1. Summary

The focus area of this project was a stretch of B Street that runs from 159th st to 152nd st in Spanaway, WA. This section of road is in close proximity to a shopping center and has two schools along it. The challenge is that the road is underdeveloped, does not support active transportation, and is often used by rush hour drivers avoiding the main road. Our objective was to identify and propose alterations to help make it a complete street.

This was accomplished by researching topics that align with the Pierce County Comprehensive Plan, such as the Safe Routes to School program. We identified many implementation options that would improve the experience of B Street users, such as sidewalks, bioswales, lane expansions, crosswalks, and bicycle lanes. These recommendations help create a complete street that prioritizes safety, mobility, and infrastructure.

2. Introduction

B street is a North-South corridor located in unincorporated Pierce County, Washington that runs parallel to Pacific Avenue, making it a popular choice for traffic trying to bypass the main road. B street is located in a community that has long been shaped by a history of Indigenous land stewardship, early Euro-American settlement, and suburban expansion[1]. B Street today functions as an essential local connector but lacks the multimodal infrastructure needed to safely support the people who use it daily. While the entire street spans from Military Road E to Mountain Highway E[2], the roadway is characterized by discontinuous sidewalks, limited number of pedestrian crosswalks, minimal bicycle accommodations, and more generally a built environment that prioritizes cars over other forms of mobility. These conditions are particularly

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consequential given the presence of Thompson Elementary School, Spanaway Middle School, and multiple bus stops located on the street, where students and families frequently walk, bike, and wait for public transit.[3]

The northern segment of B Street–between 152nd St E and 159th St E[4]–demonstrates an especially pronounced accessibility and safety challenge, including all aforementioned issues. This portion of the corridor is the focus of our project in CEP 460, where our team worked with the guidance of Pierce County staff to research potential opportunities for street redesign through a Complete Streets lens. The project was informed by frameworks such as the Pierce County Comprehensive Plan, Vision 2050, Safe Routes to Schools, and the Vision Zero Action Plan, all of which emphasize creating safer, more equitable transportation and expanding non car oriented transportation options in unincorporated communities.

Through our background research, field observations, and preliminary design development, our project seeks to reimagine the northern portion of B Street as a safer, more accessible, and more connected multi-modal corridor. Our recommendations include a series of targeted improvements. These improvements are paved sidewalks, two marked crosswalks, a pair of rapid flashing beacons, a bioswale, and a protected bicycle pathway. These are all aimed at improving safety and comfort for people walking, rolling, biking, and traveling to nearby schools. In doing so, this project contributes to ongoing countywide efforts to reduce traffic-related injuries[5], promote environmental sustainability, and expand mobility choices for

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residents in one of unincorporated Pierce County's most diverse and rapidly growing communities[6].

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3. Purpose & scope

We first divided roles among ourselves based on the assets we brought to the group. Kanon led the project. Abbey was responsible for communication between our team and the client. Ella contributed her experience with Adobe software to lead all graphic creation. Gaelen and Simonas were tasked with leading all research required for this project. After receiving the project assignment, we identified key objectives.

Our first objective was to investigate the context and history of Spanaway. We examined the colonial, economic, environmental, and demographic evolution of Spanaway. We then looked toward Spanaway's future, identifying trends and contemporary developments in Spanaway's master plan. The second objective was to perform a robust site visit of B St. The next objective was to create an online survey to learn what problems the community faced and what changes they wished to see. The analysis of this data would inform decisions regarding project deliverables. Third, we would synthesize our findings and present them at a mid quarter presentation. Afterward, we planned to present recommendations, a site map, renderings, and survey and community feedback.

After meeting again with the client, our scope narrowed. We removed community surveys to avoid causing distress for community members. In addition, we changed our final deliverable to a site plan without visual renderings. The change in scope affected the mid quarter presentation, during which we presented our findings from the site visit and the history and context research.

4. Audience/client

Our direct client for this project was Pierce County Planning and Public Works Long Range Planning Division. Specifically, we met with their planning manager Alan Bassok multiple times, and greatly benefitted from his time. His involvement from the beginning helped us contextualize the community which we were designing for, and set us on the right track. Following the first meeting we had, we were encouraged to re-examine our methods and deliverables. Alon emphasized that B-street is a long corridor, and we were best suited to reduce our scope by examining a sub-area. Similarly, Alon expressed concern for the reception of any possible outreach attempts on our end that weren't fully thought through; our approach would have been crammed time-wise, and he didn't want anyone to wrongfully attribute our survey to Pierce County Planning and Public Works. He also mentioned later on that complete streets mean future development, and he wanted to avoid the local community having any reason to distrust the planning department's actions. We kept in mind his expertise and looked into all the documents and resources he recommended.

He also recommended we check out Pierce County's involvement in the burgeoning Safe Routes to School Program, which we did an extensive portion of research on for our Issue Area Info Burst. This recommendation also helped us deduce that it would be best to focus on the corridor of B St. E between 152nd and 159th street due to the neighboring schools. It made the most sense as there are tons of ongoing projects looking to increase pedestrian safety in high risk areas near schools in Unincorporated Pierce County. While sometimes Complete Street and other trendy planning rhetoric can be lost on B st. residents who prefer to drive, the community could be rallied around certain common values like safety. Furthermore, the local community would care if these projects serve who is currently there, instead of if this project appeared to be gearing

up these streets for the prospects of future development. Additionally, Pierce County is undergoing many different safety improvements for pedestrians under their newly adopted Vision Zero Action Plan, which outlines frameworks to reduce pedestrian deaths and serious injuries by 2050. Keeping all this in mind, we were able to tailor our recommendations to fit alongside Pierce County Planning and Public Work's current projects and the general goals of their community.

5. Process or methodology

The method of this project focused on precontextualization research regarding B St and Pierce County plans. We first researched Pierce County from the earliest documentation of history, current demographics, and the culture of its communities to ensure a foundational understanding of the area we worked in. We also researched Pierce County's comprehensive plan to identify ongoing development near the project site, as well as its goals for new housing development and projected population growth (Pierce County Planning and Public Works, 2024). We then met with our client, Alon Bassok from Pierce County, to share our project scope, next steps, and to seek advice on properly conducting a community engagement activity. Using Alon's feedback to prioritize the northern block of the corridor, our group conducted a site visit on October 19th, 2025 where we walked from 159th st to 152nd st to experience how the average user travels on B St. Next, using notes, photos, and videos from our site visit, we analyzed to map nearby assets, opportunities for improvement, and set a prioritization of renovation needs. Since Spanaway Middle School is on B St and Thompson Elementary School is in proximity to the project site, our group researched the nationwide program Safe Routes To School (SRTS), Pierce County's Safe Routes to School Plan Prioritization Analysis 2025 update, Pierce County's Transportation Improvement Program (TIP), and several local case studies of successful SRTS projects. The final step in our method was to create a final map and presentation of our findings and share our recommendations with Alon Bassok.

6. Results and conclusions

The Washington Department of Transportation defines the Complete Street framework as a holistic view of how roadways are planned, designed, constructed, managed, and maintained. Unlike traditional models that prioritize cars as the default mode of travel, this approach recognizes the varied ways people move through a community. Its goal is to ensure that individuals, whether they are driving, walking, cycling, using mobility devices, riding transit, or relying on other transportation options, can navigate streets safely and comfortably (WSDOT 2023, 1). This was the goal we had in mind while developing B Street.

Bike Lanes

Adding bicycle infrastructure to B Street was a key objective. Our team had to decide if bicycle trails or lanes were the appropriate solution. We found the answer in the literature. Michelle C. Kondo, Ph.D, a civil engineer and urban planner, and her team studied bicycle lanes and their connection to crashes. They concluded that streets with bicycle lanes and four exit intersections had 47.6% fewer crashes than streets with similar characteristics and exits (Kondo et al 2017, 229). B Street intersects with four major intersections: 159th St, 168th St, 176th St, and 196th St. Additionally, B St has 67 cul de sacs, dead ends, and low traffic streets that connect onto it. Kondo et al found 39.95% fewer crashes occurred on two exit streets than their counterparts. Therefore, our team concluded that bike lanes would greatly contribute to bicyclist safety, assuming that B St does not become a popular bicycling location and volumes increase. Kondo et al found on the streets they studied that when bicycle volume increases by 10%, cyclists are more protected by the sheer volume of bicycle traffic rather than the presence of

lanes. Our goal for B St is for the infrastructure to encourage children to ride to school and for adults to commute by bicycle. Thus, we propose recommendations for a future where bicycle travel will be a main transportation method. Therefore, bicycle lanes may not increase safety if our street design is successful (Kondo et al 2017, 229).

Cycling Provision Separated from Motor Traffic: A Systematic Review Exploring Whether Stated Preferences Vary by Gender and Age conducted a review of 54 studies on cycling infrastructure that discussed ridership behavior due to gender and age. Their findings concluded that women were more likely to have a greater preference for the separation of bicycle lanes from roads (Aldred 201, 49).

Portland State University first developed the "four types of cyclists." The four types break down to strong and fearless, enthused and confident, interested but concerned, and no way no how. These terms were created by Rodger Geller at Portland State University (Dill and McNeil 2013, 129). The terms were used to target ways of increasing new ridership. Data in Portland show that less than 1% of cyclists were strong and fearless, 7% were enthused and confident, 60% were interested but concerned, and 33% were "no way, no how". Assuming Spanaway residents have similar demographics, our team decided that increasing ridership would most likely come from interested and concerned cyclists. Thus, it was important to look for solutions without bicycle lanes. We concluded that bicycle paths alongside the road would be the best option for increasing ridership in this demographic.

Safe Routes to School

With our topic area containing two schools, we found it imperative to study the Safe Routes to School program. The movement uses principles of evaluation, education, engineering,

encouragement, engagement, and equity to guide programs that make active modes of transportation safer, healthier, and more enjoyable for children and communities (Safe Routes Partnership 2025). Higher perceived walkability is associated with lower rates of obesity, diabetes, cardiovascular issues, hypertension, and better mental health. Communities with SRT implementations also report stronger social connections and higher levels of trust, communication, and overall neighborhood satisfaction. Features like sidewalks, crosswalks, and greenspace can also boost local economic value, and a reduced use of automobiles leads to lower carbon emissions, less air and noise pollution, and less traffic related injuries (King et al 2025). However, studies found that SRT interventions do encourage students to participate in active transportation, but engagement is ultimately determined by parents' perception of safety. If they do not believe their streets are safe, they won't let their children walk or bike to school (Vasey et al 2022).

Community engagement was outside of our scope of work so instead we focused on adding implementations that can be easily perceived. That is why we gave a lot of attention to lane widths, crosswalk and sidewalks, and bike paths. These additions can be easily perceived by residents and users and would hopefully encourage them to participate in more active modes of transportation.

7. Recommendations

Paved Sidewalks

By paving the shoulders in the school zones, students and residents will be encouraged to use more active modes of travel. Extending sidewalk coverage has a similar effect, creating a safer environment for pedestrians. The paved shoulders also better allow emergency vehicle access.

Bike Lanes

Bike lanes are recommended to be added to this site due to being 42.8% fewer crashes with bike lanes present (Younes et al, 2024). Also, bike lanes with dilators 29% reduction in maximum speed through intersections. Furthermore, the removal of cars is most effective to increase perceived safety(Olsson, 2023). In addition to that, data has been found that women have a higher preference for separating from automobiles (Alred et al, 2016).

Bioswale

A bioswale is a vegetated channel that slows stormwater runoff, filters pollutants, and allows water to soak into the ground. This prevents contaminated runoff from harming waterways and species like salmon, a keystone in the PNW. The site already has a natural swale, but it cannot function effectively without improvements. The compacted, low-infiltration soil must be excavated and replaced with engineered bioswale soil—a sand, compost, and sandy-loam mix topped with mulch to support infiltration, filtration, and plant growth. A gravel

layer and optional drainage pipe beneath the soil help collect and convey treated water. Inlets are also needed to direct runoff into the bioswale and prevent erosion. Adding PNW native vegetation is essential. These plants slow water, trap sediment, absorb pollutants, stabilize soil, and support local wildlife. Trees will also reduce urban heat and improve the walk to school. Proposed planting list: Alnus rubra, Acer circinatum, Cornus sericea, five-finger fern, western sword fern, native rushes and sedges, Mahonia nervosa, and Salix spp. Native plants are adapted to local conditions, require less maintenance, stabilize slopes, reduce erosion and landslide risk, support wildlife, and enhance the landscape—important considerations for the B Street redesign.

Ample Crosswalks and Signage

Shoulders shall be provided consistent with the requirements of the County Engineer and the roadway cross-sections, and should provide the following advantages:

- Space for vehicles to make emergency stops away from the traveled way.
- Enhanced safety, roadway capacity, and sight distance.
- Lateral clearance from signs, ditches, above-ground utilities, and potential roadside obstacles.
- Structural support for the pavement and storm water is discharged farther from the traveled way.
- Improved maintenance operations.
- Space for pedestrian and bicycle use.
- Space for occasional encroachment of vehicles, such as mail delivery vehicles.

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