

Methods and Assumptions

Technical Committee Acceptance

“The undersigned parties, including all members of the team from WSDOT, FHWA and the Local Agencies, concur with the Interchange Justification Report Methods and Assumptions for the West Plains Transit Center Interchange Justification Report as presented in this document.”

TECHNICAL COMMITTEE ACCEPTANCE

Spokane Regional Transportation Council

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Spokane International Airport

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Date: _____

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Roy Siegel, Eastern Area Engineer

Date: _____

Spokane Transit Authority

Karl Otterstrom, Director of Planning

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Don Skillingstad, Capital Projects Manager

Date: _____

(1) Participation on the Technical Committee and/or signing of this document does not constitute approval of the West Plains Transit Center Interchange Justification Report.

(2) All members of the Technical Committee will accept this document as a guide and reference as the study progresses through the various stages of project development. If there are any agreed upon changes to the assumptions in this document, a revision will be created, endorsed and signed by all the stakeholders.

Introduction and Project Description

The Spokane Transit Authority (STA) West Plains Transit Center project is located near Exit 272 along I-90 in the West Plains area of Spokane County. The transit center will be an important element of the future High Performance Transit Network (HPT) providing service throughout the West Plains. In early 2012, conceptual studies for the West Plains Transit Center were started. As a result of these studies, preliminary concepts and construction cost opinions were developed. After meeting with local agencies, these concepts and cost opinions were updated in March, 2013. Under the current conceptual design, the West Plains Transit Center will feature three passenger loading platforms and one park and ride lot with at least 100 parking stalls. The main loading platform will feature at least three bus bays to accommodate current and future service growth. Another loading platform will be adjacent to the eastbound off-ramp and accommodate mainline transit service along I-90. The remaining loading platform will serve westbound buses along I-90 and be connected to the rest of the transit center by a pedestrian bridge. Other features will include a transit-only flyer stop, transit lanes as needed, landscaping, lighting, bicycle parking, passenger shelters, and intelligent transportation systems (ITS). Architectural treatments and design features will also be incorporated into the project.

This interchange justification report (IJR) will evaluate the base conditions and the proposed build alternatives as recommended by the Technical Committee and approved by the Core Stakeholder Group and STA Board for the opening year and design year periods. These build alternatives may include the following three options:

1. Express buses using the existing street systems to access the transit center.
2. Express buses using a new westbound median flyer stop and a new eastbound flyer stop on the eastbound off-ramp at SR 902/Medical Lake Interchange. A pedestrian bridge would extend from the transit center over the I-90 eastbound lanes to the westbound median flyer stop.
3. Express buses using a new westbound flyer stop adjacent to the westbound on-ramp at SR 902/Medical Lake Interchange and a new eastbound flyer stop on the eastbound off-ramp at SR 902/Medical Lake Interchange. A pedestrian bridge would extend from the transit center over the I-90 eastbound and westbound lanes to the westbound flyer stop.

Purpose of the Project

The purpose of the West Plains Transit Center is to expand connectivity to the West Plains communities and improve travel times to and from Cheney and Eastern Washington University by providing improved high quality, higher performance and cost-effective transit services that will address mobility needs for an expanding population and employment base west of Spokane. Multi-modal transportation services will be enhanced through:

- Improving connectivity between cities and to the West Plains area;
- Providing easy and fast connections to high performance transit service along the I-90 corridor;
- Improving transit access to residential and employment areas adjacent to Exit 272 by providing convenient transfers between local and express bus services; and
- Reducing congestion by providing an attractive alternative for single occupant vehicle (SOV) users.

This project will include completion of an Interchange Justification Report (IJR) process to determine the preferred solution for the construction of the West Plains Transit Center project in cooperation with STA, the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA), the Washington State Department of Transportation (WSDOT), Spokane Regional Transportation Council (SRTC), and Spokane County. The results of the IJR will enable STA to assess options and opportunities to improve the transportation system within the study area and complete design plans for construction.

Project Leads and Proponents

- Spokane Transit Authority
- Federal Transit Administration
- Federal Highway Administration
- Washington State Department of Transportation
- Spokane Regional Transportation Council
- Spokane County
- Spokane International Airport

Environmental Document Type

At this time, we anticipate a NEPA Documented Categorical Exclusion (and SEPA Checklist).

Level of Documentation

The proposed improvement options will include revisions to the existing eastbound off-ramp configuration, a center median westbound bus-only flyer stop or a westbound north side flyer stop with changes to the existing westbound on-ramp configuration. As required by WSDOT and FHWA, eight specific policy points will be addressed in the IJR. These are:

- **Policy Point 1** documents the need for the access point revision. STA is embarking on a process of improving multi-modal transportation services and developing a HPT Network. Policy Point 1 will document the need for access revisions in order to achieve the desired transit level of service to achieve that purpose.
- **Policy Point 2** provides a discussion of the reasonable alternatives evaluated. Building on previously completed studies, they will include:
 - The do-nothing alternative which will include providing all transit service at the park and ride lot;
 - A center median option; and
 - A north side lane option.
- **Policy Point 3** includes the Operational & Collision Analysis. For this IJR, the only change in traffic is bus access at the Medical Lake Interchange with no changes at the upstream and downstream interchanges. As a result, this analysis will focus on either the weave or merge operations along I-90 and bus movements through the ramp terminals at the Medical Lake Interchange, depending on the preferred alternative.
- **Policy Point 4** discusses access connections and design. This policy point will include evaluation of limited improvements for bus-only access to a transit stop along the main line, connected to a park and ride lot via a pedestrian bridge. Local street access will not be changed as part of this project; although there will be a “forward compatibility” analysis with WSDOT plans for future interchange improvements (at this time these appear to be limited to roundabouts at the ramp terminals).
- **Policy Point 5** addresses compatibility with land use and transportation plans.
- **Policy Point 6** reviews compatibility with the comprehensive transportation network plan and anticipated new access points.
- **Policy Point 7** deals with coordinating projects and actions programmed for funding.
- **Policy Point 8** includes a brief summary of the environmental process.

Analysis Years/Periods

Operational analysis will include both AM and PM peak hours for the following years:

- Existing Base Year – 2014
- Assumed Opening Year – 2020
- Horizon/Design Year – 2040

Project and Study Areas

This project will only affect transit bus routings at the SR 902/Medical Lake Interchange with no impacts to the upstream or downstream interchanges. As a result, the project area for this IJR will focus on the SR 902/Medical Lake Road Interchange (Exit 272 MP 272.81) and extend along I-90 to the SR 904/Four Lakes Interchange (Exit 270 MP 270.55) to analyze weave and merge/diverge operations associated with the bus-only access changes. The Geiger Boulevard/Grove Road Interchange (Exit 276 MP 276.32) will not be analyzed.

The study area of the local street system will include the following major street intersections:

- Eastbound ramps at SR 902/Medical Lake Road and I-90 ramp;
- Westbound ramps at SR 902/Medical Lake Road and I-90 ramp;
- W. Aero Road and W. Westbow Boulevard;
- W. Westbow Boulevard and S. Hayford Road; and
- S. Hayford Road and W. Medical Lake Road.

The overall study area for traffic forecasting purposes will include all of Spokane County, as defined by the Spokane Regional Transportation Council (SRTC) travel demand model.

Traffic Operations Analysis

For interstate highway operations, Highway Capacity Software (HCS) will be used to analyze merge/diverge connections. Average vehicle speed and density will be used as performance measures for the HCS analysis.

For ramp terminal/surface street operations, intersections will be analyzed as follows:

- Synchro 8.0 software will be used to analyze the operations of signalized intersections.
- Synchro 8.0 software or HCS will be used to analyze un-signalized intersections.
- SIDRA software package will be used to analyze roundabout controlled intersections.
- SimTraffic will be used for queuing and turn lane spillover analysis.
- HCS will be used to analyze weave sections, merge/diverge area and level of service on the interstate.

Both AM and PM peak hour analysis will be used for the three analysis years.

For the purpose of Level of Service (LOS) and traffic impact calculations, a single peak hour analysis is required. The existing peak one-hour volumes generally fall into the 7:00-8:00 AM and 4:30- 5:30 PM time periods. All traffic analysis will be reported for the AM and PM single peak hours only.

Travel Forecast

For this IJR analysis, the SRTC travel demand model will be used to provide a basis for the above analysis years and periods. The SRTC model includes both the existing plus committed projects for the region from the 4-year Transportation Improvement Programs (TIPs) and Horizon 2040.

It is anticipated that model “post-processing” will be utilized to account for localized discrepancies between existing “ground counts” and model-generated volumes. The recommended method will be the Factoring Procedure – Difference Method per NCHRP 765 Chapter 6, which add the “model growth increment” (the difference between the 2010 and the future year model volumes) to the existing ground count traffic volumes.

The following 3 model runs are assumed:

- 2010 Base Year
- 2020 with current four year TIP and 2020 Land Use
- 2040 with TIP and unfunded regional improvements and 2040 land use

Safety Issues

This IJR will use the current Collision Analysis Location/Collision Analysis Corridor (CAL/CAC) criteria and the Intersection Analysis Location (IAL) criteria for state highways within the project area, as prepared by WSDOT. In addition, the collision rates along local streets will be estimated using available local collision data. Types of collisions and contributing factors will also be summarized by location. The most recent five years of available collision data will be used for this analysis. This corridor specific information, as well as statewide system collision statistics, will be used in a predictive collision analysis effort to estimate any change in the level of safety for the interstate and connecting roadways. The Highway Safety Manual will be used for this analysis.

Selection of Measures of Effectiveness

The metrics to be used to demonstrate how the proposal will accomplish the stated objectives will be our measures of effectiveness (MOE). Possible metrics may include, but are not limited to, the following:

- Travel time (in minutes) for bus routes on the Interstate and local streets through the project area.
- LOS and density along I-90 and LOS at merge and diverge locations.
- Average delay times (in seconds) at all ramp terminals with an LOS table.
- Maximum queue length on ramps and arterials (95% queue lengths).
- Area of critical environmental habitat impacted by improvements.
- Compatibility with local plans.
- Safety analysis results (collision potential/risk reduction).
- Deviations needed to implement improvements.

Deviations/Justifications

The Interchange Justification Report will be developed per WSDOT Design Manual Chapter 550. The HOV direct access facilities will be designed per WSDOT Design Manual Chapter 550. At this point in the process, there are no new deviations identified. Deviations may be identified through the various study results, and will be documented as they arise.

Conclusion

The proposed improvement will improve transit service to be competitive with SOVs, maintain existing riders, and attract new riders, thereby reducing vehicle-miles travelled through the area. Engineering judgment will be applied to arrive at the best overall set of improvements that are the most practical within the study area.