

# PREFERRED CONCEPT BASIS OF DESIGN MEMORANDUM

June 26, 2025

To: Colin Quinn-Hurst

Organization: City of Spokane

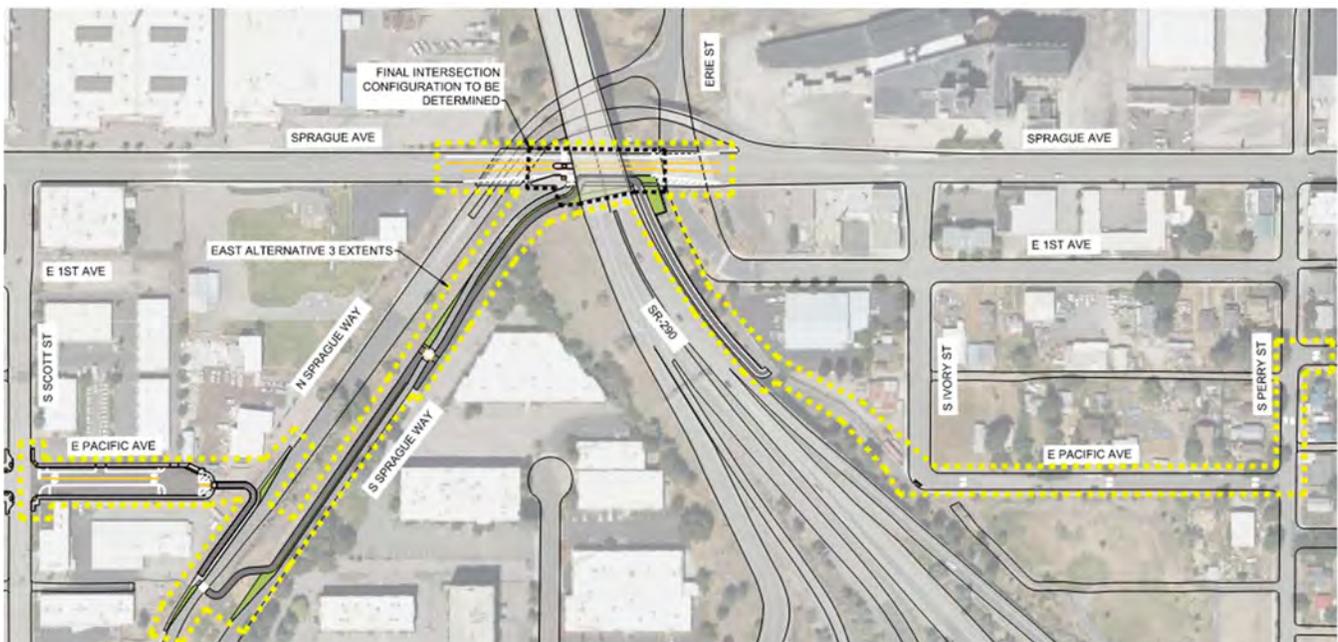
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Project: Pacific Ave Greenway Phase 2

## Introduction

The Pacific Avenue Greenway Phase 2 project will extend the planned Pacific Avenue Greenway from S Sherman Street to S Perry St, crossing the barrier of N and S Sprague Ways and the SR 290 (Hamilton St)/I-90 interchange. Through an alternatives analysis process, several different facility types and alignments were studied. For the west segment of the project (S Sherman St to N Sprague Way), shared lane and bike lane alternatives were studied. For the east segment of the project (N Sprague Way to E Perry Street), three different shared use path alignments were studied.

The alternatives analysis process yielded shared lanes as the preferred alternative for the west segment. The preferred alignment identified for the shared use path in the east segment is shown in Figure 1 below.



**Figure 1: East Segment Preferred Alternative**

This basis of design document outlines the design process and assumptions made in the development of the preferred concept. The Toole Design team reviewed the following documents to identify the design criteria:

- Washington State Department of Transportation (WSDOT) Standard Plans
- City of Spokane Standard Plans, 2024
- City of Spokane Municipal Code, 2024
- Association of American State Highway Transportation Official's (AASHTO) A Policy on Geometric Design of Highways and Streets
- AASHTO's Guide for the Development of Bicycle Facilities (Bike Guide)
- U.S. Access Board Proposed Public Rights-of-Way Accessibility Guidelines (PROWAG)
- U.S. Department of Transportation Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) and Interim Approvals (IA)
- Spokane Regional Stormwater Manual (SRSM)
- Stormwater Management Manual for Eastern Washington (SWMMEW)
- 2010 ADA Standards for Accessible Design

## Design Criteria

Toole Design reviewed design criteria associated with neighborhood greenway and shared use path design, and KPFF reviewed design criteria associated with stormwater and retaining wall design. The following sections provide documentation of design assumptions and decisions for different elements of the project.

### Greenway Design

The design of the shared lanes on Pacific Avenue from S Sherman Street to S Scott Street are based on best practices of neighborhood greenway/bike boulevard design and match the treatments used on Phase 1 of the bike route to the west. Shared lane markings are placed in the center of the lanes to encourage shared use of the roadway and help with bicyclist wayfinding. Curb extensions help reduce turning radii, narrow street widths, and improve sightlines at intersections. Traffic circles at S Hatch Street and S Scott Street will also provide traffic calming while accommodating large vehicle turning movements. Bike wayfinding signs will also be helpful to navigate the transition from greenway to shared use path.

### Shared Use Path Design

The shared use paths are designed at a width of 12' to accommodate both bicyclists and pedestrians. Painted shoulders and centerlines are used at curves in the path and where adjacent railing or walls require shy distance. For areas where the shared use path ramps down from one street to another, a maximum running slope of 5% was used to determine the current project footprint.

### West Segment

#### Street Widths

The street width on Pacific Avenue from S Sherman Street to N Sprague Way was determined by referring to the Spokane Municipal Code and discussions with City staff. For Commercial/Industrial streets a curb-to-curb width of 36 feet is prescribed in the municipal code. After discussions with the City, a minimum vehicle lane width of 11' and parallel parking lane width of 8' were identified. This results in a minimum roadway width of 30' with parallel parking on one side or 38' with parallel parking on both sides. Per discussions with the City, curb extensions were offset 1' from the edge of the parking lane line resulting in a curb extension width of 7'. In order to maintain a maximum curb alignment shift of 5' across the intersections while bulbing the curb out by a maximum of 7', the proposed street width varies from block to block, from 30' (parking on one side) up to 44' (parking on both sides). Beyond these curb-to-curb widths, any excess roadway space is used for planting strips and bioretention swales.

## **Loading Docks**

On the north side of Pacific Avenue from S Sherman St to Sheridan St there is an asphalt path at the same level as the street that is driven over to access several loading docks. A main goal of this project is to add sidewalks where they are currently missing. The sidewalk design for this block will need to accommodate the use of the loading docks behind the sidewalk by providing driveways to allow trucks to back up to the gates. Ideally the area behind the sidewalk will be long enough for a standard 30' box truck to park for loading without blocking the sidewalk; the design of the sidewalk, driveways, and loading dock access will need to be investigated further in later stages of design.

## **Turning Movements**

Initial turning movements were examined for the traffic circles on Pacific Avenue and the intersection on S Sprague Way and Sprague Avenue. A WB-50 was used for the traffic circles and the intersection of Sprague Avenue was designed to accommodate a WB-67 by using a mountable truck apron. For future stages of design, a design and control vehicle will need to be selected to finalize the design of the traffic circles, loading docks, driveways, and the truck apron at the corner of S Sprague Way and Sprague Avenue. Assumptions will need to be made about the operation of the street, such as whether large turning vehicles can use the full width of the roadway at the beginning and/or end of their turns or need to stay within their respective lanes, as well as how far parallel parking needs to be restricted on either side of driveways.

## **Stormwater Design**

The East segment of this project converts existing Sprague Way roadways to trail or constructs the trail independently of roadways, effectively causing a net reduction in PGIS (Pollution Generating Impervious Surface). This segment does not trigger the regulatory threshold from the Spokane Regional Stormwater Manual (SRSW), as no PGIS is created or reconstructed, thus it does not require implementation of new stormwater BMPs. The Pacific Avenue segment requires reconstruction of more than 5,000 SF of existing PGIS, triggering the regulatory threshold from the SRSW, and thus requiring Basic Treatment and Flow control to be implemented.

The recommended method to meet the SRSW requirements for the Pacific Avenue segment is through the use of Bioretention Planters. An example of these can be seen below in Figure 6.41 of the Stormwater Management Manual for Eastern Washington. These are placed in between the sidewalk and roadway along Pacific Ave with curb cuts to allow flow of stormwater to enter. Between Sheridan St and Scott St, the Bioretention Planters have catch basins collecting runoff and piping runoff to the Planters, due to the crowned roadway and room to construct planters only on one side of Pacific Ave. These Planters will need to have curb walls to allow for cover over the pipe, and because the walls are higher than two and a half feet tall, fences will be required atop the curb walls.

## **N and S Sprague Ways**

### **Street Widths**

N and S Sprague Ways only serve one lane of traffic but are currently very wide (N Sprague is about 36 feet wide and S Sprague is about 28 feet wide). This project proposes using excess roadway width to provide a shared use path, narrowing the vehicle lane to 13 feet wide. This lane width will need to be coordinated with emergency services to ensure that it is acceptable. Both N and S Sprague Ways have very low traffic volumes (both less than 3000 AADT) so it will be very rarely that you may have an obstruction in the travel lane at the same time as emergency vehicle attempting to use the street.

## **Raised Crossings**

Raised crossings with warning signs are proposed for the shared use path crossing of both N and S Sprague Ways as a traffic calming measure and to make the crossing of pedestrians and bicyclists more conspicuous. The dimensions, height, and slopes of the raised crossings will need to be determined through later stages of design based on the desired traversal speed; a 5-6% change in grade is recommended for arterial streets where vehicles will traverse at a speed of 10 mph or greater, whereas an 8% change in grade is appropriate for residential streets where the traversal speed would be less than 10mph.

## **Retaining Wall**

The concept design will depend on placement of retaining walls where new embankments and slopes are being introduced. Pacific Avenue at N Sprague Way has a grade separation that would not meet ADA slope requirements. In order to establish a slope that is ADA compliant, a retaining wall along N Sprague Way adjacent to the sidewalk is proposed. Use of retaining walls will minimize the earthwork footprint, and thus reduce the impact to continued use of N Sprague Way by motorized traffic.

## **Bridge Option**

As an alternative to the ramped trail shown in the preferred concept from Pacific Avenue down to N Sprague Way, Appendix A includes a preliminary look at the potential alignment and footprint of a bridge span over N Sprague Way to S Sprague Way. In order to provide the required 17.5' of vertical clearance to the bottom of the bridge structure over the roadway, while keeping the longitudinal slope of the trail at a maximum of 5%, the trail would need to begin ramping from about halfway down the block east of S Scott Street up to the west end of the bridge span. A bridge span over N Sprague Way oriented parallel to the alignment of Pacific Ave, also shown in Appendix A, was deemed infeasible due to the required vertical clearance below the bridge span. The additional cost of this bridge is estimated to be approximately \$1.5 million.

## **Sprague Avenue**

### **Intersection Geometry**

The intersection of S Sprague Way and Sprague Avenue is proposed to be modified to provide space for a trail on the south side of the street and to reorient the intersection to be more of a right angle. It is not expected that this geometric change will add any additional loading to the wing wall to west of the intersection on N Sprague Way. A truck apron is included on the SE corner of the intersection to provide a tighter corner radius for smaller vehicles while still accommodating a WB-67 right turn. Turning movements will need to be analyzed further at this intersection to finalize the design of the truck apron. A curb extension is proposed for the north and south sides of the pedestrian crossing of Sprague Avenue, which will be accommodated by narrowing the through vehicle lanes and pedestrian crossing island.

## **Ramp to Ben Burr Trail**

### **Retaining Wall**

The concept design will depend on placement of an embankment that ramps down from Sprague Avenue to the existing Ben Burr Trail in accordance with ADA standards. Retainage of the embankment will depend on two parts. A landing area adjacent the trail and next to Sprague Avenue will be built using low-density fill. This will allow for adding height above the existing bridge (Sprague Ave over Erie St) wing wall without increasing loading and pressures behind that wall. Further, as the embankment is built south toward the Ben Burr Trail, a retaining wall along next to Ben Burr Trail will allow for an ADA compliant slope and keep earthwork contained from impacting Erie Street or the Ben Burr Trail itself.

Sincerely,

**Dustin DeKoekkoek, PE** | Seattle Office Director

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