



Local Road Safety Plan

Port Angeles, Washington

2024

Prepared for City of Port Angeles
Prepared by Transpo Group

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Transpo Group
12131 113th Ave NE #203
Kirkland, WA 98034

425.821.3665

www.transpogroup.com

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Chapter 1

Introduction





The City of Port Angeles is committed to the safety of users of its transportation system. The City's commitment is to all modes of travel, including vulnerable active transportation users of all ages and abilities. The City supports the Target Zero Washington State Strategic Highway Safety Plan and seeks to reduce the number of and risk of crashes, especially involving a serious injury or fatality, in the City. In order to more effectively address transportation safety, Port Angeles has created a Local Road Safety Plan (LRSP) which uses a data-based, proactive approach to identifying risk factors for future crashes.

The LRSP allows the City to focus on systemic improvements to the transportation network, in addition to spot improvements, which can not only address reported and observed crashes, but address conditions which meet risk factors for future crashes.

History of Safety Projects

Port Angeles has a history of working to improve the safety of the City's roadways and active transportation facilities. The following are recent actions the City has taken to address safety:

- The City installed 4-way stop control at the intersections of West 10th Street/South B Street and West 8th Street/South I Street to address a known high crash rate, identified by the City police and public works department.
- The City and WSDOT partnered to address pedestrian-involved crashes on Lincoln Street (US 101), with the City successfully applying for a grant through WSDOT's Pedestrian and Bicycle Program for sidewalk, crossing and bike lane improvements. The Lincoln Street project will be completed in Spring of 2022.
- The Port Angeles City Council approved a Transportation Improvement Plan (TIP) in 2021 which includes, but has not yet identified funding for, a program to address the high number of currently uncontrolled intersections in the City. Without the benefit of the LRSP, City staff and Council were concerned about the potential safety concerns at uncontrolled intersections.
- In 2020, the City applied for and received \$1.5 million in HSIP grant funding to upgrade existing traffic signal controllers along the 1st Street and Front Street corridors. The project design is expected to begin in the first half of 2022.
- In 2022, the City applied for and was awarded \$1.2 million in HSIP grant funding to address pedestrian crossing risk factors on 1st Street and Front Street.





Local Road Safety Plan Process

The City of Port Angeles' Local Road Safety Plan follows a process developed by the Federal Highway Administration (FHWA) and promoted by WSDOT to proactively address safety concerns based on crash data. WSDOT's success with a similar program at the County level in reducing crash rates for targeted risk factors has led to the application of the LRSP process to cities to identify risk factors and targeted countermeasures. Transpo, on behalf of the City of Port Angeles, analyzed crash data reports to identify risk factors. Analysis includes a statistical look at the rate that certain contributing factors were cited in crashes, as well as a spatial look at the locations and groupings of crashes. Risk factors are prioritized and compared to the City's transportation network and existing infrastructure to identify effective countermeasures and a program of prioritized improvements.

Data Sources

Data for the City of Port Angeles' Local Road Safety Plan comes from WSDOT resources, which are coordinated with the Washington State Patrol and the local Port Angeles Police Department through the SECTOR system. The data for the LRSP is limited to a 5-year study period, January 1, 2018 through December 31, 2022. WSDOT verifies and calibrates crash data on a calendar year basis, therefore only data through the end of 2022 is included in the plan. Future updates to the plan will include a revised 5-year window.

Existing Transportation Infrastructure

The City of Port Angeles' transportation system is primarily a gridded urban/suburban street network, with blocks about 500' by 350' long. On the southern end of the City, the grid size increases, along with lot sizes, but remains suburban in nature, with sidewalks, curbs, illumination and on-street



parking in many locations. Rivers and streams in the City have wide buffers which interrupt the gridded transportation system. US Highway 101 passes through the City, splitting into a couplet on both Front Street (westbound) and 1st Street (eastbound) in the eastern half of the City. US 101 turns south at Lincoln Street, following Lincoln to Lauridsen Boulevard before exiting the City limits to the west.

Intersection Control

There are several signalized intersections along the US 101 corridor. Other signals in the City are limited to the 5th Street, 8th Street and Race Street corridors. The city's numerous 4-way intersections are a mix of uncontrolled and 2-way stop controlled, with a select few 4-way stop controlled. Approximately one third of the City's stop-controlled intersections have marked stop bars in at least one direction. Stop control is clustered in corridors, giving priority to City arterials and stopping minor intersecting street.

Active Transportation

The City has dedicated bike lanes and bike boxes in place on Lauridsen Boulevard east of Lincoln Street, portions of 8th Street, Front Street, 1st Street, and Lincoln Street. Many of the City's streets have sidewalks separated by landscaped buffer strips. The City has pedestrian signal heads in place at its signalized intersections. Some, but not all, signals have countdown-style pedestrian heads. Marked crosswalks are present at many of the intersections in the downtown core, but are less prevalent outside of the core. There are few midblock crosswalks in the City, mostly on Front Street and 1st Street west of Lincoln Street.



Chapter 2

Data Analysis



Crash Data Summary

During the 5-year study period (2018-2022), the City of Port Angeles had 819 total crashes on City roads, 13 of which (1.6%) resulted in a serious injury. The City had no crashes result in a fatal outcome. Crashes that result in serious injuries or fatalities are discussed as “SIF” crashes in the LRSP. The total number of crashes was 9% lower in the current 5-year (2018-2022) period than the previous 5-year period (2016-2020), but the rate of fatal or serious injury crashes of the total crashes was 0.3% lower. The downward trend in total crashes and the lack of fatal crashes in the five year study period is indicative of the City’s commitment to transportation safety projects. The City will continue to invest in safety projects and monitor crash rates for both statistical changes from the random nature of crashes and positive improvements from the City’s investment in safety projects.

Crash Data Analysis

Statistical Analysis

The summary data for all crashes on City roads was compared to statewide, as well as western Washington statistics to identify causes related to the transportation user (drivers, cyclists and pedestrians) and the transportation environment (roadway geometry, characteristics, enhancements, etc.). The City of Port Angeles experienced a low number of SIF crashes in the five-year study period. To avoid any statistical bias that could miss larger crash trends, the data for all crashes was analyzed for over-representation of contributing factors in reports. Approximately three fifths of SIF crashes occurred in darkness, both with and without streetlights. Four categories of contributing factors are apparent in the data.

Total Crashes¹

| | 2018-2022 | % | 2022 | 2021 | 2020 | 2019 | 2018 | 2016-2020 | % |
|-----------------------------|-----------|------|------|------|------|------|------|-----------|------|
| total # of Crashes | 819 | | 146 | 166 | 139 | 174 | 194 | 893 | |
| # of Fatal Crashes | 0 | 0.0% | 0 | 0 | 0 | 0 | 0 | 2 | 0.2% |
| # of Serious Injury Crashes | 13 | 1.6% | 2 | 3 | 2 | 2 | 4 | 15 | 1.5% |

Source: WSDOT, November 2023

¹ Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.



Intersections

Intersections include angle-type crashes at intersections with no traffic control, stop sign control (2 or 4-way) and signals. They may include disregard for a posted stop sign, or a red signal. The number of intersections where angle crashes have occurred is split between those with intersection control and those without, although the total number of crashes is higher in intersections with existing control. Angle crashes are involved in several of the City's SIF crashes.

| Intersections ¹ | | | | | | | | | | | | |
|----------------------------|-------------------|-------|-----------------------|-------|--------------------|-------|----------------------------------|--------|-----------------------|-------|--------------------|-------|
| | Total Crashes | | | | | | Serious Injury and Fatal Crashes | | | | | |
| | All WA City Roads | | Western WA City Roads | | Port Angeles Roads | | All WA City Roads | | Western WA City Roads | | Port Angeles Roads | |
| Angle (T) | 59,685 | 27.8% | 42,543 | 26.5% | 307 | 37.5% | 807 | 16.5% | 564 | 14.8% | 4 | 30.8% |
| Intersection Related | 104,656 | 48.8% | 76,662 | 47.1% | 446 | 54.5% | 2223 | 48.3% | 1678 | 44.0% | 8 | 61.5% |
| Disregard Stop Sign | 9,489 | 2.2% | 6,529 | 2.0% | 13 | 2.8% | 243 | 275.0% | 181 | 2.7% | 0 | 0.0% |
| Stop Sign | 53,571 | 10.8% | 37,345 | 10.2% | 278 | 15.5% | 963 | 2.8% | 684 | 9.2% | 4 | 13.8% |
| No Traffic Control | 286,767 | 57.9% | 211,608 | 57.6% | 1,278 | 71.0% | 5,839 | 60.4% | 4,416 | 59.7% | 23 | 79.3% |

Source: WSDOT, November 2023

Active Transportation

Active transportation includes crashes that involve pedestrians or bicyclists. In Port Angeles, the percentage of crashes that involve pedestrians is slightly below comparative averages, but the severity of the crashes makes it a priority. Other overrepresented crash circumstances cited in more detailed crash data include pedestrians hit while the vehicle is making a left turn across a crosswalk, and pedestrians hit in unmarked crosswalks.

| Active Transportation ¹ | | | | | | | | | | | | |
|------------------------------------|-------------------|-------|-----------------------|-------|--------------------|-------|----------------------------------|-------|-----------------------|-------|--------------------|-------|
| | Total Crashes | | | | | | Serious Injury and Fatal Crashes | | | | | |
| | All WA City Roads | | Western WA City Roads | | Port Angeles Roads | | All WA City Roads | | Western WA City Roads | | Port Angeles Roads | |
| Hit Pedestrian | 6,173 | 2.9% | 5,009 | 3.1% | 13 | 1.6% | 1,296 | 26.4% | 1,032 | 27.0% | 4 | 30.8% |
| Ped in Unmarked Crosswalk | 535 | 7.8% | 379 | 6.8% | 5 | 38.5% | 95 | 6.5% | 60 | 5.1% | 2 | 50.0% |
| Ped in Marked Crosswalk | 3,100 | 45.1% | 2,573 | 46.2% | 3 | 23.1% | 488 | 33.2% | 400 | 34.3% | 0 | 0.0% |

Source: WSDOT, November 2023

Roadside Objects

The roadside objects category includes anything outside the travel lane, typically involved in single-vehicle crashes. There are several crashes that involve protective devices, such as curbs and guardrails, indicating the City has already made efforts to protect many vulnerable roadside hazards. Despite the City's past safety projects, there are still several crashes involving utilities and natural features at the roadside which are not currently protected. Crashes involving parked vehicles are overrepresented in the total and SIF data.

| Roadside Objects ¹ | | | | | | | | | | | | |
|-------------------------------|-------------------|-------|-----------------------|-------|--------------------|-------|----------------------------------|-------|-----------------------|-------|--------------------|------|
| | Total Crashes | | | | | | Serious Injury and Fatal Crashes | | | | | |
| | All WA City Roads | | Western WA City Roads | | Port Angeles Roads | | All WA City Roads | | Western WA City Roads | | Port Angeles Roads | |
| Hit Parked Car | 24,091 | 11.2% | 17,199 | 10.1% | 154 | 18.8% | 156 | 3.2% | 123 | 3.2% | 1 | 7.7% |
| Guardrail | 716 | 2.6% | 594 | 2.7% | 1 | 0.8% | 23 | 2.6% | 19 | 2.6% | 0 | 0.0% |
| Utility Pole | 2,713 | 9.7% | 2,027 | 9.5% | 13 | 10.8% | 110 | 12.1% | 93 | 12.9% | 0 | 0.0% |
| Roadway Ditch | 1,017 | 3.6% | 878 | 4.1% | 10 | 8.3% | 32 | 3.5% | 26 | 3.6% | 0 | 0.0% |

Source: WSDOT, November 2023

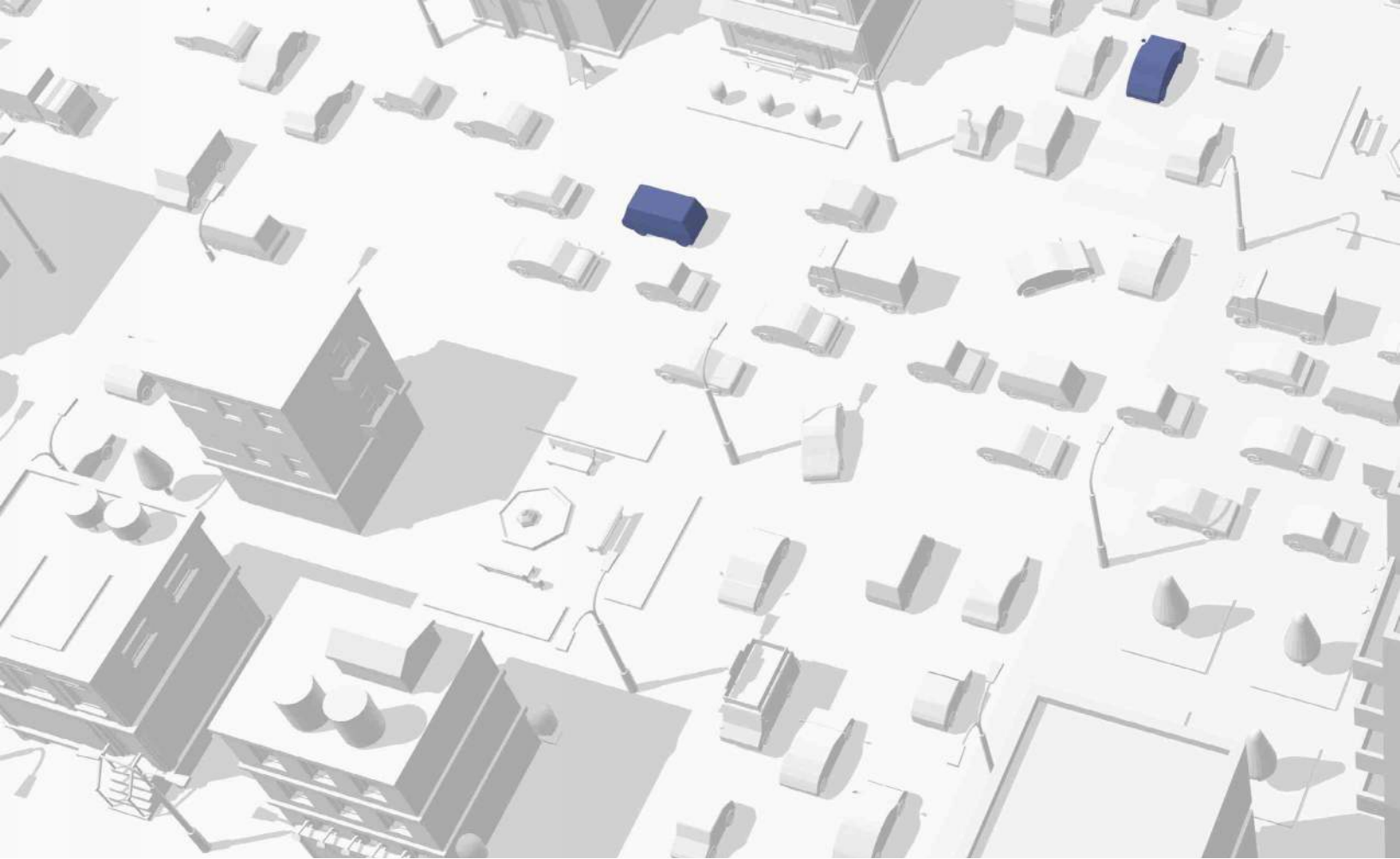
Driver Behavior

Driver inattention was cited in nearly one third of crashes. While the rate is consistent with other Cities, it represents a significant risk factor to be considered. Excessive speed was cited in a lower percentage of overall crashes compared to other Cities but was a factor in a higher number of SIF crashes.

| Driver Behavior ¹ | | | | | | | | | | | | |
|---------------------------------|-------------------|-------|-----------------------|-------|--------------------|-------|----------------------------------|-------|-----------------------|-------|--------------------|-------|
| | Total Crashes | | | | | | Serious Injury and Fatal Crashes | | | | | |
| | All WA City Roads | | Western WA City Roads | | Port Angeles Roads | | All WA City Roads | | Western WA City Roads | | Port Angeles Roads | |
| Inattention/Distraction | 58,697 | 13.3% | 46,017 | 14.0% | 48 | 15.0% | 1023 | 11.6% | 825 | 12.2% | 5 | 15.2% |
| Exceeding Safe/ Stated Speed | 16,024 | 3.6% | 12,573 | 3.8% | 18 | 3.2% | 892 | 10.1% | 703 | 10.4% | 5 | 15.2% |

Source: WSDOT, November 2023

¹ Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.



Spatial Analysis

Transpo obtained data for each reported crash in Port Angeles, including coordinates to produce maps of reported contributing circumstances. Mapping of the crash data allows for identification of patterns by physical location and the roadway environment. The spatial analysis compliments the statistical analysis and helps to identify specific risk factors for future crashes. A selection of the maps generated are included in the Appendix.

Angle Crashes

Because of Port Angeles' gridded street network, there are many 4-way intersections in the City. Nearly half of intersections have had at least one angle crash in the 5-year study period. Several of the intersections with higher numbers of crashes are signalized intersections with US 101, including Race Street at W 1st Street, Penn Street at W 1st Street and Lincoln Avenue.

At 4-way intersections one block off of major arterials and collectors, there are clusters of angle crashes at consecutive intersections, creating adjacent "corridors" of crashes to the arterial. There are three corridors that stand out with several crashes at adjacent intersections; South B Street between W 10th and W 15th Streets, South Laurel

Street between W 5th Street and W 9th Street and 6th Street between S Oak Street and S Vine Street. There are other corridors where at least one crash has happened at consecutive intersections one block off of major routes.

Disregard Stop Sign/Red Light

A subset of the angle crashes are those crashes where drivers failed to stop at a stop sign or red light, and was cited as a contributing circumstance to the crash. Crashes with disregard for a stop condition are almost all either on or one block off of arterial or collector level roadways. The signalized intersections at Race Street and W 1st Street and Lincoln Street and W 1st Street have multiple angle crashes where a vehicle did not stop for a red signal. Several intersections have had at least one angle crash where a driver did not obey a stop sign in the Peabody Street and 8th Street corridors. The data does not indicate the reason for disregarding a stop sign or signal, but conditions such as visibility, distracted driving, or driver choice are potential factors.

Pedestrian Crashes

Port Angeles' pedestrian and bicycle crashes are primarily clustered on the US 101 corridor, 1st Street and Front Street, but also on 8th Street. Crashes on 1st Street and Front Street corridors that resulted in injuries tend to be at



non-signalized crossings and in close proximity to transit stops, while signalized intersections have a higher number of total crashes involving pedestrians. Several crashes on 8th Street involved unmarked crossings. Pedestrian crashes where the driver turned left across the crosswalk was cited often as a contributing circumstance.

Roadside Objects

Roadside object crashes are primarily concentrated along the higher volume roadways in the City, including the US 101 corridors, and perimeter arterials and collectors including Lauridsen Boulevard, Mount Angeles Road, W 16th and 18th Streets, Marine Drive, and Ediz Hook Road. C Street, especially north of 10th Street also has a significant number of roadside object crashes. The most commonly hit roadside object are utilities, which include poles, hydrants, valves and other appurtenances. There are five intersections with higher numbers of roadside object crashes; the eastern and western ends of the Front Street/1st Street couplet, Hurricane Ridge Road at Mount Angeles Road, W Lauridsen Boulevard at L Street and W 18th Street at N Street. The two ends of the Front/1st Street couplet are both curves in an otherwise straight roadway alignment. The other three intersections

are less urban, without curb or guardrail protecting the roadside and may lack roadway lighting. Crashes which occurred in the dark with no streetlight typically involved an embankment or roadside ditch. Projects should ensure that drivers are aware of changing roadway conditions and that roadside objects have delineation, protection, and illumination at intersections and roadway geometry changes.

Hit Parked Vehicle

The City experiences a higher percentage of crashes involving impact with a vehicle parked along the road than in other Cities. The distribution of crashes involving a parked vehicle did not show a significant correlation with the presence of streetlights. When mapped by time of day, a pattern emerged of crashes with parked vehicles occurring more often on arterials and collectors during the daytime and evening hours, and being more spread out on residential streets during the overnight hours. The 8th Street corridor and 1st Street corridors had the most concentration of crashes involving parked vehicles. The intersections of 1st Street with Ennis Street and Laurel Street are frequent parked vehicle crash locations.



Chapter 3

Risk Factors





Based on the combination of statistical and spatial analysis of the crash data for Port Angeles, the following risk factors were identified. The risk factors will guide the City's implementation of countermeasures in a proactive effort to reduce the occurrence and severity of future crashes. Risk factors are shown in priority order.

Risk Factors

Intersections



Intersection risk factors relate to intersection control and crash types that occur at intersections. The factors are:

- Uncontrolled intersections
- Two-way stop-controlled intersections
- Right turns on red at signals

Intersections One Block Off City Arterials



Uncontrolled and two-way stop control intersections one block adjacent to parallel City arterials have an increased risk of intersection-related crashes. Adjacent routes can be used as alternatives to avoid delays.

Active Transportation



Active transportation risk factors for the City are focused on crossings at intersections. The factors are:

- Left turns across crosswalks
- Un-signalized and un-enhanced crossings at high volume arterials

Roadside Objects



Roadside object risk factors relate to the chances that objects outside the travel lane will be involved in a crash because of roadway geometry, visibility/delineation or physical protection of the objects themselves. The factors are:

- Objects (utilities and ditches) near the travel lanes in horizontal curves
- On-street parking on arterials

Excessive Speed



Excessive speed is a driver behavior that can contribute to several other risk factors. Excessive speed is cited in several of the City's SIF crashes. Speed contributes to risks for vulnerable users of active transportation and can contribute to a drivers' inability to recover and avoid crashes with roadside objects.





Chapter 4

Transportation System Improvements





Countermeasures are the actions, including engineering, enforcement and education, that Port Angeles can take to proactively address the risk factors identified through the crash data analysis. To identify projects and programs that could address the risk factors for crashes, a full range of potential countermeasures was evaluated. Some countermeasures are unfeasible due to constraints on maintenance resources. For example, projects involving significant amounts of thermoplastic roadway paint that would need to be maintained long-term were removed from consideration. Projects that would introduce large numbers of additional signs were removed from consideration for both aesthetic concerns of stakeholders and “sign fatigue” considering the short block lengths in most of the City.

Proposed countermeasures fall into five general categories; roundabouts, pedestrian crossing enhancements, enhanced signage, traffic calming and roadside hazard mitigation. Each type of countermeasure is proven effective to address the risk factors identified for the City’s transportation system. All proposed project types are all in use in other similar sized western Washington agencies.

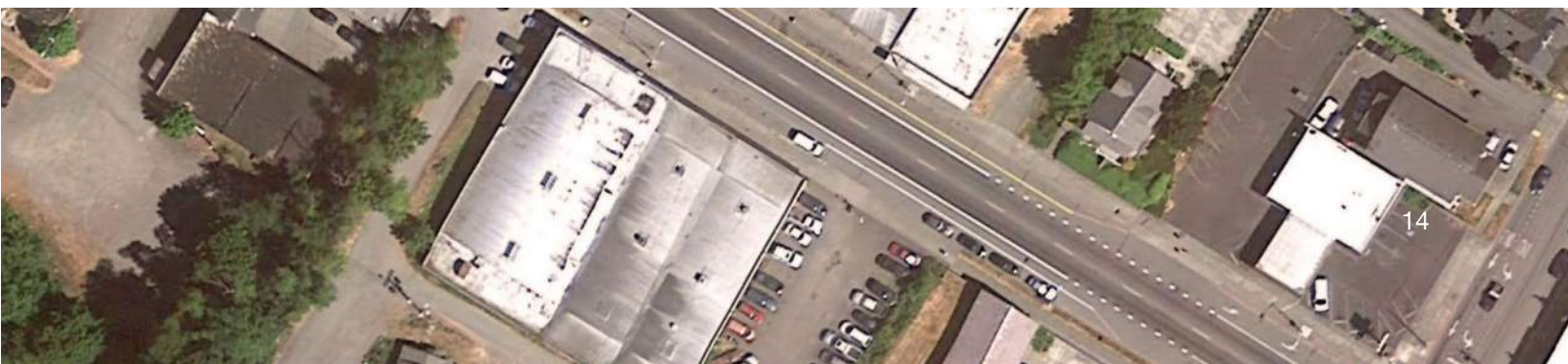
The effectiveness of countermeasures was evaluated using several sources including the National Highway Traffic Safety

- 1 http://www.cmfclearinghouse.org/study_detail.cfm?stid=492
- 2 http://www.cmfclearinghouse.org/study_detail.cfm?stid=317
- 3 http://www.cmfclearinghouse.org/study_detail.cfm?stid=11
- 4 http://www.cmfclearinghouse.org/study_detail.cfm?stid=487

Administration’s Countermeasures That Work publication, Washington State’s Target Zero plan, and FHWA’s Crash Modification Factor (CMF) Clearinghouse website. The cited resources help to identify not only potential projects, but provide research-backed documentation of the anticipated effectiveness of treatments on reducing crash rates.

For the City’s projects addressing intersection control, the CMF Clearinghouse research indicates that improvements to the visibility, signing and marking at controlled intersections can reduce total crashes by 10 to 20%¹. At uncontrolled intersections, the CMF Clearinghouse research indicates that converting to a roundabout may increase total crashes by 10%, but has a dramatic, up to 100%² reduction in severity of crashes at uncontrolled intersections. The CMF Clearinghouse indicates that converting twoway stop controlled intersections to roundabouts can reduce total crashes by 25 to 35%³.

Enhancing pedestrian crossings with a variety of treatments, including curb extensions, RRFBs, added signage and markings and improved lighting can reduce pedestrian crashes by 50-75%⁴.



Countermeasures

Roundabouts



Roundabout intersection control through the use of mini roundabouts limits the number of conflict points in an intersection, increases operational efficiency, and reduces the severity of crashes that do occur. Mini roundabouts, with a rolled curb fully traversable center island and marked splitter islands, are low maintenance projects which can be implemented without moving existing curbs or edges of pavement, limiting any right of way impacts.

Full size roundabouts provide similar benefits at signalized intersections. Full size roundabouts also can minimize operating costs compared to signals and help to address pedestrian safety at the same time.

Pedestrian Crossing Enhancements



Pedestrian crossing enhancements include upgrading existing crossings with rectangular rapid flashing beacons (RRFBs). Pedestrians press a pushbutton to activate the beacons prior to entering the crosswalk to alert drivers of their crossing. RRFBs come in both solar powered and hardwired options providing flexibility for application. Additional physical crossing enhancements include curb extensions to shorten the crossing distance for pedestrians and provide better visibility to crossing pedestrians. Curb extensions provide additional benefit when used in conjunction with RRFBs. Stop lines with associated signage indicating the location to stop for pedestrians ahead of the crossing for mid-block locations (completely separate from intersecting roadways) provide additional visibility, driver warning and pedestrian safety.

Enhanced Signage



Enhanced signage includes an array of solar powered signage that blinks to draw drivers' attention in any weather or lighting condition. Enhancements can also provide real-time driver feedback. Signs are self-contained units and typically manufactured with 3 to 5 year warranty and battery replacement periods.

Traffic Calming



Traffic calming measures are physical devices or signs designed to slow traffic speeds, especially on nonarterial roadways. Countermeasures provide driver feedback, raise awareness of posted speed limits or physically restrict drivers' ability to speed in corridors.

Roadside Hazard Mitigation



Mitigation of roadside hazards includes marking, signage and physical barriers to raise awareness of and protect roadside hazards including utilities, ditches and parked vehicles.

Enforcement and Education

Safety Programs

Education and enforcement are two key components of transportation safety, complimenting engineering projects. Non-engineering programs are ineligible for funding through WSDOT's HSIP program.

The Washington State Traffic Safety Commission (WTSC) Safety Grants program does fund education and enforcement efforts and programs

Engineering Safety Projects

The projects listed on the following pages include programmed City projects and a prioritized listing of proposed measures the City will seek to implement using a mix of funding from WSDOT's HSIP City Safety program, local funds, and other funding sources. The City will seek to combine some projects into other projects such as pavement preservation as opportunities arise.

Transportation Improvement Projects

The City's Transportation Improvement Plan (TIP) includes five projects that are countermeasures to the identified risk factors.

Port Angeles Transportation Project TR 0220

Intersection Traffic Control



Unfunded TIP project TR 1316 seeks to install intersection control at uncontrolled intersections across the City. The project seeks to install stop-control, yield-control, traffic circles or mini-roundabouts in order to improve safety. The project is similar in scope to Project 01 in the LRSP.

Project Status: **Planned**

Port Angeles Transportation Project TR 1399

Traffic Signal Interconnect/Preemption



TIP project TR 1399 seeks to replace the City's existing signal controllers City-wide. The current controllers are not capable of implementing some of the most modern safety treatments and cannot be preempted for emergency access operations. The project would allow the City to interconnect traffic signals for better control of traffic flow. With the City's selection for HSIP funding of signal controller upgrades in the 2020 WSDOT City Safety Program, the interconnect project is expected to be implemented in 2023 and 2024.

Project Status: **Planned**

Port Angeles Transportation Project TR 0120

Signal Controller Upgrades 1st/Front



TIP project TR 0120 is the WSDOT City Safety Program funded project that resulted from grant applications in the City's 2020 Local Road Safety Plan. The project will upgrade signal controllers on 1st and Front Streets to allow for implementation of other signal operation safety improvements including interconnection, flashing yellow arrow or leading pedestrian interval.

Project Status: **Funded (HSIP)**

Port Angeles Transportation Project TR 0920

Lauridsen Blvd Flashing Beacons



TIP project TR 0920 will install flashing beacons at three crossings of Lauridsen Boulevard which were upgraded with refuge islands as part of an overlay in 2019. The three crossings are at Chase, Peabody and Eunice Streets. The flashing beacons will increase pedestrian safety and comfort crossing the high volume arterial. The project is expected to be installed in 2023.

Project Status: **Planned**

Port Angeles Transportation Project TR 0222

E 1st St, Front St, and Marine Dr Pedestrian Crossing Study and Enhancement

Project on City Streets and WSDOT Facilities



TIP project TR 0222 is the WSDOT City Safety Program funded project from the 2022 Local Road Safety Plan and HSIP grant application cycle. The project will address pedestrian crossing safety on 1st Street and Front Street through a review of all intersections, and installation of curb extensions, enhanced markings and RRFBs where warranted.

Project Status: **Funded (HSIP)**

Port Angeles Transportation Project TR 0618

Stevens Middle School Safe Routes to School



TIP project TR 0618 will improve pedestrian safety treatments to make bicycling, walking, and rolling to school safer for children and those with disabilities in alignment with the WSDOT Safer Routes to School Program purpose. The project on 10th and D Street will provide a lower traffic stress alternative from higher stress C Street. Improvements will include ADA curb ramps, pedestrian crossing safety signage and sidewalk. Improvements associated with this project are a logical extension of the 10th Street Boulevard Bicycle project enhancing mobility to achieve equitable access for children and pedestrians of all abilities and socioeconomic backgrounds.

Project Status: **Planned**

Program 1

Education and Enforcement for Stop-Controlled Intersections



The City may seek WTSC funding for increased police resources aimed at enforcement and public education campaigns to address safe intersection driving and adherence to posted stop signs in the City.

Project Status: **Planned**

Program 2

Red Light Cameras



Red light cameras are an option to enforce signalized straight and turning movements at intersections. While automated enforcement can reduce the incidence of angle collisions such as are occurring at Race Street at 1st Street and Race Street at Front Street, they can introduce new risks for rear end type crashes at intersections. Camera systems can either be purchased or leased from vendors for assessment of violations which are then coordinated with the Port Angeles Police Department to issue citations. Camera enforcement is part of the City's TIP, TR0919

Project Status: **Planned**

Program 3

Traffic Calming Program



Implementing a formalized traffic calming program with a public reporting mechanism, either through a website form or app will allow the City to collect feedback from system users and the police regarding traffic concerns. With defined criteria for responding to citizen concerns, such as thresholds for implementing certain speed calming techniques, and a defined yearly budget, a traffic calming program can help to reduce excessive speeds and raise awareness of locations, such as specific uncontrolled intersections, where drivers feel more at risk, independent of the number of crashes that have occurred at that location.

The City's speed feedback program, TIP 0321, will provide traffic calming benefits.

Project Status: **Planned**

Project 01

One-Block-Off Arterial Intersection Control

Project on City Streets



Several residential street corridors that are located one block off of arterials have a history of crashes within the study period. The corridors that are a priority based on recent crash history are:

- Laurel Street between 9th Street and 3rd Street (4 intersections: 3rd, 5th, 7th, and 9th)
- 6th Street between Vine Street and Oak Street (3 intersections: Vine, Chase, and Oak)
- E 2nd Street at S Francis Street and S Washington Street (2 intersections)

In the priority corridors, a program of mini roundabouts will be implemented at 4-way intersections. Roundabouts will be installed within existing limits of pavement by constructing a center circle of doweled rolled curb with a concrete fill, and painted splitter islands. Mini roundabouts provide for circular intersection movement which has been demonstrated to improve yielding at intersections and reduce the severity of crashes that do occur. Corridor-length roundabouts can also be a traffic calming measure for both speed and volume, which is a frequently a concern on residential streets near arterial roads. If the projects are successful as demonstrated by a reduced crash rate in future years in the three corridors, additional mini roundabouts may be constructed as part of the unfunded TIP project to address uncontrolled intersections. At each improved intersection, all existing curb ramps will be replaced to meet current ADA standards.

Roundabouts will not be installed at the existing controlled intersections of any of the corridors with 5th Street, 8th Street, Lincoln Street or Race Street. Existing stop control at intersections with the arterial corridors will be supplemented solar powered perimeter LED stop signs to enhance visibility.

The majority of intersections in Port Angeles are of two sizes; one with a 55-foot diagonal length through the intersection and one with a 65-foot diagonal length. Concepts for a mini roundabout at both intersection types are included in the Appendix. The specific design of each mini roundabout would be completed as part of the design of the project, if funded. The project is similar in scope to City project TR0220.

Follow-on phases of addressing other one-block-off arterial intersections would include the following corridors:

- 2nd Street between Vine Street and Eunice Street (3 intersections)
- 2nd Street between Chambers Street and Liberty Street (3 intersection)
- B Street between 17th Street and 9th Street
- Georgiana Street between Eunice Street and Ennis Street
- 7th Street between Vine Street and Oak Street (except at Lincoln Street)
- 4th Street at Oak Street, and between Eunice Street and Liberty Street (except Race Street)

Mini roundabouts could also be constructed at other 4-way intersections across the City where a combination of traffic speed and volume calming and intersection control are a risk factor. The specific locations for future phases of mini roundabout implementation would be identified in future editions of the LRSP.

The project is fully scalable to any number of intersections. If funded at a lower level than estimated or requested, the City could implement intersection control at intersections as funding allows, and pursue other intersections in later phases of the ongoing citywide safety project.

Estimated Project Cost: **\$1,974,000***

*Phase 1 Only

Project 02

Lincoln Street Safety Project

Project on City Streets and WSDOT Facilities



<https://www.cityofpa.us/913/Lincoln-Street-Safety>

Project 02 addresses a corridor within the City with a history of a risk for future crashes involving pedestrians, and improves the safety of a high volume intersection in the City for all modes. The project also is a logical extension of a recently completed pedestrian safety and connectivity project on Lincoln Street south of E 8th Street. The project proposes to install pedestrian and traffic treatments on Lincoln Street between 8th Street and Lauridsen Boulevard to improve safety. Key project elements addressing pedestrian safety will include:

- **Curb Extensions** constructed at crossings to limit exposure to traffic for pedestrians in crossings and provide a traffic calming benefit for through traffic by narrowing the roadway
- **Median Refuge Islands** at crossings to provide those with mobility challenges or slower walking speeds with a safe option to pause and navigate traffic lanes in single movements, rather than a combined crossing
- **Pedestrian Activated Beacons**, most likely rectangular rapid flashing beacons (RRFBs) with ADA compliant pushbuttons and curb ramps for increased visibility of pedestrians in crossings and ensuring access to users with mobility challenges

The key project element addressing vehicle safety is the construction of a **roundabout** at the intersection of Lauridsen Boulevard and Lincoln Street, replacing the existing large skewed approach intersection.

the existing intersection is a signal-controlled intersection. The existing signal is on a combination of mast arms and span wire. The signal would be removed and replaced with a roundabout. A roundabout would simplify crossings for active modes on all legs. Currently, pedestrians on the southeast side of the intersection must navigate three separate crossings between “porkchop” style median islands separating turning lanes for the signalized traffic. The roundabout would offer the opportunity to terminate the marked bike lanes on Lauridsen Boulevard into shared use paths around the roundabout. The current bike lanes end at Chase Street and cyclists must mix with traffic at the signal with Lincoln Street. The City right of way around the intersection is wide and likely would accommodate the roundabout without acquisitions.

The project will be split into two phases: construction of the pedestrian improvements and construction of the roundabout. Due to complexity, the roundabout is the first project phase.

Estimated Roundabout Phase Cost: **\$2,131,000**

Estimated Pedestrian Phase Cost: **\$1,421,000**

Project 03

Speed Feedback Signs

Project on City Streets



Project 03 is intended to address excessive speed which can be a compounding factor in several crash types, including roadside hazards, active transportation and one block off arterial intersections. While the rate of speed cited within the City limits is lower than in most cities, there is a concern with the speed of vehicles entering arterial corridors at the City limits. Because of the proximity to Olympic National Park, the waters of the Salish Sea, and the ferry connection to the City of Victoria, BC, Port Angeles sees a high number of tourists on its streets who may not be familiar with the City’s speed limits and roadway system. A program of solar powered speed feedback signs will help to educate drivers and reduce vehicle speeds as drivers enter the City limits.

Solar powered speed feedback signs are proposed for inbound traffic to the City on:

- Hurricane Ridge Road
- Edgewood Road (at Airport Road)
- Black Diamond Road
- Mount Angeles Road
- Golf Course Road
- Marine Drive
- Fairmont Avenue
- Delguzzi Drive

Additional speed feedback signs supporting planned City projects would be placed on:

- N Street (TIP Project TR1020)
- Near Franklin Elementary School (Lauridsen Blvd and S Washington St) (TIP Project TR1116)

The cost of the project includes engineering design of site selection, local management, costs for a self-contained solar powered speed feedback system including post, sign and panel, installation and a contingency.

Estimated Project Cost: **\$360,000**

Project 04

Install Perimeter-lit LED Stop Signs

Project on City Streets



Project 04 will install solar powered perimeter-lit LED stop signs in locations with a history of crashes where drivers have disregarded existing stop signs. The flashing LEDs increase the visibility of the sign, along with concurrent vegetation trimming by the City’s crews. At 2-way stop intersections, a “Cross Traffic Does Not Stop” (MUTCD sign W4- 4P) plaque will be installed on the existing stop signs. The locations for perimeter-lit signs are:

- S Airport Road and Lauridsen Boulevard (2-way)
- C Street and W 8th Street (4-way)
- W 2nd Street and Valley Street (2-way)
- Peabody Street and 6th Street (2-way) (A warrant analysis will be performed to evaluate a potential 4-way stop condition)
- Francis Street and 5th Street (2-way)
- Race Street and 2nd Street (2-way)
- Washington Street and 8th Street (2-way) (A warrant analysis will be performed to evaluate a potential 4-way stop condition)

The manufacturer’s warranty period for perimeter-lit signs is 3 years. The batteries for these signs are guaranteed within that period, but are expected to last up to 5 years. The replacement cost for batteries is \$125 per sign. The cost of the project includes the warrant analyses for the two noted 2-way stop controlled intersections, engineering design, local management, of-the-shelf pricing for the products and a contingency. Several vendors are available to provide the signs, if selected for funding.

Estimated Project Cost: **\$220,000**

Project 05

Fog Lines on 8th Street

Project on City Streets



Visibility of the location of on-street parking on 8th Street may be contributing to the high number of crashes involving parked vehicles in the corridor. To address the risk of crashes with parked vehicles, a marked fog line will be placed on both sides of the street to delineate the on-street parking lane in three areas:

- Peabody Street to Cherry Street
- Pine Street to Cedar Street
- A Street to C Street

The striping project will be implemented as part of future pavement maintenance on 8th Street, using local or other grant funding.

Project 06

Enhancement of Horizontal Curve Signs on Front Street

Project on WSDOT Facilities



The City has already installed MUTCD-standard chevron signage on Front Street for westbound traffic at Golf Course Road and at the transition to Marine Drive. At both locations, Front Street, which is otherwise a mainly straight alignment, turns to form the couplet with 1st Street. At both locations, there have been crashes involving roadside objects. Existing chevron signs will be enhanced with perimeter LED lighting for increased visibility, especially during dark or rainy and foggy conditions. The power source for the signs would

be solar, considering the good southern exposure at both sites. The existing signs would need to be replaced with the perimeter lit signs, but existing sign locations and posts would not need to be replaced. A total of 3 signs at Golf Course Road and 4 signs at the transition to Marine Drive will be replaced. The enhanced signage may require coordination with and approval of WSDOT as it occurs on 1st Street which is controlled by WSDOT. The project may be completed through the use of local funding.

Estimated Project Cost: **\$49,000**



Chapter 5

Future Updates

The Local Road Safety Plan is planned for future updates on a biennial basis, aligned with the WSDOT funding cycle for HSIP funding. Future updates will document projects completed and repeat the analysis of the data to identify any changes from the current analysis and risk factors.

LRSP UPDATE PROCESS

1 Update to 2020-2024 data

2 Revisit data and spatial analysis

3 Identify new countermeasure projects matched to risk factors

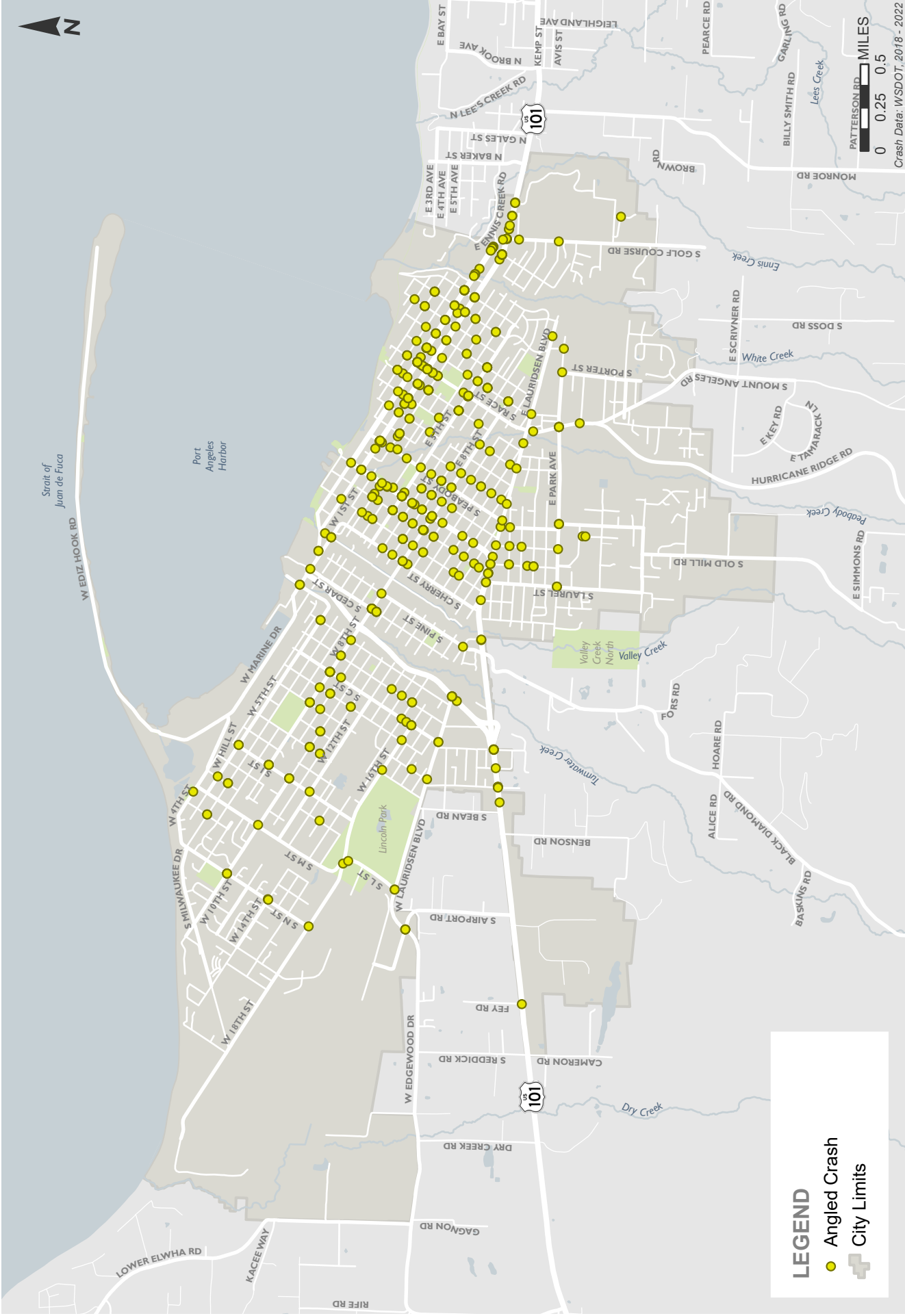
4 Update risk factors and prioritized projects





Appendix

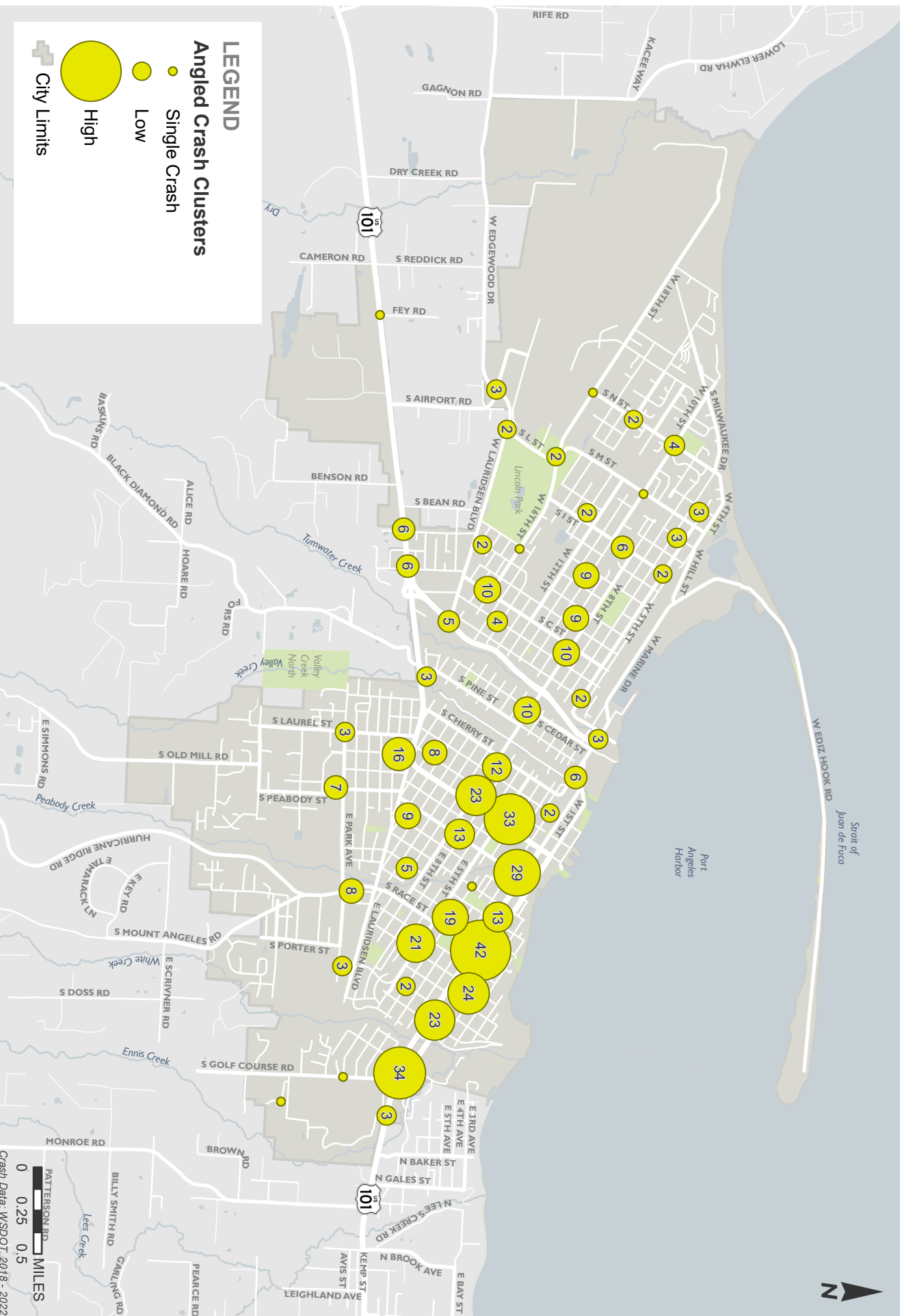




FIGURE

1





Angled Crashes (Clustered)

City of Port Angeles Local Road Safety Plan



1A

FIGURE

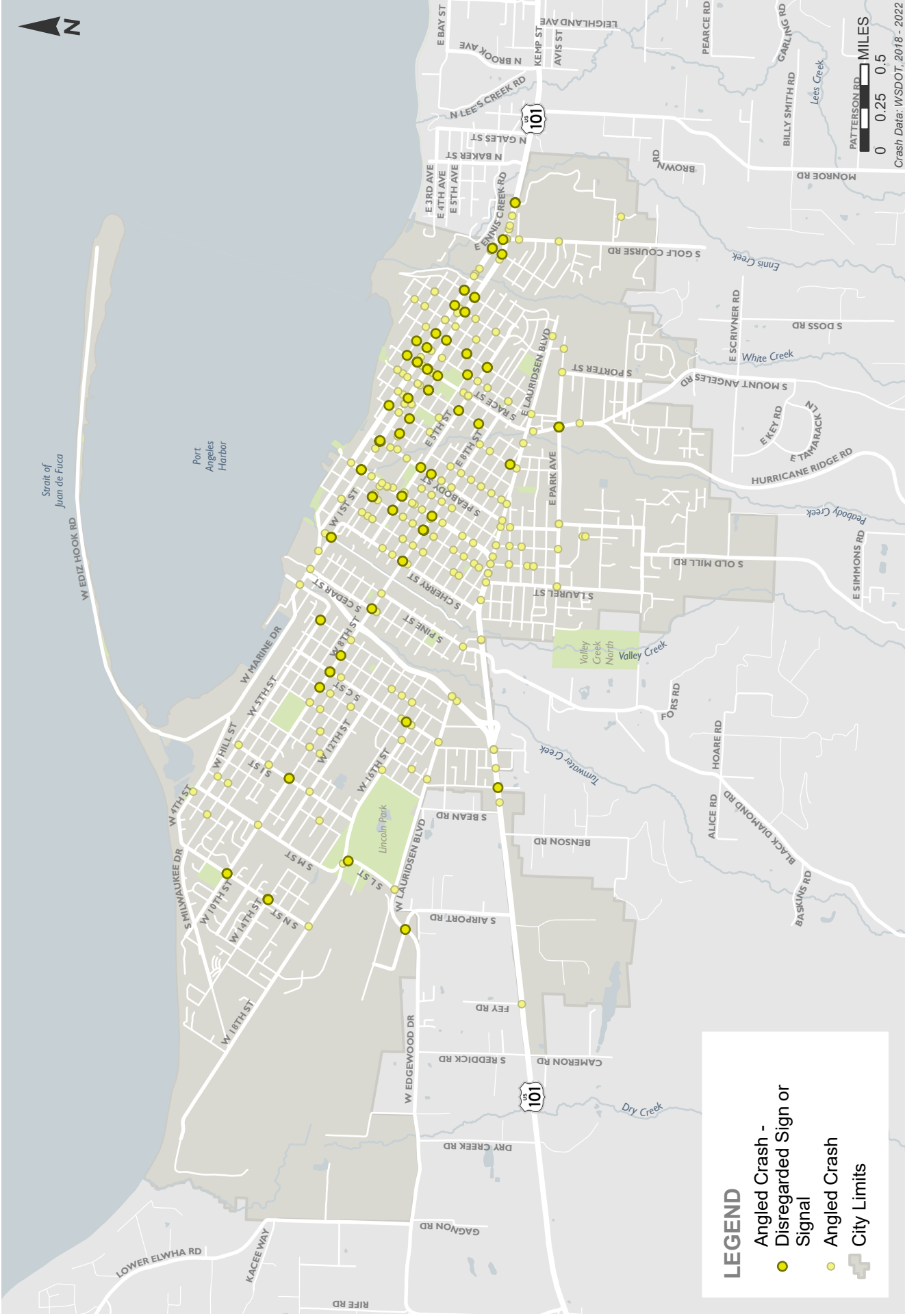
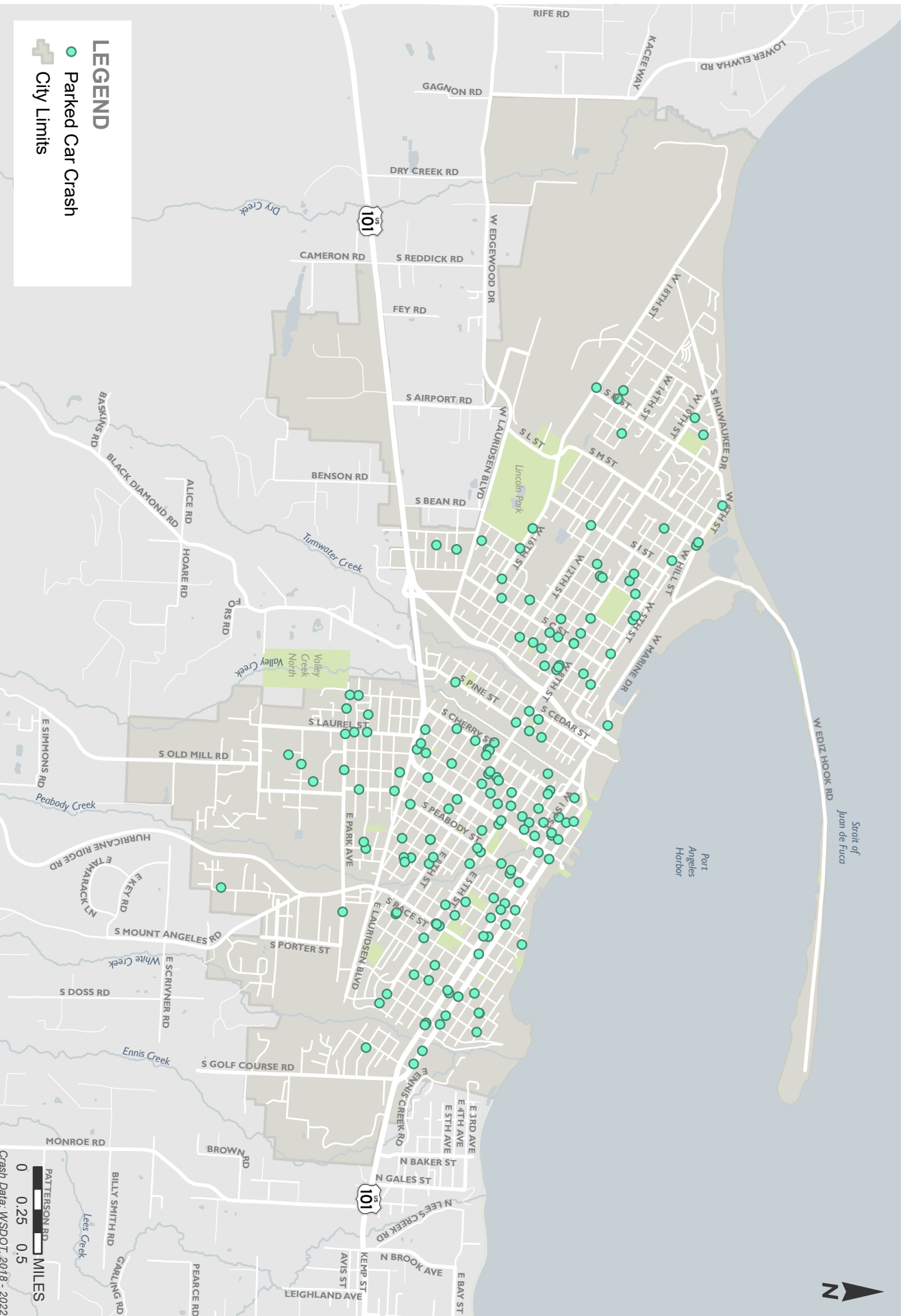


FIGURE 2

Angled Crashes - Driver Disregards Sign / Signal

City of Port Angeles Local Road Safety Plan





LEGEND

- Parked Car Crash
- City Limits

0 0.25 0.5
 PATTERNSON RD
 MILES
 Crash Data: WSDOT, 2018 - 2022

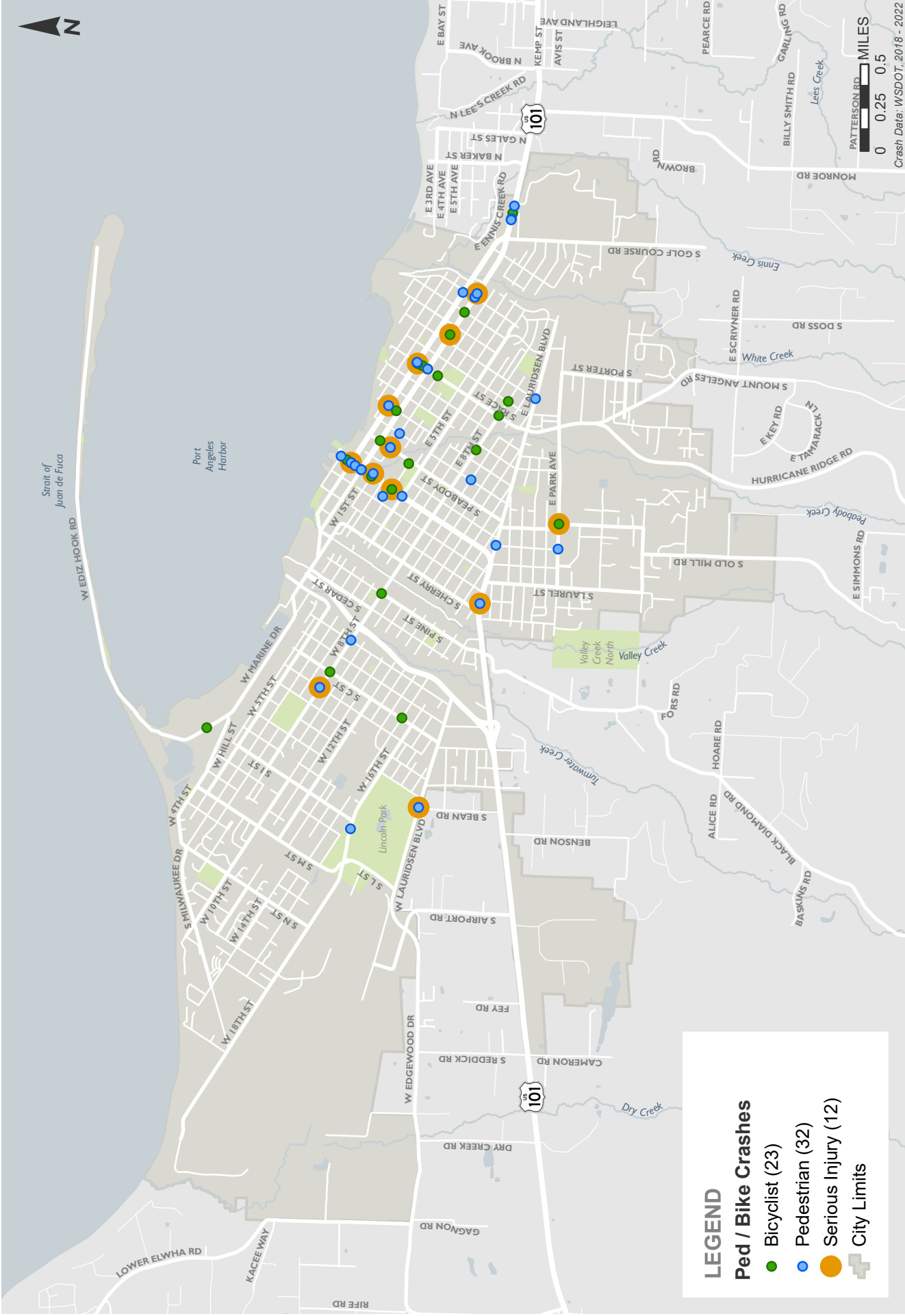


Parked Car Crashes

City of Port Angeles Local Road Safety Plan



FIGURE



Pedestrian and Bicycle Crashes

City of Port Angeles Local Road Safety Plan

FIGURE



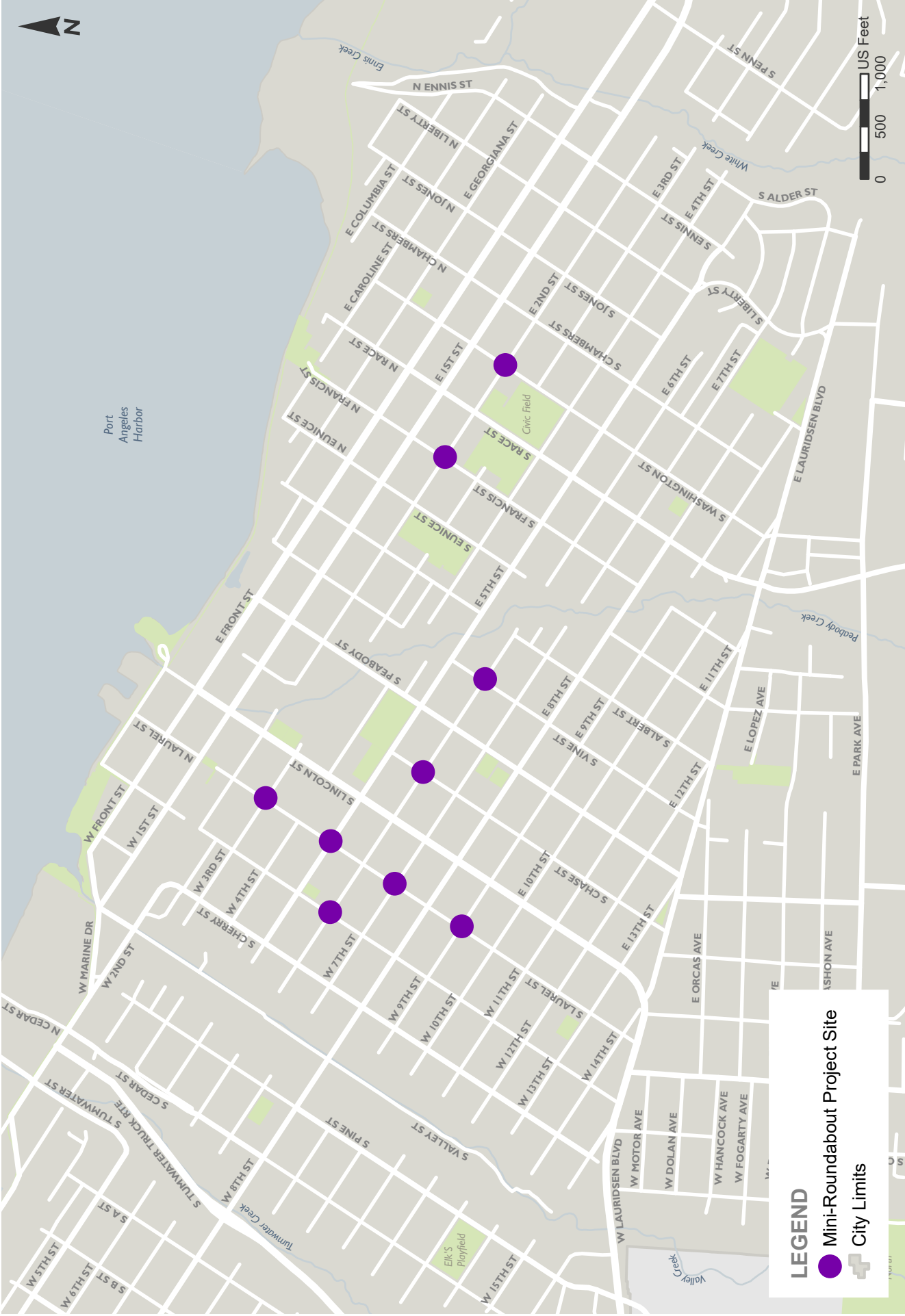
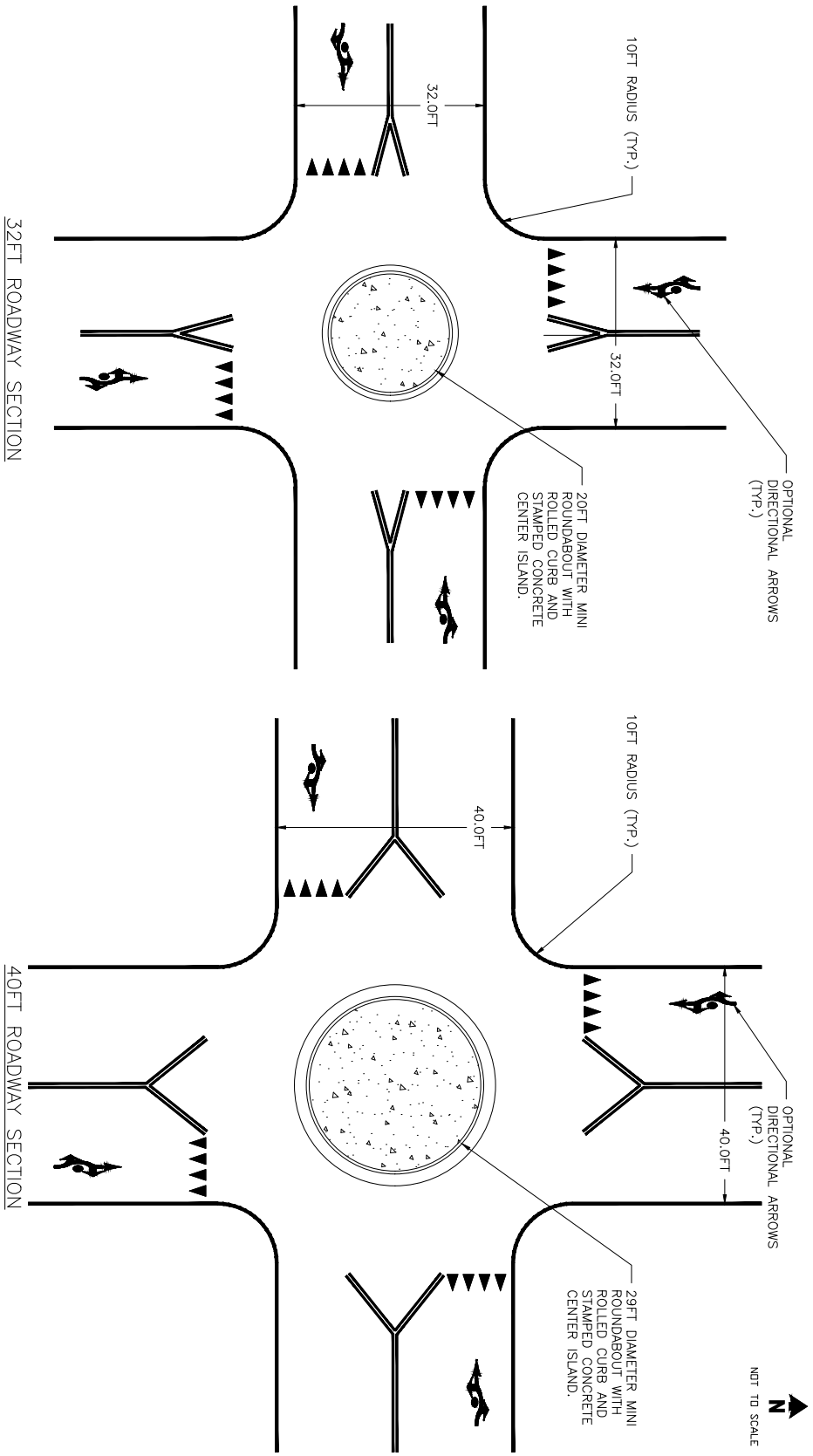


Figure 6

One-Block-Off Arterial Intersection Control

City of Port Angeles Local Road Safety Plan



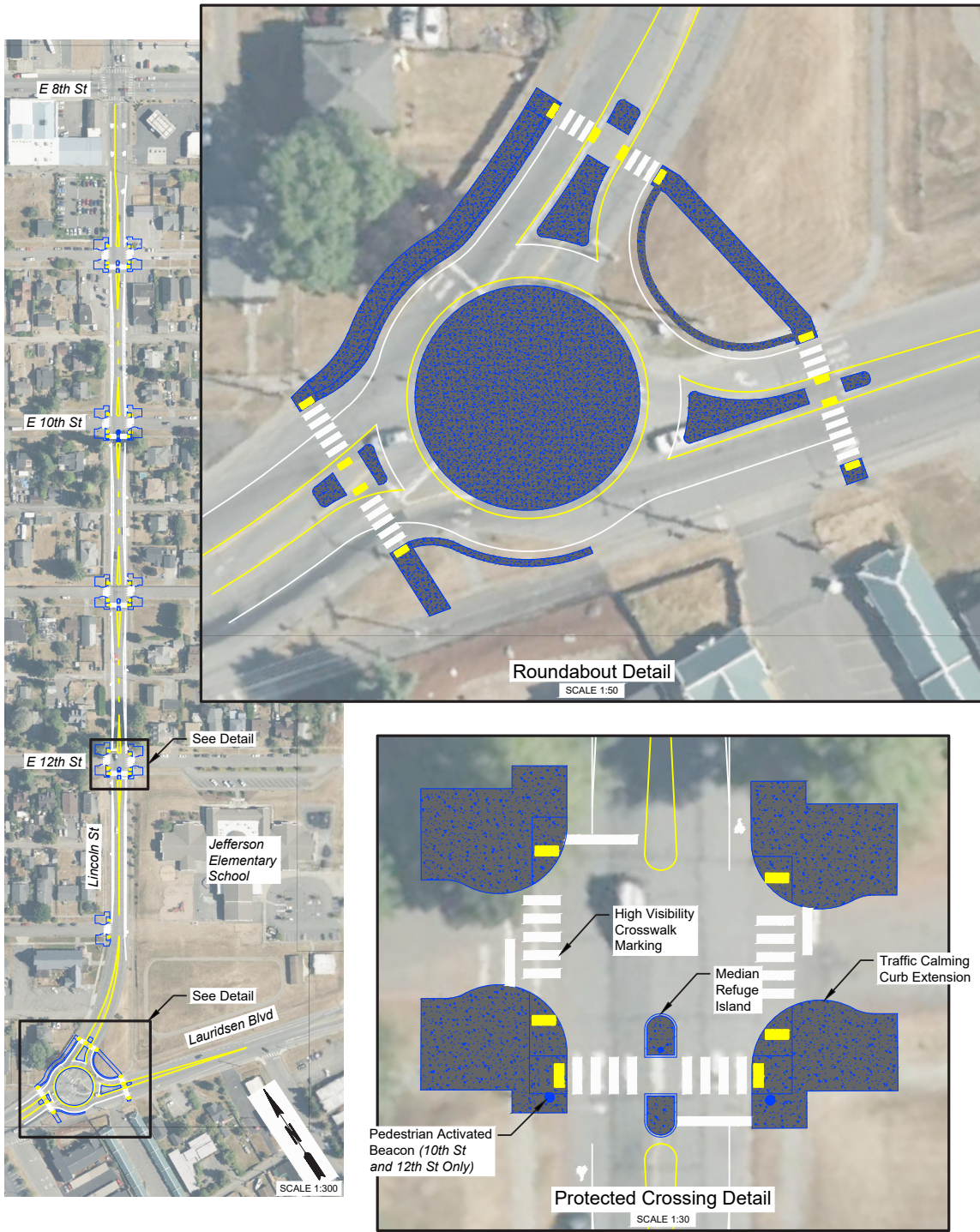


Mini Roundabout Conceptual Layouts

1.19338.00 - Port Angeles Local Road Safety Plan

M:\19\19338\00 - Port Angeles Local Road Safety Plan\Engineering\CAD\Conceptual\Mini Roundabout Layouts NE 38TH





PROJECT LIMITS: LINCOLN ST, LAURIDSEN BLVD TO E 8TH ST

Project 02 - Lincoln Street Safety Project

1.24020.00 - Redmond SS4A Action Plan

Feb 01, 2024 - 11:49am olivabrics M:\24\124020.00 - Port Angeles 2024 LRSP Update\Engineering\CAD\Conceptual\24020-TG-Concepts.dwg Layout Project 02

CONCEPT SKETCH
PORT ANGELES LOCAL ROAD SAFETY PLAN

