III. Issues, Analysis and Planning Policies

Chapter three provides a District-wide analysis of the current conditions of the historic pavements and infrastructure within the Warehouse District Heritage Street Plan study area (as defined on page II-13). This analysis identifies the critical study issues/concerns, summarizes the existing condition of historic pavements, structural condition of loading docks, defines current loading dock usage, and outlines current accessibility issues.

The analysis also identifies the specific design requirements, policies and guidelines that were considered as part of the planning process.

Summary of Issues

The following summary of analysis identifies the key issues and documents the existing conditions of the specific streets and loading dock within the study area.

- Condition of loading docks and usage - This analysis determines the general condition of loading docks and current usage. The analysis also defines recommendations for the preservation of the loading dock areas.
- Existing Right of Way (ROW) width - The existing ROW dimensions help shape the "street wall" within the District by defining the placement of buildings and loading docks. The existing ROW also defines many of the important historic view corridors that must be maintained and protected.
- Historic pavement conditions - An understanding of the existing conditions of the historic pavements is critical to verify the overall quantities of existing pavements, overall physical and structural condition of the pavements to determine suitability for reuse, damage of pavements from settling and drainage issues, and location of historic pavements.
- Current street width - Understanding the current widths of each specific Heritage street helps to define past uses of the street and limits of historic pavement areas. This understanding informed opportunities for on-street parking, the narrowing of lane widths and expanded sidewalk network to support District wide accessibility.
- Current on-street parking - An understanding of parking usage in the District was important to verify if parking will need to be removed to accommodate accessibility improvements.
- Current Street Average Daily Traffic Counts (ADT's) - Understanding the current traffic volumes on the Heritage Streets defines the need for controlled pedestrian crossings, existing vehicular/ pedestrian areas of conflict and design requirements for future street lane widths.
- Sidewalk conditions - Locations of existing sidewalks have been verified to determine where sidewalks will be needed and the overall condition of these walks to determine if replacement is necessary. We will also determine if sidewalks comply with current ADA standards for accessibility.
- Accessibility issues and concerns - This analysis provides an overall understanding of accessibility issues within the District. The analysis also determined the overall condition of existing walks and ramps, accessibility issues related to loading docks, and areas that need improvements to enhance accessibility.
- Opportunities for future street tree locations, enhanced stormwater management, and opportunities for lighting throughout the study area. This analysis defines recommendations for District livability.

Analysis of Heritage Streets

The overall process defined for the analysis of the Heritage Street study area was to first prepare an accurate site survey (to allow for the preparation of schematic design level drawings), conduct a photo documentation of the study area, conduct historic pavement/paver testing and define the critical issues/concerns and opportunities for each specific Heritage Street defined as part of this plan.

The following summarizes the analysis process:

Site Survey of the Project Area

The first step in the identification and documentation of the existing conditions within the study area was the preparation of a site survey that would provide accurate locations and elevations of existing features and infrastructure. With assistance from the Public Works Department, existing public utilities and street standards were also identified. Upon completion, the site survey was converted into a working base map for the purpose of documenting existing site conditions and defining study area opportunities/constraints. The base map was also utilized to accurately depict the primary project recommendations for the Heritage Street plan area as defined in Chapter V.

Photo Documentation of the Project Area

The next step in the analysis process was to gain a thorough understanding of the existing condition of the historic pavements and loading docks within the Heritage Street plan area. It was determined that visual inspection and photo documentation of the historic pavements within the study area would help to define the areas of differential settlement in the pavements, areas of patching over historic pavements, areas of pavement damage and would help to define areas where pavements might be salvaged for future use. The photo documentation helped to determine the overall architectural and structural condition of the historic loading docks within the plan area.

Each of the detailed street by street Heritage Street analysis graphics can be found within Chapter V. The analysis graphics include site photos from the project area to highlight some of the critical issues and concerns found along each Heritage street.

Current best practices from City staff

As part of the analysis process a series of meetings were held between the consultant team and Public Works Staff to discuss current design standards and best practices related to streets, historic paver maintenance, installation/ removal, cleaning and storage. The current City practices related to historic pavements served as a basis for recommendations related to pavement design, removal, cleaning and storage of the historic pavements.

Below is a list of discussion items and best practices:

- There is no current policy for the repair or reconstruction for the Heritage Streets. A policy has not been developed because of the complex street design and paving materials.
- Currently the City Public Works Department will repair utility or infrastructure "cuts" (or City would hire a contractor to reinstall final lift of base materials and pavers) made by private utility companies. In lieu of a standard policy for the repair of the utility cuts the PW staff will typically repair the "cut" with a bituminous patch.
- With any new street reconstruction project the City Public Works department requires the design and installation of sidewalks that meet ADA guidelines to be installed on both sides of a street.
- The current policy for street design is to narrow streets to meet Access Minneapolis guidelines for street and public ROW design.
- A limited quantity of historic clay pavers are currently being stored at the Water Works site in Columbia Heights (address is 4300 Marshall St. NE.). The current practice is to ship palletized pavers to the Water Works site (on a flat bed truck) and staff on-site will unload and find a location for the pallets. Historic clay pavers are available by prior approval by Public Works only.
- Currently, the historic streets are not receiving any capital funds for maintenance or reconstruction because the desired design outcome is not resolved.

Assessment of Loading Docks

This section focuses on the description and analysis of the historic loading docks within the Heritage Street project area. During the period of significance, commercial buildings in the Historic Warehouse District were designed with a public facade along the street and an industrial facade facing their freight access. The freight access facade typically contained train sheds, loading docks, and freight canopies.

- Loading docks and related infrastructure *"are significant in defining the interconnected relationship of the railroads and the growth of warehousing and manufacturing in Minneapolis."* - (pg 39 of WH Designation Study)

Due to increased modifications and developmental changes in the district, only twenty seven loading docks/ areas remain (See map on page III-21 for locations of loading docks). Of these twenty seven loading docks there are currently two loading docks being utilized for active service loading areas, approximately two more being used for limited service loading areas and approximately nine loading docks being used for building access.

Below is a description of some of the key elements related to the loading docks.

- There are existing historic loading docks within the District that are currently being used for pick-up and deliveries. These loading docks support a wide range of delivery truck types and sizes including semi-trucks.
    - Two specific types of delivery vehicles have been observed in the DIstrict including tractor - semi trailor trucks (approximate lenght 65'-0" to 70'-0" as seen in the photo on the next page) and box delivery trucks (approximately 24'-0" to 35'-0" long).
- Many of these active loading docks create potential conflict zones

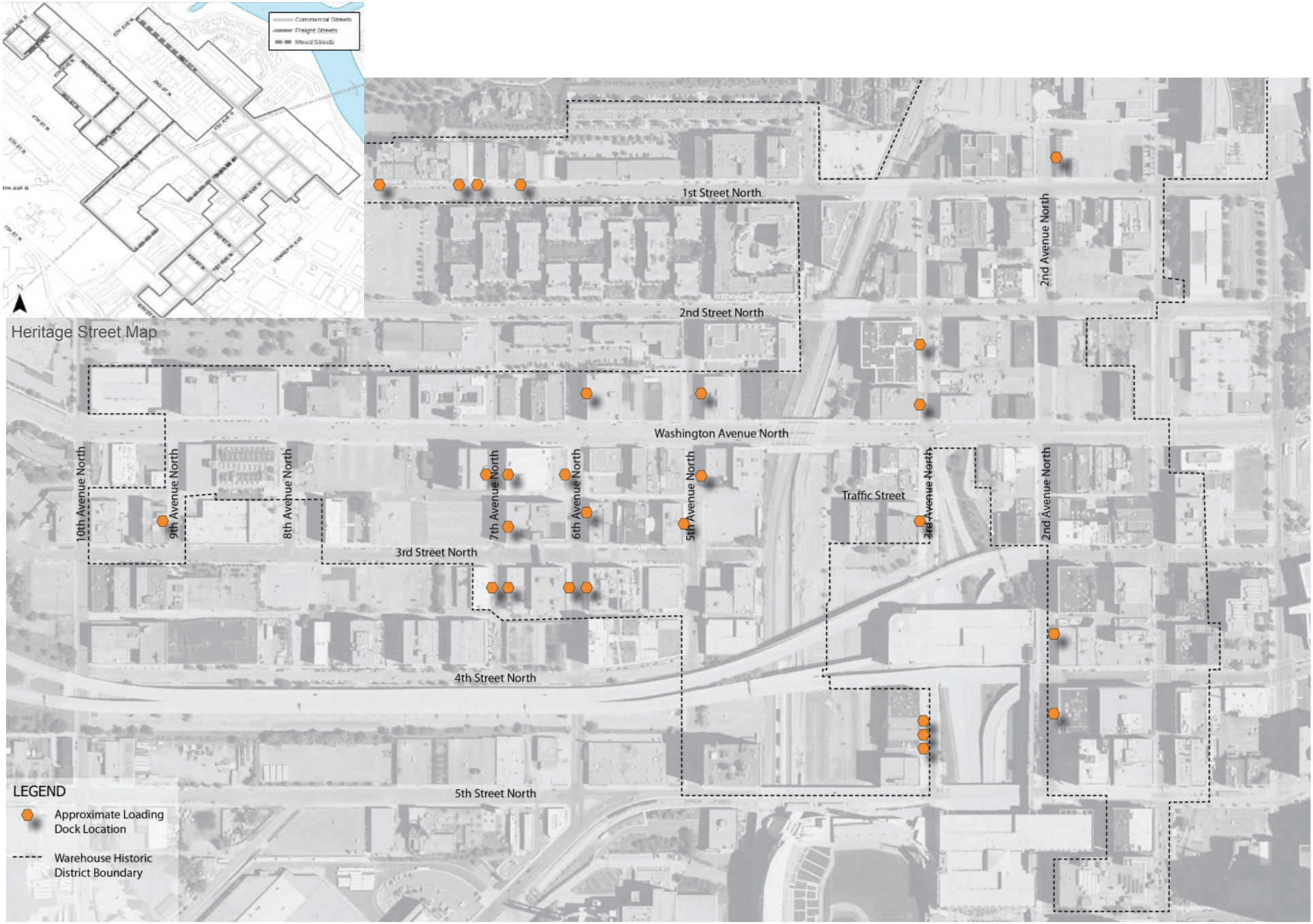
for automobiles and pedestrians. Many of the active loading docks will have trucks blocking sidewalk areas forcing pedestrians to cross the street to get to an accessible sidewalk. In many cases there may not be a sidewalk on the other side of the street from a loading dock forcing pedestrians to walk in the street. These active loading docks also force trucks to park in portions of the street to access the docks causing automobile back-ups.

- Truck turning movements along the Heritage streets need to be considered when making recommendations for street design widths. Because many of the loading docks within the District are still active, trucks need to maneuver through the ROW areas to access the loading docks.
- For a detailed analysis for each of the Heritage Street loading docks see Appendix 3.
- The following is a list of current addresses (with historic building name) for all existing loading docks identified as part of this plan.

  - 900 Third Street North (Gurley Candy Company)
  - 701 Washington Avenue North (Loose-Wiles Biscuit Company)
  - 615 3rd Street North (615 3rd Street North)
  - 525 3rd Street North (Slocum Bergen Company)
  - 701 3rd Street North (Sherwin Williams Company)
  - 618 3rd Street North (Hall Hardware Company)
  - 530 3rd Street North (Roach Tisdale Company)
  - 500 3rd Street North (Green & DeLaittre Company)
  - 607 Washington Avenue North (Parlin & Orendorff Plow Company)
  - 425 Washington Avenue North (Store/Flats)
  - 528 Washington Avenue North (Minneapolis Iron Store)
  - 424-428 Washington Avenue North (Kildall Fish Company)
  - 300-312 Washington Avenue North (Jackson Building)
  - 724 1st Street North (Security Warehouse)
  - 708-722 1st Street North (The Itasca C & D Warehouse)

Photo of active loading dock along 7th Avenue N

  - 702-708 1st Street North (The Itasca A & B Warehouse)
  - 700 1st Street North
  - 624 1st Street North (Security Warehouse)
  - 614, 616, 620 1st Street North (S.G. Cooke Company)
  - 126 1st Street North (Shop/Warehouse)
  - 300 6th Avenue North (George R. Newell & Company)
  - 418 3rd Avenue North (Fairfax-Parson Produce Company)
  - 414 3rd Avenue North (Luther Ford & Company)
  - 410 3rd Avenue North (Dakota Packaging)
  - 400 3rd Avenue North (Crane Building)
  - 250 3rd Avenue North (Moline, Milburn & Stoddard Company)
  - 200-218 3rd Avenue North (The Minneapolis Street Railroad Company)
  - 419 2nd Avenue North (F.B. Scott Wholesale Grocery)



Map of existing loading dock locations

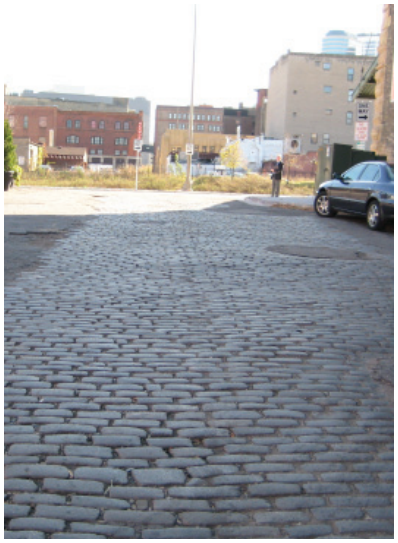
Assessment of Street Pavements

This section focuses on the description and analysis of the historic pavements within the Heritage Street project area.

Below is a description of some of the key elements related to the historic pavements.

- Historic paving materials in the district include clay brick, granite cobblestone and wood block pavers. These paving materials are key character-defining features within the historic district.
- The Heritage Street clay pavers measure approximately 8 ½ x 3 ¾ x 2 3/8 inches. Original color range was red/ brown/tan and black.
- Original manufacturer for some of the bricks that can be found in the Warehouse District is the Purington Brick company. Bricks are still available today through various salvage yards and collectors.

  Website is http://www.historicalbricks.com/brick-street-pavers
- It is estimated (through a variety of different paving tests and research information) that we can expect up to a minimum of 30% - 40% paver loss due to the removal process. Streets within the project area have an average of 30% - 52% of patching (variety of different materials including bituminous and concrete) of existing historic pavements.
- Based on visual inspection (by project team members including paving contractor, historic preservationist, civil engineer, landscape architect and notes provided by Public Works Staff) it is estimated that 85% - 90% of visible pavements are in fair to good condition.



Existing quantity of pavers in the project area

- A rough estimate is that there are 173,200 sf. of clay brick pavers in the project area. Of this total we can expect to lose approximately 30% - 40% of those pavers during removal for a salvageable quantity somewhere in the range of 121,240 sf. to 103,920 sf.

- There is an estimated quantity of 18,000 sf. of historic clay brick pavers on 6th Avenue N (between 4th Street N and 5th Street N) that is outside of the district and should be removed, cleaned and reused with the district. A usable quantity of these pavers will be in the range of 14,400 sf. to 15,300 sf.
- There is also an estimated quantity of 4,500 sf. of historic clay brick pavers on 6th Avenue N (between Washington Avenue N and alley to north) that should be removed, cleaned and reused with the district.
- There is an estimated 63,115 sf. of historic clay brick pavements that has been covered with patching.
- The proposed concepts presented as part of this study estimate about 165,800 sf. of historic clay brick pavements. Based on the salvageable pavers that can be reused (including the extra pavers from 6th Avenue) there is an estimated shortfall of roughly 29,260 sf. of clay brick pavers.

Structural Integrity of Pavement Materials

To understand the overall structural integrity of the existing pavers in the Heritage streets study area and to determine if the pavers were suitable for reuse, the City of Minneapolis Public Works staff conducted flexural and destructive testing. A process was defined to visually inspect random paver samples, perform destructive testing and test paver comprehensive strength. On January 10, 2011 consultant team members attended a meeting at the Public Works Department Engineering laboratory to witness some destructive testing of random brick paver samples from the Warehouse District study area. Below are highlights of the testing process and results.

- Ten random paver samples were included in the testing. The pavers measured approximately 8 ½ by 3 ¾ inches.
- City Public Works staff had previously visually inspected the pavers prior to testing to define any paver abnormalities or inconsistencies. Staff had also cut 3-inch diameter cores through five of the paver samples. All five paver samples survived the process of cutting the cores. The cores were treated with sulfur caps for further testing.
- The City staff had previously completed flexural strength testing of the five pavers that were not cored (samples 1-5). The average flexural strength was 1,366 psi. For comparison a new clay paver will have a average flexural strength of 1200 psi and a new concrete paver will have a average flexural strength of 1100 psi.
- At the testing, the City staff was completing compressive strength tests on the paver cores (samples 6-10). The average compressive strength obtained was 8,375 psi. For comparison a new clay paver will have a average compressive strength range of 8,000 - 14,000 psi and a new concrete paver will have a average compressive strength of 8,000 psi.

The results of the visual inspection and testing indicate that the sample pavers are still very structurally sound and that they have sufficient strength for future reuse within the Heritage Streets study area.

The table on the adjacent page represents the testing results of a random sampling of clay brick pavers taken from the project area.

Standard Brick

Measurements

Brick #	Length (in)	Span Length (in)	Width (in)	Height (in)	Diameter (in)	Radius (in)	L/D Ratio	Cross Sectional Area (in^2)	Date Tested
1	8.50	7.25	3.75	3.00	N/A	N/A	N/A	N/A	1/5/2011
2	8.50	7.25	3.75	3.00	N/A	N/A	N/A	N/A	1/5/2011
3	8.50	7.25	3.75	3.00	N/A	N/A	N/A	N/A	1/6/2011
4	8.50	7.25	3.75	3.00	N/A	N/A	N/A	N/A	1/6/2011
5	8.50	7.25	3.75	3.00	N/A	N/A	N/A	N/A	1/6/2011
6	8.50	N/A	3.75	3.00	2.75	1.375	1.09	5.94	1/7/2011
7	8.50	N/A	3.75	3.00	2.75	1.375	1.09	5.94	1/7/2011
8	8.50	N/A	3.75	3.00	2.75	1.375	1.09	5.94	1/7/2011
9	8.50	N/A	3.75	3.00	2.75	1.375	1.09	5.94	1/7/2011
10	8.50	N/A	3.75	3.125	2.75	1.375	1.14	5.94	1/7/2011

Calculations

Compressive Strength

Brick #	Factor	Compressive Strength (psi)	Load Applied (lb)	Corrected Compressive Strength (psi)	Factored Compressive Strength (psi)	Average Factored Compressive Strength (psi)
6	0.90	7993	53450	8999.0	8099.1	8375.6
7	0.90	6888	46060	7754.8	6979.3	
8	0.90	8205	54870	9238.0	8314.2	
9	0.90	8795	58810	9901.4	8911.2	
10	0.91	9344	62490	10521.0	9574.1	

Flexural Strength

Brick #	Middle 1/3 Break (Y/N?)	Outside Middle 1/3 Break >5% (Y/N?)	Distance b/t fracture & support (in)	Load Applied (lb)	Flexural Strength (psi)	Average Flexural Strength (psi)
1	Y	N	N/A	6340	1361.9	1366.3
2	Y	N	N/A	5381	1155.9	
3	Y	N	N/A	5440	1168.6	
4	Y	N	N/A	7170	1540.2	
5	Y	N	N/A	7470	1604.7	

Planning Policies

The current policy requirements and guidelines that are outlined in this Chapter considered the following primary elements of each street that informed the decision making process:

- Considerations for design within the existing street Rights-of-Way (ROW)
- Street Designation and Design
- Universal Design and ADA Accessibility
- Historic Preservation of Loading Docks and Infrastructure
- Condition of Existing Pavements
- Livability and Neighborhood Greening
- Stormwater Management
- Maintenance

The Warehouse District Heritage Street Plan utilizes the following planning and policy documents to define the overall planning policies that influence final recommendations for the project:

- Minneapolis Warehouse District Designation Study
- Secretary of the Interior's Standards for the Treatment of Historic Properties
- Minneapolis Warehouse Historic District Design Guidelines (approved February 23, 2010)
- St. Anthony Falls Design Guidelines
- City of Minneapolis Heritage Preservation Ordinance
- North Loop Small Area Plan (adopted April 2010)
- Access Minneapolis
- MSA Street Design Guidelines
- MUTCD - Manual on Uniform Traffic Control Devices
- City of Minneapolis Bikeways Master Plan (August 2010)
- City of Minneapolis and Universal Building Codes
- ADA Standards for Accessible Design (Department of Justice)
- PROWAAC - Public Rights-of-way Access Advisory Committee: July 2007 Special Report - Accessible Public Right-of-way: Planning and Designing Alternatives
- City of Minneapolis Stormwater standards
- MWMO (Mississippi Watershed Management Organization) Stormwater Standards

Based on the identified planning and existing policy documents a list of planning policies has been created that identify the key standards and guidelines that must be adhered to when making design decisions and recommendations related to potential improvements to the existing streets within the project area. These planning policies respond to the primary goals and objectives for the project and will provide guidance on proposed improvements to the heritage streets.

Secretary of the Interior's Standards for the Treatment of Historic Properties

Per the Secretary of the Interior's Standards for the Treatment of Historic Properties, the four treatment approaches are Preservation, Rehabilitation, Restoration, and Reconstruction. The following descriptions and correlating recommendations are listed in hierarchal order.

Preservation

"Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property."

Streets identified as Category Two (as identified in Chapter VII, page 112-113) shall abide by the preservation approach, which focuses on on-going maintenance and repair of historic materials rather than extensive replacement and new construction. The City will protect and maintain these materials, including instituting excavation and maintenance policies. However, based on structural and surface examinations detailed in this report, the City will not recommend complete rehabilitation of Category Two streets.

Rehabilitation

"Rehabilitation, the second treatment, emphasizes the retention and repair of historic materials, but more latitude is provided for replacement."

Streets categorized as Category One (as identified in Chapter VII, page 112-113) shall abide by the rehabilitation approach, which directs the city to rebuild the identified heritage streets using original materials and historical documentation, however allowing for possible street design modifications in instances such as handicap accessibility or pedestrian safety.

Restoration

"Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period."

The City does not recommend Restoration treatments to any Heritage Streets, as this method dictates that the streets be rebuilt as they were at a particular time period. Because all Heritage streets will need to be modified to accommodate identified needs such as ADA accessibility and street and utility maintenance, this treatment is not feasible.

Reconstruction

"Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location."

Streets categorized as Category Three (as identified in Chapter VII, page 112-113) shall abide by the reconstruction approach.

Existing Rights-of-Way (ROW)

The existing ROW's for the primary streets defined in the study vary in width. It appears that the width of the ROW's will not impact the proposed improvements but need to be considered when making design decisions related to pedestrian accessibility, road widths, on-street parking, loading docks and preservation of view corridors. See summary below for some of the important policies and guidelines which were considered as part of this project.

Minneapolis Warehouse Historic District Design Guidelines (February 23, 2010) identifies policies for the design and preservation of existing ROW's within the Historic District.

This policy states that the location and the width of existing street and alley rights-of-way shall be preserved in place and canopies dating from the period of significance shall be preserved and retained. Streets and alleys shall not be interrupted by new structures or buildings that cut off views and access through the corridor.

Reconfiguring of public right-of-way to make infrastructure more pedestrian or other transportation modal friendly is appropriate as long as the historic features are not removed, the visual corridor is not interrupted and the spatial relationships of the district are not affected.

Right-of-way designs that narrow vehicular drive lanes to accommodate wider public sidewalks and retain the full size and configuration of existing loading docks are encouraged.

Street Design

The design concepts for the streets within the project area will conform to City of Minneapolis and MSA design standards. All street systems within the District shall be designed for pedestrian and vehicular safety, and ADA compliance.

See summaries below for some of the important policies and guidelines which were considered as part of this project.

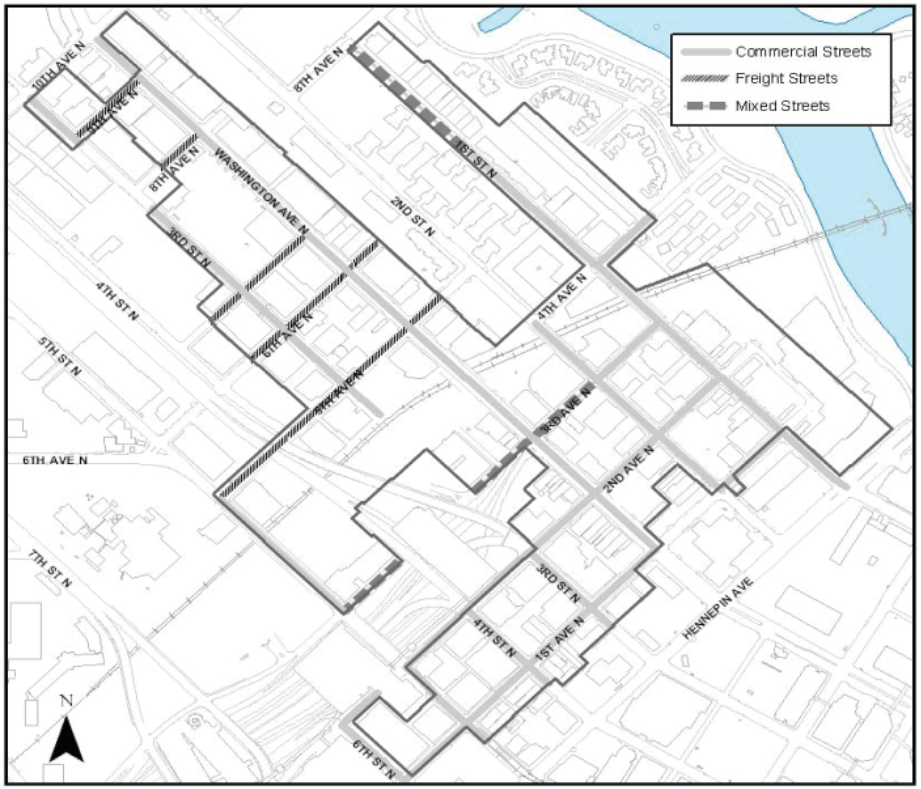
MSA Street Design Guidelines. A majority of the streets within the project area are MSA (Municipal State Aid) routes and should be designed in accordance. MSA Streets can be designed with 11' drive lanes, 2' curb reaction distance and 8' parking lanes within the project area. Only 8th Avenue N, 9th Avenue N, 2nd Avenue N and Traffic stret are not MSA streets.

Access Minneapolis. The Plan identifies Washington Avenue as a Commercial Corridor. The Plan also defines 8th Avenue N and 9th Avenue N as Local Streets that can be designed with 9' drive lanes and 7' wide parking lanes.

Parking. On-street parking in the project area is primarily metered. On-street parking meters occur along most streets within the project area, but can primarily be found on Washington Avenue, 2nd Avenue and the section of 5th Avenue (3rd Street N to 5th Street N).

Historic Heirarchy of Streets in the District. There are two specific street designations that exist within the District that need to be considered as part of the street design. These designations are defined below:

Commercial Streets: In most cases commercial streets represent the traditional development patterns of downtown Minneapolis where the buildings developed a public facade by locating primary entrances along



all the street-facing facades and used the alleys for the loading and distribution of goods. These streets include all streets not designated as Freight Streets. The only designated commercial street in the project area is 3rd Street N. The main aspects for consideration when improving a Commercial Street shall include provisions for amenities that further pedestrian activity and building access.

Freight Streets: Freight Streets are indicative of the change in building orientation due to the block's adjacency to rail spur lines. These streets possess the non-rail freight distribution infrastructure of loading docks and canopies. Building access along these streets is traditionally not public but instead commercial or industrial in nature.

Freight Streets in the project area include:

- 9th Avenue N - Washington to 3rd Street N
- 8th Avenue N - Washington Avenue to alley between Washington and 3rd Street N
- 7th Avenue N - Washington Avenue to alley between 3rd Street N and 4th Street N
- 6th Avenue N - Alley between Washington Avenue and 2nd Street N to alley between 3rd Street N and 4th Street N
- 5th Avenue N - Alley between Washington Avenue and 2nd Street N to 5th Street N

Loading Docks and Infrastructure

The design concepts for the historic infrastructure within the project area will define improvements. The design options will also look at concepts to enhance and preserve historic infrastructure within the public ROW areas.

A majority of the loading docks within the project area are functional and are still being utilized for shipping and receiving. General structural condition of the loading docks within the project area are considered in fair to good condition based on a visual analysis (from a structural engineer). See summay below for some of the important recommendations, policies and guidelines which were considered as part of this project.

Minneapolis Warehouse Historic District Design Guidelines identifies specific recommendations related to Loading Docks. The guidelines state that loading docks and canopies dating from the period of significance shall be preserved and retained. On designated Freight Streets within the District, historic loading docks and canopies should be preserved to reflect their service function and proper management of vehicular and service access to the property.

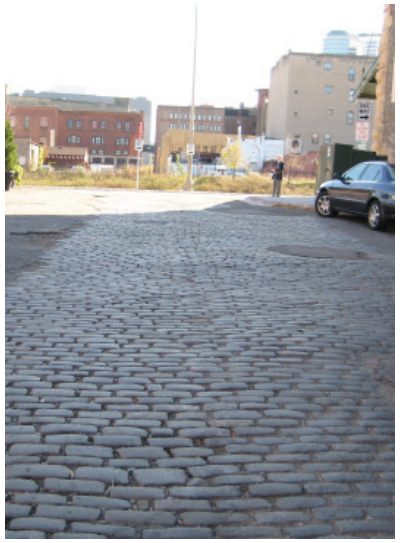
On all streets within the District, the narrowing of vehicular right-of-way to accommodate sidewalks around loading docks to create more pedestrian friendly activity is encouraged.

On identified Mixed and Freight Streets, the addition of railings or the alterations to the slope of the loading docks is appropriate to create an accessible, pedestrian-friendly environment.

Condition of existing pavements

A summary of the existing historic pavements can be found earlier in this Chapter. See summary below for some of the important policies and guidelines which were considered as part of this project.

The Minneapolis Warehouse Historic District Design Guidelines is a policy document that identifies specific recommendations related to street pavements. This document states that original historic street paving materials shall be maintained and preserved. This document also states that replacement of historic paving materials will be considered if evidence is produced that the materials are too deteriorated to repair. A compatible substitute material will be considered if using historical materials is not technically or economically feasible.



Universal Design and ADA Accessibility

Design should incorporate ADA accessibility guidelines and policies. The design for the streets and infrastructure within the project area will define improvements within the public ROW to improve access to all modes of transportation. See summary below for some of the important policies and guidelines which were considered as part of this project.

Minneapolis Warehouse Historic District Design Guidelines (February 23, 2010) defines that all street systems shall be designed for pedestrian and vehicular safety, and ADA compliance.

Livability and Neighborhood Greening

The design concepts for the streets and infrastructure within the project area will define areas to enhance neighborhood livability and incorporate street trees within the public ROW areas. See summaries below for some of the important policies and guidelines which were considered as part of this project.

City of Minneapolis Bikeways Master Plan (August 2010)

Identifes 10th Avenue N as a designated Bikeway (2 stripped lanes) with a bikeway classification of collector. This document also identifies 5th Avenue N as a designated on-street bike lane with Shared Use path with a classification of a neighborhood bikeway.

Minneapolis Street Design Guidelines

This policy document identifies 6th Avenue N. as a Neighborhood Connector Street. This document also defines 10th Avenue N as a Industrial Connector with a collector classification and Washington Avenue N as a Activity Area Street with an A Minor Arterial classification. All other streets in project area are designated as City streets.

Minneapolis Warehouse Historic District Design Guidelines identifies that on commercial and mixed streets, where possible, add street trees, street amenities, pedestrian lighting and other features that further pedestrian activity and building access.

This document also identifies that street trees shall not be located directly in front of entrances of historic buildings, rather the preferred location of street trees shall be centered within or between bays of buildings.

This document also states that landscape grass strips, planting beds, and grass boulevards are not recommended in most locations within the district. These features will be considered on a case-by-case basis.

Washington Avenue Street Tree Plantings

Stormwater Management

The design concepts for the streets and infrastructure within the project area will incorporate ideas for stormwater management within the public ROW areas. We will rely on recommendations and policies defined in the following documents:

- City of Minneapolis standards.
  - Rate control to existing conditions for the 2-year, 10-year, and 100-year, 24-hour storm events.
  - Removal of 70% of total suspended solids from the stormwater prior to leaving the site. Best management practices must be designed for the 1.25-inch rain event.
- MWMO (Mississippi Watershed Management Organization) Standards
  - Rate control to existing conditions for the 2-year, 10-year, and 100-year, 24-hour storm events.
  - Removal of 90% of total suspended solids from the stormwater prior to leaving the site.
  - On-site retention of the runoff generated from one inch of rainfall over the impervious surfaces of the site, using a runoff coefficient of 0.9.
- Minneapolis Warehouse Historic District Design Guidelines identifies specific recommendations related to stormwater management.

Swedish Soil Mix to Promote Stormwater Management along Washington Avenue