



ACHD Self-Evaluation and Transition Plan

Appendix E: GIS Data Analysis Methodology

Adopted April 2019 by Resolution 2272

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GIS Data Analysis Methodology

In 2004, ACHD inventoried its right-of-way facilities and stored the resulting data in geographic information system (GIS) shapefiles. GIS is a framework for gathering, managing, and analyzing many types of data. It helps organize information spatially and visually to reveal patterns, relationships, and situations. Since 2004, ACHD continuously collected and updated information about its sidewalks and curb ramps. This resulted in two separate sets of GIS shapefiles that do not have identical attributes that were inventoried: the 2004 dataset and a newer dataset that was continuously updated (2018 dataset). As a result, ACHD merged the data sets as part of the update to ACHD's Transition Plan. Integrating the two datasets allowed ACHD to use relevant data from the 2004 dataset with the updated dataset, providing more complete data. This appendix provides an overview of the methodology of integrating the two shapefiles.

Curb Ramps

To merge the data, the project team performed a Near Analysis in ArcMap. If there was a one-to-one match and the nearest 2004 curb ramp point was less than 20 feet from the 2018 curb ramp point, it was assumed to be a match. For the small percentage of ramps that had multiple matches, or the nearest 2004 point was more than 20 feet from the 2018 point, the ramps were manually matched to the 2004 data. If the 2018 data showed that the ramp was replaced after 2004, the data from 2004 was ignored.

The 2018 dataset included measurements for:

- Ramp type
- Top landing
- Ramp width
- Ramp slope
- Cross slope
- Date and description of ramp work

The 2004 dataset included the above measurements, as well as:

- Flared sides slope
- Whether the ramp ends in a marked crossing
- Bottom landing width
- Bottom landing slope
- Level change at the bottom of the ramp

Sidewalks

The process for merging the 2004 and 2018 sidewalk data was similar to the process for curb ramps. Initially, the project team used full segments for the Near Analysis, but upon inspection, many perpendicular segments intersected, giving incorrect results. To solve the intersecting segments, the project team conducted a Near Analysis on segments that were shortened by 20 percent. Next, the segments were converted into points, and a Near Analysis was performed on the points. Segments that were determined to be a one-to-one match with both the segment Near Analysis and point Near Analysis were marked as matches. An extensive manual process was performed to properly match the remaining segments.

The 2018 dataset included only:

- Material
- Width
- Condition

The 2004 dataset included the above measurements, as well as:

- Vertical protrusions
- Amount of heaving and cracking
- Driveways type
- Number of driveways