



Sidewalk Condition Assessment

CITY OF OLYMPIA



March 16, 2025

Prepared by:



**CROSS
REITER** civil +
geotechnical
engineers



City of Olympia

Sidewalk Condition Assessment

City of Olympia
Olympia, Washington

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Prepared by: Cross Reiter, Inc.

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Table of Contents

1	Executive Summary.....	4
2	Introduction and Background.....	5
3	Existing Sidewalk Network.....	6
4	Sidewalk Condition Assessment Results.....	7
4.1	Overview of Results and Aggregate Scores.....	7
4.1.1	Hexagonal Binning.....	8
4.1.2	Sidewalk Condition Index Scores	8
4.2	Severe Sidewalk Damage	10
4.3	Results by Damage Type.....	11
4.3.1	Panel Uplift, Cracking, Spalling, and Non-Flush Vaults	11
4.3.1.1	Panel Uplift	11
4.3.1.2	Cracking and Spalling.....	14
4.3.1.3	Non-Flush Utility Vaults.....	15
4.3.2	Width Restrictions	16
4.3.3	Missing Panels	17
4.3.4	Damaged Detectable Warning Surfaces	17
4.3.5	Other Miscellaneous Observations	18
5	Limitations.....	19

List of Tables

Table 1 – Selected City Blocks Exhibiting Notable Sidewalk Damage

List of Photographs

Photographs 1 – Representative High Severity Sidewalk Damage

Photographs 2 – Representative Panel Uplift Damage

Photographs 3 – Representative Cracking and/or Spalling Damage

Photographs 4 – Representative Non-Flush Utility Vault Damage

Photographs 5 – Representative Width Restrictions

Photographs 6 – Representative Missing Sidewalk Panels

Photographs 7 – Representative Damaged Detectable Warning Surfaces

List of Charts

(within text)

Chart 1 – Sidewalk Widths

Chart 2 – Types of Sidewalk Damage

Chart 3 – Sidewalk Condition Index Scores

Chart 4 – High Severity Sidewalk Damage

Chart 5 – Contribution of Trees to Panel Uplift

Chart 6 – Trees Causing Panel Uplift

Chart 7 – Contribution of Vehicular Loading to Cracking/Spalling

Chart 8 – Non-Flush Utility Vault Details

Chart 9 – Width Restriction Details

List of Figures

(following text)

Figure 1 – Existing Sidewalk Network

Figure 2 – Existing Sidewalk Widths

Figure 3 – Sidewalk Condition Assessment Summary

Figure 4 – Sidewalk Condition Index Scores

Figure 5 – Lowest Scoring Sidewalks

Figure 6 – Severe Sidewalk Damage

Figure 7a through **Figure 7g** – Detailed Sidewalk Condition Results

Figure 8 – Width Restrictions

Figure 9 – Missing Panels

Figure 10 – Damaged Detectable Warning Surfaces

Figure 11 – Miscellaneous Observations

List of Appendices

Appendix A – Data Collection Criteria and Methodology Memorandum

Appendix B – Aggregate Scoring Methodology

Appendix C – Tabular Summary of Lowest Scoring Sidewalk Segments

1 Executive Summary

This report presents the results of a sidewalk condition assessment Cross Reiter, Inc. (Cross Reiter) completed for the City of Olympia (City). The purpose of this assessment was to document the nature and extent of sidewalk damage within the City limits and inform future City policy decisions related to sidewalk maintenance, repair, and replacement.

Cross Reiter identified and mapped 226 linear miles of sidewalks for this assessment. The extent of the sidewalk network is shown on **Figure 1**. Sidewalk coverage on City streets is most consistent and widespread around the central downtown core and immediately adjacent areas. Coverage and connectivity decrease in outlying areas. Most sidewalks are at least 5 feet wide, especially on arterials and major collectors. Virtually all sidewalks were constructed with concrete pavement.

Cross Reiter engineers traversed every sidewalk panel in the City right-of-way and collected approximately 27,820 unique data points documenting the type and severity of observed sidewalk damage and other deficiencies. Nearly 98 percent of the data were categorized as (1) panel uplift, (2) cracking and/or spalling, or (3) non-flush utility vaults. Cross Reiter also calculated aggregate scores to summarize the density and severity of sidewalk damage across the City. The results are presented on **Figure 3** and **Figure 4**. **Figure 3** utilizes a hexagonal binning technique to minimize the impact of small-scale variability and highlight broader trends and concentrations of sidewalk damage. **Figure 4** presents an overall Sidewalk Condition Index (SCI) score for each sidewalk segment. The highest concentration of damaged sidewalks is generally located in Downtown Olympia. Other notable locations include South Capitol and relatively isolated areas on the Eastside, in Southwest Olympia, in Northwest Olympia, and along the arterials and major collectors bordering the Capital Mall area. Several residential subdivisions across the City also exhibit notably dense and severe sidewalk damage. **Appendix C** and **Figure 5** summarize the lowest scoring sidewalk segments across the City and can be used together to facilitate planning and prioritization of maintenance and capital improvements.

Cross Reiter identified approximately 1,458 high severity damage locations where full replacement of one or more sidewalk panels is likely required. All high severity damage locations are shown on **Figure 6**. An additional 4,305 moderate severity damage locations were observed throughout the City, which may or may not require full panel replacements but are a high priority for timely maintenance or repair (e.g., grinding/beveling uplifted panels, crack repair, partial panel replacements). Together, these 5,763 high severity and moderate severity damage locations comprise a potential scope of high priority sidewalk repair work. Additional data on width restrictions, missing panels, and damaged detectable warning surfaces were also collected for this assessment and are shown on **Figure 8** through **Figure 10**, respectively. Together, these comprise an additional 659 discrete maintenance/repair tasks.

All geospatial data collected as part of this assessment has also been delivered to the City in a separate digital deliverable.

2 Introduction and Background

This report presents the results of a sidewalk condition assessment Cross Reiter, Inc. (Cross Reiter) completed for the City of Olympia (City). The City elected to conduct a sidewalk condition assessment to better understand the nature and extent of existing sidewalk damage within the City limits. The intent of this assessment was to inform future policy decisions related to sidewalk maintenance, repair, and replacement. Cross Reiter identified, mapped, and systematically evaluated the condition of 226 linear miles of sidewalks as part of this project. The collected data includes the locations of identified sidewalk damage, nature of the damage, and surrounding conditions necessary for evaluation of repair options.

This report was prepared in accordance with the agreed upon scope of work, which was executed by the City and Cross Reiter on June 28, 2024. Cross Reiter's scope of work included the following specific tasks:

1. Definition of data collection criteria and methodology.
2. Execution of sidewalk condition assessment field data collection efforts.
3. Spatial analyses to assess and aggregate results, including calculation of block-by-block aggregate scores.
4. Preparation of a digital GIS dataset, including a complete inventory of the City's sidewalk network, average sidewalk widths, aggregate scores, and all collected data points.
5. Preparation of this report documenting the results of the sidewalk condition assessment, including summary figures, charts, and tables.

The results of Task 1 (data collection criteria and methodology) were documented in a draft memorandum and presented to City staff during a virtual meeting on July 19, 2024. After addressing City comments, Cross Reiter issued a final draft of the memorandum on July 23, 2024 (**Appendix A**). Cross Reiter completed Task 2 (data collection fieldwork) between late July 2024 and September 2024. All geospatial data collected as part of this assessment has been delivered to the City in a separate digital deliverable to fulfill Task 4.

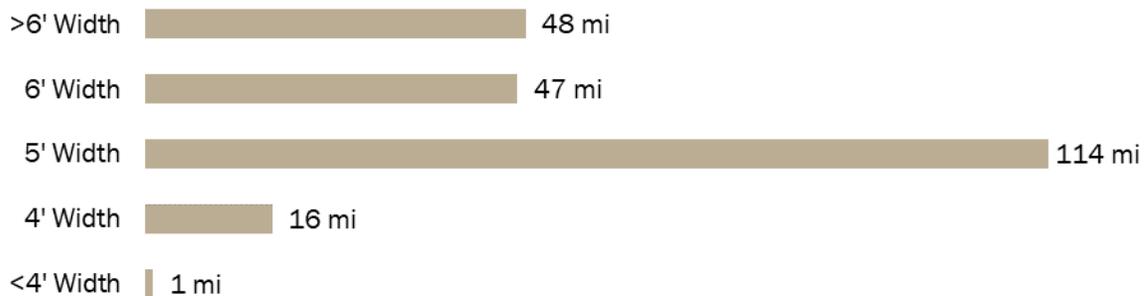
The results of the sidewalk condition assessment are documented within the narrative of the subsequent sections and subsections of this report, within the charts and graphs distributed among the report text, within the figures and maps that follow the report, and within the appendices that are appended to this report. This report also provides links to a webmap application that allows City staff to review the collected data in a basic and simplified manner.

3 Existing Sidewalk Network

Cross Reiter identified and mapped 226 linear miles of sidewalks as part of this assessment. We relied on geospatial data provided by the City¹, publicly available aerial imagery, and our own field reconnaissance to identify the extent of the existing City sidewalk network. The extent of the existing City sidewalk network is shown on **Figure 1**. Sidewalk coverage on City streets is most consistent and widespread in the central downtown core and immediately adjacent areas. Sidewalk coverage and connectivity generally decrease in the outlying, surrounding areas. The following key arterials and major collectors have notable gaps in sidewalk coverage that can be seen on **Figure 1**: Martin Way, Boulevard Road, Eastside Street, Henderson Boulevard, Cooper Point Road, 14th Avenue NW, and 20th Avenue NW.

Cross Reiter recorded observations of average sidewalk widths on an approximately block-by-block basis during our data collection fieldwork. The results are shown in **Chart 1** below and are also depicted on **Figure 2**. Most sidewalks are at least 5 feet wide, especially on arterials and major collectors. Sidewalks with widths of 4 feet or less were only observed in isolated, typically residential, areas.

Chart 1. Sidewalk Widths



Virtually all existing sidewalks were constructed with concrete pavement. In limited locations, hot mix asphalt (HMA) pavement surfacing exists in lieu of concrete. In most cases, HMA sidewalks are confined to localized areas where repairs have been completed.

Cross Reiter estimates the value of the existing City sidewalk network includes approximately \$45 million of concrete and crushed aggregate base alone². The total replacement value of the existing City sidewalk network is at least an order of magnitude higher when accounting for design; permitting; business accommodation; public communication; demolition; drainage elements; and construction of curb, gutter, pedestrian ramps, and landscaped planter strips. In our experience, including these elements would result in an estimated sidewalk replacement unit price on the order of \$750 per linear foot³. This would result in a total replacement value of the City’s existing sidewalk network on the order of \$900 million.

¹ City of Olympia. 2024. GIS Data Transmittal. Email from M. Dejernatt (City of Olympia) to L. Reiter (Cross Reiter) regarding Sidewalk Condition Assessment RFP - Cross Reiter, July 2, 2024.

² Based on a 20-year average of Washington State Department of Transportation (WSDOT) bid tabs in Western Washington.

³ Based on recent bidding/construction experience with the City of Shoreline’s \$52 million Voter-Approved Sidewalk Program over the last 5 years.

4 Sidewalk Condition Assessment Results

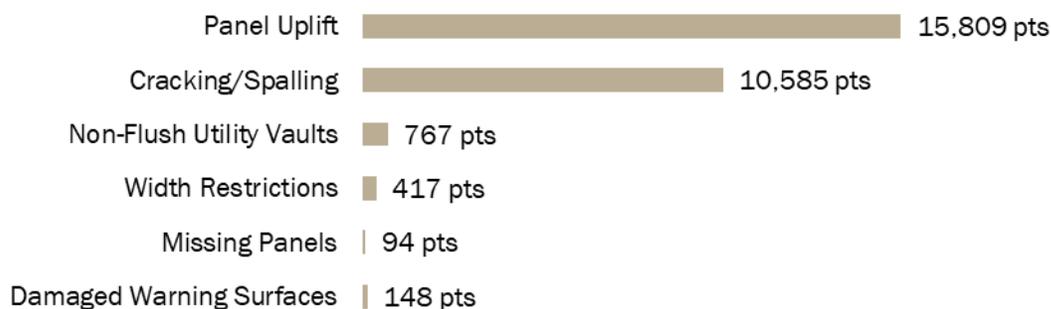
Cross Reiter engineers traversed every sidewalk panel in the City right-of-way and collected individual data points documenting the type and severity of observed sidewalk damage and deficiencies. We categorized our observations into the following type categories:

- **Panel Uplift:** Vertical separation between adjacent sidewalk panels, caused primarily by root uplift, differential settlement, or construction defects. Assessed on a scale of 1 (most severe) to 4 (least severe).
- **Cracking and/or Spalling:** Damage to sidewalk panels caused by cracking and/or spalling (e.g., weathering, pitting, chipping), mostly from vehicular loading, construction defects, or ageing. Assessed on a scale of 1 (most severe) to 3 (least severe).
- **Non-Flush Utility Vaults:** Utility vaults or subsurface structures (e.g., junction boxes, manholes) that are not flush with the sidewalk surface, caused primarily by construction defects or differential settlement. Assessed on a scale of 1 (most severe) to 2 (least severe).
- **Width Restrictions:** Obstructions that restrict effective sidewalk width (e.g., utility poles, vegetation).
- **Missing Panels:** Missing sidewalk panels or portions of sidewalk panels.
- **Damaged Detectable Warning Surfaces:** Damaged truncated dome installations at pedestrian ramps.

A more detailed description of the data collection criteria and condition assessment methodology is provided in **Appendix A**. **Appendix A** includes a detailed rubric used to assess damage severity and representative photographs of the various damage type categories.

Approximately 27,820 unique data points were collected as part of the sidewalk condition assessment. The distribution of data points among the six type categories is shown below in **Chart 2**. Virtually all observed sidewalk damage consisted of either panel uplift or cracking and/or spalling. General summaries of the overall sidewalk condition assessment results and detailed discussions of each damage type category are included in the subsequent sections.

Chart 2. Sidewalk Damage Type



4.1 Overview of Results and Aggregate Scores

Cross Reiter consolidated individual data points and calculated aggregate scores to more clearly summarize and present the results of the sidewalk condition assessment. This process requires delineating the existing City sidewalk network into logical spatial aggregations, calculate the density of individual damage observations, and apply weighting factors to prioritize higher severity damage over lower severity damage. **Appendix B** includes a detailed discussion of our aggregate scoring methodology and weighting factors. The results of this effort are depicted in **Figure 3** and **Figure 4**, which are described separately below.

4.1.1 Hexagonal Binning

Figure 3 summarizes the results of the sidewalk condition assessment within a grid of uniform hexagons, each with an area approximately equal to a downtown City block. Hexagonal binning is an effective method for visualizing density patterns in large spatial datasets due to its readability, uniform tessellation, and computational efficiency. The intent of **Figure 3** is to reduce noise in the dataset, minimize the impact of small-scale variability, and highlight broader trends and concentrations of sidewalk damage. This approach allows for the identification of areas with relatively higher levels of sidewalk deterioration across the City. The color of each hexagon represents the relative density and severity of sidewalk damage compared to the rest of the City. The following key trends can be observed in **Figure 3**:

- The 95th percentile of sidewalk damage density and severity are clustered in the following general areas:
 - Downtown Olympia and adjacent portions of the Eastside, particularly along the State Avenue NE, 4th Avenue E, and Legion Way SE corridors (especially between Plum Street SE and Eastside Street SE), as well as along the Capitol Way S and Central Street SE corridors.
 - South Capitol, where sidewalk damage is relatively well-distributed around the neighborhood/district.
 - Southwest Olympia between 5th Avenue SW and 9th Avenue SW, especially along Decatur Street SW.
 - Northwest Olympia where Garfield Ave NW intersects Sherman Street NW and Plymouth Street NW.
 - Discrete stretches of Harrison Avenue NW, Cooper Point Road SW, and Black Lake Boulevard SW near the Capital Mall area.
- A few residential subdivisions also exhibit notably dense and severe sidewalk damage, including:
 - The north phase of the Wellington West development in Southwest Olympia (Fern Street SW, Division Street SW, and 15th Avenue SW).
 - Portions of Maringo Road SE, Carlyon Ave SE, and Governor Stevens Avenue SE in the Governor Stevens area.
 - The Whisper Ridge development west of Hoffman Road SE near 30th Avenue SE (Bittersweet Street SE and 30th Avenue SE).
 - The Marie’s Vinyard development northeast of Margret Mckenny Park, near the intersection of 18th Avenue SE and Hoffman Road SE (Craig Road SE) and the nearby Redwood Estates development north of 18th Avenue SE (Redwood Place SE).
 - The Covey Street SE and 43rd Avenue SW area east of Ward Lake and west of Boulevard Road SE.
 - The Amherst development west of Lilly Road NE along Surrey Drive NE and Newport Street NE.
 - The area around Harbor View Drive NW at the north terminus of West Bay Drive NW.
 - The Bay Hill development north of Harrison Ave NW and east of Kaiser Road NW.

4.1.2 Sidewalk Condition Index Scores

Figure 4 presents an overall Sidewalk Condition Index (SCI) score for each City sidewalk segment, where each segment is approximately the length of a downtown City block. The SCI score ranges from 0 to 100, providing an intuitive metric of sidewalk condition that facilitates comparison of sidewalk conditions across the City on a block-by-block basis. This method is advantageous because sidewalk maintenance and capital improvements can be efficiently executed on a block-by-block basis to consolidate efforts related to contractor mobilization, traffic control, public outreach, and business accommodation. If desired, the City could also elect to require transportation and utility capital improvement projects to incorporate sidewalk improvements if adjacent sidewalks score below a minimum threshold.

In **Figure 4**, the color and thickness of each sidewalk segment corresponds to its SCI score. The following key trends can be observed in **Figure 4**:

- Similar to the discussion in Section 4.1.1 above, the most damaged sidewalks are generally located in Downtown Olympia, close-in portions of the Eastside, South Capitol, Southwest Olympia, Northwest Olympia, and the arterials and major collectors bordering the Capital Mall area. **Table 1** below lists several selected City blocks with notable sidewalk damage. This table is not exhaustive, it is intended to highlight key areas on **Figure 4**. A detailed tabular summary of the lowest scoring sidewalks is included in **Appendix C** and **Figure 5** and described in more detail later in this section.

Table 1. Selected City Blocks Exhibiting Notable Sidewalk Damage

Area	Street Name	General Location (Approximate, Refer to Figures 4 and 5)
Downtown	4 th Ave E	Adams St NE to Puget St NE
Downtown	Olympia Ave NE	East Bay Dr to Puget St NE
Downtown	Legion Way SE	Plum St SE to Eastside St SE
Eastside	8 th Ave SE	Boundary St SE to Lybarger St SE
Eastside	Central St SE	8 th Ave SE to 13 th Ave SE
South Capitol	Various	Several local streets between 17 th Ave SE and Columbia St SW
Southwest	Various	Several local streets near Cushing St SW, Milroy St SW, and Decatur St SW between 5 th Ave SW and 9 th Ave SW
Southwest	Various	5 th Ave SW and 6 th Ave SW between Plymouth St SW and Olympic Way SE
Southwest	Various	Fern St SW, Division St SW, and 15 th Ave SW between 15 th Ave SW and 18 th Ave SW
Northwest	Various	Percival NW, Foote St NW, and Sherman St NW between Jackson St NW and Harrison St NW
Capital Mall	Harrison Ave NW	Kenyon St NW to Cooper Point Rd SW, including Kenyon St NW
Capital Mall	Cooper Pt Rd SW	Just south of Black Lake Blvd S
Capital Mall	Black Lake Blvd SW	Just north of Capitol Mall Dr SW
Southeast	Carlyon Ave SE	Capitol Blvd S to Moore St SE
Southeast	Hoffman Rd SE	Just north of 27 th Ave SE

- Many of the same residential subdivisions described above in Section 4.1.1 also stand out on **Figure 4**. Refer to Section 4.1.1 for descriptions of these subdivisions.

The distribution of SCI scores among all City sidewalk is shown below in **Chart 3**.

Chart 3. Distribution of Sidewalk Condition Index Scores



Over 70 percent of sidewalks have SCI scores greater than 80. The City’s lowest scoring sidewalks are shown on **Figure 5**. A tabular summary of the lowest scoring sidewalks in the City is included in **Appendix C**. This detailed summary table includes approximately 175 of the lowest scoring sidewalk segments and appurtenant data related to street classification and sidewalk width. The intent of **Appendix C** is to facilitate and support

prioritization of City-led repair and maintenance tasks. Each sidewalk segment in **Figure 5** has a corresponding identification label relating to the tabular summary in **Appendix C**. **Figure 5** also shows locations of future transportation capital improvement projects, parks, schools, and other key facilities (e.g., hospitals, police stations, fire stations, libraries) that may be pertinent to the planning and prioritization of sidewalk capital improvements and maintenance.

4.2 Severe Sidewalk Damage

Cross Reiter assessed the relative severity of all points collected under the panel uplift and cracking and/or spalling damage types, which comprised nearly 95 percent of all data points collected for this sidewalk condition assessment. Both qualitative and quantitative criteria were used to assess damage severity, including the extent of vertical and horizontal nonuniformities in the sidewalk surface, risk as a potential tripping hazard, and the extent of required repairs and/or maintenance (refer to **Appendix A** for details). In general, panel uplift points and cracking and/or spalling points with the highest severity ranking represent discrete locations where full replacement of one or more sidewalk panels is likely required to repair the observed damage. Cross Reiter identified approximately 1,458 high severity damage locations that meet this criteria, which comprised about 6 percent of all points collected for the panel uplift and cracking/spalling type categories. All high severity damage locations are shown in **Figure 6**. As can be seen in **Figure 6**, individual high severity damage locations are relatively well distributed across the City sidewalk network. It is important to note that regardless of the aggregate scores presented in **Figure 3** and **Figure 4**, each location shown in **Figure 6** represents severe sidewalk damage. Representative photographs depicting typical high severity damage locations are shown below in **Photographs 1**.



Photograph 1a – High severity panel uplift in South Capitol near 17th Ave SE and Jefferson St SE.



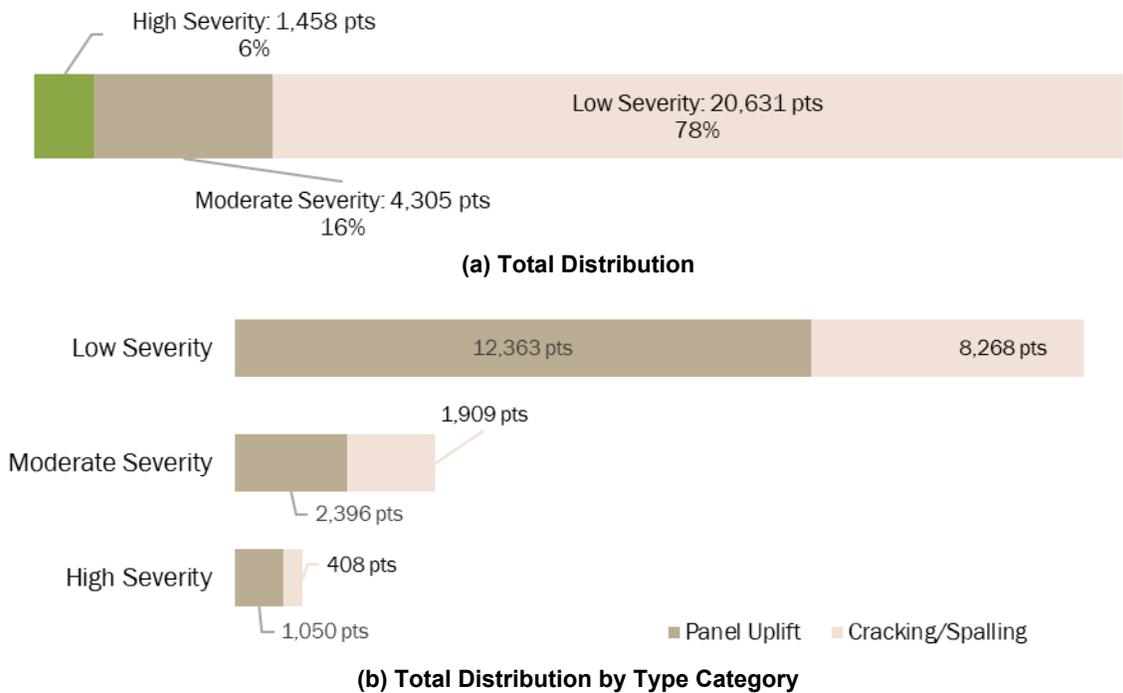
Photograph 1b – High severity cracking near Governor Stevens on Maringo Rd SE.

Cross Reiter observed an additional 4,305 moderate severity damage locations throughout the City, which comprised about 16 percent of all points collected for the panel uplift and cracking/spalling type categories. These moderate severity damage locations may or may not require full panel replacements but are a high priority for timely maintenance or repair (e.g., grinding/beveling uplifted panels, crack repair, partial panel replacements, etc.). Together, these 5,763 high severity and moderate severity damage locations comprise a potential scope of high priority sidewalk repair work.

Additional details on the distribution of damage severity among the panel uplift and cracking and/or spalling type categories are shown below in **Chart 4**. Panel uplift is the predominant type of sidewalk damage across

the City, especially at high severity damage locations. Of the approximately 1,458 high severity damage locations and 4,305 moderate severity damage locations, nearly 72 percent and 56 percent (respectively) are due to panel uplift.

Chart 4. High Severity Sidewalk Damage



4.3 Results by Damage Type

4.3.1 Panel Uplift, Cracking, Spalling, and Non-Flush Vaults

Details on the location and severity of all points collected under the three damage type categories (1) panel uplift, (2) cracking and/or spalling, and (3) non-flush utility vaults are shown in **Figure 7a** through **Figure 7g**. These points capture the range of concrete distress observed on all sidewalks and comprise nearly 98 percent of the total data collected during this sidewalk condition assessment. It is important to distinguish between each damage type category, because each type of damage has different contributing factors and different maintenance/repair approaches. Each type of damage is described separately below.

4.3.1.1 Panel Uplift

Cross Reiter collected 15,809 unique data points where sidewalk damage consisted of panel uplift. Representative photographs of typical panel uplift damage on sidewalks are shown in **Photographs 2** below.



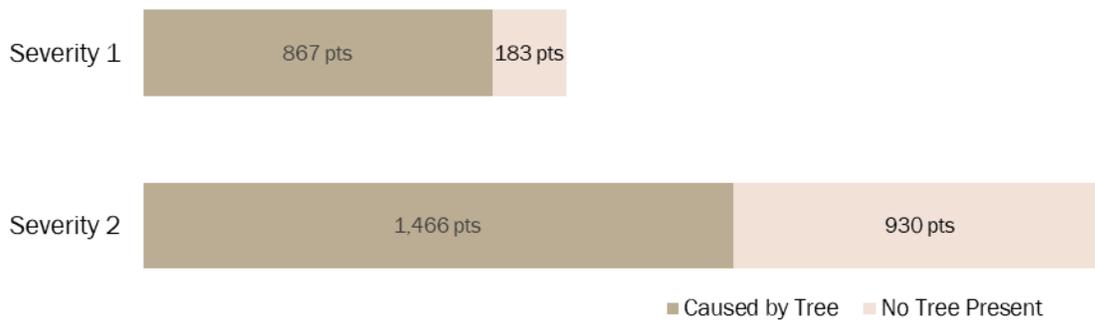
Photograph 2a – High severity uplift caused by tree roots in Southwest Olympia near 6th Ave SW and Milroy St SW.



Photograph 2b – High severity uplift caused by differential settlement in Southwest Olympia near 4th Ave W and Thomas St SW.

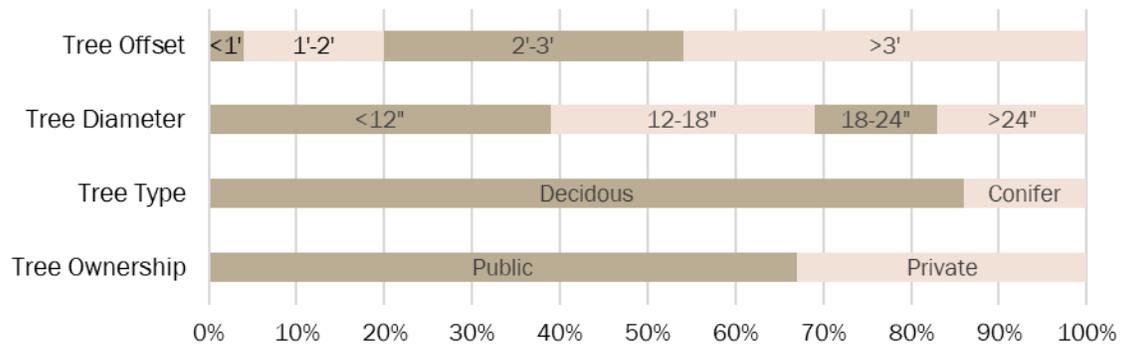
Cross Reiter collected additional information on contributing trees for every panel uplift observation assigned to high or moderate severity. Between these two severity categories, 3,446 total observations of panel uplift were made. Observed trees contributed to the damage at about 83 percent of the high severity panel uplift locations and about 61 percent of the moderate severity panel uplift locations. A detailed breakdown of this information is shown in **Chart 5** below. This data suggests tree root uplift is a major contributor to panel uplift sidewalk damage, especially in high severity locations, but other factors also contribute (e.g., ageing, differential settlement, construction defects, etc.)

Chart 5. Contribution of Trees to Panel Uplift

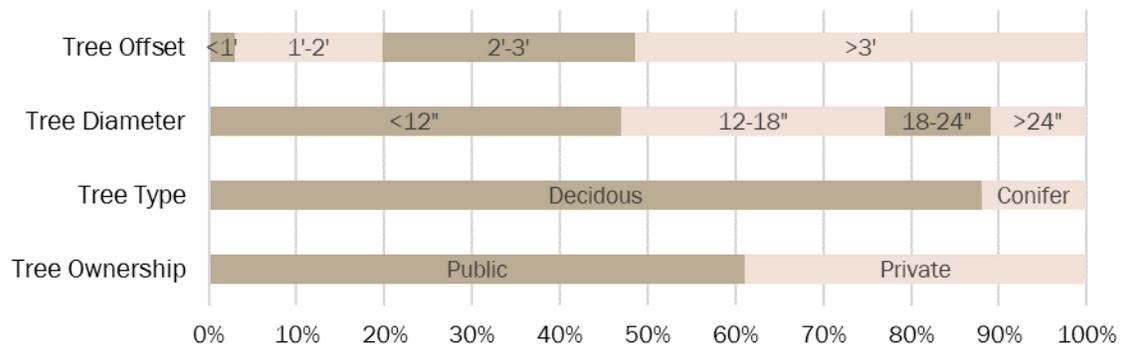


For all high severity and moderate severity panel uplift locations where trees were observed, Cross Reiter recorded the horizontal offset between the contributing tree trunk and the edge of the sidewalk, the diameter of the tree trunk, and general type of tree, and whether the tree appeared to be in the public right-of-way or on a privately owned parcel. This data is broken down in **Chart 6** below.

Chart 6. Trees Causing Panel Uplift



(a) High Severity Uplift Damage



(b) Moderate Severity Uplift Damage

Trees in the right of way (typically a planter strip between the curb and the sidewalk), almost all of which are deciduous trees, contribute to approximately 67 percent and 61 percent of the high severity and moderate severity panel uplift damage (respectively). A meaningful correlation between tree diameter or offset and panel uplift severity was not observed in the data, which is notable. This suggests sidewalk damage occurs regardless of the age of the tree or the width of the planting strip adjacent to the sidewalk.

4.3.1.2 Cracking and Spalling

Cross Reiter collected approximately 10,585 unique data points where sidewalk damage consisted of cracking and/or spalling. Representative photographs of typical cracking and/or spalling damage on sidewalks are shown in **Photographs 3** below.



Photograph 3a – High severity cracking in Southwest Olympia caused by ageing and vegetation near 9th Ave SW and Percival St SW.



Photograph 3b – High severity cracking caused by vehicular loading near Pacific Ave SW and Lansdale St SE in East Olympia.

For every cracking and/or spalling observation, Cross Reiter also recorded whether the damage was within a driveway approach or otherwise likely caused by vehicular traffic. This data is presented in **Chart 7** below. Vehicular traffic was not a significant contributor to most cracking and/or spalling damage observed across the City. Instead, cracking and/or spalling across all levels of severity is likely associated with other contributing factors (e.g., construction defects, ageing, drainage issues, or vegetation).

Chart 7. Contribution of Vehicular Loading to Cracking/Spalling



4.3.1.3 Non-Flush Utility Vaults

Cross Reiter made approximately 767 unique observations where sidewalk damage consisted of a utility vault or other buried structure (i.e., junction box, valve cover, manhole, etc.) that was not flush with the sidewalk surface. Representative photographs of non-flush utility vaults are shown in **Photographs 4** below.



Photograph 4a – Non-flush utility vault in Southeast Olympia near Hoffman Rd SE and 30th Ave SE.



Photograph 4b – Non-flush utility vault in West Olympia near Harrison Ave NW and Yauger Way NW.

Cross Reiter assigned a severity to each non-flush utility vault observation, which are detailed in **Chart 8** below.

Chart 8. Non-Flush Utility Vault Details

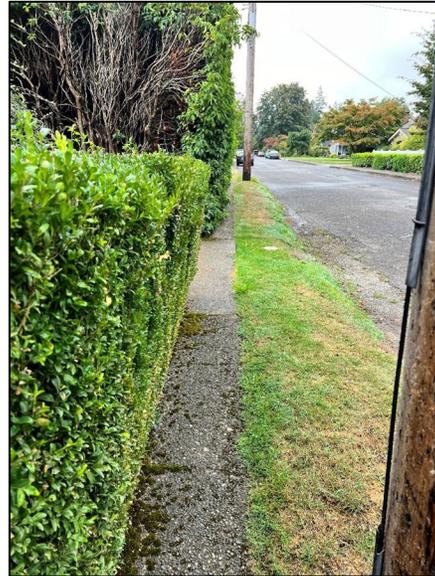


4.3.2 Width Restrictions

Cross Reiter identified approximately 417 width restrictions where the effective sidewalk width was blocked or restricted. Width restrictions were further categorized as either permanent (e.g., due to structures, mailboxes, signs, or parking meters) or temporary (e.g., due to overgrown vegetation). The locations of all observed width restrictions are shown in **Figure 8**. Most permanent width restrictions were located in the central downtown core and surrounding areas. However, temporary width restrictions were observed across the entire City. Nearly all temporary width restrictions represent a location where a relatively simple and cost-efficient maintenance task could readily address the issue (i.e., trimming back decorative hedges, removing overgrown invasive plants). Representative photographs of typical width restrictions on sidewalks are shown in **Photographs 5** below.



Photograph 5a – Permanent width restriction from a stop sign near Downtown Olympia at 7th Ave SE and Quincy St SE.



Photograph 5b – Temporary width restriction from overgrown shrubs near Vista Ave SE and Maringo Rd SE near Wildwood.

The breakdown of width restrictions between the permanent and temporary categories is shown in **Chart 9** below.

Chart 9. Width Restrictions Details



4.3.3 Missing Panels

Cross Reiter identified approximately 94 locations where individual sidewalk panels were missing. Locations of all observed missing sidewalk panels are shown in **Figure 9**. In many cases, missing panels are a result of incomplete repairs or improvements. Representative photographs of typical missing sidewalk panels on sidewalks are shown in **Photographs 6** below.



Photograph 6a – Missing sidewalk panel in Bigelow Highlands near State Street NE and McCormick St NE.



Photograph 6b – Missing sidewalk panel near Landau Ave NE and Stanhope St NE.

4.3.4 Damaged Detectable Warning Surfaces

Cross Reiter identified approximately 148 locations where detectable warning surfaces were damaged. These locations are shown on **Figure 10**. Virtually all damaged detectable warning surfaces consisted of the self-adhesive style (i.e., peel-and-stick) that had degraded over time. A few selected arterials and major collectors with a notable quantity of damaged detectable warning surfaces include 4th Avenue E from Fir Street NE to Pear Street NE, Boulevard Road SE south of Pacific Ave SE and north of I-5, Jefferson Street SE between 11th Ave SE and 13th Ave SE, Conger Ave NW from Cooper Point Road NW to Division Street NW, Cooper Point Road SE near Black Lake Boulevard SW, Carlyon Ave SE, and Henderson Boulevard SE south of N Street SE.

Representative photographs of typical damaged detectable warning surfaces on sidewalks are shown in **Photographs 7** below.



Photograph 7a – Damaged detectable warning surface near Burbank Ave NW and Blossomwood Ct NW.



Photograph 7b – Damaged detectable warning surface near Martin Way E and College St NE.

4.3.5 Other Miscellaneous Observations

During the course of the fieldwork efforts, Cross Reiter engineers also documented approximately 179 miscellaneous observations related to the City’s sidewalk network. These miscellaneous observations and the corresponding locations are shown on **Figure 11**. The individual observations are diverse, and vary from notes documenting discreet drainage issues, unique tripping hazards, the locations and condition of permeable concrete pavement sidewalks, and overall observations of pedestrian comfort on the City’s sidewalk network.

5 Limitations

This report was prepared exclusively for the City of Olympia (the “Client”) and is intended solely for the purpose outlined in the mutually agreed-upon scope of work with the Client. The work was performed in accordance with recognized professional standards applicable in the locality at the time of the assessment. Cross Reiter, Inc. (“Cross Reiter”) provides no other warranty, express or implied to any person other than explicitly provided for in that mutually agreed-upon scope of work with the Client.

The findings, conclusions, and recommendations in this report are based on site conditions observed and interpreted during the specific period when the assessment was conducted. Variations between the reported conditions and actual site conditions may exist and could change over time. Such changes may alter the applicability of the report’s findings and recommendations. Cross Reiter assumes no responsibility for such variations or changes that occur post-assessment.

This report is not intended to assess the risk of sidewalk slips, trips, and falls specifically, nor does it guarantee the prevention of such incidents. The identification of potential hazards and the reduction of associated risks are based on observable conditions at the time of the assessment. The maintenance and repair of sidewalks, including addressing conditions that may contribute to slips, trips, and falls, is not Cross Reiter’s responsibility.

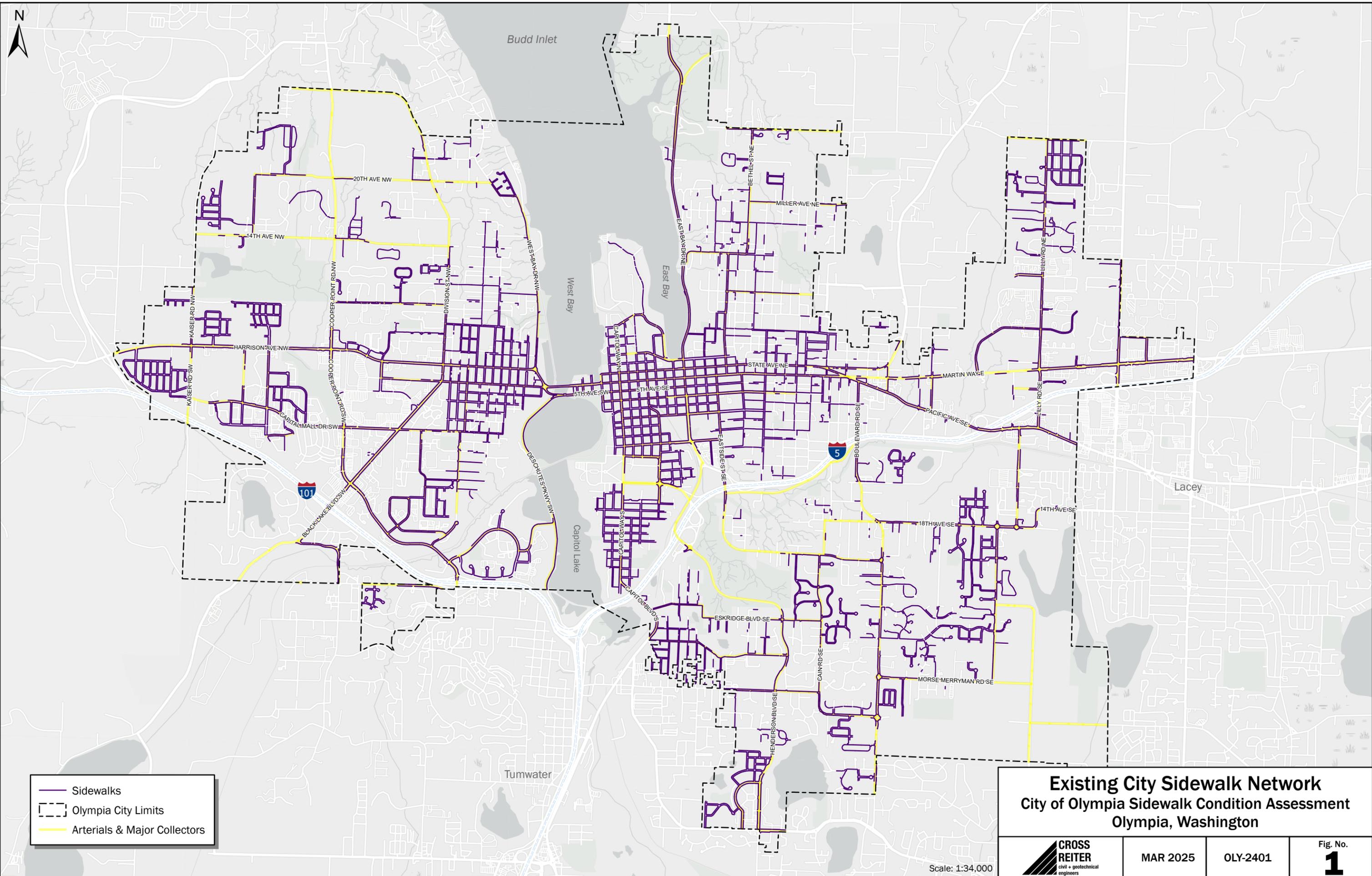
Our services do not include traffic design, pedestrian safety evaluation, detailed sidewalk engineering analysis, design, or construction services. This report is not an Americans with Disabilities Act (ADA) compliance assessment and should not be interpreted as such.

All conclusions and recommendations are unique to the project, site, and Client and should not be applied to any other project or purpose without consultation with, and consent of, Cross Reiter. This report may not be used by any other party other than the Client in accordance with the terms of the statement of work and any use or reuse of this report by any party other than the Client is not authorized by Cross Reiter and is done at their sole risk and without any liability to Cross Reiter.

Cross Reiter shall not be liable for the Client’s or property owners’ failure to act on or for any damages resulting from actions or omissions based on this report.

In the event of any discrepancy or dispute regarding the content of electronic documents furnished to others, the original report files maintained by Cross Reiter shall govern.

FIGURES



- Sidewalks
- Olympia City Limits
- Arterials & Major Collectors

Existing City Sidewalk Network
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

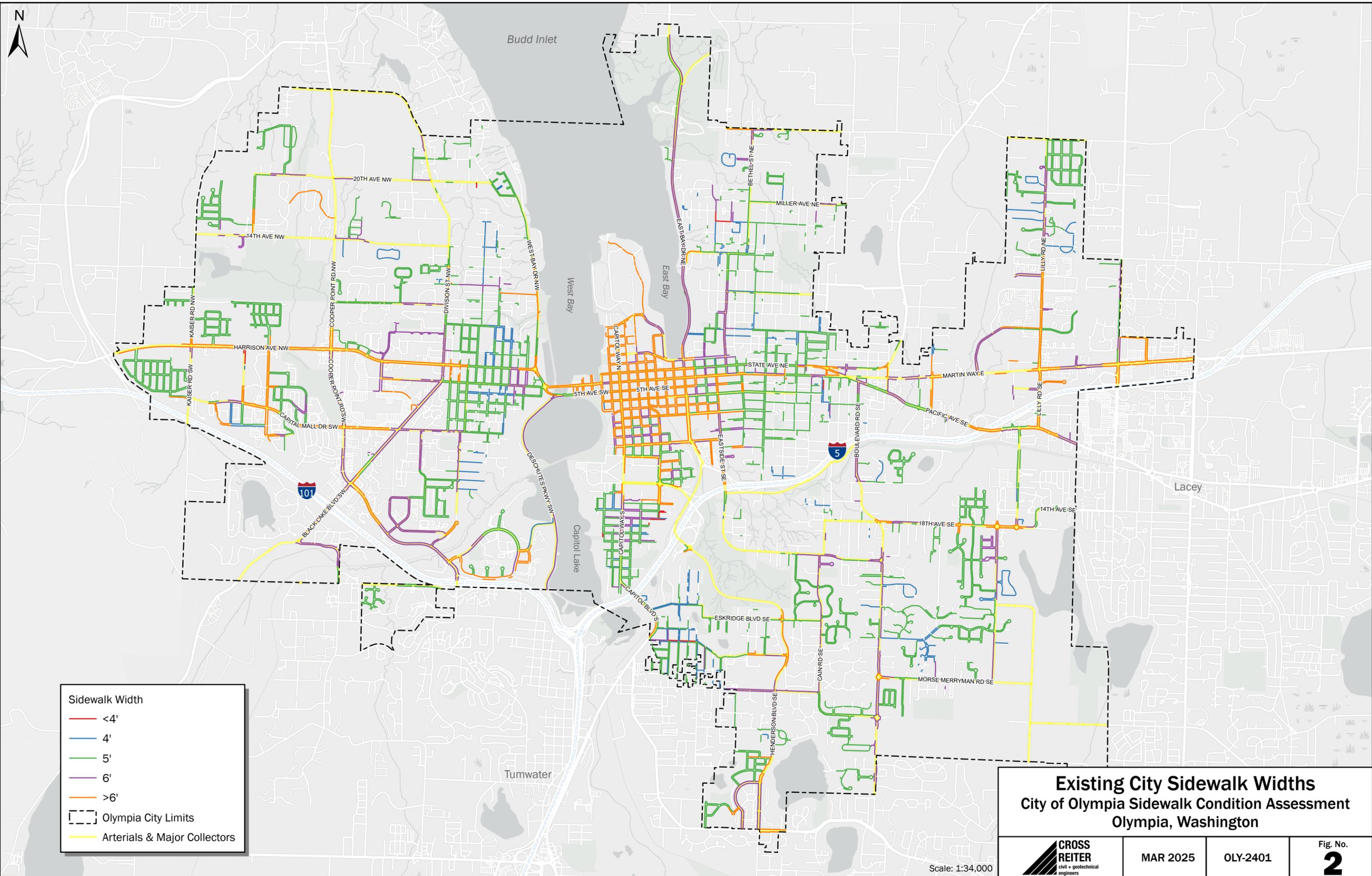
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MAR 2025

OLY-2401

Fig. No.
1



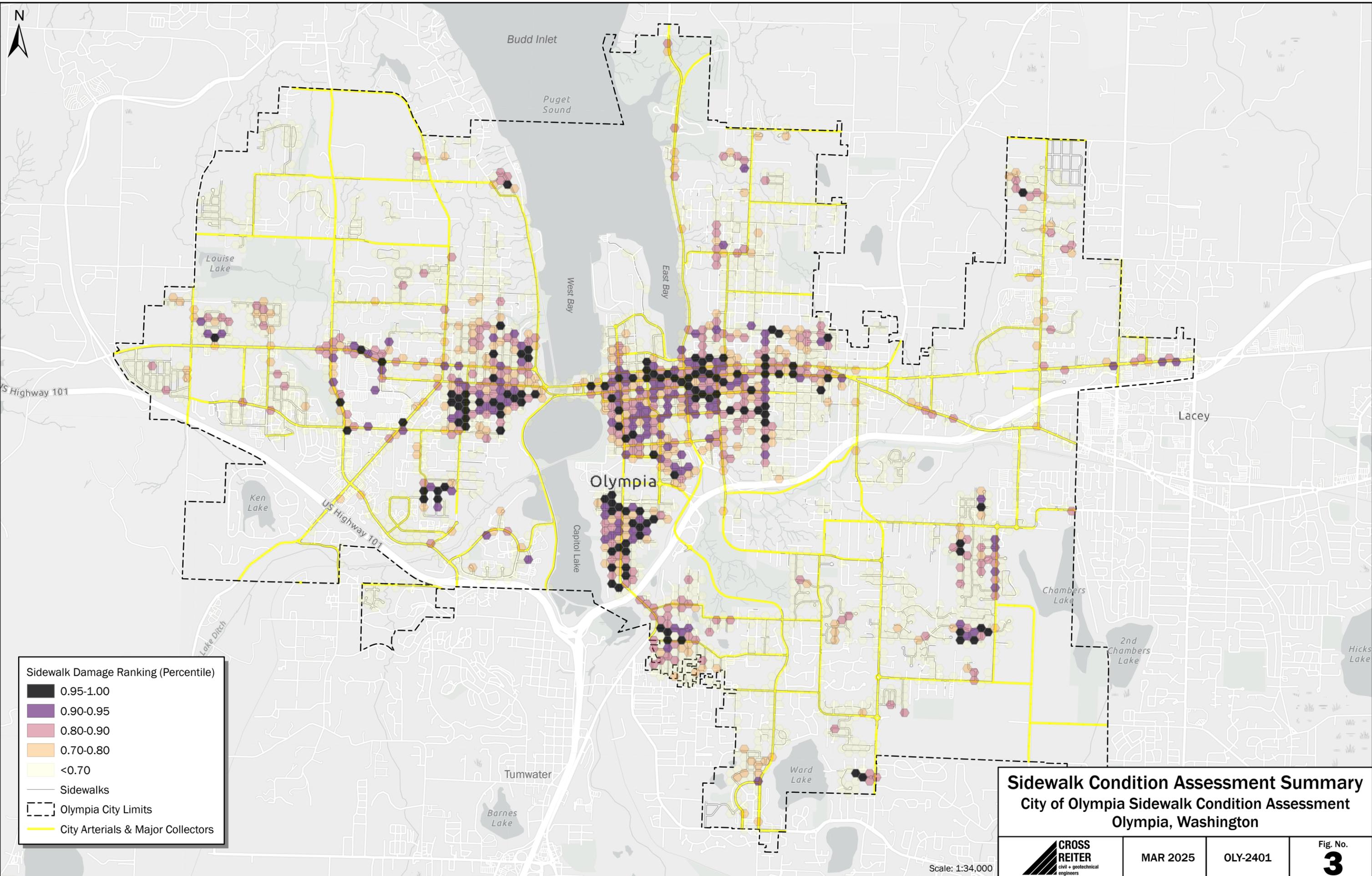
Sidewalk Width

- <4'
- 4'
- 5'
- 6'
- >6'
- Olympia City Limits
- Arterials & Major Collectors

Existing City Sidewalk Widths
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

 <small>civil + geotechnical engineers</small>	MAR 2025	OLY-2401	Fig. No. 2
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Scale: 1:34,000



Sidewalk Damage Ranking (Percentile)

- 0.95-1.00
- 0.90-0.95
- 0.80-0.90
- 0.70-0.80
- <0.70
- Sidewalks
- Olympia City Limits
- City Arterials & Major Collectors

Sidewalk Condition Assessment Summary
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

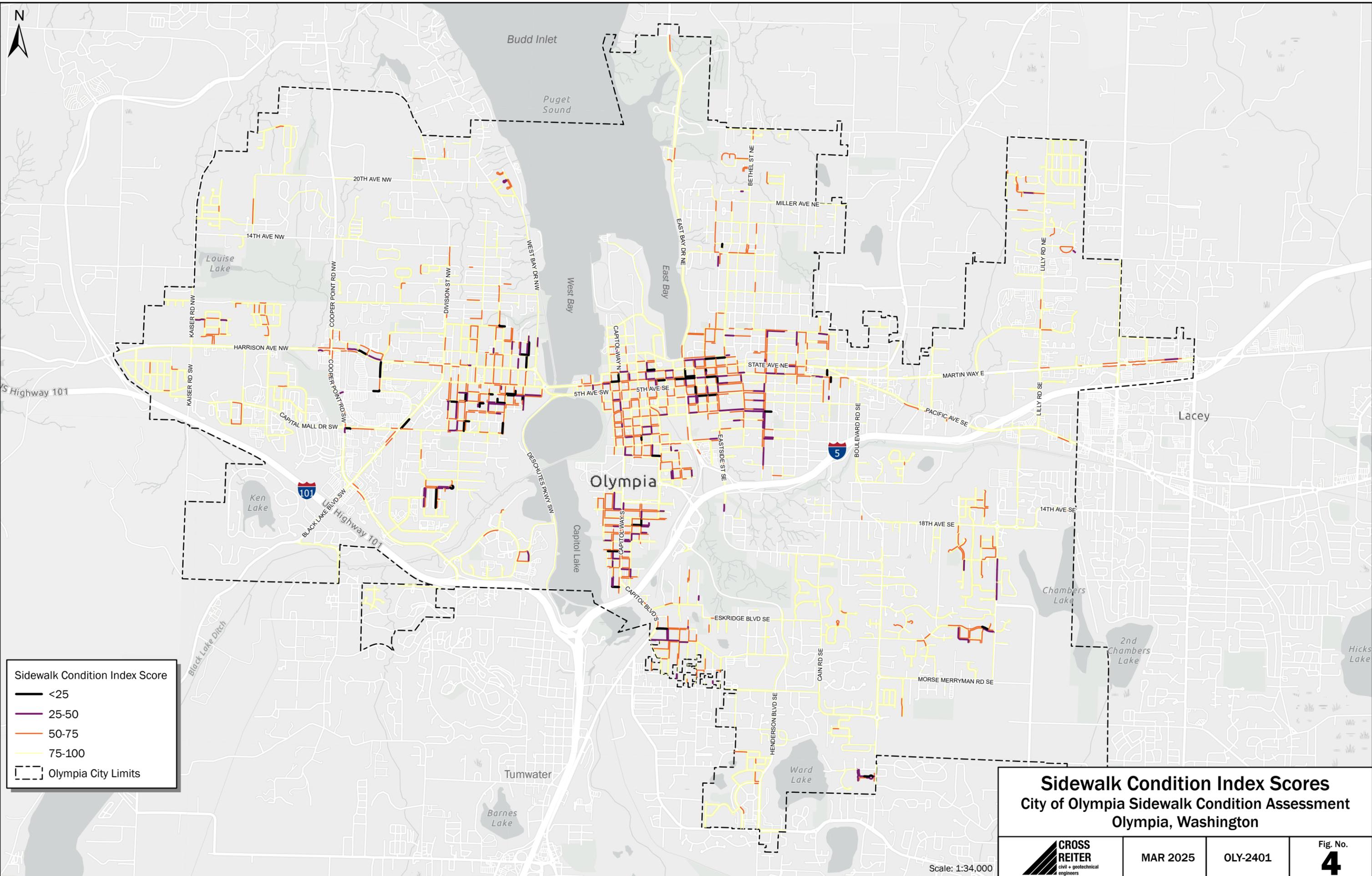


MAR 2025

OLY-2401

Fig. No. **3**

Scale: 1:34,000



Sidewalk Condition Index Score

- <25
- 25-50
- 50-75
- 75-100
- Olympia City Limits

Sidewalk Condition Index Scores
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

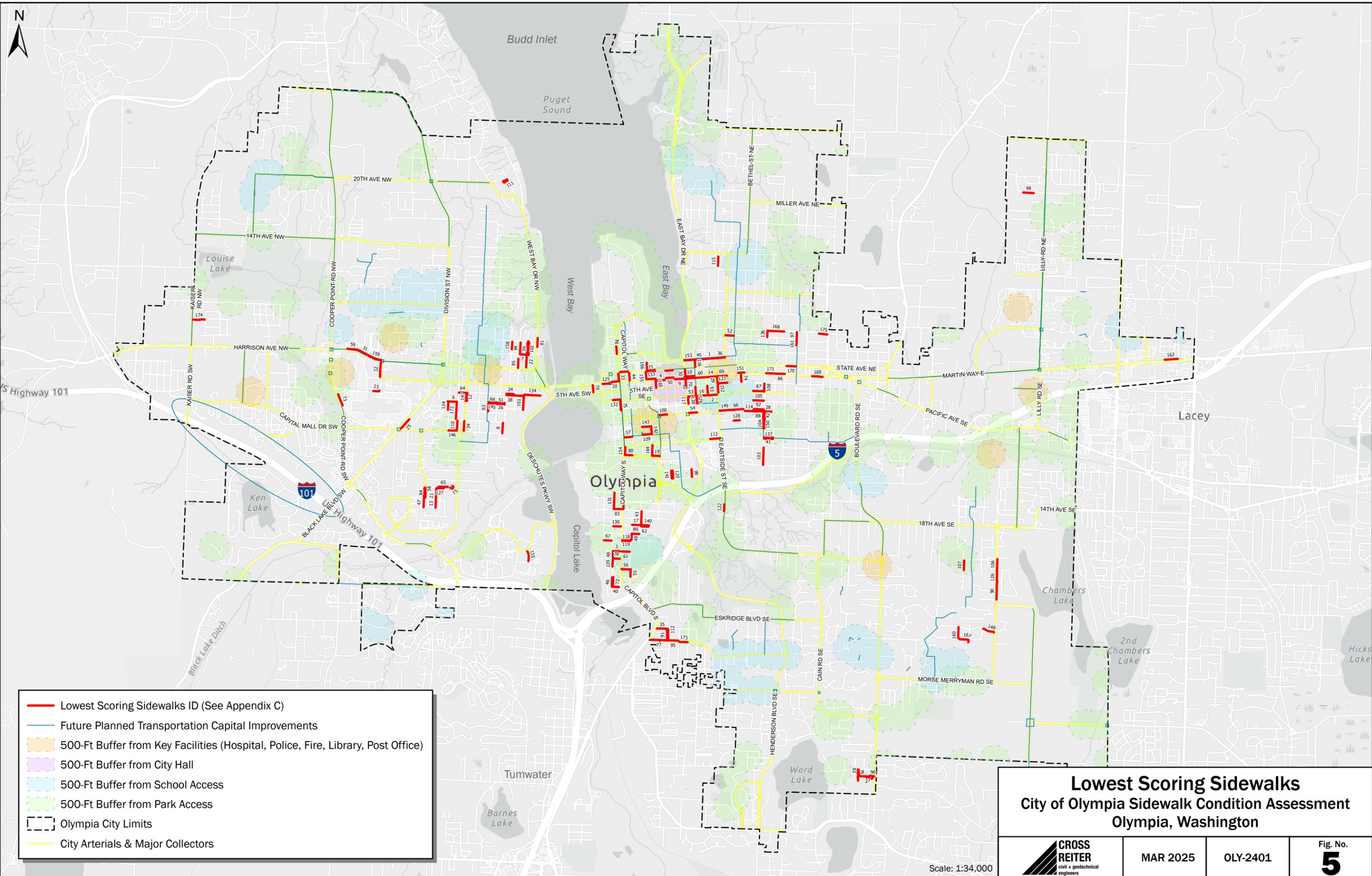


MAR 2025

OLY-2401

Fig. No.
4

Scale: 1:34,000

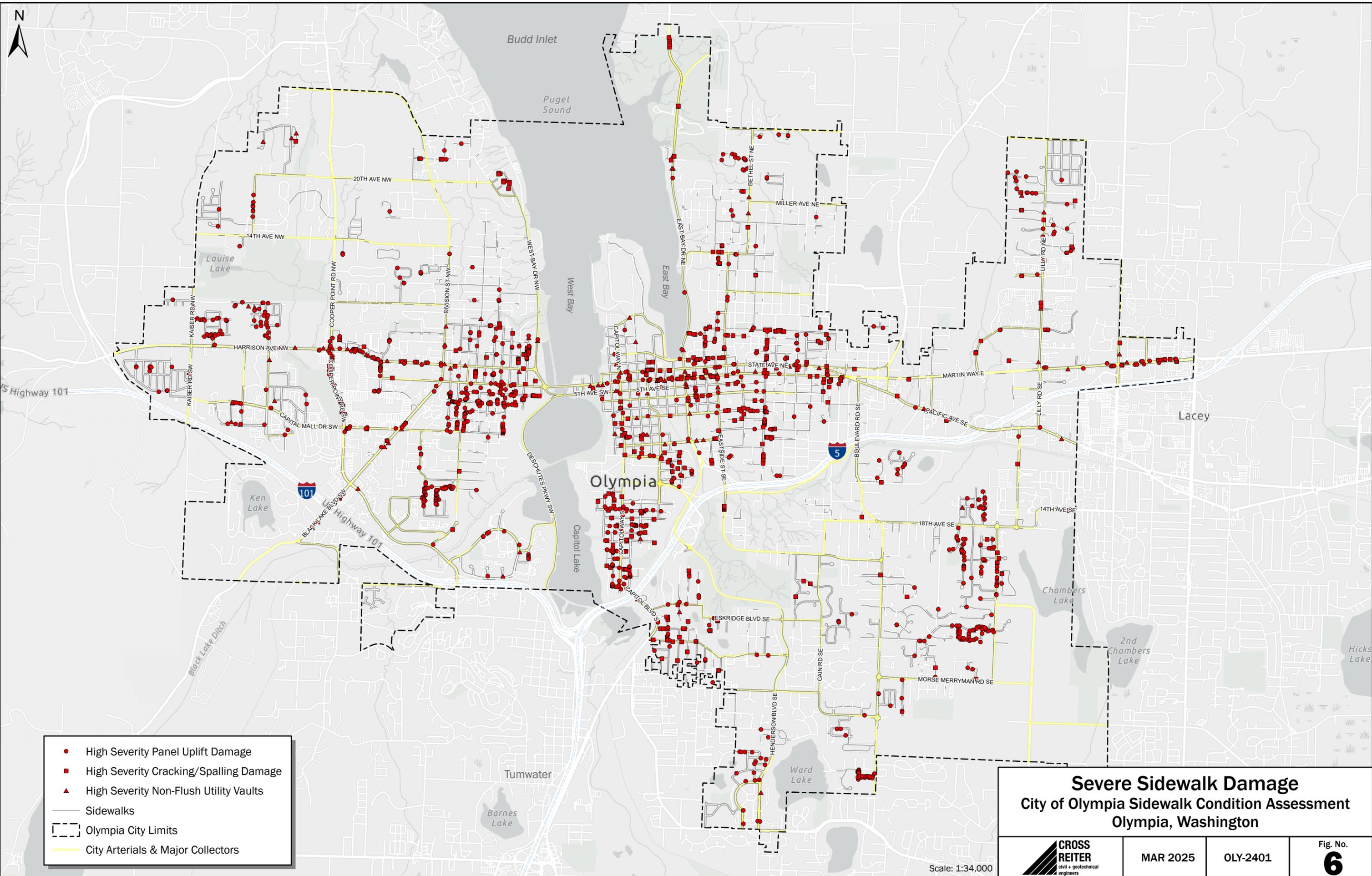


- Lowest Scoring Sidewalks ID (See Appendix C)
- Future Planned Transportation Capital Improvements
- 500-Ft Buffer from Key Facilities (Hospital, Police, Fire, Library, Post Office)
- 500-Ft Buffer from City Hall
- 500-Ft Buffer from School Access
- 500-Ft Buffer from Park Access
- Olympia City Limits
- City Arterials & Major Collectors

Lowest Scoring Sidewalks
City of Olympia Sidewalk Condition Assessment
Olympia, Washington

 <small>civil + geotechnical engineers</small>	MAR 2025	OLY-2401	Fig. No. 5
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Scale: 1:34,000



- High Severity Panel Uplift Damage
- High Severity Cracking/Spalling Damage
- ▲ High Severity Non-Flush Utility Vaults
- Sidewalks
- - - Olympia City Limits
- City Arterials & Major Collectors

Severe Sidewalk Damage
City of Olympia Sidewalk Condition Assessment
Olympia, Washington

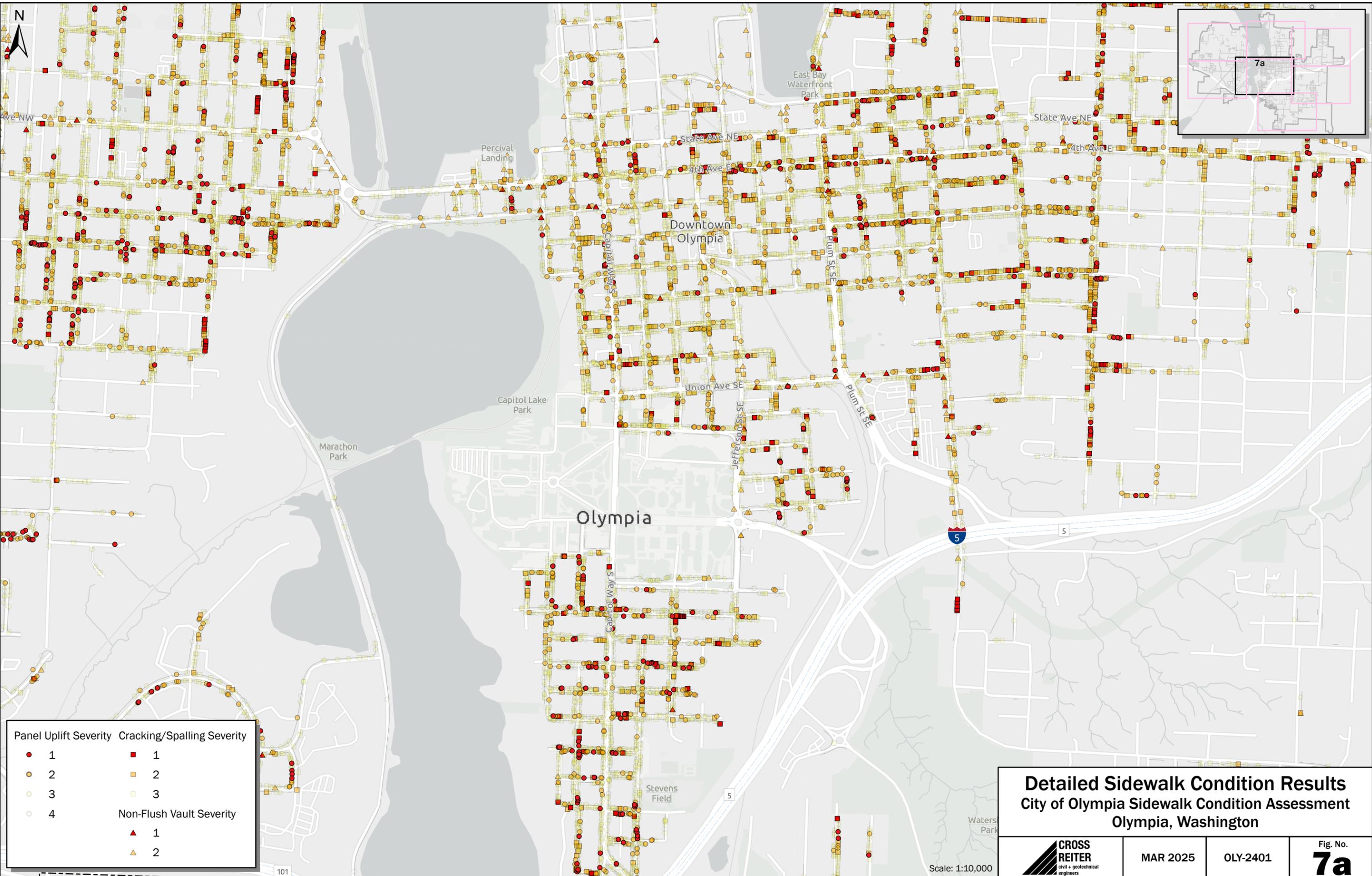


MAR 2025

OLY-2401

Fig. No.
6

Scale: 1:34,000



Panel Uplift Severity		Cracking/Spalling Severity	
● 1	■ 1	■ 1	■ 1
● 2	■ 2	■ 2	■ 2
● 3	■ 3	■ 3	■ 3
● 4	■ 4	▲ 1	▲ 1
		▲ 2	▲ 2

Non-Flush Vault Severity

Detailed Sidewalk Condition Results
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

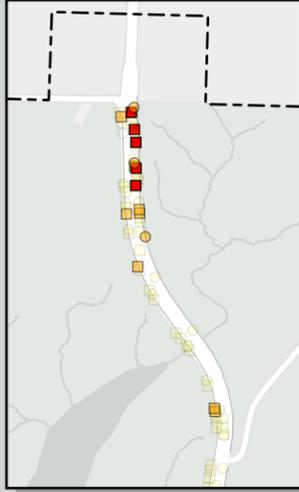
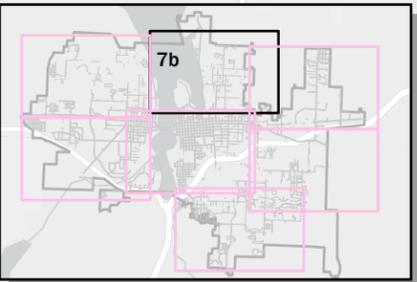
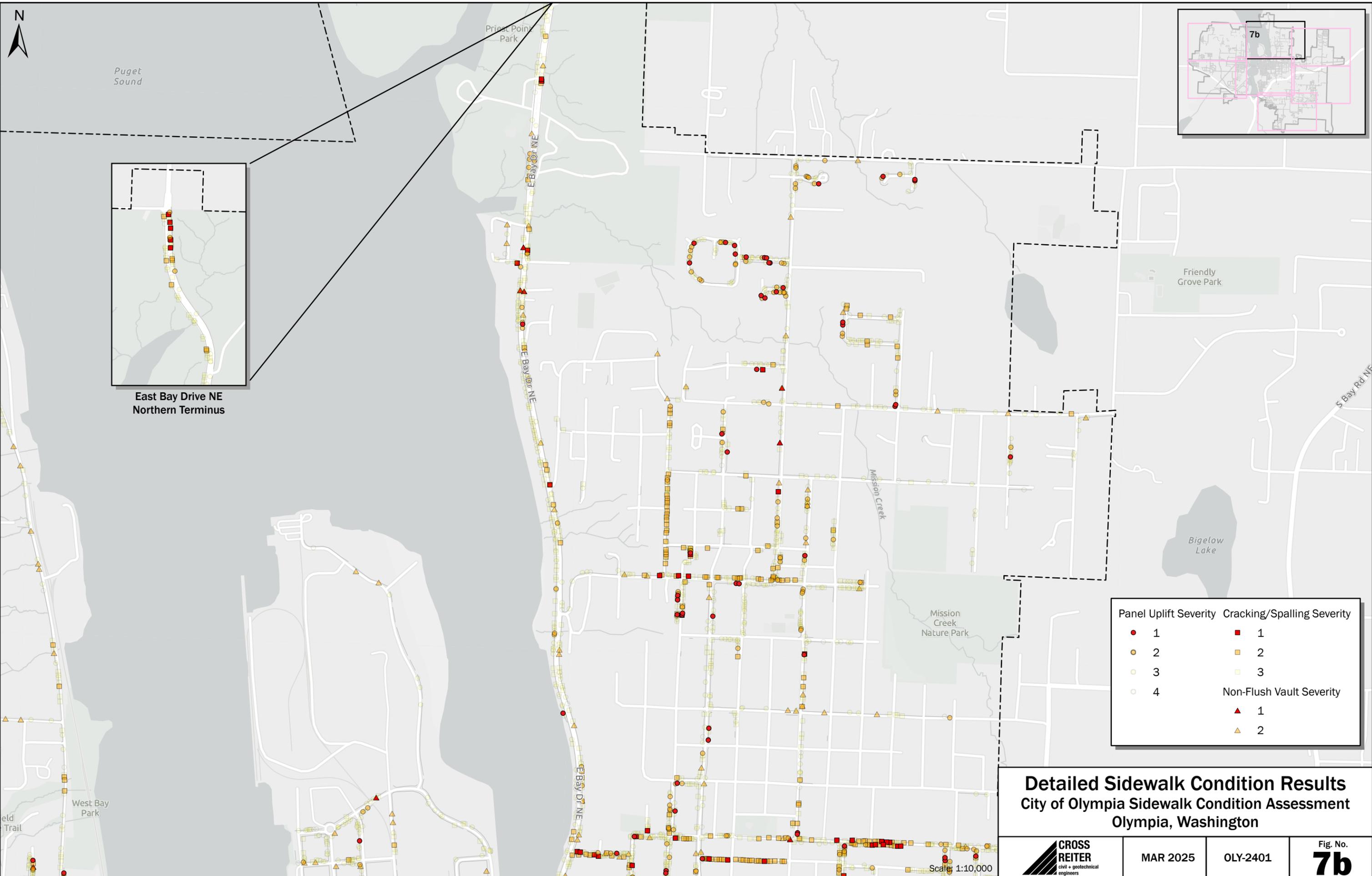


MAR 2025

OLY-2401

Fig. No.
7a

Scale: 1:10,000



East Bay Drive NE
Northern Terminus

Panel Uplift Severity		Cracking/Spalling Severity	
● 1	■ 1	■ 1	
● 2	■ 2	■ 2	
● 3	■ 3	■ 3	
● 4			▲ 1
			▲ 2
			▲ 2

Non-Flush Vault Severity

Detailed Sidewalk Condition Results
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

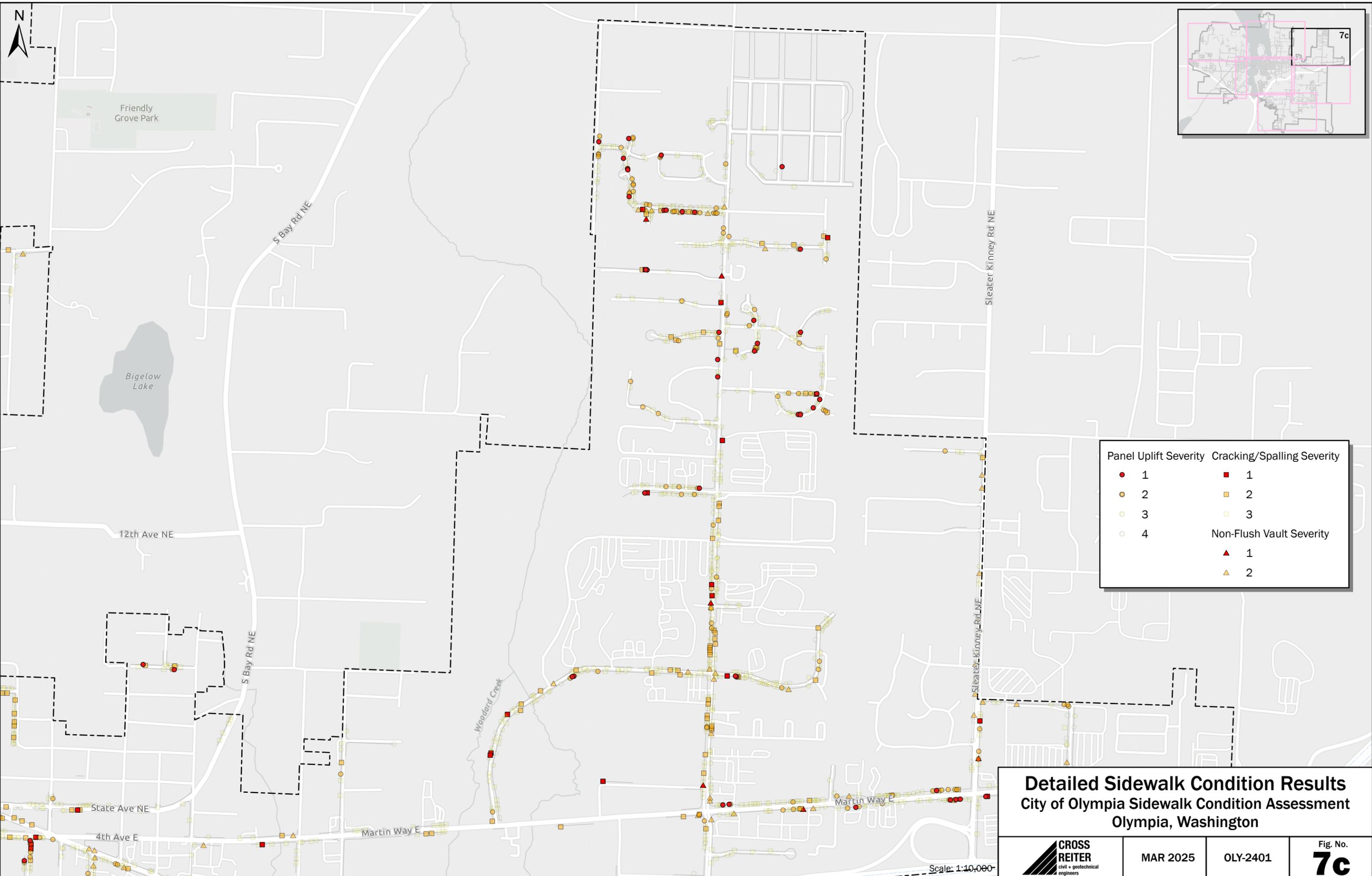
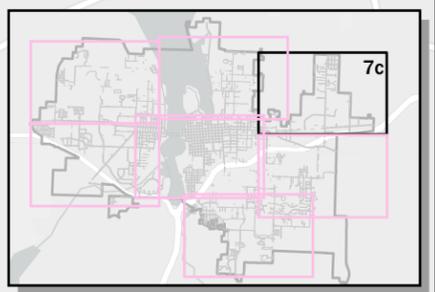


MAR 2025

OLY-2401

Fig. No.
7b

Scale: 1:10,000



Panel Uplift Severity		Cracking/Spalling Severity	
●	1	■	1
●	2	■	2
●	3	■	3
●	4	Non-Flush Vault Severity	
		▲	1
		▲	2

Detailed Sidewalk Condition Results
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

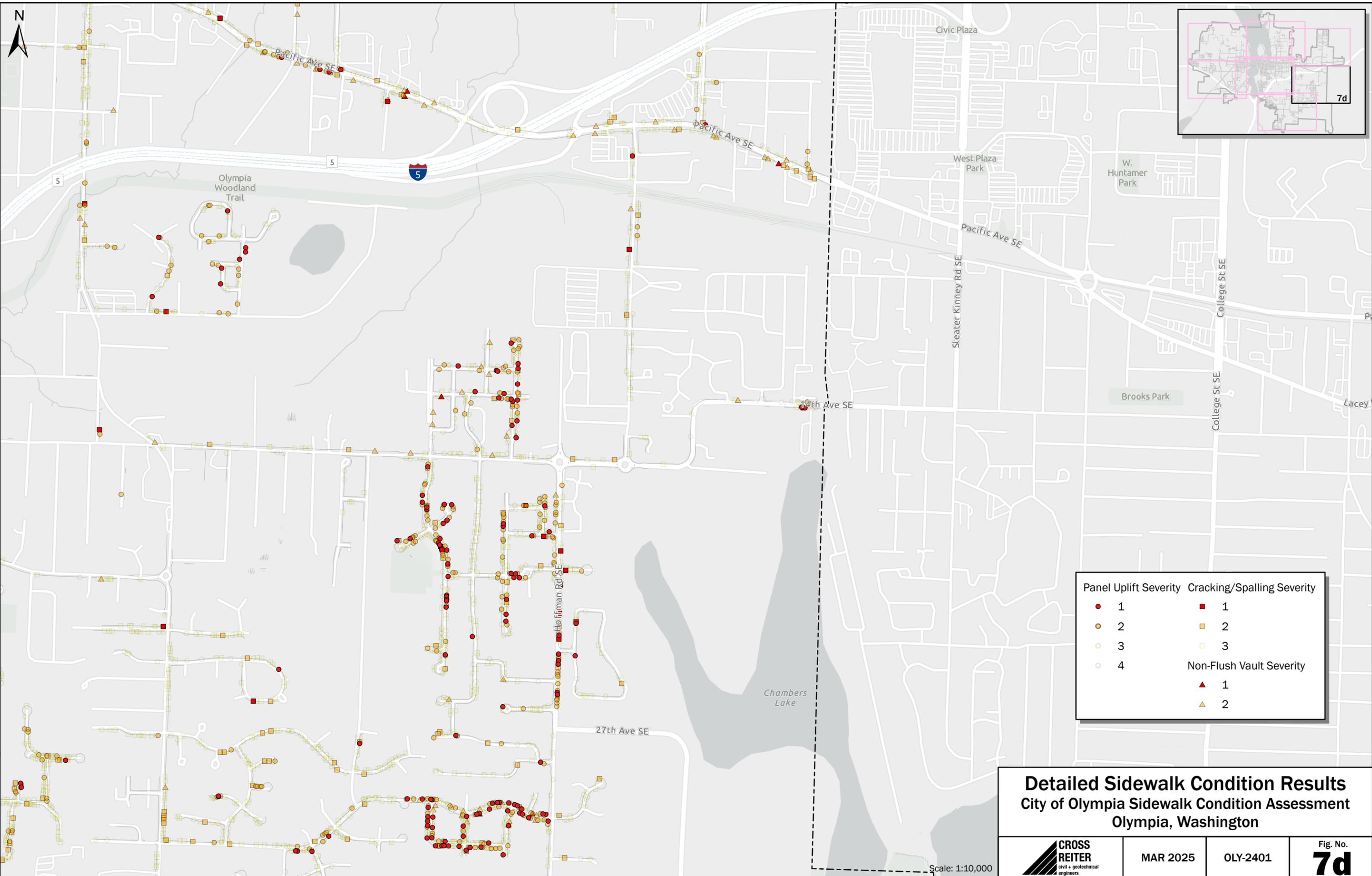


MAR 2025

OLY-2401

Fig. No.
7c

Scale: 1:10,000



Panel Uplift Severity		Cracking/Spalling Severity	
● 1	■ 1	■ 1	
● 2	■ 2	■ 2	
● 3	■ 3	■ 3	
● 4		▲ 1	▲ 2
		▲ 1	▲ 2

Non-Flush Vault Severity

Detailed Sidewalk Condition Results
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

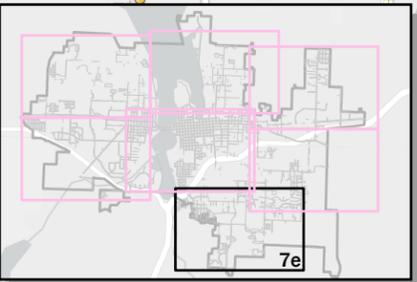
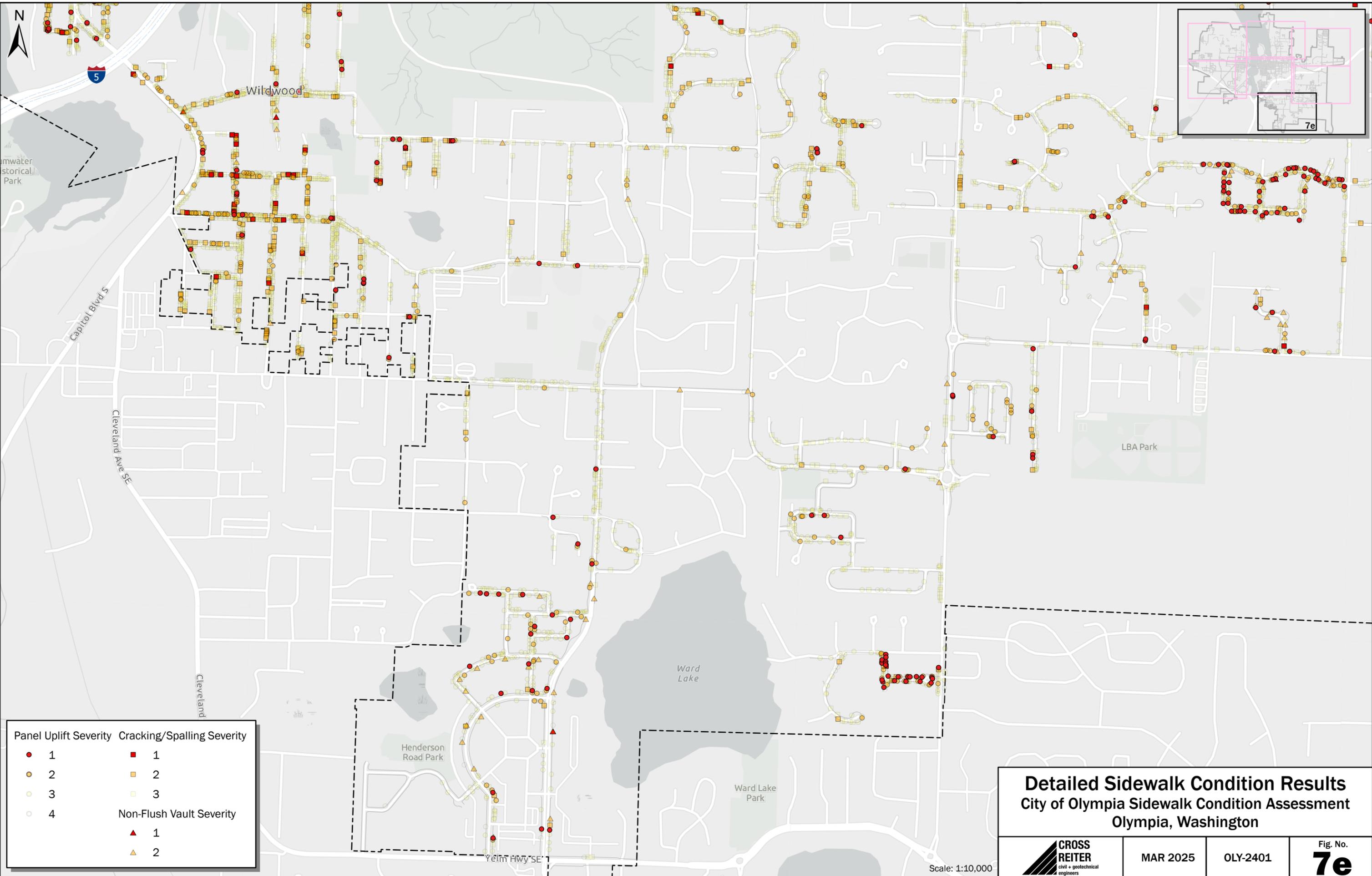


MAR 2025

OLY-2401

Fig. No.
7d

Scale: 1:10,000



Panel Uplift Severity		Cracking/Spalling Severity	
● 1	■ 1	■ 1	■ 1
● 2	■ 2	■ 2	■ 2
● 3	■ 3	■ 3	■ 3
● 4	■ 4	▲ 1	▲ 1
		▲ 2	▲ 2

Non-Flush Vault Severity

Detailed Sidewalk Condition Results
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

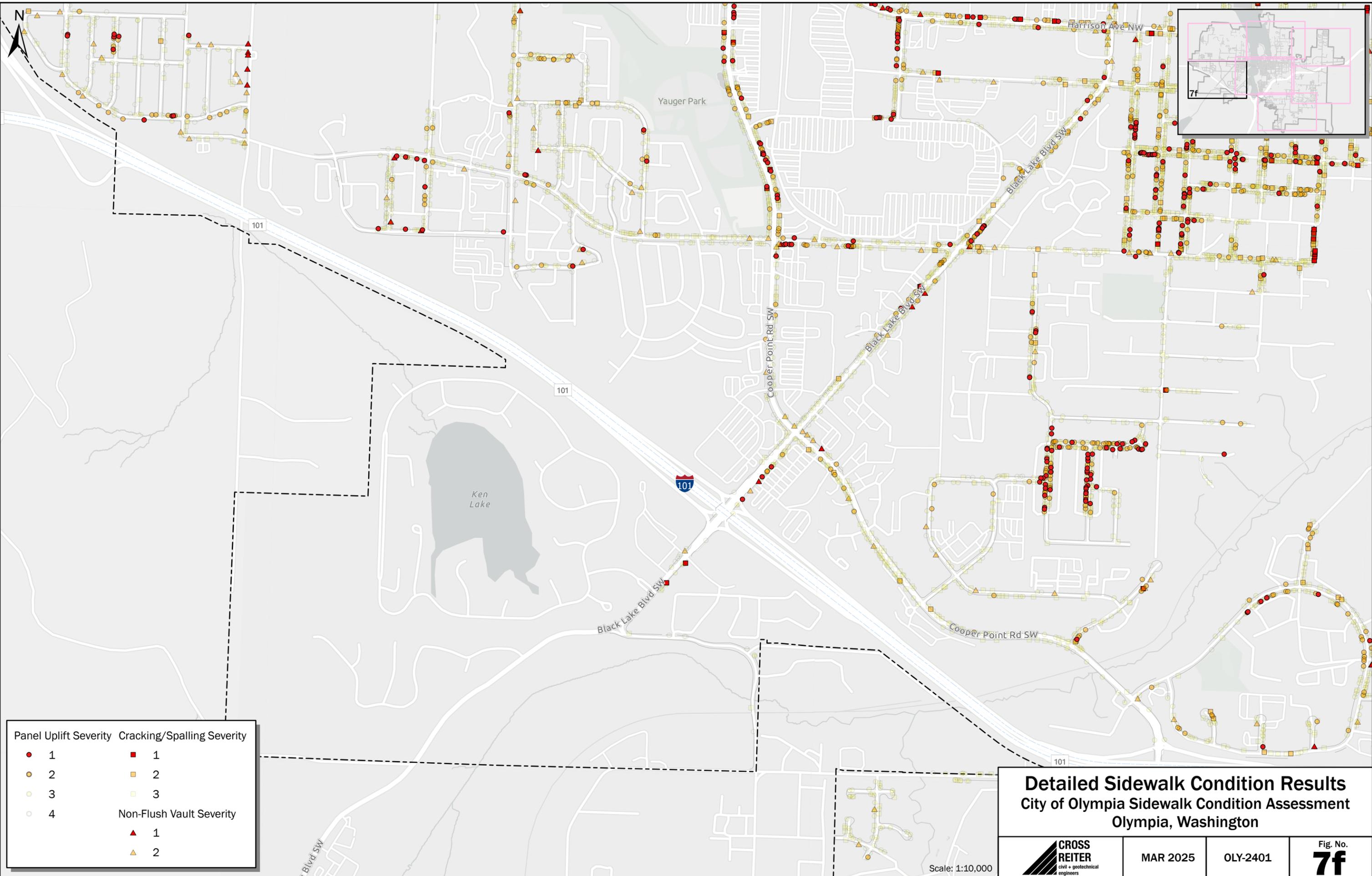


MAR 2025

OLY-2401

Fig. No.
7e

Scale: 1:10,000



Panel Uplift Severity		Cracking/Spalling Severity	
● 1	■ 1	■ 1	
● 2	■ 2	■ 2	
● 3	■ 3	■ 3	
● 4			▲ 1
			▲ 2

Non-Flush Vault Severity

Detailed Sidewalk Condition Results
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

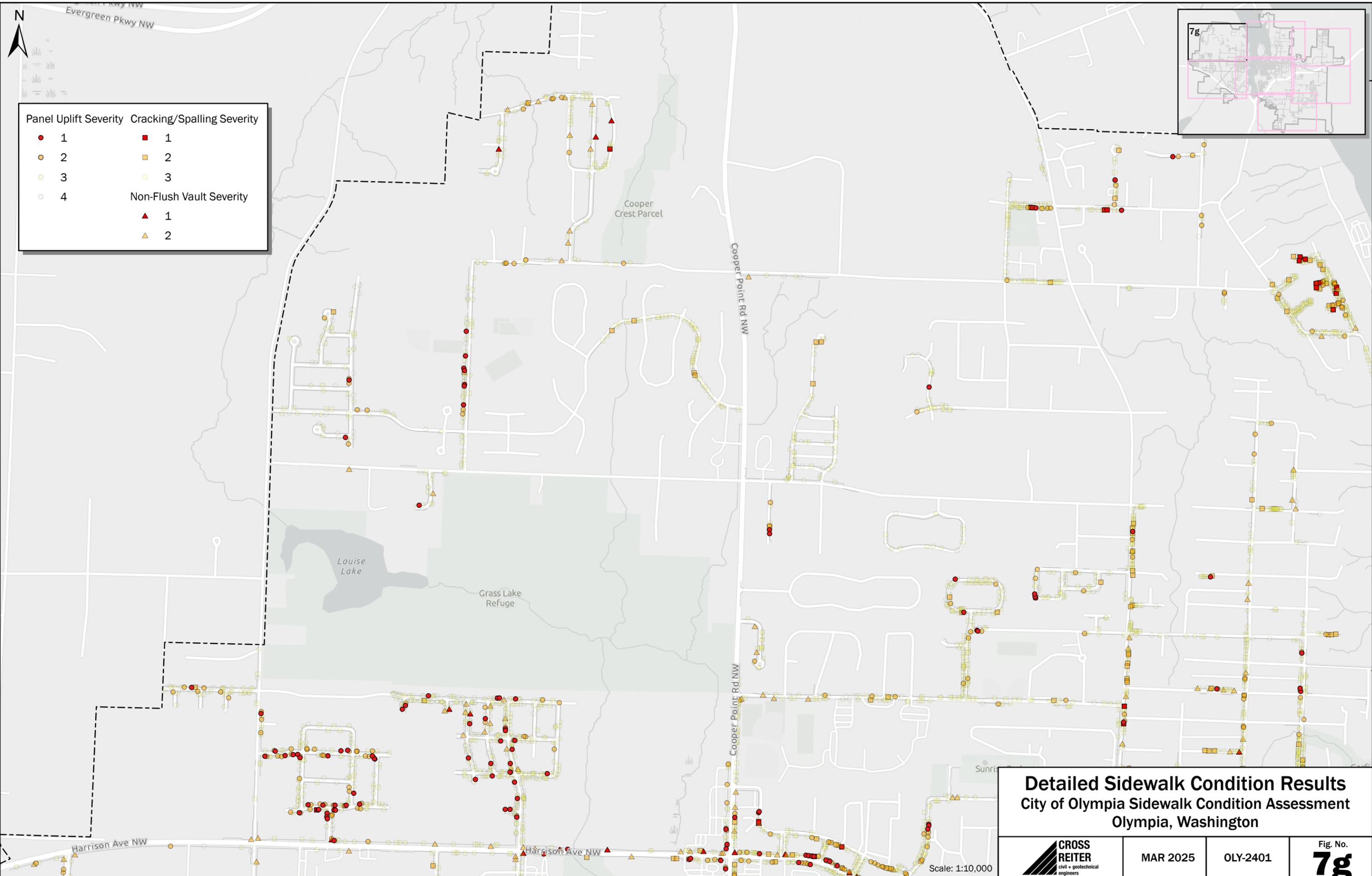


MAR 2025

OLY-2401

Fig. No. **7f**

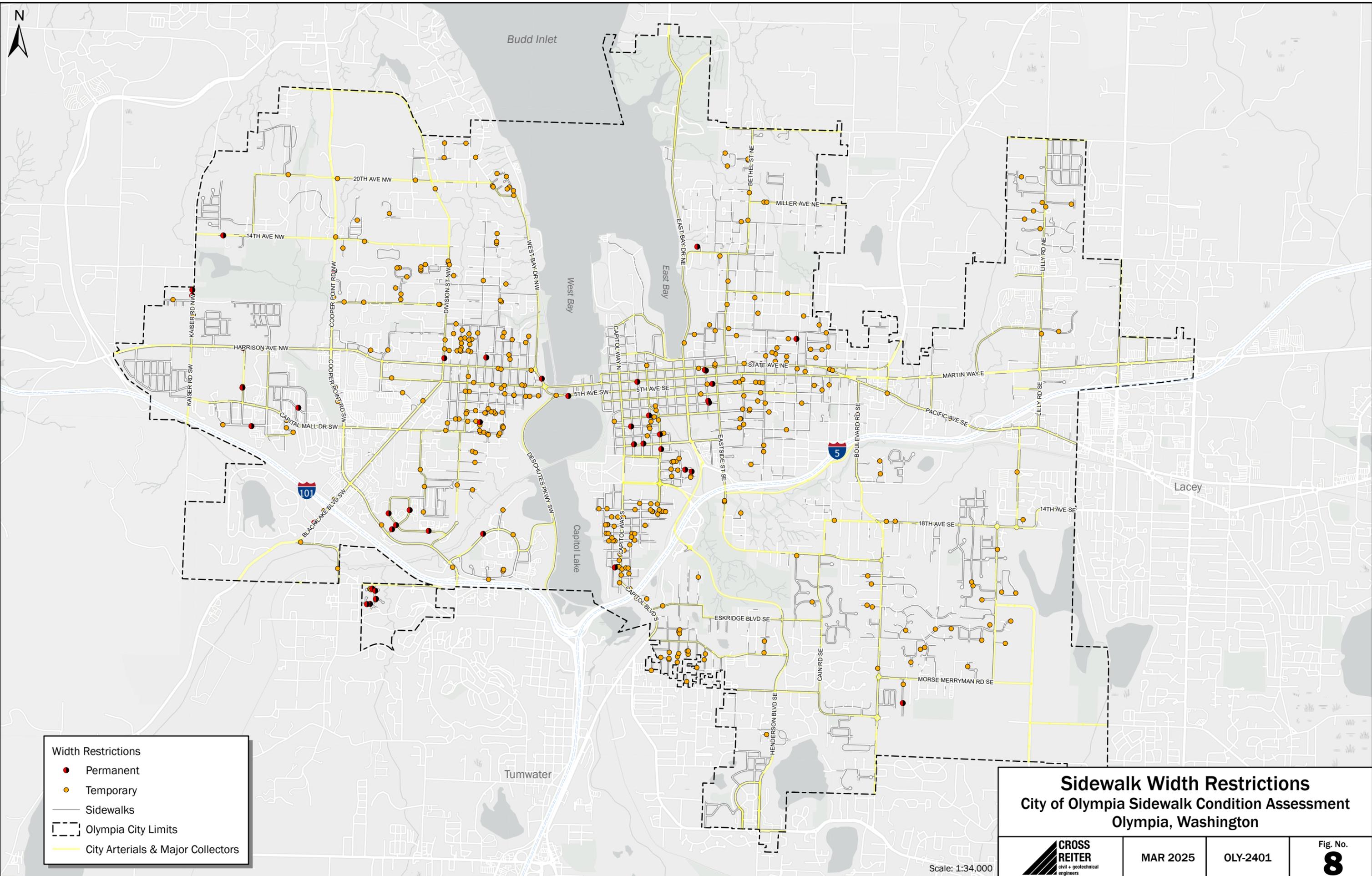
Scale: 1:10,000



Panel Uplift Severity		Cracking/Spalling Severity	
● 1	■ 1	■ 1	
● 2	■ 2	■ 2	
● 3	■ 3	■ 3	
● 4		Non-Flush Vault Severity	
		▲ 1	
		▲ 2	

Detailed Sidewalk Condition Results City of Olympia Sidewalk Condition Assessment Olympia, Washington			
 CROSS REITER <small>civil + geotechnical engineers</small>	MAR 2025	OLY-2401	Fig. No. 7g

Scale: 1:10,000



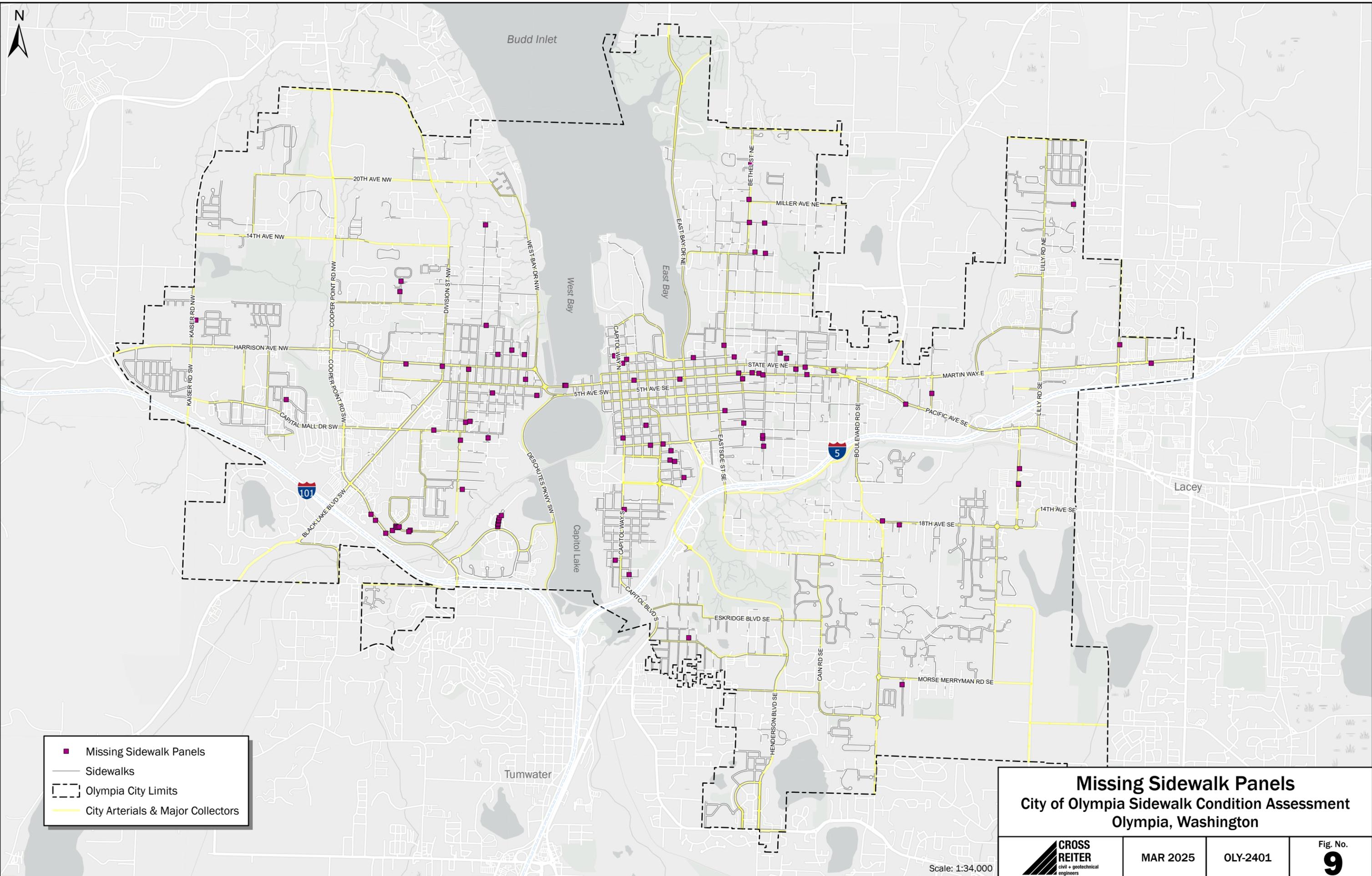
Width Restrictions

- Permanent
- Temporary
- Sidewalks
- - - Olympia City Limits
- City Arterials & Major Collectors

Sidewalk Width Restrictions
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

 <p>CROSS REITER civil + geotechnical engineers</p>	MAR 2025	OLY-2401	Fig. No.
			8

Scale: 1:34,000



Budd Inlet

West Bay

East Bay

Capitol Lake

Tumwater

Lacey

- Missing Sidewalk Panels
- Sidewalks
- - - Olympia City Limits
- City Arterials & Major Collectors

Missing Sidewalk Panels
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington

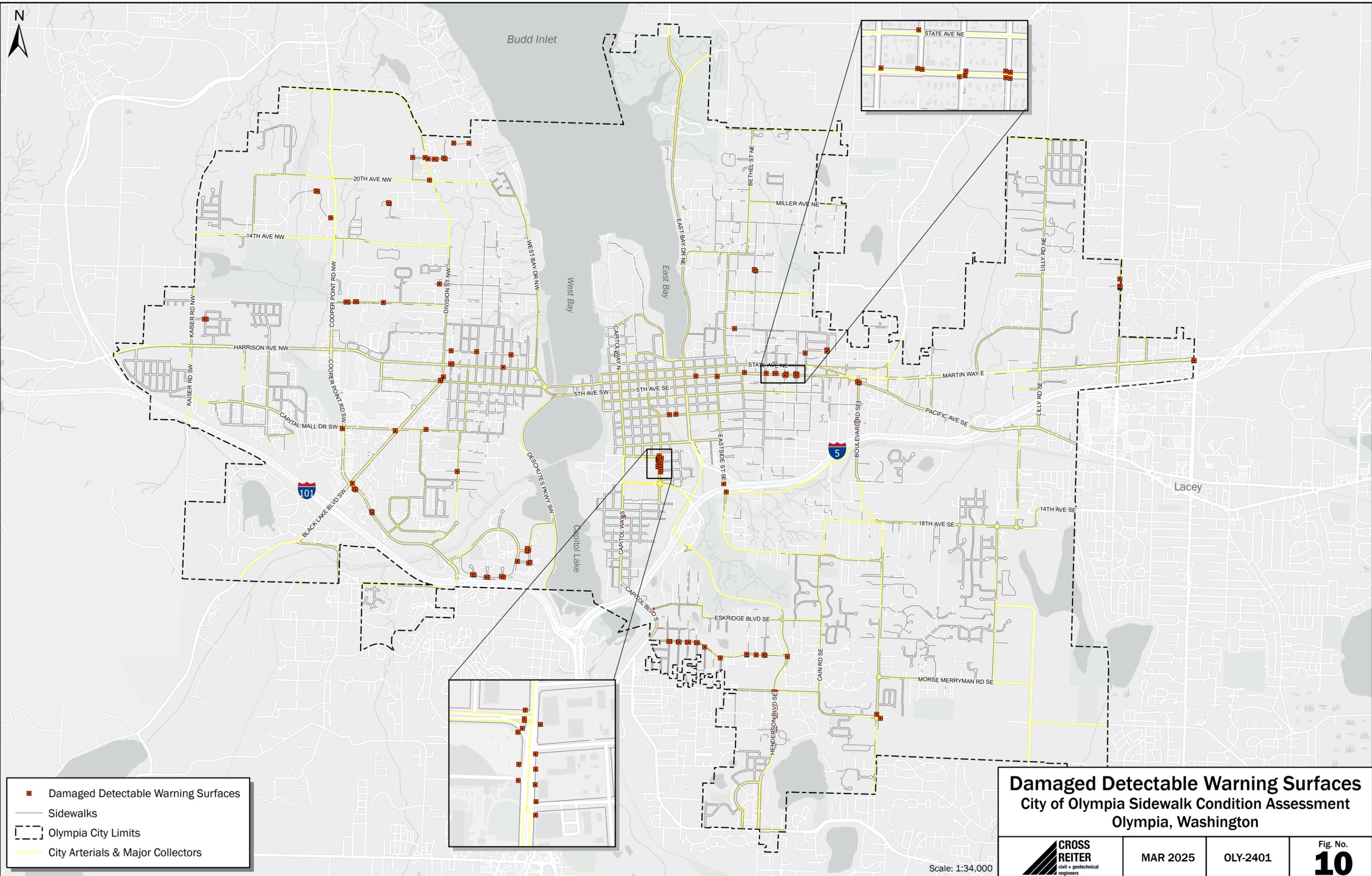
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MAR 2025

OLY-2401

Fig. No. **9**



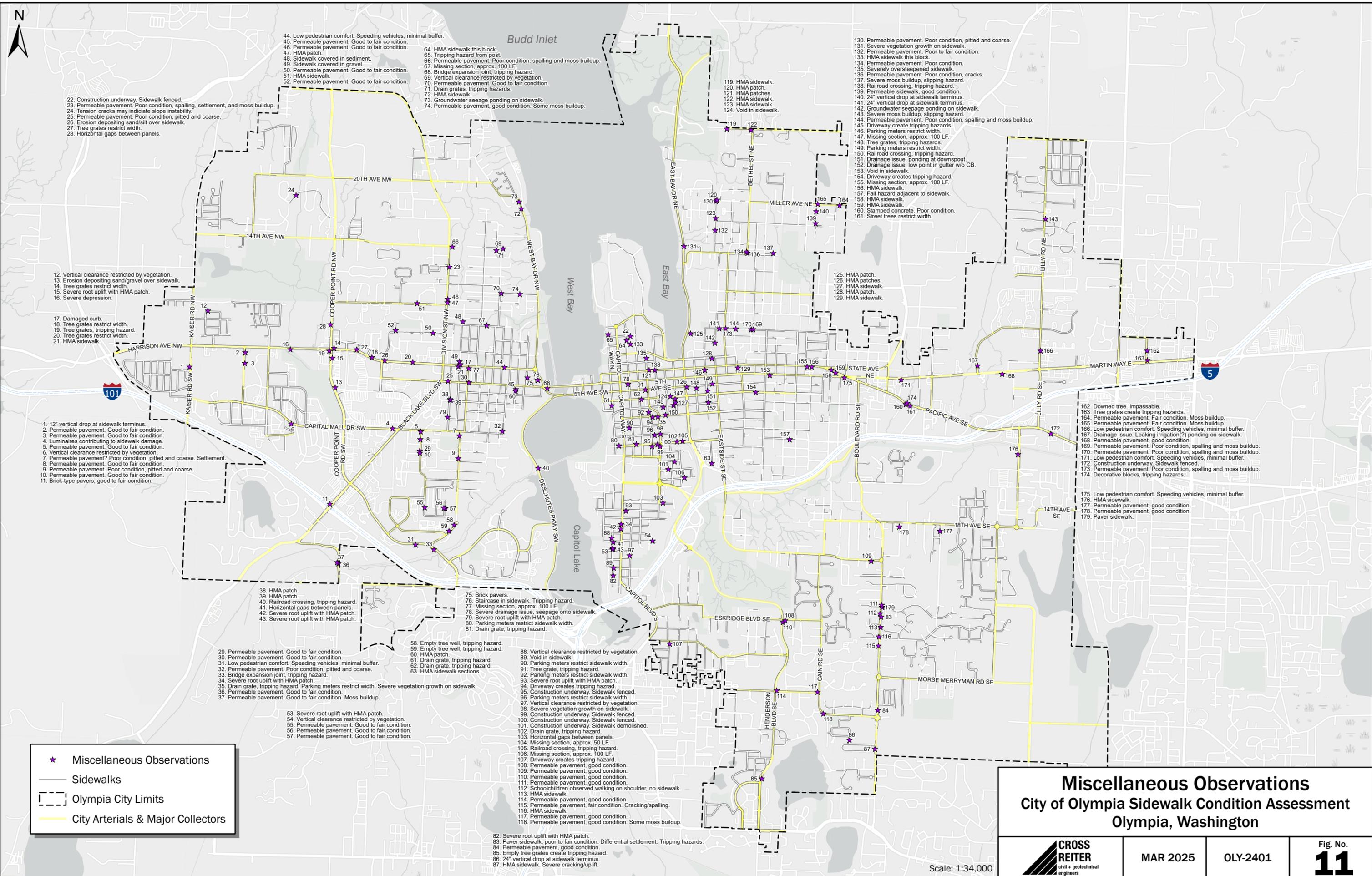
- Damaged Detectable Warning Surfaces
- Sidewalks
- Olympia City Limits
- City Arterials & Major Collectors

Damaged Detectable Warning Surfaces
 City of Olympia Sidewalk Condition Assessment
 Olympia, Washington



MAR 2025	OLY-2401	Fig. No.	10
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Scale: 1:34,000



- 22. Construction underway. Sidewalk fenced.
- 23. Permeable pavement. Poor condition, spalling, settlement, and moss buildup.
- 24. Tension cracks may indicate slope instability.
- 25. Permeable pavement. Poor condition, pitted and coarse.
- 26. Erosion depositing sand/silt over sidewalk.
- 27. Tree grates restrict width.
- 28. Horizontal gaps between panels.

- 12. Vertical clearance restricted by vegetation.
- 13. Erosion depositing sand/gravel over sidewalk.
- 14. Tree grates restrict width.
- 15. Severe root uplift with HMA patch.
- 16. Severe depression.

- 17. Damaged curb.
- 18. Tree grates restrict width.
- 19. Tree grates, tripping hazard.
- 20. Tree grates restrict width.
- 21. HMA sidewalk.

- 1. 12" vertical drop at sidewalk terminus.
- 2. Permeable pavement. Good to fair condition.
- 3. Permeable pavement. Good to fair condition.
- 4. Luminares contributing to sidewalk damage.
- 5. Permeable pavement. Good to fair condition.
- 6. Vertical clearance restricted by vegetation.
- 7. Permeable pavement? Poor condition, pitted and coarse. Settlement.
- 8. Permeable pavement. Good to fair condition.
- 9. Permeable pavement. Poor condition, pitted and coarse.
- 10. Permeable pavement. Good to fair condition.
- 11. Brick-type pavers, good to fair condition.

- 38. HMA patch.
- 39. HMA patch.
- 40. Railroad crossing, tripping hazard.
- 41. Horizontal gaps between panels.
- 42. Severe root uplift with HMA patch.
- 43. Severe root uplift with HMA patch.

- 29. Permeable pavement. Good to fair condition.
- 30. Permeable pavement. Good to fair condition.
- 31. Low pedestrian comfort. Speeding vehicles, minimal buffer.
- 32. Permeable pavement. Poor condition, pitted and coarse.
- 33. Bridge expansion joint, tripping hazard.
- 34. Severe root uplift with HMA patch.
- 35. Drain grate, tripping hazard. Parking meters restrict width. Severe vegetation growth on sidewalk.
- 36. Permeable pavement. Good to fair condition.
- 37. Permeable pavement. Good to fair condition. Moss buildup.

- 53. Severe root uplift with HMA patch.
- 54. Vertical clearance restricted by vegetation.
- 55. Permeable pavement. Good to fair condition.
- 56. Permeable pavement. Good to fair condition.
- 57. Permeable pavement. Good to fair condition.

- 58. Empty tree well, tripping hazard.
- 59. Empty tree well, tripping hazard.
- 60. HMA patch.
- 61. Drain grate, tripping hazard.
- 62. Drain grate, tripping hazard.
- 63. HMA sidewalk sections.

- 75. Brick pavers.
- 76. Staircase in sidewalk. Tripping hazard.
- 77. Missing section, approx. 100 LF.
- 78. Severe drainage issue, seepage onto sidewalk.
- 79. Severe root uplift with HMA patch.
- 80. Parking meters restrict sidewalk width.
- 81. Drain grate, tripping hazard.

- 88. Vertical clearance restricted by vegetation.
- 89. Void in sidewalk.
- 90. Parking meters restrict sidewalk width.
- 91. Tree grate, tripping hazard.
- 92. Parking meters restrict sidewalk width.
- 93. Severe root uplift with HMA patch.
- 94. Driveway creates tripping hazard.
- 95. Construction underway. Sidewalk fenced.
- 96. Parking meters restrict sidewalk width.
- 97. Vertical clearance restricted by vegetation.
- 98. Severe vegetation growth on sidewalk.
- 99. Construction underway. Sidewalk fenced.
- 100. Construction underway. Sidewalk fenced.
- 101. Construction underway. Sidewalk demolished.
- 102. Drain grate, tripping hazard.
- 103. Horizontal gaps between panels.
- 104. Missing section, approx. 50 LF.
- 105. Railroad crossing, tripping hazard.
- 106. Missing section, approx. 100 LF.
- 107. Driveway creates tripping hazard.
- 108. Permeable pavement, good condition.
- 109. Permeable pavement, good condition.
- 110. Permeable pavement, good condition.
- 111. Permeable pavement, good condition.
- 112. Schoolchildren observed walking on shoulder, no sidewalk.
- 113. HMA sidewalk.
- 114. Permeable pavement, good condition.
- 115. Permeable pavement, fair condition. Cracking/spalling.
- 116. HMA sidewalk.
- 117. Permeable pavement, good condition.
- 118. Permeable pavement, good condition. Some moss buildup.

- 82. Severe root uplift with HMA patch.
- 83. Paver sidewalk, poor to fair condition. Differential settlement. Tripping hazards.
- 84. Permeable pavement, good condition.
- 85. Empty tree grates create tripping hazard.
- 86. 24" vertical drop at sidewalk terminus.
- 87. HMA sidewalk. Severe cracking/uplift.

- 44. Low pedestrian comfort. Speeding vehicles, minimal buffer.
- 45. Permeable pavement. Good to fair condition.
- 46. Permeable pavement. Good to fair condition.
- 47. HMA patch.
- 48. Sidewalk covered in sediment.
- 49. Sidewalk covered in gravel.
- 50. Permeable pavement. Good to fair condition.
- 51. HMA sidewalk.
- 52. Permeable pavement. Good to fair condition.

- 64. HMA sidewalk this block.
- 65. Tripping hazard from post.
- 66. Permeable pavement. Poor condition, spalling and moss buildup.
- 67. Missing section, approx. 100 LF.
- 68. Bridge expansion joint, tripping hazard.
- 69. Vertical clearance restricted by vegetation.
- 70. Permeable pavement. Good to fair condition.
- 71. Drain grates, tripping hazards.
- 72. HMA sidewalk.
- 73. Groundwater seepage ponding on sidewalk.
- 74. Permeable pavement, good condition. Some moss buildup.

- 119. HMA sidewalk.
- 120. HMA patch.
- 121. HMA patches.
- 122. HMA sidewalk.
- 123. HMA sidewalk.
- 124. Void in sidewalk.

- 125. HMA patch.
- 126. HMA patches.
- 127. HMA sidewalk.
- 128. HMA patch.
- 129. HMA sidewalk.

- 130. Permeable pavement. Poor condition, pitted and coarse.
- 131. Severe vegetation growth on sidewalk.
- 132. Permeable pavement. Poor to fair condition.
- 133. HMA sidewalk this block.
- 134. Permeable pavement. Poor condition.
- 135. Severely oversteeplened sidewalk.
- 136. Permeable pavement. Poor condition, cracks.
- 137. Severe moss buildup, slipping hazard.
- 138. Railroad crossing, tripping hazard.
- 139. Permeable sidewalk, good condition.
- 140. 24" vertical drop at sidewalk terminus.
- 141. 24" vertical drop at sidewalk terminus.
- 142. Groundwater seepage ponding on sidewalk.
- 143. Severe moss buildup, slipping hazard.
- 144. Permeable pavement. Poor condition, spalling and moss buildup.
- 145. Driveway create tripping hazards.
- 146. Parking meters restrict width.
- 147. Missing section, approx. 100 LF.
- 148. Tree grates, tripping hazards.
- 149. Parking meters restrict width.
- 150. Railroad crossing, tripping hazard.
- 151. Drainage issue, ponding at downspout.
- 152. Drainage issue, low point in gutter w/o CB.
- 153. Void in sidewalk.
- 154. Driveway creates tripping hazard.
- 155. Missing section, approx. 100 LF.
- 156. HMA sidewalk.
- 157. Fall hazard adjacent to sidewalk.
- 158. HMA sidewalk.
- 159. HMA sidewalk.
- 160. Stamped concrete. Poor condition.
- 161. Street trees restrict width.

- 162. Downed tree. Impassable.
- 163. Tree grates create tripping hazards.
- 164. Permeable pavement. Fair condition. Moss buildup.
- 165. Permeable pavement. Fair condition. Moss buildup.
- 166. Low pedestrian comfort. Speeding vehicles, minimal buffer.
- 167. Drainage issue. Leaking irrigation(?) ponding on sidewalk.
- 168. Permeable pavement, good condition.
- 169. Permeable pavement. Poor condition, spalling and moss buildup.
- 170. Permeable pavement. Poor condition, spalling and moss buildup.
- 171. Low pedestrian comfort. Speeding vehicles, minimal buffer.
- 172. Construction underway. Sidewalk fenced.
- 173. Permeable pavement. Poor condition, spalling and moss buildup.
- 174. Decorative blocks, tripping hazards.

- 175. Low pedestrian comfort. Speeding vehicles, minimal buffer.
- 176. HMA sidewalk.
- 177. Permeable pavement, good condition.
- 178. Permeable pavement, good condition.
- 179. Paver sidewalk.

- 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179.

★ Miscellaneous Observations

— Sidewalks

--- Olympia City Limits

— City Arterials & Major Collectors

Miscellaneous Observations

City of Olympia Sidewalk Condition Assessment

Olympia, Washington

CROSS REITER
civil + geotechnical engineers

MAR 2025 OLY-2401

Scale: 1:34,000

Fig. No. **11**

APPENDIX A

Data Collection Criteria and Methodology Memorandum

July 23, 2024

To: Max DeJarnatt, Associate Planner
City of Olympia Public Works

From:



07/23/2024

Laura L. Reiter, PE



07/23/2024

Michael B. Reiter, PE

Re: Proposed Data Collection Criteria and Methodology - FINAL
City of Olympia Sidewalk Condition Assessment, Cross Reiter Project No. OLY-2401

Cross Reiter, Inc. (Cross Reiter) prepared this memorandum to document proposed data collection criteria and methodology for the City of Olympia’s (City) Sidewalk Condition Assessment (Project). The purpose of the Project is to gather geospatial data on sidewalk damage within the City right-of-way. The Project includes several tasks defined in the scope of work prepared by Cross Reiter and executed by the City on June 28, 2024. This memorandum serves as the final deliverable for the first project task. An initial draft of this memorandum was delivered to the City on July 1, 2024 to facilitate City review of Cross Reiter’s proposed data collection criteria and methods before data collection tasks begin. On July 19, 2024, Cross Reiter and the City met to discuss City feedback and requested revisions. This revised version of the memorandum incorporates City feedback and constitutes the final draft.

Data Collection Criteria

The data collection goals for the Project are to (1) map the locations of all existing sidewalks within the City right-of-way and (2) record individual data points detailing the location, type, and severity of existing sidewalk damage. Supplementary information related to potential causes of the observed damage and average sidewalk widths (on a block-by-block basis) will also be collected. Each data point will be categorized as follows:

- **Panel Uplift:** Vertical separation between adjacent sidewalk panels, caused primarily by root uplift from nearby vegetation or differential settlement.
- **Cracking and/or Spalling:** Damage to sidewalk panels caused by cracking and/or spalling (e.g., weathering, pitting, chipping), caused primarily by vehicular loading, construction defects, or ageing.
- **Utility Vaults Not Flush:** Vaults or subsurface structures (e.g., junction boxes) that are not flush with the sidewalk surface, caused primarily by construction defects or differential settlement.
- **Width Restrictions:** Obstructions that restrict effective sidewalk width (e.g., utility poles, vegetation).
- **Missing Panels:** Missing sidewalk panels or portions of sidewalk panels.
- **Damaged Truncated Domes:** Damaged truncated domes at pedestrian ramps.
- **“Other” Observation:** Miscellaneous observations (e.g., drainage issues, non-standard sidewalk conditions, any other noteworthy observations material to the Project goals).
- **Width Observation:** Observations of average sidewalk width.

Table 1 summarizes the Project data collection criteria and the quantitative and qualitative criteria proposed to assess damage severity, as well as additional data and measurements that will be recorded.

Table 1 – Sidewalk Condition Assessment Data Collection Criteria

| Type | Rating | Severity | Additional Data for High Severity Points |
|--------------------------|--------|--|---|
| | | Evaluation Criteria | |
| Panel Uplift | 1 | Vertical separation greater than ~1.5", poses significant tripping hazard, or damage affects a significant area. Likely requires full replacement. | <ul style="list-style-type: none"> • Damage Previously Repaired? (Y/N) • Tree Location/Side: (Private Property/Public Street) • Tree Type: (Deciduous/Conifer) • Tree Diameter: (<12", 12"-18", 18"-24", >24") • Tree Offset: (<1', 1'-2', 2'-3', >3') |
| | 2 | Vertical separation between ~1" and ~1.5", poses a moderate tripping hazard, or damage affects only a portion of panel(s). Likely requires maintenance (grinding or asphalt shim). | |
| | 3 | Vertical separation between ~0.5" and ~1", or damage confined to a limited portion of a single panel. Requires observation and future maintenance. | |
| | 4 | Vertical separation is between ~0.25" and ~0.5", and uplift is notable and worthy of observation. | |
| Cracking and/or Spalling | 1 | Cracks wider than ~0.5", extensive spalling affecting significant area, or significant deterioration that poses a substantial tripping hazard or structural integrity issue. Likely requires full replacement. | <ul style="list-style-type: none"> • Driveway Approach? (Y/N) |
| | 2 | Cracks less than ~0.5", moderate spalling affecting portion of panel(s), or moderate deterioration presenting a potential tripping hazard or structural integrity issue. Likely requires maintenance or partial replacement. | |
| | 3 | Minor cracking or spalling, or deterioration confined to limited portion of panel. Requires observation and future maintenance. | |
| Non-Flush Utility Vault | 1 | Vault more than 1" above or below sidewalk surface, or poses significant tripping hazard. Likely requires replacement. | - |
| | 2 | Vault between ~0.5" and ~1" above or below sidewalk surface, or poses moderate tripping hazard. Requires maintenance or observation. | |
| Width Restriction | 1 | Permanent structures (e.g., utility poles, mailboxes) that reduce sidewalk width significantly or limit pedestrian passage. | <ul style="list-style-type: none"> • Passable Width: (<4', 4' or Greater) |
| | 2 | Temporary conditions (e.g., overgrown vegetation) that reduce sidewalk width or moderately impact pedestrian passage. | |
| Missing Panel | - | - | - |
| Damaged Truncated Domes | - | - | <ul style="list-style-type: none"> • Truncated Dome Type: ("Peel-and-Stick", "Set-in-Place", or "Anchored") • Tripping Hazard? (Y/N) |
| Width Observation | - | - | <ul style="list-style-type: none"> • Width: (<4', 4', 5', 6', >6') |
| Other Observation | - | - | <ul style="list-style-type: none"> • As required |

A photograph array (**Attachment A**) is appended to this memorandum which includes representative photographs for several types of observations and levels of severity, for the City's reference.

Data Collection Methodology

We will walk all public sidewalks within the City right-of-way, collecting Project data points based on visual observations and measurements with hand tools (e.g., tape measures). We will use the City's available GIS dataset on sidewalk locations to delineate both logical walking routes and discrete zones for future data analysis and aggregation. To collect geospatial data points, we will use 5G-enabled Apple iPhones equipped with the ESRI Field Maps mobile application. This application will utilize preformatted data entry forms based on the criteria outlined in **Table 1**. The proposed data entry forms are included as **Attachment B**, for the City's reference. For enhanced spatial accuracy, the iPhones will be connected via Bluetooth to Trimble R1 GNSS GPS receivers during the data collection process.

Conclusion

This memorandum documents Cross Reiter's proposed data collection criteria and methodology for the Project. The proposed data collection criteria are detailed in **Table 1**, which summarizes the specific data that will be collected for the Project and the qualitative and quantitative factors we will consider to prioritize the severity of sidewalk damage. Representative photographs of typical sidewalk damage are appended to this memorandum as **Attachment A** for reference. The final digital data entry forms we propose to employ for the Project are appended to this memorandum as **Attachment B**. An initial draft of this memorandum was delivered to the City on July 1, 2024 to facilitate City review of Cross Reiter's proposed data collection criteria and methods before data collection tasks begin. On July 19, 2024, Cross Reiter and the City met to discuss City feedback and requested revisions. This revised version of the memorandum incorporates City feedback and constitutes the final draft.

Attachments

- Attachment A – Representative Photographs of Typical Sidewalk Damage
- Attachment B – Final ESRI Field Maps Data Entry Forms

Attachment A – Representative Photographs of Typical Sidewalk Damage

Panel Uplift



Severity 1



Severity 2



Severity 3

Cracking and/or Spalling



Severity 1



Severity 2



Severity 3

Non-Flush Utility Vault



Severity 1



Severity 2

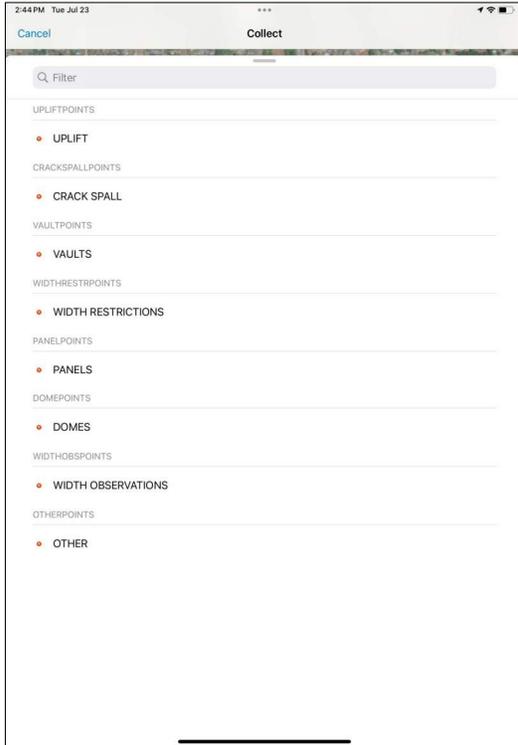
-

-

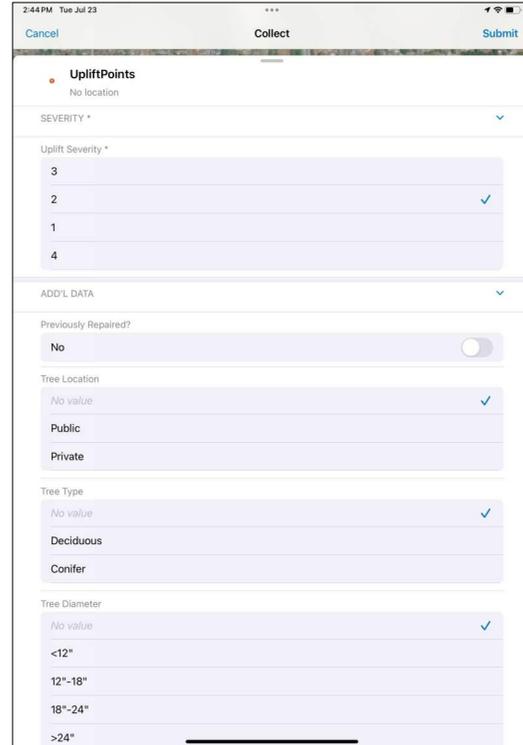
Attachment A – Representative Photographs of Typical Sidewalk Damage

| | | | |
|------------------------------------|---|--|---|
| <p>Width Restriction</p> |  |  | - |
| | <p>Permanent</p> | <p>Temporary</p> | - |
| <p>Missing Panel</p> |  | - | - |
| | - | - | - |
| <p>Truncated Dome Types</p> |  |  |  |
| | <p>"Peel-and-Stick"</p> | <p>"Set-in-Place"</p> | <p>"Anchored"</p> |

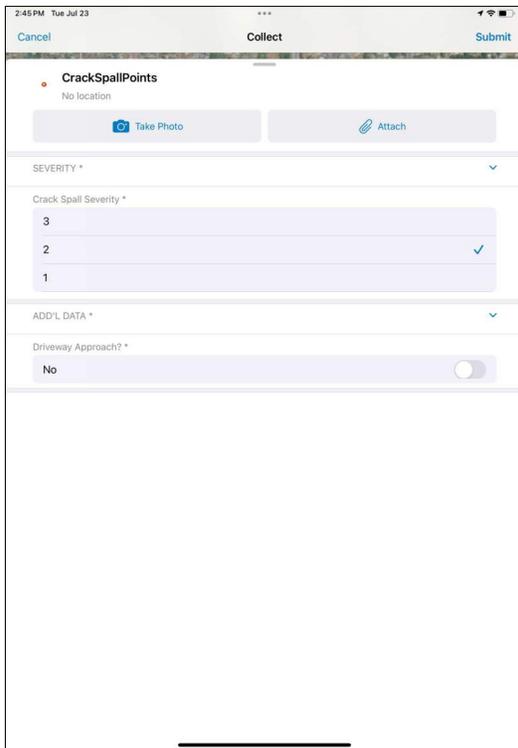
Attachment B – ESRI Fieldmaps Data Entry Forms



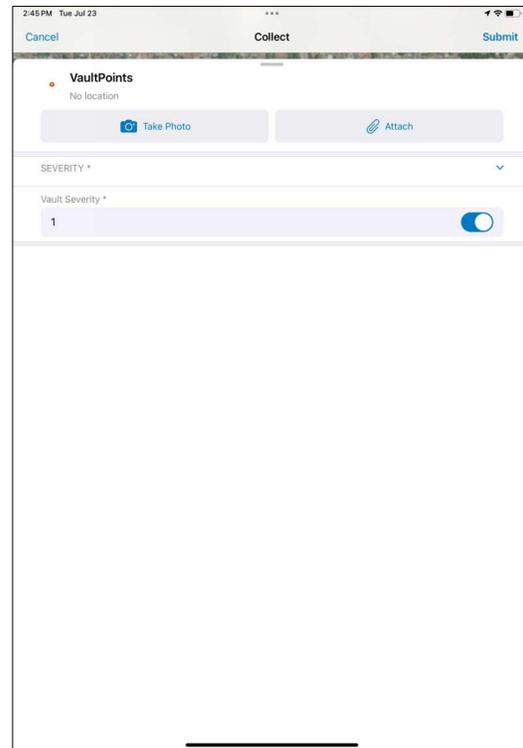
Main Menu



Panel Uplift*



Cracking and/or Spalling



Non-Flush Utility Vault

*Additional data (ADD'L DATA) fields collected only for points with severity = 1 and severity = 2, no additional data collected for points with severity = 3 or severity = 4.

Attachment B – ESRI Fieldmaps Data Entry Forms

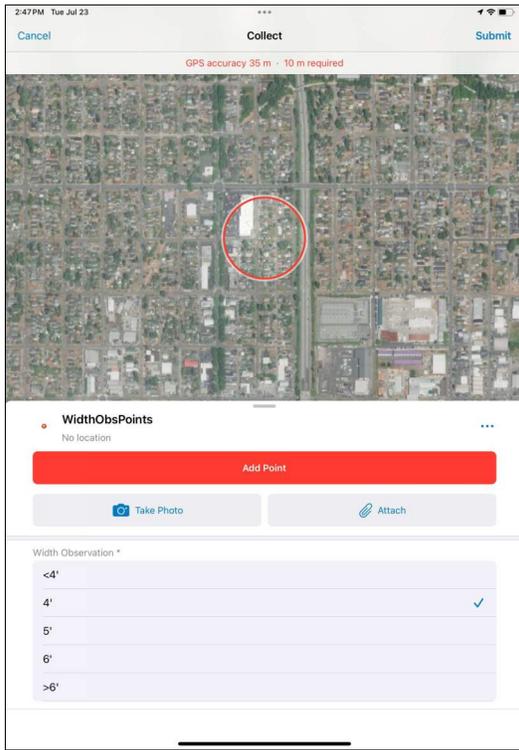
Width Restriction

Missing Panel

Damaged Domes

“Other” Observation

Attachment B – ESRI Fieldmaps Data Entry Forms



Width Observation

APPENDIX B

Aggregate Scoring Methodology

Appendix B – Aggregate Scoring Methodology

Cross Reiter employed two methods to calculate aggregate sidewalk condition scores: hexagonal binning and sidewalk segment binning, as illustrated in **Figure 3** and **Figure 4**. For hexagonal binning, the bins were designed with an area approximately equivalent to a downtown city block (about 250 feet by 250 feet). In the sidewalk segment method, discrete segments of about 250 feet in length were defined. The total number of damage points corresponding to each bin, categorized by damage type, was then tallied. Finally, the weighting factors and deductions specified in **Table B1** were applied to the damage categories to compute the aggregate scores. For the sidewalk segment bins, the total point deduction was normalized by the length of the sidewalk segment.

Table B1. Sidewalk Condition Index Score Weighting Factors

| Damage Type Category | Severity | Point Deduction/ Weighing Factors |
|-----------------------------|-----------------|--|
| Panel Uplift | 1 (Highest) | -10 |
| | 2 | -6 |
| | 3 | -1 |
| | 4 (Lowest) | -1 |
| Cracking and/or Spalling | 1 (Highest) | -10 |
| | 2 | -6 |
| | 3 (Lowest) | -1 |
| Non-Flush Utility Vaults | 1 (Highest) | -10 |
| | 2 (Lowest) | -6 |

APPENDIX C

Tabular Summary of Lowest Scoring Sidewalk Segments

Appendix C – Tabular Summary of Lowest Scoring Sidewalk Segments

A tabular summary of the sidewalk segments with the lowest sidewalk condition index (SCI) scores is included in **Table C1** below. **Table C1** only shows sidewalks with a sidewalk condition index (SCI) score less than 50 and a sidewalk segment length greater than or equal to 150 feet. These sidewalk segments are also shown in **Figure 5** with ID labels that match **Table C1** below. Arterials are highlighted for clarity.

Table C1. Lowest Scoring Sidewalk Segments

| ID
(See Figure 5) | SCI
Score | Street Name | Latitude | Longitude | Link to Location | Road Classification | Length | Width |
|----------------------|--------------|-------------------------|----------|-----------|----------------------------|---------------------|--------|-------|
| 1 | 0 | OLYMPIA AVE NE | 47.04734 | -122.89 | Click Here | LOCAL ACCESS | 322' | 5' |
| 2 | 0 | LEGION WAY SE | 47.04396 | -122.889 | Click Here | MAJOR COLLECTOR | 309' | 5' |
| 3 | 0 | 22ND AVE SW | 47.02913 | -122.901 | Click Here | LOCAL ACCESS | 241' | 5' |
| 4 | 0 | 4TH AVE E | 47.04518 | -122.896 | Click Here | ARTERIAL | 263' | >6' |
| 5 | 0 | STATE AVE NE | 47.04612 | -122.898 | Click Here | ARTERIAL | 248' | >6' |
| 6 | 0 | 6TH AVE SW | 47.0426 | -122.924 | Click Here | LOCAL ACCESS | 232' | 5' |
| 7 | 0 | GARFIELD AVE NW | 47.04719 | -122.915 | Click Here | LOCAL ACCESS | 236' | 5' |
| 8 | 3 | PERCIVAL ST SW | 47.04028 | -122.918 | Click Here | LOCAL ACCESS | 352' | 4' |
| 9 | 6 | 4TH AVE E | 47.04535 | -122.894 | Click Here | LOCAL ACCESS | 311' | >6' |
| 10 | 7 | 4TH AVE E | 47.04563 | -122.892 | Click Here | ARTERIAL | 307' | >6' |
| 11 | 10 | 4TH AVE E | 47.04545 | -122.892 | Click Here | ARTERIAL | 306' | >6' |
| 12 | 10 | DECATUR ST SW | 47.04308 | -122.923 | Click Here | LOCAL ACCESS | 267' | 5' |
| 13 | 10 | DIVISION ST SW | 47.03306 | -122.926 | Click Here | LOCAL ACCESS | 287' | 5' |
| 14 | 11 | 4TH AVE E | 47.04565 | -122.889 | Click Here | ARTERIAL | 313' | >6' |
| 15 | 15 | 15TH AVE SW | 47.03459 | -122.924 | Click Here | LOCAL ACCESS | 200' | 5' |
| 16 | 17 | LEGION WAY SE | 47.04386 | -122.89 | Click Here | MAJOR COLLECTOR | 312' | 5' |
| 17 | 19 | 19TH AVE SE | 47.03164 | -122.899 | Click Here | LOCAL ACCESS | 260' | 4' |
| 18 | 20 | FRANKLIN ST SE | 47.03193 | -122.898 | Click Here | LOCAL ACCESS | 211' | 5' |
| 19 | 20 | 11TH AVE SE | 47.03813 | -122.896 | Click Here | MAJOR COLLECTOR | 260' | 6' |
| 20 | 20 | 4TH AVE W | 47.04493 | -122.902 | Click Here | ARTERIAL | 253' | >6' |
| 21 | 20 | DIVISION ST SW | 47.03398 | -122.926 | Click Here | LOCAL ACCESS | 383' | 5' |
| 22 | 20 | SHERMAN ST NW | 47.04653 | -122.915 | Click Here | LOCAL ACCESS | 389' | 5' |
| 23 | 20 | BLACK LAKE BLVD SW | 47.04336 | -122.935 | Click Here | LOCAL ACCESS | 224' | 6' |
| 24 | 21 | 5TH AVE SW | 47.04348 | -122.917 | Click Here | LOCAL ACCESS | 255' | 4' |
| 25 | 21 | BLACK LAKE BLVD SW | 47.0404 | -122.931 | Click Here | ARTERIAL | 415' | 6' |
| 26 | 22 | 6TH AVE SW | 47.04263 | -122.918 | Click Here | LOCAL ACCESS | 250' | 5' |
| 27 | 22 | 43RD AVE SE | 47.0089 | -122.866 | Click Here | LOCAL ACCESS | 309' | 5' |
| 28 | 22 | 8TH AVE SE | 47.04257 | -122.881 | Click Here | LOCAL ACCESS | 222' | 5' |
| 29 | 23 | EASTSIDE ST SE | 47.04537 | -122.888 | Click Here | MAJOR COLLECTOR | 242' | >6' |
| 30 | 23 | EAST BAY DR NE | 47.04592 | -122.893 | Click Here | ARTERIAL | 245' | >6' |
| 31 | 23 | HARRISON AVE NW | 47.04695 | -122.937 | Click Here | ARTERIAL | 321' | >6' |
| 32 | 23 | KENYON ST NW | 47.04537 | -122.934 | Click Here | MAJOR COLLECTOR | 506' | 6' |
| 33 | 24 | CAPITOL WAY N | 47.04531 | -122.902 | Click Here | ARTERIAL | 258' | >6' |
| 34 | 24 | DECATUR ST SW | 47.04037 | -122.923 | Click Here | MAJOR COLLECTOR | 337' | 5' |
| 35 | 24 | GOVERNOR STEVENS AVE SE | 47.02206 | -122.895 | Click Here | LOCAL ACCESS | 347' | 4' |
| 36 | 25 | OLYMPIA AVE NE | 47.04744 | -122.888 | Click Here | LOCAL ACCESS | 316' | 6' |
| 37 | 25 | PEAR ST SE | 47.04433 | -122.891 | Click Here | LOCAL ACCESS | 252' | 6' |
| 38 | 25 | 5TH AVE SW | 47.04336 | -122.917 | Click Here | LOCAL ACCESS | 251' | 4' |
| 39 | 25 | SHERMAN ST NW | 47.0478 | -122.914 | Click Here | LOCAL ACCESS | 485' | 5' |

| ID
(See Figure 5) | SCI
Score | Street Name | Latitude | Longitude | Link to Location | Road Classification | Length | Width |
|----------------------|--------------|--------------------|----------|-----------|----------------------------|------------------------|--------|-------|
| 40 | 25 | 26TH AVE SW | 47.02582 | -122.901 | Click Here | LOCAL ACCESS | 234' | 6' |
| 41 | 26 | UNION AVE SE | 47.04017 | -122.881 | Click Here | LOCAL ACCESS | 304' | 5' |
| 42 | 26 | CENTRAL ST SE | 47.04223 | -122.882 | Click Here | NEIGHBORHOOD COLLECTOR | 269' | 5' |
| 43 | 26 | FRANKLIN ST SE | 47.03263 | -122.898 | Click Here | LOCAL ACCESS | 221' | 6' |
| 44 | 26 | WASHINGTON ST NE | 47.04542 | -122.9 | Click Here | ARTERIAL | 258' | >6' |
| 45 | 27 | OLYMPIA AVE NE | 47.04724 | -122.891 | Click Here | LOCAL ACCESS | 316' | 6' |
| 46 | 27 | COLUMBIA ST SW | 47.02625 | -122.902 | Click Here | LOCAL ACCESS | 318' | 5' |
| 47 | 27 | FERN ST SW | 47.03309 | -122.928 | Click Here | LOCAL ACCESS | 302' | 5' |
| 48 | 28 | COLUMBIA ST SW | 47.02879 | -122.902 | Click Here | LOCAL ACCESS | 252' | 5' |
| 49 | 28 | WASHINGTON ST SE | 47.03052 | -122.899 | Click Here | LOCAL ACCESS | 212' | 5' |
| 50 | 28 | 4TH AVE E | 47.04544 | -122.895 | Click Here | ARTERIAL | 250' | >6' |
| 51 | 28 | 6TH AVE SW | 47.04249 | -122.918 | Click Here | LOCAL ACCESS | 259' | 5' |
| 52 | 29 | GLASS AVE NE | 47.04954 | -122.887 | Click Here | LOCAL ACCESS | 285' | 4' |
| 53 | 30 | LEGION WAY SE | 47.04376 | -122.892 | Click Here | MAJOR COLLECTOR | 266' | 5' |
| 54 | 30 | 8TH AVE SE | 47.04226 | -122.892 | Click Here | MAJOR COLLECTOR | 270' | 5' |
| 55 | 30 | WASHINGTON ST SE | 47.02716 | -122.899 | Click Here | LOCAL ACCESS | 262' | 5' |
| 56 | 30 | 24TH AVE SE | 47.02749 | -122.9 | Click Here | LOCAL ACCESS | 259' | 5' |
| 57 | 30 | 10TH AVE SE | 47.0398 | -122.9 | Click Here | LOCAL ACCESS | 254' | 6' |
| 58 | 30 | FERN ST SW | 47.03408 | -122.928 | Click Here | MAJOR COLLECTOR | 316' | 5' |
| 59 | 30 | HARRISON AVE NW | 47.04719 | -122.938 | Click Here | ARTERIAL | 335' | >6' |
| 60 | 32 | 4TH AVE E | 47.04555 | -122.891 | Click Here | ARTERIAL | 310' | >6' |
| 61 | 32 | 22ND AVE SE | 47.02913 | -122.9 | Click Here | LOCAL ACCESS | 259' | 5' |
| 62 | 32 | 19TH AVE SE | 47.03152 | -122.898 | Click Here | LOCAL ACCESS | 246' | 5' |
| 63 | 32 | PLYMOUTH ST SW | 47.04215 | -122.92 | Click Here | LOCAL ACCESS | 273' | 5' |
| 64 | 32 | 5TH AVE SW | 47.04345 | -122.923 | Click Here | LOCAL ACCESS | 233' | 5' |
| 65 | 32 | 15TH AVE SW | 47.03464 | -122.925 | Click Here | LOCAL ACCESS | 318' | 5' |
| 66 | 33 | 8TH AVE SE | 47.04266 | -122.886 | Click Here | LOCAL ACCESS | 479' | 5' |
| 67 | 33 | 21ST AVE SW | 47.03011 | -122.903 | Click Here | LOCAL ACCESS | 260' | 5' |
| 68 | 33 | 6TH AVE SW | 47.04252 | -122.919 | Click Here | LOCAL ACCESS | 259' | 5' |
| 69 | 33 | 4TH AVE E | 47.04575 | -122.888 | Click Here | ARTERIAL | 329' | >6' |
| 70 | 34 | PLUM ST SE | 47.04508 | -122.893 | Click Here | ARTERIAL | 242' | >6' |
| 71 | 34 | STATE AVE NE | 47.04598 | -122.897 | Click Here | ARTERIAL | 260' | >6' |
| 72 | 34 | COLUMBIA ST SW | 47.0263 | -122.902 | Click Here | LOCAL ACCESS | 307' | 5' |
| 73 | 34 | COOPER POINT RD SW | 47.04245 | -122.94 | Click Here | ARTERIAL | 412' | 6' |
| 74 | 35 | BOUNDARY ST SE | 47.0456 | -122.885 | Click Here | MAJOR COLLECTOR | 238' | 5' |
| 75 | 35 | CAPITOL WAY S | 47.04269 | -122.901 | Click Here | ARTERIAL | 319' | >6' |
| 76 | 35 | COVEY ST SE | 47.00898 | -122.868 | Click Here | LOCAL ACCESS | 398' | 5' |
| 77 | 35 | CARLYON AVE SE | 47.02099 | -122.895 | Click Here | MAJOR COLLECTOR | 556' | 6' |
| 78 | 36 | 23RD AVE SW | 47.02844 | -122.901 | Click Here | LOCAL ACCESS | 238' | 4' |
| 79 | 36 | SYLVESTER ST SW | 47.04419 | -122.905 | Click Here | LOCAL ACCESS | 241' | >6' |
| 80 | 37 | 11TH AVE SE | 47.03813 | -122.9 | Click Here | MAJOR COLLECTOR | 252' | 5' |
| 81 | 37 | WEST BAY DR NW | 47.04835 | -122.913 | Click Here | MAJOR COLLECTOR | 309' | 5' |
| 82 | 37 | COVEY ST SE | 47.00906 | -122.867 | Click Here | LOCAL ACCESS | 381' | 5' |
| 83 | 38 | 17TH AVE SW | 47.03307 | -122.901 | Click Here | LOCAL ACCESS | 256' | 4' |
| 84 | 38 | FERN ST SW | 47.03405 | -122.928 | Click Here | MAJOR COLLECTOR | 336' | 5' |
| 85 | 38 | FOOTE ST NW | 47.04635 | -122.916 | Click Here | LOCAL ACCESS | 314' | 5' |
| 86 | 39 | 4TH AVE E | 47.04612 | -122.88 | Click Here | ARTERIAL | 293' | 6' |
| 87 | 39 | LEGION WAY SE | 47.04445 | -122.883 | Click Here | MAJOR COLLECTOR | 375' | 5' |

| ID
(See Figure 5) | SCI
Score | Street Name | Latitude | Longitude | Link to Location | Road Classification | Length | Width |
|----------------------|--------------|------------------|----------|-----------|----------------------------|------------------------|--------|-------|
| 88 | 39 | 8TH AVE SE | 47.04257 | -122.883 | Click Here | LOCAL ACCESS | 348' | 5' |
| 89 | 39 | 20TH AVE SE | 47.03081 | -122.899 | Click Here | LOCAL ACCESS | 259' | 5' |
| 90 | 39 | HOFFMAN RD SE | 47.02649 | -122.849 | Click Here | MAJOR COLLECTOR | 574' | 6' |
| 91 | 39 | MARINGO RD SE | 47.02153 | -122.894 | Click Here | LOCAL ACCESS | 391' | 4' |
| 92 | 40 | 8TH AVE SE | 47.04276 | -122.883 | Click Here | LOCAL ACCESS | 352' | 5' |
| 93 | 40 | QUINCE ST SE | 47.04446 | -122.89 | Click Here | LOCAL ACCESS | 259' | 5' |
| 94 | 40 | FOOTE ST NW | 47.04775 | -122.915 | Click Here | LOCAL ACCESS | 404' | 5' |
| 95 | 40 | CAR;YON AVE SE | 47.02099 | -122.893 | Click Here | MAJOR COLLECTOR | 348' | <4' |
| 96 | 40 | 43RD AVE SE | 47.00876 | -122.866 | Click Here | LOCAL ACCESS | 323' | 5' |
| 97 | 41 | FIR ST NE | 47.04977 | -122.878 | Click Here | NEIGHBORHOOD COLLECTOR | 210' | 4' |
| 98 | 41 | SURREY DR NE | 47.06367 | -122.847 | Click Here | LOCAL ACCESS | 361' | 5' |
| 99 | 41 | PLUM ST SE | 47.03663 | -122.892 | Click Here | LOCAL ACCESS | 264' | 5' |
| 100 | 41 | 8TH AVE SE | 47.04197 | -122.896 | Click Here | MAJOR COLLECTOR | 260' | >6' |
| 101 | 41 | SHERMAN ST SW | 47.04267 | -122.915 | Click Here | LOCAL ACCESS | 474' | 5' |
| 102 | 41 | SHERMAN ST NW | 47.04774 | -122.914 | Click Here | LOCAL ACCESS | 412' | 5' |
| 103 | 42 | CENTRAL ST SE | 47.0384 | -122.882 | Click Here | LOCAL ACCESS | 590' | 5' |
| 104 | 42 | CENTRAL ST SE | 47.04181 | -122.882 | Click Here | NEIGHBORHOOD COLLECTOR | 586' | 5' |
| 105 | 42 | 7TH AVE SE | 47.04358 | -122.883 | Click Here | LOCAL ACCESS | 363' | 5' |
| 106 | 42 | HOFFMAN RD SE | 47.02899 | -122.849 | Click Here | MAJOR COLLECTOR | 352' | 6' |
| 107 | 42 | CRAIG RD SE | 47.02881 | -122.854 | Click Here | NEIGHBORHOOD COLLECTOR | 334' | 5' |
| 108 | 43 | CENTRAL ST SE | 47.0448 | -122.882 | Click Here | NEIGHBORHOOD COLLECTOR | 271' | 5' |
| 109 | 43 | 10TH AVE SE | 47.0401 | -122.898 | Click Here | LOCAL ACCESS | 262' | 6' |
| 110 | 43 | MILROY ST SW | 47.04038 | -122.924 | Click Here | LOCAL ACCESS | 339' | 5' |
| 111 | 43 | SKYLINE TER NW | 47.06328 | -122.918 | Click Here | LOCAL ACCESS | 348' | 5' |
| 112 | 43 | MARINGO RD SE | 47.02152 | -122.894 | Click Here | LOCAL ACCESS | 387' | 6' |
| 113 | 43 | UNION AVE SE | 47.0399 | -122.888 | Click Here | MAJOR COLLECTOR | 338' | >6' |
| 114 | 43 | 8TH AVE SE | 47.04257 | -122.884 | Click Here | LOCAL ACCESS | 282' | 5' |
| 115 | 44 | EASTSIDE ST NE | 47.05643 | -122.889 | Click Here | LOCAL ACCESS | 321' | 4' |
| 116 | 44 | PEAR ST NE | 47.04686 | -122.892 | Click Here | LOCAL ACCESS | 248' | 5' |
| 117 | 44 | PLUM ST SE | 47.04339 | -122.892 | Click Here | ARTERIAL | 245' | >6' |
| 118 | 44 | 21ST AVE SE | 47.03009 | -122.9 | Click Here | LOCAL ACCESS | 263' | 6' |
| 119 | 44 | 21ST AVE SE | 47.03023 | -122.9 | Click Here | LOCAL ACCESS | 260' | 6' |
| 120 | 44 | CHERRY ST SE | 47.03645 | -122.894 | Click Here | LOCAL ACCESS | 271' | 6' |
| 121 | 44 | STATE AVE NE | 47.04586 | -122.901 | Click Here | ARTERIAL | 253' | >6' |
| 122 | 44 | EASTSIDE ST SE | 47.0335 | -122.887 | Click Here | MAJOR COLLECTOR | 227' | 4' |
| 123 | 44 | 5TH AVE SE | 47.04509 | -122.888 | Click Here | LOCAL ACCESS | 330' | >6' |
| 124 | 44 | CUSHING ST SW | 47.04225 | -122.925 | Click Here | LOCAL ACCESS | 314' | 5' |
| 125 | 45 | 4TH AVE W | 47.0447 | -122.904 | Click Here | ARTERIAL | 258' | 6' |
| 126 | 45 | HOFFMAN RD SE | 47.02794 | -122.849 | Click Here | MAJOR COLLECTOR | 418' | 6' |
| 127 | 45 | 15TH AVE SW | 47.03451 | -122.926 | Click Here | LOCAL ACCESS | 202' | 5' |
| 128 | 46 | 9TH AVE SE | 47.04166 | -122.886 | Click Here | LOCAL ACCESS | 205' | 5' |
| 129 | 46 | PEAR ST SE | 47.04347 | -122.891 | Click Here | LOCAL ACCESS | 243' | 5' |
| 130 | 46 | 19TH AVE SW | 47.03146 | -122.901 | Click Here | LOCAL ACCESS | 260' | 6' |
| 131 | 46 | COLUMBIA ST SW | 47.03383 | -122.902 | Click Here | LOCAL ACCESS | 553' | 4' |
| 132 | 46 | LEGION WAY SW | 47.04324 | -122.902 | Click Here | MAJOR COLLECTOR | 249' | >6' |
| 133 | 46 | 4TH AVE E | 47.04528 | -122.897 | Click Here | ARTERIAL | 258' | >6' |
| 134 | 46 | 5TH AVE SW | 47.04343 | -122.914 | Click Here | LOCAL ACCESS | 550' | 5' |
| 135 | 46 | LAKERIDGE WAY SW | 47.02843 | -122.913 | Click Here | LOCAL ACCESS | 351' | >6' |

| ID
(See Figure 5) | SCI
Score | Street Name | Latitude | Longitude | Link to Location | Road Classification | Length | Width |
|----------------------|--------------|-------------------|----------|-----------|----------------------------|------------------------|--------|-------|
| 136 | 47 | CENTRAL ST NE | 47.0498 | -122.882 | Click Here | NEIGHBORHOOD COLLECTOR | 213' | 5' |
| 137 | 47 | UNION AVE SE | 47.04004 | -122.881 | Click Here | LOCAL ACCESS | 307' | 5' |
| 138 | 47 | PEAR ST SE | 47.04348 | -122.891 | Click Here | LOCAL ACCESS | 246' | 5' |
| 139 | 47 | COLUMBIA ST SW | 47.028 | -122.902 | Click Here | LOCAL ACCESS | 226' | 5' |
| 140 | 47 | 19TH AVE SE | 47.03164 | -122.898 | Click Here | LOCAL ACCESS | 268' | 5' |
| 141 | 47 | CHERRY ST SE | 47.03643 | -122.894 | Click Here | LOCAL ACCESS | 270' | 6' |
| 142 | 47 | ADAMS ST SE | 47.04052 | -122.897 | Click Here | LOCAL ACCESS | 259' | 6' |
| 143 | 47 | 9TH AVE SE | 47.04081 | -122.898 | Click Here | LOCAL ACCESS | 260' | >6' |
| 144 | 47 | STATE AVE NE | 47.04612 | -122.895 | Click Here | ARTERIAL | 254' | >6' |
| 145 | 47 | 6TH AVE SW | 47.04265 | -122.919 | Click Here | LOCAL ACCESS | 248' | 5' |
| 146 | 47 | 9TH AVE SW | 47.03991 | -122.924 | Click Here | MAJOR COLLECTOR | 247' | 6' |
| 147 | 47 | DECATUR ST SW | 47.04308 | -122.922 | Click Here | LOCAL ACCESS | 268' | 5' |
| 148 | 47 | 30TH AVE SE | 47.02278 | -122.85 | Click Here | LOCAL ACCESS | 399' | 5' |
| 149 | 47 | 8TH AVE SE | 47.04255 | -122.887 | Click Here | LOCAL ACCESS | 332' | 5' |
| 150 | 48 | CENTRAL ST SE | 47.04138 | -122.882 | Click Here | NEIGHBORHOOD COLLECTOR | 260' | 5' |
| 151 | 48 | 4TH AVE E | 47.04612 | -122.885 | Click Here | ARTERIAL | 212' | >6' |
| 152 | 48 | EASTSIDE ST SE | 47.04456 | -122.888 | Click Here | MAJOR COLLECTOR | 262' | >6' |
| 153 | 48 | OLYMPIA AVE NE | 47.04714 | -122.892 | Click Here | LOCAL ACCESS | 305' | >6' |
| 154 | 48 | CAPITOL WAY S | 47.0385 | -122.901 | Click Here | ARTERIAL | 272' | >6' |
| 155 | 48 | ADAMS ST NE | 47.04558 | -122.898 | Click Here | MAJOR COLLECTOR | 256' | >6' |
| 156 | 48 | CAPITOL WAY N | 47.04786 | -122.902 | Click Here | MAJOR COLLECTOR | 260' | >6' |
| 157 | 48 | 5TH AVE SW | 47.04334 | -122.915 | Click Here | LOCAL ACCESS | 256' | 5' |
| 158 | 48 | PERCIVAL ST NW | 47.048 | -122.917 | Click Here | LOCAL ACCESS | 255' | 4' |
| 159 | 48 | HARRISON AVE NW | 47.04643 | -122.935 | Click Here | ARTERIAL | 474' | >6' |
| 160 | 48 | BITTERSWEET ST SE | 47.02245 | -122.854 | Click Here | LOCAL ACCESS | 444' | 5' |
| 161 | 49 | FIR ST NE | 47.04912 | -122.878 | Click Here | NEIGHBORHOOD COLLECTOR | 205' | 4' |
| 162 | 49 | MARTIN WAY E | 47.04856 | -122.827 | Click Here | ARTERIAL | 450' | >6' |
| 163 | 49 | CAPITOL WAY S | 47.03336 | -122.901 | Click Here | ARTERIAL | 209' | 6' |
| 164 | 49 | ADAMS ST SE | 47.03863 | -122.897 | Click Here | LOCAL ACCESS | 361' | 5' |
| 165 | 49 | JEFFERSON ST SE | 47.04482 | -122.897 | Click Here | LOCAL ACCESS | 258' | >6' |
| 166 | 49 | ADAMS ST NE | 47.04643 | -122.898 | Click Here | LOCAL ACCESS | 255' | >6' |
| 167 | 49 | BITTERSWEET ST SE | 47.02187 | -122.853 | Click Here | LOCAL ACCESS | 374' | 5' |
| 168 | 50 | BIGELOW AVE NE | 47.05008 | -122.881 | Click Here | NEIGHBORHOOD COLLECTOR | 570' | 5' |
| 169 | 50 | 4TH AVE E | 47.04597 | -122.875 | Click Here | ARTERIAL | 363' | 6' |
| 170 | 50 | STATE AVE E | 47.04686 | -122.878 | Click Here | ARTERIAL | 320' | 5' |
| 171 | 50 | 4TH AVE E | 47.04613 | -122.881 | Click Here | ARTERIAL | 296' | 6' |
| 172 | 50 | MILROY ST SW | 47.04179 | -122.924 | Click Here | LOCAL ACCESS | 583' | 5' |
| 173 | 50 | CARLYON AVE SE | 47.02087 | -122.892 | Click Here | MAJOR COLLECTOR | 283' | 4' |
| 174 | 50 | 5TH AVE NW | 47.0495 | -122.959 | Click Here | NEIGHBORHOOD COLLECTOR | 390' | 5' |
| 175 | 50 | BIGELOW AVE NE | 47.04994 | -122.874 | Click Here | NEIGHBORHOOD COLLECTOR | 291' | 5' |