

**South University District-Sprague Corridor
Investment Strategy**

Appendices

**UNIVERSITY DISTRICT—SPRAGUE
CORRIDOR PLANNING STUDY**

EXISTING CONDITIONS ANALYSIS:
DOCUMENT REVIEW UPDATE MEMO

Submitted: February 8, 2012

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INTRODUCTION

The Document Review Memo provides a review of the plans, studies and projects that relate to the University District – Sprague Avenue Corridor (UDSC) Planning Study area, both completed and currently underway. Identifying key recommendations and policies in these documents will help ensure the creation of a workable, implementable plan that will guide the future development of the study area.

This memo is an update to the Existing Conditions Analysis and provides an overview of recent and ongoing planning efforts and projects within and surrounding the study area. Along with this memo, the Existing Conditions Analysis includes a summary of Physical Characteristics and Sustainable Design and Development.

This memo is organized as follows:

Key Findings summarizes common themes and topics found in the review of existing plans and studies.

Completed Plans and Studies includes a review of past and current planning efforts that relate to the UDSC study area.

Concurrent Plans, Studies and Projects discusses work being conducted within and surrounding the study area that is currently underway.

KEY FINDINGS

Based on the document review, there are several common themes and key findings that should be carried forward into the UDSC Planning Study.

- **Pedestrian Improvements.** Improving the pedestrian realm of the street is one of the most important findings of the review. The UDSC Planning Study will need to address needed pedestrian improvements such as wide sidewalks, decorative street furniture, street trees, safe crossings, and activated street fronts.
- **Multimodal Design.** As an arterial street, Sprague Avenue is tasked with providing a primary route to downtown for motorists. However, wayfinding and convenient and safe facilities and amenities for bicycling, walking and public transit along the street are a common theme among almost all recommendations and policies. The UDSC Planning Study will need to accommodate through motorized vehicle traffic while making safe and inviting environments for pedestrians, bicyclists, and transit users.
- **Safe Streets and Crossings.** Safety is a common concern for all modes. Based on existing plans, it is especially crucial that streets are designed to increase safety for pedestrians, bicyclists, and transit users. The UDSC Planning Study will need to address safety improvements, especially at the BNSF crossing, and the intersections of Spokane Falls Blvd., Main, and Riverside avenues.
- **Making Connections.** Connecting neighborhoods, commercial centers and important destinations in Spokane improves transportation and quality of life. The UDSC Planning Study will need to address improving connectivity with Downtown Spokane and the University District, as well as residences and businesses on the north and south sides the corridor.
- **Improved Coordination.** Coordination among different stakeholders in Spokane ensures consistency and concurrency for planning and implementation. Close coordination with neighbors, business owners, and other stakeholders will be critical in the development of the UDSC Planning Study.
- **Parking Management.** Surface parking uses extensive space and is a primary consideration among existing plans and studies. The UDSC Planning Study will need to address parking management strategies, including a review of existing requirements, and consideration of on- and off-street parking.

COMPLETED PLANS AND STUDIES

There are a range of completed plans and studies that define existing characteristics of the UDSC study area, surrounding streets and neighborhoods, and outline recommendations and policies for future investments and improvements. Collectively, these plans and studies provide a relatively complete picture of the community's vision for the UDSC study area. Plans reviewed in this section range in their emphasis and degree of specificity. They include (in alphabetical order):

- City of Spokane Comprehensive Plan (2010, update from 2001 Comprehensive Plan)
- City of Spokane, Growth & Transportation Efficiency Center Plan (2008)
- City of Spokane Transportation Impact Fee Ordinance (2011)
- Connect Spokane: A Comprehensive Plan for Public Transportation (2010)
- Downtown Spokane Design Guidelines (2009)
- East Central Neighborhood Plan (2005-2006)
- Fast Forward Spokane: Downtown Plan Update (2008)
- Roadmap to the Future Master Plan (2010)
- SmartRoutes Spokane: 2010 Active Transportation Campaign Case Statement
- Spokane Downtown Parking Demand Study (2005)
- Spokane International District Neighborhood Action Plan (2010)
- Spokane Master Bike Plan (2009)
- Spokane Riverpoint Campus Academic & Master Plan Update (2009)
- Spokane Unified Regional Transportation Vision and Implementation Strategy (2011)
- SRTC Metropolitan Transportation Plan Update (2008)
- University District Area Revitalization Ordinance (2009)
- University District/Downtown Spokane Transportation Improvement Study (2009)
- University District Residential Potential and Needs Analysis (2009)
- University District Strategic Master Plan (2004)

- University District Parking Study (2007)
- WSDOT 2007-2026 Washington Transportation Plan (2006)

CITY OF SPOKANE COMPREHENSIVE PLAN (2010, UPDATE OF 2001 COMP PLAN)

The Spokane Comprehensive Plan identifies the 20-year future of the City addressing the overall scheme for development – the major land uses, transportation systems, parks, recreation, open space, commerce and employment. The Comprehensive Plan describes the UDSC study area as having the following land uses present: General Commercial and Center & Corridor Core. The intersection of Sprague Avenue and Napa is also identified as a neighborhood center. While General Commercial allows for a range of commercial and residential uses, Center & Corridor Core is more specific, requiring neighborhood-oriented commercial uses, offices, mixed-type housing, parks, and civic uses in a master-planned, mixed-use setting.

Sprague Avenue is also identified as a principal arterial and is not designated as a bike route. The Comprehensive Plan prescribes maintaining transit levels of service along arterials such as Sprague Avenue.

Key recommendations of the plan that may impact the UDSC study area include:

- Increase multimodal transportation options with holistic designs;
- Prioritize pedestrians and bicycles;
- Provide high capacity mass transit along corridors, connecting Downtown to other regional centers;
- Improve the built environment by placing more emphasis on visual character of buildings and public spaces; and
- Promote historic preservation to highlight the legacy of Spokane's past.

CITY OF SPOKANE, GROWTH & TRANSPORTATION EFFICIENCY CENTER PLAN (2008)

The primary objective of this plan is to reduce drive alone trips and vehicle miles traveled over a six year period within the City of Spokane. The plan encourages mixed-use development, and identifies Riverfront Park as the "Jewel" of the City. Key recommendations include:

- Reduce drive alone trips by 10% and VMT by 13%;
- Target commuters traveling to downtown;
- Implement parking management strategies; and
- Improve level of service and traffic flow.

CITY OF SPOKANE TRANSPORTATION IMPACT FEE ORDINANCE (2011)

The recently amended Transportation Impact Fee adds new definitions and provisions to the previous City ordinance. Major additions include clarifying the definition for “complete streets,” and adding new provisions to promote pedestrian scale street improvements.

CONNECT SPOKANE: A COMPREHENSIVE PLAN FOR PUBLIC TRANSPORTATION (2010)

The goal of the Connect Spokane Plan is to set forth a vision and policy framework to guide decisions made by the Spokane Transit Agency and its partner agencies that will further Spokane's transit mission for the next 20 years. Specific design elements of the transit system include:

- Providing transit shelters, benches, signage, lighting and bicycle facilities along fixed routes;
- Improved pedestrian infrastructure in locations where there is a direct and tangible benefit to accessing transit; and
- Fixed route service integrated with a healthy mix of employment and housing.

DOWNTOWN SPOKANE DESIGN GUIDELINES (2009)

Spokane's 2009 Downtown Design Guidelines implement the Downtown Plan by encouraging thoughtful design and site planning in the application of development standards. Pedestrian scale is a consistent theme in the guidelines, addressing how building facades and street fronts should interact with the street and pedestrian environment. The guidelines are organized into five main elements: Site Planning & Massing, Architectural Expression, Pedestrian Environment, Public Amenities and Vehicular Access and Parking. While the guidelines apply to the entire downtown, there are multiple specific design objectives that should be considered within the UDSC study area. These include:

- Installing pedestrian-friendly materials at street level and overhead weather protection;
- Enlivening and enhancing alleys;
- Creating accessible public open spaces;

- Providing public art, street furniture, lighting and landscaping;
- Incorporating green street and parking features that mitigate stormwater;
- Minimizing curb cuts;
- Integrating parking facilities; and
- Minimizing the presence of service areas.

EAST CENTRAL NEIGHBORHOOD PLAN (2005-2006)

The East Central Neighborhood Plan is a guide for the neighborhood, addressing the community, economy, and social revitalization over the next twenty years. The plan identifies specific action items for guiding and improving Spokane's East Central Neighborhood. Specific action items that impact the UDSC study area include:

- Reduce impacts associated with the I-90 expansion and North Spokane Corridor;
- Develop a trolley route that circulates through the South University District study area along Sprague Avenue and Sherman Street;
- Improve line of sight and visibility limitations;
- Link the Ben Burr Trail to the Centennial Trail and neighborhood streets;
- Create a wayfinding system;
- Improve the streetscape and develop design guidelines that reflect the unique history of the area;
- Create a main street model for centers and corridors planning and development;
- Improve opportunities for jobs and housing; and
- Update zoning to reflect desired uses.

FAST FORWARD SPOKANE: DOWNTOWN PLAN UPDATE (2008)

The Downtown Plan Update is a long-term vision and strategic action plan for the next twenty years. The Plan Update also revisits the action agenda for short (0-5 years) and mid-term (6-10 years) projects. The projects and actions proposed in the Plan Update are designed to catalyze further public and private investment in Downtown. To achieve the envisioned future of the Downtown, the plan presents the Downtown Development Concept, and categorizes the University District as a mixed use urban village, with opportunities for redevelopment and adaptive reuse.

Key recommendations of the concept include:

- Strengthen connections between the Downtown Core and the University District;

- Establish gateways to Spokane and to Downtown;
- Defined as a complete street, Sprague Avenue will be improved with wider sidewalks, street trees and pedestrian amenities and signage; and
- A pedestrian overpass, connecting across the BNSF railway to the Riverpoint Campus and pedestrian improvements along Sherman Street.

ROADMAP TO THE FUTURE MASTER PLAN (2010)

The City of Spokane Parks and Recreation developed the Roadmap to the Future Master Plan to outline strategies for the future of the City's parks and recreation system. The plan outlines policies and recommendations for development and operation of the system. While the document primarily focuses on organizational development and resource strategies, maintaining existing facilities, protection of the City's urban forest, walkability and access to trails are all components that relate to the UDSC study area.

SMARTROUTES SPOKANE: 2010 ACTIVE TRANSPORTATION CAMPAIGN CASE STATEMENT (2008)

Part of the SmartRoutes 2010 Spokane Initiative, the Case Statement outlines several strategies for increasing options for active transportation. The strategies are based on recommendations and improvements identified in several different plans and initiatives. Strategies related to Sprague Corridor include:

- Providing a streetcar to connect downtown with the medical community to the south, and the universities, arena, and government buildings to the north.
- Creation of the Ben Burr Trail to connect the Centennial Trail to the west and parks and recreation to the east.

SPOKANE DOWNTOWN PARKING DEMAND STUDY (2005)

The primary objective of the Parking Demand Study is to identify key issues regarding parking, transportation and access in the downtown and their impact on the continuing economic vitality of the Downtown. The following were the key findings from the study:

- Provide a better system of wayfinding/signage, communication, lighting/landscaping and pricing to draw patrons into offstreet parking facilities; and

- Available supply of parking in the peak hours is adequate to accommodate current and future levels of demand.

SPOKANE INTERNATIONAL DISTRICT NEIGHBORHOOD ACTION PLAN (2010)

The International District Neighborhood Action Plan presents action items that will guide the future of the neighborhood, and build strategic partnerships. The district boundaries extend from Hamilton Street to Fiske Street and the railway to I-90. Specific recommendations related to the UDSC study area include:

- Increasing water and infrastructure capacity;
- Creating a user friendly, multi-modal district;
- Define and protect the historic character of the district and develop design recommendations to enhance the local character;
- Mitigate impact of the I-90 expansion;
- Expand residential options;
- Increase public and alternative transportation options; and
- Redevelop underutilized and neglected sites.

SPOKANE MASTER BIKE PLAN (2009)

The Spokane Master Bike Plan creates a vision for enhancing bicycling opportunities for all citizens of Spokane. The Spokane Master Bike Plan is incorporated into the Spokane Comprehensive Plan. The purpose of the Master Bike Plan is to improve the environment for bicycling and provide more opportunities for multimodal transportation. The plan focuses on developing a connected bikeway network and support facilities. While no improvements are identified along the study area portion of Sprague Avenue, there are several cross streets requiring improvements. Key recommendations include:

- Providing bicycle facilities on designated arterial streets, including bridges. The plan shows a marked, shared bike route on Sprague Avenue from Sherman Street, to the west, and between Helena and Altamont streets;
- Improve bicycle safety and access at arterial crossings;
- Make key operational improvements to complete connections in the bikeway network; and
- Provide signage and wayfinding along the Centennial Trail.

SPOKANE RIVERPOINT CAMPUS ACADEMIC & MASTER PLAN UPDATE (2009)

The 2009 campus master plan update built on the 2000 master planning process, during which community members expressed interest in a "university district feeling" for the Riverpoint Campus. Goals of the Master Plan Update were to update the previous plan originally completed in 2000, identify and develop potential synergies with adjacent districts (work that will be augmented by the Downtown Plan Update), and include a strong infrastructure planning component.

The update establishes several recommendations that impact the design and development of the neighboring University District. These include:

- Walks and malls of a pedestrian scale which move through campus connecting to downtown, the Centennial Trail, Spokane River, Gonzaga University, the south University District and other surrounding neighborhoods;
- Provide for and encourage the use of alternative forms of transportation (mass transit, bicycles, pedestrian access, etc.);
- Conversion from surface parking lots to structured parking (surface lots are place-holders for future building sites);
- Enhanced streetscapes (landscaped boulevards, reduced width, etc.); and
- Coordination and promotion of alternative means of transportation to, from, and through campus including light rail, bus rapid transit, streetcar, STA bus routes, and shuttles connecting to the larger medical community on the South Hill, to the downtown core, and other surrounding neighborhoods.

SPOKANE UNIFIED REGIONAL TRANSPORTATION VISION AND IMPLEMENTATION STRATEGY (2011)

The unified regional transportation vision for Spokane County will guide transportation investments over the next 30 to 50 years. The vision identifies the necessary steps to drive sustainable economic growth and improve mobility while protecting and enhancing livability, the environment and the region's competitiveness in a global economy. Based on the community values and key findings from public involvement and analysis of existing conditions, the document outlines several recommendations for achieving the vision. Those that impact the UDSC study area include:

- Providing access to safe, convenient and reliable public transit;
- Improving transportation corridors and streetscapes for all modes that connect to Downtown Spokane and other major employment centers;

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- Promote the development of complete streets that are designed for all users;
- Invest in stormwater system improvements, especially those integrated with transportation infrastructure; and
- Invest in system-wide transportation facility rehabilitation, preservation and maintenance.

SRTC METROPOLITAN TRANSPORTATION PLAN UPDATE (2007)

The plan update is a long-term blueprint to address transportation needs from continued growth and future development in the region. The plan identifies needs and future investments for streets, highways, transit, and nonmotorized transport modes system in the City and region. As an arterial street, Sprague Avenue can be shaped by several of the policies established in the Plan. These include:

- Focus on bridges, as many of the region’s bridges are aging and will need replacement;
- Invest in transit and bike/pedestrian infrastructure since this will become more important in the years to come;
- Reduce parking requirements as increased levels of transit and pedestrian access are provided; and
- Require that parking be located at the sides or the rear of the building.

UNIVERSITY DISTRICT AREA REVITALIZATION ORDINANCE (2009)

The revitalization ordinance establishes the Spokane University District Revitalization Area which authorizes the City to use local revitalization financing for public improvements within the district. Such development is intended to increase the value of property which will spur private investment and stimulate economic development.

UNIVERSITY DISTRICT/DOWNTOWN SPOKANE TRANSPORTATION IMPROVEMENT STUDY (2009)

The transportation improvement study provides a comprehensive transportation needs assessment that considers all modes of travel and transitions between modes. The plan identified issues affecting the area such as the lack of specific strategies to reduce VMT, and the consideration of one-way street conversions. Key recommendations of the plan include:

- Construction of North Spokane Corridor would divert 30% traffic from downtown roads;

- Design streets in downtown to be slower – potential road diets, conversion of one-way roads;
- Improve wayfinding for vehicles and for pedestrians;
- Consider restricting freight movement downtown during peak times; and
- Build complete streets that accommodate all modes and help reduce drive alone mode share to 70% (from 88%).

Specific recommendations that affect the UDSC study area include:

- Construct the Sherman Street pedestrian/bicycle bridge;
- Convert 1st Avenue and Sprague Avenue to two-way streets, west of the study area; and
- Construct intersection and sight distance improvements at the intersections of Division Street and Sprague Avenue.

UNIVERSITY DISTRICT RESIDENTIAL POTENTIAL AND NEEDS ANALYSIS (2009)

For Spokane's University District, the University District Development Association and the Downtown Spokane Partnership conducted the Residential Potential and Needs Analysis to determine appropriate housing types, characteristics and costs related to new residential construction. According to the study, new housing developed in the study area should accommodate a wide range of market-rate and affordable housing for university affiliates, within walkable, mixed-use neighborhoods.

THE UNIVERSITY DISTRICT STRATEGIC MASTER PLAN (2004)

The University District Strategic Master Plan establishes the community's vision for the district and addressed economic development issues, urban growth, environmental restoration, transportation and affordable housing needs. The Master Plan establishes the following goals for the University District:

- Construct a pedestrian/bicycle bridge that will cross the existing Burlington Northern/ Santa Fe railroad tracks at Grant Street. This concept will facilitate pedestrian and bicycle traffic directly to the south end of the Riverpoint Campus and provide a link to the underdeveloped commercial district around Sprague Avenue; and
- Create a vibrant mixed-use environment with housing, campus facilities, amenities, shopping, dining, and gathering places.

UNIVERSITY DISTRICT PARKING STUDY (2007)

The University District Parking Study was undertaken to collect, analyze and summarize parking data from the Gonzaga University and Riverpoint Campuses. This data was to be used in future steps to identify programs and strategies to maximize the parking supply and plan for the future. Key findings and recommendations from the parking study include:

- Peak hour on-street occupancies reach 81% for the combined study area;
- Both campuses have unused parking in off-street facilities at peak hours;
- For the combined study area, parking limits at 1-hour stalls should be changed to 2-hour stalls to address user demand while maintaining a reasonable turnover rate; and
- At peak hours on the Riverpoint Campus, there are a significant number of unoccupied off-street parking stalls.

WSDOT 2007-2026 WASHINGTON TRANSPORTATION PLAN (2006)

The WSDOT 2007-2026 Washington Transportation Plan describes a 20-year vision that will serve citizens' safety and mobility, the state's economic productivity, community livability and viability of Washington State's ecosystems. Investment and policy guidelines are intended to guide and prioritize transportation projects given the fact that planned expenditures exceed projected revenues for transportation projects for the time frame. Other key findings include:

- Mobility of people and goods will determine the success of the region in a global economy;
- Preservation of the existing transportation system is a major priority;
- Finding innovative solutions to the planning challenges ahead will make the transportation system stronger and more resilient;
- Improve concurrency between transportation and land use; and
- Target projects to improve safety and facilitate movement of people and goods to contribute to a strong economy and a better quality of life.

CONCURRENT PROJECTS, PLANS AND STUDIES

In addition to completed planning efforts, there are a number of ongoing projects, plans and studies that will impact the UDSC into the future. This section includes updates to these ongoing projects, identifying key findings and recommendations into the development of the UDSC study to promote a high level of coordination and consistency. Plans reviewed in this section include:

- Central City Transit Alternatives Analysis
- Pedestrian Plan Update
- Riverside Extension/MLK Jr. Project
- Division Street Gateway Project
- University District Pedestrian Bridge Project
- Downtown Spokane Parking Management Study Update

CENTRAL CITY TRANSIT ALTERNATIVES ANALYSIS

The City of Spokane and the Spokane Transit Authority are working together to study a high performance transit service that will connect major activity centers within the central city area. This project will compare several options such as streetcar, bus rapid transit, light rail and personal rapid transit. The project is currently evaluating multiple route alternatives, all of which impact the University District. Key recommendations of Connect Spokane include:

- Connect neighborhoods and connect major activity nodes within the downtown such as University District, South Hill Medical District, downtown core, the Arena and the Courthouse;
- Use the transit investments to support new development within the downtown to include: development in University District (including South U District); surface parking lots replaced with dense development; more housing in downtown; improved housing development and employment; and revitalization of existing historic structures; and
- Use the transit investment to enhance the pedestrian environment and support an 18-hour downtown by activating the street, creating interest and physical diversity and complementing recreational amenities including the park and Centennial Trail.

Project Update

In Summer 2011, the Spokane Transit Authority Board of Directors decided on a preferred alternative for the Central City Transit Alternatives Analysis. Board members weighed the costs and benefits of streetcar versus a modern electric trolley, and narrowed down the preferred alignment from 11 original routes. While more planning remains, the Board unanimously approved the trolley as the preferred

mode. The preferred alignment will extend between Browne's Addition and Gonzaga University, connecting through Downtown and the Riverpoint Campus. As recommended by the Board, the City Council adopted a resolution to adopt the preferred alternative. The preferred alignment will be located north of the study area, running parallel to the BNSF rail way.

PEDESTRIAN PLAN UPDATE

The City of Spokane is updating its Pedestrian Plan in an effort to promote pedestrian safety and access to help ensure that Spokane is a safe, convenient, and attractive place to walk. It will establish a pedestrian network emphasizing safe routes to school and connections to transit. The routes include streets, walkways, and trails that connect schools, libraries, parks, neighborhoods, and commercial areas throughout the City. It will identify priority street segments along these routes for targeted improvements over the next twenty years. Currently in the first phase of the plan, the project is focusing on filling gaps in sidewalks.

Project Update

The City of Spokane has held numerous public and stakeholder meetings for development of the Pedestrian Plan project. Recently, the City conducted a city-wide questionnaire and developed a Hot Spot Map depicting missing sidewalks and other barriers for pedestrians to assist in developing the plan. As of September 2011, questionnaire results indicate that schools, parks, and STA routes are of the biggest pedestrian generators.

In relation to Sprague Avenue, the Hot Spot Map shows significant pedestrian activity near the proposed bike/ped bridge, between Perry and Helena streets along Sprague Avenue, and near Fiske Street on Sprague Avenue. A related update to the project is the City's adoption of the Complete Streets Ordinance. Among other actions, the ordinance will ensure consideration of new sidewalks as a component of major street projects.

RIVERSIDE EXTENSION/MLK JR. PROJECT

Based on the University District Master Plan, the Riverside Extension/MLK Jr. Project includes the design and construction of an extension to Riverside Avenue that will enable a more contained and campus-like area for students and faculty, and will resolve enhancement and safety concerns.

The first phase of the project will extend Riverside Avenue east from Division Street along the southern border of the campus to the unimproved right-of-way of Sherman Street near the new Trent Avenue Bridge over the Spokane River. The second phase of the project continues Riverside Avenue approximately three-quarters of a mile further east along the south side of the Spokane River to connect with Trent Avenue at Perry Street, eliminating the need for an arterial crossing of the river. In addition, Phase two will improve the air quality at the intersection of Trent Avenue and Hamilton Street, and traffic movement would be modified to create far less congestion at that intersection.

The final phase is a future extension that will connect the northerly portion of the University District (that portion north of the BNSF railroad tracks) to East Sprague, and the southerly portion of the University District. This connection will become more imperative when the University District expands further to the south creating a need to have local connectivity between future student housing opportunities south of Sprague and the University campus.

Project Update

The first phase of the project is nearly complete. This section consists of multiple blocks that connect Riverside Avenue to Spokane Falls Blvd. at Sherman Avenue. Phase II, continuing street improvements east to connect with Trent Avenue, is expected to begin in 2013.

DIVISION STREET GATEWAY PROJECT

The Division Street Gateway project will identify needed streetscape improvements as well as motorized transportation improvements throughout the corridor to provide not only “entrance” statements into the downtown, but strong linkages that provide east-west access between the Downtown and the University District. Improvements to this transportation corridor are intended to enhance Spokane’s visual image and be a safe and effective transportation corridor for all modes. This project will also address State requirements for Greenhouse Gas Emissions and Vehicle Miles Traveled targets. Some of the key points of coordination with the UDSC study will be the GTEC’s improvement of the pedestrian crossings along Division Street, and signal timing changes downtown.

Project Update

After months of analysis and discussions with stakeholders, the project team identified a preferred circulation and lane configuration for the Division Street Gateway Project. As part of the analysis, the project team evaluated future traffic impacts related to the potential street

design, and presented the results to the public at the December 2011 community workshop.

Based on outcomes of the workshop and meetings with the project team, the street can be categorized into multiple “rooms” that describe the character of the street segment. The street segments adjacent to the South University District-Sprague Avenue study area are known as the Entry and the South University District segments of Division Street.

Although more planning remains, the preferred alternative for the entry segment will feature a wide, 21-foot sidewalk on the west street side, four 11-foot travel lanes, and a 10-foot sidewalk on the east street side. Moving further north to the South University District segment, the street will change to three travel lanes, with a 12-foot wide sidewalk and on-street parking on the west street side, and a separated bike lane and sidewalk on the east street side. The street design will feature street trees, landscaped bulb-outs, new street lights and street banners along both street sides. The next step will include refinement of the preferred design, including opportunities for public review, in early Spring 2012.

UNIVERSITY DISTRICT PEDESTRIAN BRIDGE PROJECT

The University District Pedestrian Bridge Project will alleviate safety concerns for increasing numbers of users from the University District urban campus. The project will improve the connection spanning the railway, with connections to a major multimodal transit stop, as well as streetscape improvements over the railroad at North Grant Street to link Riverpoint and Gonzaga campuses to the South University District. The project is a key recommendation of multiple plans and studies including Fast Forward Spokane. Key points of coordination will include the increase in pedestrian traffic and crossings along Sherman Street and across Sprague Avenue.

Project Update

Based on community feedback and an analysis of alternatives, the City identified a preferred alignment and bridge design concept for the University District Pedestrian Bridge. Although conceptual, the preferred alignment connects the campus mall to Sherman Street, using ramps to allow for necessary height restrictions while still meeting ADA accessibility requirements. For the South University District-Sprague Avenue study, the project team organized the design alternatives around the Sherman Street pedestrian/route to allow for direct access to the future bridge.

As part of the bridge project, the City conducted a Health Impact Assessment to help identify potential health impacts related to future bridge users. Based on the study, the bridge will have positive health impacts to those within the study area and bridge users. The study also found that the bridge could increase the number of residents, businesses and users to the study area, with related increases in higher real estate values and reduced building vacancy.

**UNIVERSITY DISTRICT—SPRAGUE
CORRIDOR PLANNING STUDY**

EXISTING CONDITIONS ANALYSIS:
SUSTAINABLE DESIGN AND DEVELOPMENT MEMO

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Appendix B: Green Infrastructure Options Study

INTRODUCTION

Sustainable design and development encompasses a range of practices to improve energy and resource efficiency and conservation, and reduce negative impacts of development on the community and environment. For purposes of this study, sustainable design and development is based on the description and methodology outlined in the LEED for Neighborhood Development rating system. The system serves as a tool for measuring the potential to improve the overall sustainability of the University District – Sprague Corridor study area. Appendix B provides a description of green infrastructure technique case studies, and street improvement projects in Spokane.

This memo is the third part of the three part Existing Conditions Analysis. Along with this memo, other sections of the analysis include the Document Review and Physical Characteristics. This part of the report is organized into the following three sections:

- **Overview of LEED Neighborhood Development;**
- **Preliminary Sustainability Assessment; and**
- **Opportunities to Improve Sustainability.**

OVERVIEW OF LEED NEIGHBORHOOD DEVELOPMENT

To identify opportunities to improve sustainable design and development, this memo provides a review of the UDSC study area using the LEED ND rating system. LEED (or Leadership in Energy and Environmental Design) is an internationally recognized green certification system, developed by the U.S. Green Building Council. The LEED rating system offers a tool for measuring green design, construction, operations, and maintenance.



LEED for Neighborhood Development (LEED ND) integrates the principles of smart growth, urbanism, and green building into a national system for neighborhood design. Through a certification process rating system, the LEED ND designation indicates a neighborhood's high level of environmental responsibility and orientation for sustainable development. The rating system places an emphasis on site selection, design, and construction techniques that integrate buildings with infrastructure, and relate the neighborhood to its landscape and local context.¹

It is important to note that the certification system applies to property owners that own or have significant control over a majority of the land in the neighborhood. Pursuit of LEED ND certification requires that redevelopment takes place over a majority of the area. In addition, based on LEED ND project requirements, the preferred neighborhood size is between 40 to 160 acres. While neither condition applies to the South University District, evaluating the study area through the LEED ND rating system provides a tested guide and industry standard for assessing and improving sustainable design and development.

The rating system has five topic areas, which are further discussed in the following section:

- **Smart Location and Linkage**, to encourage development near public transit infrastructure, that reduces vehicle miles traveled, and encourage walking and biking.
- **Neighborhood Pattern and Design**, to promote transportation efficiency, and create safe, appealing, and comfortable street environments.
- **Green Infrastructure and Buildings**, to encourage design, construction, and retrofit of buildings using green building practices.

¹ U.S. Green Building Council (www.usgbc.org)

- **Innovation and Design Process**, to encourage exemplary and/or innovative development.
- **Regional Priority Credit**, to address geographically specific priorities related to the environment, social equity, and public health.

PRELIMINARY SUSTAINABILITY ASSESSMENT

To qualify for LEED ND certification, there are several requirements in each of the five topic areas that must be fulfilled, as well as a minimum number of points ranging from a Certified Level to a Platinum Level. Based on the LEED ND requirements and available data on the study area, Table 1 provides an overview of the sustainability assessment. There are several areas in which the study area currently meets or partially meets the criteria. Yet there are also multiple criteria that are not being met presently. Based on the assessment, there are multiple opportunities for improving sustainability in the study area as discussed throughout this document.

Table 1: Preliminary Sustainability Assessment

Measurement	Unknown/ More research needed	Does not meet requirements	Partially meets requirements	Meets or exceeds requirements
Proximity to transit				✓
Impact on wildlife and the environment	✓			
Distance to wetlands and water bodies				✓
Residential density		✓		
Non-residential density		✓		
Proximity to the 100-Year Floodplain				✓
Building setbacks			✓	
Continuous Building Frontage			✓	
Average FAR of new development	✓			
Distance to food markets		✓		
Distance to schools		✓		
Average building height			✓	
Intersections/square mile				✓
Distance between streets			✓	

SMART LOCATION AND LINKAGE

The Smart Location and Linkage topic area calls for new development to be near existing infrastructure and near an infill site, or adjacent to a development with existing streets, transit, and development. To meet this requirement, there are several considerations related to a compact, walkable neighborhood, and minimizing impacts to the natural environment.

Smart Location

- *Proximity to transit.* The study area has excellent access to transit. The maximum distance most pedestrians are willing to walk to access destinations and transit is ¼-mile. All buildings and parcels within the project area are within ¼-mile from transit. It is important to note that all transit routes operating within the study area run east and west.

Imperiled Species and Ecological Communities

- *Impact on wildlife and the environment.* This requirement requires an assessment of listed or threatened species within the project area, and related development techniques that minimize adverse impacts. The study area is almost completely developed, with little to no suitable habitats areas in existence. However, additional research is needed to determine if the presence of listed or threatened species exists in the study area.

Wetland and Water Body Conservation

- *Distance to wetlands and water bodies:* The study area is a suitable distance from wetlands and water bodies. LEED ND requires a 50-100-foot minimum distance from wetlands and water bodies. The nearest water body to the study area is the Spokane River at a distance of 300 feet and greater.

Agricultural Land Conservation

- *Residential density:* A higher density of housing within an urban setting reduces sprawl, serving to conserve agricultural land. Although the study area is predominantly commercial, there is potential to provide more housing. Residential density in the study area is currently very low. There are 24 residential dwelling units in the 196-acre study area, representing an average of 0.12 dwelling units per acre.
- *Non-residential density:* Non-residential development is the predominant land use in the study area. However, due to the larger size of many non-residential buildings, the average non-residential density is still low. There are 200 non-residential

buildings within the 196-acre study area, representing an average of 1.02 nonresidential buildings per acre.

Floodplain Avoidance

- *Proximity to the 100-Year Floodplain:* The study area is outside of the 100-year flood plain.

NEIGHBORHOOD PATTERN AND DESIGN

The Neighborhood Pattern and Design topic area has three requirements. There are also 15 topic areas that determine potential credit. Human scaled buildings and street widths, wide sidewalks, buildings that are pulled up to the sidewalk, retail storefronts and other uses, and interesting street furniture and trees, are meant to create a safe, inviting, and well-used public realm that all influence neighborhood pattern and design.



Walkable Streets

- *Building setbacks:* Building setbacks are an important and visible part of building design, and have a strong influence on street character and the pedestrian environment. Along with other design treatments, buildings located closer to the street create a more pedestrian friendly environment and can serve to reduce traffic speeds. LEED ND requires a maximum of 25 feet setbacks for at least 80 percent of the building façade, and 18 foot setbacks for at least 50 percent of the façade. Currently, building setbacks within the South University District range from four to 16 feet, with some locations that have a setback of as much as 43 feet.
- *Continuous Building Frontage:* When combined with smaller setbacks, a continuous building frontage creates a pedestrian friendly street, by improving urban form and reducing the number of driveways. The current building frontage to street length in the study area is between 38 to 65 percent. The lower value indicates a non-continuous building frontage while the higher value indicates a more continuous building frontage.

Compact Development

- *Average FAR:* FAR's (floor area ratios) regulate the amount of use allowed on a site, and is calculated by dividing interior floor area by total site area. A higher FAR leads to denser development. Most of the study area allows for a maximum FAR of 2.5. LEED ND requires a non-residential FAR of 0.50 - 0.80 or greater buildable land available for nonresidential uses. Based

on a site tour, it appears that most of the existing building FAR is less than the allowable LEED ND standards. However, more data is needed to verify this assessment.

- *Residential density:* LEED ND requires a residential density of between 7-12 and greater dwelling units per acre of buildable land available for residential uses. Existing residential density is 0.12 dwelling units/acre, which is below the minimum requirement.
- *Distance to food markets:* There are few food markets in walkable distance (1/4-1/3-mile) from residents. There is one farmer's market located at the intersection of 5th and Division Street, nearly 3/4-mile distance from the center of the study area. There is a new public market at Browne and Second and the Main Street Coop is located at Main and Browne at a distance of 1/2-mile from most residents.
- *Distance to schools:* There are six schools near the study area, ranging from 1/2-mile to over two miles. The average distance to the six closest schools from the center of the study area is 1.2 miles which is a greater distance than most pedestrians are willing to walk.
- *Average building height:* The average building height in the study area is 18.6 feet (or one to two stories). Multi-story buildings allow for more compact development, and can also allow for a greater mixture of uses. The study area has potential for more compact development, with an average building height equivalent to two-story development.

Connected and Open Community.

- *Intersections/square mile.* Intersections allow for more convenient transportation routes, greater route options, and more opportunities for redevelopment. LEED ND requires a minimum of 140 intersections per square mile. There are 72 intersections in the study area, representing 235 intersections per square mile, indicating that there are more than adequate intersections and good connectivity in the majority of the study area.
- *Distance between streets.* Distance between streets indicates how well the study area can accommodate pedestrians and bicyclists. A shorter distance between streets offers more opportunities for walking and biking. The maximum average block length to achieve an integrated network is 450 feet. LEED ND requires a minimum of 800-foot distance between streets.

The street layout in the study area mostly follows a grid system, with some differences in street design to the east (E. Sprague Way). In general, the typical block length in the study area is 300 feet which results in a walkable street pattern. However, because not all blocks in the study area are the same, the average distance between streets in the study area is 736 feet, or less than ¼-mile (0.13 of a mile).

GREEN INFRASTRUCTURE AND BUILDINGS

The Green Infrastructure and Buildings topic area has four requirements. There are also 17 topic areas that determine potential credit. Much of the type of green development takes place during the design and construction of individual buildings. However, the green infrastructure must be in place prior to any new construction.

LEED ND requires 90-percent of the building floor area of all non-residential and mixed-use buildings, and 90-percent of new single family residential buildings are built to energy efficiency standards. Efficiency standards include a range of considerations including water efficiency, landscaping, building reuse, historic preservation, minimizing site disturbance during design and construction, stormwater management, wastewater treatment, recycling, and lighting.

OTHER REQUIREMENTS

There are two additional topic areas that offer additional credit based on projects that go above and beyond LEED ND requirements (Innovation and Design Process), and for addressing priorities that have been identified at the regional level (Regional Priority Credit). The Regional Priority Credit offers additional points based on specific regional issues. According to the U.S. Green Building Council, the UDSC study area is not eligible for credits in this category.

OPPORTUNITIES TO IMPROVE SUSTAINABILITY

The application of LEED ND design requirements served to identify how existing conditions can be altered to maximize future opportunities for green development within the South University District and Sprague Avenue Corridor.

LOCATION

The location of the study area has potential to offer the largest gain in attracting new investment. The study area is close to Downtown



Spokane, the University District, the East Central Neighborhood, and access to several major transportation routes. Proximity to all of these neighborhoods and amenities makes the UDSC uniquely suitable for spawning growth and change, with a focus on sustainability.

TRANSIT

The availability of public transit is one of the biggest assets for opening opportunities in the study area. Existing public transit within the study area already provides excellent service along Sprague Avenue and within the South University District. Denser, more walkable development requires excellent proximity and access to transit, allowing residents and visitors to move around the City without reliance on cars. Focusing development along areas with existing transit service, as well as potential extension of service into new focus areas can increase the livability of the study area while reducing GHG emissions related to reliance on personal vehicle travel.

BUILDING DENSITY AND DESIGN

There is excellent potential for infill development within the study area. Currently, both residential density and non-residential building density are below the LEED ND requirements. Yet existing City design and development guidelines allow for FARs that can create an appropriate density in the study area. Opportunities for infill and redevelopment of existing structures can also be targeted for developing green buildings.

STREET SYSTEM

The existing street network already provides options for pedestrians, bicyclists, motorists, and transit users for moving in and around the study area. The ratio of intersections per square mile, and distance between intersections meets LEED ND requirements. However, not all streets in the study area are currently suitable or are designed to safely accommodate all modes. There are many sections of street with broken or missing sidewalks, dangerous crossings, and other issues. Yet, with an abundant street width, there is excellent potential for redesigning and redeveloping existing streets to safely and efficiently accommodate all modes.

HEALTHY FOOD

Access to markets and healthy food are important components of a livable neighborhood. There are currently few options for buying or growing food in the study area. With potential to increase residential uses in the study area, more markets and food sources within a walkable distance will be needed. The existing infill areas provide

excellent opportunities for community gardens, while vacant or underused buildings can be converted for grocery stores or markets.

CONNECTIVITY

The University District –Sprague Corridor is fortunate to be near an abundance of great neighborhoods and adjacent uses. Good connectivity is central to leveraging these assets, including safe crossings for pedestrians and bicyclists, transit routes, and efficient linkages for vehicles. Currently the study area is constrained by I-90 to the south and the BNSF railway to the north. However, projects such as the pedestrian/bicycle bridge connecting to the University District will create new opportunities for development in the study area.

NEIGHBORHOOD AMENITIES

A vibrant and livable neighborhood is dependent on a diverse number of amenities for the community, and can create a unique sense of place. Along with access to healthy food, schools, parks and open space, trails, and other public spaces are all elements of a complete neighborhood. These amenities can draw visitors, and serve existing residents and workers to the study area. Unique shops, public markets, and public art can also make the study area diverse and memorable. With support from organizations such as the Spokane International District and the East Sprague Business Association, there is an emergence of several new initiatives to attract more amenities into the study area.

APPENDIX: A

LEED ND SCORECARD



LEED 2009 for Neighborhood Development Project Scorecard

Project Name:

Yes	?	No
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Smart Location and Linkage

27 Points Possible

Y	Prereq 1	Smart Location	Required
Y	Prereq 2	Imperiled Species and Ecological Communities	Required
Y	Prereq 3	Wetland and Water Body Conservation	Required
Y	Prereq 4	Agricultural Land Conservation	Required
Y	Prereq 5	Floodplain Avoidance	Required
	Credit 1	Preferred Locations	10
	Credit 2	Brownfield Redevelopment	2
	Credit 3	Locations with Reduced Automobile Dependence	7
	Credit 4	Bicycle Network and Storage	1
	Credit 5	Housing and Jobs Proximity	3
	Credit 6	Steep Slope Protection	1
	Credit 7	Site Design for Habitat or Wetland and Water Body Conservation	1
	Credit 8	Restoration of Habitat or Wetlands and Water Bodies	1
	Credit 9	Long-Term Conservation Management of Habitat or Wetlands and Water Bodies	1

Yes	?	No
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Neighborhood Pattern and Design

44 Points Possible

Y	Prereq 1	Walkable Streets	Required
Y	Prereq 2	Compact Development	Required
Y	Prereq 3	Connected and Open Community	Required
	Credit 1	Walkable Streets	12
	Credit 2	Compact Development	6
	Credit 3	Mixed-Use Neighborhood Centers	4
	Credit 4	Mixed-Income Diverse Communities	7
	Credit 5	Reduced Parking Footprint	1
	Credit 6	Street Network	2
	Credit 7	Transit Facilities	1
	Credit 8	Transportation Demand Management	2
	Credit 9	Access to Civic and Public Spaces	1
	Credit 10	Access to Recreation Facilities	1
	Credit 11	Visitability and Universal Design	1
	Credit 12	Community Outreach and Involvement	2
	Credit 13	Local Food Production	1
	Credit 14	Tree-Lined and Shaded Streets	2
	Credit 15	Neighborhood Schools	1

Yes ? No

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Green Infrastructure and Buildings

29 Points Possible

Y			Prereq 1	Certified Green Building	Required
Y			Prereq 2	Minimum Building Energy Efficiency	Required
Y			Prereq 3	Minimum Building Water Efficiency	Required
Y			Prereq 4	Construction Activity Pollution Prevention	Required
			Credit 1	Certified Green Buildings	5
			Credit 2	Building Energy Efficiency	2
			Credit 3	Building Water Efficiency	1
			Credit 4	Water-Efficient Landscaping	1
			Credit 5	Existing Building Use	1
			Credit 6	Historic Resource Preservation and Adaptive Reuse	1
			Credit 7	Minimized Site Disturbance in Design and Construction	1
			Credit 8	Stormwater Management	4
			Credit 9	Heat Island Reduction	1
			Credit 10	Solar Orientation	1
			Credit 11	On-Site Renewable Energy Sources	3
			Credit 12	District Heating and Cooling	2
			Credit 13	Infrastructure Energy Efficiency	1
			Credit 14	Wastewater Management	2
			Credit 15	Recycled Content in Infrastructure	1
			Credit 16	Solid Waste Management Infrastructure	1
			Credit 17	Light Pollution Reduction	1

Yes ? No

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Innovation and Design Process

6 Points

			Credit 1.1	Innovation and Exemplary Performance: Provide Specific Title	1
			Credit 1.2	Innovation and Exemplary Performance: Provide Specific Title	1
			Credit 1.3	Innovation and Exemplary Performance: Provide Specific Title	1
			Credit 1.4	Innovation and Exemplary Performance: Provide Specific Title	1
			Credit 1.5	Innovation and Exemplary Performance: Provide Specific Title	1
			Credit 2	LEED® Accredited Professional	1

Yes ? No

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Regional Priority Credit

4 Points

			Credit 1.1	Regional Priority Credit: Region Defined	1
			Credit 1.2	Regional Priority Credit: Region Defined	1
			Credit 1.3	Regional Priority Credit: Region Defined	1
			Credit 1.4	Regional Priority Credit: Region Defined	1

Yes ? No

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

Project Totals (Certification estimates)

110 Points

Certified: 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80+ points



LEED 2009 for Neighborhood Development
Project Scorecard

Project Name:
Date:

Yes ? No

0 0 0 Smart Location and Linkage 27 Points Possible

Y	Prereq	Description	Required
Y	Prereq 1	Smart Location	Required
Y	Prereq 2	Imperiled Species and Ecological Communities	Required
Y	Prereq 3	Wetland and Water Body Conservation	Required
Y	Prereq 4	Agricultural Land Conservation	Required
Y	Prereq 5	Floodplain Avoidance	Required
	Credit 1	Preferred Locations	10
	Credit 2	Brownfield Redevelopment	2
	Credit 3	Locations with Reduced Automobile Dependence	7
	Credit 4	Bicycle Network and Storage	1
	Credit 5	Housing and Jobs Proximity	3
	Credit 6	Steep Slope Protection	1
	Credit 7	Site Design for Habitat or Wetland and Water Body Conservation	1
	Credit 8	Restoration of Habitat or Wetlands and Water Bodies	1
	Credit 9	Long-Term Conservation Management of Habitat or Wetlands and Water Bodies	1

Yes ? No

0 0 0 Neighborhood Pattern and Design 44 Points Possible

Y	Prereq	Description	Required
Y	Prereq 1	Walkable Streets	Required
Y	Prereq 2	Compact Development	Required
Y	Prereq 3	Connected and Open Community	Required
	Credit 1	Walkable Streets	12
	Credit 2	Compact Development	6
	Credit 3	Mixed-Use Neighborhood Centers	4
	Credit 4	Mixed-Income Diverse Communities	7
	Credit 5	Reduced Parking Footprint	1
	Credit 6	Street Network	2
	Credit 7	Transit Facilities	1
	Credit 8	Transportation Demand Management	2
	Credit 9	Access to Civic and Public Spaces	1
	Credit 10	Access to Recreation Facilities	1
	Credit 11	Visitability and Universal Design	1
	Credit 12	Community Outreach and Involvement	2
	Credit 13	Local Food Production	1
	Credit 14	Tree-Lined and Shaded Streets	2
	Credit 15	Neighborhood Schools	1

Yes ? No

0 0 0 Green Infrastructure and Buildings 29 Points Possible

Y	Prereq	Description	Required
Y	Prereq 1	Certified Green Building	Required
Y	Prereq 2	Minimum Building Energy Efficiency	Required
Y	Prereq 3	Minimum Building Water Efficiency	Required
Y	Prereq 4	Construction Activity Pollution Prevention	Required

Yes ? No

Green Infrastructure and Buildings, Continued

Y	Credit	Description	Points
	Credit 1	Certified Green Buildings	5
	Credit 2	Building Energy Efficiency	2
	Credit 3	Building Water Efficiency	1
	Credit 4	Water-Efficient Landscaping	1
	Credit 5	Existing Building Use	1
	Credit 6	Historic Resource Preservation and Adaptive Reuse	1
	Credit 7	Minimized Site Disturbance in Design and Construction	1
	Credit 8	Stormwater Management	4
	Credit 9	Heat Island Reduction	1
	Credit 10	Solar Orientation	1
	Credit 11	On-Site Renewable Energy Sources	3
	Credit 12	District Heating and Cooling	2
	Credit 13	Infrastructure Energy Efficiency	1
	Credit 14	Wastewater Management	2
	Credit 15	Recycled Content in Infrastructure	1
	Credit 16	Solid Waste Management Infrastructure	1
	Credit 17	Light Pollution Reduction	1

Yes ? No

0 0 0 Innovation and Design Process 6 Points

Y	Credit	Description	Points
	Credit 1.1	Innovation and Exemplary Performance: Provide Specific Title	1
	Credit 1.2	Innovation and Exemplary Performance: Provide Specific Title	1
	Credit 1.3	Innovation and Exemplary Performance: Provide Specific Title	1
	Credit 1.4	Innovation and Exemplary Performance: Provide Specific Title	1
	Credit 1.5	Innovation and Exemplary Performance: Provide Specific Title	1
	Credit 2	LEED® Accredited Professional	1

Yes ? No

0 0 0 Regional Priority Credit 4 Points

Y	Credit	Description	Points
	Credit 1.1	Regional Priority Credit: Region Defined	1
	Credit 1.2	Regional Priority Credit: Region Defined	1
	Credit 1.3	Regional Priority Credit: Region Defined	1
	Credit 1.4	Regional Priority Credit: Region Defined	1

Yes ? No

0 0 0 Project Totals (Certification estimates) 110 Points

Certified: 40-49 points, Silver: 50-59 points, Gold: 60-79 points, Platinum: 80+ points

APPENDIX: B

GREEN INFRASTRUCTURE OPTIONS STUDY

Produced by Jackie Caro
City of Spokane Business and Development Services Dept.

INTRODUCTION

In the first phase of the East Sprague Redevelopment Study the American Reinvestment and Recovery Act grant requires a look at innovative solutions to problems pertaining to the urban setting. In recent years many cities have begun to implement green infrastructure into new projects as a way to mitigate or eliminate the negative impacts of the urban form on the environment in which it exists.

Green infrastructure has been associated with many different definitions the one that is most prevalent to this paper comes from the Center for Neighborhood Technology's report *The Value of Green Infrastructure*:

"Green infrastructure (GI) refers to a network of decentralized stormwater management practices, such as green roofs, trees, storm gardens and permeable pavement, that can capture and infiltrate rain where it falls, thus reducing stormwater runoff and improving the health of surrounding waterways." (2010)

Though the main purpose of green infrastructure is to treat stormwater it is also associated with many unforeseen benefits. These benefits include positively impacting energy consumption, air quality, carbon reduction and sequestration, property prices, recreation and other elements of community health and vitality that have monetary or other social values.

For the purpose of this paper there will be a focus on the benefits of green infrastructure elements and examples used in Spokane and ones incorporated in other municipalities and designs that could be incorporated into the future design of the Sprague Corridor.

GREEN INFRASTRUCTURE ELEMENTS

PERMEABLE PAVEMENT

Also known as porous or pervious concrete types allow for absorption and infiltration of rain and snow melt onsite¹.

BENEFITS:

- Reduces stormwater runoff by allowing stormwater to infiltrate underlying soils, which can lower water treatment costs and reduce flooding and erosion;
- Help to reduce the use of salt by substantially delaying the formation of a frost layer in the winter climates, saving money and reducing the pollution in the local waterways and groundwater sources;
- Reduces energy use by lowering surrounding air temperature, in turn reducing demand on cooling systems within buildings;
- Help to reduce the urban heat island effect, decreasing the ground level ozone formation, which directly impacts the air quality;
- Reduces atmospheric CO₂ by capturing rainfall onsite, allowing communities to reduce the amount of rainwater treatment needed, and in turn reducing CO₂ emissions from power plants;
- Improves community livability by increasing the street porosity levels permeable pavement can help to reduce local noise pollution.¹



Figure 1: Example of Porous Pavement

BIORETENTION AND INFILTRATION PRACTICES

Bioretention and infiltration practices are used in a number of ways and in a variety of scales, including storm gardens, bioswales and wetlands. Storm gardens are usually dug at the bottom of a slope in order to collect water from a roof downspout or adjacent impervious surface, performing best if planted with long-rooted plants like native grasses.¹ **Error! Bookmark not defined.**

Bioswales are typically installed within or next to parking lots or along roads and sidewalks; they are designed to allow for overflow into the sewer system by allowing water to pool for a

¹ <http://www.cnt.org/repository/gi-values-guide.pdf>

period of time and then drain. These systems also act as a trap for silt and other pollutants that runoff from impermeable surfaces. According to the Center for Neighborhood Technologies' report *The Value of Green Infrastructure: A Guide to Recognizing Its Economic, Environmental and Social Benefits* bioretention and infiltration practices offer many benefits to a community.

BENEFITS:

- By storing and infiltrating stormwater, bioretention and infiltration prevents stormwater from polluting local waterways;
- Help to increase available water supply by reducing the amount of potable water used for outdoor irrigation;
- Directs rainwater into the ground instead of pipes helping to increase groundwater recharge;
- Improves air quality by minimizing the amount of water entering treatment facilities therefore reducing the energy use that in turn reduces greenhouse gases emitted from treatment;
- Infiltration practices also improve air quality through uptake of criteria air pollutants and the buildup of particulate matter;
- Through direct carbon sequestration bioretention and infiltration practices help reduce carbon dioxide emissions;
- A reduction in surface albedo and evaporative cooling, these practices help to mitigate the urban heat island effect resulting in reduced energy use;
- Help to improve community livability by improving the local aesthetics and enhancing recreational opportunities within communities¹.



Figure 2: Example of storm garden, Seattle, WA



Figure 3: El Cerrito Storm Garden



Figure 4: Storm garden, Portland, OR

TREE PLANTING

Tree planting has many benefits; they provide many services that have ecological, economic and social implications. Trees have benefits on a tree-by-tree basis as well as on the larger scale.¹

BENEFITS:

- Reduce stormwater runoff by intercepting rainfall and increase infiltration and the ability of soil to store water;
- Trees help to contribute to local aquifer recharge and help to improve watershed system health;
- When properly placed trees provide shade, which can decrease the air temperature and reduce the amount of heat reaching and being absorbed by buildings; decreasing heat absorption of buildings trees can reduce the use of energy to cool buildings;
- Trees reduce wind speeds, helping to reducing the need for energy to cool buildings;

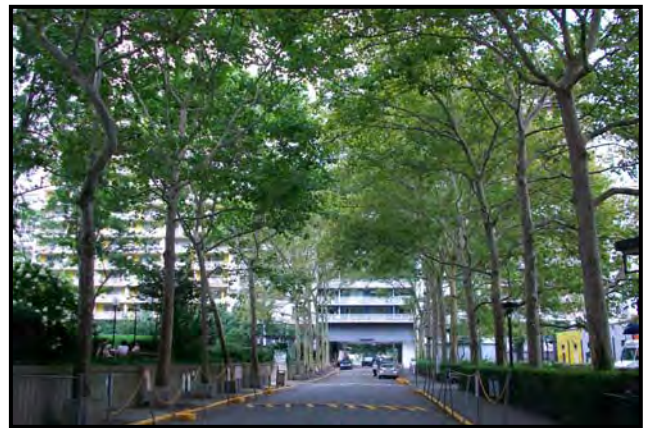


Figure 5: Street trees, New York City

- Trees improve air quality by absorbing air pollution and intercepting particulate matter;
- Through direct sequestration, trees reduce atmospheric carbon dioxide levels and reduce the amount of energy consumption, which reduces CO₂ levels;
- Trees are seen as creating a sense of place and well-being, which can help to strengthen community cohesion;
- Trees help to reduce sound transferal, reducing local noise pollution levels.¹

GREEN ROOFS

Green roofs also known as ecoroofs are rooftops that is partially or completely covered with a growing medium and vegetation planted over a waterproofing membrane. There are two types of green roofs: “extensive” green roofs are thinner and light weight growing medium, an “intensive” green roofs include thick growth medium and can support a wide variety of plant species including trees and large shrubs.² Green roofs can provide many benefits to a community as well as to private entities.

BENEFITS:

- Through the storage of water in their growing medium green roofs reduce the runoff entering sewer systems and waterways, which can help alleviate the risk of combined sewer overflows;
- By acting as additional insulation a green roof can reduce a building’s energy consumption by providing better insulation compared to conventional roofing materials;
- Cooling from water retained in the growing media helps to reduce roof surface temperature, reducing the amount of energy needed to cool a building;
- The vegetation on green roofs take up air pollutants and intercepts particulate matter;



Figure 6: Green Roof, Chicago, IL

² <http://www.portlandonline.com/bes/index.cfm?c=50818&a=261053>

- Due to the cooling effect of vegetation on a green roof smog formation can be decreased by slowing the reaction rate of nitrogen oxides and volatile organic compounds;
- Green roofs in urban areas can help to reduce the heat island effect by reducing the amount of heat-absorbing surfaces;
- Green roofs can increase recreational opportunities by providing outdoor areas for people to use and enjoy.¹

LOCAL GREEN INFRASTRUCTURE PROJECTS

LINCOLN STREET SURGE PROJECT

PROJECT DESCRIPTION

The Lincoln Street Project is located in the Manito/Cannon Hill Park Neighborhood of Spokane's South Hill area (see Figure 7). The project contained two parts; the first being the Lincoln Street Rehabilitation funded by the City of Spokane 10-Year Street Bond Program, the second was the Lincoln Street Spokane Urban Runoff Greenway Ecosystems (SURGE), which was funded by the City of Spokane Sewer Department.³

The Lincoln Street SURGE is located within Combined Sewer Overflow (CSO) Basin 24a, in 2008 the CSO experienced 15 overflows and discharged approximately 2.48 million gallons of untreated combined sewage into the Spokane River. To meet compliance with Washington State regulations (173-245 WAC) the overflow discharges must be limited to 1 event per year per outfall. In addition to state regulations, the Environmental Protection Agency (EPA) has issued a Combined Sewer Overflow (CSO) control policy as part of the Clean Water Act. The City of Spokane has less than nine years to bring their CSO system and discharges in compliance with State and Federal requirements.³



Figure 7: Map of Lincoln Street Surge

³<http://www.spokanewastewater.org/SURGE/Reports/Lincoln%20St%20Surge%20Report.pdf>

The Lincoln Street Rehabilitation addressed removing and replacing existing pavement and adding ADA compliant curb ramps at the intersections.

The Lincoln Street SURGE constructed Low Impact Development (LID) technologies such as pavement area reduction, bio-infiltration techniques, and subsurface drainage facilities³.

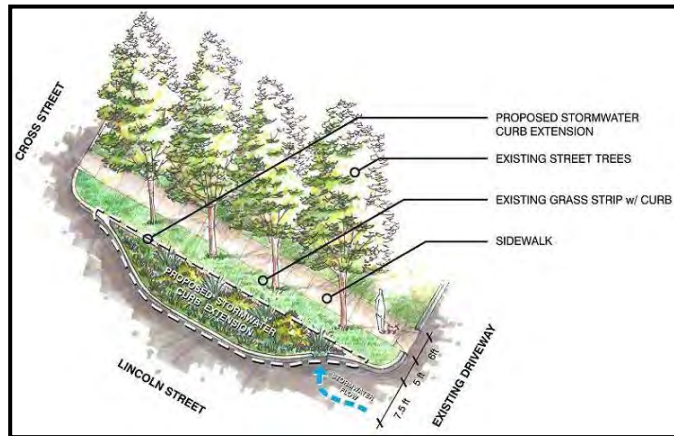


Figure 8: Rendering of Lincoln Street SURGE

LINCOLN SURGE BENEFITS

The SURGE project will remove up to 86,000 gallons per rainfall event from the combined sewer system.³ It is projected that the SURGE will decrease treatment costs by reducing the amount of sewage reaching the Riverside Park Facility. Lincoln Street SURGE is intended to decrease the amount of pollutants reaching the treatment facility and the Spokane River by capturing and treating the pollutant loaded “first flush”.³

Another benefit from the Lincoln Street SURGE project was the pipe installed to flow treated water from the bio-infiltration ponds to Cannon Hill Pond which will reduce the volume of potable water that needs to be added to the pond.

INNOVATIVE/ALTERNATIVE TECHNOLOGIES USED

- **Neighborhood Partnership:** Input was solicited from the area homeowners by Engineering Services and has incorporated plant selection recommendations from local residents in the final design. Information campaigns educated homeowners on how to care and maintain the treatment areas.³
- **Low Impact Development Techniques:** Many native and locally adapted species were specified in the mixtures for the bio-infiltration cells that were drought tolerant, in addition to

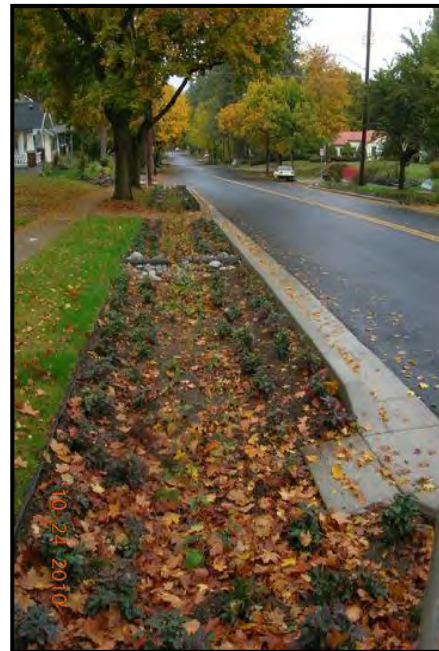


Figure 9: Finished storm garden, Lincoln Street

some plants that can survive with occasional “wet feet”.³

- **Green Practices:** With street slopes being very steep from 27th Avenue to 21st Avenue, a “timber” style of check dam was designed to allow the cell areas to match street grade as quickly as possible to reduce the amount of wasted infiltration area. The timbers will be made of recycled plastic to keep creosote and other wood treatment chemicals out of the system.³
- **Stormwater Treatment:** The soil mix for the bio-infiltration cells was specially designed to retain soil moisture, promote healthy plant growth, and improve nitrogen and phosphate treatment.³
- **Street Trees:** The curb extensions were designed to allow large tree roots to enter and flourish. The bio-infiltration cells were lined with clay to allow tree roots to safely pass through without compromising the liner.³

MAINTANENCE

City of Spokane:

- Sweeping of the streets;
- Inlet cleaning;
- Cleaning out basins.³

Neighborhood and property owners:

- Plant survival and maintenance required to keep the system operating efficiently are contingent upon care from homeowners;
- Weeding, watering, trash removal, plant replacement and removal of leaves from inlets.³

LESSONS LEARNED

- Train construction management to deal with planting association with the installation of the bio-infiltration cells;
- Do a more comprehensive monitoring and evaluation of the project before and after installation to evaluate desired outcomes;
- Establish baseline performance using current conditions at pre-installation and at implementation and create a follow-up monitoring schedule in order to review performance of bio-infiltration cells.⁴

WEST BROADWAY AVENUE SURGE PROJECT

PROJECT DESCRIPTION

The Broadway Avenue SURGE Project is located in the northwest section of the City of Spokane. The project runs from Elm Street to Oak Street along Broadway Avenue (see Figure 10). The SURGE project implemented a series of storm gardens, constructed between the street and the sidewalk. The storm gardens accept stormwater runoff directly from the street. The other SURGE components include plants, trees and new pervious sidewalks. The intent of the project is to accept, treat and use stormwater that would normally be treated at the City of Spokane's treatment plant or into the Spokane River.⁵

WEST BROADWAY AVENUE STORMWATER DESIGN APPROACH

The Broadway Avenue SURGE project includes multiple dispersed storm gardens to reduce scale of system and provide redundancy. The design approach of even distribution of storm gardens was used to allow consistent unit size simplifying the installation process. The project was designed as a self-contained system that matched the character of the urban neighborhood of Broadway Avenue.⁵

The project did not modify the pavement width; the existing curbs were replaced with a concrete curb and gutter to better control the flow of the runoff. The existing sidewalks were replaced by a combination of pervious concrete and concrete pavers. The existing concrete driveways along the project area were not modified. The landscaping was included in the proposed stormwater gardens and landscape strips outside of the storm gardens. Stormwater improvements included construction of 27 storm gardens to collect, treat, and infiltrate stormwater runoff, decreasing the volume of runoff directed to the combined sewer system⁴.



Figure 10: Map of location of West Broadway Ave SURGE project

⁴ Interview with Marcia Davis, City of Spokane Public Works Department

WEST BROADWAY AVENUE SURGE BENEFITS

- **Reduce Pollutants:** Storm gardens are utilized to reduce the pollutants entering the Spokane River due to filtration through natural plant systems in the constructed storm gardens;
- **Improve Operation:** Reduce the amount of runoff volumes to the Combined Sewer System (CSS);
- **Urban Green Space:** Increased trees and plants in the area that moderate summer temperatures and help to improve air quality;
- **Low Cost:** The facilities constructed help to provide alternatives for treating and managing stormwater runoff versus being treated in a plant;
- **New Standards:** Helped to established new standards for the City of Spokane's emerging green infrastructure system;
- **Positive Environmental Impacts:** Enhanced by reducing impervious surfaces and increasing the natural hydrological runoff path.⁵



Figure 11: Finished storm gardens, Broadway Ave

WEST BROADWAY AVENUE STORMWATER MAINTENANCE

Maintenance of the sidewalks is performed by the neighborhood. The City of Spokane does the majority of the maintenance including weeding, watering, trash pick-up, plant replacement, and removal of leaves from inlets; sweep streets, inlet cleaning, and catch basin clean out.⁵

LESSONS LEARNED

Lessons from this project include things that could have been done differently for this project and ones



Figure 12: Finished storm gardens, Broadway Ave

⁵ <http://www.spokanewastewater.org/SURGE/Documents/BroadwaySURGEPosterpdf.pdf>

that should be considered on future projects that are related to the Broadway Surge Project.

- Casting of the concrete Storm Gardens in place did not work, contractor had to go back and precast concrete structures⁶;
- Pervious concrete does not appear to function correctly, increased monitoring and testing previous to construction may have prevented lack of function⁶;
- Over constructed the project, each Storm Garden was designed for a ten year storm equaling up to a one hundred year storm facility which was unnecessary⁶;
- Conduct more comprehensive evaluation and monitoring before installation of facilities⁴;
- It is necessary to have good cross communication with all involved parties⁴.

MONITORING

Monitoring the Broadway Avenue SURGE has three main goals that are being monitored; flow reduction to a Combined Sewer Overflow basin, based on flow reduction, show pollutant reduction, disposal location is going to be Storm gardens instead of the Wastewater Treatment Plant or the Spokane River.⁵ For monitoring of the Broadway Avenue SURGE project seven techniques were established:

- Monitor adjacent Catch Basin/Street Piping system;
- Monitor bypass flow after Storm Garden;
- Compare rainfall discharge amounts within close proximity to SURGE;
- Establish amount per square foot of typical street runoff per rain event;
- Compare to measured flow from storm gardens to existing overflow catch basin;
- Difference equals storm garden Capture flows.⁵

⁶ Interview with Joel Graff, City of Spokane Engineering Department

MARKET STREET REVITALIZATION PROJECT

PROJECT DESCRIPTION

Market Street Revitalization Project is located in northeast Spokane's Hillyard District. When finished the project became the largest road and sidewalk rehabilitations ever taken on by the City of Spokane. In November of 2004 the City of Spokane's 10-year street bond included the reconstruction of Market Street to be completed in 2009. With the combination of federal (ARRA), state (WSDOT, TIB) and the local (CDBG, 10-Year Street Bond, LID) funding sources in place the project was able to incorporate improvements to the fire protection, street, sidewalk, and bike infrastructure were made along the Market Street corridor⁷. Water and sewer upgrades were also completed as part of the project.

BENEFITS OF REVITALIZATION

- Reduction of maintenance costs and electric usage with the installation of new lighting lit with LED's.⁸
- Installation of electric car charging stations benefit future transportation options.⁸
- Improved property value increase of 14% and a reduced vacancy rate from 20% to 0% as of March 2011.⁸
- Retail sales increased by \$3 million during the construction year alone. From 2008 to 2010, retail sales increased by 6% while the rest of Spokane County decreased sales by 15%.⁸
- Decrease in traffic speeds from 27-29 mph to 21-22 mph due to physical improvements⁸.
- Improved bicycle infrastructure facilities with installation of new bike racks.⁸



Figure 13: Map of Market Street Revitalization Project

⁷ Market Street Revitalization: Final Project Report, City of Spokane Neighborhood Business Centers (NBC) Program

⁸ Market Street Revitalization Project White Paper

- Improved pedestrian amenities including new sidewalks, upgrade and rehab of existing sidewalks, installation of bumpouts and integrated crosswalks for increased pedestrian safety perception and traffic calming⁸.
- Reduced costs and utilization of locally generated resources by using recycled glass to supplement gravel in the roadbed⁷.

MAINTENANCE OF NEW AMENITIES

Both the City of Spokane and the Greater Hillyard Business Association maintain the newly installed amenities. With the use of a Memorandum of Understanding, specific responsibilities of each party were described⁷.

MAINTAINED BY THE CITY OF SPOKANE:

- Streetlights and light standards;
- Plantings in the northern triangle swale;
- Removal of any street furniture that becomes a public nuisance⁷.



Figure 15: South "triangle" planter, Market Street

MAINTAINED BY GREATER HILLYARD BUSINESS ASSOCIATION:

- Sidewalks maintained by adjacent owner;
- Plantings in the southern "triangle";
- Bike racks, planters, and trash receptacles and to frequently and legally dispose of any collected trash;
- Inspection of tree grates and monthly water bill payment associated with tree irrigation;
- Maintain and winterize the master irrigation system, weed periodically, repair irrigation system damage, prune live trees, and replace dead trees⁷.

LESSONS LEARNED

In the process of revitalizing Market Street many lessons were learned. These lessons can help to aid in the improvement of future projects and reduce construction impacts on the City's communities.

- Involve construction management personnel earlier in the process;
- Encourage heavy public participation in planning to acquire local expertise and trust;
- Removal of the sidewalk at the same time as the road is helpful;

- Allow Local Improvement District (LID) work run independently of any main project timelines;
- Include the NBC (Neighborhood Business Centers) in follow-up activities to ensure necessary private action is confirmed complete;
- Include the design review process earlier in the process;
- When a list of neighborhood priorities is adopted, create a checklist to ensure that they are included;
- When construction is adjacent to buildings, assess facades to determine if they need to be shored up⁷.

MARTIN LUTHER KING JR. WAY

PROJECT DESCRIPTION

Martin Luther King Jr. Way previously the Riverside Avenue extension began Phase I of the two-phase project in spring of 2010. Phase I is set to include complete streets elements including bike lanes, street trees, wide sidewalks, and an elevated median and is to be completed Winter 2011. In addition Phase I of the project will extend:



Figure 16: Rendering of Martin Luther King Jr. Way

- Riverside Avenue/Martin Luther King Jr., Way from Division Street to Sherman Avenue;
- Pine Street from Main to Riverside avenues;
- Spokane Fall Boulevard from Division Street to Sherman Avenue; and
- Sherman Avenue from Martine Luther King Jr., Way to Riverpoint Boulevard⁹.

The project will also encompass green infrastructure elements including 208 swales to treat stormwater. The crushed rock used on the project is blended with 15% recycled glass and the new asphalt is produced using 20% recycled asphalt. Several hundred trees will be planted in the swales and the medians; there will also be several thousand shrubs will be planted as well as sod⁶

⁹ http://www.spokaneengineering.org/mlk_way

NATIONAL GREEN INFRASTRUCTURE PROJECTS

NEW COLUMBIA-PORTLAND, OR

PROJECT DESCRIPTION:

Located in Portland, OR five miles to the north of the central business district is the Hope VI mixed-income and mixed-use public housing project known as New Columbia. The project lies on 82-acre site-formerly the home of the troubled Columbia Villa public housing project. By the 1980s the original housing project was overrun with crime and drugs and serving as a home to California gangs



Figure 17: New Columbia Plan, Portland, OR

that were beginning to take hold in the city. The site is surrounded on three sides by residential neighborhood, whereas the northern side of the property has limited access and is cut off from the river by North Columbia Boulevard, railroad tracks and the Columbia Slough.

Developed by the Housing Authority of Portland the New Columbia site features 854 residential units, including public housing, affordable rentals, seniors' housing, and both market-rate and affordable homes for sale. The site includes a number of sustainable measures: 82 percent of building materials were recycled; a sustainable stormwater management system was installed; three structures-the elementary school and two mixed-use buildings achieved LEED certification¹⁰.

SUSTAINABLE FEATURES:

New Columbia features one of Portland's largest demonstration areas of porous pavement including seven blocks of residential alleyways use porous pavers where rainwater filters through 30-foot in place drywells before returning to the aquifer.

To lower the impact of the new development on the existing sewer system low-impact development strategies were utilized. New Columbia uses 80 percent less

¹⁰ <http://casestudies.uli.org/CaseStudies/C038010.htm>

stormwater piping than a traditional neighborhood; altogether, the innovative “Green Streets” system at New Columbia resulted in 98 percent retention of stormwater, keeping contaminants out of the environmentally stressed Columbia Slough. The green infrastructure features saved \$1.5 million by not having to install as much piping and infrastructure in the streets.

Another sustainable feature of the New Columbia was the reuse and recycling of 83 percent of building material from the tearing down of the previous Columbia Villa Housing Development. One hundred percent of the concrete and asphalt rubble was reused as road base and structural fill¹⁰.

FINANCING:

The \$151 million project was financed in a number of different ways, including \$58.8 million (39 percent) from low-income housing tax credits, \$43.4 million (29 percent) from the federal government, \$19.1 million (13 percent) from a HUD 108 loan, \$14.6 (10 percent) from debt financing, \$13.4 million (9 percent) from HAP, and \$1.9 million (1 percent) from donations.



Figure 19: Housing in New Columbia, Portland, OR

The HUD 108 loan was repaid from a variety of sources including tax increment financing (TIF) by the Portland Development Commission, city of Portland infrastructure funds, and a community development block grant (CDBG). HAP funds were derived from the proceeds of market-rate lot sales and developer fees¹⁰.

LESSONS LEARNED:

There were lessons learned found for this case study.

HIGH POINT NEIGHBORHOOD, SEATTLE, WA

Project Description:

Seattle’s High Point is a 34-block, mixed income HUD Hope VI neighborhood redevelopment in West Seattle. The project was led by the Seattle Housing Authority and Mithun Architectures+Designers+Planners, with the intent to combine ecological and social goals to transform an isolated and distressed site

into a vibrant, sustainable neighborhood¹¹ The 120-acre market rate and rental housing community replace 716 WWII-era subsidized homes with 1,600 energy-efficient, mixed income houses, townhouses, condominiums, apartments, and numerous parks for more than 4,000 residents¹¹. The neighborhood was re-knit into the surrounding urban context by combining varied economic, ethnic, and social backgrounds of the its residents while increasing density, reducing neighborhood energy consumption and drawing the greater neighborhood to its walkable streets and green spaces.

LOW IMPACT DEVELOPMENT ELEMENTS

STORMWATER MANAGEMENT

As a way to maximize the landscape's role in stormwater runoff treatment a natural drainage system was created for the 120-acre site to simulate natural hydrologic systems. All Rainwater runoff from roofs is directed into small furrow and vegetated channels, where the flows are retained on-site through storm gardens and compost amended soil, or dispersed to the street through trenches and pop-up emitters that gathers water and carries it away from structural foundations¹¹.

Pervious paving materials and natural drainage systems are used in the public right-of-way to mitigate run-off from streets and parking areas. This is accomplished with the use of grassy and vegetated filtering swales with amended soils and a stormwater pond.

With gently sloped streets stormwater is collected while runoff is cleansed as it filters through soil and vegetation. Using natural features as a vehicle, stormwater is given maximum opportunity for infiltration and groundwater recharge. At the end of the stormwater system is a one-acre pond that provides additional quality treatment and slowly releases water into Longfellow Creek. The stormwater system reduces runoff by approximately 65 percent during an average storm event¹¹.

SUSTAINABLE SITE DESIGN AND DEVELOPMENT PRACTICES

By using native, drought-tolerant, and site-suitable plants irrigation and pesticide use is minimized. Water retention is improved with the use of amended soils, a computerized irrigation management system adjusts water supply based on plant needs, solar orientation and local weather information. Preservation of 150 trees and the planting of 2,600 new trees in parks and along streets tripled the number of previously existing trees¹¹.

Public conveyance storm pipe was placed under swales to avoid multiple utility trenches to optimize space for low impact development practices. Due to the

¹¹ http://mithun.com/knowledge/article/restoring_community_the_high_point_story/

natural drainage system the size required for the central stormwater pond was reduced, allowing for more developable land. The pond is located in a preexisting depression, maximizing its land area and creating a functional community open space and reducing long-term maintenance costs.

Even before development began, 22 existing structure were dismantled and the material were sold for reuse. Concrete foundations were crushed and used as the base material for the new sidewalks and foundations in the development. All existing topsoil that was removed was saved for later site development¹¹.

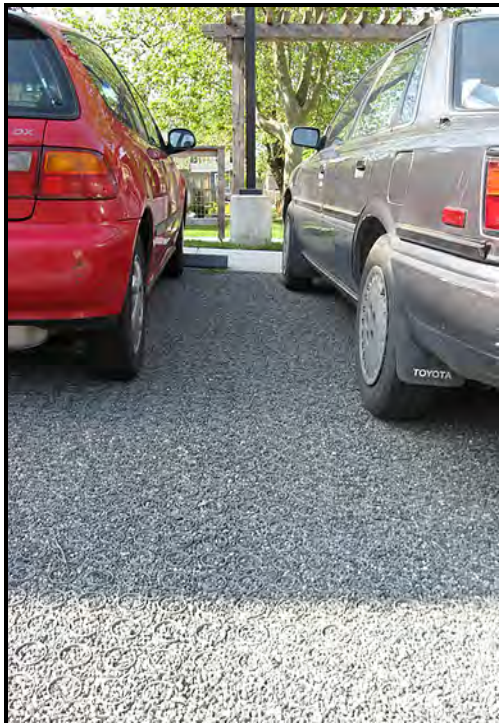


Figure 18: Pervious parking next to a pocket park, High Point Neighborhood Seattle, WA



Figure 19: Street side bioswales, High Point Neighborhood Seattle, WA

Financing:

Multiple funding sources were used to fund the High Point Neighborhood Project. Initial funding came from an awarded HOPE VI grant of \$35 million from the U.S. Department of Housing and Urban Development in 1999¹². The grant money focused on decentralizing subsidized housing and intermix market-rate housing both to sustain the projects financially and to build healthier communities. Together with other funding sources the total funding came to more than \$550 million¹²

¹² <http://www.sustainablesites.org/cases/show.php?id=11>

MAINTENANCE OF FACILITIES:

Through a memorandum of agreement entered into by the City of Seattle and the Seattle Housing Authority the decision of long-term maintenance was formalized.

City of Seattle maintenance responsibilities:

- Natural drainage system below the mulch;
- Replacement of engineered soils and subsurface pipes, should plugging occur;
- Public roads and off-site properties.

High Point Open Space Association maintenance responsibilities:

- Natural drainage landscape and the pond;
- Above-ground drainage system that is in the public space;
- Maintenance is broken down into four levels.

LESSONS LEARNED:

- Collaboration and communication with permitting agencies, interdisciplinary planning and community celebrations were necessary for the success of the project.
- Protection of natural drainage system during construction needs to be emphasized for the contractor.
- Porous concrete paving needs to be protected during on-going construction. Contractor selection should be based on their prior experience with porous concrete installation.
- When preserving trees, grade changes impacting a maximum of 30 percent of the root zone area is acceptable in many conditions if well-draining fill is used.
- By stacking functions of certain low impact development features reduces costs and provide amenities. For example, the central stormwater pond was strategically located in an existing depression, minimizing occupation of additional land area while creating a functional common open space and reducing long-term maintenance costs.

CONCLUSION

As planning and implementation of the Sprague Corridor continues to take place, one of the major goals will be to create a transit-oriented, green corridor that reduces vehicle miles traveled and greenhouse gas emissions. By way of green infrastructure elements the corridor could reduce or mitigate the negative impacts of development and human use. From aiding to reduce urban heat island effect to creating a safe and inviting pedestrian effect, green infrastructure as explained throughout this report has a multitude of benefits.

RESOURCES

¹ <http://www.cnt.org/repository/gi-values-guide.pdf>

² <http://www.portlandonline.com/bes/index.cfm?c=50818&a=261053>

³ <http://www.spokanewastewater.org/SURGE/Reports/Lincoln%20St%20Surge%20Report.pdf>

⁴ Interview with Marcia Davis, City of Spokane Public Works Department

⁵ <http://www.spokanewastewater.org/SURGE/Documents/BroadwaySURGEPosterpdf.pdf>

⁶ Interview with Joel Graff, City of Spokane Engineering Department

⁷ Market Street Revitalization: Final Project Report, City of Spokane Neighborhood Business Centers (NBC) Program

⁸ Market Street Revitalization Project White Paper

⁹ http://www.spokaneengineering.org/mlk_way

¹⁰ <http://casestudies.uli.org/CaseStudies/C038010.htm>

¹¹ http://mithun.com/knowledge/article/restoring_community_the_high_point_story/

¹² <http://www.sustainablesites.org/cases/show.php?id=11>



memo portland

To Melissa Wittstruck, City of Spokane
From Jay Renkens and Jon Pheanis, MIG
Re **Stakeholder Interview Summary**
Date November 11, 2011

On September 28th and 29th of 2011, MIG conducted seven interviews at Spokane City Hall as part of the University District – Sprague Corridor Planning Study. As identified by City staff, interview participants represent a range of interests within the University District – Sprague Corridor study area, including business owners and representatives, developers, the city council, and city partners. This memo provides a general summary of common themes discussed by interview participants, organized by opportunities and challenges. Interview responses served to identify challenges, opportunities, and key issues facing the study area. The interviews also helped to refine the public outreach process and address desired outcomes of the final plan.

Interview participants included:

- Taudd Hume, attorney (*PBBH*);
- Jon Snyder, Spokane Council Member;
- Jack Strong, business owner (*Strong Solutions*);
- Mike Rohme, business owner (*Floormart*);
- Patrick Tennican, University District representative and CEO (*Hyprotek*);
- Darryl Reber, developer (*Inland Empire Residential Resources*), and Mike Wallace, architect (*WAG*); and
- Boris Borisov and Tracy Reich, community partners (*Impact Capital*).

The interview was somewhat structured with several guiding questions to help organize responses. The interview participants received the list of questions prior to the interview, and the interviews lasted approximately 45 minutes. Some participants addressed multiple questions within one response, while others provided shorter responses to each of the questions.

In total, there were 18 questions listed below.

1. What is your organization's mission/role and how does it relate to the University District-Sprague Corridor?
2. What specific outcomes are you hoping for at the end of this process regarding:
 - a. The final product?
 - b. Relationships/partnerships?
 - c. Political positioning/Funding?
3. In your opinion, what is the key to success over the next eight months as we navigate through the planning process? Are there pitfalls or common mistakes that we can avoid along the way?
4. How would you describe the existing character and role of Sprague Avenue?
5. What do you feel are the greatest assets of Sprague Avenue? Regarding transportation, land use, jobs, housing, and/or the environment?
6. What are the biggest issues along Sprague between Browne and Fiske?
7. What do you think the character and role of Sprague should be in the future?
8. What do you feel are the greatest challenges facing Sprague Avenue over the next 20 to 30 years?
9. What do you think are the major drivers of growth and/or change along Sprague Avenue over the next 10 years? 20 years?
10. How would you describe the overall character of the South University District?
11. What types of uses would you like to see/not like to see within the South University District?
12. What do you feel are the greatest assets in the South University District regarding transportation, land use, jobs, housing, and/or the environment?
13. What specific elements are part of your vision for what the South University District should be?
14. How should the Downtown link to the South University District and how should the South University District link to the International District?
15. What do you feel is holding the South University District back? Why hasn't the area taken off like many people thought it would?

16. What do you think will be the major drivers of growth and/or change in the South University District over the next 10 years? 20 years?
17. What do you feel are the greatest challenges to realizing that growth and/or change in the South University District over the next 20 to 30 years?
18. How do you think this Planning Study process can help to address those challenges?

The following provides a summary of key themes identified during the interviews organized by opportunities and challenges.

OPPORTUNITIES

- There is strong community interest and support to improve the area.
- The study area is close to Downtown, the University District and major transportation routes.
- There is great public transit serving the study area.
- Existing vacant and underused land holds great potential for redevelopment and reuse.
- With proximity to hospitals and the University District, the study area can serve as a future hub for medical/research and technology.
- There are many potential projects that can serve as a catalyst to spur new development.
- “Quick fixes” such as street furnishings, banners, and gateway features can generate big gains.
- Historic resources can be preserved to strengthen the local identity.
- There are several unique segments of the Sprague Corridor with their own character.
- The future pedestrian/bicycle Bridge crossing the BNSF tracks will connect the study area with the University District.

CHALLENGES

- Economic conditions create challenges for funding and investment into the study area.
- Parking along Sprague Avenue is narrow and dangerous.

- Traffic speeds along Sprague Avenue create an unsafe environment for motorists parking on-street, as well as bicyclists, and pedestrians.
- There is a negative image associated with East Sprague Avenue.
- There are limited opportunities for housing.
- The overall condition of streets and sidewalks is poor.
- Public infrastructure to serve new growth is inadequate.
- There are a number of property owners, businesses, residents, and other concerned community members that must be continuously informed.
- An abundance of small parcels under different ownership make larger redevelopment projects difficult.
- There is an inadequate balance of regulations and incentives to leverage and motivate change.
- The existing street design is unfriendly to pedestrians and bicyclists.
- There is no destination that attracts visitors to the area.
- There are few connections to adjacent neighborhoods.



memo portland

To Melissa Wittstruck, City of Spokane
From Jay Renkens and Jon Pheanis, MIG
Re **Community Workshop Summary**
Date December 19, 2011

On December 7, 2011, MIG facilitated a community workshop for the University District–Sprague Corridor (UDSC) Planning Study. The workshop took place at the South University Complex from 5:00pm to 7:00pm, and allowed the public to hear about and weigh-in on the different alternatives proposed for the future of the study area. The meeting was well attended, with over 65 participants. This memo provides a summary of the workshop and feedback received on the alternatives.

WORKSHOP OVERVIEW

To begin the workshop, Jay Renkens and Jon Pheanis of MIG provided a brief presentation of the project, including an overview of the process and schedule, city outreach and community participation activities, and existing conditions in the South University District and along Sprague Avenue. Mr. Renkens then presented the draft vision and planning principles, as well as the land use and corridor design alternatives. The vision, planning principles and alternatives are all based on previous planning work, an analysis of the study area, and community input received to date.

Land Use Alternatives

There are three land use alternatives, or land use focuses, for the South University District. For each focus, the prevalence of each land use changes based on the potential infill of new development, and either low or medium development intensity. Included in each alternative are five opportunity sites that serve as examples of the type of development that could occur under the conditions of each focus.

- **Employment Focus** allows for more retail and industrial uses south of Sprague Avenue, with an emphasis on residential to the north of Sprague.
- **Urban Village Focus**, or a neighborhood that has a balance of housing, employment and services, includes the most amount of

residential of the alternatives. There is an emphasis of office targeted for areas south and west of Sherman, and industrial to the east.

- **Institutional Focus** emphasizes more institutional uses (ie. medical, educational and government institutions) as well as industrial and office, with some residential west of Sherman.

Street Design Alternatives

There are five potential design alternatives for Sprague Avenue.

- **Option A** has two 11-foot travel lanes, a 16-foot landscaped median, two 8-10-foot sidewalks, and 8-foot onstreet parking.
- **Option B** has two 11-foot travel lanes, a 10-foot landscaped median, two 11-13-foot sidewalks, and 8-foot onstreet parking.
- **Option C** has two 11-foot travel lanes, a one-way, six-foot bike lane, a 10-foot landscaped median/turn lane, 8-10-foot sidewalks, and 8-foot onstreet parking.
- **Option D** has two 11-foot travel lanes, two 7-foot bike lanes, a 12-foot landscaped median/turn lane, and 11-13-foot sidewalks.
- **Option E** has two 10-foot travel lanes, a 10-foot separated, two-way bike lane, a 10-foot left turn lane, 8-10-foot sidewalks, and 8-foot onstreet parking.

A brief discussion followed the presentation, allowing participants to ask questions related to the project and presentation. Following the presentation, two interactive exercises--designed to solicit specific input on the alternatives--were undertaken by workshop participants. The following provides an overview of workshop feedback, and comments related to the alternatives evaluation exercises. A graphic recording of the conversation following the presentation portion of the workshop is attached.

PARTICIPANT DISCUSSION

Following the presentation, workshop participants posed several questions and comments related to the project. The following provides a brief overview of the discussion.

Project Purpose and Process

The project aims at improving land use within the South University District, and identifying an improved street design along Sprague Avenue. To fund the project, the City received a Federal grant with the goal of reducing vehicle miles traveled and related green house gas reduction. The evaluation of land use is limited to the South University District study area boundary, with the goal of retaining existing uses and improving the design and focus of future uses.

Relation to Other Plans

There are several existing plans and studies that impact the future of the study area. The project intends to seamlessly pull key goals and objectives from these efforts into a unified plan for the study area. This includes a review of plans such as the East Central Neighborhood Plan, as well as ongoing and concurrent projects such as the Division Street Gateway project and the future pedestrian and bike bridge to connect with the University District.

Land Use

To date, much of the public input indicates a need to strengthen the South University District identity and sense of place. One of the key opportunities is the strength and support of existing businesses. Spokane residents rely on businesses within the study area for employment as well as shopping. One of the challenges is the lack of homes in the study area. However, residential uses, including mixed-use and apartments are currently allowed in most of the study area.

Sustainability Evaluation

Through this study, MIG used LEED Neighborhood Design (LEED ND) guidelines as a tool to evaluate existing conditions in the South University District. The guidelines are an industry standard and are used to gauge the environmental sustainability of the study area. While some of the principles are similar to those already used by the City, the official LEED ND review process and designation is initiated by property owners and developers.

Street Design

Safety is a major issue currently, and should be a primary driver for selecting the preferred design. Speed limits are currently 25-35 miles per hour along the corridor. While a speed study has indicated that the majority of vehicles travel at or below the speed limit, the future design can help maintain or slow speeds. Medians are common design treatments that offer a range of benefits such as slowing traffic. However, there are also tradeoffs. Bus traffic and operations, and access to businesses can both be impacted by landscaped medians.

Snow removal is another consideration. Medians can be used to store snow, while its important to note that snow storage is currently not permitted within turn lanes. In addition, sidewalks should be designed to accommodate snow berming to prevent interference with snow removal from streets and pedestrians on the sidewalk. There is also inadequate street width to consider a round-a-bout or allow parallel parking within the median. Finally, the extensive basalt rock found throughout the study area poses issues for street design and construction and should be evaluated accordingly.

Parking

Parking is an important factor that should be carried forward through the alternatives. While this study evaluates the street and onstreet parking, there may be potential for the city to address offstreet parking along the Sprague Avenue Corridor in the future.

ALTERNATIVES EVALUATION SUMMARY

The alternatives review allowed participants to review the different alternatives at their own pace, and provide their input on the supplied comment cards (attached to this memo). The review featured two activities. The first exercise focused on land use alternatives for the South University District, and the second exercise focused on soliciting input related to street design alternatives for the Sprague Corridor. The following provides a summary of the comment card results.

Participant Characteristics

While most of the workshop participants took part in the activities, there were a total of 34 completed cards turned-in. Based on the responses to general demographic questions, participants can be characterized as follows:

- The majority of participants (85%) own their own residence.
- Thirty-eight percent live in or own property in the study area.
- Fifty-six percent stated that they frequently do business or shop in the study area
- Driving was noted as the primary mode of transportation (76% stated they drive most frequently), while 14% most frequently bike. Only two individuals noted public transit as their most frequent mode.

Activity 1: South University District Land Use Alternatives

Three land use alternatives have been developed for the South University District. For the purposes of this workshop exercise, land use alternatives were presented graphically on posters at three separate stations located along one side of the room. Participants visited each station and noted on their comment cards how well they thought each alternative meets the individual planning principles developed for the project.

Of the three land use alternatives, the Urban Village Focus received the greatest level of support with 71% of responses indicating the alternative somewhat or mostly meets principles. The second alternative, Employment Focus received 56% of responses indicating it somewhat or mostly meets the principles. The third alternative, Institutional Focus, received the least amount of support and greater percentage of “does not meet principles.”

Table 1 below presents a summary of comment card results for the land use alternatives activity. Percentages are expressed as the percentage of total responses provided for each alternative.

Table 1: Land Use Alternatives

Alternatives	Does not meet principles		Unsure/ need more information		Somewhat meets principles		Mostly meets principles	
	Count	%	Count	%	Count	%	Count	%
Employment Focus	37	10%	122	34%	132	36%	71	20%
Urban Village Focus	16	5%	87	25%	87	25%	160	46%
Institutional Focus	43	13%	113	33%	117	34%	71	21%

Activity 2: Sprague Corridor Street Design Alternatives

Five potential street design alternatives have been developed for the Sprague Avenue Corridor. For the purposes of the workshop, the Sprague Avenue Corridor study area was divided into two areas: Sprague Ave. west of Hamilton Street and Sprague Ave. east of Hamilton Street. Workshop participants were asked to review each of the design alternatives for both Hamilton “West” and Hamilton “East”, and address how well the alternatives fit best for each of the two sides. Tables 2 and 3 below present a summary of comment card results. Percentages are expressed as the percentage of responses provided for each alternative, or option.

Among workshop attendees who participated in the comment card exercise, Options A and B were voted as the most popular alternatives for both sides of Sprague, with the most “I mostly like the design” votes. The majority of responses indicated that Option D is least desirable. Interestingly, of all the alternatives, this same option also elicited the greatest number of highly positive responses (“I love the design!”). This is likely related to the inclusion of bike lanes in Option D and the exclusion of on-street parking.

Table 2: Street Design Alternatives for Sprague Avenue West of Hamilton Street

Alternatives	I do not like the design		The design is okay		I mostly like the design		I love the design!	
	Count	%	Count	%	Count	%	Count	%
Option A	10	33%	5	17%	13	43%	2	7%
Option B	5	16%	9	29%	14	45%	3	10%
Option C	11	37%	11	37%	6	20%	2	7%
Option D	19	66%	5	17%	0	0%	5	17%
Option E	13	48%	9	33%	5	17%	1	4%

For the east side of Sprague (east of Hamilton) Options A and B were the most favorable, similar to the west side. Options C, D and E were least desirable, and few chose “I love the design” to describe the options.

Table 3: Street Design Alternatives for Sprague Avenue East of Hamilton Street

Alternatives	I do not like the design		The design is okay		I mostly like the design		I love the design!	
	Count	%	Count	%	Count	%	Count	%
Option A	7	26%	6	22%	13	48%	1	4%
Option B	5	18%	9	32%	11	39%	3	11%
Option C	12	43%	9	32%	6	21%	1	4%
Option D	18	67%	4	15%	1	4%	4	15%
Option E	12	48%	6	24%	7	28%	0	0%

NEXT STEPS

Feedback from the workshop will guide the process for identifying and refining the preferred design alternatives. Comments received from the public open house, stakeholder interviews, project team and advisory meetings will also guide the process. In the coming weeks, the project team will further analyze the feasibility of the alternatives, addressing traffic impacts and operational characteristics, and coordination with concurrent street projects. The analysis will result in an illustrative plan and implementation strategy, as well as necessary updates to the Comprehensive Plan. In March 2012, the draft plan will be presented to the public at the final open house. Based on feedback received from this event, the project team will create a second draft and final plan for adoption in April of 2012.

WELCOME!

UNIVERSITY DISTRICT-SPRAGUE CORRIDOR PLANNING STUDY COMMUNITY WORKSHOP 12.7.11

▶ WHY CHANGE?

- IMPROVE LAND USE
- REDUCE VEHICLE MILES TRAVELED

▶ WHO PAYS?

- \$150,000 GRANT

▶ WHAT TYPE OF LAND USE?

- SOUTH UNIVERSITY DISTRICT
- MAINTAINING EXISTING USES

▶ WHAT IS THE FUTURE PROCESS?

- GUIDE FUTURE LAND USE DURING DEVELOPMENT

▶ RELATION TO NEIGHBORHOOD PLAN

- PLAN IS COORDINATED WITH OTHER PLANS
- PBD/BUS BRIDGE AWAITING FINDING

▶ EXISTING BUSINESSES ARE A DESTINATION

- ▶ 24,000 TRIPS TO REQUIRE ADDITIONAL LANE

▶ SAFETY OF EXISTING STREET DESIGN IS AN ISSUE

- ▶ EXAMINE/MEASURE EXISTING LANE WIDTHS

▶ SPEED LIMITS WILL BE 25-35 MPH

- REDUCE SPEED TO CREATE A DESTINATION
- STREET DESIGN CAN REDUCE SPEED
- SPEED NOT CURRENTLY AN ISSUE

STREET DESIGN ISSUES

▶ MOTORING PARKING? → NOT DESIRABLE

▶ STREET TREES/MEDIAN

- CONFLICT WITH BUSES → CURRENT CONDITIONS DO NOT ALLOW PARKING TO ALLOW BUSES
- COULD LIMIT ACCESS

▶ ANGLED PARKING

- WILL NOT ALLOW TURN LANE

▶ OFF-STREET PUBLIC PARKING!

- NOT ADEQUATE ROW FOR ROUNDABOUT

▶ SNOW REMOVAL AND STORAGE ON MEDIAN

- ALSO ON SIDEWALKS
- NOT STORED IN TURN LANE

LAND USE ALTERNATIVES

▶ RESIDENTIAL TYPES

- MIXED-USE, APARTMENTS, etc.

▶ LEED NEIGHBORHOOD DESIGN

- A GUIDE AND CERTIFICATION TO EVALUATE SUSTAINABLE DESIGN AND DEVELOPMENT
- SOME PRINCIPLES ARE ALREADY USED BY CITY
- DESIGNATION IS DETERMINED BY PROPERTY OWNER

▶ GEOLOGIC CHARACTERISTICS

- POTENTIAL HIGH COST OF DEVELOPMENT
- EXISTING NATURAL STRINGS

STREET DESIGN AND STREET USERS

- ▶ 12-FOOT TRAVEL LANES ALLOW FOR IMPROVED TRUCK MOVEMENT

- ▶ REROUTING BIKE TRAFFIC TO SPRAGUE

- ▶ POTENTIAL CHANGES COULD REDUCE EXISTING SIDEWALK LOCATION

▶ BIKE ROUTE FROM SHERMAN

- COULD BE ROUTED TO PACIFIC OR FIRST
- BIKE/ROD COMMONS W. OF GORGE

▶ WHAT ARE BIKE COUNTS?

- ▶ MORE BIKE USERS EXPECTED NEAR S.U. DIST

- ▶ BIKE ROUTE DESIGN ON ALTERNATIVES NOT SAFE

- ▶ INTERSECTION AT DIVISION AND SPRAGUE IS DANGEROUS



Draft University District-Sprague Corridor Vision

The South University District is home to a range of thriving businesses which provide jobs and services to the neighborhood and the city. The District is also a walkable, mixed use neighborhood, or urban village, offering a variety of housing options, excellent access to public transit, and connections to adjacent areas. The improved relationship between land use and transportation also supports a healthy environment, reducing vehicle miles traveled and related emission of green house gases. At its foundation, business and property owners, residents and employees in the University District-Sprague Corridor are engaged and supportive of well planned growth and continued investment.

Sprague Avenue also plays a central role in the success of the District and the City. Providing a major transportation linkage between Downtown and East Spokane, the street is composed of many distinct segments and adjacent businesses, held together by a streetscape that is both safe and attractive. The street design balances economic development and mobility, and is multimodal, accommodating motorists, pedestrians, and transit users, for trips within and through the City.

Additional Comments

Thanks for participating!

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About the Project

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The project area includes the South University District, bounded by Division Street to the west, the Hamilton Street overpass to the east, BNSF railway to the north, and I-90 to the south; and Sprague Avenue and neighboring uses between Pine and Fiske streets.

The project is made possible through the Department of Commerce's Energy Efficiency through Transportation Planning grant program funded by the American Recovery and Reinvestment Act.

The University District-Sprague Corridor Planning Study: Community Workshop

December 7, 2011

Welcome to the Workshop!

This workshop is a great opportunity to weigh-in on the future of the University District-Sprague Corridor (UDSC) study area. We invite you to visit the informational displays located throughout the room and hear about the project with us. Use this comment card to evaluate the alternatives presented tonight, fill out the card, and turn it back in. We'll gather the information we receive and use it to help determine the preferred land use plan for the South University District, and street design for the Sprague Avenue Corridor.

Planning Principles

The workshop activities are based on planning principles. Planning principles serve as a tool for evaluating how design alternatives for the South University District-Sprague Corridor study area meet the vision. To achieve the vision, alternatives should be carefully judged against each principle. The alternatives that best meets the intent of the collective planning principles should be selected as part of the preferred alternative. The principles are presented on the following page.

Please tell us about yourself:

- Age: _____
- Gender: M F
- Do you rent or own your residence?
- Do you live or own property in the study area?
Yes No
- Do you work, do business or shop in the study area?
No Sometimes Frequently
- Which mode do you use most frequently?
Walk Bike Drive Take Transit Other

Activity 1: South University District Land Use Alternatives

There are three potential land use alternatives for the South University District based on a technical analysis of the study area and public input. The land use alternatives are presented at separate stations found throughout the room. Using the table below, visit each station and decide how well the alternatives achieve the planning principles and envisioned future of South University District (see back page for vision).

Use the following scale and indicate your response in the appropriate box below. If you would like to add a principle, use "other" at the bottom. For all other comments, use the back page.

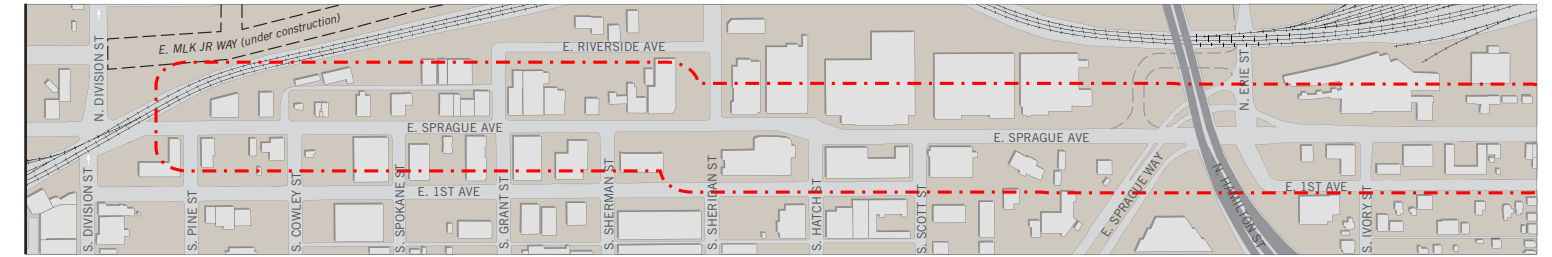


PLANNING PRINCIPLE	1. Employment Focus	2. Urban Village Focus	3. Institutional Focus
Land Use			
Increases housing options.			
Redevelops underutilized properties.			
Maintains affordability.			
Creates a more walkable neighborhood.			
Improves public utilities and infrastructure.			
Sense of Place			
Creates a destination.			
Improves physical aesthetics.			
Preserves historic assets.			
Improves public safety.			
Environment			
Reduces Greenhouse Gas (GHG) emissions.			
Incorporates green infrastructure and building techniques.			
Creates a better jobs-education-housing balance.			
Transportation and Parking			
Reduces vehicle miles traveled (VMT).			
Improves multimodal safety and operations.			
Maintains or increases traffic carrying capacity.			
Maintains or enhances on-street parking.			
Improves connectivity to adjacent areas.			
Other:			
TOTAL			

Activity 2: Sprague Corridor Street Design Alternatives

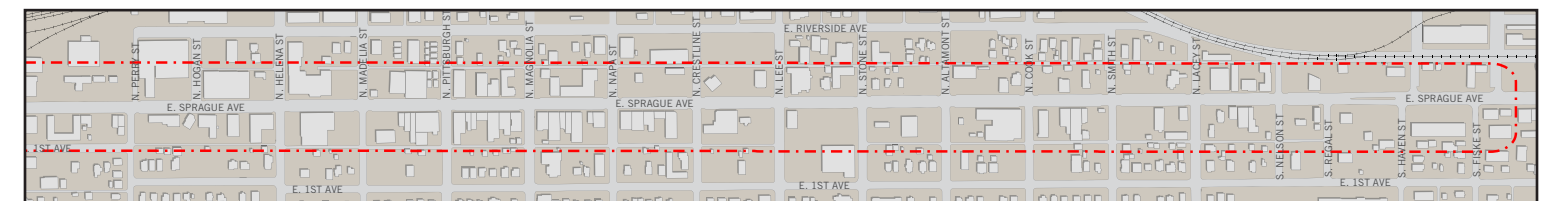
There are five potential street design alternatives for the Sprague Avenue Corridor, displayed on two posters. For purposes of the workshop, the existing Sprague Avenue Corridor study area is divided into west (Division to Hamilton streets) and east (Hamilton to Fiske streets) shown below. After reviewing the design alternatives, indicate which design option you prefer for west and east Sprague Avenue by filling in the corresponding bubble in the tables below. Following the workshop, the project team will conduct a detailed traffic analysis to further examine feasibility of the alternatives. Use the back page to provide more detailed comments.

Sprague Avenue: West of Hamilton Street



STREET DESIGN ALTERNATIVES	Unsure/ Need more information	I do not like the design	The design is okay	I mostly like the design	I love the design!
Option A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option E	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Sprague Avenue: East of Hamilton Street



STREET DESIGN ALTERNATIVES	Unsure/ Need more information	I do not like the design	The design is okay	I mostly like the design	I love the design!
Option A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option E	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



memo portland

To Melissa Wittstruck, City of Spokane
From Jay Renkens and Jon Pheanis, MIG
Re **Public Open House Summary**
Date November 8, 2011

On October 25th of 2011, MIG held the first open house for the University District – Sprague Corridor (UDSC) Planning Study. The open house showcased the UDSC study as one of several other transportation projects as part of the City of Spokane’s Central City Mobility Open House series. The open house format allowed participants to learn about other transportation projects occurring in and near the core of Spokane, while viewing displays and talking with project staff at their own pace.

Held at the Bookie in the Riverpoint Campus between 5-7pm, there were several maps and informational displays to inform participants and solicit feedback on existing conditions and needs facing the UDSC study area. Jay Renkens and Jon Pheanis of MIG were also on hand to discuss the project and respond to questions.

Over 20 people visited the UDSC display, and many participated in the interactive exercises. Along with interviews, staff and advisory team meetings, and a site tour with community members, feedback from the open house will help to define a future vision for the South University District – Sprague Avenue Corridor. This document provides an overview of the open house, and a summary of feedback and major themes received from participants.

UNIVERSITY DISTRICT ALTERNATIVES CRITERIA

A set of evaluation criteria is a useful tool to help assess preliminary alternatives for the envisioned future of the South University District. MIG presented draft criteria on a poster board and asked participants to place dots next to 10 criteria that best represent the envisioned future of the South University District (Figure 1). Tables 1-4 below summarize the results.

Figure 1: South University District Land Use Alternatives Criteria

University District Sprague Corridor Planning Study

South University District Land Use Alternatives Criteria

One of the outcomes of the University District – Sprague Corridor Planning Study is a plan for future land use within the South U. District. Basing decisions on goals, or criteria, is an effective method of evaluating and refining land use alternatives. You can help guide development of the alternatives by choosing the goals that best represent how you envision the future of the South U. District.

Instructions: Place one dot next to the 10 goals that best represent how you envision the South University District.

Land Use	Place dots here	Environment	Place dots here
Increase housing options	••••••••••	Reduce greenhouse gas (GHG) emissions	•••••
Redevelop underutilized properties	••••••••••	Incorporate green infrastructure (eg. vegetated stormwater catchment)	••••••••••
Maintain affordability	••••••••••	Create a better jobs-housing balance	•••••
Redevelop off-street parking lots with new uses	••••••••••	Transportation and Parking	Place dots here
Create a more walkable neighborhood	••••••••••	Reduce vehicle miles traveled (VMT)	••••••••••
Improve public utilities and infrastructure	•••••	Improve conditions for cyclists	••••••••••
Sense of Place	Place dots here	Maintain/increase traffic carrying capacity	••••••••••
Create a destination	••••••••••	Improve road capacity for freight traffic	••••••••••
Improve physical aesthetics	••••••••••	Maintain/enhance on-street parking	••••••••••
Preserve historic assets	••••••••••	Improve multimodal safety and operations	••••••••••
Improve public safety	••••••••••	Improve connectivity to adjacent areas	••••••••••

Note: A yellow sticky note is attached to the 'Maintain/increase traffic carrying capacity' criterion.

As shown by the number of dots in Figure 1, some criteria are more important to participants than others, yet all proposed criteria received support. Based on the general criteria categories, Sense of Place and Land Use had the highest average number of votes.

Sense of Place

The Sense of Place category received the highest average number of votes (10). Criteria in this category address the desired physical and safety improvements that can make the South University District more attractive and welcoming to residents, visitors and businesses.

Table 1: Sense of Place Criteria

Sense of place	10
Create a destination	13
Improve physical aesthetics	13
Preserve historic assets	7
Improve public safety	7

Land Use

The Land Use category was also popular to open house participants and received an average of 8 votes. Criteria in this category ensure that the South University District will provide housing choices, maximizing underutilized properties and ensuring that the area is affordable.

Table 2: Land Use Criteria

Land Use	8
Increase housing options	11
Redevelop underutilized properties	11
Maintain affordability	8

Transportation and Parking

The Transportation and Parking criteria received a mixture of support and had an average score of 6. Improve connectivity to adjacent areas received the most votes, while improving road capacity for freight received the fewest. One participant added light rail as an additional criterion (not included in the average score).

Table 3: Transportation and Parking Criteria

Transportation and Parking	6
Improve connectivity to adjacent areas	11
Maintain/enhance on-street parking	7
Improve multi-modal safety and operations	6
Reduce vehicle miles traveled (VMT)	6
Improve conditions for cyclists	6
Maintain/increase traffic carrying capacity	6
Improve road capacity for freight traffic	2

Environment

The Environment criteria received the lowest average number of votes. This category also received a mix of support, with a more walkable neighborhood receiving the most support with 10 dots, and reducing greenhouse gas emissions receiving the fewest with 3 dots.

Table 4: Environment Criteria

Environment	5
Create a more walkable neighborhood	10
Incorporate green infrastructure	7
Create a better jobs-housing balance	6
Redevelop off-street parking lots with new uses	5
Improve public utilities and infrastructure	4
Reduce greenhouse gas (GHG) emissions	3

SPRAGUE AVENUE EXISTING CONDITIONS AND NEEDS

Participants also had an opportunity to identify existing issues and needs facing the Sprague Avenue Corridor. A large map of Sprague Avenue (between Division and Fiske streets) provided a space for notes, and participants used stickers to indicate different opportunities and challenges (Figure 2).

Based on outcomes of the activity, participants placed stickers with the area of Sprague Avenue between Division and Sheridan streets. The majority of comments focused on increasing pedestrian safety, improving parking, and enhancing the street appearance. The list of all comments follows.

Figure 2: Sprague Avenue Corridor Map Comments



- Integrate South University District with Division Street at the Sprague Avenue and Division Street intersection.
- Make Sprague three lanes.
- Widen on-street parking.
- Replace wood street lights.
- Synchronize traffic lights.

- Plow snow to center of street and not to parking and sidewalks.
- Create bike lanes.
- Provide traffic calming with improved pedestrian and crosswalk visibility.
- Improve safety and business development.
- Provide shuttle bus to the Medical District.
- Provide parking and transit center on Riverside Ave. near the future bike/ped bridge for the Riverside Campus.
- Provide trees along Sprague Avenue.
- Improve existing infrastructure.
- Parking is needed along Riverside Avenue.
- A dangerous pedestrian crossing exists at Cowley and Sprague.

LIVE, WORK AND DO BUSINESS

Another set of maps asked participants to place dots where they live, work and do business within the study area (Figures 3 and 4). These questions help to identify key destinations within the study area. Based on those that participated in the map activity, the majority of dots were clustered within the central portion of the South University District and along Sprague Avenue in the International District (between Madelia and Crestline streets).

UNIVERSITY DISTRICT – SPRAGUE CORRIDOR PLANNING STUDY

Figure 3: Sprague Avenue Corridor: Where do you live, work and do business?

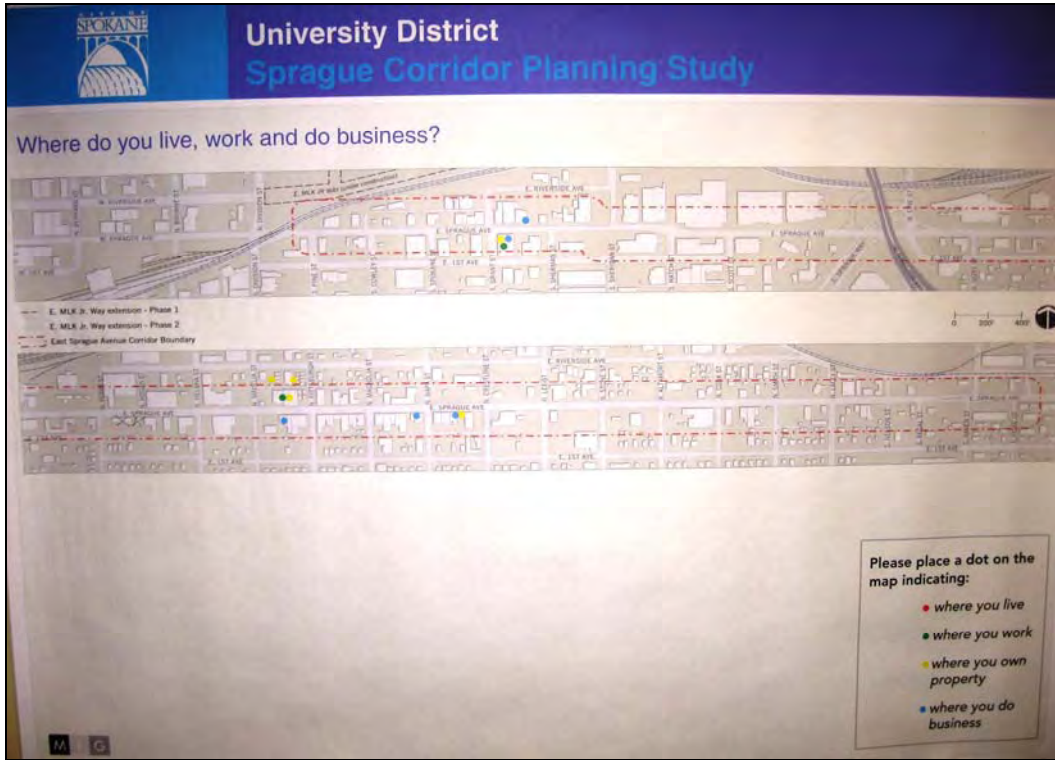
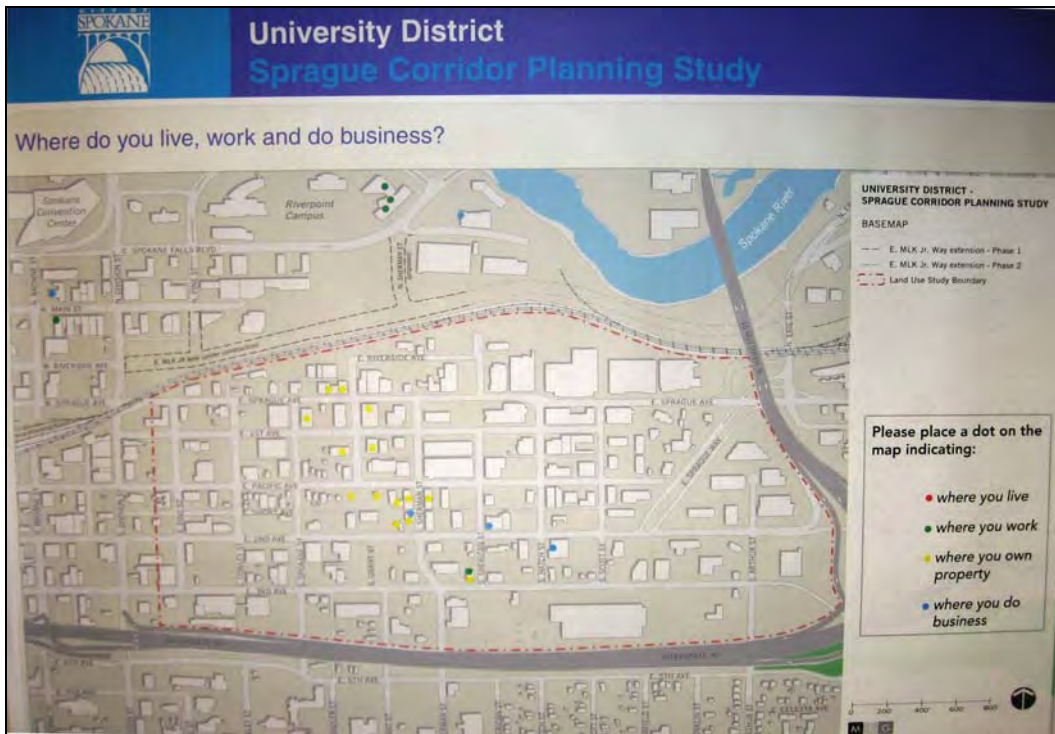


Figure 4: University District: Where do you live, work and do business?



The University District-Sprague Corridor Planning Study: Community Open House

March 20, 2012



About the Project

The University District – Sprague Corridor (UDSC) Planning Study focuses on the future of land use within the South University District, and transportation and street design along Sprague Avenue, from Pine to Fiske streets. During the six-month planning process, the project aims to evaluate existing conditions within the study area and determine appropriate strategies and designs that will serve to reduce energy consumption and greenhouse gas emissions.

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The project is made possible through the Department of Commerce's Energy Efficiency through Transportation Planning grant program funded by the American Recovery and Reinvestment Act.

How do you feel about the **Preferred Land Use Alternative**?

I feel that it would allow for greater use of the area that would benefit both business, consumer and residents of the area in a way that would promote community and neighborhood responsibility and benefit. We need to look at these types of areas in the city core as a visitor would and ask ourselves how do they see Spokane as it exists today. It appears non-progressive and stagnant... What will keep them coming back? All the ad campaigns in the world cannot change what they see when they travel our streets.

How do you feel about the **Preferred Street Design**?

Though I realize that this probably the most controversial aspect of this project, I feel that it the most necessary. It will provide for the type of street use that will benefit the shop owner as it will allow for greater foot traffic.

What is needed to make this happen?

To create an agreement on the part of residents and business much like the covenants that exist in many neighborhoods... To promote a plan of development that adheres to a master plan for use and appearance of the area

Draft University District-Sprague Corridor Vision

The South University District is home to a range of **thriving businesses** which provide jobs and services to the neighborhood and the city. The District is also a **walkable, mixed use** neighborhood, or urban village, offering a variety of **housing options**, excellent access to **public transit**, and **connections** to adjacent areas. The improved relationship between land use and transportation also supports a **healthy environment**, reducing vehicle miles traveled and related emission of green house gases. At its foundation, business and property owners, residents and employees in the University District-Sprague Corridor are engaged and supportive of **well planned growth** and continued **investment**.

Sprague Avenue also plays a central role in the success of the District and the City. Providing a major transportation linkage between Downtown and East Spokane, the street is composed of many **distinct segments** and adjacent businesses, held together by a streetscape that is both **safe** and **attractive**. The street design balances **economic development** and **mobility**, and is **multimodal**, accommodating motorists, pedestrians, and transit users, for trips within and through the City.

Additional Comments:

Thanks for participating!

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How do you feel about the **Preferred Land Use Alternative?**

FOR IT!

How do you feel about the **Preferred Street Design?**

I am really into planted medians these days. I know Chicago and Albuquerque have invested heavily in these small extras and it has made a world of difference. Please consider...

What is needed to make this happen?

Many hands make small work for all. That and cement trucks.

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How do you feel about the **Preferred Land Use Alternative**?

Great idea, let's do it! I agree with Jack Strong, owner of Strong Solutions, let's do it now. Spokane has a history of studying up on something, getting the funding, and then somehow forgetting to do the project, just like the Iron Bridge a few blocks over on Trent.

How do you feel about the **Preferred Street Design**?

Ditto.

What is needed to make this happen?

For bureaucrats to get off their duffs and do something and stop "studying" everything.

Draft University District-Sprague Corridor Vision

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How do you feel about the **Preferred Land Use Alternative?**

Sprague Corridor Comments:

Land use:

Great suggestions. It's hard to think of anything to change. The planned land use would lead to a major revitalization of the area.

How do you feel about the **Preferred Street Design?**

Street Design:

I have many concerns about the street design.

- Overall bike/ped safety: The study area has had 3 fatalities in the last 4 years including one last fall near the Hamilton St. Bridge. I don't feel the study adequately addresses this large safety and liability issue for the City and demonstrates significant improvement. How will the plan help this situation? I believe it will help, but will it help

What is needed to make this happen?

Implementation:

There needs to be a combination of funding sources to get this done.

The implementation strategy was well considered. Is there any analysis on the pros and cons of trying to do some of this in phases? If the entire \$20 million project was done as a part of our next street bond it would likely take one fifth of that total budget.

I am sympathetic to the East Central neighborhood's

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Additional Comments:

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March 20, 2012



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How do you feel about the **Preferred Land Use Alternative?**

I am happy with the outcome.

I think that the extent of the planned "Priority Pedestrian-Oriented Retail" is a bit overzealous at this point. The area would need a dramatic increase in residents and foot traffic to support all of the planned retail space. With that said, the completion of the footbridge, streetscape improvements, curb parking, increasing buildout of the riverpoint campus, etc. could create this "dramatic" increase.

I also believe that encouraging the market to build more

How do you feel about the **Preferred Street Design?**

I like the design, although I believe some people will regard some of the improvements as excessive. I think that wherever possible, improvements need to be done conservatively so that project costs are kept to a minimum. This will produce the best chance of public support and thus implementation. Particularly I think that the landscaped medians proposed in the ID could be regarded as excessive.

I am also cautious about the painting of sharrows on Sprague, unless speed limits are reduced on this road, it would be unwise to encourage bicycling and vehicle

What is needed to make this happen?

In my opinion, it will be "getting the ball rolling" that will be the hardest part of implementation. There is potential for residential and mixed use in this area due to the proximity to Riverpoint, hospitals and downtown, but there are also many barriers to overcome.

To increase the attractiveness of the neighborhood, crime and vandalism will need to be addressed. There will need to be quite a transformation from an industrial district to a neighborhood that will need to occur. This will include more park space / open space, more trees, more neighborhood essentials (grocery store, laundromat, etc.), and improved

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How do you feel about the **Preferred Land Use Alternative?**

I am somewhat confused over what is being termed "Preferred Land Use Alternative" because it was made clear at the meeting held March 20 that the University District Planning Study will not change land use designations or zoning and the U-district Plan is merely a concept to be adopted as a non-binding resolution. Additionally, the General Commercial zone already allows the general use categories proposed in the "plan". While I recognize that the present idea would be to encourage the types of uses in the locations identified in the Preferred Land Use Alternative through design standards or incentives, neither of these has been discussed in detail,

How do you feel about the **Preferred Street Design?**

I think the Preferred Street Design is pretty good and that some of the concerns could have been addressed if a block-by-block description was presented. I am really glad you did not present the Option B (?) of block intersections in the International District- this definitely would have caused some to come unglued. Having stated that I liked the preferred plan, I must say that I am severely disappointed with the comments made by Teresa Sanders saying that the proposed projects will not make it to the capital improvements list. It is disappointing because of all the time, money, and effort spent to come to some level of agreement to abandon the idea at the last

What is needed to make this happen?

What is needed to make this happen? I think I have answered this above, but it is worth repeating. The City of Spokane can adopt the South University District plan as a subarea plan of the comprehensive plan and take the steps necessary to get the Sprague Corridor project elements into the Capital Facilities Program or Plan. Why go through effort only to not bind anyone to carrying it out? Do we really want to have the argument again? I may not have got everything I wanted, but I can live with the plan and hope the City of Spokane reconsiders its adoption choices.

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Additional Comments:

As a resident of the area, I am really excited about the pedestrian bridge, but I also know that Erie Street connects to Sprague Ave and is pretty close to the eastern edge of the campus. As Brandon Betty mentioned, this is not an either or choice, but I think showing this potential link even if it's not part of a project is important. I also think this route could be improved for cars, pedestrians, and bicycles for less money than the bridge and would greatly improve access to the north (while you can presently use the route it has huge potholes, it also feels a little unsafe but only more people will solve that issue).

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How do you feel about the **Preferred Land Use Alternative**?

I think that the preferred land use alternative is on the right track for the area. A good mix of housing, retail, and office space along with some areas of light industrial seem to fit this portion of Spokane well.

How do you feel about the **Preferred Street Design**?

I like the landscaped look and feel for the Sprague corridor. Some adjustments to the plan may need to be made for truck traffic in and out of Madelia Street and some additional openings for use of existing parking areas. Otherwise, I think the traffic calming effect and change in appearance to the street landscape will be of great benefit to the area.

What is needed to make this happen?

Money, money, and more money.
I believe you will have the support of the majority of property owners along Sprague Avenue when the time comes to put this plan in place.

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How do you feel about the **Preferred Land Use Alternative**?

I think a multi-use development plan is a great idea, and I am in favor of the higher density version of this plan because it results in greater greenhouse gas efficiency and I think that having more people living successfully in the neighborhood can help make it safer and more enjoyable. I hope that in the quest to keep it "affordable" we don't discourage folks from making investments in the area.

How do you feel about the **Preferred Street Design**?

This neighborhood should be attracting younger folks to live here, especially medical students and health sciences students from Riverpoint. As a medical student myself, I would ALWAYS prefer to live in a neighborhood where I felt safe walking and biking and I think these should be key elements to the redesign of this neighborhood. Please keep multimodal transportation at the forefront of your mind in this neighborhood-- as it is in every neighborhood supporting a vibrant university. I think the emphasis on landscaped areas is a plus, and I think that historically appropriate street lights should be incorporated as well, as we have seen in the Perry district.

What is needed to make this happen?

Money.

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How do you feel about the **Preferred Land Use Alternative**?

How do you feel about the **Preferred Street Design**?

What is needed to make this happen?

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Additional Comments:

Probably a single voice for planetary consevatism, here. Given all the statistics for the over burdening of the planet, even as humanity seems to be falling back from the over-population threat versus limitations of the planet to provide life-sustaining resources endlessly---- Might not the Inland Northwest become a sensible leader in limited over-expansion by way of crowded infrastructured over population and burden on natural resources? There is some "handwriting on the walls of the future" even now that would indicate such limits already in place since before the world was found round. Hydropower just to light above-ground complexes of apartment dwellers from here to the canadian border surrounding all the little lakes and beauty sites, etc., with highways plentiful from place to place like spaghetti to serve a zillion little cars to carry us all to oblivion must be what capital-developers are aiming at in their lifetime of excesses. Does anyone get this picture besides this one sending?
Local resident age 73, 1503 Cathedral Plaza 1120 W. Sprague. (509) 624-4772

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How do you feel about the **Preferred Land Use Alternative**?

Are there similar instances when a corridor with the same traffic volume and number of lanes has been converted down to 1 lane in each direction with a middle turn lane? That is a decrease of one lane in each direction.

How do you feel about the **Preferred Street Design**?

You show pictures of Gilroy, CA. Do they have the same traffic volume as the Sprague corridor? Is it an apples to apples comparison?

What is needed to make this happen?

I think conservative Spokane will have a heart attack if you get rid of a lane in each direction.

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Additional Comments:

Has STA been included in the discussion as far as placement of bus stops or bus rapid transit (signal prioritization etc...)?

I like the incorporation of bikes but I think that would be dangerous without a separate bike lane. I commute to work and would not risk the rage I think I would encounter riding down Sprague, backing up traffic. I think those bike symbols (can't think of the name) on the roads are good for short distances but dangerous in that long of a corridor. I could be wrong.

I like the designs. I definitely agree that this area needs to be re-developed. It is an eye sore now.

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How do you feel about the **Preferred Land Use Alternative**?

I like to live in a mixed-use, walkable neighborhood close to downtown.

I like to shop in a neighborhood with various small business and industrial sites.

How do you feel about the **Preferred Street Design**?

I wonder about the ability to make left turns when there is extended median-plantings.

I also wonder about businesses that may be 'drive-through' or utilize drop-off such as doggie daycare.

What is needed to make this happen?

I think perhaps a Port District or another new source of revenue

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Additional Comments:

Thank you for your extensive outreach to business and community members.

Thanks for participating!

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How do you feel about the **Preferred Land Use Alternative**?

Strikes the right balance
Between ~~past~~ present and future
and establishes a vision that
can be accepted by many

How do you feel about the **Preferred Street Design**?

I would prefer wide lanes to accommodate
bikes ~~trucks~~ throughout but understand
the constraints. I prefer more
room for bus passengers and amenities
at stops

What is needed to make this happen?

\$

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Additional Comments:

Good job - Don't lose sight
of goal to ~~make this~~ create
a pedestrian oriented place for
the future

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How do you feel about the **Preferred Land Use Alternative**?

Fine, as long as no zoning changes are made to the area. If design guidelines are to be developed, I feel land owners in the area must make up at least 50% of the decision makers.

How do you feel about the **Preferred Street Design**?

I like it for the most part.

What is needed to make this happen?

① Maintain flexible zoning ② Get the pedestrian bridge built ③ stop all these expensive studies and commit to action. This has been going on for over a decade with not a spoonful of dirt moved.

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How do you feel about the **Preferred Land Use Alternative?**

Need more green space / park land for the
large increase in population from multi family
land use. Playfields?

How do you feel about the **Preferred Street Design?**

Blurb outs will make turns from side streets
very difficult for longer wheel based vehicles to turn
Where will the stormwater go? How about
depressed medians to gove ty flow water from street
Add width to through lanes for bikes - don't need
a 15' median

Be careful of planting trees in medians to block
sight distance / triangle - side streets @ turning left!
What is needed to make this happen?

Lots of Money - where is it coming from
Who will take care of Median plants and
other planting
No Snow storage - not even a middle lane to stock it
Pointed medians aren't buildable or maintainable

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How do you feel about the **Preferred Land Use Alternative**?

How do you feel about the **Preferred Street Design**?

if the travel lanes on Sprague are
11' and minimize the safety of bikes,
pls. assure 1st & 2nd are bike friendly
through the residential areas
so that people can get to the
Sherman to cross on the bike/pec
bridge. Consider the block between
~~Division & Pine on Sprague~~ to include

What is needed to make this happen?

a

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The University District – Sprague Corridor (UDSC) Planning Study focuses on the future of land use within the South University District, and transportation and street design along Sprague Avenue, from Pine to Fiske streets. During the six-month planning process, the project aims to evaluate existing conditions within the study area and determine appropriate strategies and designs that will serve to reduce energy consumption and greenhouse gas emissions.

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How do you feel about the **Preferred Land Use Alternative**?

No Major concerns. Viable housing dev't in So. Univ District will, in my opinion, require a stronger connection to North University district campuses. I fear that a nice, wide, elegant pedestrian bridge will not provide this. Get cars across somehow!

How do you feel about the **Preferred Street Design**?

Concerned that center planting islands will not be beneficial. Snow plowing concerns, will affect, etc are valid concerns in my mind.

What is needed to make this happen?

Draft University District-Sprague Corridor Vision

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Sprague Avenue also plays a central role in the success of the District and the City. Providing a major transportation linkage between Downtown and East Spokane, the street is composed of many **distinct segments** and adjacent businesses, held together by a streetscape that is both **safe** and **attractive**. The street design balances **economic development** and **mobility**, and is **multimodal**, accommodating motorists, pedestrians, and transit users, for trips within and through the City.

Additional Comments:

I am a proponent of well planned growth.
The establishment of the U-District ~~is~~ and the
current studies in the district are positive
developments for me as a business/building
owner in the South U-District.

Thanks for participating!

For more information, please contact:

City of Spokane Business and Development Services
3rd Floor, City Hall • 808 W. Spokane Falls Blvd • Spokane, WA 99201
509-625-6983 • www.developingspokane.org

The University District-Sprague Corridor Planning Study: Community Open House

March 20, 2012



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How do you feel about the **Preferred Land Use Alternative**?

Kosher! I think it's perfect. Well, Almost, because it could perhaps be a bit more aggressive on the urban planning front.

How do you feel about the **Preferred Street Design**?

Kosher! See above.

What is needed to make this happen?

Money. Talk to Brandon Betty, I hear he has some ideas.

Draft University District-Sprague Corridor Vision

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Additional Comments:

Thank you City of Spokane staff
for being open & transparent with
this process

Thanks for participating!

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How do you feel about the **Preferred Land Use Alternative**?

I like the idea of an ~~urban~~ urban village design. I would be a good idea to "clean up" Sprague and ~~not~~ create a more desirable neighborhood to walk to. Mixed use plans create more diversity for the neighborhood's image and the city's economy.

How do you feel about the **Preferred Street Design**?

I like the emphasis on trees and making more accessible parking / pedestrian access. Slowing down traffic makes it more comfortable for pedestrians.

What is needed to make this happen?

Coordination with different city departments and with other private coordination with city and private businesses.

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How do you feel about the **Preferred Land Use Alternative?**

I ~~would~~ like ~~to~~ developing the Urban Village concept between ~~the~~ Division and Sheridan. We need more housing w/ a mixed use focus.

How do you feel about the **Preferred Street Design?**

More medians, especially vegetated medians.

I want vegetated median in the U-Dist Area as well.

What is needed to make this happen?

Funding for Ped/Bike Bridges, integrated with parking garage and intermodal station with retail services.

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Additional Comments:

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How do you feel about the **Preferred Land Use Alternative**?

I like the ideas (1) create median, (2) improve landscaping (3) improving pavements surfaces

UD is very close to universities. Do you consider to improve student housing?

How do you feel about the **Preferred Street Design**?

What is needed to make this happen?

I think first landowners, business owners should be convinced that these changes will affect them positively.

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Additional Comments:

I have been to UD and it was very scary when I walked on the street. I did not feel safe and the condition of the UD is really bad & desperately needs to be improved.

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How do you feel about the **Preferred Land Use Alternative?**

APPEAL FOR NEW RESIDENTIAL DEVELOPMENT

(MULTIFAMILY) WILL GROW WITH:

- PARKING CAPACITY (OFF-STREET - VERY EXPENSIVE)

- OPEN SPACE/PARKS

- PEDESTRIAN SAFETY

How do you feel about the **Preferred Street Design?**

LOTS OF DIVERGENT INTERESTS BUT THE

ENHANCED ON-STREET PARKING WILL BE

A POPULAR IMPROVEMENT

What is needed to make this happen?

DEVELOPMENT INVESTMENT. GROWTH OF

UNIVERSITY DISTRICT & CONNECTIVITY

TO CAMPUSES SHOULD SPUR THIS

Draft University District-Sprague Corridor Vision

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Additional Comments:

I DON'T BELIEVE POLICY PLANNING IS DRIVEN BY
THE TRAINING OR ATTITUDES OF SNOWPLOW DRIVERS

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How do you feel about the **Preferred Land Use Alternative**?

I like it - we (the city)
will need to develop a
tool box of incentives &
changes in regulations
to make it happen.

How do you feel about the **Preferred Street Design**?

I like it - we'll need
to think about where
bikes will go in Int'l.
District if not on Sprague.

What is needed to make this happen?

targeted investment by both
city & private sector -
incentives, changes in
regulations or design
standards -
LEADERSHIP

Draft University District-Sprague Corridor Vision

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How do you feel about the **Preferred Land Use Alternative**?

I like the Urban Village alternative for the South U-District because it combines the best of the alternatives to make the neighborhood a positive compliment to the overall University District.

How do you feel about the **Preferred Street Design**?

I think the plans for both the S. U-District & International District will be good. I think the medians will make the International District more attractive and will make it better for business. Overall, I think it'll make the whole area better for pedestrians, cyclists, and transit users.

What is needed to make this happen?

There needs to continue to be good public participation and open houses so planners know what the public wants and the public will understand what the planners are saying could or would happen for the area.

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How do you feel about the **Preferred Land Use Alternative**?

Sticking with the EC plan
with no rezoned works fine

How do you feel about the **Preferred Street Design**?

3 lanes - no trees or
obstructions in center lane
- Bus Pull outs perhaps
every 3 to 4 blocks

What is needed to make this happen?

Test plan w just paint
for 3 lanes to verify
concept works

Draft University District-Sprague Corridor Vision

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Additional Comments:

- 13000 app day vehicle count -
- est B/k at 20 - move Bikes to Riverside or 1st
- east & West -
- Make the center turn lane unobstructed
- in International Dist as the 4 lane section
- east of Haven is currently
- Consider business economics i.e. - visibility of businesses
- + left turns to access parking

Thanks for participating!

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How do you feel about the **Preferred Land Use Alternative?**

I like it - after 11 yrs
its good to see the
2001 "Centers and Corridors"
alternative to the city's
"Comprehensive plan"
finally on the drawing
board... again!

How do you feel about the **Preferred Street Design?**

I like it - especially
the medians (trees)
parking in the concept
for East of Hamilton.
It improves the access
& livability of the business
areas

What is needed to make this happen? - ACTION

\$ implementation as
presented
1) projects - Stop permit blockades!
2) programs w/out excess
lip service

Draft University District-Sprague Corridor Vision

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Additional Comments:

Bruce Gage - Co Owner
Eco Depot / Oasis Park
1326 E. Sprague Avenue
in the Heart of the
"Spokane District"

Thanks for participating!

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DAVID A. CLACK
325 E. SPRAGUE AVENUE
SPOKANE, WA 99202
509.747.7121

RECEIVED
MAR 29 2012
BUILDING & CODE ENFORCEMENT

March 29, 2012

Melissa Wittstruck
City of Spokane
Business and Development Services Department
808 West Spokane Falls Blvd
Spokane, WA 99201

Dear Ms. Wittstruck,

Thank you for the opportunity to attend and participate in the community meeting and open house for the University District Sprague Corridor Planning Study held March 20, 2012. I'm more comfortable providing you comments in this letter than filling out the comment sheet, and I hope you can include my comments here as if they were provided on the form. The comments are organized by the questions found on the comment sheet provided.

How do you feel about the Preferred Land Use Alternative?

Based on the community open house held March 20, 2012, I understand that no changes are proposed to the existing comprehensive plan land use designation (General Commercial) or existing zoning (GC-150). I support this decision.

As identified in the comprehensive plan and implemented in the zoning regulations, General Commercial supports a variety of uses including housing and auto-oriented commercial. Future changes or updates to the land use standards and/or design guidelines as proposed in the implementation strategy should be informed by existing policy and regulations, and they should strike a balance between the diverse uses (existing and proposed) in the south University District. I understand that the land use schemes proposed by the consultant are intended to inform the character of the streetscape and are not to be considered anticipated changes in land use designations or zoning.

How do you feel about the Preferred Street Design?

The preferred street design is reasonable as a concept, and some very thoughtful consideration went into where medians with a planting strip or center turn lanes were located. It seems the majority of those in attendance were in favor the three-lane cross-section for the Sprague corridor. I believe that an additional level of detailed study is needed to locate proposed medians and center turn lanes east of the Hamilton overpass. I think that special attention in that area should be given to auto-oriented business for left-turn access. In addition, I would like to restate that the City of Spokane could trial run medians and center turn lanes with some temporary striping, allowing businesses and motorists to get comfortable with the concept before the City invests in actually constructing the medians. Striping has been effective on 29th, and I believe it can work here, too. Once motorists and businesses have become accustomed to the three-lane concept, the City can construct the medians and, if necessary, install left-turn signals at Helena, Napa and Altamont.

What is needed to make this happen?

In order for the south University District and Sprague Corridor to be successful, the City of Spokane should preserve the existing flexibility of the zoning and land use designations. The process should look for additional creative ways to ensure that design considerations and changes should embrace the preferred vision while protecting the existing character and businesses. There are many successful auto-oriented businesses along the corridor, Becker Buick and Trudeau's Marina for example, that have very few options to relocate within the City of Spokane. I would like to see the plan acknowledge these uses and provide options for integrating them into the proposed vision of the corridor.

Additional Comments.

An important component to a successful planning process such as the University District Sprague Corridor Study is its ability to relate to other plans and projects. In order for this plan to have a better fit and to preserve the flexibility I mention above, the plan should acknowledge and incorporate to at least a conceptual degree the *existing* connection Erie Street provides to the eastern edge of the Riverpoint campus. This connection provides an opportunity for easy access to the campus from the South University District. It has the added benefit of providing a potential link to the Centennial Trail and the Gonzaga Campus. In addition, this connection is included in the Citywide bicycle/pedestrian plan and the East Central neighborhood plan. Clearer concepts showing MLK and Erie and their ability to facilitate non-motorized connection between the south and north U-District would be a welcome addition to the next graphic set.

Sincerely,



Dave Clack

ADDITIONAL COMMENTS

How do you feel about the Preferred Street Design ?

Personally I would prefer to see parking eliminated on one side of the street in order to allow bike lanes on both sides. Bikes represent low emission, low-impact traffic and people who do stop and patronize local businesses--even more so than drivers because it's easier to make a spontaneous decision to stop. With the great transit service along Sprague, living car-free is very, very doable; multi-family housing in this vicinity will support demand over time and more young people are choosing to forego cars completely.

There is no good through street for east/west bike access linking the International District, South University District, and downtown except Sprague. Everything else runs into the river and ends or dumps into a bunch of uncontrolled intersections just east of Division with blind corners and basalt bluffs, or both.

2nd Ave. doesn't work well because of the strange and scary interchange with Hamilton and Arthur, and it has no good eastbound parallel; 3rd Ave. stays south of the freeway and does nothing to connect people with the businesses they could support along Sprague.

In addition, the bike lane that comes down Southeast Blvd and currently ends at 5th is a logical route for people living on the South Hill and Perry District to come down the hill. They can use 2nd (a signed bike route) to get into downtown. But if Sprague were made more inviting to bikes they might choose to take some of their commerce east instead of west, further supporting growth in the area.

The presence of people on bikes, like pedestrians, can also help with crime prevention because there are more eyes on the street and more activity.

I like the median design. It is important that the plantings selected not serve to block visibility, which would increase the potential for collisions. Riverpoint Blvd. has had problems with this--a number of bushes had to be taken out and trees limbed up because they were poor choices by the original developer.

What is needed to make this happen?

First and foremost, the voices of a few who don't like this approach cannot drown out the many who have expressed support and enthusiasm. I attend hearings and get the impression of a "no change at all!" mentality among a few that doesn't recognize where our society, economy, and transportation trends are going.

I want to respect their concerns about issues like access for delivery trucks--we all need the movement of goods as well as people. I believe that all can be accommodated with thoughtful design (and better snow removal by the city!).

How do you feel about the Preferred Land Use Alternative?

I like it! I come through there daily and see the signs of existing business efforts that will be enhanced by a greener, "friendlier", more walkable/bikeable streetscape. Businesses like the railroad hobby shop, the Pacific Flyway Gallery, Jones Radiator, the flower shop, the tennis shop, and others will definitely benefit.

Additional Comments

Bike alternatives intended to keep bikes off Sprague will not serve the purpose of bringing commerce TO Sprague. In addition, people on bikes are like people in cars--they tend to take the direct route unless it's really impossible. So bikes WILL be on Sprague and plans need to be realistic about this.

How do you feel about the Preferred Street Design ?

The preferred street design looks great! However I have one concern. There is a middle school (The Libby Center) at 1st Ave and Haven St. The current location of the transit stop is at Sprague and Haven. There are several students, faculty and staff at this school who use this transit stop every weekday. There is also a Boys and Girls Club at the school which has attendees who use transit.

It would be nice if the transit stop can be maintained as close as possible to the school. Regardless of where the transit stop is located (presently designated to be moved one block east, to Fiske) these young transit riders need a user-activated pedestrian crossing signal in order to cross the street. Or this area needs to be designated as a school zone and appropriate signage and speed limits posted.

What is needed to make this happen?

Previously there has been money from the State Traffic Safety Commission to install school zone signage and flashers at Spokane area schools. Additional grant money may be available for this segment of the project. District 81 Transportation and Safety Coordinator Jason Connelly has indicated the school district will supply crossing guards for students if a pedestrian crossing is provided. The Libby School PTG unanimously supported enhanced pedestrian safety in this segment of Sprague at its monthly meeting on March 14, 2012.

How do you feel about the Preferred Street Design ?

It's great. Would love to see more shopping open up there as well. The planted median is a wonderful idea. Some trees & flowers & we'd be just as lovely as Seattle.

Thank you for letting me comment.

Background

The Sprague Avenue corridor east of downtown Spokane has been evaluated in two recent studies; the *University District/Downtown Spokane Transportation Improvement Study (Downtown Study)*¹ completed in 2009 and the *University District - Sprague Corridor Planning Study (Sprague Study)* that is in progress. Both studies evaluated the future capacity needs of Sprague Avenue. However, due to the use of different regional travel demand models and resulting traffic volume forecasts, the recommended roadway improvements for Sprague Avenue were not the same.

Downtown Study

The overall objective of the *Downtown Study* was to provide a comprehensive assessment of the transportation needs within Spokane's University District and Downtown areas. The study included two intersections on Sprague Avenue east of Downtown; Division Street/Sprague Avenue and Sherman Street/Sprague Avenue. A capacity analysis of Sprague Avenue was conducted to determine if the current four-lane section could be narrowed to a three-lane section while maintaining adequate traffic operations in the future year 2030.

Future year volume forecasts for the *Downtown Study* were developed using the Spokane Regional Transportation Commission's (STRC) 2005 and 2030 travel demand models. Based on these forecasts, Sprague Avenue was anticipated to carry around 2,100 vehicles during the PM peak hour (approximately 21,000 vehicles a day) in the year 2030. Typically, urban two or three-lane roads can accommodate up to 20,000 vehicles in a day, depending on the side street traffic volumes, access density, and other road characteristics (bus stops, on-street parking, pedestrian volumes).

The year 2030 forecasted volumes on the Sprague Avenue corridor were assessed to determine if a four to three-lane reduction east of Division Street was feasible. The lane reduction was not recommended based on the following information:

- Future 2030 forecast volumes for Sprague Avenue were borderline for adequate three-lane operations
- The construction of the Riverside extension as an alternative east-west facility was not certain in the near-term
- Sprague Avenue serves as the primary alternative route during I-90 congestion
- Detailed traffic operational analyses at non-signalized intersections were not available
- Traffic operational analyses at intersections east of Sherman Street were not available

¹ *University District/Downtown Spokane Transportation Improvement Plan*, DKS Associates, June 2009.

Sprague Study

The findings and recommendations of the Sprague Study are based on recent 2030 volume forecasts and traffic operating conditions. These are described on the sections below.

2030 Volume Forecasts

Intersection counts were conducted in the fall of 2011 at select intersections (both signalized and unsignalized) on Sprague Avenue between Division Street and Lee Street. The traffic counts revealed that the majority of the turning movements on the corridor were concentrated at the signalized intersections. Year 2030 volume forecasts were developed using the current SRTC 2008 base year and 2030 future year travel demand models. The SRTC models include recent updates including revised regional land use assumptions. The 2030 forecasts estimated that Sprague Avenue would carry approximately 18,300 vehicles a day east of Napa Street and 14,700 vehicles a day west of Sherman Street. The Sprague Avenue corridor three-lane configuration was reassessed based on new volume forecasts and additional study intersections. It was concluded that the 2030 volume forecasts could be accommodated on a three-lane roadway with appropriate improvements at the signalized intersections.

Traffic Operational Analyses

A 2030 No Build traffic operational analysis was conducted for the four signalized intersections that would be impacted by the proposed reduction in the number of lanes on Sprague Avenue, including:

- Sprague Avenue/Sherman Street
- Sprague Avenue/Helena Street
- Sprague Avenue/Napa Street
- Sprague Avenue/Altamont Street

While the number of east-west through lanes at each of these intersections would be reduced, there would only be a minor reduction in the total intersection capacity. The addition of a dedicated left turn lane and right turn lane on Sprague Avenue would improve the ability for the signalized intersections to more efficiently serve traffic. Additionally, traffic signals with protected left turn phasing and enhanced signal timing and communication would allow for increased intersection efficiency. These two improvements combined would benefit traffic on Sprague Avenue as well as on the side streets.

Riverside Extension

While the *Downtown Study* was being completed, planning work on the Riverside extension (Division Street to Trent Avenue) was also underway. DKS Associates completed a Technical Memorandum in 2008 as part of the effort to determine the future needs of this proposed roadway extension project.² The Riverside extension was planned to serve as an alternative east-west facility to Spokane Falls Boulevard, however a portion of traffic demands on Sprague Avenue would also reroute to the Riverside

² DKS Associates, *Riverside Extension Transportation Analysis* – Technical Memorandum, March 20, 2008.

extension. During the *Downtown Study*, the timing of the construction of the Riverside extension project was unclear. This uncertainty was a factor in recommending to preserve four-lanes on Sprague Avenue.

Since the completion of the *Downtown Study*, construction has begun on the first phases of the Riverside extension (renamed to Martin Luther King Junior Way). The City is currently working on the preliminary engineering for the completion of the project. The recent progress on the Riverside extension project suggests that the traffic demands on Sprague Avenue east of Division Street would decrease in the short-term and the three-lane Sprague Avenue configuration should be reassessed.

Technical Memorandum

DATE: January 31, 2011
TO: Jay Renkens, AICP, MIG
FROM: Michael Tomasini, P.E., PTOE, DKS Associates
SUBJECT: **Alternatives Analysis**
Spokane Sprague Corridor Planning Study

P11138-000-003

The purpose of this technical memorandum is to present the results of the future volume forecasts and operational analysis.

Future Traffic Growth Forecasts

Future traffic growth forecasts on Sprague Avenue are a function of the future land use and the surrounding transportation network. Land use is a key factor in how the transportation system operates and how many vehicle trips are on the transportation network. Projected land uses have been developed for the study area reflecting the the three land use alternative focus types (employment focus, institutional focus, and urban village focus) and City of Spokane *Comprehensive Plan*¹ assumptions for year 2030. Complete data sets were developed for the following conditions:

- Existing base 2011 conditions
- Existing Travel Demand Model Year (2008)
- Year 2030 No Build conditions
- Year 2030 Alternative Analysis Build conditions
 - Employment Focus (low and mid-level)
 - Industrial Focus (low and mid-level)
 - Urban Focus (low and mid-level)

For the purposes of the local traffic analysis, 2011 was considered the existing year and 2030 was considered the future year. For the purpose of travel demand modeling, 2008 was considered the base year and 2030 was considered the future year.

¹ Comprehensive Plan, City of Spokane Planning Department, Revised April 4, 2011.

The Spokane Regional Transportation Council (SRTC) developed the base year (2008) and future year (2030) travel demand models using existing land uses and future City of Spokane *Comprehensive Plan* zoning.² These land uses and the associated population and employment forecasts were converted to an equivalent number of employees using employment density rates data published by the, Metro³, the City of San Francisco⁴ and Gruen Gruen and Associates⁵. Using data from the Institute of Transportation Engineers trip generation Manual⁶, these employees are then converted into motor vehicle trips for assignment throughout the region in SRTC's travel demand models.

These trips were then assigned to the model and distributed along the regional network of roads. The output from the travel demand models was then used to develop future 2030 p.m. peak-hour directional roadway volumes and intersection turning movements. These volumes have been derived using post processing methodologies outlined in National Cooperative Highway Research Program Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design*. Table 1 shows the forecasted average annual daily traffic volumes for the study area intersections.

²Comprehensive Plan, City of Spokane Planning Department, Revised April 4, 2011.

³ *Metro Employment Density Study*, 1990.

⁴ *The Downtown Plan Environmental Impact Report*, City and County of San Francisco, Department of Planning, 1984.

⁵ *Employment Densities by Building/Use Type*, Gruen and Gruen Associates, September 1984.

⁶ Trip Generationm 8th Edition, Institute of Transportation Engineers, December, 2008.

Table 1: Estimated Daily Traffic Volume

Roadway	Location	Estimated Daily Traffic Volume							
		2011 Existing	2030 No Build	2030 Employment Focus		2030 Institutional Focus		2030 Urban Village Focus	
				Low	Medium	Low	Medium	Low	Medium
<i>East-West Facility</i>									
Sprague Avenue	West of Sherman	11,000	14,700	14,300	14,700	14,500	15,220	15,200	15,500
Sprague Avenue	East of Napa	15,000	18,300	17,900	18,650	17,850	18,450	17,900	18,550
<i>North-South Facility</i>									
Cowley Street	South of Sprague	850	1,030	1,010	1,060	1,030	1,060	1,050	1,080
Grant Street		400	480	470	500	480	500	490	510
Sherman Street		3,600	4,450	4,250	4,750	4,450	4,620	4,500	4,800
Sheridan Street		200	240	240	250	240	250	250	250
Sprague Way northbound		1,700	2,060	2,020	2,130	2,060	2,110	2,100	2,170
Sprague Way southbound		200	240	240	250	240	250	250	250
Perry Street		750	910	890	940	910	930	930	960
Magnolia Street		300	360	360	380	360	370	370	380
Altamont Street		5,500	6,700	6,600	6,650	6,650	6,700	6,750	6,750
Lacey Street		300	360	360	380	360	370	370	380
Fiske Street		600	730	710	750	730	740	740	760
Helena Street		North of Sprague	3,000	3,750	3,800	3,950	3,800	3,950	4,000
Madelia Street	800		970	950	1000	970	990	990	1020
Napa Street	6,100		6,900	6,700	7,100	6,900	7,000	6,900	7,050
Lee Street	500		600	590	630	610	620	620	640

Under the land use build alternatives, there would be some minor overall changes in travel patterns and in traffic loading at the study intersections. Most all of the streets would expect to see minor increases in the number of vehicles. However, under the low build out option for the Employment Focus and Institutional Focus scenarios, increases in the mix of land uses help to slightly reduce number of trips into the study area from outside areas.

Motor Vehicle Operational and Queuing Analysis

The future motor vehicle operational and queuing analysis of the Sprague Corridor has been conducted for the signalized study intersections. The unsignalized intersections have not been included, since the increase in motor vehicle volume at these locations would be fairly small.

Operational Analysis

To be consistent with the previous area studies, the operational analysis has been conducted using Synchro 7 software to create reports based on Highway Capacity Manual 2000 methodologies. This study reports the average delay per vehicle, level of service (LOS) and volume to capacity (v/c) ratio for signalized study intersections.

Level of service (LOS): A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection.⁷ LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.

Volume to capacity (v/c) ratio: A decimal representation (typically between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays.

All of the intersections within the study area are under City of Spokane jurisdiction and are therefore subject to the LOS D mobility standard. Table 2 shows the results of the intersection operational analysis comparing a No Build Scenario to the three land use alternatives.

⁷ A description of Level of Service (LOS) is provided in the appendix and includes a list of the delay values (in seconds) that correspond to each LOS designation.

Table 2: 2030 PM Peak Hour Intersection Operations

Scenario	Standard	Sprague/ Altamont	Sprague/ Napa	Sprague/ Helena	Sprague/ Sherman
No Build	Delay	13.5	11.2	11.5	9.5
	LOS	B	B	B	A
	v/c Ratio	0.55	0.67	0.51	0.45
Employment Low	Delay	13.9	21.4	25.1	8.9
	LOS	B	C	C	A
	v/c Ratio	0.67	0.84	0.77	0.56
Employment Medium	Delay	16.8	31.2	30.3	10.2
	LOS	B	C	C	B
	v/c Ratio	0.72	0.93	0.80	0.58
Institution Low	Delay	13.8	29.6	26.3	8.5
	LOS	B	C	C	A
	v/c Ratio	0.68	0.88	0.76	0.57
Institution Medium	Delay	14.2	31.8	28.7	9.7
	LOS	B	C	C	A
	v/c Ratio	0.69	0.92	0.79	0.59
Urban Village Low	Delay	13.9	29.7	26.7	9.7
	LOS	B	C	C	A
	v/c Ratio	0.68	0.89	0.78	0.62
Urban Village Medium	Delay	16.3	30.3	29.0	10.3
	LOS	B	C	C	B
	v/c Ratio	0.71	0.93	0.82	0.64

Notes: LOS = Level of Service
v/c = volume to capacity ratio

As can be seen in Tables 1 and 2, the three land use alternatives would slightly increase the number of vehicles using Sprague Avenue and would also slightly increase the volume to capacity (v/c) ratio and associated average delay at the study intersections. The increase in delay would be relatively minor and in some instances result in a change in the LOS. Despite these changes in v/c ratio and delay all of the study intersections would continue to meet the City’s mobility standards under the No Build and all three land use alternatives.

Queuing Analysis

Queuing analysis was performed using the SimTraffic analysis tool that simulates the 95th percentile queue for each study intersection approach. This 95th percentile queue estimates that for any given

cycle at a signalized intersection, the queue length calculated is representative of 95th percent of the peak fifteen-minute vehicular queues during the peak hour at that intersection.

Queuing results from SimTraffic have taken vehicle type (car, truck, bus, etc.), vehicle arrivals during queue clearance, adjustments for oversaturated conditions, and upstream metering into account. For the purpose of analysis, queuing estimates have been based on an average vehicle length of 25 feet per vehicle. This length takes buffer space in front of and behind a queued vehicle into account.

Table 3: PM Peak Hour 95th Percentile Queue Lengths

Intersection	MVMT*	No Build	Employment		Institution		Urban Village	
			Low	Medium	Low	Medium	Low	Medium
Sprague/ Altamont	NBL	125	125	125	150	150	150	125
	NBT	75	75	50	100	125	125	75
	NBR	75	50	75	50	50	50	75
	SBL	50	50	50	50	50	50	50
	SBT	100	100	75	100	75	100	75
	SBR	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹
	EBL	175	50	50	50	75	50	50
	EBT	Shared ²	150	150	150	175	150	150
	EBR	225	175	200	175	175	175	175
	WBL	200	100	100	75	100	100	125
	WBT	Shared ²	325	525	325	300	350	450
WBR	200	25	25	25	25	25	25	
Sprague/ Napa	NBL	50	50	50	50	50	50	50
	NBT	75	75	75	75	75	75	75
	NBR	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹
	SBL	200	200	200	200	200	200	200
	SBT	175	225	300	350	375	350	575
	SBR	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹
	EBL	175	125	100	125	100	125	100
	EBT	Shared ²	550	650	625	650	625	525
	EBR	175	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹
	WBL	125	75	75	75	75	75	75
	WBT	Shared ²	400	400	475	425	500	350
WBR	150	175	175	225	250	225	225	
Sprague/ Helena	NBL	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴
	NBT	125	125	125	125	100	150	150

Table 3: PM Peak Hour 95th Percentile Queue Lengths

Intersection	MVMT*	No Build	Employment		Institution		Urban Village	
			Low	Medium	Low	Medium	Low	Medium
	NBR	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴
	SBL	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴
	SBT	150	225	275	225	325	275	250
	SBR	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴	Shared ⁴
	EBL	175	100	100	100	125	100	100
	EBT	Shared ²	500	450	400	450	450	450
	EBR	200	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹
	WBL	75	50	50	75	100	75	50
	WBT	Shared ²	450	450	450	450	450	425
	WBR	100	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹	Shared ¹
Sprague/ Sherman	NBL	150	125	150	125	125	125	150
	NBR	75	50	75	50	75	75	75
	EBT	125	275	275	250	250	275	300
	EBR	175	75	125	100	50	150	125
	WBL	150	100	75	100	75	100	100
	WBT	175	200	225	225	225	250	225

Notes:

*MVMT = Movement (Compass direction and turning movement)

NBL = Northbound Left Turn

NBT = Northbound Through

NBR = Northbound Right Turn

- 1) Right turns shared with through movements.
- 2) Two through movements one shared with left turns and one shared with right turns.
- 3) Left turns shared with through movements.
- 4) Right and left turns shared with through movements.

The 95th percentile queuing analysis revealed that the northbound/southbound queues at the study intersections would not differ greatly between scenarios. Instead, the eastbound/westbound queues showed the greatest propensity to change between the No Build Scenario and the Land Use Alternatives. This change was mostly seen in increases in queue length for the through movements and decreases in queue length for the left and right turns off of Sprague Avenue. This type of pattern was to be expected, however, since the lane configuration under the Land Use Alternatives would be modified from shared turn/through movement lanes to separate dedicated left turn and right turn lanes at the study intersections. Nearly all of the queues fit within one block, with the exception of the eastbound/westbound queues at the study intersections of Sprague Avenue/Napa Street and Sprague

Avenue/Altamont Street. The longest of these queues (eastbound at Napa Street) would extend approximately 650 feet to west from Napa Street, cross Magnolia Street and come to within about 100 feet of Pittsburg Street. Once a final alternative has been selected, optimization to the signal timing and intersection layout may help reduce the length of this queue.

Technical Memorandum

DATE: March 16, 2012

TO: Jay Renkens, AICP, MIG
Jon Pheanis, AICP, MIG

FROM: Michael Tomasini, P.E., PTOE, DKS Associates

SUBJECT: Preferred Alternative Transportation Analysis
Spokane Sprague Corridor Planning Study

P11138-000-003

Three land use alternatives were previously analyzed for the Spokane Sprague Corridor Planning Study. From these six, the preferred alternative has been selected for further refinement and analysis. The purpose of this technical memorandum is to present the results of the future volume forecasts and operational transportation analysis for the preferred alternative.

Future Traffic Growth Forecasts

Future traffic growth forecasts on Sprague Avenue are a function of the future land use and the surrounding transportation network. Land use is a key factor in how the transportation system operates and how many vehicle trips are on the transportation network. Projected land uses have been developed for the study area reflecting the preferred land use alternative focus types (urban village focus) and City of Spokane *Comprehensive Plan*¹ assumptions for year 2030. Complete data sets were developed for the following conditions:

- Existing base 2011 conditions
- Existing Travel Demand Model Year (2008)
- Year 2030 Baseline Growth (no build) conditions
- Year 2030 Preferred Alternative (Urban Focus (low and mid-level))

For the purposes of the local traffic analysis, 2011 was considered the existing year and 2030 was considered the future year. For the purpose of travel demand modeling, 2008 was considered the base year and 2030 was considered the future year.

¹ Comprehensive Plan, City of Spokane Planning Department, Revised April 4, 2011.

The Spokane Regional Transportation Council (SRTC) developed the base year (2008) and future year (2030) travel demand models using existing land uses and future City of Spokane *Comprehensive Plan* zoning.² These land uses and the associated population and employment forecasts were converted to an equivalent number of employees using employment density rates data published by the, Metro³, the City of San Francisco⁴ and Gruen Gruen and Associates⁵. Using data from the Institute of Transportation Engineers trip generation Manual⁶, these employees are then converted into motor vehicle trips for assignment throughout the region in SRTC’s travel demand models.

These trips were then assigned to the model and distributed along the regional network of roads. The output from the travel demand models was then used to develop future 2030 p.m. peak-hour directional roadway volumes and intersection turning movements. These volumes have been derived using post processing methodologies outlined in National Cooperative Highway Research Program Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design*. Table 1 shows the forecasted average annual daily traffic volumes for the study area intersections.

Table 1: Estimated Daily Traffic Volume

Roadway	Location	Estimated Daily Traffic Volume		2030 Preferred Alternative	
		2011 Existing	2030 Baseline Growth	Low	Medium
<i>East-West Facility</i>					
Sprague Avenue	West of Sherman	11,000	14,700	15750	15800
Sprague Avenue	East of Napa	15,000	18,300	18350	18700
<i>North-South Facility</i>					
Cowley Street	South of Sprague	850	1,030	1080	1090
Grant Street		400	480	510	510
Sherman Street		3,600	4,450	4850	4800
Sheridan Street		200	240	250	260
Sprague Way northbound		1,700	2,060	2160	2190
Sprague Way southbound		200	240	250	260
Perry Street		750	910	950	970
Magnolia Street		300	360	380	390
Altamont Street		5,500	6,700	6800	6750
Lacey Street		300	360	380	390
Fiske Street		600	730	760	770
Helena Street		3,000	3,750	4050	4250
Madelia Street		800	970	1010	1030
Napa Street		6,100	6,900	6950	7150
Lee Street	500	600	630	640	

²Comprehensive Plan, City of Spokane Planning Department, Revised April 4, 2011.

³ *Metro Employment Density Study*, 1990.

⁴ *The Downtown Plan Environmental Impact Report*, City and County of San Francisco, Department of Planning, 1984.

⁵ *Employment Densities by Building/Use Type*, Gruen and Gruen Associates, September 1984.

⁶ Trip Generation 8th Edition, Institute of Transportation Engineers, December, 2008.

Under the preferred land use build alternative, there would be some minor overall changes in travel patterns and in traffic loading at the study intersections. Most all of the streets would expect to see minor increases in the number of vehicles.

Motor Vehicle Operational and Queuing Analysis

The future motor vehicle operational and queuing analysis of the Sprague Corridor has been conducted for the signalized study intersections. The unsignalized intersections have not been included, since the increase in motor vehicle volume at these locations would be fairly small.

Operational Analysis

To be consistent with the previous area studies, the operational analysis has been conducted using Synchro 7 software to create reports based on Highway Capacity Manual 2000 methodologies. This study reports the average delay per vehicle, level of service (LOS) and volume to capacity (v/c) ratio for signalized study intersections.

Level of service (LOS): A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection.⁷ LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.

Volume to capacity (v/c) ratio: A decimal representation (typically between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays.

All of the intersections within the study area are under City of Spokane jurisdiction and are therefore subject to the LOS D mobility standard. Table 2 shows the results of the intersection operational analysis comparing a Baseline Growth Scenario to the preferred land use alternative.

Table 2: 2030 PM Peak Hour Intersection Operations

Intersection	Baseline Growth			Preferred Alternative Low			Preferred Alternative Medium		
	Delay	LOS	v/c Ratio	Delay	LOS	v/c Ratio	Delay	LOS	v/c Ratio
Sprague /Altamont	13.5	B	0.55	20.7	C	0.79	22.7	C	0.85
Sprague /Napa	11.2	B	0.67	29.9	C	0.83	28.5	C	0.86

⁷ A description of Level of Service (LOS) is provided in the appendix and includes a list of the delay values (in seconds) that correspond to each LOS designation.

Sprague/Helena	11.5	B	0.51	19.1	C	0.69	16.8	B	0.7
Sprague /Sherman	9.5	A	0.45	10.6	A	0.62	10.4	B	0.63

Notes: LOS = Level of Service
v/c = volume to capacity ratio

As can be seen in Tables 1 and 2, the preferred land use alternatives would slightly increase the number of vehicles using Sprague Avenue and the reduction from four lanes to three would also decrease the roadway capacity. The combination of these two factors would result in an increase in the volume to capacity (v/c) ratio and associated average delay at the study intersections. The increase in delay would be between zero and 20 seconds, and in most instances result in a change in the LOS. Despite these changes in v/c ratio and delay all of the study intersections would continue to meet the City’s mobility standards under the Baseline Growth and preferred land use alternative.

Queuing Analysis

Queuing analysis was performed using the SimTraffic analysis tool that simulates the 95th percentile queue for each study intersection approach. This 95th percentile queue estimates that for any given cycle at a signalized intersection, the queue length calculated is representative of 95th percent of the peak fifteen-minute vehicular queues during the peak hour at that intersection.

Queuing results from SimTraffic have taken vehicle type (car, truck, bus, etc.), vehicle arrivals during queue clearance, adjustments for oversaturated conditions, and upstream metering into account. For the purpose of analysis, queuing estimates have been based on an average vehicle length of 25 feet per vehicle. This length takes buffer space in front of and behind a queued vehicle into account.

Table 3: PM Peak Hour 95th Percentile Queue Lengths

Intersection	Mvmt	Baseline Growth	Preferred Alternative Low	Preferred Alternative Medium
Sprague/Altamont	NBL	100	200	150
	NBT	50	75	50
	NBR	75	100	100
	SBL	50	75	50
	SBT	75	175	100
	SBR	Shared1	Shared1	Shared1
	EBL	175	50	50
	EBT	Shared2	625	625
	EBR	225	300	300
	WBL	250	125	150
	WBT	Shared2	525	475
	WBR	225	50	50
Sprague/Napa	NBL	50	50	50
	NBT	75	150	125
	NBR	Shared1	Shared1	Shared1
	SBL	175	625	600
	SBT	200	475	425
	SBR	Shared1	Shared1	Shared1
	EBL	225	150	175
	EBT	Shared2	600	625

Table 3: PM Peak Hour 95th Percentile Queue Lengths

Intersection	Mvmt	Baseline Growth	Preferred Alternative Low	Preferred Alternative Medium
	EBR	225	50	50
	WBL	125	75	100
	WBT	Shared2	550	575
	WBR	150	200	200
Sprague/Helena	NBL	Shared4	Shared4	Shared4
	NBT	100	150	175
	NBR	Shared4	Shared4	Shared4
	SBL	Shared4	125	125
	SBT	150	100	100
	SBR	Shared4	Shared4	Shared4
	EBL	200	100	100
	EBT	Shared2	425	400
	EBR	200	50	50
	WBL	100	75	125
	WBT	Shared2	525	575
	WBR	100	75	100
	Sprague/Sherman	NBL	125	125
NBR		75	75	75
EBT		150	300	300
EBR		175	125	125
WBL		150	75	75
WBT		150	200	175
Grey box and bold numbers indicate a 95th percentile queue that would exceed one block in length				

Notes:

- 1) Right turns shared with through movements.
- 2) Two through movements one shared with left turns and one shared with right turns.
- 3) Left turns shared with through movements.
- 4) Right and left turns shared with through movements.

The 95th percentile queuing analysis revealed that the northbound/southbound queues at the study intersections would not differ greatly between the low and medium preferred alternative. Instead, the eastbound/westbound queues showed the greatest propensity to change between the Baseline Growth Scenario and the preferred alternative. This change was mostly seen in increases in queue length for the through movements and decreases in queue length for the left and right turns off of Sprague Avenue. This type of pattern was to be expected, however, since the lane configuration under the Land Use Alternatives would be modified from shared turn/through movement lanes to separate dedicated left turn and right turn lanes at the study intersections. While none of the queues would queue past a signalized intersection (representing a potential safety hazard), eastbound and westbound queues at the study intersections of Sprague Avenue/Altamont Street, Sprague Avenue/Napa Street and Sprague Avenue/Helena Street would extend over 400 feet. The longest queues that would be expected within the study area would be approximately 625 feet long and cover approximately a block and one half. This queue would consist of approximately 25 vehicles. Based on the operational analysis all of the vehicles in the queue would be expected to make it through the signal within one cycle length.

Greenhouse Gas Emissions

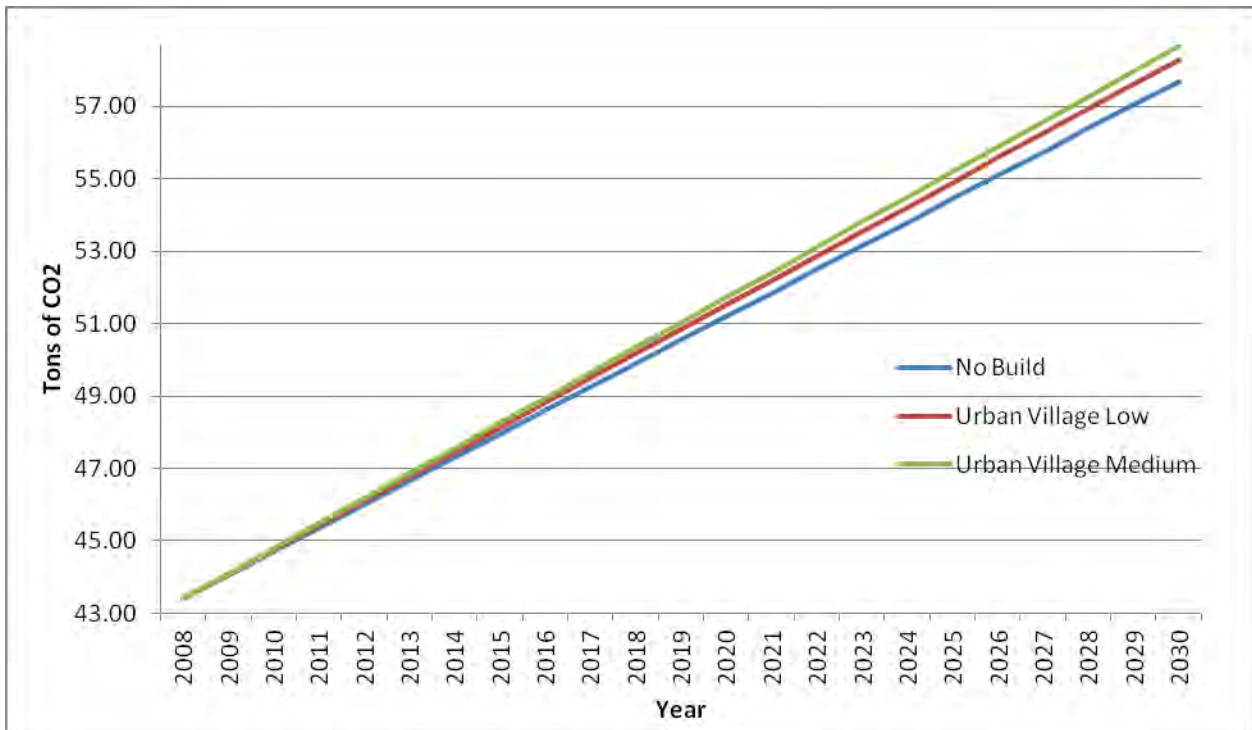
Greenhouse gas (GHG) emissions were calculated for the passenger cars and light trucks within the study area. Under the existing conditions analysis, it was revealed that large trucks represent approximately two to five percent of the study area traffic. For the purposes of GHG calculations, it has been assumed that the number of trucks would remain constant between the future 2030 No Build Alternative and the future preferred alternative.

Vehicle miles traveled (VMT) data from the SRTC travel demand model was used to calculate GHG emissions. Specifically, carbon dioxide equivalent (CO₂E) emissions were calculated from the SRTC data using United State Environmental Protection Agency (EPA) methodologies.⁸ Based on this methodology, the following assumptions were included in the calculations:

- 8.92*10⁻³ metric tons CO₂/gallon gasoline
- 20.4 miles per gallon car/truck average
- Ratio of carbon dioxide emissions to total emissions (including carbon dioxide, methane, and nitrous oxide, all expressed as carbon dioxide equivalents) for passenger vehicles was 0.977

Figures 1 through 3 show the projected change in CO₂E between 2008 and 2030 for the No Build (baseline growth scenario), Urban Village Low (Preferred Alternative Low) and Urban Village Medium (Preferred Alternative Medium) alternatives.

Figure 1: Total CO₂E



⁸ Environmental Protection Agency, Website: <http://www.epa.gov/cleanenergy/energy-resources/refs.html#vehicles>

Figure 2: Total CO2E/Dwelling Unit (Daily)

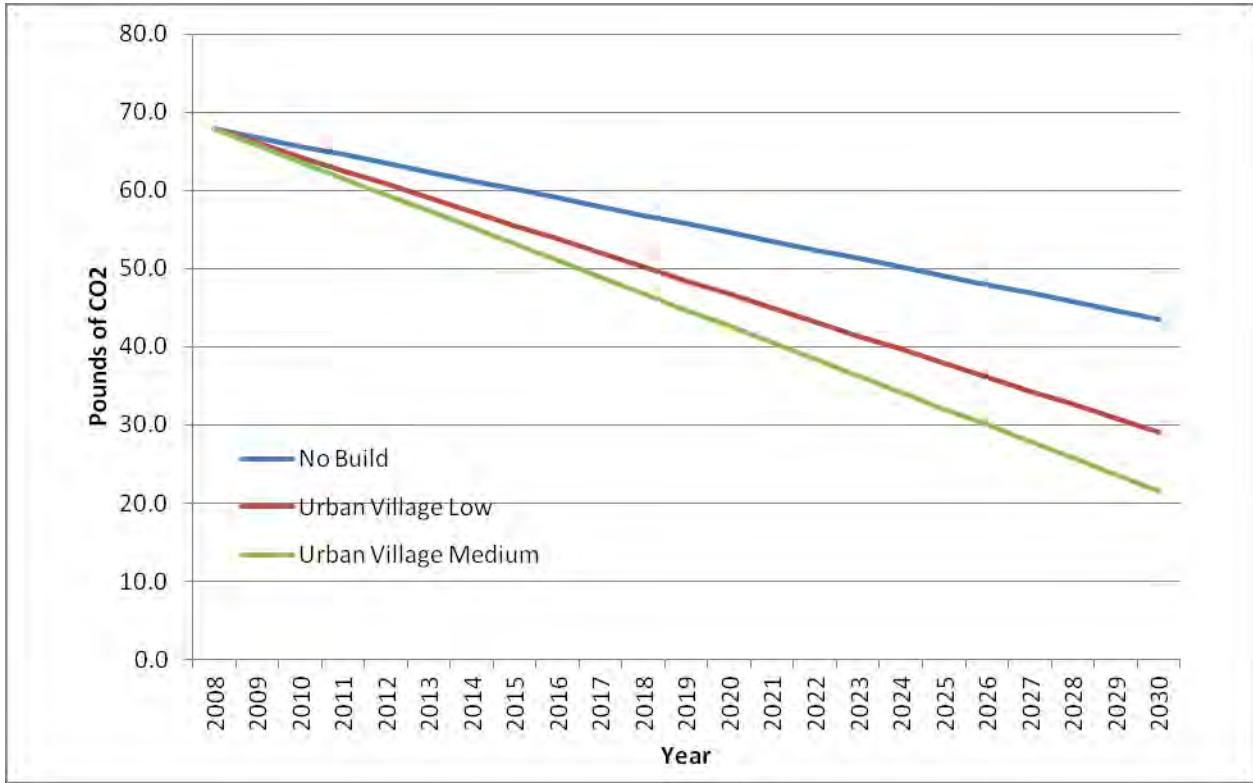
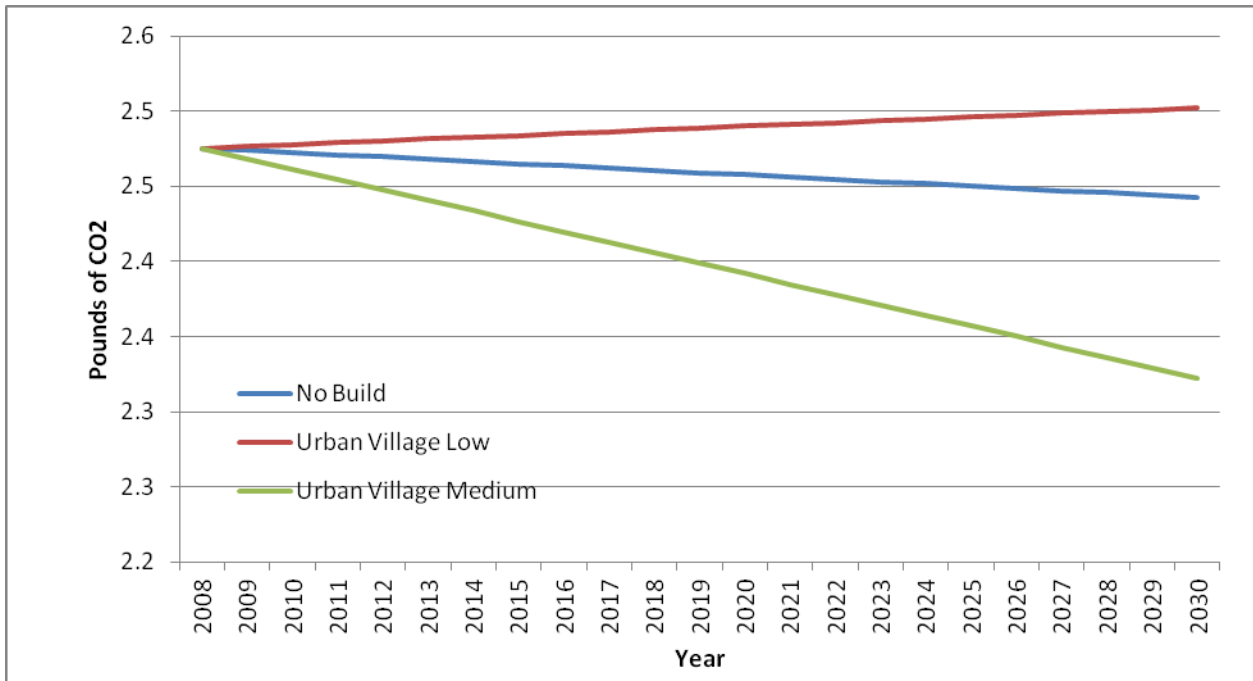


Figure 3: Total CO2E/Employee



As can be seen in Figure 1 the additional houses and jobs added to the study area would create a relatively minor increases in the total VMT and total CO₂E for the area beyond what would have been expected under a 2030 No Build Alternatives. This increase would be a logical outcome of the increased household and employment density within the study area, and increase in total number of households and employees within the region under the preferred alternative.

More importantly, Figures 2 and 3 show that while the total CO₂E would increase with increased VMT, the ratio of CO₂E per dwelling unit (DU) or per employee would be significantly reduced. This indicates that there would be a potential to reduce the per employee and per dwelling unit CO₂E through the mix of housing, employment and retail land uses proposed under the preferred alternative.

MEMORANDUM

Date: March 16, 2012
To: Jon Pheanis, AICP
Company: MIG, Inc.
C: Jay Renkens, AICP

Project: University District Sprague Corridor Planning Study
Project No.: CEI #11511
From: Chad Heimbigner, P.E., LEED AP

After receiving the preferred land use concept for the South University District from MIG, Inc. on March 7, 2012, we submitted the attached Urban Village Focus exhibit and associated Development Intensity Summary spreadsheet for the study area to the utility purveyors on March 9, 2012 with the following questions.

- Do you have any capacity concerns associated with your utility system in the study area based on the anticipated Low Development Intensity or Medium Development Intensity scenarios?
- Are there any infrastructure upgrades you would anticipate needing for your utility system in the study area based on the Low Development Intensity or Medium Development Intensity scenarios?
- If infrastructure upgrades are required for your utility system because of the Low Development Intensity or Medium Development Intensity scenarios, what are the approximate costs for the utility improvements (rough planning level costs).
- Are there any infrastructure upgrades that are currently planned for your utility system within the study area?

The following is a summary of the information we have received to date from the utility purveyors.

Water

The following is a summary from Chris Peterschmidt, City of Spokane Water Department. The water department has two large diameter transmission mains in the vicinity of the study area. A 36 inch diameter water main is located in Division Street and an 18 inch diameter water main is located in Sprague Avenue. According to Chris, these pipelines have the capacity to supply a very large quantity of water to the area being reviewed for future development. The existing distribution network of pipes located within the study area is sufficient to supply an average residential / commercial area. The pipe grid in this area includes mains running the lengths of the east-west streets, with some north-south connections that run between the streets.

The intersection of Division and Sprague has some desired pipe work the water department would like to conduct if future street improvements were performed (including removing and replacing the existing pavement), but the water department does not have any current capital projects identified for the study area.

Based on input from the water department, an in-depth assessment of their system will not be available, including capacity concerns or required upgrades and associated costs, until specific water use requirements are known. Examples of the information the water department would need to perform an assessment of their system includes more input on the type of development, anticipated water use needs of the tenants, fire flow demands, type of construction materials, individual building sizes, and possible roadway realignment and elevation change input.

Storm and Sanitary Sewer

Bill Peacock, City of Spokane Sewer Department, said he would try to provide us with some input regarding the sewer system within the study area by the end of March 2012.

Communications

The following is a summary from Bryan Richardson, Comcast cable (telephone, cable TV, and internet). Comcast currently does not have any capacity issues for the study area. Any assessment of their current infrastructure would be based on demand for their service, therefore Bryan couldn't confirm if upgrades would be required or what the associated costs would be. The only current upgrade Comcast is working on near the study area is placement of conduit only within Spokane Falls Boulevard.

The following is a summary from Charisse Mathes, CenturyLink cable (telephone, cable TV, and internet). CenturyLink primarily has copper cable currently serving the study area. If the population density increases significantly, CenturyLink will probably need to reinforce their existing cable facilities, as well as place fiber cable to provide for services that require a fiber transport. Charisse was not able to provide an estimate for the costs associated with the anticipated upgrades, as CenturyLink typically does not place infrastructure until they have a demand for their services. Those costs would typically be borne by CenturyLink. If CenturyLink was asked to change any of their existing aerial improvements to underground for aesthetic purposes, they would request reimbursement from the requesting agency or individual property Owner.

Electricity

We have not received a response to either of our requests for information from Avista regarding their electricity infrastructure within the study area.

Natural Gas

The following is a summary from Mark Hansen, Avista, regarding their natural gas system. Mark believes their existing natural gas system within the study area is sufficient to support the potential growth. At this time, Avista is not planning on any system upgrades within the study area. However, if a greater load comes online that their system will not be able to accommodate, Avista will take the necessary steps to reinforce that area.

Email from Coffman Engineers Regarding Utility Costs

Based on our phone conversation earlier this morning, we understand you would like some rough approximations for potential costs associated with utilities located within Sprague Avenue associated with the UDSC Planning Study. Please refer to our memorandum dated April 3, 2012 regarding more detailed information we received from the utility purveyors pertaining to upgrades for the subject area. The following is some additional information associated with potential utility upgrade costs (*the text shown in italics reflects updated information to supplement the April 3, 2012 memorandum*).

- Water
 - According to the City, the 18 inch water main located in Sprague Avenue has the capacity to supply a very large quantity of water to the area being reviewed for future development. The City currently does not anticipate that this line would need to be upgraded. *Approximate costs for replacing this line in the future could range from \$150 to \$250 per lineal foot (there are many variables that could result in an increase to this cost).*
 - *The City has been adding fire hydrants along the Sprague corridor. The approximate cost could be between \$5,000 to \$10,000 per fire hydrant assembly depending on the extent of associated curb, sidewalk, and pavement patching required.*
- Storm / Sanitary Sewer
 - Based on input from the City, an approximate cost of \$50 per lineal foot could be used for planning purposes for upgrading sewer lines with diameters less than 10 inches within the study area. Depending on the final densities and associated sewer line capacities, sewer mains that need to be upsized to 12 inches could cost up to \$200 per lineal foot. Side sewers serving the properties may also need to be replaced. According to the City, the cost for property owners to replace the side sewer for their parcel could be up to \$20,000 per side sewer depending on the location.
 - *Cured-in-place lining for the existing sewer lines could cost approximately \$40 to \$150 per lineal foot depending on the size of pipe (assuming pipes between 8" to 24"). Pipe bursting could cost approximately \$120 to \$240 per lineal foot depending on the size of pipe (assuming pipes between 8" to 15"). Lateral reinstatement could cost between \$100 to \$300 each. Chemical grouting for the manholes could cost between \$1,000 to \$2,000 per manhole.*
- Communications
 - Based on input from the utility purveyor, utility infrastructure costs would typically be borne by the utility company, with the exception of individual

services. If the private communications utility purveyor was asked to change any of their existing aerial improvements to underground for aesthetic purposes, they would request reimbursement from the requesting agency or individual property Owner.

- Electricity
 - Based on input from Avista, they do not anticipate any power system infrastructure upgrades would be required based on the proposed study scenarios.

- Natural Gas
 - According to Avista, their existing natural gas system within the study area is sufficient to support the potential growth. If a greater load comes online that their system will not be able to accommodate, Avista will take the necessary steps to reinforce that area.

Coffman Engineers cannot and does not guarantee that actual costs will not vary from the very rough approximations noted above. Actual costs could vary greatly depending on the scope of utility system improvements.

Please let me know if you have any questions or if you need additional information. Thank you.

Chad

Chad Heimbigner, P.E., LEED AP
Senior Engineer, Civil Engineering

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Spokane University District
Pedestrian/Bicycle Bridge
Health Impact Assessment

October 2011

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Acknowledgments

The Spokane University District Pedestrian/Bicycle Bridge HIA Team would like to thank the following people for their input and guidance with this HIA:

- Dr. Olaf Kuhlke, Professor of Geography at the University of Minnesota at Duluth
- Charles Green, Health Communication Specialist (CDC)
- Katherine Hebert, Planner, Researcher, ORISE Fellow (CDC)
- James Dills, HIA Coordinator, Nashville/Davidson County Metro Public Health

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Contributors

- **Spokane Regional Health District:** Heleen Dewey, Anthony Summers, Elizabeth Wallace
- **The City of Spokane:** Melissa Wittstruck, AICP, Rob Zimburean

Executive Summary

Introduction: The Spokane University District Pedestrian/Bicycle Bridge Health Impact Assessment (HIA) was developed to help inform decision makers about potential health impacts that development of a pedestrian bridge in the University District will have on the current and projected population who will live, work, and recreate within a quarter-mile radius of the bridge. The bridge project is key to a targeted redevelopment area where a land use and transportation study is now underway. This HIA is a collaboration between the City of Spokane and the Spokane Regional Health District.

Methods: Six health impacts were chosen for analysis: physical safety, physical activity, perceived safety, social capital, economic development, and air quality. Indicators were developed to measure each impact. A combination of primary and secondary research was utilized. The HIA team developed a survey that was administered to residents and business owners within the study area. Data pertaining to air pollution, perceived safety, and social capital were collected via this survey. Peer-reviewed journal articles and local data sources were also used to develop recommendations.

Results: Impacts and magnitude on the health of the study population were developed for each health impact. A review of physical activity literature suggests there would be a 13 percent increase in bicycle commuting for the students and employees who work at the Riverpoint campus. Based on the Spokane Regional Transit map and survey data pertaining to bicycle and pedestrian collisions with motorized vehicles in the past two years, collisions will likely increase by 18 percent once the bridge is built. Actual levels of various air pollution components were not assessed in the study area. Instead, survey data was used as a proxy to estimate the impact. Residents drive an average of 4.75 miles per week, which could be reduced by 0.86 miles per week once the bridge is built, resulting in an average reduction in CO₂—between 0.62-0.69 lbs. per person per week, and a reduction in 2.3 kilos of particulate matter. Based on secondary economic development research, the pedestrian bridge will likely draw more residents, businesses and patrons to the study area, resulting in higher costs per square foot of real estate, reduced vacant space, and increased business revenue.

Recommendations: First and foremost, this bridge HIA concluded that the bridge will contribute positively to the health of the study area. Authors recommend that this bridge be constructed. Design research shows that the following additional recommendations will have positive impacts on current and future populations within the study area, and all users of the bridge. Recommendations were prioritized by considering cost, impact on health, and impact on reducing vehicle miles traveled. Please see Appendix 6 for detail on how these recommendations are prioritized. The top ten are listed below in descending order of priority.

Top ten recommendations:

1. Reduce the availability of on- and off-street parking to encourage alternate forms of transportation
2. Provide zoning that allows and provides incentives for mixed-use residential / retail / office
3. Ensure there are bike lanes to and from the bridge
4. Ensure regular bus service, and provide covered bus stops in the area to make bus transportation more appealing
5. Ensure that sidewalks are properly maintained and repaired
6. Provide bike lanes on the bridge
7. Provide maps and signs that direct bicycle and pedestrian commuters to shortest and safest routes to destinations
8. Provide alternative transportation incentives
9. Implement traffic calming strategies such as chokers or raised crosswalks, for pedestrian safety
10. Continue to “brand” the University District, especially the South University District Revitalization Area (SUDRA)

We have concluded that if the recommendations made for each health impact are included within policy and project plans for the pedestrian/bicycle bridge that the health of people using the bridge and living and working within the study area will be improved beyond the initial benefits of the physical connection. The following report offers details supporting the inclusion of these recommendations into policy and plans for development of the pedestrian/bicycle bridge.

Introduction

The Spokane University District Pedestrian/Bicycle Bridge Health Impact Assessment (HIA) is a product of the City of Spokane and the Spokane Regional Health District.

The City of Spokane applied for and received an American Recovery and Reinvestment Act (ARRA) grant to help fund the University District-Sprague Corridor Study (UDSC). The redevelopment study focuses on creating energy efficient land use patterns that will provide jobs, housing, and transportation alternatives, while reducing vehicle miles traveled and greenhouse gas emissions. Health impact assessments (HIA) are included as part of the study's scope because public health concerns align with project goals.

The University District Pedestrian Bridge will likely be the first infrastructure project within the UDSC study that will be implemented and may well have the largest influence on future redevelopment activities there. The South University District is intended to attract future residential development and a higher intensity of land uses, including support for businesses and employment growth. Therefore, the project was selected as the focus of this HIA.

This HIA takes into account six health impacts: physical safety, perceived safety, social capital, air quality, physical activity, and economic development. These impacts were chosen because of their relevance to the study's goals of reducing vehicle miles traveled, reducing greenhouse gas emissions, and creating jobs, and their relevance to reducing some of the top causes of preventable disease and death in Washington State.

Purpose

The Spokane University District Pedestrian/Bicycle Bridge HIA uses best available information to assess potential health impacts of the pedestrian bridge on the people who live, work, and recreate within a quarter mile of the bridge, now and in the future. The assessment produces several recommendations for increasing positive health effects, while avoiding or mitigating negative health effects relevant to the bridge project.

This document is intended for use by residents, city staff, and City of Spokane elected officials to inform planning process and decision making. The authors hope that this document will encourage conversation about the importance of assessing health impacts for the pedestrian bridge project and illustrate the link between human health, compact land use patterns, and energy efficiency.

Community Profile

The community profile provides an understanding of the geographic location of the study area, as well as how the area was developed. The residential population is described in the demographics section, which provides information about race, age, income, household types and numbers.

The HIA study area encompasses a quarter-mile radius surrounding the pedestrian bridge site. This radius was chosen due to natural boundaries created by arterials and is considered walkable. Also, anticipated future development within a majority of the study area will be residential.

The area sits on the southwest corner of the East Central Neighborhood and is within the boundaries of the South University District next door to the city's central business district. The area is zoned Downtown University and General Commercial. Both of these zones provide for a wide range of uses and building heights. The City of Spokane land use standards for the Downtown University zone specifically encourage a pedestrian-friendly and safe urban environment for the Riverpoint Campus, along with a wide range of residential, office, retail, and other supporting commercial uses. (Spokane Municipal Code Section 17C.124.030)

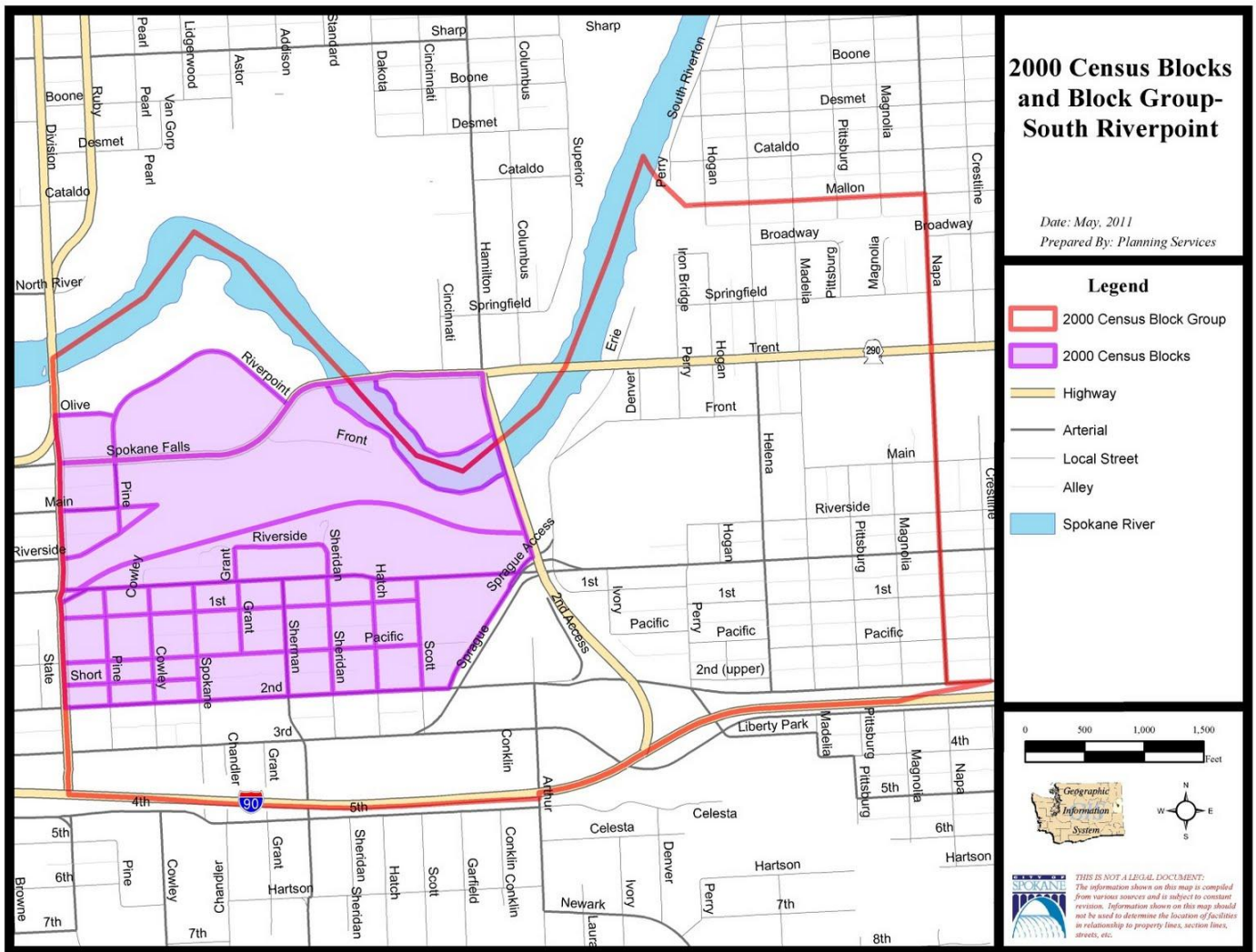
The study area is bisected by railroad tracks, which the pedestrian bridge will cross when constructed. The area to the north of the railroad tracks is zoned Downtown University and is home to the Riverpoint Campus, housing branch locations of Washington State University, Eastern Washington University, Whitworth University, University of Washington, and Community Colleges of Spokane. The campus area is a former rail yard and was redeveloped over the last 20 years. There are also a few businesses such as a hotel, restaurant, and animal clinic on the north side of the study area. The south side of the tracks is zoned General Commercial and was primarily residential pre-1960. Since the construction of Interstate 90, it transitioned to an area characterized by a mix of light industrial, wholesale and retail businesses with little residential.

Demographics

Since 2010 U.S. Census data is still being analyzed, and not all available data is specific to block level, U.S. Census data from 2000 was used to supplement 2010 data.

According to 2010 census data there are 99 people that live within the study area. The average age falls into the 41-62 age group, with only six residents under the age of 18. The population is predominantly white. There were 102 housing units within the study area at the time of the 2010 census; 78 of the units were occupied.

Household income is provided only at the block group level, which does not allow for a specific look at the exact study area, but it gives us a general idea of income for a larger boundary including the study area. There are 391 households within the block group, 66 percent of these households report an income of \$24,999 or less, which is < 250 percent of the federal poverty level (FPL) (US Census 2000). A quarter of the households in this block group report making less than \$10,000, which is < 100 percent FPL (US Census 2000). The federal poverty level is used to indicate how poor an area is. In general, an individual or family earning 250 percent FPL can survive but has no savings for emergencies.



This map displays the study area, which is shaded in purple, and the census block group, which is outlined in red.

City of Spokane

Description of an HIA & linking to this HIA

The World Health Organization (WHO) describes an HIA as “a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population” (WHO, 1999).

Since HIAs look at the potential health effects that a project or policy may have on a population which can contribute to community costs or benefits, they provide another tool to help elected officials, administrators, and the public make informed decisions about policy or project implementation.

There are generally four types of HIA: desk-based, rapid, intermediate, and comprehensive. Resources and amount of time needed to perform an HIA vary by type. A desk-based HIA may utilize secondary research resources and take a few weeks to complete, while a comprehensive HIA may utilize primary research gathered specifically for the assessment and take a year or more to complete.

Because of the pedestrian bridge design decision timeline and size and scope of the project, the HIA team decided to perform a rapid assessment. This HIA has taken five months to complete, and has utilized both primary and secondary research resources.

The HIA process is comprised of six steps: screening, scoping, identification, assessment, decision making and recommendations, and evaluation and follow up. (Refer to appendix 1 for how authors completed each step.)

Methodologies

The methodologies section provides an explanation for why the authors chose to cover the health impacts included within this HIA, survey, data collection and analysis methods, and authors’ observation methods.

Identification of Indicators

Authors started with a list of topic areas commonly utilized in HIAs. From this list, authors chose topic areas most relevant to the bridge project. For example, the bridge is likely to impact physical activity by providing a connection to destinations. Topics were then researched using the Entrez Pubmed Website to look for specific methods that could be used to collect primary and secondary data. This search yielded the indicators that are mentioned in the corresponding section for each topic.

Collection of Primary Data

Survey

A survey was developed with questions derived from authors’ literature research of conducted studies. Since the survey area was small—with approximately 102 residences and 120 businesses—all residences and businesses in the area were surveyed. The number of houses and residences were verified during a house-to-house distribution of notices regarding the forthcoming survey. For the residential portion, the survey was conducted verbally using volunteers who went house to house in pairs. When residents were not at home or did not have time to answer the survey, a survey and self-addressed and stamped return envelope was left. Businesses were called to set up an appointment to be interviewed over the phone or in person. Occasionally, a survey was faxed or e-mailed to the business owner, who could then return it the same way, mail it, or have it picked up. There were a total of 57 responses to the survey from both residents and businesses. This is approximately a 24.8 percent response rate.

Observations

While the surveys were being administered, the incidence and density of vandalism was observed. Every incidence was noted on a form that also looked at the number of buildings per block and the amount of windows facing the street. The windows are a proxy for a measure called “eyes on the street.” Statistically, fewer crimes occur in areas where there are more unobstructed windows to view what is happening on the street (Jacobs, 1961). One notation form was used for each city block.

Commute Trip Reduction Data

Commute Trip Reduction (CTR) is a statewide program that offers incentives to increase alternative modes of transportation and reduce single occupancy vehicle miles traveled. This program surveys all participants when they enroll, then yearly, to measure ongoing change. Authors gained access to the CTR database for Spokane’s local universities. This information was analyzed to sort out the target population and estimate the average percentage of respondents using alternative modes of transportation.

Statistical Analyses

The data was analyzed using both Microsoft® Excel and IBM® SPSS software. Correlative analyses were performed in SPSS using a two-tailed Pearson correlation. P-values were considered to be significant at 0.05.

Collection of Secondary Data

Information about pedestrian/bicycle bridge impacts to economic development was gathered from a book called “The University as Urban Developer,” from a U.S. government report titled “An Economic Analysis of Infrastructure Investment,” which is a report on the impacts of several different pedestrian infrastructure projects. That report was titled “Pedestrian Safety Guide and Countermeasure Selection System.” Additionally, a document from Oklahoma City was used titled “Construct the SkyDance Pedestrian Bridge.” Other data about the current economic situation for the University District was gathered from the EWU Urban and Regional Planning Studio Class Project (2009, 2010), from the Fast Forward Spokane Downtown Plan Update Appendix D (2008), from the City of Spokane South University District vacant land field study (2011), and from the Zimmerman Volk University District Housing Study (2009).

Social capital data was gathered by using Ebsco Host to search for articles in peer-reviewed journals. The phrases “social capital and health,” and “social connectedness and health” were used to find applicable articles. The Social Capital Research Web site was also used to locate peer-reviewed articles.

Perceived safety data was gathered using Ebsco Host to search for articles in peer reviewed journals. The phrases “perceived safety,” and “perceived safety and the built environment” were used to find applicable articles. Data about how light levels relate to crime was introduced to authors by Dr. Olaf Kuhlke, who shared a lighting level and crime bibliography and methodology from his forthcoming lighting study, and a recent lighting study of the University of Minnesota – Duluth Campus (Kuhlke & Parent, 2009).

The City of Spokane Crime Map was used to identify the incidence of crime and locations within the study area. Crime incidence was broken down into assaults, thefts, drug crimes, and all crimes. Crimes were compared to “eyes on the streets” observations and the incidence of vandalism to determine if there is a connection.

Authors also considered safety and sexual crimes; WSU crime reports, as well as the Spokane County Sherriff’s Office sexual predator map, were consulted to determine the incidence of crimes and the presence of sexual offenders.

Health Impact Assessment Chapters

Each health impact assessment chapter is broken into four sections.

1. The first section introduces the health impact, defines the impact and informs the reader with the best-available science about the health impact.
2. The second section provides baseline indicator data collected with surveys and observations.
3. The third section describes the impact and magnitude that the health impact will have on the study area. The impact and magnitude measures what kind of effect and how much of an effect the bridge will have on a chosen health impact.
4. The fourth section provides recommendations intended to make the study area a healthier place for people who live, work, and recreate in the area.

Physical Activity

In recent years, research demonstrates a connection between how a community is built and how it relates to levels of physical activity of residents. Walking and biking is a form of physical activity. The U.S. Centers for Disease Control and Prevention (CDC) recommends people get at least 30 minutes a day on most days of the week to maintain health. Currently, only about half of Spokane residents reach those recommended levels. (Spokane Counts) Physical inactivity has been linked to chronic illness such as diabetes, heart disease, high blood pressure, stroke, osteoarthritis, and some forms of cancers.

Indicators

No physical activity data was available for the quarter-mile radius around the proposed pedestrian bridge due to the limited number of residents. The majority of the study area consists of businesses and universities; therefore, it was difficult to gauge the levels of physical activity of employees and students from existing indicators. However, there was a CTR survey completed by Riverpoint Campus students (just north of proposed bridge) that measured levels of non-motorized transportation practice. Thirteen percent of students responding to the CTR questionnaire lived within two miles of their campus and 36.4 percent within five miles of campus. Of students responding, 15.9 percent walk, bike and/or take public transit.

Impact/Magnitude

Bridges improve connectivity. Survey maps showed researchers destinations on the other side of the proposed bridge that people could walk to (within one mile) or bike to (within two miles). The Spokane River Centennial Trail would be within a half mile of most portions of the study area. At least one study has shown that those with good access to large, attractive open spaces, were 50 percent more likely to achieve high levels of walking (Giles-Corti, 2005). Similarly, in London, a bike lane over the Thames increased bicycle commuting by 13 percent between 1996 and 2004 (Livingstone, 2004). Authors hypothesize that there would be a positive impact similar in magnitude to the London study.

Recommendations

In a systematic review of studies on street-scale urban design and land use policies to increase physical activity done by the Task Force on Community Preventative Services, both were found to be an effective intervention to increase physical activity. These policies and practices included: sidewalk continuity, enhanced street landscaping, improved street lighting or infrastructure projects that increase the ease and safety of street crossing, traffic calming, or enhanced landscaping features. In the six studies reviewed, there was a 35 percent overall median increase in physical activity in areas implementing these features. “Knowledge of green space—and intention to use green space for activities—may be associated with positive changes in health behavior and quality of life even before individuals reach their desired level of green space use. And, that benefit may persist although a long period of time has passed since they have used green space.” (Willis, 2005) Thus, it is safe to say if those features are used in the study area (including on the bridge), research shows it will increase physical activity of the people who live, work, and play in the study area. Based on systematic review, the following recommendations will increase physical activity in the study area:

- *Ensure that lighting is a minimum of 20 lux across bridge and landing areas.*
- *Ensure that lighting is focused on the pathways.*
- *Provide signage at crossings to alert traffic to presence of bicycles and pedestrians.*
- *Provide traffic calming approaches such as a speed table at intersections with crosswalks.*
- *Provide green space. Consider using drought resistant flora, and shade producing trees.*

Regarding urban planning for the larger community around the study area (several square miles), the same study showed that there are design elements that address specific areas that can increase physical activity by up to 161 percent. Those design elements address:

- Proximity (0.5 miles) of residential areas to stores, jobs, schools and recreation areas
- Continuity and connectivity of sidewalks and street
- Aesthetic and safety aspects of the physical environment such as trees, green spaces, lack of apparent vandalism, interesting architecture, and fewer vacant lots

It is recommended those areas be addressed when planning for the larger community around the study area.

Perceived Safety

Perceived safety is how people think an environment will affect a person's ability to avoid or negate physical harm. Environments that appear harmful, such as a busy street or environments that could pose harm, such as a dark alleyway in a high-crime neighborhood are not appealing environments for most people. Harmful environments induce fear, and are avoided by people for different reasons, and at different times. People are affected differently by environments that may be perceived as unsafe. Several factors influence if a person perceives an environment as unsafe including his/her physical abilities, familiarity with an environment, or neighborhood reputation. "Feelings of fear of crime are not described by mathematical functions of actual risk but are rather highly complex products of each individual's experiences, memories, and relations to space" (Koskela, 1997, p. 304).

Decreased physical activity is an effect of perceiving an environment as unsafe. People who feel unsafe in an area are less likely to be physically active in that area. Areas that are economically unstable often have higher crime rates, and are perceived by residents as unsafe, preventing residents from being physically active outside in their neighborhoods. Studies by CL Craig and RC Brownson et al. (2002) reveal that perceived lack of safety leads to decreased physical activity in low-income populations.

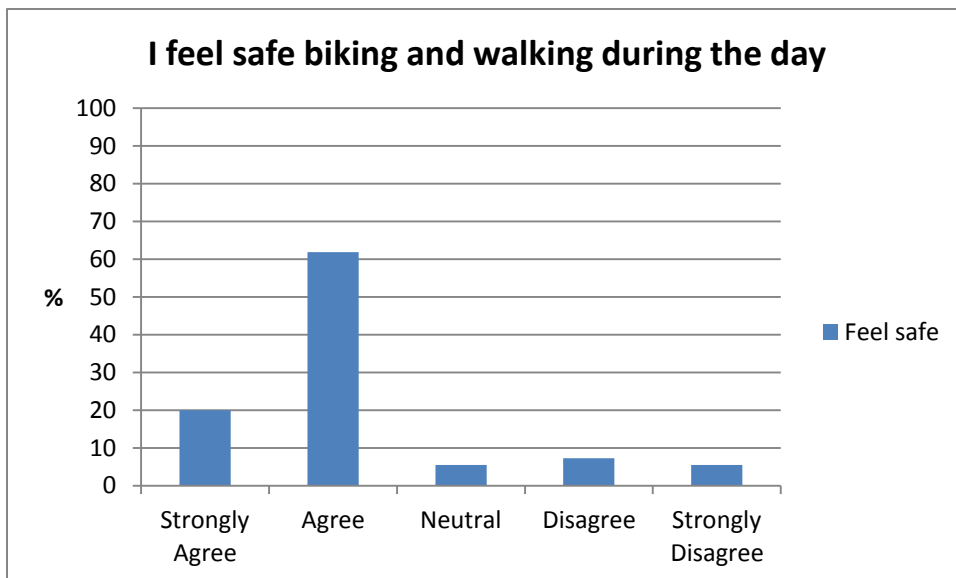
Age groups can be affected as well. Studies by the CDC and Economic Cooperation and Development (1996) have found that lack of safety leads to decreased activity in senior citizens. Senior citizens, being less physically capable of fleeing or fending off a dangerous situation, feel especially vulnerable, and can be especially sensitive to perceiving environments as unsafe. Since the average age in the study area falls within the 41-62 age range, this could be a concern, particularly for the female population.

Environments that are generally perceived as unsafe are those without easily accessible escape routes, lacking in good visibility, or that are isolated. A study by G. Valentine (1990) shows that subways and enclosed parking garages can be perceived as unsafe for people because these locations offer opportunities for criminals to trap their victims. Open spaces such as vacant lots, desolate transit stops, and recreational areas can also be perceived as unsafe because they can provide a criminal with the opportunity to conceal crimes and act outside of visual range of others. A study by K. Day (2001) reveals that fear inducing factors in public environments include darkness, desolation, lack of opportunities for surveillance by the general public, lack of maintenance, and poor environmental quality.

Indicators

Opportunities for human surveillance, or 'eyes on the street,' coined by Jane Jacobs (1961), is a strategy for discouraging criminal activity, which can lead to perceptions of safety. This study did not show a significant correlation between "eyes on the street" or the number of windows on a block with perceived safety ($p=0.66$). Nor was there any correlation between either perceived safety or "eyes on the street" with any actual crime numbers (total crimes, assaults, drug crime, thefts).

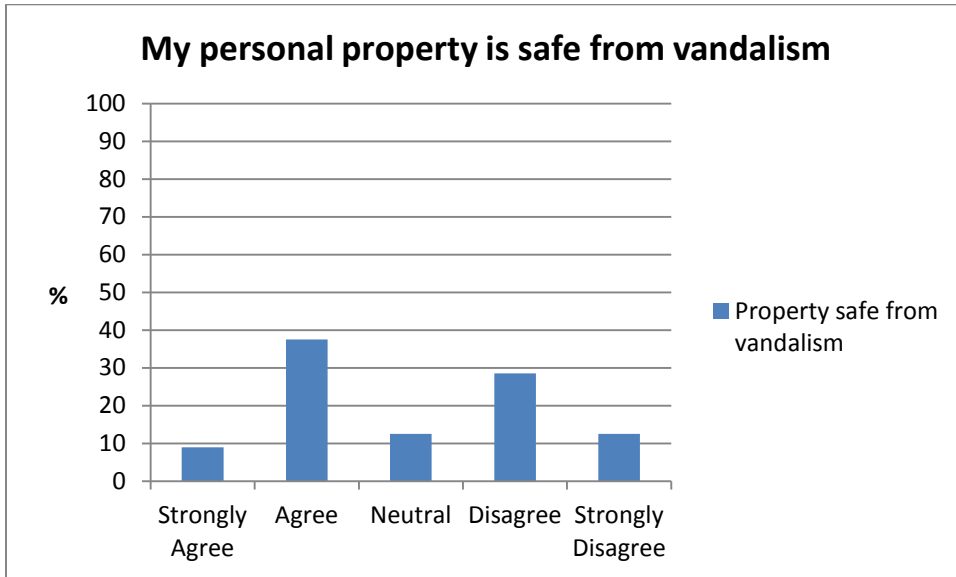
The survey found that residents and people working within the study area felt safe walking and biking during the day, but did not feel safe walking and biking in the study area at night. When given the statement "when biking and walking in my neighborhood during the day I feel safe," respondents gave a 3.77 average on a scale of 1-5, which indicates that most respondents mildly agree with the statement. When given the same statement, but with 'night' taking the place of 'day,' responses yielded a 1.82 average on a scale of 1-5, which indicates that respondents disagree with the statement.



Spokane Regional Health District

Regardless of the time of day, the survey found that people feel safe in front of their house, or where they worked. When given the statement “I feel safe hanging out in my front yard or in front of my home (also adapted for the business survey),” people responded with a 3.95 average on a scale of 1-5, which indicates that most respondents agree with the statement.

Responses were mixed regarding vandalism and theft, which resulted in a neutral score for both of these statements on the survey. When presented with the statement “my personal property is safe from *vandalism* in the neighborhood,” responses yielded a 3.12 average on a scale of 1-5, which is considered neutral. When presented with the statement “my personal property is safe from *theft* in this neighborhood,” responses yielded a 3.02 average on a scale of 1-5, which is also considered neutral.



Keep in mind, although the graph may appear to illustrate that more respondents agree than disagree, Spokane Regional Health District also responses for ‘neutral,’ ‘strongly agree,’ and ‘strongly disagree’ that weigh in on the average a combined percentage for responses ‘disagree,’ and ‘strongly disagree’ is 41.1 percent, compared to a combined percentage of 46.4 percent for ‘strongly agree’ and ‘agree.’ The percentage for ‘neutral’ is 12.5 percent. This tells us that there are two opinion groups among respondents.

Impact/Magnitude

One impact of increased connectivity is increased use. Increases in the flow of pedestrians and bicyclists usually increases ‘eyes on the street’. This, in turn, can improve perceived safety of person and personal property in the area (Jacobs, 1961). Increased use, in turn, fosters the feeling of ‘safety in numbers’.

Since this bridge will likely be used more during the day for commuter transportation, the primary impact of the bridge will likely be positive during the day. There is currently a relatively high feeling of safety in front of homes or places of business. Until housing is built in the study area and there are more residents living in the area, feelings about safety at night are not likely to change. The divided responses to vandalism and theft may become more positive.

Recommendations

- *Light the bridge and surrounding sidewalks* and roads with a light source that emits a minimum of 20 lux every 90 ft. Placement of 20 lux lighting every 90 ft. will provide continual ability to distinguish facial features and colors as a person walks over the bridge at night.

A well-lit environment can discourage criminal behavior. Dr. Robert Samuels (1995, 1995b, 1996), an environmental criminologist in Australia, carried out a variety of studies about lighting and crime prevention. These studies reveal that crime is more likely to happen in low-light settings, especially under 5 lux (40 percent of crimes investigated in the study), while settings above 20 lux (3 percent of crimes investigated) saw remarkably less crime. Twenty lux lighting provides an opportunity for identification of facial features and colors up to 90 ft. from the center of the illumination point (where light shines strongest).

- *Provide light fixtures that direct light to the ground*, eliminating excess light pollution, and making the best use of available light for pedestrian and bicyclist visibility. Providing light fixtures that direct light to the ground will provide light where it is most needed for people who are using the bridge. Allowing less light to escape provides for brighter and better focused light on the bridge, which will deter criminal activity.

Improved lighting can have a significant impact on reducing crime. A systematic review of eight lighting studies by Ferrington and Welsh (2007) found that crime reduced by 22 percent in areas that experienced improved lighting. Lighting can make a dramatic difference in how safety is perceived within an environment. Studies by Robert Samuels (1995) and S.E. Merry (1981) describe that perpetrators prefer to commit crimes in dark places, and a safety audit in Warsaw Poland (Un-Habitat, 2007) reveals that one of the main problems for women's feeling of insecurity is directly related to inadequate lighting of public spaces.

- *Provide emergency phones where appropriate.* Emergency phones can discourage criminal behavior, because they increase the chance of apprehension.
- *Clean up vandalism and provide maintenance* that will communicate that the bridge area is monitored. Quick responses to vandalism and routine monitoring of the bridge and its landing sites will provide a sense of activity. This may discourage criminal activity by giving the sense that people are in the area that will intervene with criminal activity. A study of Chicago transit stations by Block and Davis (1996) observed that high levels of guardianship in high-traffic stations had a positive effect on reducing crime incidents, which suggests that an area that is maintained and populated experiences less criminal activity.

Physical Safety

Installing a bike and pedestrian bridge over the railroad tracks will hopefully increase the amount of active transportation. As more citizens become cyclists and pedestrians, the risk of personal injury becomes an important health impact of the bridge. Cyclists and pedestrians can run into inanimate objects, each other, or motorized vehicles on the bridge or on their way to and from the bridge.

In addition, it is assumed that getting out of the car and walking, running or biking opens people up to physical assaults. When using motorized transportation such as cars or trucks, people are protected by glass and metal from would-be attackers. Those using active transportation appear to be at a higher risk for physical assaults.

For these reasons, authors looked at the possible impacts on physical safety and chose some indicators to assess the baseline and monitor improvements or negative consequences of the bridge.

Indicators

In order to determine the number of bicycle and pedestrian collisions with motorized vehicles, authors accessed Spokane Regional Transportation Commission (SRTC) maps for incidents between 2007 and 2009. Per biennium, it appears there were two collisions involving bicyclists and four collisions involving pedestrians on the periphery of the study area on Division Street. That results in an average of one collision involving bicyclists and two collisions involving pedestrians per year. There were no reported collisions within the rest of the study area. Outcomes of those collisions are unknown.

The number of assaults per year in the study area was calculated using the City of Spokane Crime Map and the WSU Cleary Report. As of May 3, 2011, assaults were analyzed up to the last year. There were a total of seven assaults in the study area, three of which were on Sprague Avenue within a block of the proposed bridge landing site. Two more were on First Avenue and the other two were on Second Avenue. There were 10 more assaults on Division Street that were not included in this count. On the north side of the bridge there were no reported assaults aside from those on Division Street.

Using the Spokane County Sheriff's Office Web site that is dedicated to tracking sex offenders, authors were able to obtain the number of registered sex offenders currently residing in the study area. As of May 3, 2011, there was one, level-two sex offender living on the periphery of the study area on Division Street. Based on the reported crime data mentioned above, there were no reports of sexual assault in the study area. It should be noted that City of Spokane data does not distinguish sexual assaults from other assaults.

Suicide from bridges is also a major concern that is shared by train engineers and suicide prevention advocates. Nationally, the number of suicides by train may be as small as 200 or 300 cases a year. Suicide is also the third leading cause of death in the 15-24 year old age group. This is the age group most likely to use the bridge. Depending on the speed of the train, there is a 60-90 percent suicide success rate. Those who survive have major medical problems for the rest of their lives. Since 2002, there has been an average of 73 suicides per annum in Spokane County considering all means of suicide. (Spokane Counts). There is no mechanism in place for researchers to calculate suicide rates within the study area.

Impact/Magnitude

As part of the survey that was fielded to residents and local businesses, it is estimated that there will be an 18 percent increase in bicycle and pedestrian trips among current residents. One potential secondary impact of the bridge, and other revitalization projects, is an influx of residents into the area. If this were to happen the increase in bicycle and pedestrian trips is likely to increase substantially. For example, one major housing project could double the resident population in the study area. The increase in the number of residents, the number of residents' bike and pedestrian trips, and the increase in commuters riding through the area could lead to an increase in collisions involving cars particularly along Sprague Avenue and Division Street. These collisions have many costs associated with them, including but not limited to: health care costs, city personnel costs (police), costs of damaged property, potential loss of income, and costs to social capital. Pedestrian and bike fatalities can cost as much as \$3,840,000 including all costs (Bicycling info, 2011). These costs are likely to increase with the implementation of the bridge due to the increased volume of pedestrians and cyclists and the change in non-motorized traffic patterns in the study area.

There is no evidence to suggest that assaults would either increase or decrease with construction of the bridge. Sexual assaults are not likely to increase as there is currently no history of them. If physical assaults occur during daylight hours, there is a possibility that these will decrease with an increase in population, i.e. more witnesses. However, if these occur at night, it is unlikely that the incidence of assault will change until the area is further developed. A recent study (Browning, 2011) found that rates of aggravated assault and homicide declined in areas of increased commercial and residential density, which supports Jacob's 'eyes on the street' hypothesis. With respect to this study it can be anticipated that the pedestrian/bicycle bridge study area will experience less assault if residential and commercial density increases. This impact would be a secondary impact not directly related to the presence of the bridge.

It is possible that with the implementation of a bridge over the railroad track, that the incidence of suicide at the bridge could increase, although it would likely not influence Spokane County statistics significantly.

Recommendations

- *Provide raised medians or pedestrian refuge areas at pedestrian crossings* around the bridge landing area and particularly crossing busy streets such as Sprague. Providing this kind of infrastructure has demonstrated a 46 percent reduction in pedestrian crashes. Installing such raised channelization on approaches to multi-lane intersections has been shown to be particularly effective. At unmarked crosswalk locations, medians have demonstrated a 39 percent reduction in pedestrian crashes. Medians are especially important in areas where pedestrians access a transit stop or other clear origin/destinations across from each other. Midblock locations account for over 70 percent of pedestrian fatalities. Also vehicle speeds are higher contributing to the injury and fatality rate at this location. Over 80 percent of pedestrians die when hit by vehicles traveling at 40 mph or faster, while less than 20 percent die when hit at 20 mph.
- *Install crosswalks according to Complete Streets standards* in the areas leading up to and away from the bridge. The presence of a sidewalk or pathway on both sides of the street corresponds to approximately an 88 percent reduction in “walking along road” pedestrian crashes.
- *Design for visibility up to 50 feet.* Lighting and designated bike lanes on the bridge are some ideas to help facilitate safe travel. Consider larger numbers of pedestrian and bicycle commuters in the bridge design to ensure that high volumes can cross safely during peak hours of use.
- *Utilize traffic calming strategies* in this area. If bike lanes are included on the streets, authors suggest that there be signage and white lines indicating the bike lane. If bike lanes are not used, chokers are recommended to make pedestrian crossings more visible. Chokers result in a 14 percent decrease in speed on major roads. Whether or not a bike lane is added to Sprague Avenue, raised crosswalks are recommended based on an estimated 45 percent reduction in collisions (trafficalming.org).
- *Provide suicide deterrents.* Implementing a form of suicide deterrent will likely prevent potential future suicides. “Decades of research clearly demonstrate that bridge barriers effectively prevent suicides” (e.g., Beautrais, 2007). In reviewing all suicide prevention approaches—barriers, signs and telephone hotlines, bridge patrols and staff trainings—Beautrais concluded that “The most effective form of prevention at jumping sites is a physical barrier, which literally restricts access to the drop” (Suicide, 2008). Hotlines have also had some efficacy for those who are ambivalent. Posting hotline signs next to the phone may deter some casing the bridge while planning their suicide (Glatt, 1987). Using some form of a barrier method would be the most beneficial to preventing suicide, but if not feasible, installing a phone connected to a suicide hotline would also be beneficial.

Air Pollution

Traffic is a major source of air pollutants including CO₂, particulate matter, etc. Traffic density and vehicle miles traveled contribute significantly to health effects. Previous research shows a strong relationship between health outcomes and air pollution from motorized vehicles. Exposure to air pollution is associated with cardiovascular and respiratory diseases, neurological impairments, an increased risk of preterm birth, genotoxicity, cancer and even mortality (Beate, 2008). In Spokane County, air pollution can be correlated to the incidence of asthma hospitalizations.

In addition, there are many impacts that air pollution can have on climate change that affects human health indirectly. Increased temperatures can pose a health risk to seniors and infants during summer months. Increased rainfall can lead to flooding. An increased incidence of severe natural disasters such as tornadoes and hurricanes can also negatively affect human health. However, for the purposes of this study, authors mainly focused on the direct role that air pollution has in connection with health.

Indicators

Although authors were not able to assess the actual levels of various air pollution components in the study area, data was used from the residential and business surveys to help determine how many miles per week individuals in the study area drive and how many of those trips could be reduced and converted to active transportation trips. The survey also included a map component to determine how many car trip miles could be reduced within a half mile of destination after the construction of the bridge.

Impact/Magnitude

The Vermont Street Footbridge in San Diego contributed to a 10 percent drop in vehicle generation and a higher pedestrian mode share. In this study area, residents currently drive an average of 4.75 miles per week. This is a low amount of single occupant vehicle (SOV) trips. After the University District bridge is built, residents and employees could reduce SOV trips by 0.86 miles per week which is a calculated reduction of 18.1 percent. If the average reduction is multiplied by the estimated number of adult residents and workers in the area there could be an average reduction in CO₂ between 0.62-0.69 lbs. per person per week. This is based on the assumption of average fuel economy of 22.3 miles per gallon and an average of 12,500 miles driven per year. Since there are ~100 residential addresses and ~110 businesses, and there is an average of one person per residence and an estimated average of five persons per business, there are approximately 650 driving adults in the study area. The amount of miles that could be reduced on average would be 29,068 miles per year. This would prevent 8.23 kilos of non-methane hydrocarbons, 122 kilos of CO, 17.4 kilos of nitrogen oxides, 2.3 kilos of particulate matter, and 12.7-14.2 tons of CO₂ from being emitted annually.

Based on reductions in motorized transportation use for current residents, it is unlikely there will be large reductions in CO₂ and other pollutants from cars. Overall, there is likely to be an increase in air pollution in the area as a secondary impact of residential and business development. However, there will be a decrease in air pollution per capita for those moving into the areas, since these people are currently assumed to drive more than 4.75 miles per week. The exact amount of this impact cannot be evaluated because authors do not know the extent of the residential and business growth that can be expected. Nor do authors know the demographics and vehicle miles traveled of persons who would move into the area.

Recommendations

- *Provide incentives for reducing reliance on motorized transportation* such as offering a free bicycle to those who buy condos or move into the area. Promoting CTR and related prizes will also help.
- *Provide a bicycle sharing program.* A recent HIA that assessed bicycle sharing in Barcelona, Spain concluded that annual carbon dioxide emissions were reduced by an estimated 9,062,344 kilos and 12.46 deaths were avoided annually as a result of physical activity.
- *Reduce the availability of on and off street parking* and increase monthly parking rates closer to daily parking rates to encourage alternate forms of transportation. Salem and Portland Oregon, and Berkley, California, have successfully implemented these policies. In Portland, the Central City Transportation Management Plan specifies maximum off-street parking ratios from 1.5 to 2.0 (per-dwelling-unit for residential developments and per 1,000 square feet for office developments).
- *Ensure regular bus service and provide covered bus stops in the area.* This will make bus transportation more appealing. Bus routes that incorporate frequent destinations would also be useful. Further research would need to be conducted to find out where these should be, if not already in existence.
- *Provide maps and way finders* to direct commuters to the shortest and safest route to their destination.

Social Capital

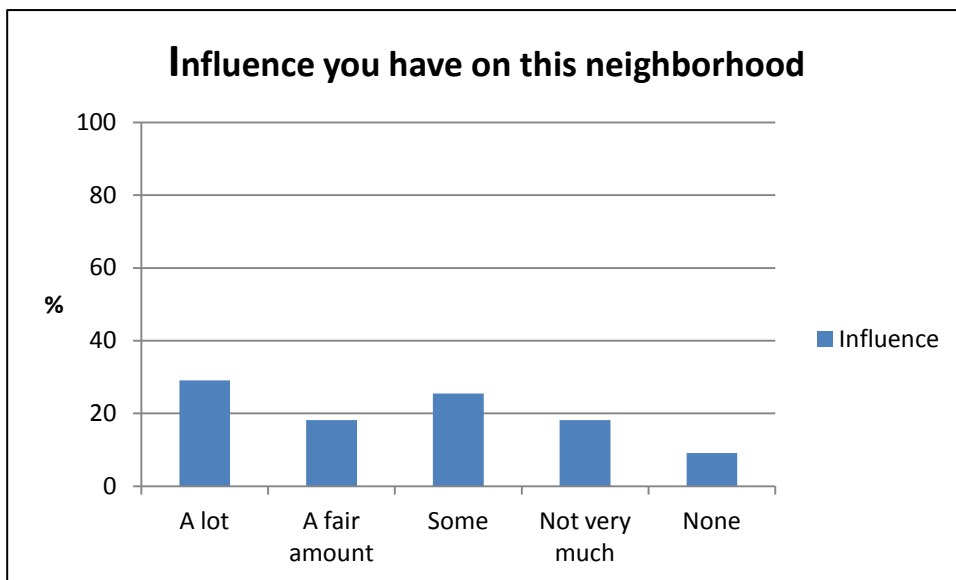
Social capital can be thought of as the social connectedness of a community, and how those social connections affect a community. Although there is no commonly agreed upon definition for social capital, a comprehensive resource, Social Capital Research, states “the commonalities of most definitions of social capital are that they focus on social relations that have productive benefits” (socialcapitalresearch.com).

A benefit of social connectedness is social support. A study by Berkman and Glass (2000) found that social support influences health through three different pathways: health behavior, psychological, and physiological pathways. This study suggests that a lack of social support can lead to negative health behavior such as excess smoking, an unhealthy diet, less physical activity, and less likelihood of seeking medical attention when sick. Social support was found to have positive psychological effects such as promoting self-esteem and self-efficacy. The study also found that social support strengthened a person’s ability to cope, which reduces stress creating positive physiological effects on the immune and cardiovascular systems. A study carried out in Thailand ([Yiengprugsawan, 2011](#)) found correlations between poor self-assessed and psychological health and low trust and low social support.

Indicators

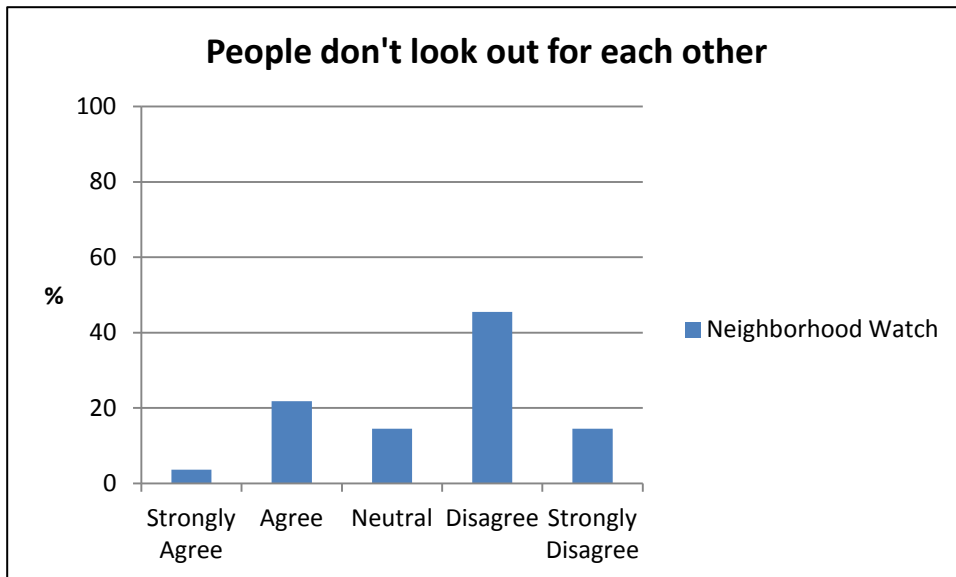
Indicators for social capital were chosen based upon their ability to gauge social connectedness within the study area. Authors chose to measure social connectedness with this survey.

Survey mean results reveal that social capital is neither lacking, nor very strong. When asked “how much influence can you have on this neighborhood,” local businesses and residents responded with a 3.4 average on a scale of 1-5, which indicates that respondents feel that they have some influence on positively impacting their neighborhood.



Spokane Regional Health District

When presented with the statement “people here look out mainly for the welfare of their own families and are not much concerned with community welfare (neighborhood watch),” responses yielded a 2.6 average on a scale of 1-5, which indicates that people feel neutral. For “neighborhood watch,” there are two peaks in the graph below, but one is much stronger than the other. This indicates two positions among respondents, but one of these positions is more strongly supported. In this case, this is a positive result for social capital.



Spokane Regional Health District

When asked how often members in your neighborhood come together, 12.5 percent of local business and residents responded with every week, and 12.5 percent responded one to two times per month.

Social capital has been shown to affect crime levels. Kawachi’s (1999) study on community health, used crime as an indicator of community well-being. He found that violent crimes such as homicide, assault and robbery were often associated with indicators of low social capital. Property crimes, such as burglary were also associated with indicators of low social capital. Buonanno (2009) used recreational associations, voluntary associations, referendum turnout, and blood donation as measurements of social capital. His findings suggest that civic norms and social connectedness reduced crime rates. A study done in the Netherlands suggests communities with higher levels of social capital experience less crime. This study notes that “communities play an important role in crime prevention by providing informal social control, support and networks” (Akçomak & Weel, 2008). This study did not show these connections.

Impact/Magnitude

Magnitude is unknown due to lack of previous study evidence. Providing public space encourages social interactions, which can increase social connectedness. Since the current bridge design incorporates green and recreational space at the landings, this is likely to occur. If design of the bridge encourages social connectedness, the impact of social capital is predicted to be positive for the area. “Passive use of green space (e.g. visually), low-level physical use (e.g. picnicking and social activities) and intermittent or irregular use, i.e. not on a weekly or daily basis ... is associated with psychological and quality of life benefits. Again there is a lack of evidence as to the size of the benefits using validated health-related quality of life (HRQOL) scales such as the gold standard SF-36 or SF-12...” (Willis, 2005).

Recommendations

- *Incorporate green space, shade, and visually-appealing designs to ensure that landings will encourage residents and commuters to collect for social interactions. Research has shown that this can be done. Drought resistant vegetation can be used to improve the appeal of the area.*

Economic Development

Economic development activity, including infrastructure investment, impacts the health of a community in many ways. According to WHO, the two are interrelated so that not only does wealth creation equal better health, but it can also be said that better health results in more productive and wealthier people. Therefore, authors' research should look both ways; how bridge construction could spur economic growth and its resulting impact on health, and how the bridge could improve health resulting in economic growth.

The second and more common conclusion in research and discussion of health and economic development is job creation and the factors that influence it. This view holds that good health flows from the activities that result in wealth creation. The decline of American inner cities in the last half of the 20th century has seen disinvestment and resulting job loss. This decline is seen as one of the nation's most profound challenges. This is particularly true for neighborhoods located around central business districts (CBDs), like derelict industrial zones and blighted residential areas, where the value of underutilized and deteriorated public infrastructure and private building stock measures in the trillions nationally. Providing for public safety in these environments is often challenging and costly, and accompanied by additional impacts to health and well-being.

These factors combine to drive away economic investment, leading to further job loss. The South University District Revitalization Area (SUDRA), located south of the proposed Pedestrian and Bicycle Bridge, shares some of these conditions. Although not severe, conditions do include some vacant or boarded up buildings and housing, loss of population, crime, and public infrastructure that is in poor condition for remaining residents and businesses. Economic growth can provide people living here, or moving into the area, with incomes that give them access to better nutrition, housing, better health care services, and less stressful lives.

Indicators

For economic development, authors chose indicators likely to be impacted by the construction of the pedestrian bridge, like affordable housing. A 2009 Zimmerman Volk housing study indicates 1,740 households (faculty, staff, and student) desiring to locate in the University District. In 2009, the Zimmerman Volk study offered this absorption forecast: "barring a long-term continuation of the downturn in national, regional, and local economies, it is likely that between five and six percent of the potential market for new dwelling units within the District could be absorbed per year over the near term. As the economic environment improves over the next five years, it is likely new developments could begin to capture higher percentages of the annual market potential; with a strong economy, it should be possible to capture up to 10 percent of the market for each housing type, which would double the annual forecast absorption." The current residential population is small (less than 100) and most of the housing units are in poor condition. This indicates a gap of 1,700 housing units, and a portion of that is in demand by low-income student population.

According to Spokane County Parcel information from November 2009, land in the SUDRA is considerably less expensive than in the nearby CBD. Land in the SUDRA costs \$8.04 per square foot on average, compared to \$31.55 per square foot on average in the CBD. However, redevelopment costs, demolition for instance, will likely close that gap for some parcels.

Land utilization is also likely to be affected. A recent field study (March 2011) conducted in the SUDRA by the City of Spokane verified 90 vacant parcels in the area. With a total of 486 parcels in the SUDRA, this means that about 18.5 percent of parcels in the area are currently vacant. There are a similar amount of underutilized properties, indicating there is siting potential for new and expanding businesses, as well as housing.

2010 Nielsen SiteReports data reports that consumer expenditures (including eating and drinking places) by the population within the South University District boundary totaled \$3,757,363. This compares to a total available retail supply value of \$ 65,966,554, resulting in a surplus of goods and service for sale of \$62,209,191.

Impact /Magnitude

Research quantifying the impact of pedestrian and bicycle bridges on the economies of the immediate area is sparse and hindered this analysis. While research did not provide much quantifiable evidence on how infrastructure investments can impact economic growth, there is at least anecdotal evidence and examples of pedestrian and bicycle bridges that either helped to induce economic development (Vermont Street Footbridge, San Diego, CA) or are anticipated to induce economic development (SkyDance Pedestrian Bridge, Oklahoma City, OK).

For example, in anticipation of the Vermont Street Footbridge being rebuilt, a large Sears department store was redeveloped as part of Southern California's first new urbanist development including shops, a grocery store, small offices and 310 dwelling units. Pedestrian bridge construction in the SUDRA area, along with other public improvements, will likely spur further development by the private sector creating both jobs and housing. With the housing demand indicated both by informal planning surveys and the Zimmerman-

Volk study, it is likely that the revitalization signaled by this public investment should align with new development interest in residential and commercial uses. New development would absorb the excess supply of land and existing uses would transition as redevelopment becomes a more profitable proposition, stabilizing and contributing to land value, thereby increasing investment options for current property owners.

Rising land values are key to development interest, as is risk mitigation. A recent study on the economic impacts of public infrastructure investments (Department of the Treasury with the Council of Economic Advisors, 2010) found evidence that private sector productivity stands to gain from public infrastructure investments. Well-designed infrastructure investments can increase economic growth, productivity, and land values while also providing significant growth to economic development, energy efficiency, public health and manufacturing. The bridge landing concepts add green space, lighting, and other urban amenities to an area of blight, removing some of the risk currently perceived by investors and adding potential pricing premiums to new development.

Increasing consumer expenditures would indicate a rise in disposable income, or wealth, and an increase in residents. A survey was conducted in a joint effort between the City of Spokane and the Spokane Regional Health District in April 2011 that was administered to businesses in the pedestrian/bicycle bridge study area. One of the questions asked was, "What do you think will be the other impacts that this bridge will have on you and/or on your neighborhood?" About 26.8 percent of the businesses surveyed believed that the bridge will make the area more accessible and user-friendly, and about 17.9 percent believed that the bridge will create more business and a livelier neighborhood, thereby increasing utilization of available property.

Based on the research, it should be anticipated that the completion of a pedestrian/bicycle bridge will:

- Meet the needs of the growing student population by making housing in the SUDRA more available/convenient for students and workers
- Raise costs per square foot on average in the SUDRA
- Reduce vacant space due to increasing levels of customers, which should attract new businesses and new housing
- Increase business revenue by bringing more customers into the SUDRA

Recommendations

While a pedestrian/bicycle bridge may contribute to overall economic growth in the University District, it is not a standalone policy for redeveloping and revitalizing the area. The following policies are recommended to coincide with the completion of a pedestrian/bicycle bridge:

- *Enhance the public realm with green spaces, street trees, landscaping in the area of the railroad tracks, better lighting, sidewalk repair, and safe crosswalks.* These support and attract private investment and encourage energy efficiency and physical activity. Studies by the University of Washington state that drivers indicated it was easier to locate roadside businesses when they were framed by trees and vegetation and that greenery and flowers increase retail activity by attracting shoppers and residents to urban areas, spurring economic growth. In addition, parks improve property value. There is a significant link between the value of a property and its proximity to parks, greenbelts and other green spaces. Studies of three neighborhoods in Boulder, CO., indicate that property values decreased by \$4.20 for each foot away an urban area was from a greenbelt. And finally, small businesses choosing a new business location rank the amount of open space and proximity to parks and recreation as their first priority in site selection.
- *Provide zoning that allows mixed-use residential/retail/office/light industrial* and support development with incentives. A 2010 survey by Smart Growth America shows one-third of the housing market seeks smart growth, or mixed-use with transit development, with demand increasing as commute times decrease. It also found that pricing premiums exist for mixed-use or traditional neighborhood development.
- *Continue to "brand" the University District, especially the SUDRA.* Specifically, it is important that SUDRA is branded as part of the University District before and after the completion of the pedestrian and bicycle bridge. Although this recommendation was not highly prioritized as a mitigation factor for health impact, marketing is key to successfully attracting development and business interest early, and to strengthening the connections to the campus, medical district and downtown.

Conclusion

The purpose of this HIA is to evaluate the health impacts that the South University District Pedestrian and Bicycle Bridge will have on the current and anticipated population within a quarter-mile radius of the bridge. The goal of this HIA is to present information to the public and to policy makers, which will facilitate informed decisions. Hopefully the HIA will result in positive impacts on the health of people who will use the bridge to live and work within the study area. Recommendations are included to improve six health impacts: physical activity, perceived safety, economic development, social capital, air quality, and physical safety.

Positive health impacts and energy efficiency are likely to occur with the implementation of the recommendations included within this HIA. The following recommendations scored among the highest on the prioritization matrix for providing positive health impacts and reducing vehicle-miles-traveled.

- Reduce the availability of on- and off-street parking to encourage alternate forms of transportation
- Provide zoning that allows and provides incentives for mixed-use residential/retail/office
- Ensure that there are bike lanes to and from the bridge

Some of the conclusions may be limited when there is no quantifiable evidence regarding the impact and magnitude for some of the health impacts. For example, quantifiable evidence is lacking about impact and magnitude of the bridge on social capital in the study area. There have not been studies describing the effect that social capital has on reduction in crime in an area over a certain amount of time. As a result, authors rely upon evidence that describes social capital's effect on crime in areas where social capital is measured to be strong and presume that if social capital development is facilitated by the bridge and related development in the area, that crime rates will recede.

The authors' general assessment is that this bridge will likely have a positive impact on human health. Recommendations and their prioritization are found in the table in Appendix 6.

Call to Action

The HIA team encourages elected officials and other policy makers to refer to this HIA when making pedestrian/bicycle bridge design decisions that affect human health. The priority recommendations have been deemed most important for having positive impacts on human health and promoting energy efficiency. These recommendations should be considered first for implementation, but should not overshadow the other recommendations made within this HIA. The other recommendations should also be considered important in their ability to positively affect human health and should be implemented as time and funding allows.

Appendix 1 • HIA Steps and Tasks Performed

Screening

Purpose	Tasks
Determine whether HIA is appropriate and required	<ul style="list-style-type: none"> • Met With City of Spokane and Decided that the Most Feasible HIA Would be Starting with the Pedestrian Bridge HIA • Grant was Written by the City of Spokane to Focus on the East Sprague Corridor • Site Visit Done by HIA Team

Scoping

Purpose	Tasks
Set Out Parameters of HIA	<ul style="list-style-type: none"> • Set up a Steering Committee • Chose to Make this a Rapid HIA • Chose Which Impacts Will be Assessed • Scoped Evidence to be Gathered • Developed Project Plan

Identification

Purpose	Tasks
Develop a Community Profile and Collect Information to Identify Potential Health Impacts	<ul style="list-style-type: none"> • Develop a Neighborhood Profile • Develop a Literature Review for Health Impacts and Indicators • Develop Methodologies for Measuring Effects of Impacts • Develop and Implement a Residential and Business Survey

Assessment

Purpose	Tasks
Synthesize and Critically Assess the Information in Order to Prioritize Health Impacts	<ul style="list-style-type: none"> • Hold a Steering Committee Meeting to Review all Information Collected on Impacts and Put in Assessment Matrix • Assess Positive and Negative Impacts and Sources of Information

Decision Making and Recommendations

Purpose	Tasks
Make Decisions to Reach a set of Final Recommendations for Acting on HIA Findings	<ul style="list-style-type: none"> • Develop a Draft Set of Recommendations • Develop a Report • Present to Stakeholders

Evaluation and Follow Up

Purpose	Tasks
Evaluate the Process Involved in the HIA and its Impact, and Follow up the HIA Through Monitoring and a Health Impact Management Plan	<ul style="list-style-type: none"> • Process Evaluation Held by Steering Committee • Impact Evaluation, Find What Changes Resulted from the HIA

Appendix 2A • HIA Residential Survey Form

Bridge survey used for interviewing residents within HIA study area

March 2011 HIA- 99202 Bridge

I am _____ from the Spokane Regional Health District. We are doing a survey for a Health Impact Assessment. Hopefully you received our letter about the project. Are you or someone at home over the age of 18 years old? There is a proposal to build a bridge from the south portion of the Riverpoint Campus where EWU and WSU are located over the railroad tracks and landing at S. Sherman Street N. of Sprague. This bridge is proposed to have small green/recreational areas at both ends. We would like to find out how the proposed project would affect you and your health. Based on the information we collect, recommendations will be made to the city council about the proposed project. The survey is anonymous. We would greatly appreciate your help by taking five minutes to answer some questions about walking and biking in the area, safety, security and about the project.

Q1 Have you heard anything about the proposed bridge project before today? Yes No

Q2 For the first few questions, please tell me whether you strongly agree, agree, disagree or strongly disagree with the following statements or if you are unsure.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	N/A
When biking and walking in my neighborhood during the day I feel safe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When biking and walking in my neighborhood in the evening or at night I feel safe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel safe hanging out in my yard or in front of my home.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My personal property is safe from vandalism in my neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My personal property is safe from theft in my neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Litter and trash is a major issue in my neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neighboring businesses and residences are maintained well. (windows replaced, lawns cared for)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q3 Comments on safety (write these as they answer questions)

Q4 What kinds of improvement would you like to see (or see more of) in your neighborhood? (services, activities, facilities?)

Q5 How do you primarily get to and from different destinations/ activities around town?

- Drive alone Bus/vanpool Walk
 Carpool Bike Skateboard/Long board

Other

Q6 What makes it difficult to bike, walk or use transit more to get to destinations/ activities?

Q7 What would make it easier to bike, walk or use transit more to get to destinations/ activities?

Q8 How many miles did you drive last week? (not passenger)

Appendix 2B • HIA Residential Survey Form

Bridge survey used for interviewing residents within HIA study area

Q9 For the next few questions, please tell me whether you strongly agree, agree, disagree or strongly disagree with the following statements or if you are unsure.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The roads in my neighborhood are in good shape.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are enough sidewalks in my neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The sidewalks in my neighborhood are in good shape.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are enough bike lanes or marked shared roads in my neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The bike lanes and marked roads are in good shape.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When walking across intersections I feel safe from traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is convenient to access transit in my neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q10 How often have members in your neighborhood come together to address common concerns?

- Do not meet 1-2/ year 5-12/ year 3-4/ month
 Have met at least once 3-4/ year 1-2/ month

Q11 How much influence do you think people like yourself can have in making this neighborhood a better place to live?

- A lot A Fair amount Some Not very much None

Q12 Do you think that in this neighborhood people generally trust one another in matters of lending and borrowing?

- Yes (trust) No (do not trust)

Q13 People here look out mainly for the welfare of their own families and they are not much concerned with community welfare.

- Strongly agree Agree Neutral Disagree Strongly Disagree

Q14 Once the bridge is built, how likely are you to use the bridge?

- Very likely Moderately likely Somewhat likely Slightly likely Not likely

Q15 Once the bridge is built, what would you use it to get to?

- Work Parks/trails Day care Entertainment Education

Q16 Once the bridge is built, how often do you think you will use the bridge to get to your destinations/ activities?

- 1-2 /day 2-6/ week 2-4/ month 1-3/ season 1-3/ year

Q17 There will be two small recreation areas on either end of the bridge, how often do you think you will go to these areas?

- 1-2 /day 2-6/ week 2-4/ month 1-3/ season 1-3/ year

Q18 If often why, or if infrequently why not?

Q19 What do you think will be the other impacts that this bridge will have on you and/or on your neighborhood?

On the map, indicate the places you traveled to in the last week. How did you get to each place (mode of transportation: Drive/Walk/Bike/Transit/Carpool/Skateboard/Other)? Be sure to include work or school location even if not within the map area.

Appendix 3A • HIA Business Survey Form

Bridge survey used for interviewing businesses within HIA study area

March 2011 HIA- 99202 Bridge

I am _____ from the Spokane Regional Health District. We are doing a survey for a Health Impact Assessment. Hopefully you received our letter about the project. Are you or someone at home over the age of 18 years old? There is a proposal to build a bridge from the south portion of the Riverpoint Campus where EWU and WSU are located over the railroad tracks and landing at S. Sherman Street N. of Sprague. This bridge is proposed to have small green/recreational areas at both ends. We would like to find out how the proposed project would affect you and your health. Based on the information we collect, recommendations will be made to the city council about the proposed project. The survey is anonymous. We would greatly appreciate your help by taking five minutes to answer some questions about walking and biking in the area, safety, security and about the project.

Q1 Have you heard anything about the proposed bridge project before today? Yes No

Q2 For the first few questions, please tell me whether you strongly agree, agree, disagree or strongly disagree with the following statements or if you are unsure.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	N/A
When biking and walking in my business neighborhood during the day I feel safe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When biking and walking in my businesses neighborhood in the evening or at night I feel safe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel safe hanging out in front of my place of work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My personal property is safe from vandalism in my business neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My personal property is safe from theft in my business neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Litter and trash is a major issue in this neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neighboring businesses and residences are maintained well. (windows replaced, lawns cared for)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q3 Comments on safety (write these as they answer questions)

Q4 What kinds of improvement would you like to see (or see more of) in your business neighborhood? (services, activities, facilities?)

Q5 How do you primarily get to and from your place of work and other locations during your work day?

- Drive alone Bus/vanpool Walk
 Carpool Bike Skateboard/Long board

Other

Q6 What makes it difficult to bike, walk or use transit more to get to destinations during your work day?

Q7 What would make it easier to bike, walk or use transit more to get to destinations during your work day?

Q8 How many miles did you drive last week? (not passenger)

Appendix 3B • HIA Business Survey Form

Bridge survey used for interviewing businesses within HIA study area

Q9 For the next few questions, please tell me whether you strongly agree, agree, disagree or strongly disagree with the following statements or if you are unsure.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The roads in my business neighborhood are in good shape.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are enough sidewalks in my business neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The sidewalks in this neighborhood are in good shape.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are enough bike lanes or marked shared roads in my business neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The bike lanes and marked roads are in good shape.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When walking across intersections I feel safe from traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is convenient to access transit in this neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q10 Don't Ask!

<input type="checkbox"/> Do not meet	<input type="checkbox"/> 1-2/ year	<input type="checkbox"/> 5-12/ year	<input type="checkbox"/> 3-4/ month
<input type="checkbox"/> Have met at least once	<input type="checkbox"/> 3-4/ year	<input type="checkbox"/> 1-2/ month	

Q11 How much influence do you think people like yourself can have in making this neighborhood a better place to live?

A lot
 A Fair amount
 Some
 Not very much
 None

Q12 Don't ask

Yes (trust)
 No (do not trust)

Q13 People here look out mainly for the welfare of their own business and they are not much concerned with community welfare.

Strongly agree
 Agree
 Neutral
 Disagree
 Strongly Disagree

Q14 Once the bridge is built, how likely are you to use the bridge?

Very likely
 Moderately likely
 Somewhat likely
 Slightly likely
 Not likely

Q15 Once the bridge is built, what would you use it to get to?

Work
 Parks/trails
 Day care
 Entertainment
 Education

Q16 Once the bridge is built, how often do you think you will use the bridge to get to your destinations/ activities?

1-2 /day
 2-6/ week
 2-4/ month
 1-3/ season
 1-3/ year

Q17 There will be two small recreation areas on either end of the bridge, how often do you think you will go to these areas?

1-2 /day
 2-6/ week
 2-4/ month
 1-3/ season
 1-3/ year

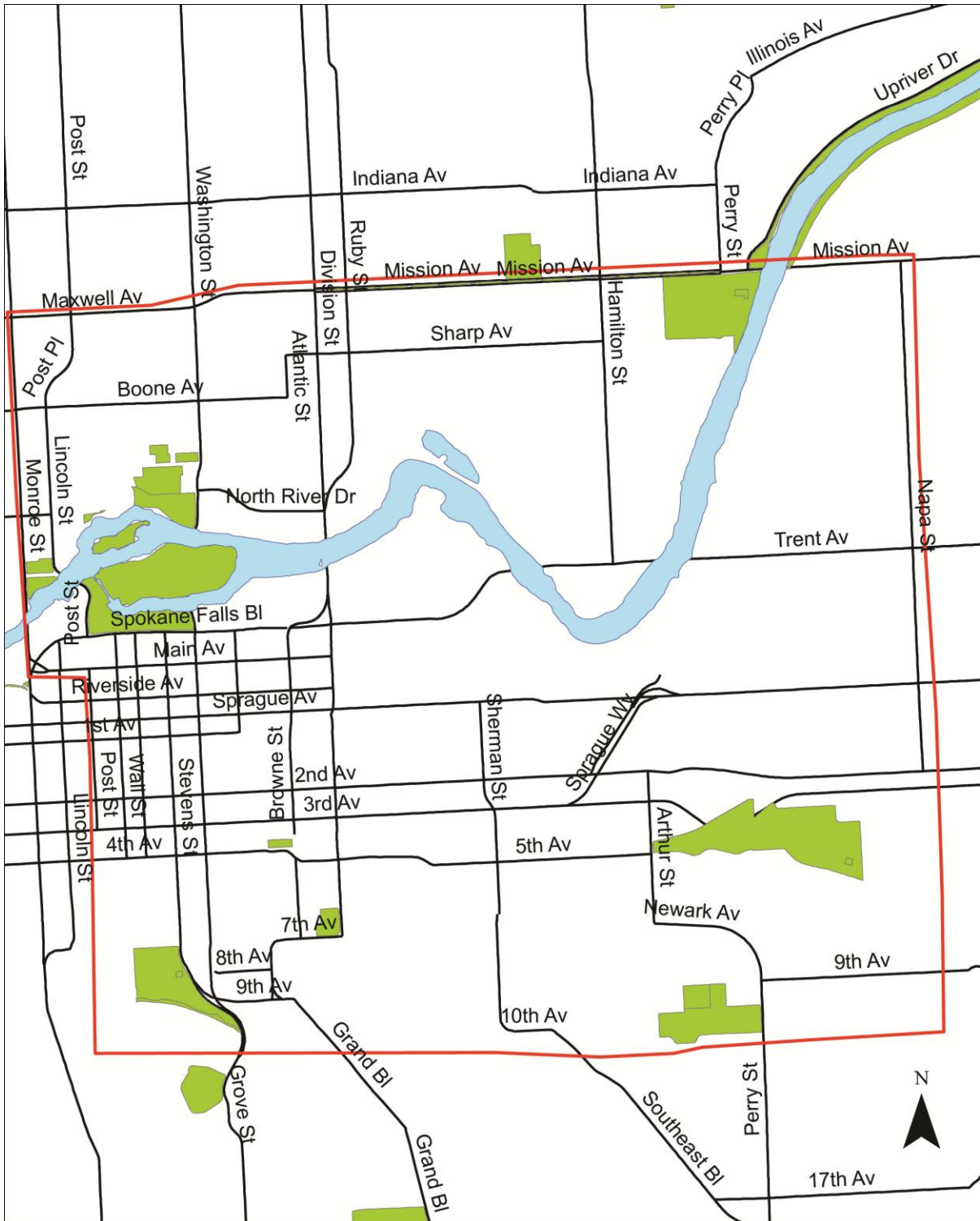
Q18 If often why, or if infrequently why not?

Q19 What do you think will be the other impacts that this bridge will have on you and/or on your neighborhood?

On the map, indicate the places you traveled to in the last week. How did you get to each place (mode of transportation: DriveWalkBikeTransitCarpoolSkateboardOther)? Be sure to include work or school location even if not within the map area.

Appendix 4 • HIA Residential Survey MAP

Map used with surveys for residents to identify where they commute to and how they commute



Appendix 5 • HIA Observation Form

Observation sheet used by survey team during the day of surveying residents within the HIA study area

March 2011 HIA 99202 Bridge Neighborhood Observations

Each team will be assigned a collection of blocks, which have been numbered on an attached map. Please begin your surveying and observing at the north east corner of every block and circle each block in a clockwise direction.

Q1 Street Name Q3 Block Number

Q2 Building Number Q4 Number of buildings (homes/ businesses) on the block

Vandalism: broken windows, graffiti, and other signs of property appearing to be damaged via malicious behavior.

Q5 Evidence of vandalism (types of vandalism seen) Q6 # of instances of vandalism

Q7 # of buildings (homes/ businesses) with obvious vandalism

Eyes on the street: Inventory the number of windows on the first and second floors of buildings that provide an opportunity for eyes on the street. Note whether the window is on the first or second floor and if view is obstructed (i.e. fully bloomed tree may obstruct a view in the summer, tinted, painted etc.)

Q8 Number of unobstructed windows on the first floors Q10 Number of unobstructed windows

Q9 Number of unobstructed windows on the second floors

Appendix 6 • HIA Recommendation Rankings

Recommendation rankings taken from priority matrices

Reduce the availability of parking within the study area	1
Provide mixed use zoning	2
Provide bike lanes to and from bridge	3
Ensure that there is regular bus service within the study area	4
Ensure that sidewalks are repaired and maintained	5
Bike lanes on bridge	6
Provide way finding maps/ signs for bicycle commuters	7
Provide alternative transportation incentives	8
Provide traffic calming infrastructure (chokers/ speed tables)	9
Brand SUDRA	10
Bridge maintenance	11
Provide signage alerting car traffic about pedestrian and bicycle activity	12
Provide a bridge telephone/emergency line	13
Provide lighting that is a minimum of 20 lux across bridge and landings	14
Provide shade at landings	15
Use drought resistant vegetation at the landings	16
Provide fixtures that direct light to ground	17
Provide green space at landings	17
Ensure that there is visibility up to 50 ft on bridge and landings	18
Use visually appealing designs for the landings	19
Provide a bridge barrier (suicide prevention)	20

Spokane Regional Health District

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