TECHNICAL MEMORANDUM

To: Bakerview Interchange Justification Report (IJR) Project Team
From: Chris Comeau, AICP-CTP, Transportation Planner
Subject: Analysis of Non-Motorized Transportation Connections, Needs, and Plans
Date: May 25, 2015

INTRODUCTION

On April 29, the Bakerview IJR Team was presented with Bellingham’s proposed approach to addressing the non-motorized analysis to ensure that all transportation modes are examined and accommodated in future proposals for improvements to the interchange. Bellingham uses a proprietary software product named “ViaCity” that was created by TranspoGroup, Inc. (Kirkland, WA) and purchased by the City for in-house connectivity analysis for non-motorized transportation planning and multimodal transportation studies.

In 2014, Bellingham employed the ViaCity software in the development of a citywide Bicycle Master Plan to study beneficial citywide bicycle network connections and then to prioritize a list of 185 bicycle infrastructure improvements needed across the citywide bicycle network. The ViaCity software is land parcel based and therefore integrates land use with the transportation network while providing an excellent GIS graphic representation of the connectivity benefit gained from a user standpoint by constructing sidewalk or bicycle infrastructure on the existing street network.

For example, the ViaCity graphics can show the change in relative connectivity for a person living on one side of the interstate who wishes to walk to a retail store on the other side of the interstate. If there is not a sidewalk in place, then walking is not really an option and the person is forced to either drive across the interstate, which increases traffic congestion, or to not make the trip at all. If a sidewalk exists on one side of the overpass, then it provides the person with the option to walk although it may not be the most direct route and there may be several traffic signals and crosswalks to navigate in the process. If sidewalk exists on both sides of the overpass, then there is more opportunity to walk, with more direct routing and fewer signals and crossings to navigate. Increased sidewalk and bicycle lane connectivity is associated with increased walking and bicycling, both of which help to reduce traffic congestion and improve the health and quality of life for residents.

Bellingham’s approach to transportation planning is to address all transportation modes and to accommodate the transportation needs of all user groups, wherever possible. If sidewalk or bicycle facilities cannot be accommodated on a particular street in the short-term, then reasonable alternatives should be made available until these facilities can be accommodated in the future.
EXISTING CONDITIONS

The Bakerview/I-5 interchange is located in the northwest portion of Bellingham and serves as an important gateway into Bellingham. The Bellingham International Airport is located on the northwest side of the interchange and Bellingham's largest retail center is located on the east side of the interchange. Major concentrations of residential development exist in the Cordata Neighborhood northeast of the interchange and in the Birchwood and Alderwood Neighborhoods on the south and southwest sides of the interchange.

The Bakerview/I-5 interchange was originally constructed in the mid-1970's with one vehicle travel lane in each direction and 8-foot wide shoulders, but without any type of pedestrian or bicycle accommodations on the overpass bridge. Currently, the Bakerview/I-5 interchange has a 6-foot-wide concrete sidewalk along the north side of the overpass bridge, which was constructed in 2013 by the City of Bellingham and its funding partners as part of the $3.5 million Option 1 improvements recommended in the April 2011 WSDOT Bakerview/I-5 Value Planning Study. This north sidewalk, along with associated crosswalks on both sides of the overpass, provides a continuous, if not direct, pedestrian walking route across Interstate 5 from residential areas to commercial areas for both shopping and employment purposes. There is not currently a sidewalk or pedestrian pathway on the south side of the overpass and there are currently no dedicated facilities for bicyclists on either side of the Bakerview/I-5 overpass.
Bellington’s pedestrian and bicycle infrastructure is prioritized based on the relative benefit that each network link is expected to provide to users and to the overall citywide non-motorized network. The 2012 Pedestrian Master Plan includes over 340 individual sidewalk and crossing improvement projects at an estimated cost of $225 to $250 million to construct over 20 years. The 2014 Bicycle Master Plan includes over 185 individual bicycle facility improvement projects at an estimated cost of $25 to $50 million to construct over 20 years. Improvement projects are prioritized as follows:

- "Tier 1" short-term (1 - 5 years) projects;
- "Tier 2" medium-term (6 - 10 years) projects; and
- "Tier 3" long-term (10 - 20 years) projects.

Regardless of the Tier status on the priority list, Bellington transportation planners take advantage of every possible opportunity to implement any sidewalk or bicycle facility whenever possible. For example, if development is happening faster in one part of the city than another, or if there is sewer/water/storm water utility maintenance/repair work needed beneath a street, it is very likely that there are opportunities to boost the justification for Tier 2 and Tier 3 projects and get them constructed sooner rather than later. State and federal grants for Safe Routes to School and pedestrian and bicycle infrastructure can also provide justification for elevating a lower priority project to a higher priority, as well as opportunities to partner with other agencies (WWU, WTA, WCC, WSDOT, etc.) or private developers.
NON-MOTORIZED CONNECTIVITY BENEFIT ANALYSIS

Using ViaCity analysis, as described in the introduction, the GIS graphics below show the change and benefit of pedestrian connectivity to each land parcel both before and after sidewalk construction. The first graphic shows that the construction of a sidewalk on one side of the overpass where none existed prior to 2013 provided a huge connectivity benefit to the residents living in homes southwest of the Bakerview/I-5 interchange, which is depicted by the dark blue shading. The residents in the dark blue shaded area are now better connected to the major retail shopping areas on the east side of Interstate 5 along Bakerview Road.

The second graphic shows that the construction of a sidewalk on the south side of the overpass also provides better pedestrian connectivity, but at a relatively lower level of benefit. This is due to the dramatic change that the sidewalk on the north side of the overpass provided. The real benefit of a sidewalk on the south side of the overpass is that it would provide a more direct walking route across the overpass with fewer crosswalks and signals to navigate.
EXAMINING ALTERNATIVES

The ViaCity analysis allows transportation planners to show the net user benefit gained from making direct sidewalk and bicycle connections across the Bakerview/I-5 overpass. However, ViaCity does not provide an assessment of the qualitative aspects of the sidewalk or bicycle connections, which may be more of a determinant as to whether a walker or bicyclist would choose to use these connections across the interchange, even if they are more direct than others. The 2014 Bellingham Bicycle Master Plan specifically examined qualitative aspects of bicycle facility links in a "Vehicle Presence Matrix" (similar to the Mineta Transportation Institute Stress Index). The matrix includes quantifiable data that helps transportation planners understand some of the qualities of particular bicycle routes, which may lead different types of bicyclists to use, or not use, certain routes to get to the places they wish to travel to. For example, while a very confident road cyclist may be perfectly comfortable riding in a vehicle with congested traffic and therefore take a direct route across the overpass, a less confident cyclist may choose to take a longer, less-direct route to avoid the discomfort of speeding vehicles and traffic congestion.

The graphic below provides a depiction of the Vehicle Presence Matrix for the study area surrounding the Bakerview/I-5 IJR.

Less direct, but more comfortable routes
Tier 1, 2, and 3 sidewalk and bike connections surrounding interchange, including costs