- Public Art Saint Paul
- Forecast Public Art
- St. Anthony Falls Laboratory - stormwater management

Financing

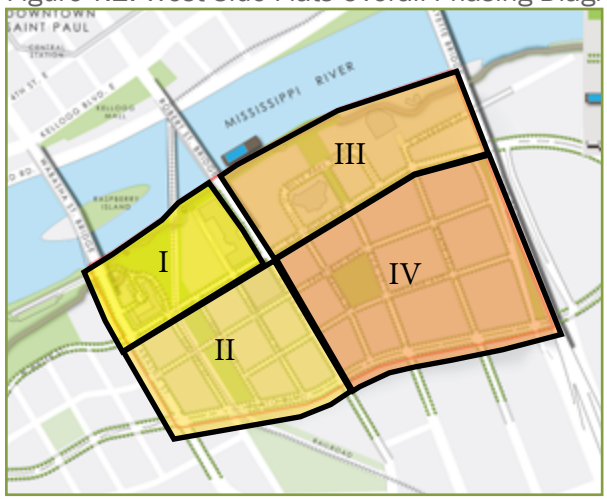
One of the keys to successfully implementing the *West Side Flats Master Plan* is financing the desired public improvements. There are a variety of financing policies, programs and tools that should be considered for the West Side Flats:

- Public ownership of land and street rights-of-way, public spaces
- Saint Paul Housing and Redevelopment Authority- e.g. levy authority, site assembly, housing and commercial loans and grants, the issuance of bonds
- Capital Improvement Budget (CIB)
- Tax increment financing (TIF) – both regular and special legislation
- Park dedication
- Special assessments for street construction/reconstruction, including public parking facilities
- Municipal State Aid (MSA) roadway program
- County State Aid Highway (CSAH) program
- MN Department of Employment and Economic Development (DEED) Redevelopment Grant Program and Contamination Cleanup Grant Program
- Metropolitan Council's Livable Communities Demonstration Account (LCDA) Grant Program
- Metropolitan Council's Tax Base Revitalization Account (TBRA) Grant Program
- Metropolitan Council's Local Housing Incentives Account (LHIA) Grant Program
- Federal TEA-21 Transportation Enhancements program
- Business Improvement District (BID) for parking, streetscape, and wayfinding improvements
- Saint Paul Port Authority, e.g. energy financing programs, brownfield remediation
- Minnesota Housing Finance Agency



Implementation Phasing

Figure 7.2. West Side Flats Overall Phasing Diagram

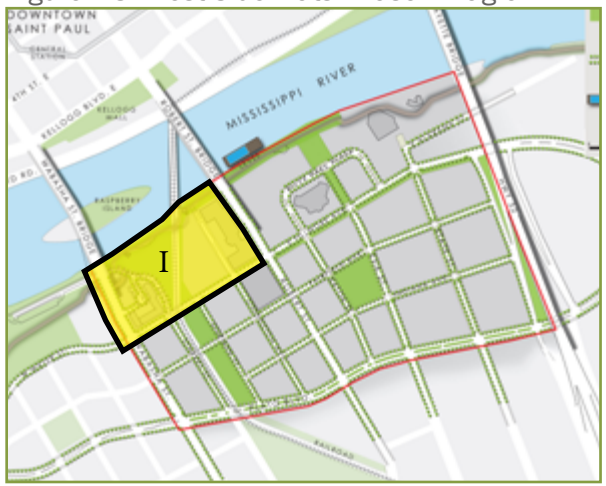


Public Improvements

Redevelopment of the West Side Flats is anticipated to occur over the next 20-30 years and require significant public investments in infrastructure. The study area's large scale and long-term redevelopment timeline demand that infrastructure improvements and public financing be planned in strategic phases. At the same time, the study area's large size and redevelopment timeline requires the City to have an implementation approach that is phased and affords flexibility over time. Things will change as development progresses, such as market demand, developer interest, demographics, public financing capacity, types of funding sources available, and policies at various levels. This recommended phasing strategy consists of four phases. Within each phase, the anticipated public infrastructure improvement projects are briefly described, including streets, public spaces, utilities, stormwater management, and land acquisition. The phasing of public improvements is based on current projections of when and where the private development market will develop land over time. The implementation projects within each phase are not intended to be all inclusive or in a specific sequence. The various phases are not likely to be discrete phases and are more likely to overlap with each other. The identification of these recommended phases and projects should not inhibit or preclude opportunistic implementation projects.

In any case, it is important to note that the construction of new streets and parks proposed in this Plan is likely only in conjuction with the redevelopment of private property, as the City is unlikely to have the financial resources to build public infrastructure without attendant private development. Until such time as the City has the resources to build the recommended new streets and parks, as part of a redevelopment project, parcels may be put to any legal use permitted under the current zoning classification, provided that the proposed use meets all applicable conditions and/or standards.

Figure 7.3. West Side Flats Phase I Diagram



PHASE I (within 5 years)

- Evaluate potential needs for sanitary sewer upgrades, including regional sewer interceptor and lift station, to accommodate future build-out of the study area.
- Develop a stormwater/green infrastructure plan for the West Side Flats study area similar to the Green Line's plan.
- Develop the program and site design plan for the West Side Flats Greenway.
- Create a West Side Flats Streetscape Master Plan.
- Acquire land for the West Side Flats Greenway.
- Design and construct the park and Greenway connection between the Mississippi River and Fillmore Avenue, both sides of the rail line.
- Construct the Plato Boulevard multi-use trail.
- Pursue interim uses of vacant and underutilized sites, both public and private, for public art and community gardens.

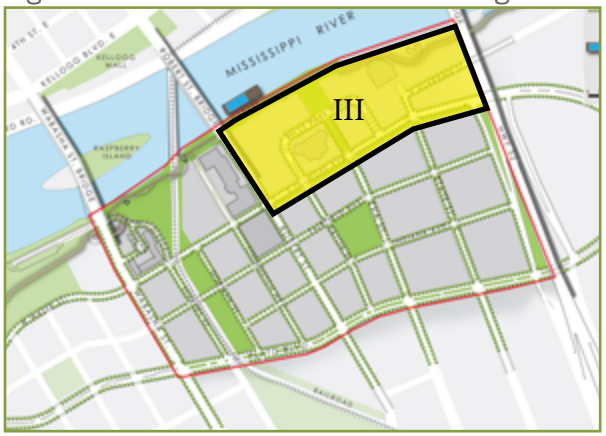
Figure 7.4. West Side Flats Phase II Diagram



PHASE II (5-15 years)

- Acquire right-of-way along Robert Street required to expand right of way to 95' width.
- As redevelopment occurs, acquire right-of-way for proposed streets in the Phase II area, including Starkey Street, Gorman Street, Fairfield Avenue and Indiana Avenue.
- Submit railroad crossing application to Union Pacific.
- Design and construct streetscapes within the Phase II area, including Wabasha Street, Plato Boulevard, Robert Street, Starkey Street, Gorman Street, Fairfield Avenue and Indiana Avenue.
- Program, design and construct the West Side Flats Greenway between Fillmore Avenue and Plato Boulevard.

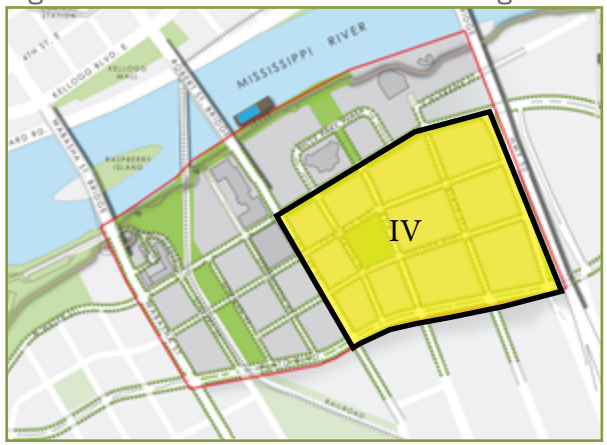
Figure 7.5. West Side Flats Phase III Diagram



PHASE III (10-20 years)

- As redevelopment occurs, acquire land for the Eva Street Greenway.
- Design and construct streetscapes within the Phase III area, including Fillmore Avenue, River Park Plaza, Eva Street, and Alabama Street.
- Program, design and construct the Eva Street Greenway.
- Design and construct a vertical circulation from the Robert Street Bridge to the Riverfront Esplanade.
- Add an overlook feature to eastern end of Riverfront Esplanade.

Figure 7.6. West Side Flats Phase IV Diagram



PHASE IV (20-30 years)

- As redevelopment occurs, acquire right-of-way for proposed streets in the Phase IV area, including Fairfield Avenue, Indiana Avenue, and Eaton Street.
- As redevelopment occurs, acquire land for Eva Street Park.
- Design and construct streetscapes within the Phase IV area, including Fairfield Avenue, Indiana Avenue, Eaton Street, Eva Street, State Street and Plato Boulevard.
- Program, design and construct Eva Street Park.









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West Side Flats

MASTER PLAN & DEVELOPMENT GUIDELINES

APPENDIX: STORMWATER & SEWER SYSTEM ANALYSIS

DECEMBER 2014

STORMWATER SYSTEM ANALYSIS

Purpose

The purpose of this memorandum is to provide additional technical background on the assessment of stormwater system and future plans for stormwater management in addition to the content within the West Side Flats Master Plan Update.

Background

As part of the update of the West Side Flats Design Guidelines, the water infrastructure, especially the stormwater system, need to be updated to reflect the different land use patterns projected. The update is also needed to be consistent with current stormwater regulations and new stormowater management techniques. The site is adjacent to the Mississippi River and levee system, providing some challenges, such as stromwater pump stations needed during high river stage, and opportunities, such as ability to connect to a significant natural amenity and tie the theme of the neighborhood to the river corridor.

Water issues are a key factor for the West Side Flats for several reasons. The area is located adjacent to the regionally significant, Mississippi River, that also receives the untreated runoff directly from the area. The site is protected from flooding from the Mississippi River by a levee system. The past land uses reflected the working nature of the river, with many industrial uses that benefited from river access. The future uses will likely also include strong connections to the river as an iconic asset for those living, recreating, and working in the West Side Flats. The West Side Flats represents an important linkage, both along the riverfront as well as connecting the river corridor to the natural valley escarpments and surrounding neighborhoods of St. Paul.

Unique Setting

There are several unique features of the West Side Flats, many of which are directly or indirectly related to the site's location along the Mississippi River. Those include:

- Development zone protected by levee
- Levee easements
- Levee setbacks/maintenance

- Water table (15-18’ down) with likely fluctuations higher with river stage
- Varied fill (8-10’) over sandy deposits (ancient river deposits) with clayey layers
- Contamination from historical land uses
- Pump system needed for stormwater at high river stage

The physical site conditions (soils, water table, and contamination) are based on some limited boring information. These physical constraints must also be considered in the infrastructure management planning for the area.

Current Physical Conditions and Infrastructure

There is an existing storm sewer network serving the area as well as bringing flows from further upstream, south of the West Side Flats Study Area. Most of the storm sewers within the study area were constructed after 1960, with some as recently as 1989 and 2002. Programmed inspection of storm sewers is anticipated to be completed in 2023. Televising before 2023 is possible for special or larger sized development projects. There are virtually no water quality treatment facilities in the WSF study area, except associated with recent development.

There are two stormwater lift stations, Custer Street Station and Chester Street Station, that are used when there is high river stage on the Mississippi River. Figures 1-3 from the Riverview Subwatershed Storm Water Modeling Report, 2010 show the two drainage areas that include the WSF study area. No flooding problems have been reported within the study area (Riverview Subwatershed Storm Water Modeling Report, 2010).

Lower frequency storms can be considered locally when looking at pump station capacities due to the lower probability of the river being at high flood stage during a large local event. Under lower river stage, the gravity pipe system operates without the pumps being utilized. Based on the City’s Riverview Subwatershed Storm Water Modeling Report, Dec. 2010, and current modeling, the Custer subwatershed 2-yr flows are somewhat higher than the Custer pump stations capacity. For the Chester subwatershed 2-yr flows are over triple the Chester pump station capacity. Reviewing the intermediate size storms (e.g., 2-yr event) indicates that if the modeling is accurate, there is potential for flooding during high river stage due to the local drainage areas if no other improvements are made. The extent of flooding should be subject to further analysis. The pump stations both include four pumps. Typically the design flow is considered with at least one pump in reserve.

Below is a summary of information available from existing reports and records of the pump stations. The flows included in the table are using the 2-yr flows as a representative flow, reflecting the compounding probability of the Mississippi River being at a high/flood stage at the same time that a large local storm occurs. Other storm flow rates are available in the 2010 report and should also be considered.

STORMWATER WATERSHED MODELING AND PUMP STATIONS INFORMATION

	Drainage Area (Ac.)*	Peak Flow (cfs)*	Pumping rates	Pump Capacity**	
		2-yr		Low	High
Custer Subwatershed	176	237	gpm/pump	22,000	26,000
			cfs/pump	49	58
			cfs (3 pumps)	147	174
Chester Subwatershed	330	623	gpm/pump	20,000	26,000
			cfs/pump	45	58
			cfs (3 pumps)	135	174

*Riverview Subwatershed Storm Water Modeling Report, Dec. 2010.

**City of St. Paul, Dept. of Public Works, 1995-6 Sewer Lift Station Condition Survey.

SOURCE INFORMATION, ATTACHMENTS:

1. Riverview Subwatershed Storm Water Modeling Report, Dec. 2010, page 12, Table 5: Peak Discharge Rates at Outfall(s) (cfs).
2. Pump Information – Custer Flood Station; City of St. Paul, Dept. of Public Works, 1995-6 Sewer Lift Station Condition Survey
3. Pump Information – Chester Flood Station; City of St. Paul, Dept. of Public Works, 1995-6 Sewer Lift Station Condition Survey

Given that the storm sewer system is designed to carry smaller storms and this is the only means for the flows to reach the pumps, something in the range of 2-yr to 5-yr flows may be reasonable for reviewing flood risk. It is not clear if the modeling takes into consideration in the flows calculated street flooding or surface by-pass in larger storms, and this should be considered in the model review before larger investments in the pump systems are made. Risks still exist for flooding with larger events or concurrent events. This data also does not include the new Atlas 14 rainfall intensity-duration-frequency guidelines for design that are just now being released.

Additional analysis should be done to evaluate mitigation needs:

1. Review if modeled flows are accurate, including calibration if possible
2. Evaluate benefits of implementing practices with development, such as GI, to accomplish corrections of problems via development and retrofits (volume/water quality and rate control)

3. Finally, consider pump station upgrades, if needed, and/or upstream improvements outside the study area

Green infrastructure and stormwater management integrated into public spaces, systematically applied, could likely eliminate the need to upgrade the lift stations.

Design Storm Updates

For both Stormwater Quality/Volume and Stormwater Rate control, another important issue emerging in stormwater management is the need to update the standard design storms used in sizing infrastructure and evaluating risks. Most of the current standards utilize the older Rainfall Frequency Atlas, U.S. Weather Bureau Technical Paper No. 40 (TP 40). It has become more obvious that the old standards for the 2-yr, 100-yr, and other storms, developed in the 1960s, does not reflect current knowledge and databases on rainfall patterns and amounts. There is a large database of additional rainfall information since that time.

Emerging now is the update of these rainfall design guidance data, now distributed as Atlas 14. In the near term it is likely the older TP 40 design storms will be supplanted with the new Atlas 14 data, which implies larger rainfall amounts for the design storms in the Twin Cities area. Note that given the Atlas 14 analysis is still based on past/historic data sets, there is also a consideration of additional analysis or safety factors needed to reflect on-going climate change, which may continue to result in larger rainfall amounts. Changes needed in the design sizing due to climatological changes and variability into the future are not explicitly addressed here and should be analyzed in the future.

Current Regulatory Standards

Current stormwater standards and guidance that apply come from various sources:

- National Pollutant Discharge Elimination System (NPDES) Standards – Federal/MN
- Total Maximum Daily Loads (TMDLs) – Federal/MN
- Minimal Impact Design Standards (MIDS) Guidance - MN
- St. Paul Standards, Chapter 52 - City
- Stormwater Overlay (St. Paul's Sustainable Buildings Policy) - City

Local city standards that should be noted for this area include:

- No new stormwater outfalls through the levee will be allowed.
- Any proposed encroachments into the levee easement or maintenance areas need to be

reviewed by city and USACE on a case-by-case basis.

- Runoff from private lands is allowed to drain to public areas, but not public to private.
- Design criteria for storm sewer – 5-year event for public (check 100-year); 100-year for ponds and the system that carries pond outflows and provide overflow path.
- All private developments are required to own, maintain and operate their own stormwater management facilities within their property.
- Private development may discharge stormwater at the restricted rate of 1.64 cfs/acre to the public storm sewer system.
- Design of all public sewers and facilities must have adequate room, area, ROW, or easements for routine maintenance and operation and future replacement.

"Current conditions" is also relevant for stormwater permitting requirements. In some cases, regulations treat existing development differently. It should be noted that land that is currently vacant at the time of development, would be treated as new development for purposes of the stormwater requirements, even if there was past development on the site. For linear projects, like roads, there can be redevelopment exemptions (e.g., MS4 permit), and this applies in the case where the project is simply replacing the existing road in-kind with the same type and configuration of road section. Resurfacing of roads, such as mill and overlay projects, are typically also exempt.

Another factor in how stormwater standards would apply is the definition of a common plan of development. In the definitions for "common plan of development" derived from the NPDES permitting, all the construction of private development, including multiple phases, and the public infrastructure improvements to support the development, would be considered together as all part of the common plan of development and be subject to current standards.

Stormwater requirements are changing both locally and nationally and are on a path emphasizing volume control. This is beyond the typical rate control and wet ponding used in the past and is not easily addressed by conventional ponding, but rather relies on new techniques. The State of MN, along with many metro area communities and organizations, are in the process of adopting volume standards, such as those outlined in the Minimum Impact Design Standards (MIDS). The MIDS work suggests a volume control of 1.1" of runoff volume over the impervious areas. For reconstruction of linear projects (within the pre-existing footprint), the standard is 0.55" of runoff volume over the impervious areas.

The newly issued NPDES stormwater standard is 1" of volume control off of newly created impervious surfaces, although not applicable to reconstructed impervious surfaces (reconstruction within the pre-existing footprint). There are alternative compliance options for problematic site conditions

(impermeable soils, contamination, shallow groundwater, bedrock, etc.). The system of TMDL-driven regulations are also emerging and are in parallel or "in addition to" those that apply as minimum standards statewide. These TMDL standards are customized to the receiving waterbody and apply to discharges to impaired water for the Mississippi River downstream of this area. The TMDL regulations for the Mississippi River include nutrients, sediments, and fecal coliforms.

Stormwater Quality & Volume Approach

Stormwater management is subject to new standards and expectations as well as new techniques being used. Many of the new approaches are being used and are sometimes referred to as "Green Infrastructure" (GI). Through the visioning and stakeholder process, stakeholders also expressed a preference for updating the system to reflect modern tools, practices, and standards and utilizing GI techniques. The historic approach over the last 50+ years of moving water away from the site underground and "out-of-site" as quickly as possible is no longer the goal. In order to protect the river, address flooding, and treat the water, the approach is completely re-thought, by viewing water as a resource and using natural processes, likes soils and vegetation, to filter the runoff near the source. When properly managed, water quality can be improved, groundwater protected, flooding reduced, and stormwater can be incorporated into the landscape as part of urban amenities.

Reflecting the site's connection to the river, both as a direct discharge and being part of the river corridor, attention has been given to stormwater and Green Infrastructure approaches as it applies to redevelopment. The site also serves as an important link ecologically due to its strategic location between the Mississippi River corridor and the bluffs paralleling the river valley, providing value to a green design approach.

Several aspects of GI lend itself well to multiple uses of urban spaces, which could be thought of as stacked infrastructure, provide opportunities in the West Side Flats to incorporate new stormwater approaches. These approaches provide multiple benefits and can sometimes be more cost effective than traditional approaches. The master plan guiding elements to consider for integrating stormwater into the West Side Flats plan include:

- Flexibility – meeting standards on-site or, when practical and with dedicated funding (capital and O&M), combining into a regionalized system
- Dense development - using street ROW and public park/open spaces that complement the spaces
- Creating multi-value facilities/landscapes – using green/vegetative stormwater practices
- Great River Passage Master Plan – a means to accomplish connections, connectivity, and green fingers

A Comprehensive Stormwater Management Framework

A comprehensive approach can be used for stormwater management as an option for the West Side Flats that provides a hierarchy that can be integrated into the road network system, park systems planning, public art opportunities, bike/pedestrian connectivity, and green connections of the region ("green fingers"). We recommend the framework follow the three-tiered hierarchy:

1. **Green Fingers/Corridors – Regional** park/corridor connections (Great River Passage Master Plan) - Recreation, multi-modal transportation, and ecological connections
    a. **Linear Parks**
    b. **Block Parks**
    c. **Major North-South Roads**
2. **Parkways – Neighborhood** scale connections - Internal and regional (riverfront and Plato Ave.) trail loops, intercepting runoff flow paths
    a. **River Esplanade**
    b. **Fillmore Avenue**
    c. **Plato Boulevard**
3. **Local Green Streets** – Woven into **local** internal street network
    a. **Collector/Commercial Streets**
    b. **Secondary Streets**
    c. **Internal/Service Streets**

Site-by-site improvements under current regulations could be sited and implemented to compliment this framework in terms of locations and methods of treatment. In cases where there is alignment of public and private goals and needs, then the facilities could be designed in conjunction to maximize benefits (e.g., urban green space amenities), maximize highest and best use of the land, and realize economies of scale for cost savings.

One example of how shared facilities can accommodate stormwater needs, plus providing amenities, would be the linear park along the existing rail corridor shown in the Plan. The location along the railroad already represents a place where stormwater is concentrated via a large stormwater system. This provides two advantages: 1) there are existing easements in the area reducing land acquisition needs and 2) for larger, flood flows, excess flow can be routed to the existing storm sewer nearby.

The linear park could include the following key features to provide a maximum of benefits for infrastructure, protection of the river, and amenities for the community. The system in the park could and should be used to treat runoff from a larger area. Assets of the system could include:

- Irrigation system using stormwater for green spaces and turf
    - » *maintained green space*
    - » *reduced irrigation costs*
    - » *treating runoff to meet standards on problem sites (e.g. contaminated)*
- Urban stream as focal point/amenity
    - » *using seeps and springs of the bluff area*
    - » *augmentation with treated stormwater for low cost water source and treatment*
- Urban water park features
    - » *using seeps and springs of the bluff area*
    - » *augmentation with treated stormwater*
- Greenscape stormwater features
    - » *tree trenches*
    - » *raingardens*
    - » *wetlands*

The green infrastructure practices for stormwater in the West Side Flats anticipates using the following stormwater techniques. It is expected in each case, maximizing the integration with art and urban place-making such as streetscapes is vital. The ability to provide valuable urban ecological and green space benefits should be given a priority. The practices that we recommend, in order of preference, are:

a. Reuse in parks/esplanade – irrigation, other
b. Water features in parks– stream, fountains, ponds
c. Tree trenches in streets
d. Raingardens/bioretention – parks, boulevards, medians, bump-outs
e. Permeable pavements
f. Green roofs
g. Reuse – private
h. Infiltration Basins/Chambers
i. Temporary flood storage to match levee pump system capacities

Determining the appropriate techniques are subject to the site's constraints, especially contamination or confining layers. Some of the techniques, such as reuse methods and green roofs, are very flexible and are appropriate with difficult site constraints of contamination and soils. In other cases, such as tree trenches and raingardens, the design can be easily modified to include an under drain to be adaptable to site constraints.

With the extensive use of green infrastructure techniques and some adaption to maximize rate control, it is possible that rate control and any potential localized flooding due to lift station capacities would be addressed. With a volume control standard at the level of 1" over the landscape, it is likely this would have a significant impact on mitigating flow rates in the system. Further analysis would be needed with the city's model to quantify the benefits of the green infrastructure on rate control needs. Precedence exists for rate control being accomplished with GI methods.

Performance Standards

For rate control aspects of the system, and the potential for capacity issues at the lift stations, the following process can be used to evaluate rate control issues before additional rate control standards are pursued.

1. Monitor flows in system to calibrate model
2. Quantify benefits of green infrastructure on peak flow reductions
3. Upgrade the Q2 and Q100 analysis using the new Atlas 14 rainfall frequency information and further variability due to future climatic changes as the basis of design
4. Determine if pump upgrades are necessary, after considering upstream GI practices and/or city's rate control standard (Q100 1.64 cfs/ac) (and phasing considerations)
5. Consider if a Q2 standard should also be added (in addition to the Q100)
6. Develop phasing strategies for the system: to reduce flood risks and phase in infrastructure financial investments

While site-by-site implementation is the default approach, shared facilities might be more desirable if issues can be resolved for who builds it, who owns it, how it is funded, and who maintains it. For the near term, the following best describes how projects should approach meeting stormwater requirements within the WSF.

PRIVATE:

- Meet local and state stormwater management requirements on-site

- Design visible/above ground stormwater facilities as the best practice
- Incorportate rain gardens and bio-retention systems
- Encourage the use of green roofs in this urban/dense setting
- Promote stormwater harvesting and reuse
- Utilize regional facilities that are made available off-site to mitigate impacts as directed by the city

PUBLIC:

- Meet local and state stormwater management requirements when applicable
- Design visible/above ground stormwater facilities as an above-standard best practice which provides public multiple benefits
- Install tree trenches as part of new and reconstructed streets with planted boulevards to mitigate right-of-way stormwater impacts
- Install non-traditional swales with natural meanders and check dams to slow stormwater runoff and create natural visual amentities

SHARED (IF THE FOLLOWING CONDITIONS EXIST, A SHARED SYSTEM MAY BE FEASIBLE):

- Development with highly urban densities and place-making opportunities
- Efficiency and cost savings with grouped/comprehensive systems
- Multiple uses and enhancement of the public spaces
- Lands are available and physically feasible (streets, streetscapes, parks)
- Addresses water quality, volume, and rate/flood control needs

The following factors should be considered if standards are modified for new development/ redevelopment to address new volume control standards:

- **Volume control standards consistent with MIDS guidance**
- **Pretreatment standard for infiltration/filtration facilities**
- **Alternative compliance, such as filtration multiplier, for constrained sites**
- **Grouped treatment flexibility**

Some exceptions and alternative compliance may apply for situations such as linear projects and physical site constraints.

Some or all of the stormwater treatment could be combined within systematic/regionalized systems, primarily in publicly-held areas. However, a secure funding mechanism should accompany any

grouped infrastructure approach, which would include upfront development charges as well as utility fees for on-going maintenance.

No financial mechanism has yet been identified to advance land acquisition or infrastructure improvements. The City's PED department may investigate further funding opportunities and or mechanisms. No feasibility analysis has been completed to determine capital cost comparisons, constructability, or potential cost recovery allocations and should be addressed in the future.

Implementation

1. FRAMEWORK FOR SHARED PUBLIC-PRIVATE PARTNERSHIP

Develop the specifics for a framework to structure a public-private partnership for the design and construction of stormwater infrastructure, including:

- revenue generation mechanism such as a tax district
- cost allocation and recovery methods
- license agreement(s) for ownership and maintenance
- plan review and approval

2. SHARED STORMWATER FACILITIES FEASIBILITY STUDY

The West Side Flats presents a unique opportunity to explore ideas and scenarios of shared public-private stormwater infrastructure that could greatly contribute to the vision of the West Side Flats. These ideas have been expressed throughout the Master Plan, however, they do not fit neatly into the City's current regulations and guidelines. Similar ideas of shared infrastructure are being explored by the City in current initiatives for the Central Corridor, but a specific feasibility study of the costs/benefits of this approach in the West Side Flats would be a logical next step for this Master Plan, and potentially provide a precedent for similar projects within the study area or city.

Some of the expected benefits of a shared stormwater infrastructure at the West Side Flats would be to:

- Provide stormwater treatment that will meet expected future regulations in the area
- Enhance the long-term sustainability of public open spaces in the neighborhood – irrigation, maintenance, etc.
- Stack functions into public open space, freeing up land area for elements that will contribute

to several other goals of the Master Plan:

a. Higher densities per block
b. More inviting pedestrian spaces (raingardens, tree trenches, etc.)
c. Increased tree health and canopy size
d. Identifiable public open spaces
e. Stronger connections to the river

This configuration of public and private infrastructure relationships does not currently exist in the City and there are few Regional, cold-climate, precedents – making this type of feasibility study more valuable for the City. A couple of scenarios should be explored in this feasibility study that would compare typical mixed-use block that would be expected in the West Side Flats:

	PRIVATE (DEVELOPMENT)	PUBLIC (NEW ROADS, IMPERVIOUS)	PRIVATE - PUBLIC SHARED
Treatment Areas			
On-Site Only	traditional development model		
Street & R.O.W.	utilizing boulevard space and ROW	utilizing boulevard space and ROW	utilizing boulevard space and ROW
Parks/ Open Space – Larger Regional Facilities	Nearby park space	Nearby park space treats only City stormwater	Nearby park space

The cost/ benefits of each scenario could be compared to a traditional scenario and to each other. Factors would include initial construction costs, long term maintenance costs, expected revenue/ tax base of developments, and water quality benefits. Recommendations for financing the construction and long term maintenance should also be provided – utilizing any precedents from ongoing work in the City, or other national examples.

3. ELABORATE A DEVELOPMENT PROGRAM AND FEASIBILITY PLAN FOR PHASED IMPLEMENTATION

In order to activate development in the area and establish the tone and standards desired for the WSF, some public investment will likely be necessary. Creating a development program is part of that process, that will map out in greater detail the infrastructure needs, such as regional park/stromwater/

art facilities, the riverfront esplanade, and major road corridors utilizing GI techniques is needed. In order to develop the development program, the next level of analysis will be needed, providing a feasibility analysis including actual costs needed and staging plans to enable development to proceed wisely and efficiently in the area.

4. CONSISTENT ART THEME INTEGRATED INTO STORMWATER

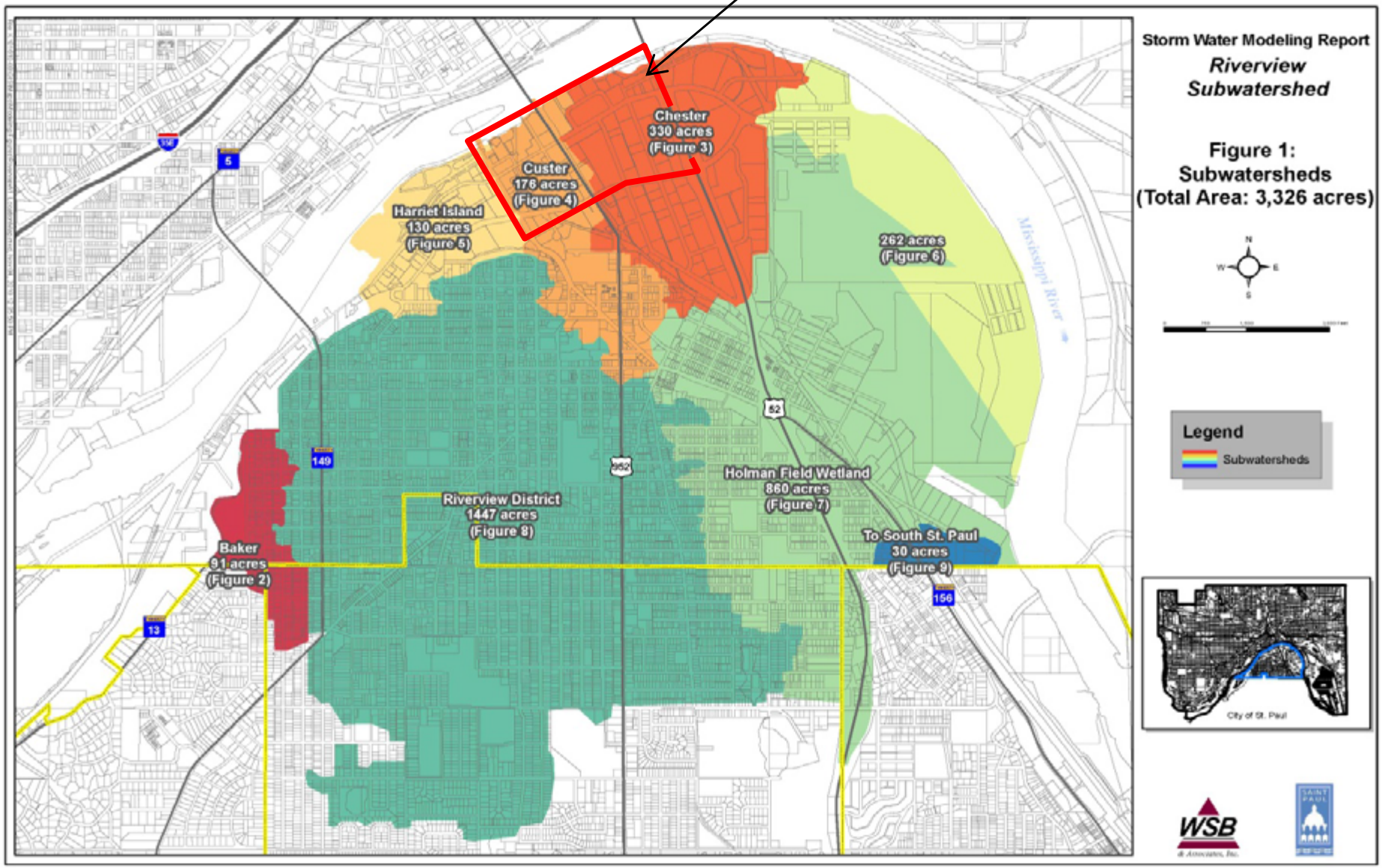
Develop and promote a consistent public art theme that can integrate with stormwater management. Consider the proposed FLUXion GARTens by Craig David, as either a model to replicate or for implementation. Regional park areas and water features offer other prime opportunities to highlight water integrated into an public arts framework.

5. BUILD ON EXISTING GUIDANCE MATERIALS

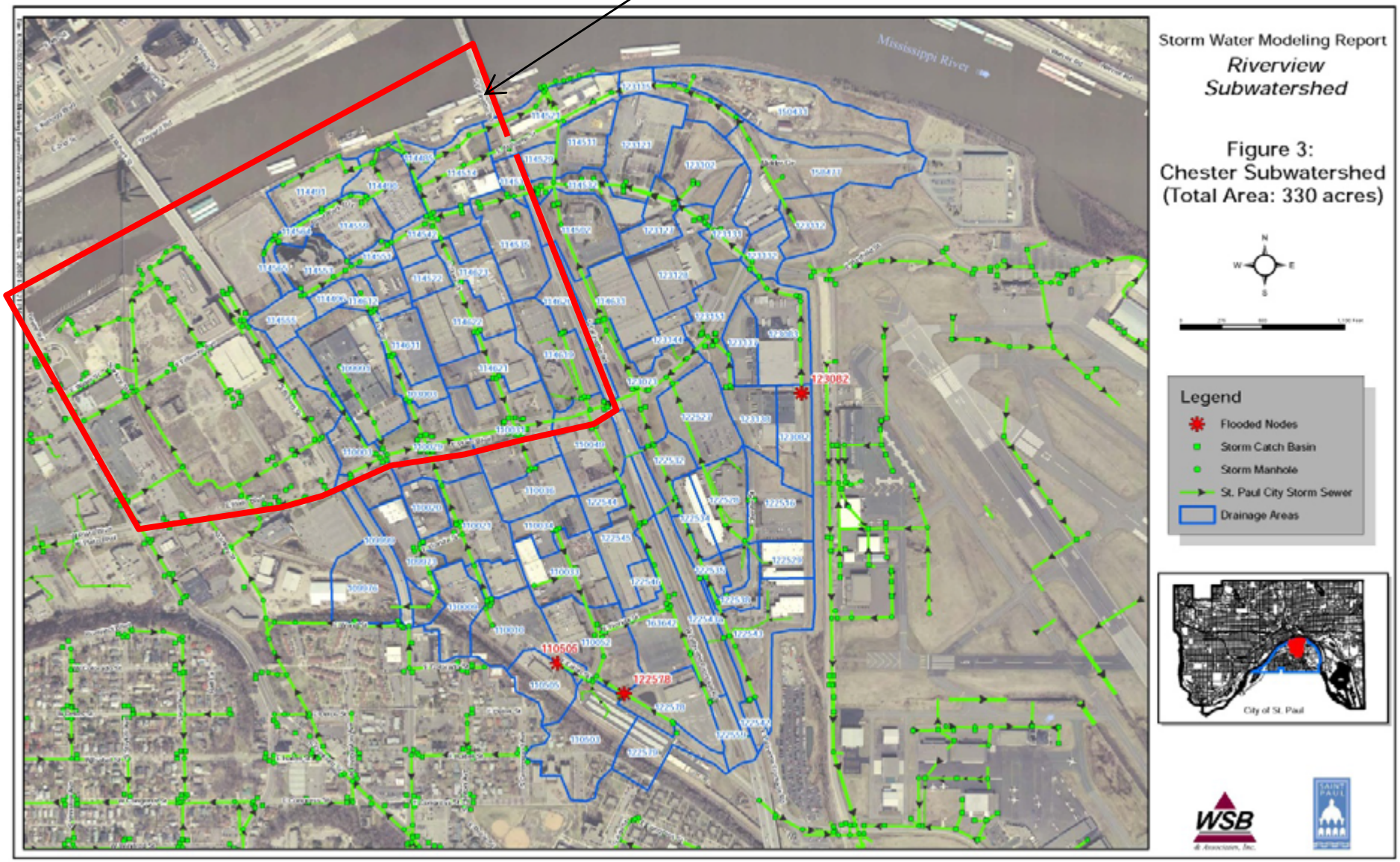
Utilize and/or modify existing guidance material as needed to help inform stormwater compliance at development sites. Examples include:

- Water Quality Manual (site scale, block scale, neighborhood scale)
- Central Corridor Transit-Oriented Development Guidebook

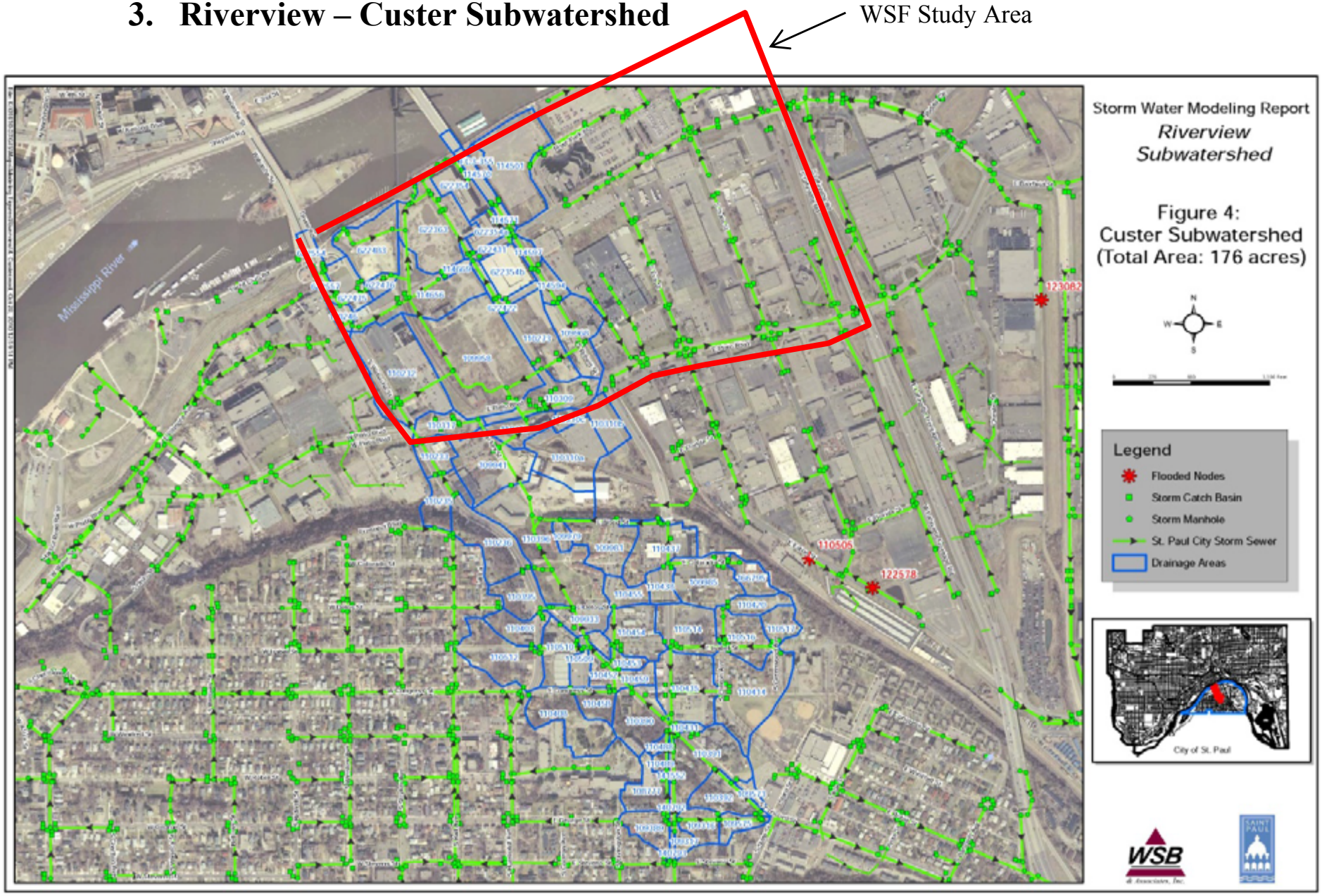
1. Riverview Subwatershed



2. Riverview – Chester Subwatershed



3. Riverview – Custer Subwatershed



Attachments

- **Summary of Modelled Stormwater Flows (from Riverview Subwatershed Storm Water Modeling Report, 2010)**
- **Lift Station Data (from St. Paul Public Works)**
- **Table 6: Average Annual Pollutant Loading (1969-1988) (from Riverview Subwatershed Storm Water Modeling Report, 2010)**
- **Table 7: Average Annual Device Removals (1969-1988) (from Riverview Subwatershed Storm Water Modeling Report, 2010)**

4.0 RESULTS/OBSERVATIONS

This section provides a discussion for the results of the XP-SWMM and P8 model simulations. The hydraulic analysis addresses significant flooding areas and the water quality analysis predicts the average annual pollutant loads and the performance of existing treatment infrastructure.

4.1 Hydraulic Analysis (XP-SWMM)

Tables 4 and **5** provide the total storm water runoff volumes and maximum discharge rates from each storm sewer system based on the results of the XP-SWMM model:

Table 4: Total Runoff Volume (cu-ft)

Subwatershed	1-inch storm event	2-inch storm event	2-year storm event	5-year storm event	10-year storm event	100-year storm event
Baker	58,796	210,536	377,042	567,102	720,206	1,185,583
Chester	564,746	1,384,044	2,132,466	2,931,064	3,553,157	5,387,114
Custer	241,448	631,631	1,006,145	1,414,009	1,735,145	2,691,511
Harriet Island	151,954	416,999	680,520	971,628	1,202,557	1,895,219
Holmen Field Wetland	751,538	2,456,558	4,229,633	6,212,476	7,792,833	12,547,813
Holmen Field Airport	131,418	548,171	1,021,852	1,568,394	2,010,838	3,361,297
Riverview District	1,1173,978	3,890,103	6,745,076	9,950,025	12,508,940	20,218,205
To South St. Paul	16,464	66,253	121,312	184,278	235,064	389,713
TOTAL	**13,090,342**	**9,604,295**	**16,314,046**	**23,798,976**	**29,758,740**	**47,676,455**

Table 5: Peak Discharge Rate at Outfall(s) (cfs)

Subwatershed	2-year storm event	5-year storm event	10-year storm event	100-year storm event
Baker	35	35	35	35
Chester	623	760	899	1,035
Custer	237	350	420	495
Harriet Island	178	245	297	379
Holmen Field Wetland	153	287	417	858
Riverview District	1,207	1,254	1,270	1,287

Flooding was evaluated as part of this analysis. Flooding occurring as a result of limited catch basin inlet capacity has been evaluated separately from flooding occurring as a result of limited storm sewer pipe capacity. The tables in **Appendix D** list the results of the catch basin analysis. This analysis assumes a constant rate of discharge per catch basin within each subwatershed. Runoff rates that exceeded the calculated combined catch basin inlet capacity are highlighted in red.

To determine which areas may flood due to pipe restrictions, the depth of water above the manhole rim (surcharge depth) was calculated in the model. These results were tabulated and are found in **Appendix B**. Surcharging simulated in the model accounts for flooding resulting from limitations in pipe capacity only as opposed to catch basin grate clogging, insufficient number of grates, etc. A discussion of storm sewer surcharging is provided below according to major storm sewer systems. The 5-year storm event is the City's

PUMP INFORMATION

Station CHESTER FLOOD STATION

Type of Construction wet well/dry well

Number of Pumps 4

Manufacturer Cascade Pump Company, Fairbanks-Morse Motors (1960s)

	Pump 1	Pump 2	Pump 3	Pump 4
Pump Model	36P	36P	36P	36P
Pump Installation Date	1993	1993	1993	1993
Serial Numbers	14276	14277	14278	14279
Impeller No. (& Size)				
Observed Discharge (gpm) (1996)				

Design Discharge 20,000 gpm 26,000 gpm

Expected Discharge from Impeller Curve Based on Design Conditions (approx) n/a

Total Dynamic Head at Design Discharge 22.7' 10'

Static Head (approx.) (pumps off elevation to discharge elevation)

Motor Speed 705 rpm

Horsepower 150

Electrical Requirements 460/60/3 ph.

Pump Weight 3500 lbs.

Motor Weight 2300 lbs.

Pump Discharge Size 30"

Pump Supplier Quality Flow Systems
Eden Prairie, MN

644-9445
Attn: Mike Rodger

PUMP INFORMATION

Station CUSTER FLOOD STATION

Type of Construction subersible, propeller

Number of Pumps 4

Manufacturer Flygt

	Pump 1	Pump 2	Pump 3	Pump 4
Pump Model	PL 7081	PL 7081	PL 7081	PL 7081
Pump Installation Date	1994	1994	1994	1994
Serial Numbers	735-4481001	735-4481002	735-4481003	735-4481004
Impeller No. (& Size)	735- 24"	735- 24"	735- 24"	735- 24"
Observed Discharge (gpm) (1996)				

Design Discharge 22,000 gpm 26,000 gpm

Expected Discharge from Impeller Curve Based on Design Conditions (approx) n/a

Total Dynamic Head at Design Discharge 25' 9'

Static Head (approx.) n/a (pumps off elevation to discharge elevation)

Motor Speed 885 rpm

Horsepower 170

Electrical Requirements 480/60/3 ph.

Pump Weight 4000 lbs.

Motor Weight n/a

Pump Discharge Size

Pump Supplier Waldor Pump & Equipment Co.
9700 Humboldt Ave. So.
Minneapolis, MN 55431
612-884-5394

pipe at this location. As a result, storm water surcharges this node and flows northward along Bidwell Street.

Nodes 109206 and 109207 represent storm sewer junctions along the Bidwell Street system between Sydney Street and Belvedere Street. The storm sewer depth drops from about 25 feet to about 13 feet in this location. As a result, the upstream hydraulic gradeline causes storm water to surcharge the system here.

Node 109640 represents a junction in the Riverview District storm tunnel at Water Street. This node is located at the bottom of the bluff. The depth of the tunnel changes from about 160 feet to about 15 feet in this location. As a result, the upstream hydraulic gradeline causes storm water to surcharge the system here.

Nodes 106644, 106670, 106660, 106669, 109511, 109501, 109382, 109381, 109591, 109589, 109586, 109581, 109582, 109584, and 109547 represent storm sewer junctions along Robert Street and State Street. Flooding originates at the intersection of Annapolis Street and Livingston Avenue where three storm sewer pipes converge. One of these pipes is a 30" pipe which receives drainage from West St. Paul. Insufficient pipe capacity in the Livingston Avenue storm sewer causes over 100 cfs to flow through the street eastward to the Robert Street storm sewer during the 5-year storm event. This flow is propagated along Robert Street and State Street because the storm sewer systems function at capacity during the 5-year storm event. This flooding may be addressed by increasing the capacity of the Livingston Avenue storm sewer.

Nodes 110477 and 110475 represent junctions along the Wabasha Street storm sewer system. The storm sewer decreases in diameter from 27" to 18", then increases to 24" between George Street and Congress Street. This does not provide sufficient increases in the capacity of the system to accommodate additional flows being received along Wabasha Street. In addition, the system receives significant surcharge flows from the Hall Avenue storm sewer to the west.

4.2 Water Quality Analysis (P8)

The Riverview subwatershed is limited with respect the number of storm water management BMPs available to treat storm water runoff prior to discharge to the Mississippi River. There are no BMPs within this subwatershed that provide substantial removal of pollutants through the system aside from a few wet and dry detention ponds within the airport.

The model has been constructed to calculate the total pollutant loads within each of the 8 major storm sewer systems within the Riverview subwatershed. The results of the water quality modeling in P8 within the study area provide average annual pollutant loads over a 20 year period (1968 – 1988). These results are shown below in **Tables 6** and 7 and in **Appendix G**:

Table 6: Average Annual Pollutant Loading (1969-1988)

Subwatershed Name	Tributary Area (ac)	Runoff (ac-ft/yr)	TSS (lbs/yr)	TP (lbs/yr)

Baker	91	55.7	47,139	70.4
Chester	330	434.5	320,864	497.1
Custer	176	192.7	146,432	225.0
Harriet Island	130	127.2	98,471	150.5
Holman Field Airport	262	147.3	130,466	192.6
Holman Field Wetland	860	561.6	468,269	701.9
Riverview District	1,447	1,470.7	1,127,901	1731.4
To South St. Paul	30	32.4	25,310	38.7
TOTAL	**3,326**	**3,022.1**	**1,976,138**	**3,237.9**

Table 7: Average Annual Device Removals (1969-1988)

Device Name	Subwatershed Name	Discharges To	Tributary Area (ac)	TSS (lbs/yr)	TP (lbs/yr)
HF1	Holman Field Wetland	HF2	385.6	251,872	243.2
HF8	Holman Field Wetland	HF2	83.2	52,778	54.4
HF11	Holman Field Wetland	HF2	96.2	22,739	15.9
HF2	Holman Field Wetland	Mississippi R.	139.8	36,500	30.5
Overall HF	**Holman Field Wetland**	**Mississippi R.**	**139.8**	**363,889**	**344.0**
Mud Lake	Riverview District	Mississippi R.	34.2	13,194	13.4
Lily Lake	Riverview District	Mississippi R.	22.3	11,630	12.3

*These values may be subtracted from the corresponding subwatershed loads in Table 6 to calculate annual average output to the Mississippi River.

SANITARY SEWER SYSTEM ANALYSIS

Purpose

The purpose of this memorandum is to provide a preliminary assessment of available sanitary sewer capacity at the West Side Flats development in light of its intended use (see Figure 1 – Development Key Map, and Attachment A – Future Development Program Summary).

Assumptions

The following are the assumptions used in this evaluation. The values are typical industry and literature standards frequently used in Minnesota for urban sanitary sewer capacity calculations. These assumptions have been revised by the City of Saint Paul Public Works Department.

- **Development Program:** Land uses and densities (based on maximum building heights) as provided by HKgi (see Attachment A – Future Development Program Summary)
- **Average persons per residential unit:** 2.5 persons/unit
- **Average waste water generation:** 75 GPD/person
- **I/I allowance :** 15 GPD/person
- **Total sewer flow/person:** (75 + 15) = 90 GPD/person
- **Total sewer flow/res. unit:** (90 GPD/person X 2.5 persons/res. unit) = 225 GPD/res. Unit
- **Commercial/Retail:** 1,500 Gallons/Acre/Day
- **Commercial/Office:** 1,200 Gallons/Acre/Day
- **Commercial/Light Industrial/Office:** 1,500 Gallons/Acre/Day
- **Industrial (not wet industry):** 2,000 Gallons/Acre/Day
- **Park:** 100 Gallons/Acre/Day
- **Design Peak Factor (flow):** Factor of 5 based on sewer flow monitoring and rain data collected in the area, as well as on a sanitary sewer modeling effort conducted by the City of St. Paul.
- **Sewer sizes and slopes:** As-built pipe sizes and slopes (as provided by the City of St. Paul) where used inside the West Side Flats development area. As-built sizes and an average slope of 0.4% (conservative assumption and consistent with most of the local sanitary sewer network) were used for pipes contributing to the West Side Flats network, but outside the West Side Flats development area.
- **Manning's Roughness (n):** 0.013

Sewer Flows (Average and Peak)

Based on the above assumptions, Table 1 shows the average and peak sanitary flows that can be expected out of each one of the blocks illustrated in Figure 1.

Table1 – Average and Peak Sewer Flows by Block

Block Number	Block Size (Acres)	Average Sewer Flow (GPD)	Peak Sewer Flow (GPD)
Block 1	2.45	47,460	237,300
Block 2	1.65	37,825	189,125
Block 3	2.3	52,450	262,250
Block 4	3.8	81,180	405,900
Block 5	2.5	56,250	281,250
Block 6	2.64	58,500	292,500
Block 7	1.7	38,250	191,250
Block 8	3.5	11,740	58,700
Block 9	1.75	Included in Block 8	Included in Block 8
Block 10	2.1	47,950	239,750
Block 11	2.0	68,200	341,000
Block 12	6.88	135,700	678,500
Block 13	1.75	6,210	31,050
Block 14	1.9	7,600	38,000
Block 15	1.75	10,340	51,700
Block 16	2.6	11,740	58,700
Block 17	2.6	6,800	34,000
Block 18	1.75	6,900	34,500
Block 19	5.0	101,600	508,000
Block 20	1.65	Included in Block 16	Included in Block 16
Block 21	4.4	13,800	69,000
Block 22	4.8	15,500	77,500
Block 23	4.8	15,500	77,500
Block 24	6.75	20,660	103,300
Block 25	2.5	7,575	37,875
Block 26	3.6	16,070	80,350
Block 27	4.6	19,510	97,550
Block 28	4.5	19,510	97,550
TOTAL	**88.22**	**914,820**	**4,574,100**

Capacity Limitations of Existing Infrastructure

Based on existing sanitary sewer infrastructure in the West Side Flats development area and on existing or potential connections to the sanitary sewer network, sewer collection areas and general direction of sanitary sewer flows were determined (Figure 2).

Peak sewer flows were compared to existing sewer capacity based on the guidelines established in the Standard Handbook for Civil Engineers. Sewers bellow 15" in diameter were assessed/designed to

convey peak flows under "half full conditions". Sewers from 15" in diameter and up were assessed/designed to convey peak flows under "three-quarters full conditions". Bellow capacity sewer sections are listed in Table 2 and shown in Figure 3. Suggested sanitary sewer and lift station upgrades are also displayed in Table 2 and Figure 3.

Table 2 – Under Capacity Infrastructure and Suggested Upgrades

Sanitary Sewer Location	Existing Sanitary Sewer Size	Available/Firm Capacity (MGD)	Needed Capacity (MGD)	Suggested Upgrade
River Park Plaza (Between Blocks 12 & 19) to River Park Plaza eastern curve	10" PVC	0.44	0.71	12"
River Park Plaza curve to Fillmore Ave. at State St.	10" PVC	0.44 - 0.7	0.97 - 1.22	15"
Fillmore Ave. at State St. to State St. at Fairfield Ave.	10" DIP	0.46	1.45	15"
State St. at Fairfield Ave. to State St. at Plato Blvd.	10" PVC	0.46	1.67	15"
Plato Blvd. (between State St. and Eva St.) to Eva St.	(1) 20" DIP	4.9	6.2	24"
Plato Blvd. at Eva St. to Plato Blvd. Lift Station	(1) 20" DIP	4.6	6.9	24"
Force Main from Plato Blvd. Lift Station to Robert St.	12" DIP Force Main	———	6.9	18" Force Main
Plato Blvd. at Robert St. to Plato Blvd. between Blocks 7 & 11 (Gravity from Plato Blvd. L. S.)	18" DIP and 21" DIP	(2) ———	6.9	(2) 24"
Plato Blvd. Lift Station	———	(3) 1,450 gpm	4,730 gpm	(5) Add 2 pumps at 1,450 gpm or higher
Riverview Lift Station	———	(4) 4,000 gpm	10,500 gpm	(5) Add 3 pumps at 2,000 gpm or higher

(1) Upsizing the existing 20" DIP from between State St. and Eva St. to the Plato Blvd. Lift Station may require complete reconstruction of the road and other utilities due to depths of about 26' of the existing sanitary sewers.

(2) 18" DIP needs upgrade to a 24" PVC. For the 21" DIP, pipe profile (slope) is not available. If slope is at or exceeds 0.5%, upgrade may not be necessary. If slope is less that 0.5%, upgrade by a 24" PVC is recommended.

(3) 1 pump operating, 1 spare.

(4) 2 pumps operating, 1 spare.

(5) Adding capacity by just adding pumps at the Plato and Riverview Lift Stations will be difficult and likely unfeasible due to size limitations of both existing dry and wet wells.

Based on note (5) of Table 2, two new lift stations would likely need to be constructed to accommodate the projected sanitary flows from the West Side Flats build out. The potential future design of the lift stations and connections to the MCES's siphon valve box structure, by Riverview, would need to be closely coordinated with the Metropolitan Council.

Suggestions for infrastructure upgrade are based exclusively on capacity issues assuming no other problems are encountered (i.e. aging or cracked pipes, excessive I/I, sediments, obstructive debris, etc.). Televising being undertaken by the City of St. Paul will shed some light on these maintenance/replacement issues. Another variable that could affect the need to update the Sanitary Sewer system are changes in the grid pattern and location of public easements. If existing sewer lines can be utilized in the redevelopment, that may be beneficial, but if new sewer lines must be installed, that should be a secondary concern, in most cases, to a development pattern that is preferred for the area.

Capacity in the Metropolitan Council's regional system and syphon under the Mississippi River are not addressed here and must be verified with the Metropolitan Council.

Guidance in the updated Master Plan intentionally provides some flexibility in the future development pattern. Based on the unknowns of the development patterns, there is some uncertainty in predicting the ultimate sanitary sewer capacities. Sanitary sewer issues and constraints to be considered with new development:

- Utilize existing sanitary sewers where feasible (condition, size, and location)
- Verify condition of existing sanitary sewer pipes – contingent on completion of video review
- Review capacities of sanitary sewer pipes under new development densities
- Verify ownership of existing sanitary sewers
- Determine if new street grid is compatible with existing sanitary sewers
- Review lift station capacities under new development densities
- Utilize the existing access point into the Met Council river syphon at the existing location

Next Steps

A final development program and associated zoning codes are needed to better define the likely impacts to the existing sanitary sewer system. The sanitary sewer network could then be modeled to verify capacity issues when replacement is considered. The more detailed analysis is warranted to confirm these preliminary results once the area is undergoing redevelopment activity.

Attachment A.

WEST SIDE FLATS
Future Development Program Summary
DRAFT 12.2.13

Block 1
Site size: 2.45 ac
Land uses/bldg. program: Residential (210 units)
Commercial/retail (6,000 sf)

Block 2
Site size: 1.65 ac
Land uses/bldg. program: Residential (165 units)
Commercial/retail (20,000 sf)

Block 3
Site size: 2.30 ac
Land uses/bldg. program: Residential (230 units)
Commercial/retail (20,000 sf)

Block 4
Site size: 3.80 ac
Land uses/bldg. program: Residential (360 units)
Commercial/retail (5,000 sf)

Block 5
Site size: 2.50 ac
Land uses/bldg. program: Residential (250 units)

Block 6
Site size: 2.64 ac
Land uses/bldg. program: Residential (260 units)

Block 7
Site size: 1.70 ac
Land uses/bldg. program: Residential (170 units)

Block 8
Site size: 3.50 ac
Land uses/bldg. program: Commercial/office (350,000 sf)

Block 9
Site size: 1.75 ac
Land uses/bldg. program: Parking ramp for Block 8 (approx. 1,200 spaces)

Block 10
Site size: 2.10 ac
Land uses/bldg. program: Residential (210 units)
Commercial/retail (20,000 sf)

Block 11
Site size: 2.00 ac
Land uses/bldg. program: Residential (300 units)
Commercial/retail (20,000 sf)

Block 12
Site size: 6.88 ac
Land uses/bldg. program: Residential (600 units)
Commercial/retail (20,000 sf)

Block 13
Site size: 1.75 ac
Land uses/bldg. program: Commercial/office (200,000 sf)
Commercial/retail (20,000 sf)

Block 14
Site size: 1.90 ac
Land uses/bldg. program: Commercial/office (250,000 sf)
Commercial/retail (20,000 sf)

Block 15
Site size: 1.75 ac
Land uses/bldg. program: Commercial/office (350,000 sf)
Commercial/retail (20,000 sf)

Block 16
Site size: 2.60 ac
Land uses/bldg. program: Commercial/office (350,000 sf)

Block 17
Site size: 2.60 ac
Land uses/bldg. program: Commercial/office (240,000 sf)

Block 18
Site size: 1.75 ac
Land uses/bldg. program: Commercial/light industrial/office (200,000 sf)

Block 19
Site size: 5.00 ac
Land uses/bldg. program: Residential (450 units)
Commercial/retail (10,000 sf)

Block 20
Site size: 1.65 ac
Land uses/bldg. program: Parking ramp for Block 16 (approx. 1,200 spaces)

Block 21
Site size: 4.40 ac
Land uses/bldg. program: Commercial/light industrial/office (400,000 sf)

Block 22
Site size: 4.80 ac
Land uses/bldg. program: Commercial/light industrial/office (450,000 sf)

Block 23
Site size: 4.80 ac
Land uses/bldg. program: Commercial/light industrial/office (450,000 sf)

Block 24
Site size: 6.75 ac
Land uses/bldg. program: Industrial (*150,000 sf – 450,000 sf)

Block 25
Site size: 2.50 ac
Land uses/bldg. program: Industrial (*55,000 sf – 165,000 sf)

Block 26
Site size: 3.60 ac
Land uses/bldg. program: Industrial (*80,000 sf – 350,000 sf)

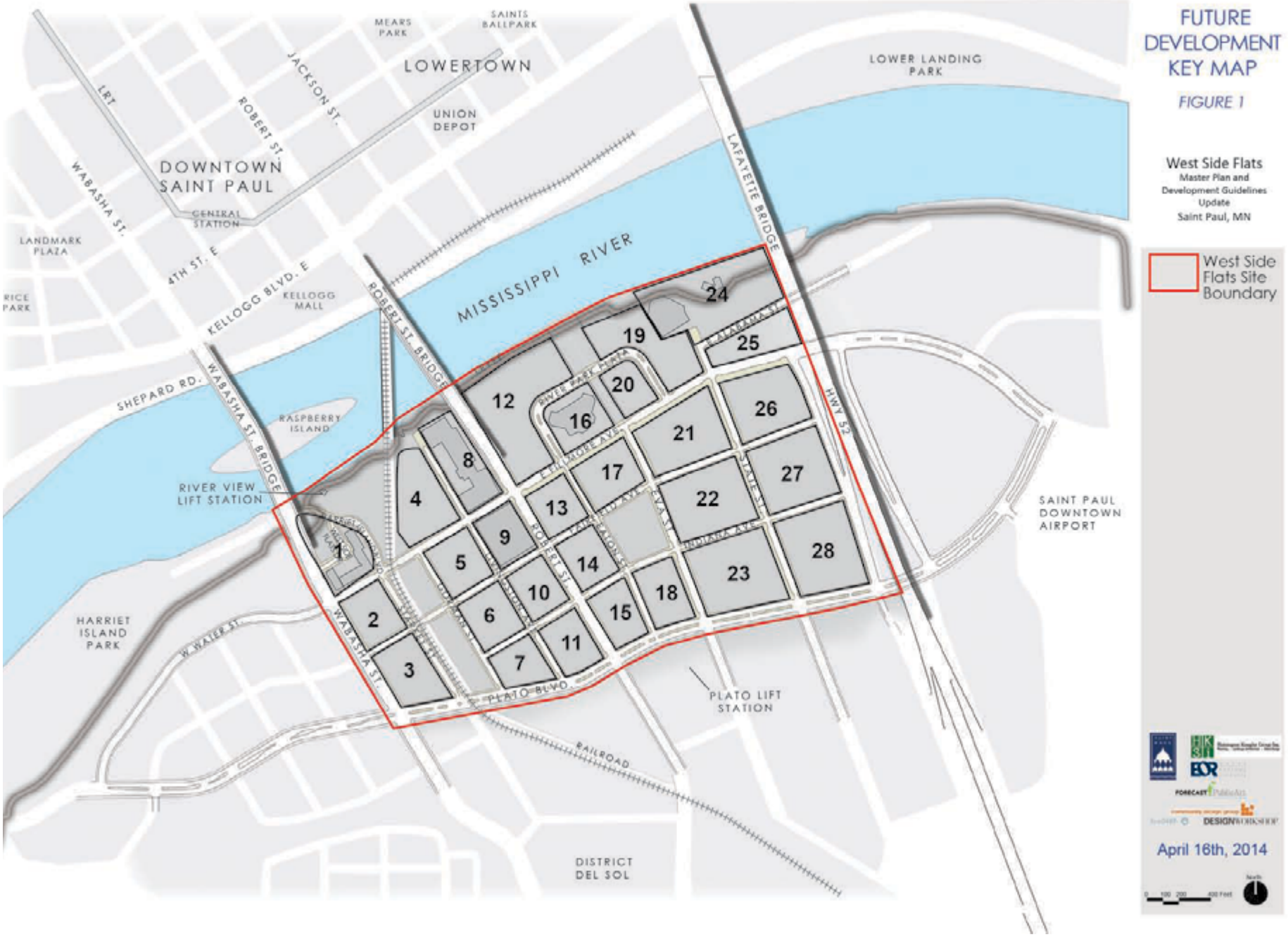
Block 27
Site size: 4.60 ac
Land uses/bldg. program: Industrial (*100,000 sf – 425,000 sf)

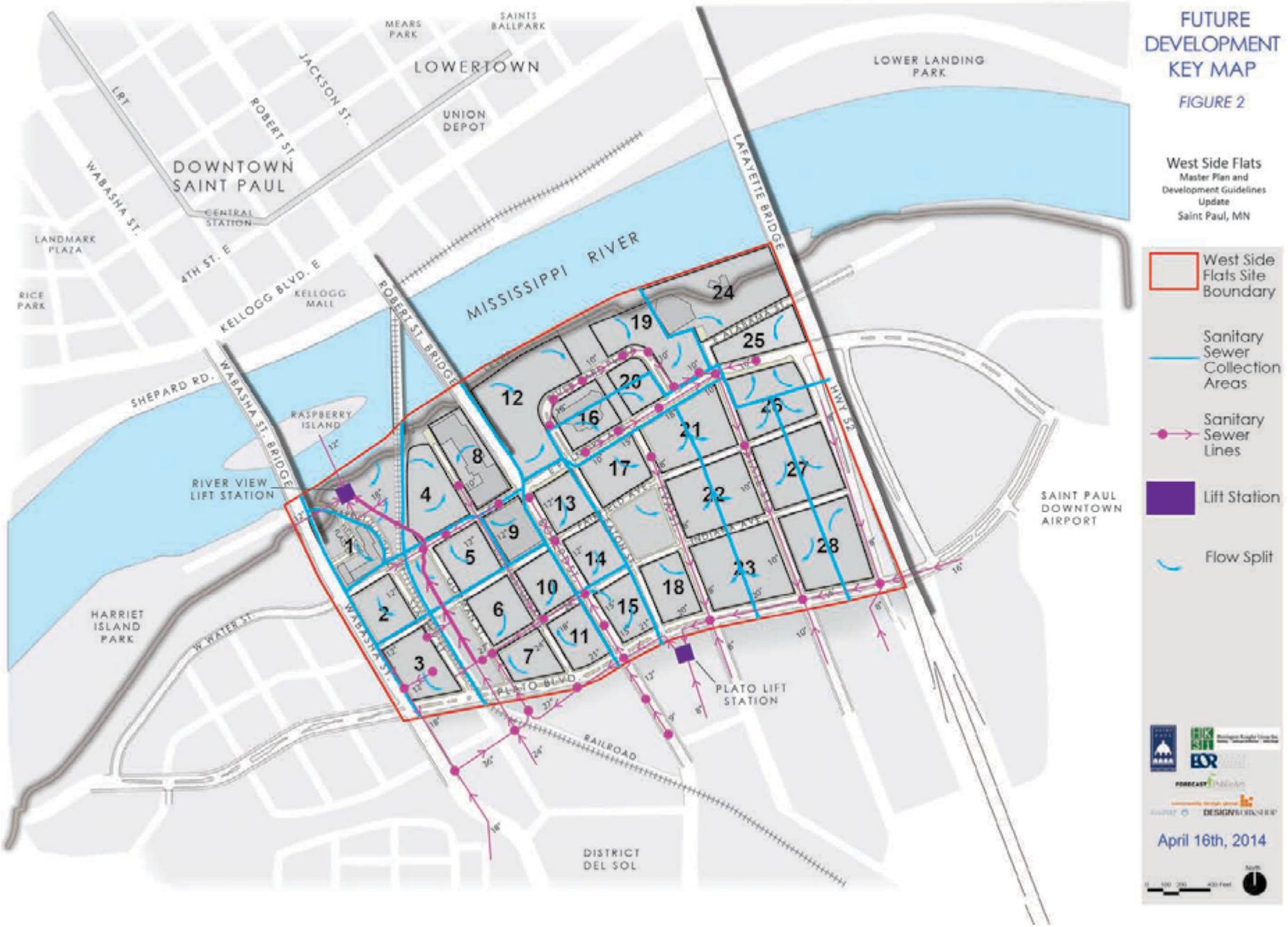
Block 28
Site size: 4.50 ac
Land uses/bldg. program: Industrial (*100,000 sf – 425,000 sf)

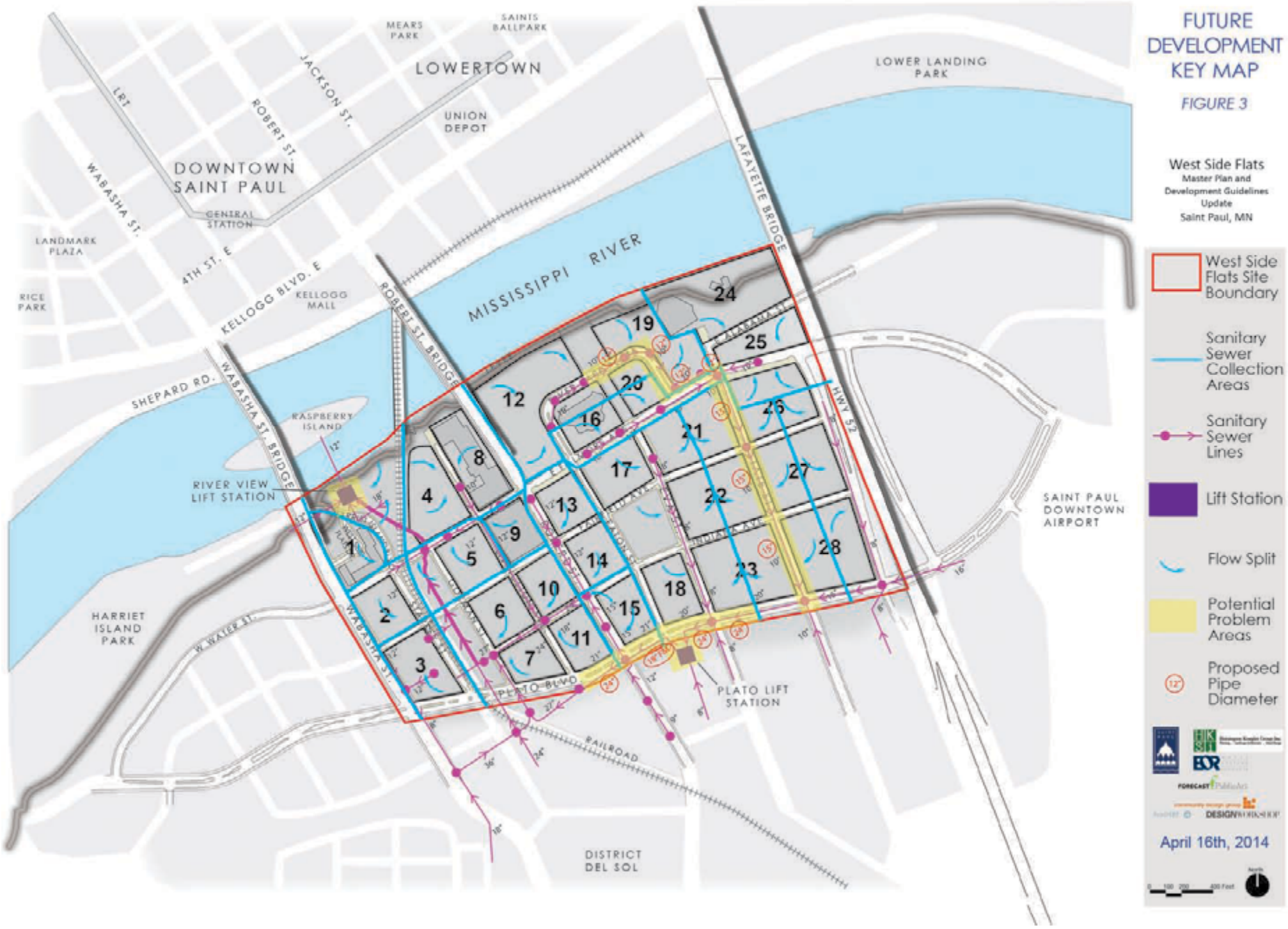
DEVELOPMENT SUMMARY

Land Use	Units/Square Footage
Residential	3,205 units
Commercial/Retail	181,000 sf
Commercial/Office	1,740,000 sf
Commercial/Office/Light Industrial	1,500,000 sf
Industrial	485,000 sf – 1,815,000 sf *

*: *The industrial sites were looked at based upon urban industrial standards (low end of spectrum) up to the density allowed based upon building heights, thus the wide range.*


FUTURE DEVELOPMENT KEY MAP
FIGURE 1
West Side Flats
Master Plan and Development Guidelines Update
Saint Paul, MN
West Side Flats Site Boundary
April 16th, 2014
MEARS PARK
SAINTS BALLPARK
LOWERTOWN
LOWER LANDING PARK
LRT
JACKSON ST.
ROBERT ST.
UNION DEPOT
WABASHA ST.
DOWNTOWN SAINT PAUL
CENTRAL STATION
LANDMARK PLAZA
4TH ST. E
KELLOGG BLVD. E
KELLOGG MALL
RICE PARK
MISSISSIPPI RIVER
LAFAYETTE BRIDGE
ROBERT ST. BRIDGE
SHEPARD RD.
WABASHA ST. BRIDGE
RASPBERRY ISLAND
RIVER VIEW LIFT STATION
HWY 52
SAINT PAUL DOWNTOWN AIRPORT
HARRIET ISLAND PARK
W WATER ST
PLATO BLVD
PLATO LIFT STATION
RAILROAD
DISTRICT DEL SOL
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FUTURE DEVELOPMENT KEY MAP
FIGURE 2
West Side Flats
Master Plan and Development Guidelines Update
Saint Paul, MN
West Side Flats Site Boundary
Sanitary Sewer Collection Areas
Sanitary Sewer Lines
Lift Station
Flow Split
April 16th, 2014
MEARS PARK
SAINTS BALLPARK
LOWERTOWN
LOWER LANDING PARK
UNION DEPOT
JACKSON ST.
ROBERT ST
LRT
WABASHA ST.
DOWNTOWN SAINT PAUL
CENTRAL STATION
LANDMARK PLAZA
4TH ST. E
KELLOGG BLVD. E
KELLOGG MALL
RICE PARK
MISSISSIPPI RIVER
LAFAYETTE BRIDGE
ROBERT ST. BRIDGE
SHEPARD RD.
WABASHA ST. BRIDGE
RASPBERRY ISLAND
RIVER VIEW LIFT STATION
HWY 52
SAINT PAUL DOWNTOWN AIRPORT
HARRIET ISLAND PARK
W WATER ST
PLATO BLVD
PLATO LIFT STATION
RAILROAD
DISTRICT DEL SOL


FUTURE DEVELOPMENT KEY MAP
FIGURE 3
West Side Flats
Master Plan and Development Guidelines Update
Saint Paul, MN
West Side Flats Site Boundary
Sanitary Sewer Collection Areas
Sanitary Sewer Lines
Lift Station
Flow Split
Potential Problem Areas
Proposed Pipe Diameter
April 16th, 2014
LOWERTOWN
DOWNTOWN SAINT PAUL
MISSISSIPPI RIVER
LOWER LANDING PARK
SAINTS BALLPARK
MEARS PARK
UNION DEPOT
GENERAL STATION
LANDMARK PLAZA
RICE PARK
KELLOGG MALL
KELLOGG BLVD. E
4TH ST. E
JACKSON ST.
ROBERT ST
WABASHA ST.
LRT
ROBERT ST BRIDGE
WABASHA ST. BRIDGE
LAFAYETTE BRIDGE
HWY 52
SHEPARD RD.
RASPBERRY ISLAND
RIVER VIEW LIFT STATION
HARRIET ISLAND PARK
W WATER ST
PLATO BLVD
PLATO LIFT STATION
RAILROAD
DISTRICT DEL SOL
SAINT PAUL DOWNTOWN AIRPORT
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West Side Flats

MASTER PLAN & DEVELOPMENT GUIDELINES

DECEMBER 2014