Appendix F. Figure Descriptions

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This appendix includes written descriptions of all figures included in this Technical Report. If needed, additional figure interpretation is available from the ODOT Senior Environmental Project Manager at (503) 731-4804.

Figure Number	Figure Title	Figure Description
1	Project Area	Figure 1 shows the Project Area. The Project Area includes a 1.7-mile segment of Interstate 5 (I-5), beginning north of Interstate 405 (I-405) at milepost 303.2, extending south to the Burnside Bridge just south of Interstate 84 (I-84) at milepost 301.5. The Project Area also includes the interchange of I-5 and N Broadway and NE Weidler Street (Broadway/Weidler interchange) and the surrounding transportation network, from approximately N/NE Hancock Street to the north, N Benton Avenue to the west, N/NE Multnomah Street to the south, and NE 2nd Avenue to the east. Figure 1 also shows the Willamette River to the west of the Project Area and the following four bridges (from north to south): Fremont Bridge, Broadway Bridge, Steel Bridge, and Burnside Bridge. The Project Area includes segments of both I-5 and I-84.
2	Auxiliary Lane/ Shoulder Improvements	Figure 2 shows the locations of the proposed auxiliary lanes and shoulder improvements on I-5. One new northbound (NB) auxiliary lane would be added to connect the I-84 westbound on-ramp to the N Greeley Avenue off-ramp. A new southbound (SB) auxiliary lane would extend the existing auxiliary lane that enters I-5 SB from the N Greeley on-ramp. The extent of proposed auxiliary lanes and shoulder improvements begin near where I-5 crosses over N Russell Street and extends south to I-84. Figure 2 also shows the Project Area.
3	I-5 Auxiliary (Ramp-to-Ramp) Lanes – Existing Conditions and Proposed Improvements	Figure 3 shows the existing and proposed auxiliary lane configurations from the N Greely on-ramp extending south to the SB Morrison Bridge off-ramp. Existing conditions are shown on the left and proposed improvements are shown on the right. Existing SB conditions include two SB lanes and three on-ramps (listed from north to south): N Greeley, I-405/N Fremont Street, and N Wheeler Avenue and three off-ramps (listed from north to south): N Broadway, I-84, and Morrison Bridge. There are existing auxiliary lanes between the N Greeley on-ramp extending to just south of the N Broadway off-ramp, the I-405/N Fremont on-ramp and N Broadway off-ramp, and N Wheeler on-ramp and I-84 off-ramp. Existing NB conditions include two NB lanes and two on-ramps (listed from south to north): I-84 and N Broadway and two off-ramps (listed from south to north): N Weidler, I-405/N Fremont, and N Greeley. There are existing auxiliary lanes between the I-84 on-ramp and N Weidler off-ramp and between the N Broadway on-ramp and I-405/N Fremont off-ramp. For proposed improvements, the on-ramps and off-ramps are the same as those shown for existing conditions, and all existing auxiliary lanes remain. There is one new SB proposed auxiliary lane that results in a continuous auxiliary lane from the N Greeley on-ramp extending south to the Morrison Bridge off-ramp. There is one NB proposed auxiliary lane that results in a continuous auxiliary lane from the I-84 on-ramp north to the N Greeley off-ramp. Two additional proposed NB auxiliary lane segments also extend the existing auxiliary lane between the I-84 on-ramp and N Weidler off-ramp.

Figure Number	Figure Title	Figure Description
4	I-5 Cross Section (N/NE Weidler Overcrossing) – Existing Conditions and Proposed Improvements	Figure 4 shows a cross section comparison of existing and proposed conditions of I-5 south of the N/NE Weidler overcrossing within the Broadway/Weidler interchange area. Existing conditions are shown on the top and are the same for NB and SB traffic and include an inside and outside shoulder of varying width and two 12-foot lanes. Proposed lane configuration is shown below the existing conditions and is the same for NB and SB traffic and include an inside and outside shoulder, two through lanes, and one auxiliary lane. All shoulders and lanes are 12 feet wide.
5	Broadway/ Weidler/ Williams and Vancouver/ Hancock Highway Covers	Figure 5 shows a rendering of the Broadway/Weidler/Williams and Vancouver/Hancock highway covers. The Broadway/Weidler/Williams cover appears as a green space that spans east-west across I-5, extending from immediately south of N/NE Weidler to immediately north of N/NE Broadway. The entire block between N/NE Weidler, NE Victoria Avenue, N/NE Broadway, and N Williams is all shown as a green space covering I-5. The Vancouver/Hancock cover is located farther to the north and appears as a smaller green space extending northwest and southeast from N Vancouver Avenue at its intersection with N/NE Hancock. Proposed bike lanes are also shown along N/NE Weidler, N Williams, N Vancouver, N/NE Broadway, and N/NE Hancock.
6	Broadway/ Weidler Interchange Area Improvements	Figure 6 shows locations of improvements to the Broadway/Weidler interchange between I-5, the interchange, and the local street network. Improvements are labeled with letters A through H. The Broadway/Weidler/Williams cover spans east-west across I-5, extending from immediately south of N/NE Weidler to immediately north of N/NE Broadway. The Vancouver/Hancock cover is located farther to the north and appears as a smaller green space extending northwest and southeast from N Vancouver at its intersection with N/NE Hancock. Both covers are indicated by the letter "A." Letter "B" is located near the bottom of the figure and shows how the I-5 SB on-ramp would be relocated by having it begin one block farther north at N/NE Weidler instead of N Ramsay Way, where the existing ramp begins. Letter "C" located near the middle of the figure shows the segment of N Williams between N Ramsay and N Weidler that would be closed to private motor vehicles. Letter "D" located near the middle of the figure shows the location of where traffic flow on N Williams between N/NE Weidler and N/NE Broadway would be converted to a reverse traffic flow two-way street with a 36-foot-wide median. Letter "E" shows the location of the proposed Hancock-Dixon crossing that extends from the intersection of N Dixon Street and N Wheeler east to N Williams and N/NE Hancock. Letter "G" indicates the location where N Flint Avenue would be removed beginning at N Tillamook Street and extending south to N Broadway. Letter "H" shows the location of the proposed Clackamas bicycle and pedestrian bridge, located south of N/NE Weidler to connect NE Clackamas Street with N Williams. The Project Area boundary and proposed auxiliary lanes and shoulders are also shown on the figure.
7	Conceptual Illustration of Proposed N Williams Multi-Use Path and Revised Traffic Flow	Figure 7 shows a rendering of the proposed N Williams multi-use path and reverse traffic flow. The foreground in the bottom half of the rendering shows the multi-use path as an extension of the sidewalk to the west (left) of N Williams. The top half of the rendering shows two SB traffic lanes to the east (right) of the multi-use path/median and two NB traffic lanes to the west (left) of the multi-use path/median. The Broadway/Weidler/Williams cover is shown as green space to the east (right) of N Williams SB traffic lanes.
8	Clackamas Bicycle and Pedestrian Crossing	Figure 8 shows a rendering of the Clackamas bicycle and pedestrian crossing. The crossing is shown as a curved elevated path crossing I-5, connecting NE Clackamas on the east side of I-5 to N Williams on the west side of I-5. Green bicycle lanes are also shown on either side of N Williams, located just west of I-5.

Figure Number	Figure Title	Figure Description
9	Transportation Area of Potential Impact	Figure 9 shows the Project Area boundary (as shown in Figure 1) and the Area of Potential Impact (API) boundary for the transportation safety study. The API includes the entire Project Area and an additional portion of N Broadway on the west. The Project Area extends west on N Broadway to N Benton. The API extends west on N Broadway to N Larrabee Street, which is west of N Benton.
10	Local Street Study Intersections	Figure 10 shows the API boundary from N Page Street in the north to NE Oregon Street in the south and the 14 study intersections (13 existing and 1 [N Vancouver/N Hancock] that only exists for the Build Alternative). Ten intersections are on N/NE Weidler and N/NE Broadway spanning from the N Broadway and N Larrabee intersection in the west to the NE Broadway and NE Weidler intersections with NE 2nd in the east. Three intersections are on N/NE Hancock at N Flint, N Vancouver, and N Williams. One intersection is south of N/NE Weidler at N Wheeler/N Williams/N Ramsay.
11	I-5 Corridor – Crashes Based on Severity (2011–2015)	Figure 11 is a circular pie chart showing the number and percentage of crashes categorized by severity, in different colors for the period 2011 to 2015. Filling the left side of the circle, in yellow, a majority of the crashes (387 or 51 percent) are shown having no injury involved. Occupying most of the right side of the circle, in orange, there are 305 (40 percent) of the crashes shown with minor injuries; a small portion of the upper right side of the circle is shown in red indicating that 56 (8 percent) of the crashes had moderate injuries, a sliver at the top right side of the circle, in green, identifies 6 (1 percent) crashes with serious injuries, and a very narrow sliver, in blue, shows 1 (less than 1 percent) crash resulting in a fatality.
12	SPIS Segments in the Project Area	Figure 12 shows the Project Area boundary and Safety Priority Index System (SPIS) scores for three segments of I-5. The NB and SB I-5 segments between mileposts 302.75 and 302.82 (length of 0.07 mile, south of the I-405 NB off-ramp) are in the top 10 percent of SPIS scores with a score of 57.11 and an annual average daily traffic (AADT) number of 123,340. Immediately south, the NB and SB segments between mileposts 302.52 and 302.75 (0.23 mile) are in the top 5 percent of SPIS scores statewide with a score of 79.93 and an AADT of 123,340. Farther south (in the area from around the Moda Center to the Steel Bridge), the NB and SB segments between mileposts 301.84 and 302.12 (0.28 mile) are in the top 5 percent of SPIS scores statewide with a score of 80.97 and an AADT of 123,680.
13	I-5 Corridor – Crashes by Hour of Day (2011–2015)	Figure 13 is a bar graph showing the number of I-5 corridor crashes by hour of day for the study period 2011 to 2015. The x-axis shows hours of the day, from 12 AM on the left to 11 PM on the right. Crashes occurring at an unknown time are documented at the far right of the x-axis. The y-axis shows number of crashes for both NB and SB I-5 travel directions. Most of the crashes are in the SB direction, from 11 AM to 6 PM and are shown by blue bars. The highest numbers of SB crashes are at 3 PM and 5 PM (70 crashes for each hour) and the shoulders of the curve, if a curve was imposed on the bars, are at 11 AM and 6 PM with about 40 and 35 crashes, respectively. The periods on either side of 11 AM and 6 PM show fewer than 20 crashes, with most showing fewer than 10. NB crash peaks, shown by yellow bars, are at 2 PM, 4 PM, and 5 PM; each hour shows about 20 crashes. 12 PM, 3 PM, and 6 PM each show about 15 crashes, and the remaining periods show 10 or fewer.

Figure Number	Figure Title	Figure Description
14	I-5 Corridor – Crashes by Year (All Severities, 2011–2015)	Figure 14 is a bar graph showing the number of crashes by year for the study period 2011 to 2015; it shows crashes for both directions, in blue bars, and by subsets for NB, in red bars, and SB in green bars. Total crashes per year have declined from (numbers are approximate) around 160 in 2011 to 145 in 2015. SB crash numbers show no overall trend and range from 100 to 120 per year. NB crash numbers show no overall trend and range from 25 to 50 per year.
15	I-5 Corridor – Crash Contributing Factors (2011–2015)	Figure 15 is a circular pie chart showing the numbers and percentages of factors contributing to crashes for the study period 2011 to 2015. A majority of crashes in the period, shown in blue occupying the entire right side, and part of the lower bottom left side of the circle, were due to following too close (476, 63 percent), followed by improper lane change (120, 16 percent) shown in pink on the left center side of the circle, and failure to avoid (70, 9 percent) shown in red near the upper left part of the circle; the remaining 89 (12 percent) are shown in small wedges at the upper left of the circle and are attributed to other causes including inattention (in green), driving too fast (in dark blue), other improper (in yellow), and all other (in orange).
16	I-5 Corridor – Crash Causes for Fatal and Serious Injury Collisions (2011–2015)	Figure 16 is a circular pie chart showing the numbers and percentages of causes of fatalities and serious injuries resulting from crashes during the study period (2011-2015. A majority of these types of crashes result from following too close (4, 57 percent). This is followed by one crash (14 percent) each for being in the roadway illegally, inattention, and reckless driving. (Note that one of the last three causes is labeled as 15 percent so the sum for the pie chart equals 100.)
17	I-5 Corridor – Collision Types (2011–2015)	Figure 17 is a circular pie chart showing the numbers and percentages of four types of collisions, from 2011-2015 data. Most are rear-end collisions (595, 80 percent), followed by side swipe overtaking (129, 17 percent), fixed object (17, 2 percent), and turning collisions (9, 1 percent).
18	Corridor Segmentation and Crash Rates	Figure 18 shows I-5 from north of I-405 to the Burnside Bridge. SB is broken up into seven segments on the left side of the figure, and NB is broken up into six segments on the right side of the figure. Each segment is shown as either being below or exceeding the statewide average crash rate of 0.77 crashes per million vehicle miles travelled. Segment 1 for both NB and SB is at the north end of the corridor. SB Segment 1 (the half-mile segment north of the SB N Greeley on-ramp) is the only segment below the average with a crash rate of 0.53. The remaining SB segments progressing south have rates (and lengths) of 1.25 (0.17 mile), 4.94 (0.32 mile), 1.46 (0.57 mile), 15.71 (0.11 mile), 3.25 (0.21 mile), and 0.95 (0.13 mile). NB has three segments that are below the average crash rate: Segments 1, 4, and 6. North to south, the rates (and lengths) for the six segments are as follows: 0.7 (0.19 mile), 1.29 (0.2 mile), 2.67 (0.08 mile), 0.44 (0.58 mile), 5.66 (0.13 mile), and 0.51 (0.39 mile). More details are available in Appendix B of this technical report.

Figure Number	Figure Title	Figure Description
19	Total Number of Crashes (by Mode)	Figure 19 is a bar graph showing the total number of crashes for three modes (pedestrian, bike, and motor vehicle) for each of the 13 study intersections during the study period (2011-2015). Crashes involving motor vehicles dominate the graph and are shown by blue bars. Only two intersections had pedestrian-involved crashes, and are shown in red, and seven had bicycle-involved crashes, shown in green. There are five intersections, shown by the longest bars, that stand out as having the highest total crashes (ranging from 30 to 43): three along N/NE Weidler at N Vancouver, N Williams, and NE Victoria; and two along N/NE Broadway at N Williams and NE Victoria. Detailed data are available in Appendix C of this technical report.
20	Crash Severity Distribution	Figure 20 is a bar graph showing the numbers and severity of the crashes for each of the 13 study intersections during the study period (2011-2015). Four levels of severity are listed in the legend: Type A injuries (Incapacitating Injury), shown by green bars; Type B (Non-Incapacitating but Evident Injury), shown by red bars; Type C (Possible Injury), shown by orange bars; and PDO (Property Damage Only), shown by yellow bars. PDO crashes appear as a majority of the crashes and have the longest bars, followed by Type C crashes. Detailed data are available in Appendix C of this technical report.
21	Collision Type Crash Distribution	Figure 21 is a bar graph showing the numbers and types of crashes for each of the 13 study intersections during the study period (2011-2015). Twelve types of crashes are listed in the legend. Turning movement crashes appear to be the primary crash type and are shown by green bars. Angle and rear-end crashes appear as the next most common types of crashes, shown by blue and red bars, respectively. Number of crashes per intersection range from 1 at N Flint/N Hancock to 43 at NE Victoria/NE Broadway. Detailed data are available in Appendix C of this technical report.
22	Pedestrian/ Bike Crashes (by Severity)	Figure 22 is a bar graph showing the numbers and injury types of crashes for the 13 study intersections during the study period (2011-2015). There are five types of crashes in the legend: Types A and B pedestrian, shown by red bars, and pink bars; and Types A, B, and C bicycle, shown by dark blue, medium blue, and light blue bars. Only eight intersections had crashes involving pedestrians and/or bicycles. Most crashes are either Type B (medium blue bars) or Type C (light blue bars) crashes involving bicycles. Detailed data are available in Appendix C of this technical report.
23	Crash Distribution by the Time of Day	Figure 23 is a bar graph showing the numbers and times of occurrence of crashes in the 13 study intersections during the study period (2011-2015). Five time periods are listed in the legend—Midnight to 7 AM, AM Peak (7 to 9 AM), 9 AM to 4 PM, PM Peak (4 to 6 PM), 6 PM to Midnight, and one category labeled Unknown. The time period that stands out for most crashes, with the longest bars, is 9 AM to 4 PM. Detailed data are available in Appendix C of this technical report.

Figure Number	Figure Title	Figure Description
Appendix E	I-5 Rose Quarter Emergency Braking Heatmap – Existing Condition	The figure shows four emergency breaking heatmaps for Existing Conditions for the I-5 corridor in the Project Area: two for the AM Peak, NB and SB; and two for the PM Peak, NB and SB. Green and blue indicate the least occurrence of emergency braking with yellow and red indicating higher occurrence of emergency braking. The NB AM Peak is all blue except for greenish spots from south of the N Broadway off-ramp and to south of the I-405 off-ramp. The SB AM Peak is yellow from the north approaching the N Going Street on-ramp; greenish to the N Greeley on-ramp; yellow to the N Broadway off-ramp; blue to the N Wheeler on-ramp; greenish just south of the N Wheeler on-ramp; and continues blue. The NB PM Peak has greenish spots from south of the N Broadway off-ramp to south of the I-405 off-ramp; yellow from north of the I-405 off-ramp to the I-405 on-ramp; red fading to yellow to south of the N Going off-ramp; the blue to the north. The SB PM Peak shows greenish yellow approaching the N Greeley on-ramp; reddish yellow to the N Broadway off-ramp; greenish to south of the N Wheeler on-ramp; then blue continuing south.
Appendix E	I-5 Rose Quarter Emergency Braking Heatmap – Future Year 2045 No-Build	The figure shows four emergency breaking heatmaps for No-Build Conditions for the I-5 corridor in the Project Area: two for the AM Peak, NB and SB; and two for the PM Peak, NB and SB. Green and blue indicate the least occurrence of emergency braking with yellow and red indicating higher occurrence of emergency braking. Both NB and SB look the same as for Existing Conditions. The NB AM Peak is all blue except for greenish spots from south of the N Broadway off-ramp and to south of the I-405 off-ramp. The SB AM Peak is yellow from the north approaching the N Going on-ramp; greenish to the N Greeley on-ramp; yellow to the N Broadway off-ramp; blue to the N Wheeler on-ramp; greenish just south of the N Wheeler on-ramp; and continues blue. The NB PM Peak looks the same as the NB AM Peak. The SB PM Peak looks the same as the Existing Conditions SB PM Peak: greenish yellow approaching the N Greeley on-ramp; reddish yellow to the N Broadway off-ramp; greenish to south of the N Wheeler on-ramp; then blue continuing south.