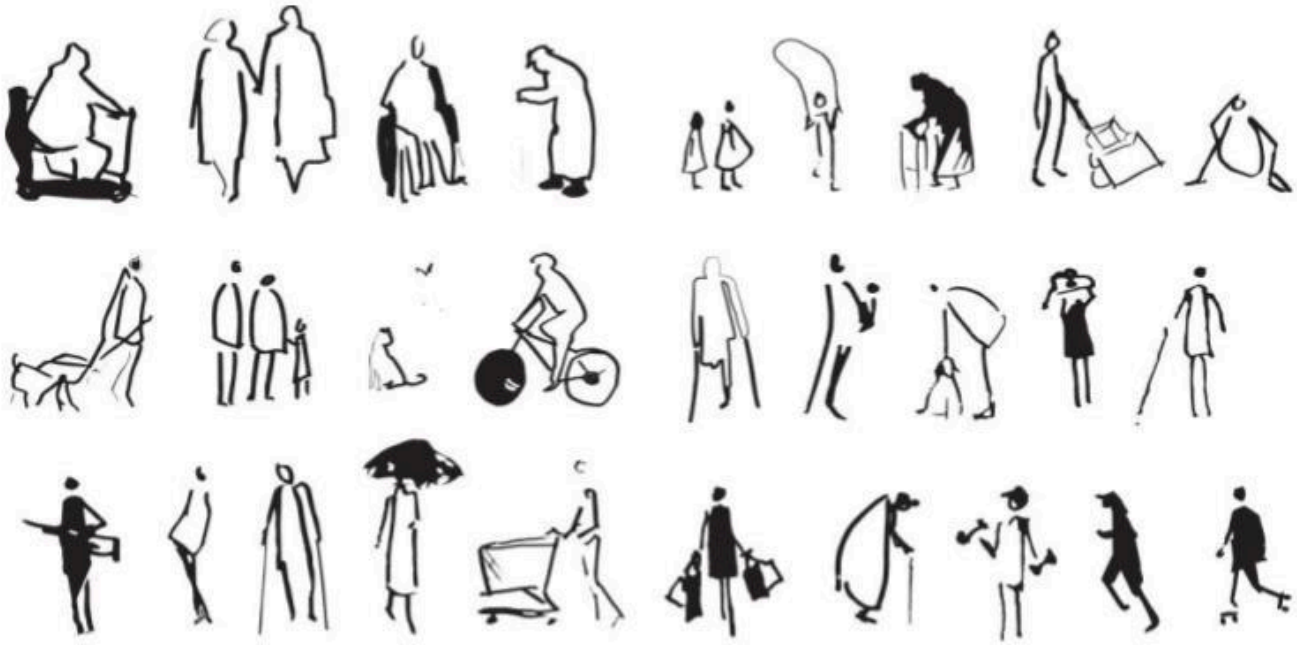
Mapping Guide:
Using OpenSidewalks schema in OpenStreetMap



OpenSidewalks

OpenSidewalks is an open data project by the Taskar Center for Accessible Technology, through the Paul G. Allen School at the University of Washington in Seattle, WA.

This Mapping Guide was developed with the support of the ITS4US (USDOT) program, Microsoft AI4Accessibility program, and Washington State DOT.

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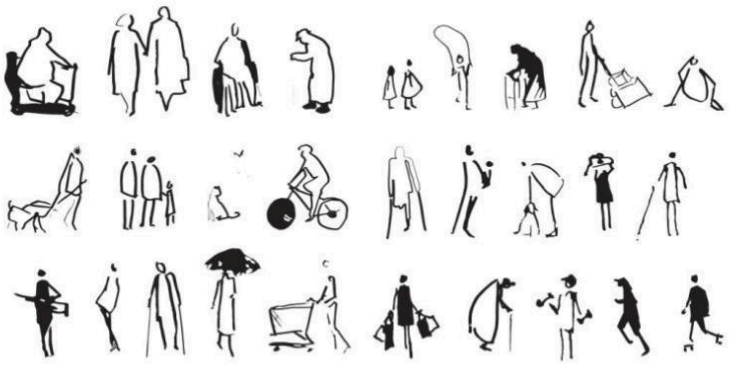
Purpose Of This Document

OpenSidewalks is a project to engage wide audiences in the important work of open source mapping of pedestrian pathways and their physical features.

The OpenSidewalks project team developed an online Canvas LMS resource to support our community mappers in their onboarding process. This resource enables us to expand our reach. Our learning resource provides essential materials to assist local mapping teams in creating consistently documented and openly shared data on accessible pedestrian pathways within the globally recognized OpenStreetMap database.

The information contained in this guide represents the current best practices and guidance true to the date of publication. The OpenStreetMap community is constantly evolving and mapping styles and guidances are changing with it. Consequently, use of this guide is recommended alongside consultation with the OpenStreetMap wiki as well as the local OSM community. For most up-to-date information, please consult our Canvas LMS guide.

Thank you for partnering with OpenSidewalks. Together, we can work towards creating inclusive and accessible pedestrian pathways that benefit communities worldwide!



OpenSidewalks

Welcome to the OpenSidewalks project!

The OpenSidewalks (https://opensidewalks.com) mission is to create a tooling ecosystem that supports the consistent, standardized collection of data about pedestrian pathways (sidewalks and crossings). This open and shared data can then be used to enable pedestrian routing applications, inform infrastructure planning, and be used to advocate for improved walkability, accessibility and quality of life for all.

This learning resource contains material to help you create accessible pedestrian pathways data that is shared in the open source OpenStreetMap (https://openstreetmap.org) global database.

Your mapping contributions make a difference!! Our collaboration with G3ict in the AI For Inclusive Urban Sidewalks initiative, in particular our work in Brazil and Ecuador, were recognized by the Smart City Expo World Congress 2022, earning the Living and Inclusion Award!

As we continue to engage with more cities in our mission to improve and scale the documentation of pedestrian pathways, we maintain this self-paced training resource to enable the participation of mapping contributors.

Are you interested in contributing to the project as a mapper, or do you want to become an OpenSidewalks trainer? Would you take the lead in organizing an OpenSidewalks pedestrian mapping effort in your city, town or jurisdiction and want our project to support you?

The materials in this resource are organized to support the onboarding of mappers who have no prior experience with OpenStreetMap tools, to teach validators how to review mapping contributions, and a little about how to organize a mapping team.

Please start by reviewing the OpenSidewalks Learning Roadmap module designed to help you enhance your individual mapping skills and maximize the productivity of your local engagements. This module provides valuable information on how to effectively utilize the material and offers guidance tailored to your specific needs.

Are you generally interested in learning more about accessibility in the public right of way, or in research relating to pedestrian pathways infrastructure?

We are in the process of building a module to provide information to individuals who may not be involved in mapping but who are interested in accessibility research and advances in accessible technology. Contact us at uwtcat@uw.edu for more information.

OpenSidewalks is an open data project by the Taskar Center for Accessible Technology (https://tcat.cs.washington.edu/), through the Paul G. Allen School of Computer Science and Engineering at the University of Washington in Seattle. The project heavily relies on the OpenStreetMap *infrastructure, mapping standards and volunteer community.*

OpenSidewalks: Learning Roadmap

How To Use The OpenSidewalks Onboarding Guide

Thanks for joining the OpenSidewalks global mapping collaboration! Please take a moment to review this page to familiarize yourself with the topics covered in our onboarding guide. This material covers the mapping practices and data standards of the OpenSidewalks schema that lead to consistently mapped, networked data about pedestrian pathways (sidewalks and crossings).

This guide is intended to allow OpenSidewalks advocates and mappers (of varying degrees of experience) to become familiar with OpenSidewalks mapping tools and data standards. The onboarding guide also includes lessons for experienced mappers on how to help validate completed mapping tasks. Lastly, we offer a set of best practices for local mapping team coordinators to engage more effectively with other mapping contributors, and to develop local data governance practices. This page is organized along the following topics:

- Roadmap For All Mappers
- Roadmap For Validators (Advanced Mappers)
- Roadmap For Local Mapping Team Coordinators
- The Essential Lessons

The next lesson, which completes the Learning Roadmap module, covers How To Reach Us If You Need Assistance.

Roadmap For All Mappers

The modules in the OpenSidewalks Onboarding Guide that relate to all mappers are organized into the following major topics. The modules below should be completed in the order presented, and are required for new mappers.

This table below represents the entirety of modules and lessons that relate to OpenSidewalks mapping practices and data standards. The modules marked as "**Advanced**" are intended for advanced mappers (validators) and local mapping team coordinators.

Check out our Videos: Mapping An OpenSidewalks Project Task page, where you

can find a series of brief videos that encapsulate the concepts covered in these modules. The videos are not a substitute for the depth of information you will find in the lessons of the modules listed in the table below, but can help to accelerate your understanding of the OpenSidewalks mapping process.

The estimated time to complete the core modules for new mappers, and their associated assignments is about 120 minutes.

Module	**Contents and Completion Estimate**
OpenSidewalks: Project Overview	Understand the objectives of the OpenSidewalks project, and how can citizen change agents and city mapping teams contribute to the project. [6 Minutes + Assignment]
OpenSidewalks Academy: Intro To Mapping Tools	Understand the open source tools and data the OpenSidewalks project uses to map and tag pedestrian features. [20 Minutes + Videos]
OpenSidewalks Academy: The iD Editor	Learn to use the OpenStreetMap iD Editor browser based tool to map pedestrian pathway features and document their attributes. [20 Minutes]
OpenSidewalks Academy: The Tasking Manager	Learn to navigate the OpenSidewalks Tasking Manager instance to contribute geolocated pedestrian pathway data to the global OpenStreetMap database. [20 Minutes + Assignment]

OpenSidewalks Academy: How To Map Pedestrian Pathways	Understand how OpenSidewalks breaks down mapping of pedestrian features into three distinct phases. Identify the features of a pedestrian network. Learn how to map and document the attributes of crossings, curbs, sidewalks and foot paths. Follow the OpenSidewalks mapping guidelines to ensure data consistency. [30 Minutes + Assignments]
OpenSidewalks Academy: Validating Completed Mapping Tasks (Advanced)	Learn about the experience that qualifies mappers to validate other users' contributions, what to look for when validating completed tasks in the Tasking Manager, and how to approach corrections. Use our recommendations to organize your local validation team. [25 Minutes + Assignments]
OpenSidewalks Academy: Miscellaneous Guides and Data Quality Practices (Advanced)	This module contains reference material such as guidelines on how to map city intersections under different scenarios, and a summary of best collaboration practices to help coordinate local mapping teams. The module also includes a glossary of pedestrian features, the list of tags by pedestrian feature, and information on how to capture your own street side images. [20 Minutes]

Roadmap For Validators (Advanced Mappers)

Individuals who have gained OpenStreetMap mapping experience while contributing to the OpenSidewalks project are in a unique position to help local mapping teams review and validate completed tasks in the OpenSidewalks Tasking Manager (https://tasks.opensidewalks.com).

These mappers will have completed the modules listed in the Roadmap For All Mappers, above.

Specifically, they should review the lessons included in the OpenSidewalks Academy: Validating Completed Mapping Tasks In The Tasking Manager module which are listed in the table below.

Module	**Lessons**
OpenSidewalks Academy: Validating Completed Mapping Tasks (**Advanced**)	Project Task Validation Overview What To Look Out For: Revisiting the OpenSidewalks Mapping Methods How To Validate Completed Project Tasks In The Tasking Manager? Correcting Mapping Issues Organize Local Validation Teams

Validators can also benefit from the lesson on Mapping A City Intersection Under Different Scenarios.

Roadmap For Local Mapping Team Coordinators

Individuals who are organizing and coordinating the efforts of a local mapping team should be familiar with the modules listed in the Roadmap For All Mappers, above--in particular the advanced OpenSidewalks Academy: Miscellaneous Guides and Data Quality Practices module.

Additionally, they should review these two lessons:

- City Mapping Team Best Collaboration Practices
- Organize Local Validation Teams

Coordinators of local mapping teams should reach out to us to uwtcat@uw.edu to arrange a virtual onboarding session where we can provide direction to your group of mapping volunteers based on the unique characteristics of your community.

The Essential Lessons

Mappers who are pressed for time, or those who want to just get an overview of the

OpenSidewalks mapping process will want to complete the following core lessons. Because each intersection in an urban environment is unique and presents its own mapping challenges, these lessons are hardly a substitute for consuming the modules listed in the Roadmap For All Mappers, above; but, they can help to accelerate your understanding of the OpenSidewalks mapping process.

The list of OpenSidewalks Essential Lessons includes:

- Introduction to The OpenSidewalks Project
- Videos: Mapping An OpenSidewalks Project Task
- OpenStreetMap Basics: Navigating The iD Editor
- Create Your OpenStreetMap Account
- Explore The OpenSidewalks Tasking Manager
- The OpenSidewalks Mapping Phases

The introductory content and videos in this guide were informed and aided by other onboarding media resources created by the OpenStreetMap community. You can find more information about OpenStreetMap at https://wiki.openstreetmap.org (https://wiki.openstreetmap.org/) .

The next lesson completes the Learning Roadmap module and covers How To Reach Us If You Need Assistance. Otherwise, you can skip to the OpenSidewalks: Project Overview module.

How To Reach Us If You Need Assistance

We look forward to working with you to advance the collection of data about pedestrian network features, especially those that impact accessibility.

This guide is our most comprehensive resource on how to map these features, how to classify them, and the OpenSidewalks standards we follow in documenting the data. There is always room for improvement, and we appreciate your feedback and suggestions.

Otherwise, please do reach out using the following channels if you need assistance using these learning materials.

Online: opensidewalks.com (http://opensidewalks.com)

Email: uwtcat@uw.edu (mailto:uwtcat@uw.edu)

Slack: opensidewalks.slack.com (http://opensidewalks.slack.com)

(Use this link

https://join.slack.com/t/opensidewalks/shared_invite/zt-111cr22s0-9rUz6JYLj7w_OkHetV_fXg to be added to the group. The link does have an expiration date, so may not be valid after June 2023)

OpenSidewalks: Project Overview

Introduction to The OpenSidewalks Project

This page provides you with a high level overview of the OpenSidewalks project, its motivations, goals, and approach to the collection of pedestrian pathway data. Here we will cover the following questions:

- What is OpenSidewalks?
- What does OpenSidewalks hope to address?
- How does OpenSidewalks address gaps in the transportation network?
- How does OpenSidewalks contribute to building more walkable, inclusive, and resilient communities?
- What is important about Pedestrian Pathways?
- Why collect data on Pedestrian pathways?
- How will data be collected?
- What are the data collection phases?

What is OpenSidewalks?

OpenSidewalks is an open-source project promoting the creation and adoption of data standards to describe pedestrian-centered information and contextual information about pedestrian pathways. (https://github.com/OpenSidewalks (https://github.com/OpenSidewalks))

What does OpenSidewalks hope to address?

OpenSidewalks aims to improve the accessibility of “pedestrian pathways” by embracing a multimodal transportation perspective, emphasizing the needs of pedestrians with disabilities. Pedestrian pathways are critical infrastructure in ground transportation systems that help people engage in their professional and daily lives. Pedestrian pathways may include sidewalks, street crossings, stairs, ramps, bridges, tunnels, and publicly accessible buildings with elevators. Any combination of these options might be required to get to a destination, depending on a pedestrian's preferences and ability to use them. Pedestrians may have different capabilities depending on if they are able-bodied, use a cane, crutches, wheelchair, electric wheelchair, or have a visual impairment. Pedestrian transport

should consider people with disabilities when mapping routes and estimating travel time.

How does OpenSidewalks address gaps in the transportation network?

The OpenSidewalks project uses multiple data tools, data sources, and sensors to collect important infrastructure information about pedestrian pathways in an open, shared, and scalable manner.

The project leverages prior open-source initiatives (i.e., OpenStreetMap and AccessMap) to empower crowd-sourced and community-enabled geodata collection around a collaborative community of mappers

How does OpenSidewalks contribute to building more walkable, inclusive, and resilient communities?

“Can I get from point A to point B?” The answer to this question is heavily dependent on an individual’s ability to interact with topography and existing infrastructure, as well as understand the environment. To be compliant with the Americans with Disability Act, public and private transportation agencies in the United States must account for accessibility issues in their transportation plans.

Although some cities collect data on pedestrian-related infrastructure, such as pedestrian ways and signals, this data is often stored in inconsistent formats. Many data collections exist in data siloes that are unavailable for general use and contain a wide variety of different attributes. These datasets may never be integrated into public domains, where they could increase the accuracy of mapping tools.

By initiating and maintaining this collaborative effort within the open-source domain, diverse communities and infrastructure agencies can better understand, engage, and meet each other's needs through data sharing. Mapping tools should not make routing decisions that are biased against people with disabilities. Amassing geodata for public use will help eliminate these unwanted biases. Ultimately, OpenSidewalks aims to improve walkway safety and transportation accessibility for all.

What is important about Pedestrian Pathways?

Pedestrianism is the primary means of transportation for many people, supporting nearly all other modes of travel. Pedestrian pathways serve a fundamental role in how communities engage recreationally and professionally. People with disabilities require more information when traversing built environments, sometimes inhibiting their ability to full access.

Static physical features (e.g., curb ramps, auditory signaling) or transient conditions (e.g., rainy weather conditions) can influence the perception of safety and other travel concerns. Given information about these conditions, individuals can find alternative routes, first responders can manage emergencies more efficiently, transportation agencies can direct resources to mitigate risk factors, and city planners can use smart city data to drive infrastructure decisions.

Why collect data on Pedestrian pathways?

Despite the interest of multiple stakeholders, information gaps about pedestrian pathways remain due to data collection silos and lack of reporting on changes in built environments. Urban environments in particular are subject to rapid change. Without updated information about changes to built environments, people with disabilities are unfairly disadvantaged when trying to interact with their environment.

Recent advances in open-sourced technology enable the possibility of standardized, interoperable data sharing environments. This allows for the combination of crowd-sourced data collection efforts with city-scale urban collections. The coordination of machine learning, satellite imagery, street imagery, and data related to smart city infrastructure has the potential to improve incomplete and uncoordinated sidewalk datasets. The utilization of community-mediated data resources will greatly benefit pedestrians, especially those with disabilities.

How will data be collected?

OpenSidewalks promotes the creation and adoption of data standards leveraging OpenStreetMap (OSM) as the centralized platform. Data capture and annotation can occur remotely, or on-site using Mapillary for open-sourced geotagging. The data collection workflow has three phases, each with its own documentation goals and classification focus, summarized in the table below.

When you complete the core lessons in these learning modules you should be well versed in the process of documenting pedestrian pathway features using OpenSidewalks mapping practices.

What are the phases of city data collection?

Phase	Goal	Mapping Focused On
Phase 1	Create the pedestrian transportation layer	Street crossings, sidewalks and footway links
Phase 2	Add attributes that could affect traversal	Local community selects important crossing and sidewalk features to map
Phase 3	Add mitigating features that improve pedestrian traversal	Outdoor ramps, escalators, public access buildings

Now that you have a general understanding of the OpenSidewalks project, continue onto the details of the data collection tools and methodology in the next module: OpenSidewalks: Project Overview.

OpenSidewalks Academy: Intro To Mapping Tools

What You Will Need To Map

Are you ready to map to improve accessibility?

The set of lessons in the Mapping Tools module, detailed below, will guide you through the tools OpenSidewalks contributors use to map and tag pedestrian pathways in urban communities. When you complete the lessons in these modules you will be ready to use the open source mapping tools to add geodata details that help us to advance solutions to improve accessibility, mobility and inclusivity!

Let's start by covering some basic principles before you proceed to the ID Editor and Tracking Manager modules. This Intro To Mapping Tools module includes the following lessons.

Basic Geographic Information Systems (GIS) Principles

Provides a primer on the basic principles of GIS and geolocated data. This is a critical step if you have not previously worked with maps, lines, points, and their respective coordinates, known as geolocated data objects.

Introduction To The Mapping Tools Lessons

This lesson will explain how OpenSidewalks contributes to and benefits from the OpenStreetMap platform, an open, shared, and global geolocated information database used in digital cartography, mapping tools, and routing applications.

Basic Mapping Requirements

What You Will Need To Map: OpenSidewalks for Cities

You will need a **web browser and an internet connection**--preferably high bandwith. Also, keep in mind that geospatial mapping using these tools can be memory intensive and tax your graphic card.

*To contribute to the OpenSidewalks project you will **need to create a OpenStreetMap account**, which you will use to access our communities mapping projects in the OpenSidewalks Tasking Manager (https://tasks.opensidewalks.com) --your personal or contact information are not disclosed to other users. If you do not yet have an OpenStreetMap account we will help you create one when we cover the Tasking Manager module lessons.*

Mapping Tools Modules

Note: Please complete the lessons in the Mapping Tools modules and the module on OpenSidewalks mapping practices--How To Map Pedestrian Pathways, before you start to contribute to the OpenSidewalks project.

OpenStreetMap iD Editor

Learn how to navigate the web mapping application used by OpenStreetMap contributors of all levels of experience.

OpenSidewalks Tasking Manager

Use our OpenSidewalks mapping instance which helps community teams coordinate their pedestrian pathways mapping events. Tasking Manager users have access to the iD Editor to map, tag and commit changes to the OpenStreetMap database.

After you gain a better understanding of the mapping interfaces we use, you will take your first mapping steps when you review the OpenSidewalks collaborative

mapping process and the mapping rules we have adopted to ensure consistent practices across mapping teams.

Basic Geographic Information Systems (GIS) Principles

This lesson provides a brief primer on geographic information systems and geolocated data. The lesson is organized in the following sections:

- What Is A Geographic Information System (GIS)?
- What Is Geolocated Data?
- Feature Geometry, Placement and Attributes

Once you complete this lesson you will proceed to an introduction to the OpenSidewalks Mapping Tools.

What Is A Geographic Information System (GIS)?

"A geographic information system (GIS) is a system that creates, manages, analyzes, and maps all types of data. GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there).

This provides a foundation for mapping and analysis that is used in ... almost every industry. GIS helps users understand patterns, spatial relationships, and geographic context. The benefits include improved communication and efficiency as well as better management and decision making."

"A geographic information system (GIS) is used to identify problems, monitor change, manage and respond to events, perform forecasting, set priorities, and understand trends."

(*Source: "What is GIS?" Environmental Systems Research Institute.* *https://www.esri.com/enus/what-is-gis/overview (https://www.esri.com/en-us/what-is-gis/overview)*. *Accessed December 23, 2022.*)

Geographic information systems rely on satellite imagery, geographic positioning systems (GPS) and location surveys to enable us to (1) aggregate complex data that

can be (2) contextualized on a map and (3) analyzed to discover patterns that can inform the design and (4) development of solutions.

What Is Geolocated Data?

Geographic information systems are collections of relatable information whose common attribute is their location data or coordinates, their geolocation, at a particular time. Geolocated data can be rendered on a map to be analyzed.

The simplest example of a geolocated digital object is a selfie image taken while your smart phone location is on. The graphic object is stored along with positional coordinates and the time stamp when the image was taken.

Similarly, the digital representation of the perimeter of a school's buildings contain lines connected by points (nodes) at its corners, each containing location coordinates. The points of information are collected into a container that defines the shape and placement of the object.

Today many digital devices contain a GPS receiver chip that enables the device to log the approximate location coordinates over time. It is this time attribute that enables us to build models to analyze trends over time at a given location.

Examples of geolocated data that can be layered and analyzed are a city street grid, the location of bicycle lanes, public transportation bus stops, hospital locations, local park amenities, and the number of crossings with accessible ramps.

Feature Geometry, Placement and Attributes

The OpenSidewalks project is invested in analyzing the location and condition of pedestrian features in the built environment.

Built pedestrian features such as crossings, curbs and sidewalks are represented by geometric shapes, placed at a location and contain descriptive attributes.

For example, an intersection may have one or many pedestrian crossings. Each pedestrian crossing is represented visually as a line crossing a road from curb

to curb. This line will have an attribute designating it as a crossing way (highway=crossing), and it may have an additional attribute to describe whether it is a Marked or Unmarked crossing (crossing:markings=yes/no).

We will spend more time discussing these concepts in the OpenStreetMap Basics: Geometry and Tags lesson.

This information is presented so that at a very high level, you understand the degree of complexity that our data processing systems and analytic tools must resolve to reveal actionable patterns.

For now take solace in that, as a contributing mapper to the OpenSidewalks project you will only be concerned with what shape to use to draw a pedestrian feature on a satellite map background image, where to map the feature, and how to tag (classify) it. The

OpenStreetMap tools that we use to map pedestrian features will resolve the location coordinates of the mapped shapes once you save and commit your changes.

You will now proceed to the Introduction To The Mapping Tool Lessons.

Introduction To The Mapping Tool Lessons

This lesson is part of the Intro To Mapping Tools module, and briefly explains how OpenSidewalks contributes to and benefits from shared data on the OpenStreetMap platform, a global geospatial information database used in digital cartography, mapping tools, and routing applications.

The lesson contains the following sections:

- OpenSidewalks and OpenStreetMap
- What Is OpenStreetMap?
- How Does OpenSidewalk Use OpenStreetMap Tools?
- Video: OpenSidewalks Mapping Tools

Once you complete this lesson you will proceed to the topics on how to use the OpenStreetMap iD Editor, which is used when documenting pedestrian features in the OpenSidewalks Tasking Manager community projects, so you can start mapping.

OpenSidewalks and OpenStreetMap

OpenSidewalks focuses on creating open, shared and interoperable pedestrian network data schemas. The project was founded by the Taskar Center for Accessible Technology at the University of Washington (TCAT) (http://tcat.cs.washington.edu/). In creating open, shared Geographical Information Science (GISc) data, TCAT recognized that OpenStreetMap and its community of contributors have already provided a foundational infrastructure and data schemas for capturing automobile information, and increasingly adding more pedestrian data.

OpenStreetMap is a globally popular open-source mapping platform. The OpenSidewalks schema is compatible with the way OpenStreetMap shares open data. This allows OpenSidewalks mappers to leverage tools built for OpenStreetMap.

What is OpenStreetMap?

OpenStreetMap (OSM) is an open-source mapping platform designed and developed to enable crowd-sourced collection of geolocated data. It contains geographic data from around the world, which is voluntarily sourced and shared. OpenStreetMap allows its users to edit a global map, where user contributions can be validated and augmented by other platform users.

OpenStreetMap developers manage other contributed solutions that allow users of the platform to map geodata (the iD Editor (https://learnosm.org/en/beginner/id-editor/)), analyze mapping activity (OSMCha.org (http://osmcha.org)) and extract data (turbo-overpass.eu (http://overpass-turbo.eu/)). To learn more about the OpenStreetMap project please visit https://learnosm.org/ (https://learnosm.org) .

The OpenSidewalk project contributes to and leverages the geolocated data in the

OpenStreetMap platform to study accessibility issues in the built environment and advocate for solutions.

How Does OpenSidewalk Map Use OpenStreetMap Tools?

The HOT Tasking Manager (https://github.com/hotosm/tasking-manager) , originally built by the Humanitarian OpenStreetMap Team (HOT), is used by OpenSidewalks to organize collections of geolocated data in local communities.

The OpenSidewalks Tasking Manager (https://tasks.opensidewalks.com) is a customized version of the open-source HOT Tasking Manager (https://github.com/hotosm/tasking-manager) . It allows us to set up mapping projects for communities that have partnered to support the data collection objectives of the

OpenSidewalks project. Tasking Manager users have access to the OpenStreetMap iD Editor tool** to map, tag and commit changes to the OpenStreetMap global map.

When your local team maps you want to make sure no two people are simultaneously editing the same location. This is where using the Tasking Manager is helpful. It allows us to track individual community contributors, audit their

changes and help them make mapping corrections when necessary, and monitor the progress of mapping in the target area.

Since you are using the iD Editor tool to map the tasks that are organized in the Tasking Manager, the changes to the global map are synchronized to OpenStreetMap when you save and commit.

***The iD Editor is only one of the OpenStreetMap mapping applications. This OpenSidewalks guide only addresses the use of the OpenStreetMap iD Editor. When you get more comfortable mapping, you can use more advanced tools as you progress.*

Before proceeding keep in mind that edits that you make and save to the OpenStreetMap map (a two-step process) will be visible to and can be edited by the millions of users who use OpenStreetMap. Your edits can be based on personal knowledge, on-the-ground surveying, or imagery collected from aerial or street level photos. We want to emphasize that you need to be very certain about the map data you are contributing to the platform before saving your changes to the map.

This lesson is part of the Intro To Mapping Tools module. Now that we've covered how the OpenSidewalks project contributes to the OpenStreetMap global map and uses its data to develop solutions to improve accessibility, you are ready to explore the OpenStreetMap iD Editor tool which is used when mapping in the OpenSidewalks Tasking Manager!

OpenSidewalks Academy: The iD Editor

The OpenStreetMap iD Editor in the Tasking Manager

The following set of lessons is part of the The iD Editor module. These lessons will focus on how to use the OpenStreetMap iD Editor mapping interface--which you will use when you log into and contribute to a community project in the OpenSidewalks Tasking Manager. The iD Editor interface makes it easy for any community mapper to contribute to the open geospatial mapping and tagging of features in the built environment.

Details on mapping basics, how to navigate the OpenStreetMap iD Editor dashboard, and the mapping tools you have access to are covered in the following lessons:

- OpenStreetMap Basics: Geometry and Tags
- OpenStreetMap Basics: Navigating The iD Editor

**Please note that, as long as you do not save any changes that you make to the OpenStreetMap global map and commit them--it is a two step process--you can use the iD Editor mapping tools to practice without affecting other users' contributions. Any changes to the map that you do save and commit, however, will be added to the global map database.



The image above is a screenshot of the OpenStreetMap iD Editor mapping tool dashboard.

The next topic in The iD Editor module covers OpenStreetMap Geometry and Tags, followed by the most important lesson on Navigating The iD Editor.

Once you are familiar with the iD Editor we will proceed to the next module, how to use the OpenSidewalks Tasking Manager.

OpenStreetMap Basics: Geometry and Tags

At its core, the OpenStreetMap infrastructure presents a very flexible way to map the world.

One of the best attributes of OpenStreetMap is that it has allowed the community to lead the development and definition of Geographical Data. For a variety of reasons, the community has focused on automobile roads, which are the predominant elements in OpenStreetMap.

OpenSidewalks is attempting to re-focus the community's attention on the need for consistent and standardized ways to express pedestrian accessibility data, to enhance accessibility, sustainability and resilience for communities.

Because OpenSidewalks is using already-built OpenStreetMap infrastructure, it is very important that we closely follow the OpenStreetMap Community rules, and the data conventions that the community has adopted.

In this lesson, let's briefly go over fundamental OpenStreetMap terminology. This lesson is part of the ID Editor module. Once you complete this lesson, we will go over the details of each feature of the OpenStreetMap iD Editor, a simple mapping tool that you will be using to contribute to the OpenSidewalks project.

Mapping Terminology

Every element in the map has a "Geometry" and "Tags". We define both here.

Geometry

Geometry generally refers to shape and dimension. In OpenStreetMap, there are three types of geometries that every community contributor (that includes you!) can edit:

 Node

A node is a point. It has no shape.

 Line

A line is a string connecting multiple nodes. Using the Line geometries, contributors can define a Way. A way is a general term for series of joined nodes, not just for

roads or ways in reality. As you will see, a crossing, or a sidewalk, will also be called a way.

 Area

An area is a line whose start and end nodes are the same. Therefore, Areas typically define a connected closed shape. For example, a plaza would likely have an area geometry to indicate its shape and location on the map.

Besides those three geometries, there is one additional abstraction type of element in

OpenStreetMap that allows relating several elements together, much like a national hiking trail might be made up of a sequence of several smaller trails. This element is called a Relation:

 Relation

A relation is an ordered sequence of ways, areas and nodes, a logical container used to group elements. Only 1% of the data (https://taginfo.openstreetmap.org/reports/database_statistics) is modeled using relations.Please refrain from using relations if you are just a beginner. The OpenSidewalks schema includes no relations at this time.

Tags

In addition to a geometry, most elements on the map are also tagged. A tag is an attribute, a descriptor, a feature of the element on the map. Tagging involves a 'key = value' pair, where the contributor provides a specific agreed upon descriptor (from a set of allowable values) for a particular Tag.

 Tag

Tags describe what each node, way or aera represents. Tags are organized into "keys" and "values." Keys are basically larger categories, such as "Highway" or "Land Use," while values are specific features, such as "Primary Road" or "Residential Street," and "Residential" or "Retail" land use.

If a road, track or path is curved, the curve is approximated using a number of nodes within a way, and short lines connecting them. If a way has a direction, that is indicated partly by using tags. For example, "oneway=yes" is a road that goes only in one direction. Other tags refer to being on the left and right of the direction of way along the way. Other tags, especially those we will be focusing on, are related to accessibility of the path. We ask all OpenSidewalks contributors to kindly pay attention to the agreed upon standards of the OpenStreetMap community. If your city team feels that there is a missing tag, or that a tag needs to be changed, there is an acceptable mechanism to propose a change to the tagging system, and have the community VOTE on the tag before becomes accepted. There is more information you can find about this process in the OSM community wiki (https://wiki.openstreetmap.org/).

You've got this!! Now, let's move on to the next lesson: OpenStreetMap Basics: Navigating The iD Editor (https://canvas.uw.edu/courses/1507295/pages/openstreetmap-basics-navigating-the-ideditor) .

OpenStreetMap Basics: Navigating The iD Editor

This lesson is part of the The iD Editor module and focuses on the features of the OpenStreetMap iD Editor mapping tool--the web browser mapping interface that you will use to map OpenSidewalks pedestrian features.

The iD Editor is the de facto, browser-based OpenStreetMap editor. iD Editor is fast and easy to use and allows mapping from various data sources such as satellite and aerial imageries, GPS, Field Papers or Mapillary.

The iD editor is a great way to edit for small and easy changes that don't require the advanced features of other more advanced mapping editors. This lesson demonstrates the basics of editing with iD.

Note: Please use this lesson as a reference guide. If you have an OpenStreetMap account, you can follow along; but, we advise that you do NOT commit pedestrian pathway mapping changes until you have completed the The Tasking Manager and How To Map Pedestrian Pathways modules.

You can access the material on Navigating The ID Editor Features by visiting the OpenStreetMap learnOSM guide: https://learnosm.org/en/beginner/id-editor/.

The lesson will cover the following iD Editor features:

- Starting to use the iD Editor
- The iD Editor interface
- Configuring the Background for an Editing Session
- Basic Editing with iD
- Adding Points
- Drawing Lines
- Drawing Shapes (Polygons)
- Drawing Multipolygons
- Issues
- Saving Your Changes
- Additional Information and Custom Tags Further OpenStreetMap Tutorials iD versus JOSM Field Papers

Once you complete this lesson you are ready to learn how to start using the OpenSidewalks Tasking Manager to contribute to the mapping of pedestrian pathways!

Starting to map with iD Editor in the OpenSidewalks Tasking Manager? See the OpenStreetMap HOT Tips page (https://learnosm.org/en/hot-tips/) --which includes a link to a collection of short OpenStreetMap videos (https://www.youtube.com/playlist?list=PLb9506_-6FMHZ3nwn9heri3xjQKrSq1hN).

You are now ready to learn how to start using the OpenSidewalks Tasking Manager to contribute to the mapping of pedestrian pathways!

OpenSidewalks Academy: The Tasking Manager

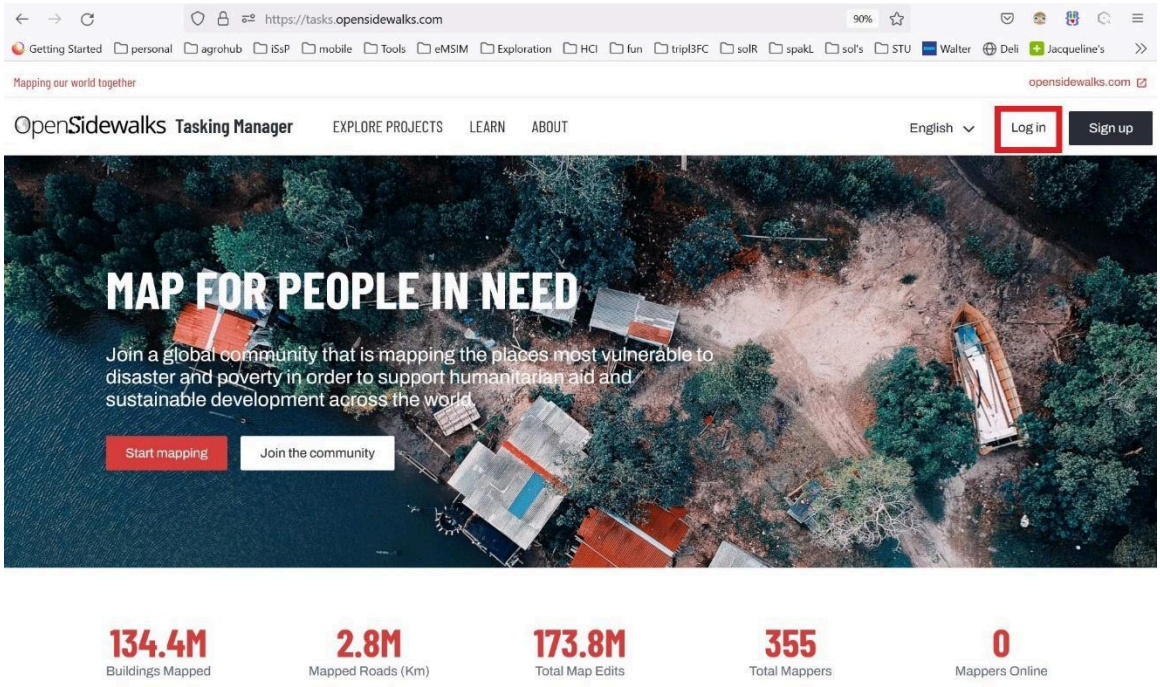
Create Your OpenStreetMap Account

This lesson will walk you through the process of creating an OpenStreetMap mapping account so that you can contribute to the documentation of pedestrian network features. You will create the account by logging in to thru the OpenSidewalks Tasking Manager (https://tasks.opensidewalks.com).

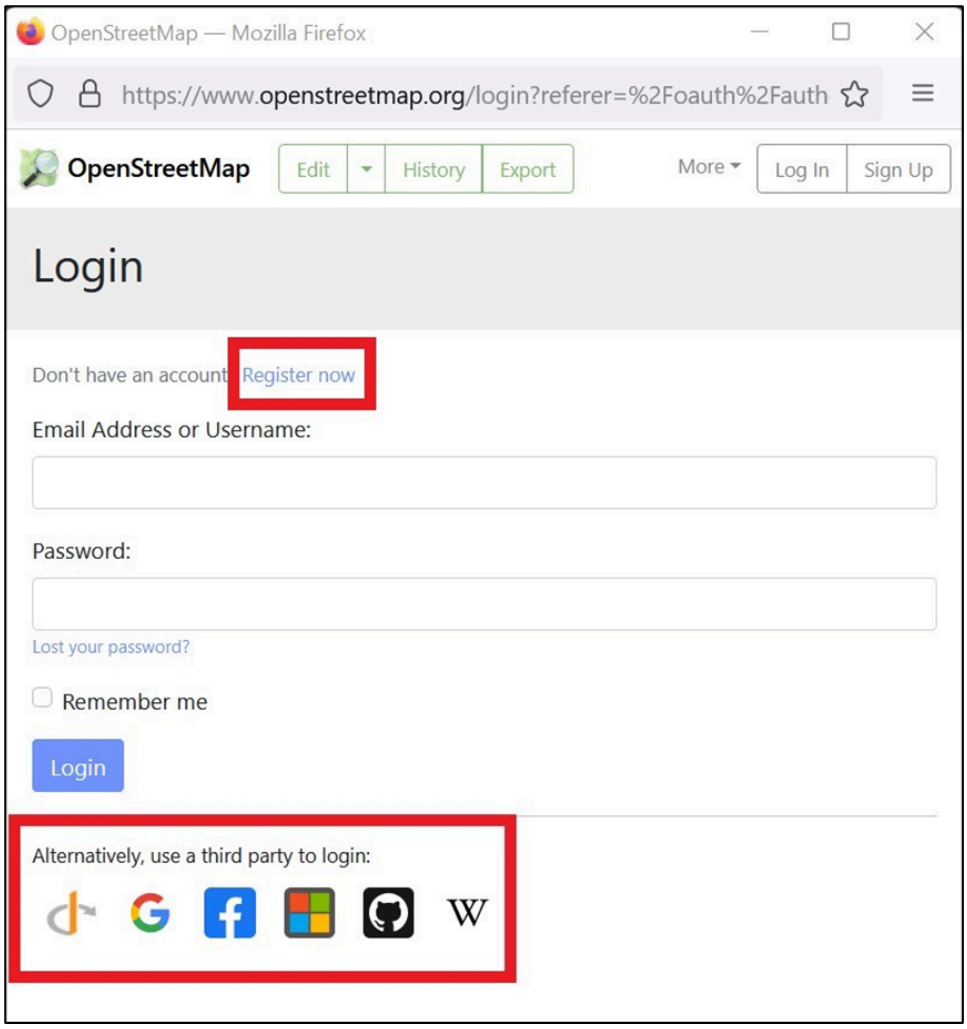
Create An OpenStreetMap Account

To contribute to the OpenSidewalks community mapping projects you will first need an OpenStreetMap account. You will use this to log into the OpenSidewalks Tasking Manager--the Tasking Manager will ask you to grant permissions to your user profile on OpenStreetMap.

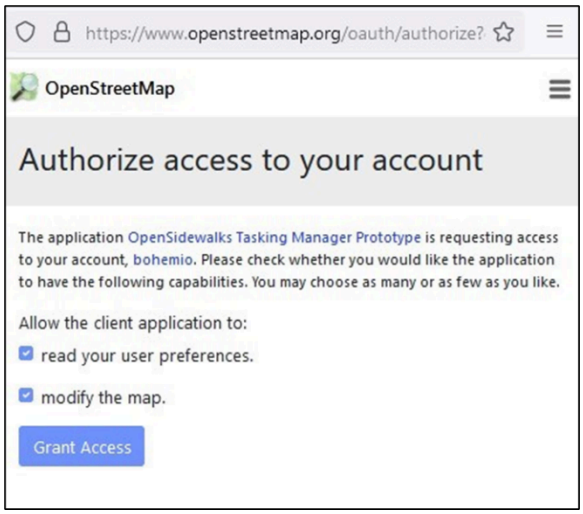
When you first open https://tasks.opensidewalks.com you will need to Login. You will be prompted to sign in with your OpenStreetMap account. If you do not have one, follow the steps below to create your OpenStreetMap profile. You will not need to leave the OpenSidewalks Tasking Manager.



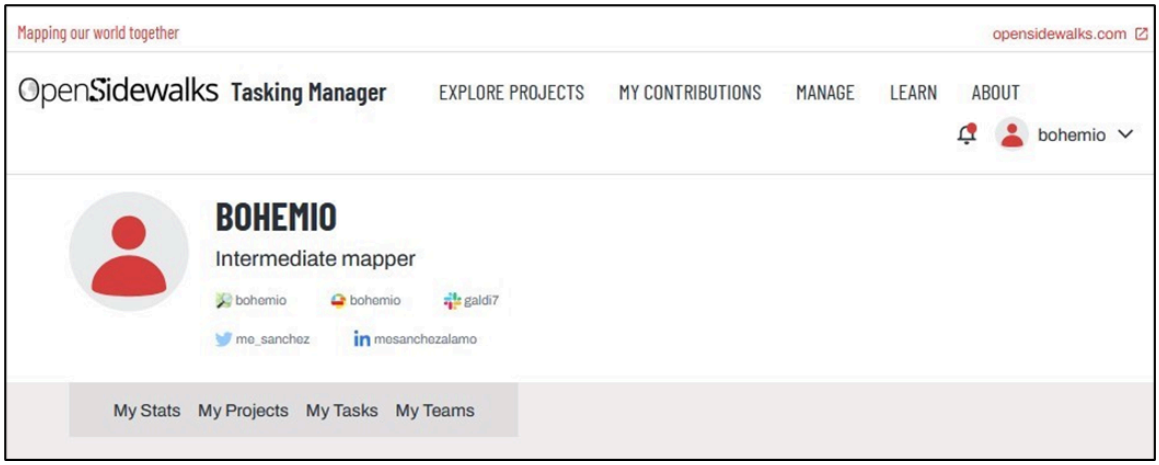
Click on “Register now” if you need to create a new OpenStreetMap account; or, alternatively, you can link your OpenStreetMap profile using one of your third party application user accounts.



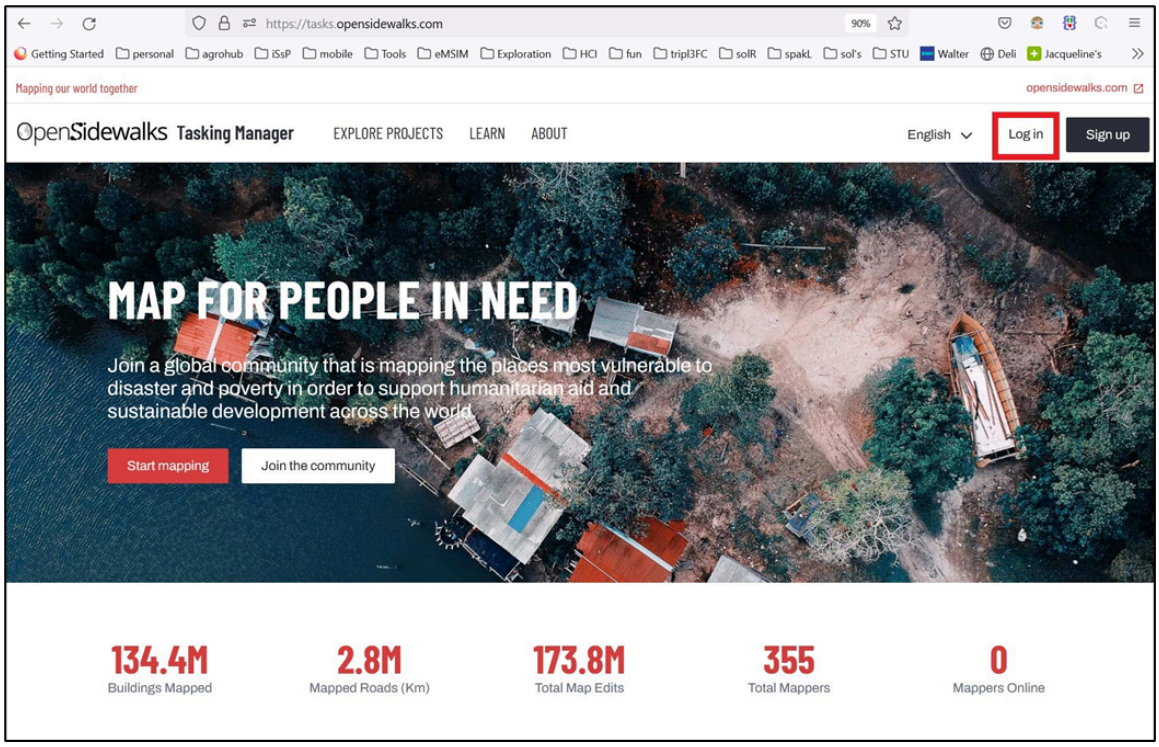
Once you have created your OpenStreetMap account, you will be asked to grant permissions to the OpenSidewalks Tasking Manager instance to enable you to save your mapping contributions to the global OpenStreetMap database.



Once you grant access, you will be redirected to your personal landing page within the OpenSidewalks Tasking Manager. Notice that only admin level Tasking Manager users will see the "Manage" navigation option in the top navigation menu.



Any time you are logged out, you can return to your map and your progress by going back to https://tasks.opensidewalks.com.



You're all set! You can now start contributing to mapping features in any of the OpenSidewalks Tasking Manager community projects we have partnered with to document pedestrian network features.

This lesson is part of the Tasking Manager module. Now that you have an OpenStreetMap account the next lesson will show you how to navigate the OpenSidewalks Tasking Manager.

Explore The OpenSidewalks Tasking Manager

To add to the global pedestrian network data set, you will need an internet connection, and be logged into https://tasks.opensidewalks.com and have your OpenStreetMap account authorized. Before you proceed, visit https://tasks.opensidewalks.com and log into your account--which will be your OpenStreetMap username. If you have not yet created an OpenStreetMap account, please follow the steps in the Create Your OpenStreetMap Account lesson. You can set up your account through https://tasks.opensidewalks.com.

The OpenSidewalks Tasking Manager (https://tasks.opensidewalks.com) provides an integrative framework to coordinate local team mapping contributions to the OpenStreetMap database.

You should now be logged in with your OpenStreetMap account.

The lessons in this topic, which is part of the The Tasking Manager module, will focus on how to navigate the OpenSidewalks Tasking Manager, and are organized as follows:

- Adjust Your Tasking Manager Settings
- Select A Project Mapping Task
- Completing A Task In The Tasking Manager

Once these lessons are completed you will be ready to learn the OpenSidewalks mapping practices that we have developed to ensure quality geolocated data and consistent mapping across our partner communities.



Let's proceed to the lesson on how to Adjust Your Settings In The Tasking Manager.

Adjust Your Settings In The Tasking Manager

As discussed in the previous section, the OpenSidewalks Tasking Manager instance provides an integrative framework to coordinate local team mapping contributions to the OpenStreetMap database. Let's make some adjustments to your Tasking Manager profile before going on to find a project to map. The Tasking Manager includes built in localization features and allows you to manage your notification preferences.

This lesson is part of the Tasking Manager module. The lesson is organized into the following sections:

- Adjust Language Settings
- Set Up Notifications

Once you have completed this lesson you will learn how to select a Tasking Manager project and choose a task to map.

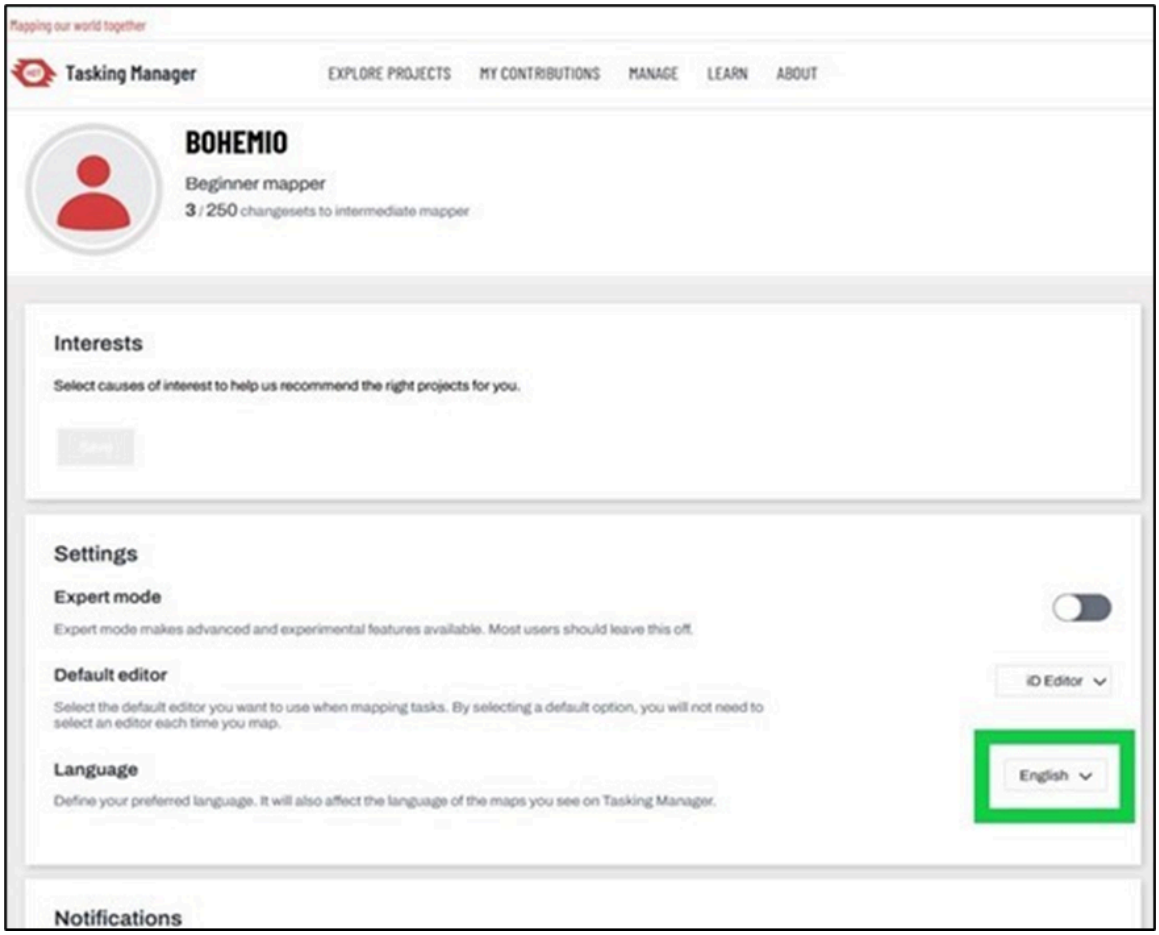
Adjust Language Settings

The iD Editor Preset Features library has already been adapted to many languages. Local mapping projects configured and prioritized in the OpenSidewalks Tasking Manager instance can include localized translations of project priority instructions. Once you set your local preferences in the Tasking Manager, you can benefit from access to local language sets when they've been made available.

You can adjust your language settings by clicking on your profile image at the top right of the

Tasking Manager homepage, or by visiting https://tasks.opensidewalks.com/settings.

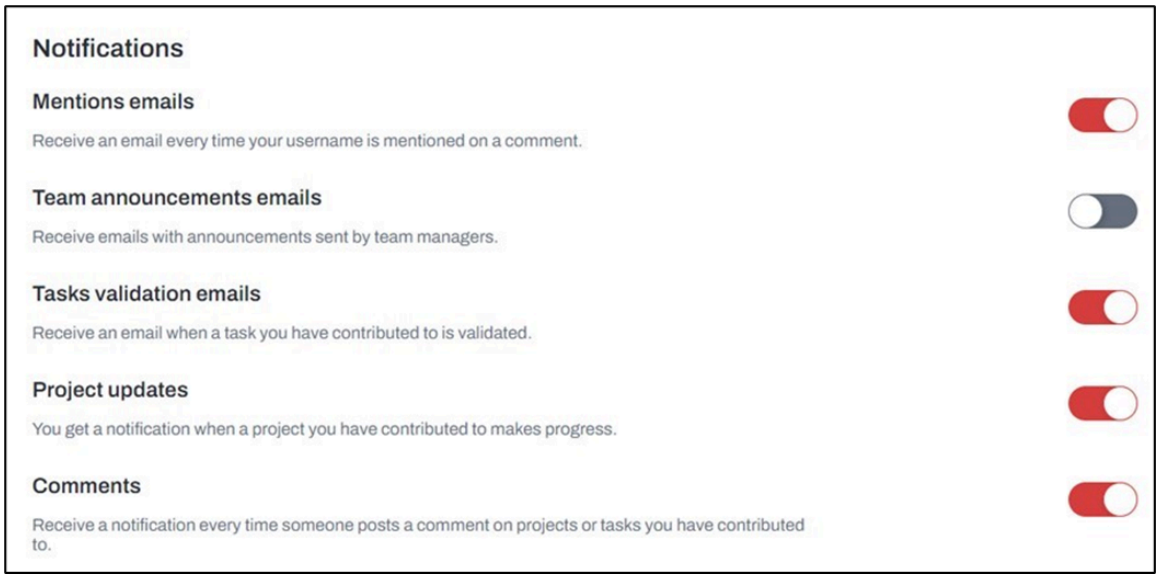
The OpenStreetMap (OSM) platform supports translated interactions.



Setup Notifications

While you are on this configuration page you should take a moment to consider your notification settings. Here's how to do so.

You should set up your notification preferences, just below where the language settings appear on your profile page. This will allow you to receive an email when you are mentioned in a comment, team managers send an announcement, your tasks are validated, etc.



This lesson is part of the Tasking Manager module. You will now learn how to select a Tasking Manager project and choose a task to map.

Select A Project And Mapping Task

It took a moment to set up your OpenStreetMap account, and resolve your personal settings in our OpenSidewalks Tasking Manager instance (https://tasks.opensidewalks.com), but now you're all set to dive into mapping pedestrian network features!

This lesson describes how to select a local mapping project to contribute your built environment observations.

The lesson is organized into the following sections:

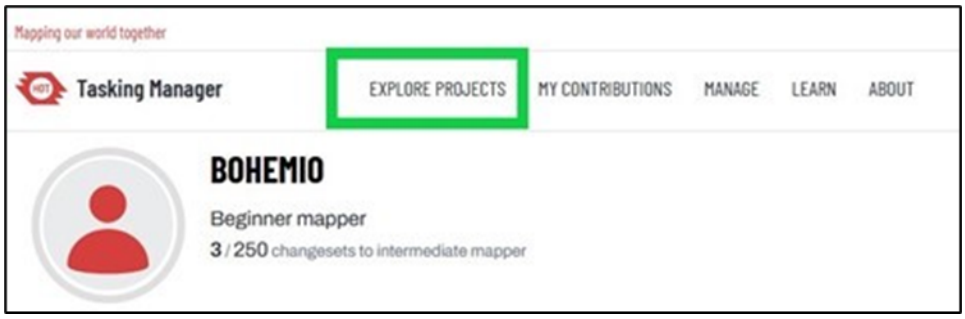
- Select A Project and Task
- Contribute To A Project
- Select A Polygon To Map Project Instructions iD Editor Interface

Once you complete this lesson you will be ready to add your mapping changes to the OpenStreetMap global map and complete the Tasking Manager project task you selected.

Select A Project and Task For Your Contributions

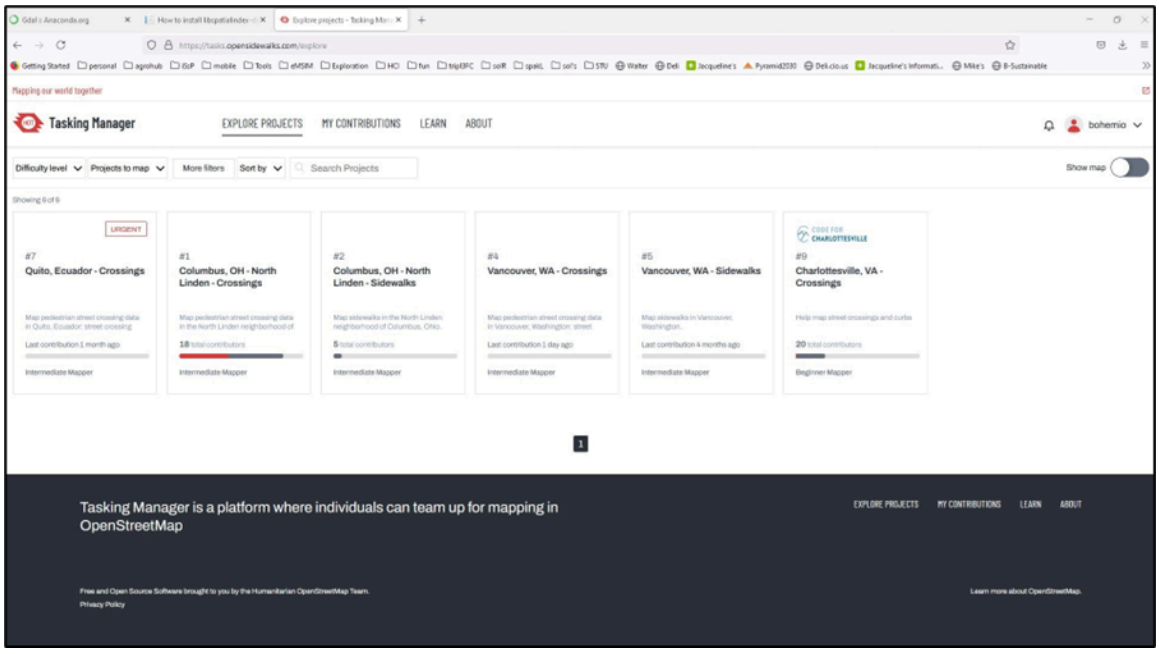
Here you will find how to contribute to a project and connect with your local mapping community!

Click on “Explore Projects” in the top navigation menu of the OpenSidewalks Tasking Manager to access the list of projects and their mapping tasks.

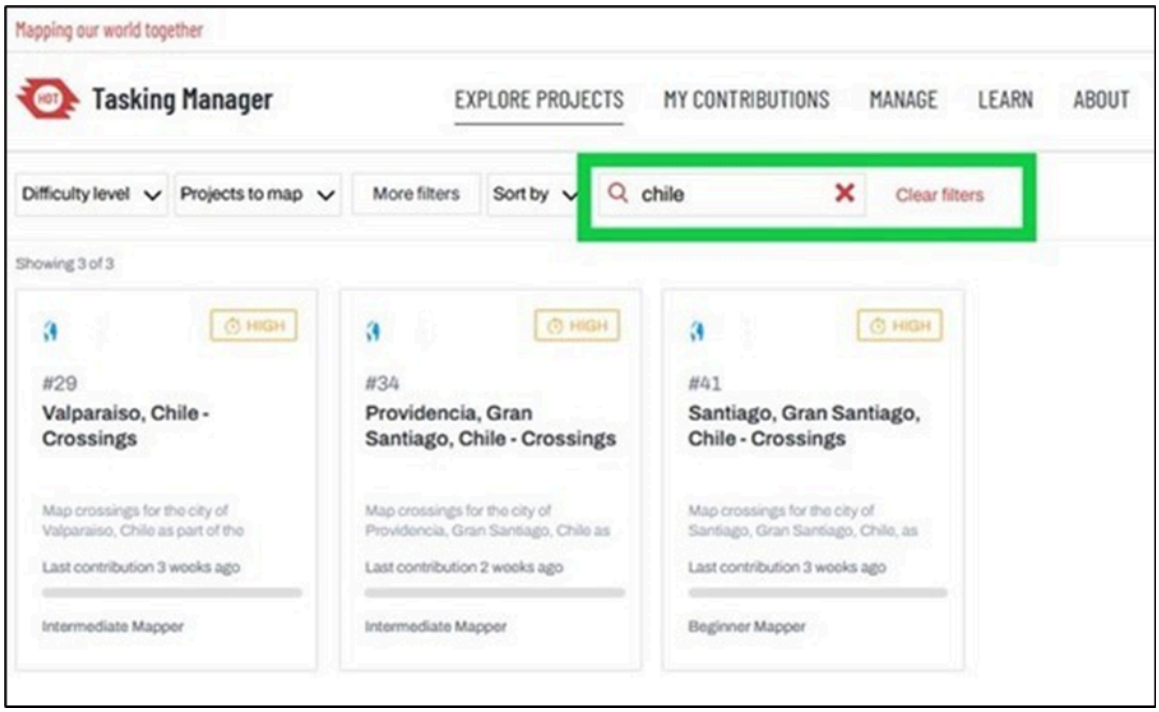


Note: Unless you are an instance admin, you will not see a "Manage" link in the navigation menu of the OpenSidewalks Tasking Manager.

Locate a project of your interest in the Explore Projects list. Click on any project to access its detail page.

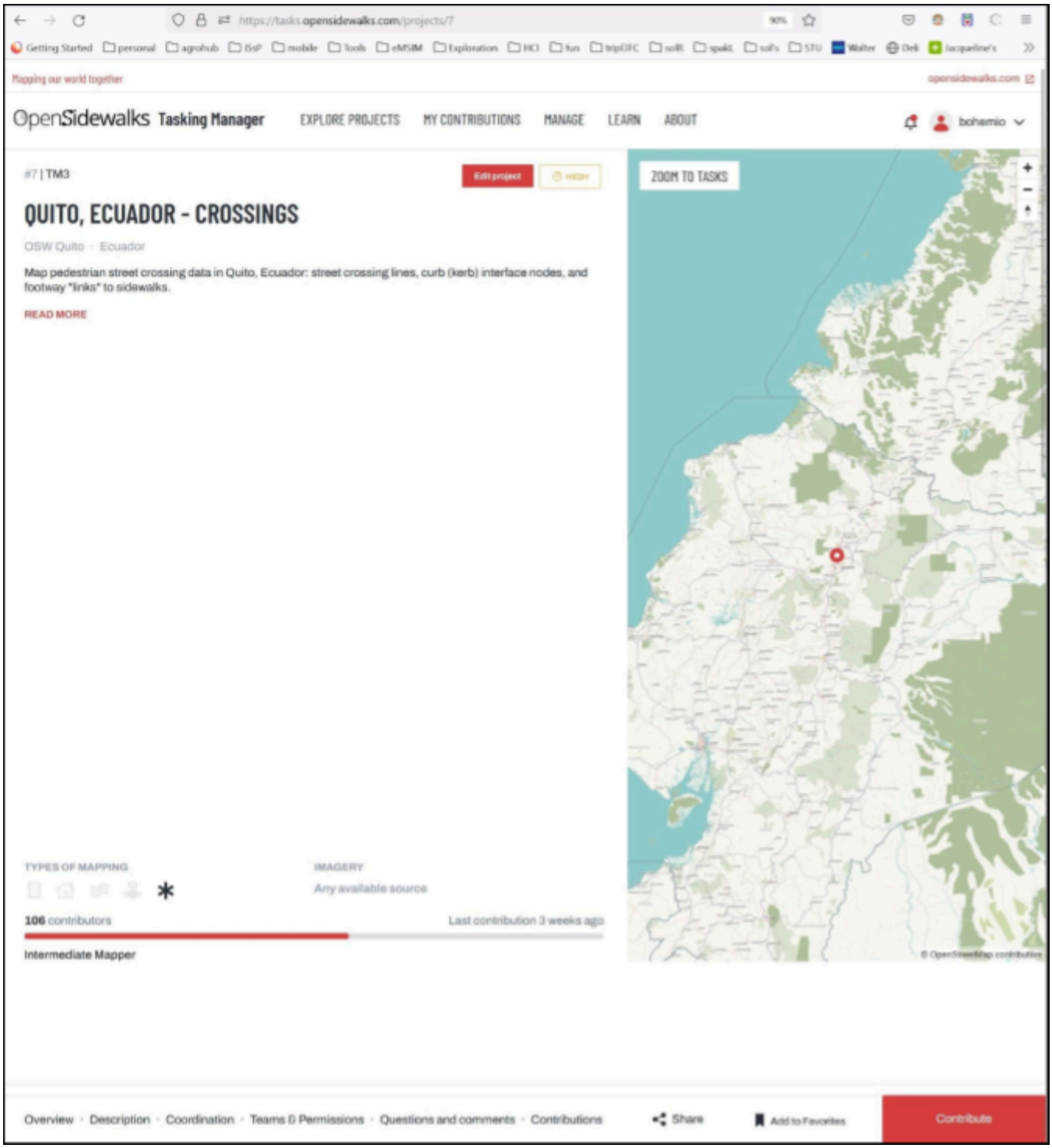


You can also search for a project according to the city that we have set up in the OpenSidewalks Tasking Manager.



Contributing To a Project

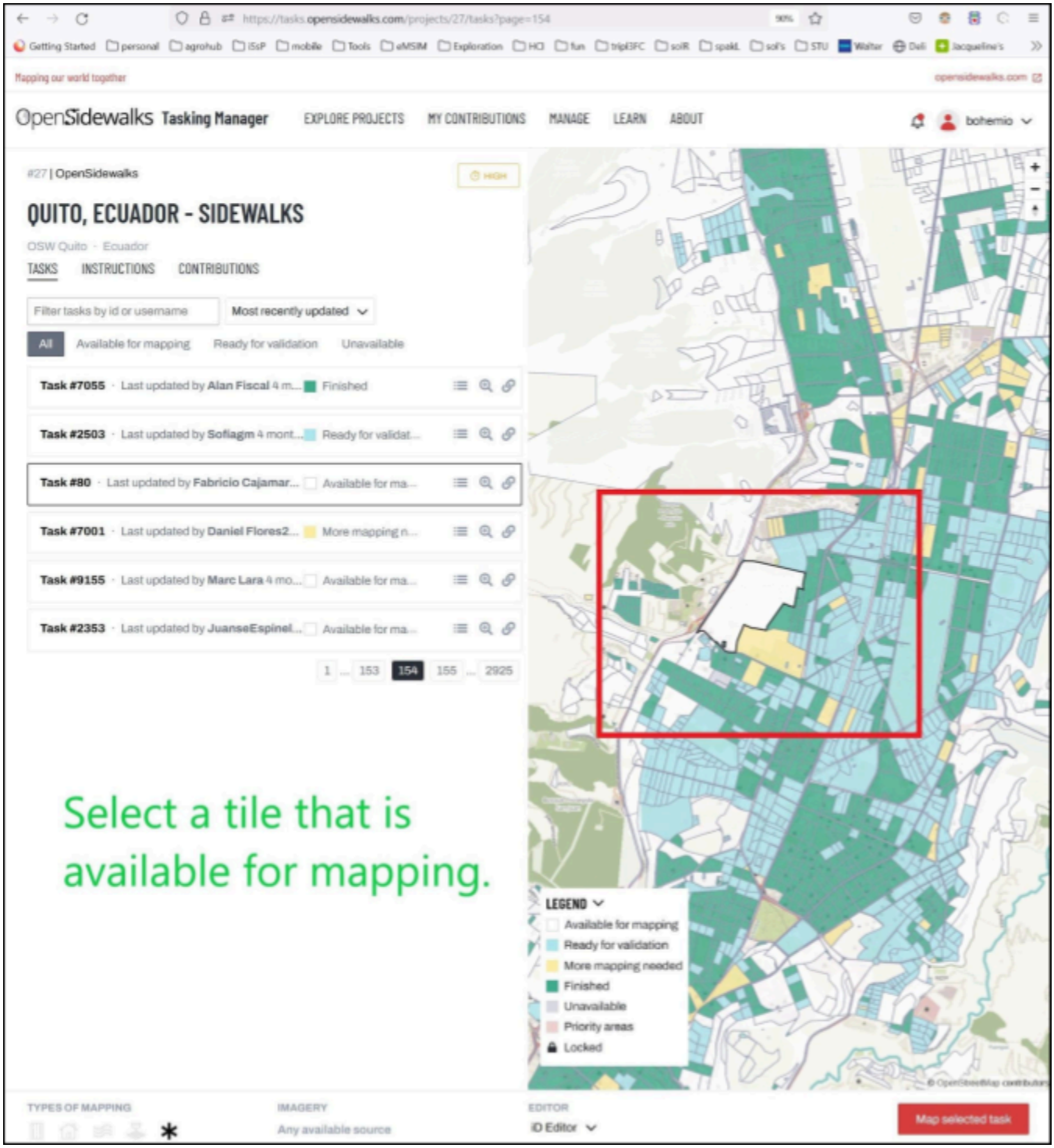
Once in the detail page of any project, click the "Contribute" button at the bottom of the page to access the list of available mapping tasks (delimited areas).



Please pay attention to the text on the left--the project organizers will include information on what the project is about and what each mapping task is intended to accomplish.

Selecting A Polygon To Map

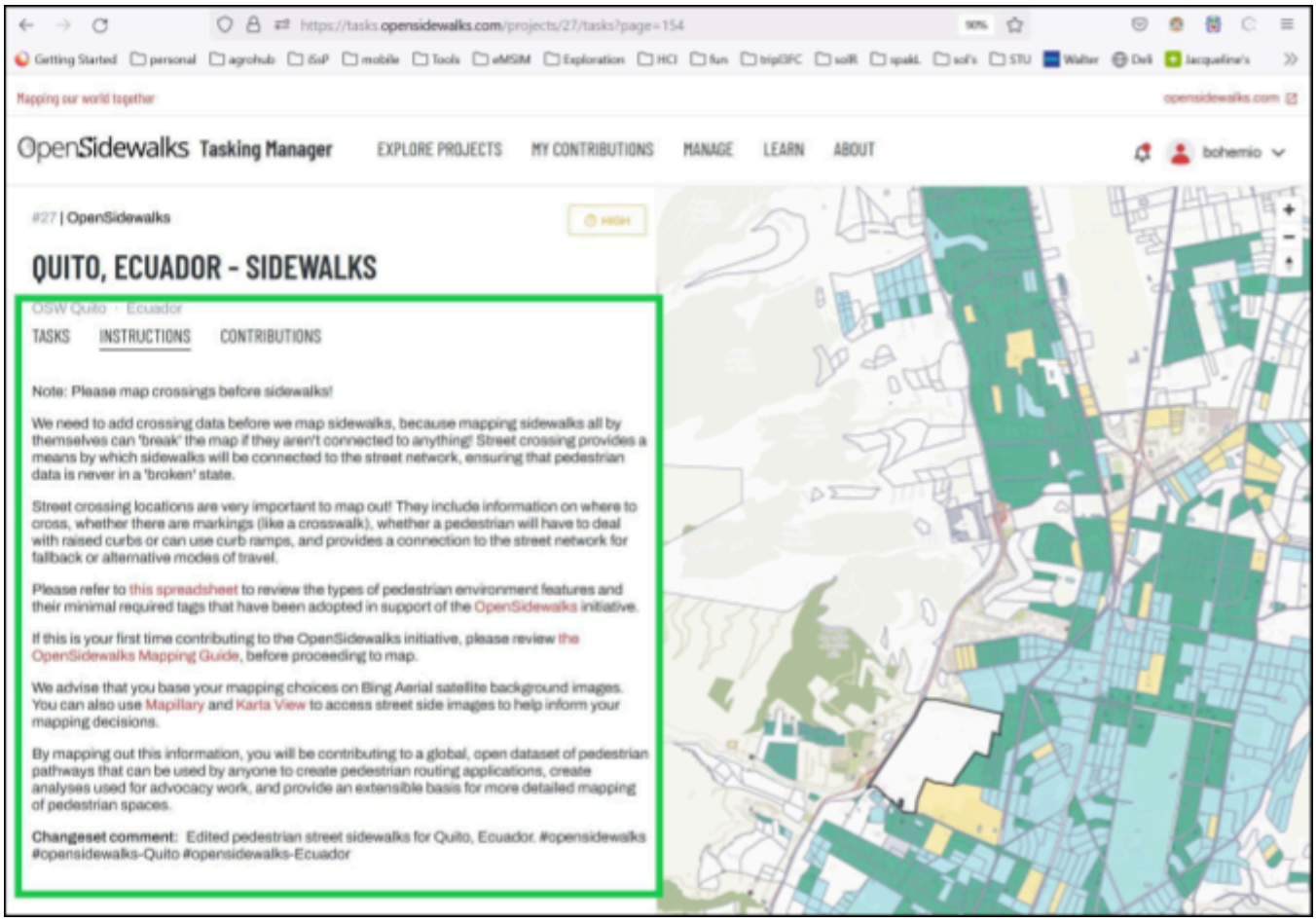
You will then select a polygon tile from the project map, before proceeding to click on "Map selected task" to begin mapping in the iD Editor. This interface allows you to map features that are stored in the OpenStreetMap database, while ensuring that no other OpenSidewalks Tasking Manager user is also mapping in that area of the city.



Project Instructions

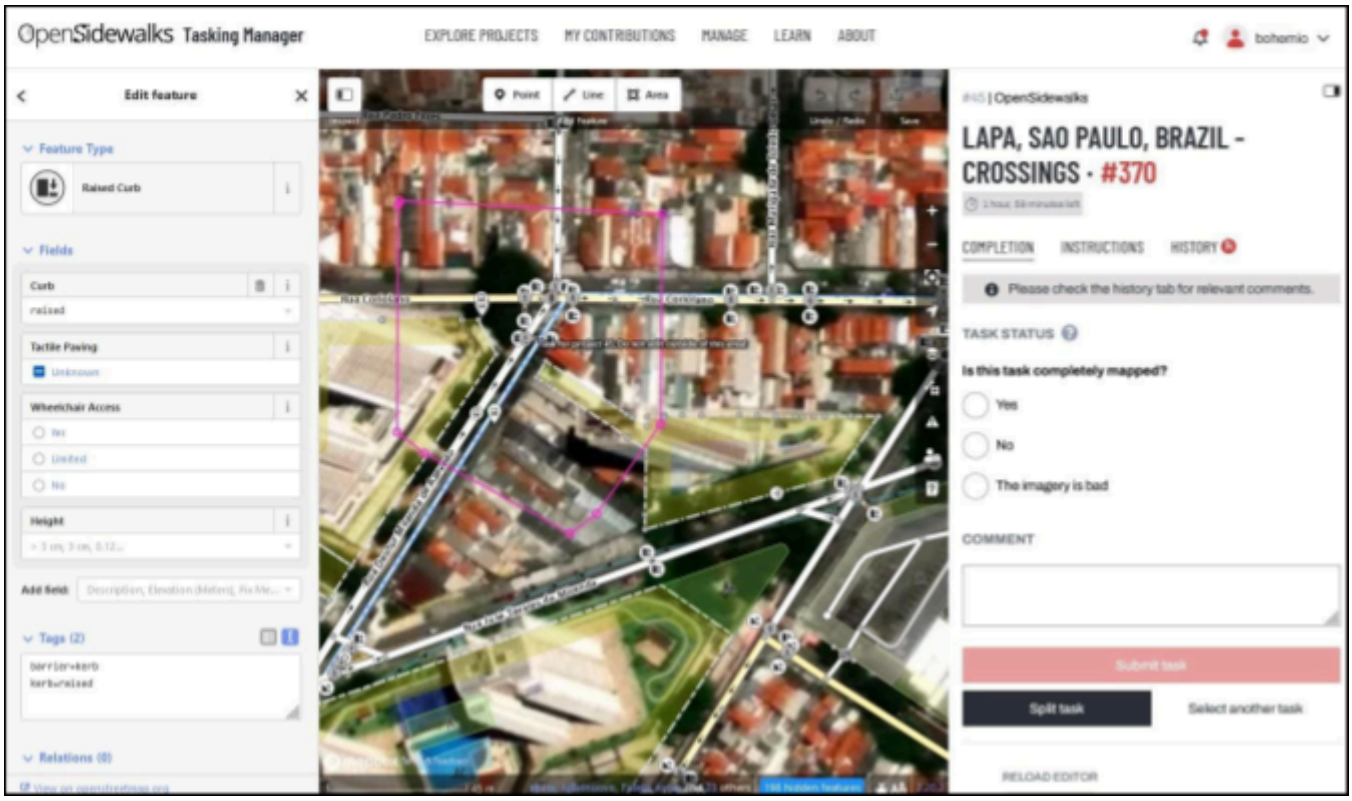
Notice that the project tasks page contains an "Instructions" tab. Be sure to review the information contained there to ensure you follow the mapping guidelines, and understand whether the local mapping team has stated particular

mapping priorities for the area (for example: whether mapping the location of light posts should be documented while you map in your community.)



iD Editor Interface Within The OpenSidewalks Tasking Manager Interface

Now that you have selected a task for mapping, a new window will open with three separate panes. The center panel is the most relevant one, with an aerial map centered at the task polygon you selected and in pink outline is the area on the map you are asked to review and make additions to.



This middle pane features a suite of map editing tools for OpenStreetMap, collectively known as the "iD Editor".

This lesson is part of the Tasking Manager module. The next lesson will walk you thru how to complete the Tasking Manager project task you selected.

Completing A Task In The Tasking Manager

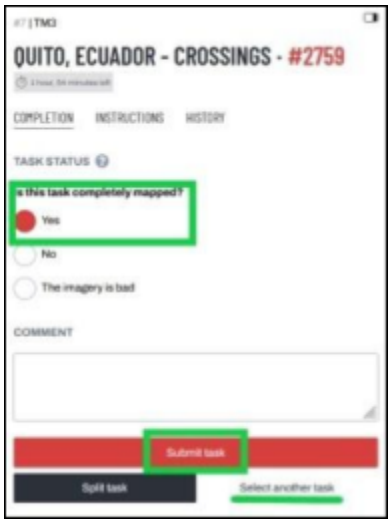
This lesson is the last in the Tasking Manager module focusing on how to navigate the OpenSidewalks Tasking Manager. The lesson will focus on how to complete a task in OpenSidewalks Tasking Manager so that your mapping contributions to pedestrian features in our community partner projects can be tracked. This step allows us to change the status of the project task so that it can be queued for validation by another mapper. You can also request assistance from other OpenStreetMap users to help complete the mapping task.

Once you have contributed (and saved the contributions to OpenStreetMap via the iD editor), you should comment, save, and close the OpenSidewalks Tasking Manager project task you have been working on.

Even if you didn't get to finish reviewing the entire task polygon, you should close the task. By taking this step, you are signaling the Tasking Manager that the task has either been completed (and is therefore ready for validation) or requires more mapping.

If you have any comments to future mappers attempting this task, leave them in the COMMENT text field.

The “Submit task” button at the bottom of the Task Management pane on the right side of the tasking manager will be enabled. (1) Mark the task according to whether you have completed it, if it needs more mapping or to report bad imagery and click on "Submit task."



You can click on Select Another Task to go back to the project tasks view of the OpenSidewalks Tasking Manager, but if you do so before "Submit task" then your interaction with the task will not be recorded.

This lesson is the last in the Tasking Manager module. You are now ready to review the OpenSidewalks mapping practices we have developed to ensure data quality and consistent mapping across our partner communities.

The OpenSidewalks Mapping Phases

We are excited your team has agreed to map sidewalk data in your community!

The importance of doing things in an organized fashion cannot be understated. In particular, it is critical to be in agreement with the accepted practices of the OpenStreetMap community. The table below summarizes the three mapping phases of the OpenSidewalks project.

Phase I is focused on contributing to the data set of the "transportation layer" for pedestrians, the pedestrian network. This layer describes a connected network of foot paths and information about how they connect. Just having the crossings and sidewalks drawn in the correct locations, and connected through nodes in the way they connect on the ground, provides information for routers (like Directions applications) to do a better job routing pedestrians.

The lessons in this module will first focus on how to map pedestrian features identified in Phase 1 using the OpenSidewalks mapping practices: Mapping The Pedestrian Network. Detailed mapping instructions for Phase 1 are provided for in the following lessons:

- Part 1: How To Map Crossings And Curbs
- Part 2: How To Map Sidewalks and Footways
- Part 3: How To Connect Crossings and Sidewalks

We also summarize the tags used in Phase 2 and Phase 3 in the following pages:

- Phase 2: Attributes That Could Affect Accessibility and Navigation
- Phase 3: Hazards And Mitigating Features That Affect Accessibility

Phase	Goal	Mapping Focused On
Phase 1	Create the pedestrian transportation layer	Street crossings, sidewalks, and footway links

Phase 2	Add attributes that could affect traversal	Local community selects important crossing and sidewalk features to map
Phase 3	Add mitigating features that improve or hamper pedestrian traversal	Local community maps specific features and barriers addressing local traveler needs.

OpenSidewalks Phase 1: Mapping The Pedestrian Network

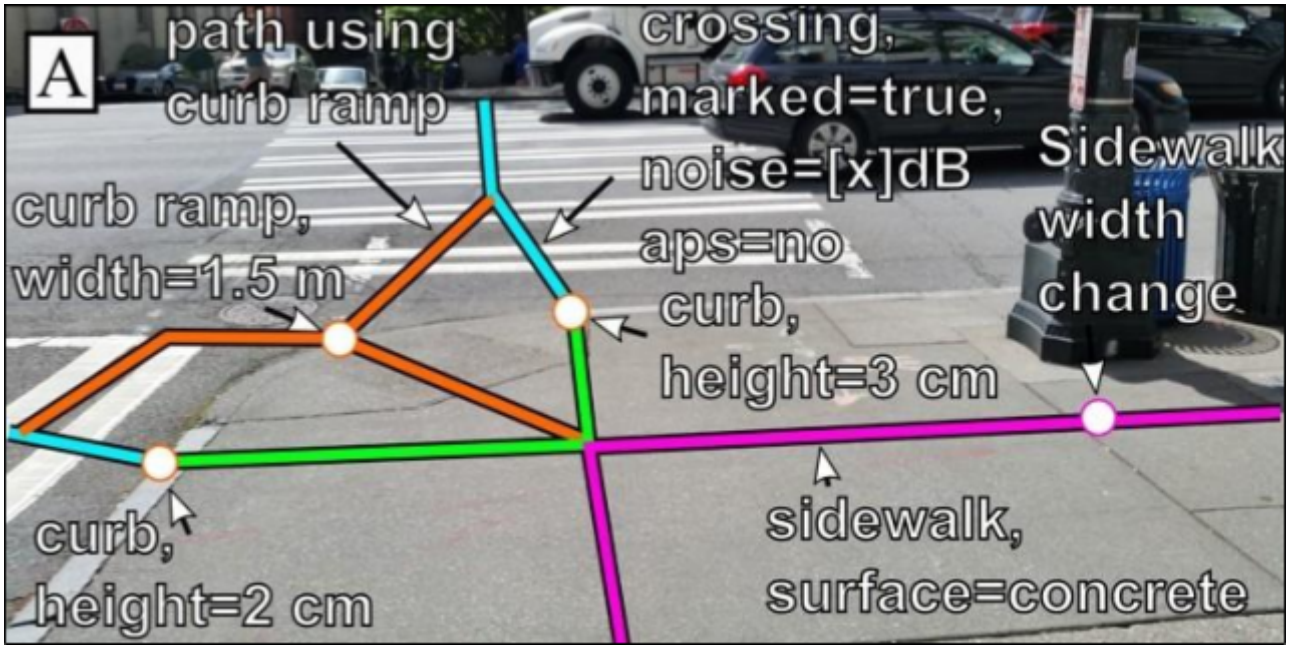
Mapping Phase 1: Create The Pedestrian Transportation Layer

The OpenSidewalks project aims to expand the catalog of open geospatial information on accessible walkways in urban environments; and, importantly, explain how pedestrian pathways, or footways, are connected to roads and other pedestrian environments (trails and service roads, for example).

Specifically, we are concerned with collecting data on crossings, curbs, sidewalks and foot paths, other built environment features that impact accessibility, and how they intersect.

The brief lesson below the image provides a primer on how we approach mapping pedestrian features. You will next learn the Rules For Mapping that we follow when we map each of the features identified in Phase 1, in this subset of lessons:

- Part 1: How To Map Crossings
- Part 2: How To Map Sidewalks and Footways
- Part 3: How to Connect Crossings and Sidewalks



Connectivity is KEY when mapping pedestrian features in the built environment! For this reason, we will ask that every pedestrian element you map is somehow connected to elements that are already there (usually street, roads or building entrances). For example: the center line of a sidewalk is connected to a short foot way, that connects to the curb node, that connects to the crossing way, that intersects with (and is connected to) the road. This last node in particular connects the urban transportation network to the pedestrian network.

Don't worry if you struggle to digest all of this information! As you complete the following lessons, you will gain first hand mapping experience while you get more comfortable with the pedestrian feature mapping concepts.

Mapping Pedestrian Features

Mappers contributing to Phase 1 of the OpenSidewalks project will first focus on mapping (1) the crossings at intersections. We do this first for two reasons:

1. Crossings are the most contentious spaces in our built environment because they are sharedspaces for pedestrians, bikes, and cars. Pedestrians want to know specific information about crossings, like whether they are visually marked, if there are signals or signs present, and how the street environment connects to the sidewalk.
2. The second reason to map crossings before sidewalks is that, through crossings, we canconnect the representation of sidewalks and footpaths to the road network. This helps routing applications use the data downstream.

Mappers then focus on documenting (2) the curbs at the edge of the crossings, (3) the sidewalk center lines in the vicinity, and (4) the footways connecting the sidewalk way to the curb nodes.

Tagging Pedestrian Features

Here is how we document pedestrian network information during Phase 1, in a nutshell.

1. Map each street Crossing way, a line that extends from curb to curb, and shares a connected node, a point where the crossing line intersects with the street it is traversing. The crossing line will have the tags highway=footway and footway=crossing, and the crossing node connected to the road will have the tag highway=crossing.

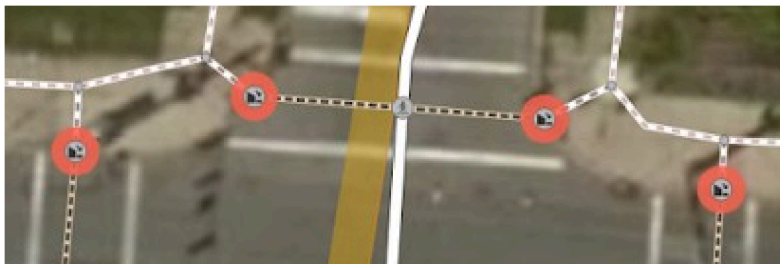
You may add marking information for the crossing line feature by adding the tag crossing:markings = yes/no, or by using equivalent presets in the iD Editor (Marked or Unmarked Crossing). You can also document the surface conditions and types and any signaling associated with the crossing.

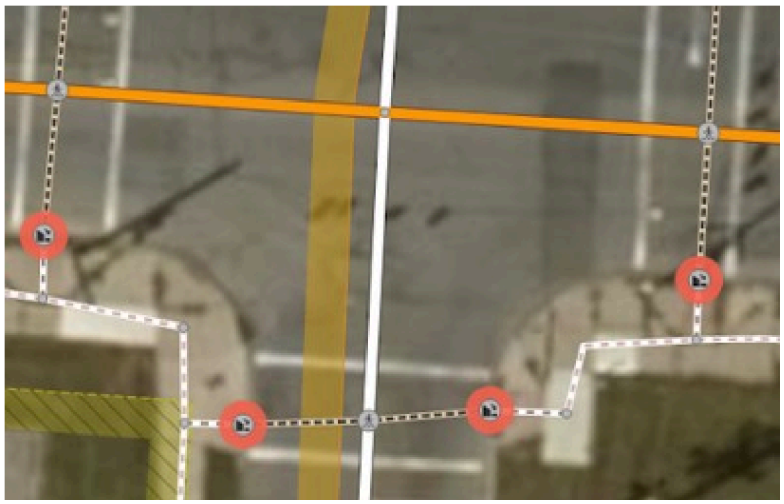


2. Map Curb (kerb) nodes, points at either end of the crossing lines where the crossings meet the edge of the road. Each curb node will be tagged barrier=kerb.

Add an additional tag if you can resolve whether the curb is raised or lowered. Use kerb=raised or kerb=lowered to document the curb feature. If there is no curb at all, you can add kerb=flush. In the special case where the curb is rounded (common in American suburbs), you can use kerb=rounded.

When documenting a lowered curb you can also add information on whether there is tactile paving at the location by using the tactile_paving=yes/no tag.



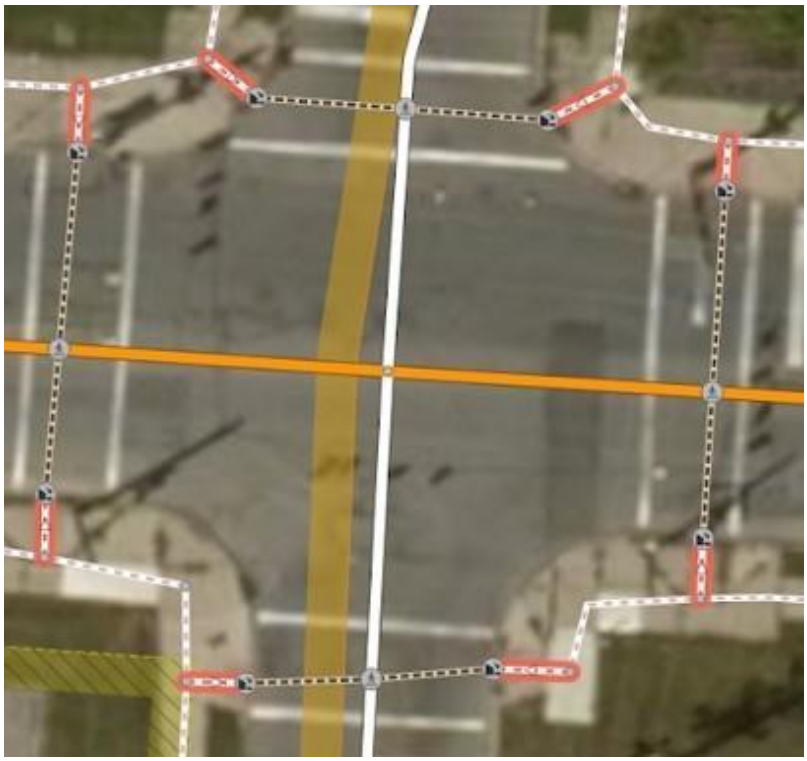


3. Map Sidewalk ways reserved for pedestrians along the edges of roads by drawing a line along the center line of the pathway. Sidewalk lines use the tags highway=footway and footway=sidewalk.

You can add additional tags to document the conditions of the sidewalk such its surface type (i.e., surface=concrete/asphalt/cobblestones/gravel), width and inclination.



4. Map short footways, lines that connect the crossing curb nodes to the sidewalk center lines (or to the expected location of it, if the sidewalk center line has not yet been mapped). These "link" lines are tagged highway=footway. It is acceptable if any links connecting the crossing curb to the sidewalk have already been mapped and tagged as a sidewalk (highway=footway and footway=sidewalk).



Once we have mapped the core pedestrian features that intersect with the transportation network, we can collect data on other details of the pedestrian environment that may impede or improve the ways in which we access these transition pathways. Mapping goals during Phase 2 and Phase 3 focus on documenting issues that may impact accessibility such as sidewalk barriers, surface types and conditions, and built mitigating factors (i.e., steps, escalators and elevators). Your local mapping team will determine which such elements in your community are to be prioritized for documentation.

Please keep in mind that the labels we discuss in this mapping guide are the actual values that need to be entered to document each feature detailed here, with the exact spelling regardless of local language or local definition of the term. OpenStreetMap is a community collaboration that is governed by accepted community mapping rules.

We ask OpenSidewalks city mapping teams to use the tagging exactly as it is covered here, in English—this is the accepted global data standard! If the team has difficulty with a tag that may not be applicable to your city or region, please consider submitting a proposal to OpenStreetMap.

Let us now proceed to learn the Rules that we follow when we map each of the features identified in Phase 1, starting with Crossings and Curbs.

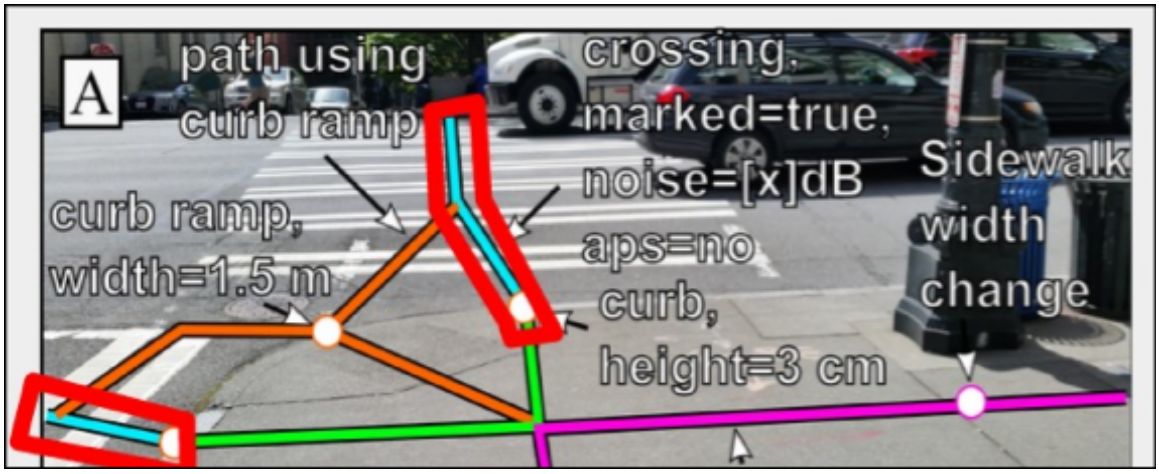
Phase 1, Part 1/3: How To Map

Crossings And Curbs

This lesson covers the mapping process and tagging standards of how to document crossing features using the OpenStreetMap iD Editor. The sections in this page include:

- Why Map Crossings First?
- Map Crossings In Your Community
- Rules For Mapping Crossings
- Mapping Steps: Crossings
- Tagging Curbs
- Rules For Mapping Curbs
- Mapping A Crossing (Checklist)
- Basic Crossing Tags
- Basic Curb Tags
- What To Do If Some Of The Features Have Already Been Mapped In OpenSTreetMap?

The next lesson will focus on How To Map Sidewalks And Footways.



Why Map Crossings First?

OpenSidewalks advises local teams to focus first on mapping and validating street crossings information first. This allows us to anchor data collection at the intersection of the sidewalk and the road or pathway (trail, service road, etc.)

Any pedestrian pathway information collected later, such as sidewalk locations and conditions, can be more easily related to the nearby crossing, making it possible to connect the pathways with information relating to the road. Here is the OpenStreetMap Crossing Tag Wiki Page: https://wiki.openstreetmap.org/wiki/Tag:footway%3Dcrossing.

Map Crossings In Your Community

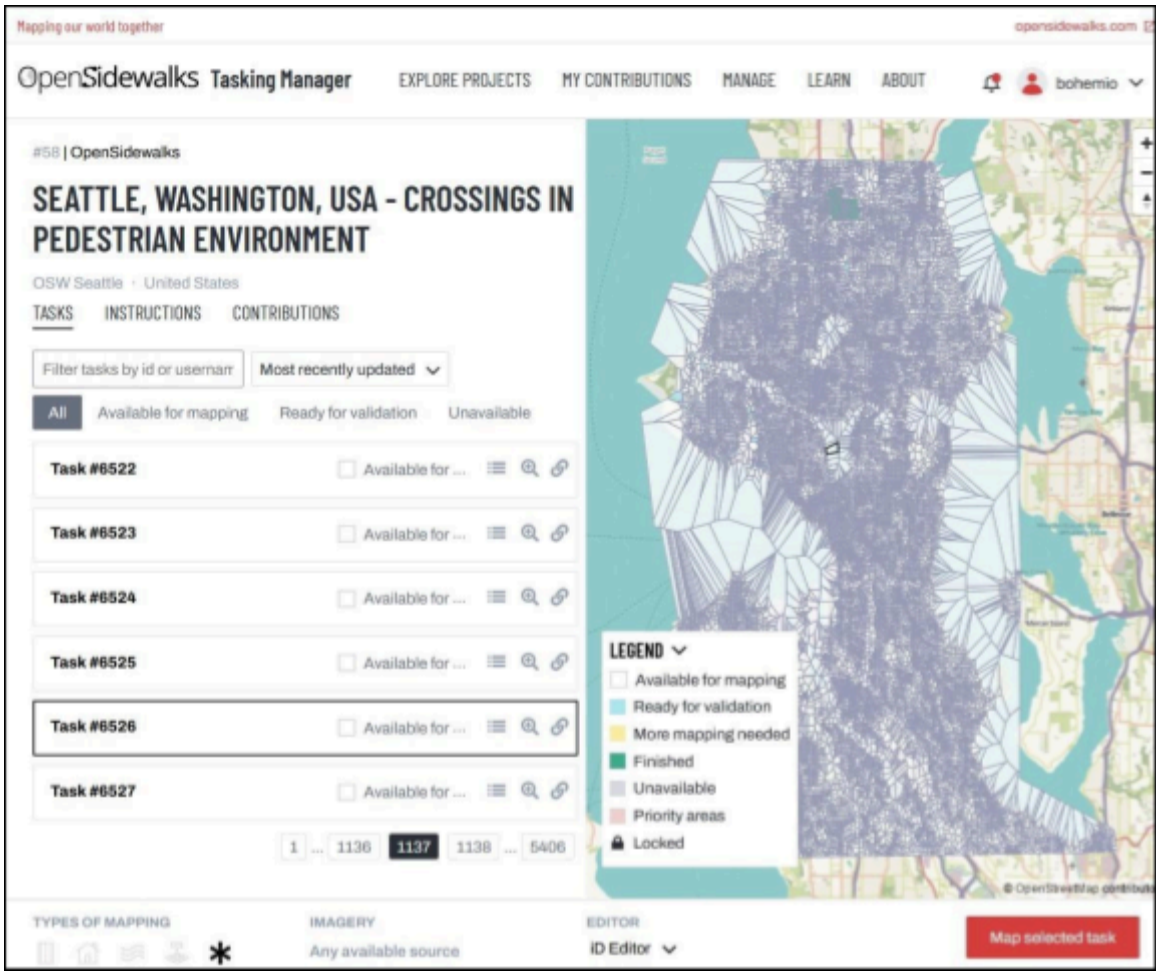
Let's get to mapping intersection crossings in the OpenSidewalks Tasking Manager iD Editor-tasks.opensidewalks.com!

You will first need to select a crossing task to map. Crossings mapping tasks in the Tasking

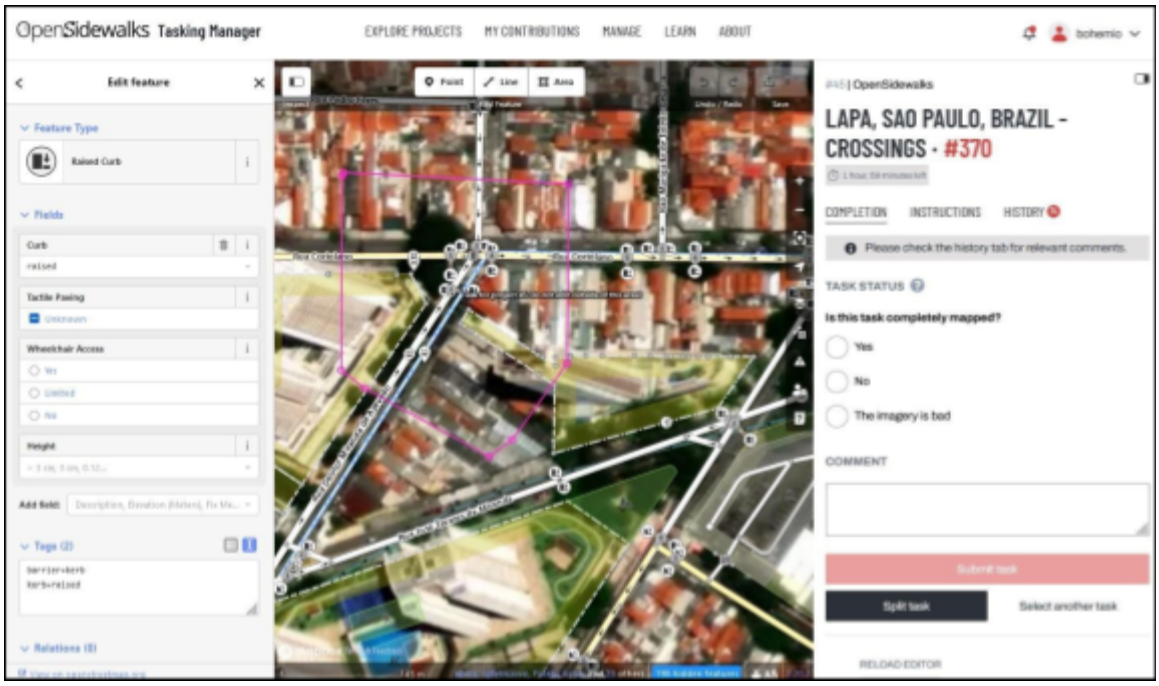
Manager have been organized around street intersections so that no more than one OpenSidewalks map contributor is mapping an intersection at a time.

To map a crossings task:

1. Go to the tasks.opensidewalks.com instance.
2. Log in.
3. Click on 'Explore Projects'.
4. Search for and then click on a project named '{city/neighborhood} - Crossings'.
5. On the project details page, click 'Contribute'.
6. Click on a "Map a task" at the bottom right of the page, to be assigned a task randomly; or,select a specific task polygon on the project map, and click "Map selected task" at the bottom right of the page. You can also click on a task "Available for mapping" in the project Tasks list, and click "Map selected task".



You will be redirected into an editing view that combines the iD Editor (left) with task information (right).



Map all crossing ways and nodes at intersections following the Rules and the mapping steps below.

You will need to Save your mapped features to OpenStreetMap before your contributions are recorded in the global map. Complete the Tasking Manager project task and click "Submit task" to log your contributions to the OpenSidewalks project!



Rules For Mapping Crossings

Crossings describe the path a pedestrian can take to cross a street. These are essential for connecting the pedestrian network across streets and to the streets themselves as well. Crossings are lines (ways in OpenStreetMap).

Crossings are drawn only on the surface of streets: they should not be drawn on top of sidewalks.

Crossings should always start and end with curb nodes.

Crossings are always tagged with highway=footway and footway=crossing. These tags will be added automatically when you use the iD Editor presets described below.

Crossings can be of two types: marked or unmarked. To map these:

- Marked (add tag crossing:markings=yes). A “marked” crossing is one with lines on the ground showing where a pedestrian can cross and is (likely) protected to cross. The iD Editor preset in English is "Marked Crossing".
- Unmarked (add tag crossing:markings=no). An "unmarked" crossing is one where a crossing is implied but lacks ground markings, which is usually at most intersections. The iD Editor preset in English is “Unmarked Crossing".

Crossings are always connected to the street(s) they cross. This guarantees connectivity with the larger road network, preventing us from accidentally breaking routing software.

Crossings may be enriched with some optional tags. Please consider waiting on adding this information in Phase 1, as we just want the core network established. Those optional tags are--not limited to:

- surface=* (surface composition--concrete, asphalt, cobblestones, gravel, etc.)
- tactile_paving=yes/no (whether the crossing itself has tactile surfaces to aid the blind and others)

Addressing Complexity

Sometimes it is hard to determine labels and there is some level of "decision-making" when it comes to drawing crossings. Here are two common examples.

There are NO sidewalks. Simply connect the crossings to the curbs and create no footways to connect the crossing.

Curb ramp is right at the corner of an intersection rather than a specific roadside. There are two options on connecting the corner to the crossings:

1. Connect the crossing only to the corner curb ramp, creating a path that does not perfectly alignwith crosswalk markings.
2. Draw directly across the street by adding a raised curb, then add an additional path thatconnects the crossing to the curb ramp. In other words, drawing the path a wheelchair user might take as well as the more direct path of someone who does not mind curbs.

OpenSidewalks prefers the second option if there is any doubt, but the first is also acceptable.

Mapping Steps: Crossings

To map crossing ways you will select the iD Editor Line marking tool at the top of your mapping dashboard.



Then, (1) start by clicking once on the edge of the crossing; (2) click again where your line meets the roadway or pathway midpoint (this step is pivotal, because it associates the new crossing data to the main road or path data set that is already on the map); and, (3) double click at the terminal end of your crossing, on the opposite edge of the street, to complete the rendering of the line.

The feature drawn, a crossing way, now shows a line with three visible nodes (points): the start, the mid, and the end nodes (points). You will now proceed to update the tags associated with the crossing line, and the tags that correspond to each of its nodes.

But, first, let's quickly go over Marked vs. Unmarked crossing types in OpenStreetMap.

Marked vs Unmarked Crossings

There are two types of crossings: Marked and Unmarked. The tags associated with each type of crossing are listed in the Basic Crossing Tags table below. The next section will explain how to apply the basic feature tags in the iD Editor.

Here is a screenshot of the iD Editor when tagging a crossing using a Marked Crosswalk preset feature.

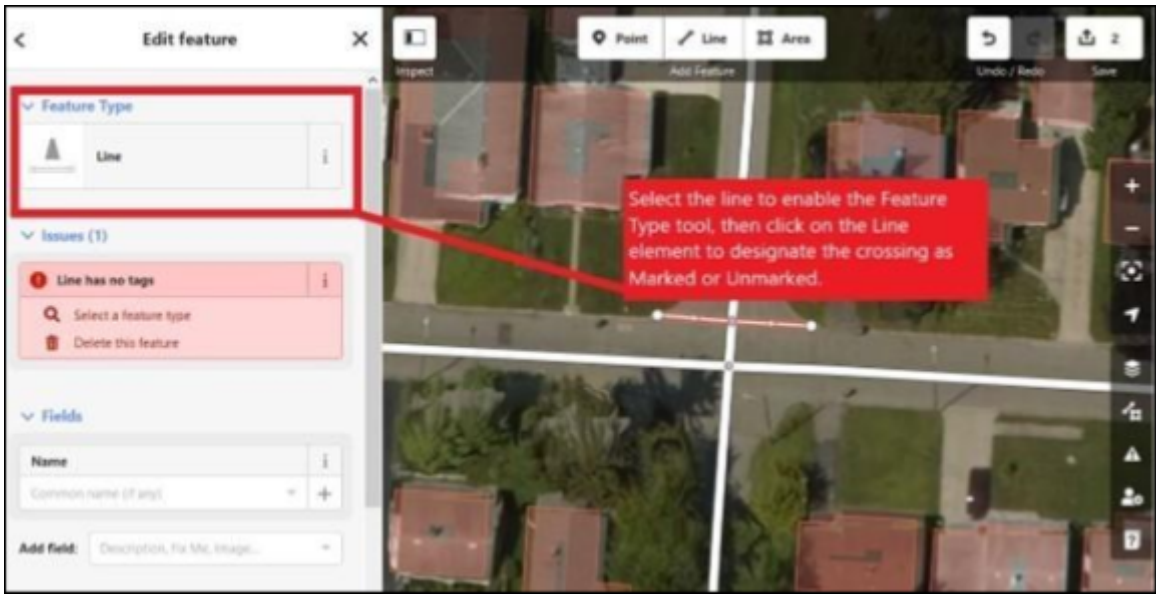


Here is a screenshot of the iD Editor when tagging a crossing using an Unmarked Crossing preset feature.

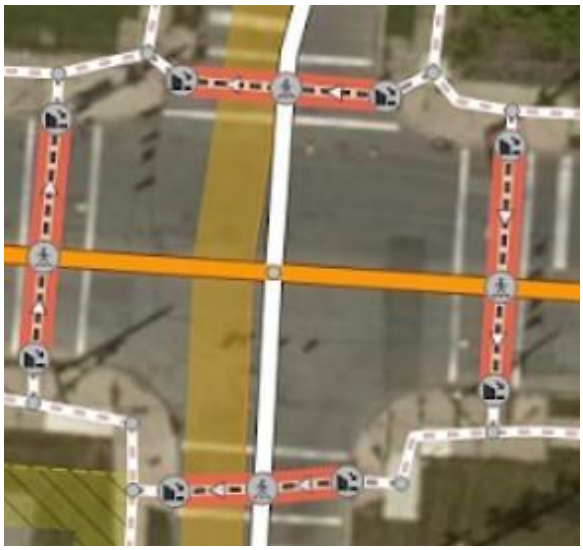


Tagging The Crossing Line

This image below shows how once you select the mapped Line the iD Editor Feature panel will appear to the left of the dashboard to allow you to modify the classification of the object. When you click on the Feature Type, it will allow you to search for pre-defined features such as “Marked” or "Unmarked", which already contain the basic required tags for that type of feature.



By selecting a Marked Crosswalk or an Unmarked Crossing preset feature your line will now have the basic tags highway=footway and footway=crossing, along with the marking information.



Tagging The Crossing Node

You created three points along the crossing line when you mapped it: two curb endpoints, and one point in the middle that connects the crossing to the road, which you will now label.

Begin by selecting the middle point, and you should see the “Select Feature Type” panel appear on the left. Search and choose the same label you used to tag the crossing line in the previous step, either “Marked Crosswalk” or “Unmarked Crossing”, to apply the basic feature tags to the intersecting crossing point.

The middle point of the crossing way should now have the basic tags for a crosswalk point:

highway=crossing, along with the marking information. The point will also turn into a small dot icon with an outline of a walking person within.

The other points at each end of the crossing line, at the edge of the street, are considered Curbs, which we will tag in the next section.

Tagging The Crossing Curbs: Raised vs Lowered

Your crossing lines end in two points at the edges of the street, the Curb nodes. Mapping these curb features and tagging them according to their degree of accessibility is critical data to downstream routing applications.

The basic tag to document a Curb point is barrier=kerb (the English term adopted in OpenStreetMap).

OpenSidewalks is most concerned with the type of curb the point represents. The most likely attributes of a curb type are Raised (curb), Lowered (ramp), Flush (sidewalk at same level as crossing) or Rolled (typical in suburbs). The tag kerb=raised/lowered/flush/rolled is added to the curb point to document that information.

The basic curb tags are already preset in the iD Editor Feature list for each of those types. Select the curb node(s) you want to tag--to tag multiple curbs that are of the same type use the Shift key before clicking to select the next point.



The same “Select Feature Type” panel will appear to the left of the dashboard for you to search and choose whether this curb is a “Lowered Curb,” “Raised Curb,” "Flush Curb" or “Rolled Curb.”

If you are unable to determine whether the curb is one of these three tags, please see the section about using the available street side imagery to confirm your selections. If you are still unsure, please tag this point “kerb=unknown” by selecting a type of Curb from the Select Feature Type list and then using the dropdown list within the Curb (kerb) data element to select the “unknown” value.

The full set of considerations on mapping Curb features are covered in the Rules For Mapping Curbs section below.

Rules For Mapping Curbs

Curbs describe the interface between street and pedestrian pathways. These are helpful for informing pedestrians about potential barriers or helpful infrastructure when crossing the street.

Curbs are points (nodes in OpenStreetMap).

Curbs should be placed exactly at the place where street meets the edge of the sidewalk.

Curbs should be mapped as one of the following:

- “Raised” (tag kerb=raised). The curb interface of a typical square-edge curb where there is a vertical displacement down from the sidewalk to the street. The iD preset in English is, “Raised Curb".
- “Lowered” (tag kerb=lowered). The curb interface of a curb ramp where a sloped surface meets the street. The iD preset in English is, "Lowered Curb".
- “Flush" (tag kerb=flush): No curb. The interface is flat from sidewalk to street. The iD preset in English is, "Flush Curb".
- “Rolled” (tag kerb=rolled): A quarter-circle-shaped curb. This is common in American suburbs. The iD preset in English is, "Rolled Curb".

Curbs may be enriched with some optional tags. Please consider waiting on adding this information in Phase 1, as we just want the core network established. Those optional tags are--not limited to:

- surface=* (surface composition--concrete, asphalt, cobblestones, gravel, etc.)
- tactile_paving=yes/no (whether the area around the curb itself has tactile surfaces to aid the blind and others)

Mapping A Crossing Checklist

Here is a checklist on how to map a Crossing feature. Zoom in on your crossing point. Then establish if you have a clear view of the area or if you need to rely on street side images to complete the task. Here is a OpenStreetMap wiki on crossings: https://wiki.openstreetmap.org /wiki/Key:crossing.

Draw a Line to mark the crossing, which will have a starting Point, an intersection Point with the roadway or pathway, and an end Point at each opposing end (the curbs).

1. Label the Line, according to its type, Marked or Unmarked.
2. Label the center Point attached to the road, as a crossing.
3. Assess that the node is connected to the street (does the street move when you drag the center node?). If you DO move things around, please use the “UNDO”

button to put the road back where it was earlier. If you do not, many local mappers might be looking at your edits and ask why you edited the automobile streets (even though you didn't really, but moving that node will have changed the geometry of the road a little)

4. Label the two curb points (nodes) at each end of the crossing, whether they are lowered or raised.

Once you complete these steps you can commit your mapped features to Save to OpenStreetMap and proceed to mark the project task as completely mapped and click "Submit task" so your work can be logged in the Tasking Manager.



If it was too difficult to determine how to map and tag the crossing from the imagery provided, or you otherwise need to exit the project task in the Tasking Manager, mark the task as not completely mapped, add a comment and click "Submit task". Another mapper or validator can then help complete the mapping task.

Basic Crossing Tags

This table summarizes the basic OpenStreetMap tags to classify Crossing features. Here is an OpenStreetMap wiki on Crossings: https://wiki.openstreetmap.org/wiki/Key:crossing.

Feature Type	**Tags**
Marked Crosswalk	highway=footway footway=crossing crossing:markings=yes
Unmarked Crossing	highway=footway footway=crossing crossing:markings=no
Crossing NODE (Middle Point connecting the footway and the road)	highway=crossing* *This is the middle point in the crossing! Also, highway=crossing crossing:markings=yes/no

Basic Curb Tags

This table summarizes the basic OpenStreetMap tags to classify Curb features. Here is an OpenStreetMap wiki on Crossings: Here is an OpenStreetMap wiki on curbs:

https://wiki.openstreetmap.org/wiki/Tag%3Abarrier%3Dkerb.

Feature Type	**Tags**
Curb	barrier=kerb
Lowered Curb (Ramp)	barrier=kerb kerb=lowered
Raised Curb (Barrier)	barrier=kerb kerb=raised
Flush Curb	barrier=kerb kerb=flush
Rolled Curb	barrier=kerb kerb=rolled
Curb Barrier Height	barrier=kerb* height=3 cm* https://wiki.openstreetmap.org/wiki/Key:height *This is an example out of a range of values, please see the wiki page for correct annotations

What To Do If Some Of The Features Have Already Been Mapped In OpenStreetMap?

You may find yourself working on a mapping task in which some of the pedestrian features have already been documented and tagged by other mappers. Your aim in such scenarios is to: (1) map the pedestrian features that have not yet been documented; (2) confirm that the tags attributed to the features follow the OpenSidewalks Rules For Mapping; and, (3) reconfigure any shapes already mapped so they conform to the placement standards of the Rules For Mapping.

The next lesson, What If Pedestrian Pathway Features At A Crossing Are Already Mapped? will go over these concerns.

Video: Mapping Pedestrian Pathway Features At An Intersection

Watch this video to get a better sense for the situational factors you will have to keep in mind while you determine how to map pedestrian pathway features and document their attributes: https://youtu.be/_AczR5YHPdw.

The next lesson, What If Pedestrian Pathway Features At A Crossing Are Already Mapped?, will focus on what to consider when working on a task where the pedestrian features have already been wholly or partially mapped. After you have completed that lesson we will cover the process of How To Map Sidewalks And Footways.

What If Pedestrian Pathway Features At A Crossing Are Already Mapped?

The previous lesson walked you through the process of mapping pedestrian pathway features of a crossing at an urban intersection using the OpenSidewalks mapping guidelines. That lesson assumed that those features had not previously been mapped in the community. It is likely, especially in dense cities, that OpenStreetMap contributors have previously mapped pedestrian features.

This short lesson covers the issues you would consider when you find yourself working on an OpenSidewalks Tasking Manager project mapping task where the pedestrian pathway features at a Crosssing or Sidewalk are already wholly or partially mapped. You will need to ascertain whether the previous mapping contributions conform to the OpenSidewalks Rules For Mapping guidelines. The sections in this lesson include:

- Mapped Features
- Correcting Mapped Crossings
- Correcting Mapped Curbs
- Correcting Mapped Sidewalks

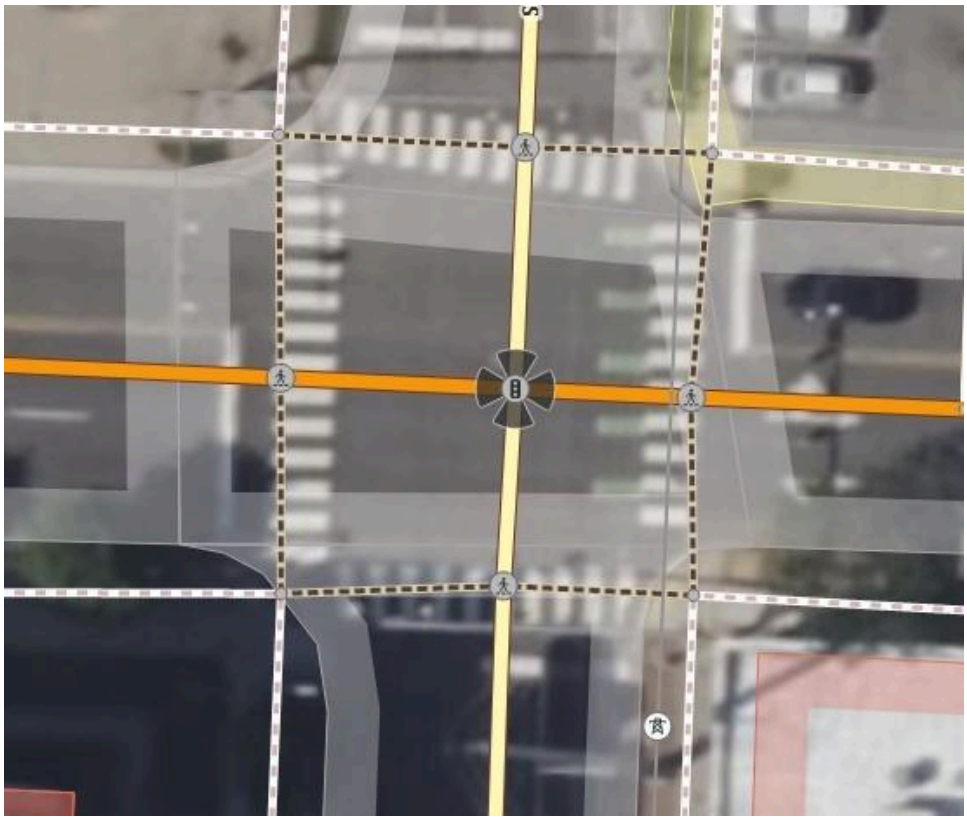
Once you complete this lesson, we will cover the process of How To Map Sidewalks And Footways.

Mapped Features

There are many intersections in a city where the crossing or adjacent sidewalks pedestrian pathway features may already have been mapped and tagged in OpenStreetMap.

You will want to consider revising or adding crossing or sidewalk details based on our guidelines. For example, you would want to: ensure that the crossing node is connected to the street and is properly tagged; that the curb end nodes of the crossing are documented as lowered or raised curbs; and, to check whether details of the crossing or sidewalk ways features could be expanded with other information such as traffic_signals or surface tags.

Take a look at this image below of a mapped crossing in Raleigh, North Carolina. Notice that the crossings have been mapped connected directly to the sidewalk. In the sections below we go over the considerations on how to correct the mapping at this intersection so that it follows the Rules For Mapping. At the end of the lesson you will see a collection of images of how an urban crossing's pedestrian pathway features should be mapped.

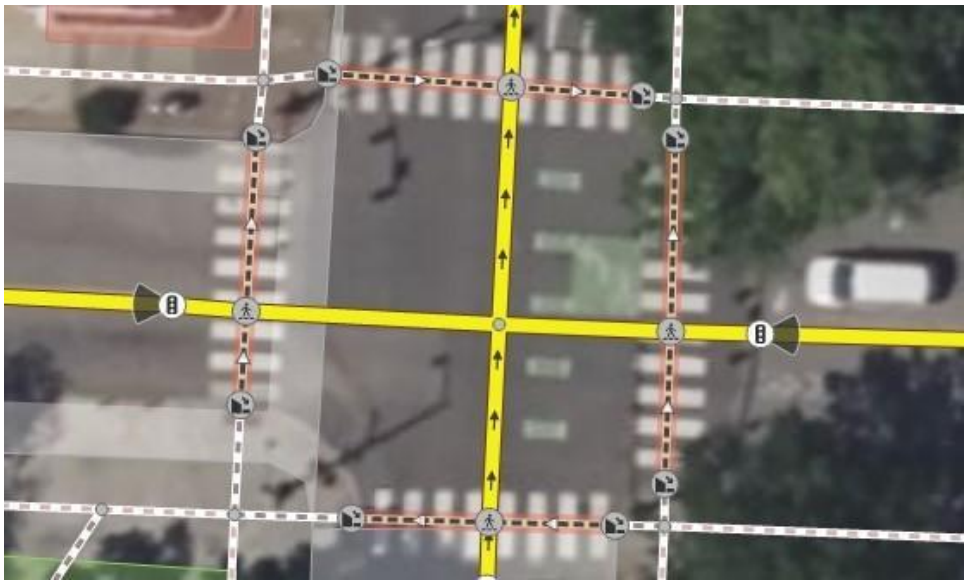


Correcting Mapped Crossings

Where a crossing may have been mapped already, check that it contains the correct tags, highway=footway and footway=crossing, and is placed in the center line of the crossing. The crossing line should also contain the tag crossing:markings=yes/no.

The crossing line should also be connected to the street it traverses by a crossing point (node) that is tagged highway=crossing and crossing:markings=yes/no. The crossing node is also where you would add the traffic_signals=yes/no tag.

The crossing way edge nodes (the curbs) should not be mapped beyond the edge of the street.

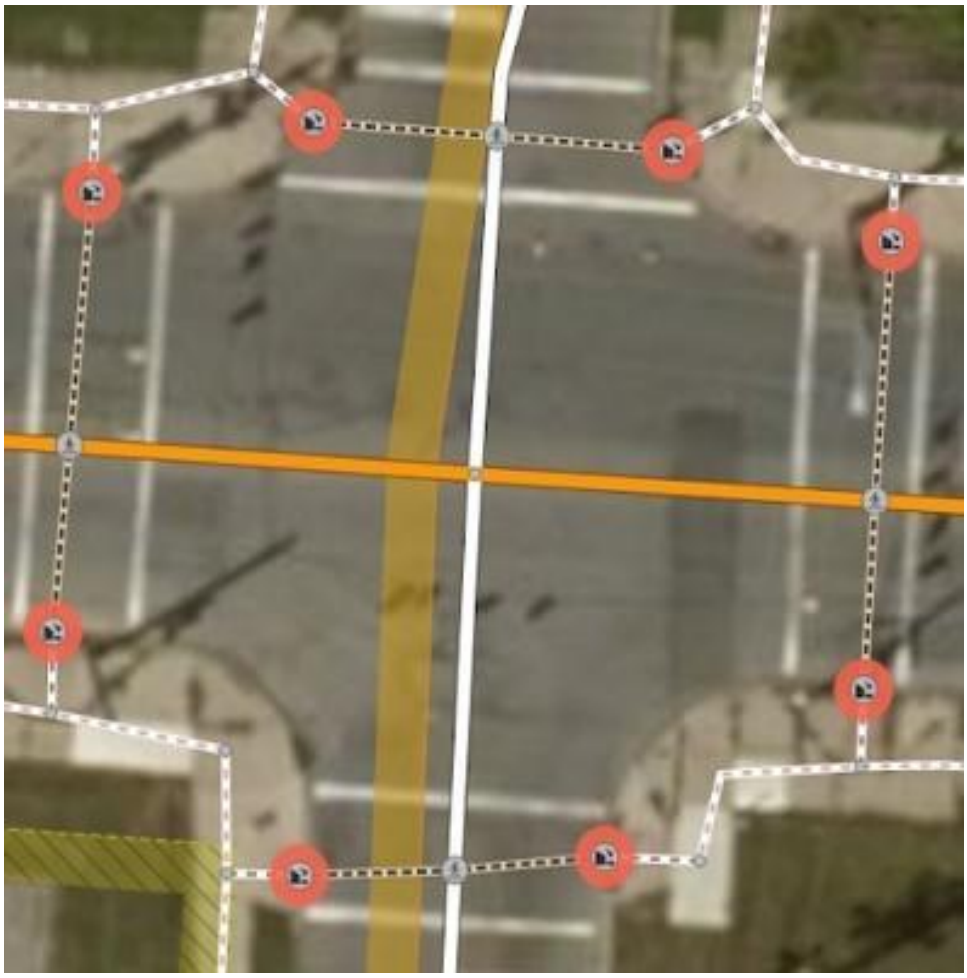


Correcting Mapped Curbs

Be sure to check that curb information has been added to the crossing way end points (nodes). Determine whether the curb is lowered or raised; and, does it afford blind pedestrians tactile paving at the edge of the crossing.

If a crossing is mapped connected to the sidewalk way, without any curb information, please split the line (by adding a point or right-clicking on the line to split) at the edge of the street. Then add the barrier=kerb and kerb=raised/lowered/flush tags to the crossing line end points, along with surface or tactile_paving information, so that they can be identified as a Curb.

After correcting the curb information, the resulting short line that connects the curb to the sidewalk center line should be tagged as a Foot Path (highway=footway) feature type.



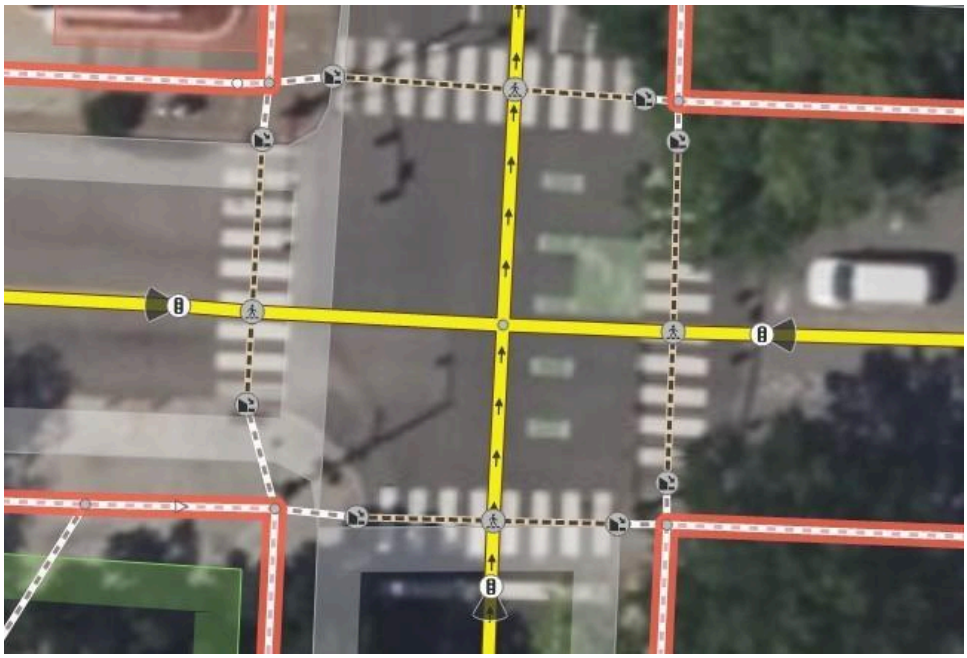
Correcting Mapped Sidewalks

Sidewalks should be mapped as lines in the apparent sidewalk center line of the pedestrian way. They should contain the basic tags highway=footway and footway=sidewalk, along with other tags such as surface.

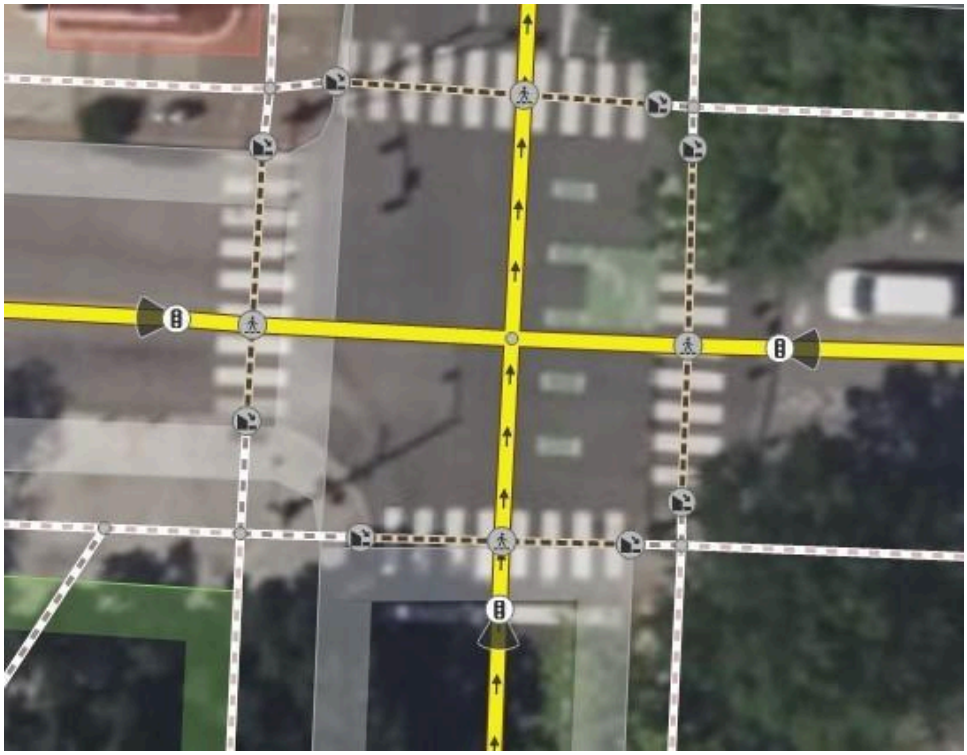
Most importantly, Sidewalk ways should be connected by a node to any nature path, parking entrance or service road that the line intersects with. These nodes that connect a sidewalk way to any other ways it intersects with along the path do not need to be tagged. The mere connection of these ways, using a point (node) will ensure that the data for the pedestrian network is related to the transportation network in the area.

Features of the built environment such as bollards, benches, trees, light posts, crossing signals, etc., should be mapped in the vicinity of the pedestrian

pathway. They are not to be mapped connected to the sidewalk center line unless that feature is impeding pedestrian accessibility.



Here is an image of how the pedestrian pathway features at an intersection should appear once corrected.



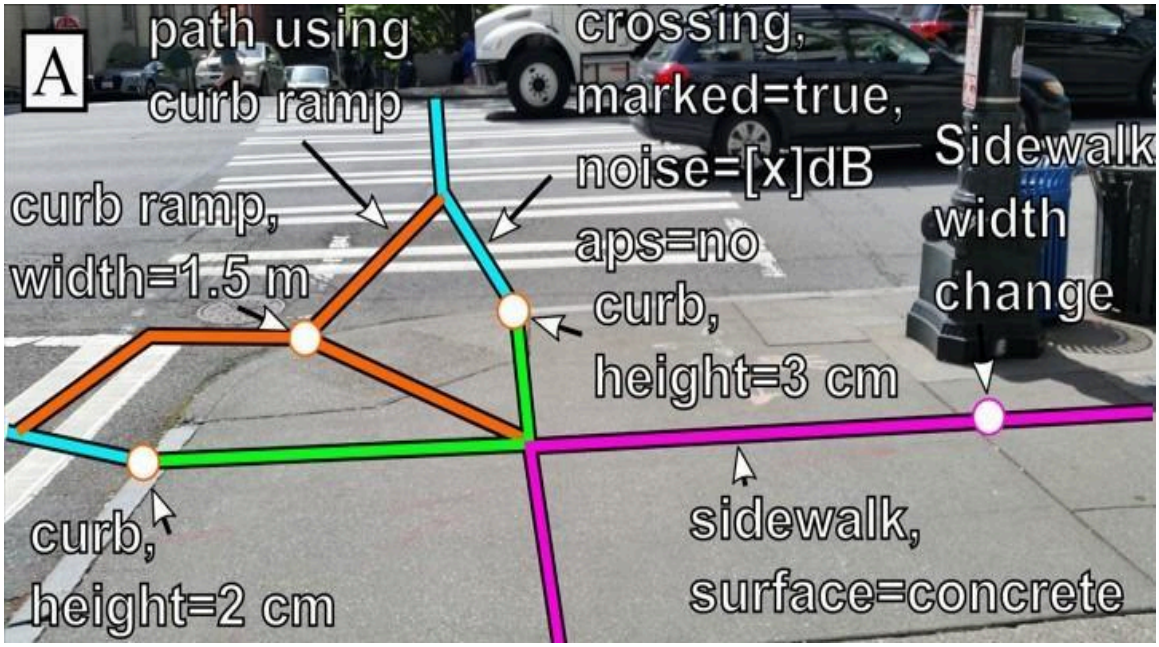
Let's now resume our how-to mapping lessons. In the next lesson we will cover the process of How To Map Sidewalks And Footways.

Phase 1, Part 2/3: How To Map Sidewalks and Footways

This lesson covers the mapping process and tagging standards of how to document sidewalk and footway features using the OpenStreetMap iD Editor. The sections in this page include:

- Mapping Sidewalks In Your Community
- Rules For Mapping Sidewalks
- Mapping Steps: Sidewalks
- Mapping Footways As Links
- Rules For Mapping Links
- Mapping Steps: Footway Links
- Basic Sidewalk Tags
- Basic Footway Tags
- Extra: Mapping Sidewalk Signaling Features

The next lesson will focus on How To Connect Crossings and Sidewalks.



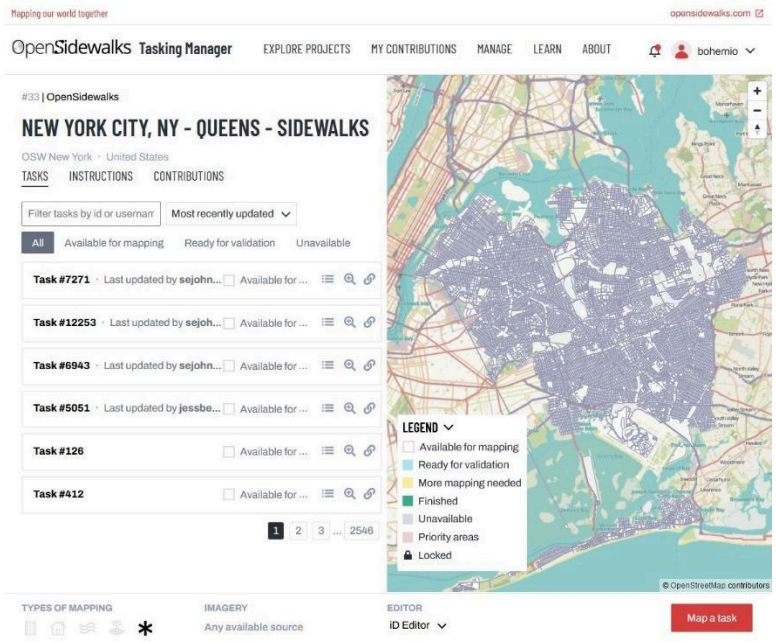
Map Sidewalks In Your Community

Let's get to mapping sidewalks in the OpenSidewalks Tasking Manager iD Editor-tasks.opensidewalks.com!

You will first need to select a sidewalk task to map. Sidewalk mapping tasks in the Tasking Manager have been organized around neighborhood blocks so that no more than one OpenSidewalks map contributor is mapping in the same area at a time.

To map a sidewalks task:

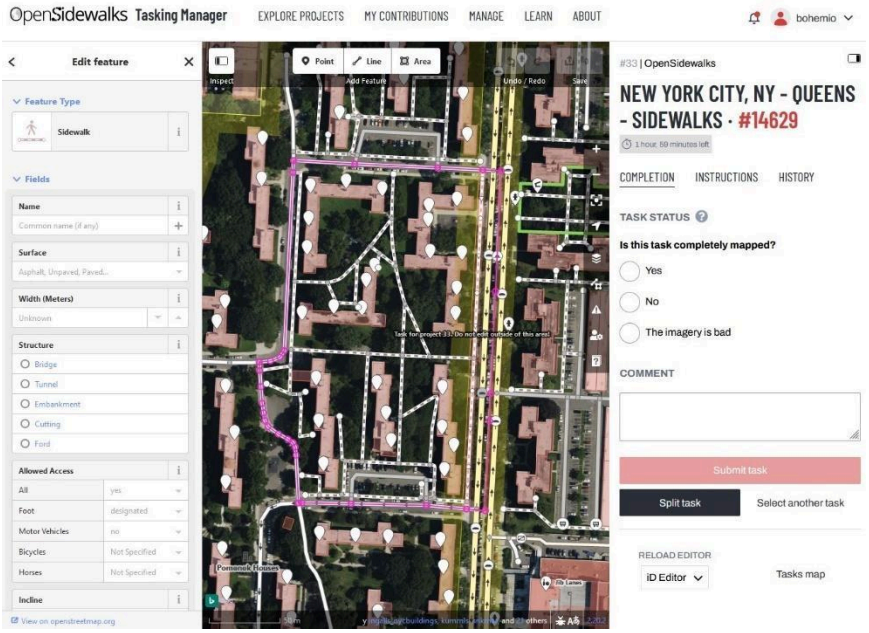
1. Go to the tasks.opensidewalks.com instance.
2. Log in.
3. Click on 'Explore Projects'.
4. Search for and then click on a project named '{city/neighborhood} - Sidewalks'.
5. On the project details page, click 'Contribute'.
6. Click on a "Map a task" at the bottom right of the page, to be assigned a task randomly; or,select a specific task polygon on the project map, and click "Map selected task" at the bottom right of the page. You can also click on a task "Available for mapping" in the project Tasks list, and click "Map selected task".



You will be redirected into an editing view that combines the iD Editor (left) with task information (right).

Map all sidewalks and path ways along the road way following the Rules and the mapping steps below.

You will need to Save your mapped features to OpenStreetMap before your contributions are recorded in the global map. Complete the Tasking Manager project task and click "Submit task" to log your contributions to the OpenSidewalks project!





Rules For Mapping Sidewalks

Sidewalks describe paths next to and along streets that are dedicated to pedestrians. They are essential for mapping the pedestrian spaces of many urban environments.

Sidewalks should be mapped as lines (ways in OpenStreetMap).

Sidewalks are drawn down the center of the sidewalk path.

Sidewalks should not be directly connected to crossings or curbs associated with crossings.

Instead, a “link” (described in the next section) should connect them.

Sidewalks should be joined to (shared a node with) service roads with which they overlap. In OpenStreetMap, this includes driveways, alleys, and entrances to parking lots.

Sidewalks should be mapped as lines and tagged with highway=footway and footway=sidewalk.

These tags will be automatically set when you select the iD Editor preset “Sidewalk”, in English.

Sidewalks may be enriched with some optional tags. Please consider waiting on adding this information on the first pass, as we just want the core network established ASAP. Those tags are-not limited to:

- surface=* (surface composition--concrete, asphalt, cobblestones, gravel, etc.)
- width={number} (width in meters, only if you can quantitatively measure it on-the-ground or with the aid of a computerized measuring stick on aerial imagery).

Mapping Steps: Sidewalks

Sidewalks are effectively footways dedicated to pedestrian traffic that run along the edge of the road or street. Sidewalks connect with crossings at transit intersections, and they are connected by way of short footways ("links", see below.)

By ensuring that we connect sidewalks to crossings using "links" we ensure that pedestrian pathway data is related to transportation network data to be used by downstream routing applications.

Sidewalks are documented on a map using the Line marking tool. 

To map a sidewalk you simply (1) draw a line on the map along the path where the center line of sidewalk is located. Once you have marked the sidewalk line, (2) select it so that it can be tagged.

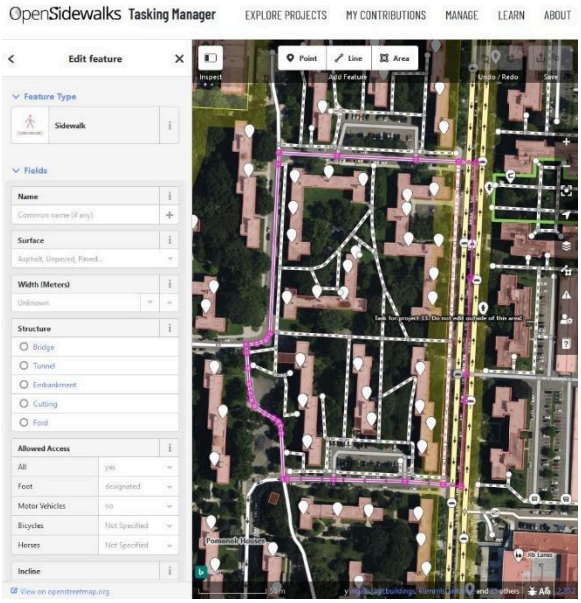
You will later want to document as many conditions about the footpath as possible in the OpenSidewalks project Phases 2 and 3, in agreement with the priorities and guidelines set by your local mapping collaboration team. See the corresponding lessons in this module to learn more.



Tagging The Sidewalk Line

Select the mapped sidewalk line in the iD Editor to tag it, and the Feature panel will appear to the left of the dashboard to allow you to modify the classification of the line. Search for "Sidewalk", and select the preset feature from

the results list. The tags highway=footway and footway=sidewalk are now added to the feature, and the line now appears dashed on the map.



Once you complete these steps you can commit your mapped features to Save to

OpenStreetMap, and proceed to mark the project task as completely mapped and click "Submit task" so your work can be logged in the Tasking Manager.



If it was too difficult to determine how to map and tag the crossing from the imagery provided, or you otherwise need to exit the project task in the Tasking Manager, mark the task as not completely mapped, add a comment and click "Submit task". Another mapper or validator can then help complete the mapping task.

Mapping Footways As Links

Footways are walking paths, whether part of the built or recreational environment, trails, alleys or gravel paths. This feature should be mapped as a line between GPS located nodes (points). The basic footway tag is highway=footway. This classification would apply to pedestrian features that are not considered as sidewalks, and is more typically used in the OpenSidewalks project to designate connecting "links" between a sidewalk way and a crossing curb node.

Review the following Rules For Mapping Links to be sure you have a solid foundation for when to limit your tagging to this most simple classification of a way in OpenStreetMap as you contribute to the OpenSidewalks project.

Rules For Mapping Footway Links

Links describe connections between pedestrian spaces and connections between pedestrian and non-pedestrian spaces that are not well-described by any identifiable path. In our case, we use links to connect sidewalk center lines to crossings, as this path is not geometrically delineated in any way, but implied.

Links should connect sidewalk center lines to crossing curb nodes.

Links should have a curb node at one end (shared with the crossing) and a node without curb tags at the other (shared with the sidewalk).

Links should be tagged as plain footways (tag highway=footway)--pending the acceptance of the footway=link tag by the OpenStreetMap community. If you would like to support our work in documenting this data (footway=link), please discuss with your local OpenStreetMap mapping community if they would like to pilot this tag.

Links can be tagged using the iD preset "foot path" in English.

Links may be enriched with some optional tags. Those tags are--not limited to:

- surface=* (surface composition--concrete, asphalt, cobblestones, gravel, etc.)

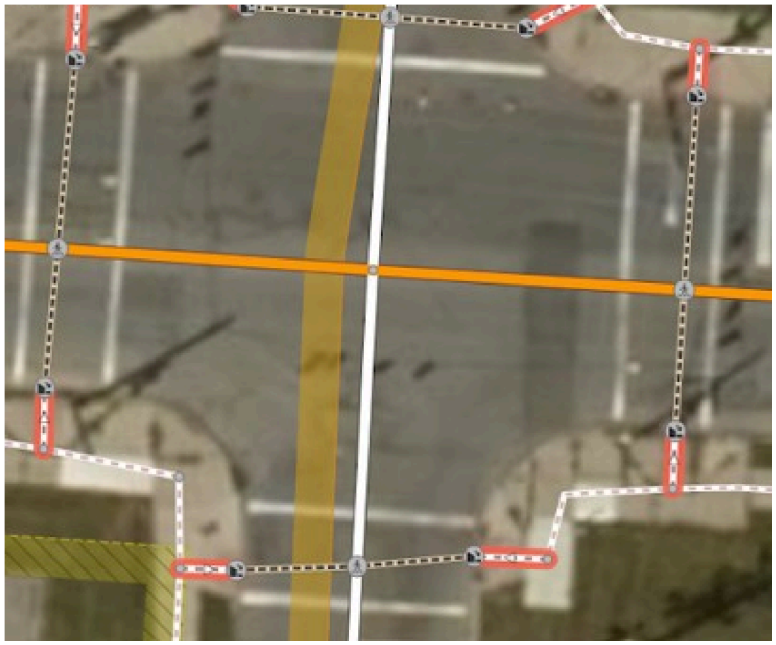
Mapping Steps: Footway Links

Select the Line drawing tool in the iD Editor. 

Start the footway line by (1) clicking on one of the curb points you created at the end of the crossing. Extend the line by (2) drawing the path a wheelchair is likely to follow to get from the curb to the center of the nearest sidewalk. (3) Double click on that point to end the line. It is likely that currently there is not an actual sidewalk center line on the map--in some cities it has not been mapped in OpenStreetMap, and is usually drawn after the crossing ways have been documented.

Click on the line you created, and the Feature panel will appear on the left side of the iD Editor dashboard, describing the selected line as a “Line” feature. Search for the preset Feature Type ”Foot Path" and select it so the line now has the tag highway=footway.

Repeat these steps to map more footway links that connect other crossing curb points at an intersection to the location of the adjacent sidewalk center line. If the sidewalk has not yet been mapped, we encourage you to map footway links from the crossing curb point to the expected sidewalk center line location.



Basic Sidewalk Tags

This table summarizes the basic OpenStreetMap tags to classify Sidewalk features. Here is the OpenStreetMap wiki on Sidewalks: https://wiki.openstreetmap.org/wiki/Sidewalks.

Feature Type	**Tags**
Sidewalk	highway=footway footway=sidewalk

Basic Footway Tags

This table summarizes the basic OpenStreetMap tags to classify Footway features. Here is the OpenStreetMap wiki on Footways: https://wiki.openstreetmap.org/wiki/Tag:highway%3Dfootway.

Feature Type	**Tags**
Footway	highway=footway

Extra: Mapping Sidewalk Signaling Features

You can use the point marking tool to document the locations of auditory or visual signaling devices, which are typically at a crossing point (node) or along the edge of the sidewalk--a point not connected to the sidewalk!

Once you mark the location of the device, and label its type, you will want to create a footway path from the location point of the signal to the closest sidewalk or crossing line—unless the signal is already located at the crossing. This ensures that the signaling data is related to the local pedestrian pathways and transit networks into a coherent transportation information layer.

OpenSidewalks recommends that most Traffic Signal features should be tagged as part of the data of crossing mid points connected to the road.

This table summarizes the basic OpenStreetMap tags to classify common Signaling features. Notice that these examples all relate to signals that are connected to the crossing mid point. Here is an OpenStreetMap wiki on Traffic Signals: https://wiki.openstreetmap.org/wiki/Tag:highway%3Dtraffic_signals.

Feature Type	**Tags**
Traffic Sign: Yield (Crossing Midpoint)	highway=crossing traffic_sign=yield_ahead
Traffic Signals (Crossing Midpoint)	highway=crossing traffic_signal=yes/no
(Crossing Midpoint)	traffic_signal=blink_mode* https://wiki.openstreetmap.org/wiki/Key:traffic_signals *This is an example out of a range of possible values!
Crossing Signal Device: Sound (Crossing Midpoint)	highway=crossing traffic_signals:sounds=yes/no *These are suggestions that need to be vetted and agreed by your local mapping team!

Let's now proceed to the next lesson on How To Connect Crossings and Sidewalks to complete the core mapping guidelines of OpenSidewalks.

Phase 1, Part 3/3: Connecting Crossings and Sidewalks

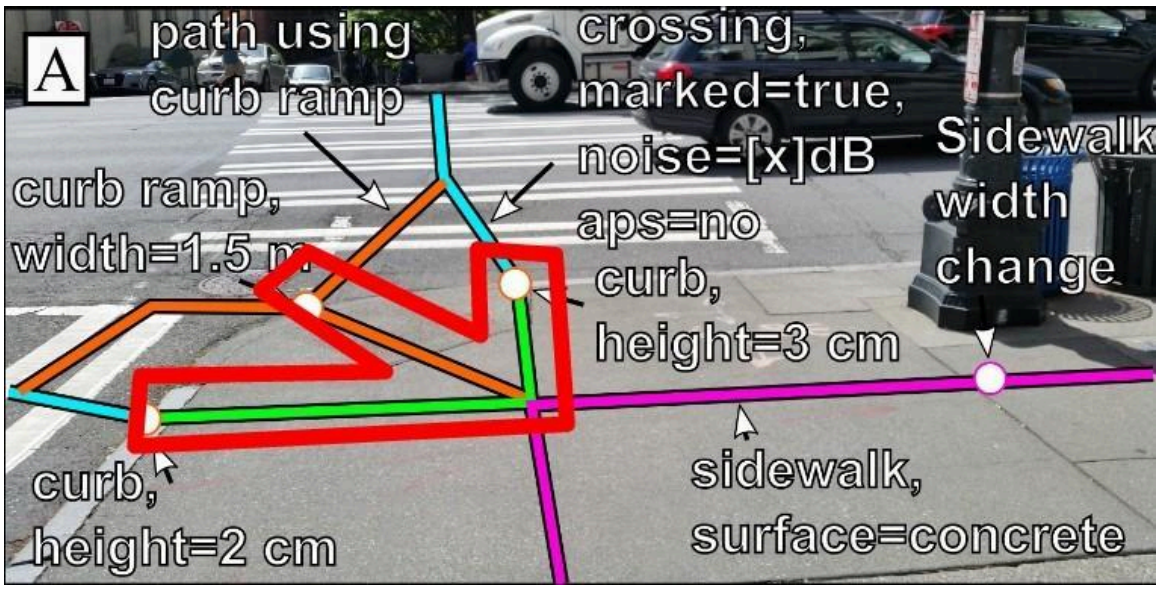
Details on how to connect crossings and sidewalks was briefly covered in the previous lesson on How To Map Sidewalks and Footways.

This lesson covers the mapping process and tagging standards of how to document footway link features using the OpenStreetMap iD Editor. The sections in this page include:

- Connecting Crossings To The Sidewalk
- Mapping Steps: Footway Links

This is the last lesson of the Phase 1 mapping submodules. The next lessons will focus on Phase 2: Attributes That Could Affect Accessibility And Navigation

and Phase 3: Hazards and Mitigating Features That Affect Accessibility.



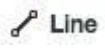
Connecting Crossings To The Sidewalk

We map urban sidewalks in OpenStreetMap by marking a line along its center line path on the background map image. We then want to connect these sidewalk center line features to any adjacent crossing way lines mapped across the road, which allows us to combine pedestrian and transportation network data into an information layer that can be used by downstream routing applications.

Crossing curbs mapped in OpenStreetMap which are located at the edge of the street do not typically connect directly to the sidewalk center lines, except in very rare scenarios.

To be sure that sidewalk center lines and crossing curb nodes are properly connected you will need to create a short "link" (a footway) that will guide how people might reach the middle of the sidewalk from the crossing curb points at the edge of the road or street. This line is documented with the basic tag highway=footway.

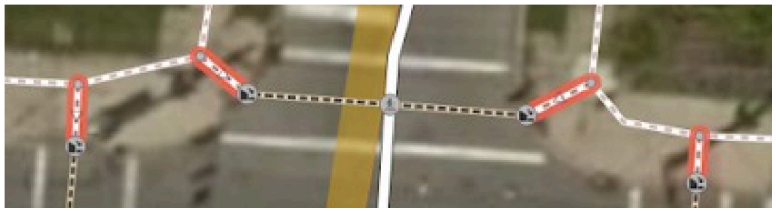
Mapping Steps: Footway Links

Select the Line drawing tool in the iD Editor. 

Start the footway line by (1) clicking on one of the curb points you created at the end of the crossing. Extend the line by (2) drawing the path a wheelchair is likely to follow to get from the curb to the center of the nearest sidewalk. (3) Double click on that point to end the line. *It is likely that currently there is not an actual sidewalk center line on the map--in some cities it has not been mapped in OpenStreetMap, and is usually drawn after the crossing ways have been documented.*

Click on the line you created, and the Feature panel will appear on the left side of the iD Editor dashboard, describing the selected line as a “Line” feature. Search for the preset Feature Type ”Foot Path" and select it so the line now has the tag highway=footway.

Repeat these steps to map more footway links that connect other crossing curb points at an intersection to the location of the adjacent sidewalk center line. If the sidewalk has not yet been mapped, we encourage you to map footway links from the crossing curb point to the expected sidewalk center line location.



This is the last lesson of the Phase 1 mapping submodules. The next lessons will focus on Phase 2: Attributes That Could Affect Accessibility And Navigation and Phase 3: Hazards and Mitigating Features That Affect Accessibility.

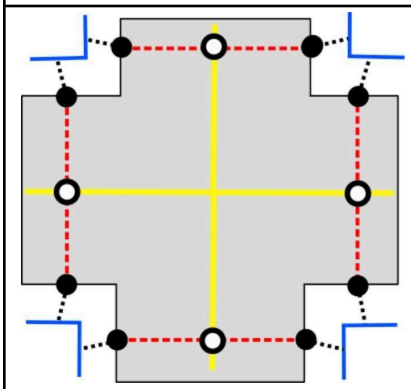
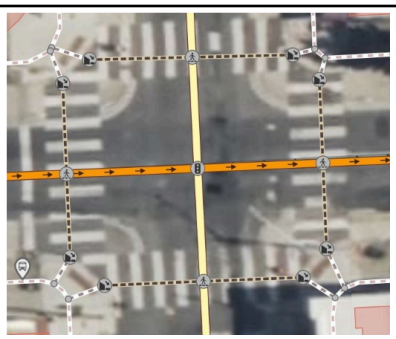
Intersection Cases and Examples

This is a non-exhaustive list of possible intersection types you will encounter while mapping crossings or sidewalks. Each case description is illustrated below as an abstract schematic, unmarked aerial photograph, and marked up aerial photograph. Each of the general cases is a guideline, and exceptions are always anticipated.

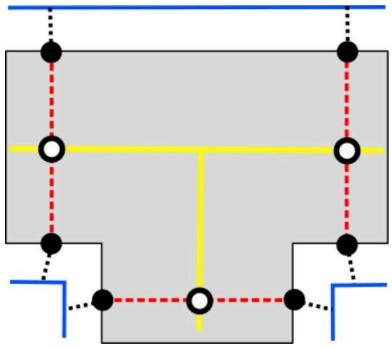
Schematic Key:

- red dashed lines: crossing
- black dotted lines: footpath between sidewalk and curb
- blue solid lines: sidewalk
- yellow solid lines: major road
- orange solid lines: service road
- black filled dots: curbs
- black outline dots: road/crossing junction

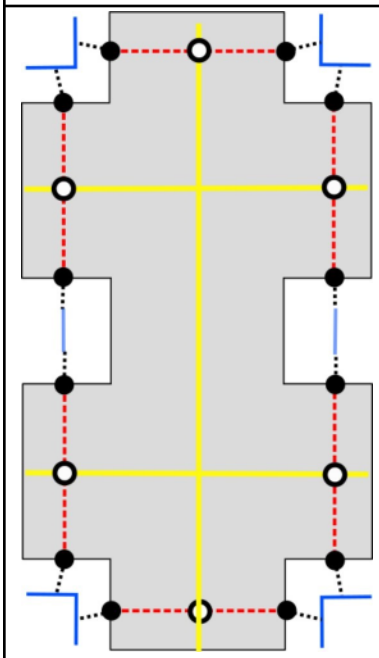
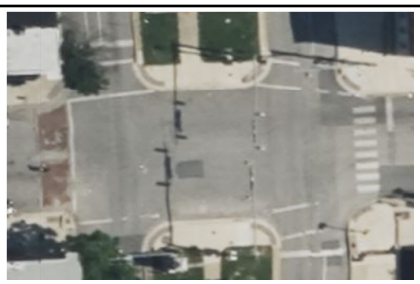
Cross Intersection: Intersection of two major roads in a four-way crossing.

Schematic	**Unmarked**	**Marked**
		

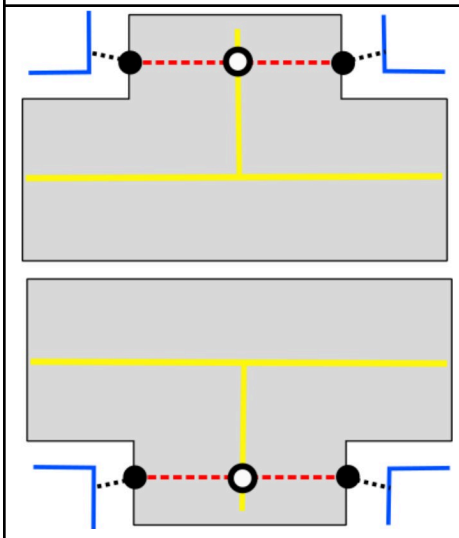
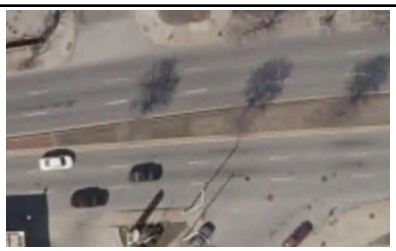
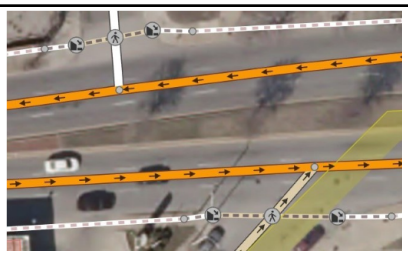
T Intersection: Two major roads meet in a 'T' shape, creating a 3 way crossing.

Schematic	Unmarked	Marked
		

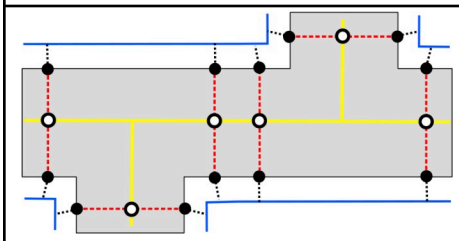
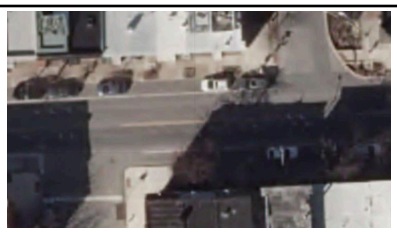
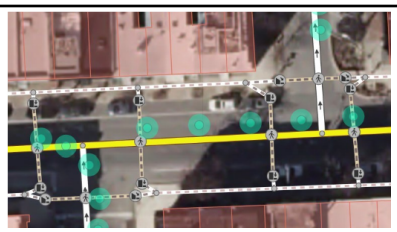
H Intersection: A major road meets 2 parallel major roads in an 'H' shape, creating a 6 crossing intersection.

Schematic	Unmarked	Marked
		

Double T Median Intersection: Major roads meet a multi-lane major highway with a median in the center, creating a 2 crossing intersection. (if the median has sidewalks on it, there may also be crossings like in a 'H' intersection).

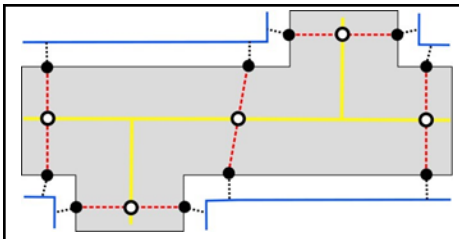
Schematic	Unmarked	Marked
		

Sequential Intersection: Major roads meet at a staggered intersection.

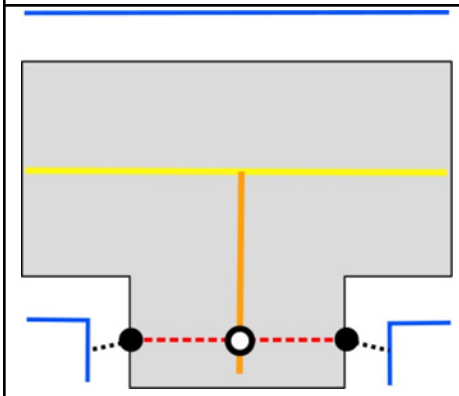
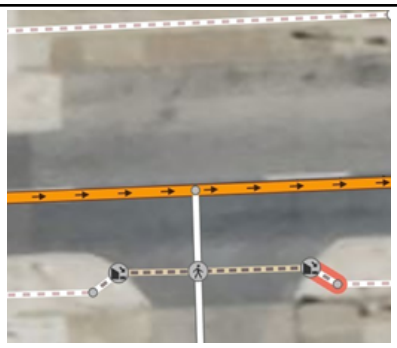
Schematic	Unmarked	Marked
		

Sequential B Intersection: Roads meet at a staggered intersection, creating a diagonal crossing across the perpendicular road.

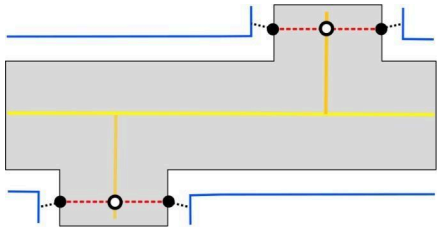
Schematic	Unmarked	Marked

Service Road T Intersection: A service road meets a major road at a 'T', creating a crossing over the service road. These are often mid-block service roads, where crossing the major road is usually not intended.

Schematic	**Unmarked**	**Marked**
		

Service T Sequential Intersection: two service road T intersections in sequence. These are usually mid block service roads, where crossing the major road is not intended.

Schematic	**Unmarked**	**Marked**
		

OpenSidewalks Phase 2: Attributes That Could Affect Accessibility And Navigation

Add Attributes That Could Affect Traversal

This section focuses on how to label attributes of the pedestrian environment that could affect (impede or improve) traversal. Examples include documenting Surface Type and Pathway Width, among others.

Crossing Attributes: Curbs

There are other aspects of a crossing that we want to document, such as barriers, whether the curb is raised or has a ramp (lowered curb). Select a particular corner node of a crossing, to apply the following tags. Here is an OSM wiki on curbs: https://wiki.openstreetmap.org/wiki/Tag%3Abarrier%3Dkerb.

Feature Type	**Tags**
Curb	barrier=kerb
Lowered Curb (Ramp)	barrier=kerb kerb=lowered
Raised Curb (Barrier)	barrier=kerb kerb=raised
Flush Curb	barrier=kerb kerb=flush
Rolled Curb	barrier=kerb kerb=rolled
Curb Barrier Height	barrier=kerb* height=3 cm* https://wiki.openstreetmap.org/wiki/Key:height

	*This is an example out of a range of values, please see the wiki page for correct annotations

Surface Feature Types

Information about surface features, tactile types, width, and pathway barriers is important to people who use the transportation network and who manage visual or auditory conditions. These tags are optional, to be prioritized by each community according to their agreed collaboration objectives.

Note that these classification tags can relate to either a point or a line in the mapping area, so they can apply to both crossings and sidewalks.

Feature Type	**Tags**
Surface	surface=concrete* https://wiki.openstreetmap.org/wiki/Key:surface *This is an example out of a range of values!
Tactile Crossing or Node	tactile_paving=yes https://wiki.openstreetmap.org/wiki/Key:tactile_paving
Incline	incline=*value*% {Example: incline=15%} https://wiki.openstreetmap.org/wiki/Key:incline
Pathway Width	width=2 m* https://wiki.openstreetmap.org/wiki/Key:width *This is an example out of a range of values! *Width should only be recorded after an adequate measure has been taken at the site! *See the wiki page for examples of correct annotation!
Pathway Barrier	barrier=bollard* or barrier=kerb* https://wiki.openstreetmap.org/wiki/Key:barrier *This is an example out of a range of values!

Curb Barrier Height	barrier=kerb* height=3 cm* https://wiki.openstreetmap.org/wiki/Key:height *This is an example out of a range of possible values! *See the wiki page for examples of correct annotation!

OpenSidewalks Phase 3: Hazards And Mitigating Features That Affect Accessibility

This section focuses on how to document pedestrian environment features that impede or can improve pedestrian traversal. Examples include hazards such as dips and holes, and outdoor stairs, ramps, and elevators in buildings with public access that can influence how one traverses a pedestrian environment. Be sure to review the appropriate wiki, linked below, to ensure you understand how to use local OpenStreetMap community resources and documenting practices.

Hazard Features

There are features (points) on a sidewalk or footpath that will impede mobility in a particular area. These hazards can become a barrier that will force some individuals to re-route to their destination, or that will force the individual to consider whether they are able to get around the hazard (if they know the residual width of the affected area). Here are guidelines on how to label these hazard feature points (nodes). Here is a wiki on sidewalk and crossing hazards: https://wiki.openstreetmap.org/wiki/Key:hazard.

Feature Type	**Tags**
Dip	hazard=dip
Hole	hazard=hole
Loose Gravel	hazard=loose_gravel
Effective Width	width:effective=2 m*

	*This measurement represents the area of navigable space around the hazard, which would tell us if an assistive device can get around the hazard. This is a measurement that should be taken on location! *This is an example out of a range of values!

Barrier Features

Barriers are footway features that might impede access or may affect how an individual navigates a pedestrian environment. Here is an OSM wiki on Barrier Features: https://wiki.openstreetmap.org/wiki/Key:barrier.

This table lists the OpenStreetMap tags used to describe different types of barriers.

Feature Type	**Tags**
Gate (Point)	barrier=gate
Bollard (Point)	barrier=bollard
Fence (Point)	barrier=fence
Debris (Point)	barrier=debris
Entrance / Exit (Point)	barrier=entrance

Mitigating Features

There are instances in which pedestrian areas will include mitigating features, such as stairs, ramps, or escalators. Here are guidelines on how to label these pathway feature points (nodes).

Here is an OSM wiki on Steps, Ramps, Escalators: https://wiki.openstreetmap.org/wiki/Tag:highway%3Dsteps.

Feature Type	**Tags**
Outdoor Steps	highway=steps
Outdoor Ramps	highway=steps ramp=yes (or no)
Outdoor Escalator	highway=steps conveying=yes* (or no) https://wiki.openstreetmap.org/wiki/Key:conveying *This is an example out of a range of possible values!
Building Elevator	highway=elevator https://wiki.openstreetmap.org/wiki/Tag:highway%3Delevator

OpenSidewalks Academy: Validating Completed Mapping Tasks In The Tasking Manager

Project Task Validation Overview

You have by now mapped pedestrian network features in the open source OpenStreetMap platform using the OpenSidewalks Tasking Manager interface--https://tasks.opensidewalks.com. The features you have contributed as nodes (points), lines (ways), or polygons (outlines), have now been uploaded to the global map, where other OpenStreetMap users can access, modify and extend the information documented.

If you closely followed OpenStreetMap guidelines and OpenSidewalks practices, the data that you contributed should be highly accurate. But, even the best mappers in the world can make mistakes from time to time.

Our mapping peers in the local community can help us to peer review the most recent contributions to the map. There are built in safeguards that flag contributions that should be reviewed for accuracy.

The lessons in this module focus on the process of validation, and how validators use OpenStreetMap tools to ensure the highest degree of data quality and consistency in the mapping of features added to the global map.

We will first address the particular issues that validators need to consider, and then will go thru each step of the validation process.

The lessons that are presented in this module are organized as follows:

- What To Look Out For: Revisiting the OpenSidewalks Mapping Rules
- How To Validate Completed Project Tasks In The Tasking Manager?
- Correcting Mapping Issues
- Organize Local Validation Teams

Please note that individuals who are assigned to validate other mappers contributions should have significant mapping experience! If you do not yet have experienced mappers in your local mapping team that can take on validation tasks, you should reach out to other local OpenStreetMap users who could support your group's goals.

There are different ways to validate mapping contributions. One of them is to use the OpenSidewalks Tasking Manager interface as part of your local mapping engagement in collaboration with the OpenSidewalks project, which will make up the bulk of the content in these sections.

Another is to use the OpenStreetMap Change Analysis interface--https://osmcha.org. You can also use the JOSM (https://josm.openstreetmap.de/) and QGIS (https://www.qgis.org/en/site/) analytic applications, which are open source tools that we will not document in this OpenSidewalks guide, but we invite you to explore as you advance your geospatial mapping skills.

What To Look Out For: Revisiting the OpenSidewalks Mapping Methods

The process of validation can be summarized as one in which mapped features are assessed for:

(1) Is it the correct shape--was the feature drawn as a node, way or polygon?; (2) Was it placed in the right location--is the feature located in the right place on the map?; (3) Have the features been connected to other mapped features?; and, (4) Have the correct tags have been used, is the feature type properly documented to describe the mapped feature--is it a raised or a lowered curb; a marked or unmarked crossing?

Each validation cycle begins with a review of the principles, guidelines and practices that the OpenSidewalks project adheres to. Because these practices may evolve from time to time as we better understand how best to leverage the pedestrian network data, we want to make sure that all validators use the latest version of the OpenSidewalks schema.

Taking a moment to review these principles and guidelines (linked below) helps local mapping teams to remain consistent and ensure a high degree of data quality.

The Mapping Pedestrian Pathways Lessons. The How To Map Pedestrian Pathways module helps us to understand the basics of mapping pedestrian network features in an urban environment. It guides mappers through the process of locating, tagging and connecting pedestrian network features (crossings, curbs, ways, sidewalks). More importantly, the lessons in this module lay out the OpenSidewalks Rules For Mapping, which spell out the absolute minimum placement and tagging requirements for contributions to the OpenSidewalks project.

As an example, the rules for mapping curbs dictate that curb nodes are to be placed at the edge of the street where the street transitions to the pedestrian environment, and not directly connected to the sidewalk center line.

Mapping A City Intersection. This lesson on Mapping A City Intersection Under Different Scenarios covers a number of different crossing scenarios that can help mappers determine how to tag its pedestrian network features. Mapping crossings is fundamental to the interconnectivity of the pedestrian network, as crossings connect the transportation and transit network to the pedestrian network. Documenting crossings properly is critical to the effectiveness of downstream routing applications that provide customization to a person's mobility profile such as AccessMap.io.

Tags By Feature Type. The List Of Tags By Pedestrian Feature lesson lists the minimum tags that need to be recorded for each pedestrian pathway feature that is mapped as part of the OpenSidewalks project.

Organize Local Validation Teams. Before the validation process begins (and if it is to succeed), mappers, validators and coordinators need to have a brief conversation to make sure everyone in the collaboration understands the local mapping priorities agreed upon for their local community and that these fulfill the goals of their mapping initiative. The Organize Local Validation Teams lesson provides suggestions on how to coordinate validation resources to support your local mapping events.

The next lesson in this validation module on will walk you through the steps on How To Validate Completed Project Tasks In The Tasking Manager?

How To Validate Completed Project Tasks In The Tasking Manager?

Your mapping team has been documenting crossings, curbs, sidewalks, barriers, signals, and other features of your local pedestrian network using the OpenSidewalks Tasking Manager and following the guidelines documented in the How To Map Pedestrian Pathways module.

Some of your mappers will have marked the option to have their changes to the OpenStreetMap global map reviewed when they committed their updates. Those will be flagged in the OpenStreetMap database so that other global mappers take a look at your contributions.

The OpenSidewalks Tasking Manager instance makes it possible for you to coordinate local mapping teams, providing the tools to distribute the mapping tasks and enable validators a quick way to identify completed tasks that are ready to be validated--to ensure the mapped features follow the Rules For Mapping.

There are different means to validate features added to the OpenStreetMap platform. We will focus on this section on the process of validating mapping tasks that have been completed using the OpenSidewalks Tasking Manager.

This lesson covers the following topics:

- What Are Validators Looking For
- Step By Step OpenSidewalks Tasking Manager Validation
- Validating Mapped Features
- Other Resources On Validating Mapped Data

We urge you to explore these other validation resources as you advance your geospatial mapping skills.

Once you complete this lesson you will be directed to guidelines on how to approach Correcting Mapping Issues.

What Are Validators Looking For?

Validators review completed tasks in the Tasking Manager and focus on confirming that:

- The correct shape has been used to document the pedestrian network features.
- The features have been mapped in the right place, or aligned, on the map.
- The features are part of a pedestrian network that has been connected to the transportation network it intersects with.
- The required tags have been used to classify the features.

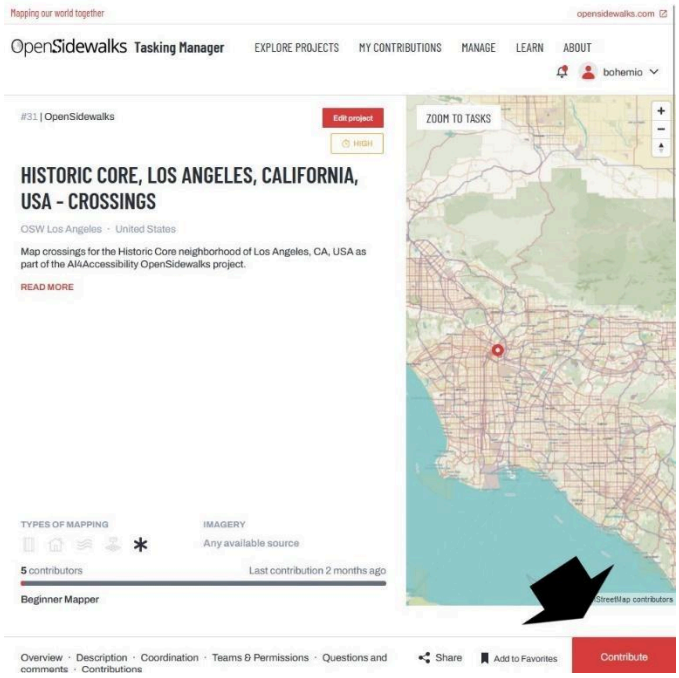
Keep in mind that when you validate as a contributor to the OpenSidewalks project, especially in the Tasking Manager instance, your main focus is to validate the pedestrian network features: crossings, curbs, pathways, sidewalks, barriers, signals and other features that impact the accessibility of pedestrian areas. That said, there is no restriction on you correcting other mapping errors that you run into in the process.

Step By Step OpenSidewalks Tasking Manager Validation

Here's how you validate mapped project tasks in the Tasking Manager (https://tasks.opensidewalks.com) that are ready for validation.

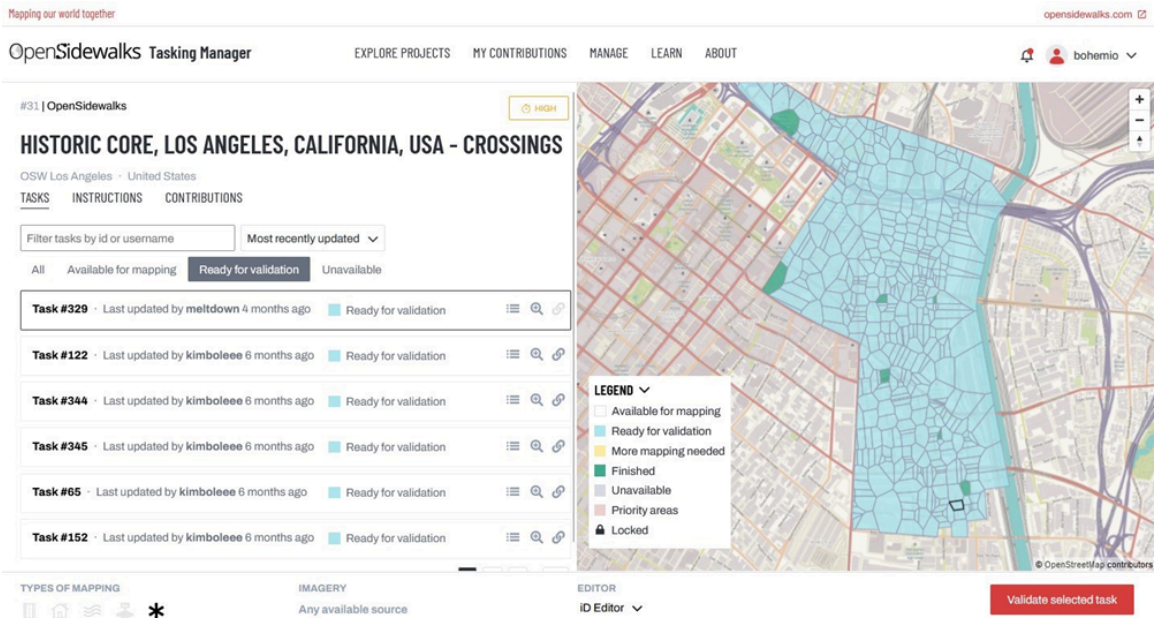
Access The Project Page

Go to https://tasks.opensidewalks.com (https://tasks.opensidewalks.com) to access the OpenSidewalks Tasking Manager to find a project for which you are to validate mapped pedestrian network features. Once you find it, click on the project to arrive at its detail page. Then, click on Contribute to see the project tasks list.



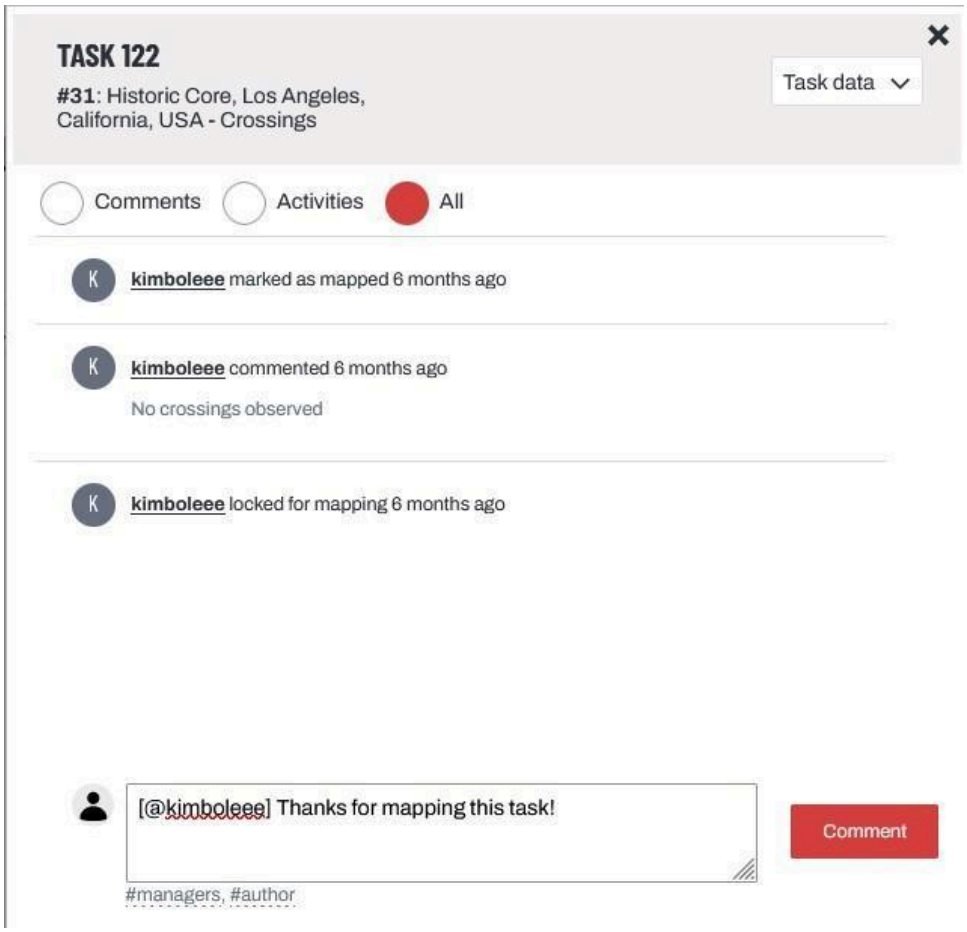
Find The Tasks Of The Project That Are Ready For Validation

The tasks list shows you the status of tasks associated with the project map, which you can filter so that you can see only the tasks that are "Ready for validation". These tasks appear as blue tiles on the map. When you click on a particular task either on the map or on the list, that Task appears bounded in black outline on the map, and the action button at the bottom left of the page reads "Validate selected task".



Examine The Task Activity

While in the project Task List you can examine the history of the task activity and look at any comments added to the task by a previous mapper. Use the task information links [ ] next to each task to access the Task Activity panel. The Task Activity panel includes the task comment and activity history. The bottom text field in this activity panel allows you to add your own comments. If you'd like another user to be notified of your comment you only need to add the user name bracketed, in this format [@username]. They will be sent an email with a copy of your comment.



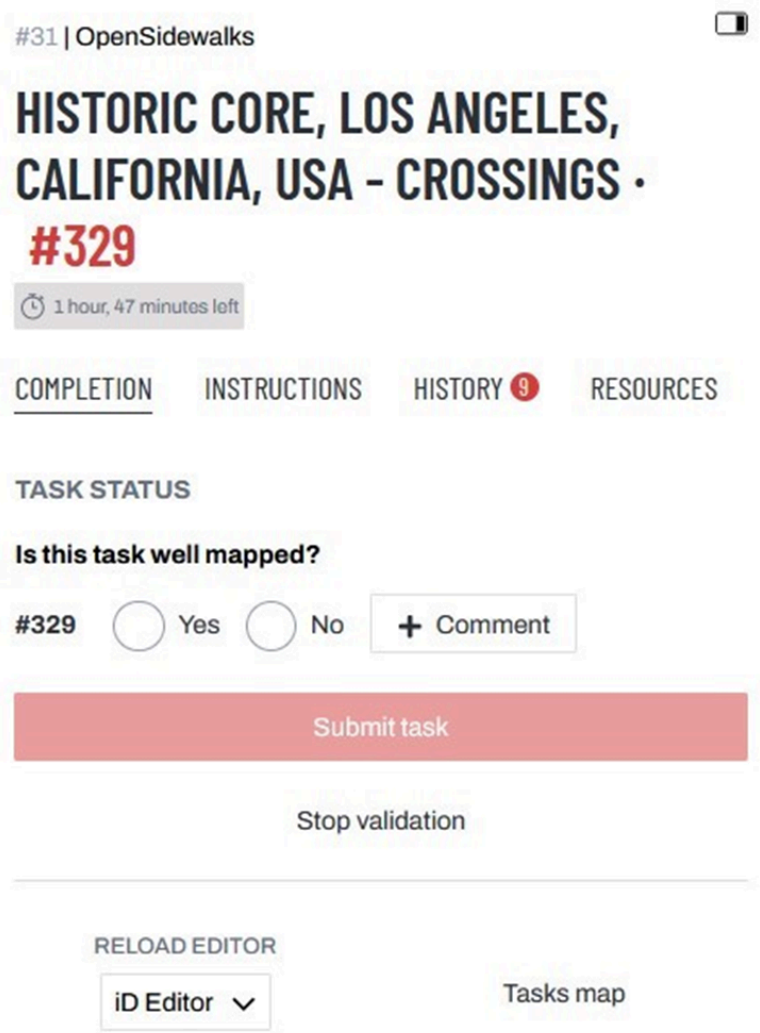
We will skip the "Task data" dropdown that includes several useful links, but which we found had some unresolved bugs. Experienced OpenStreetMap users will

likely already know how to use OSMCha and Overpass to examine changesets and download data.

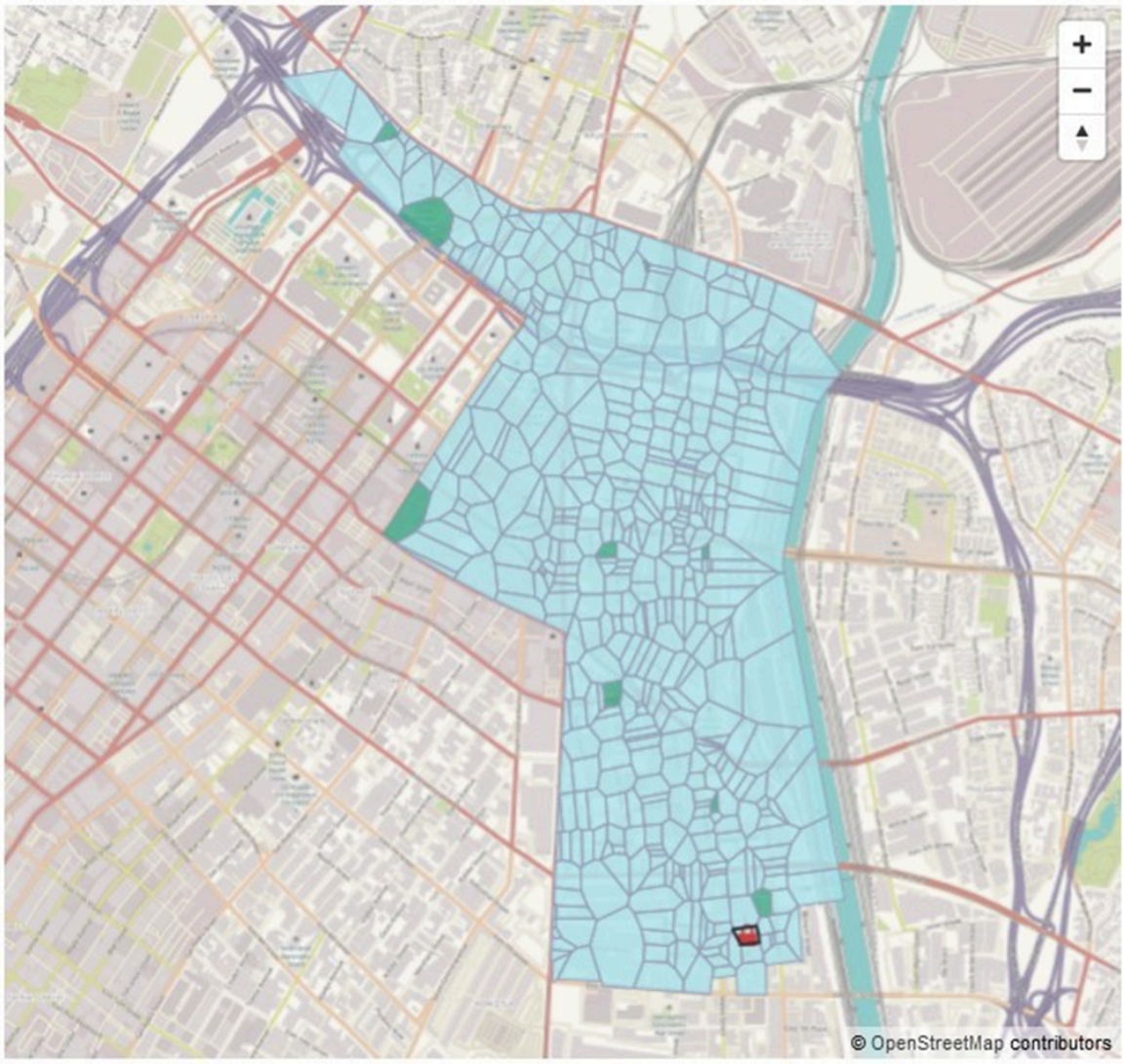
Using The Task Resources

Once you click on "Validate selected task" you will enter the Tasking Manager iD Editor interface. The area mapped appears to the left within the iD Editor frame. To the right of the iD Editor is the panel with information collected on the task and the analytic resources afforded to Tasking

Manager users. This panel is used to mark the task as having been validated and completed.

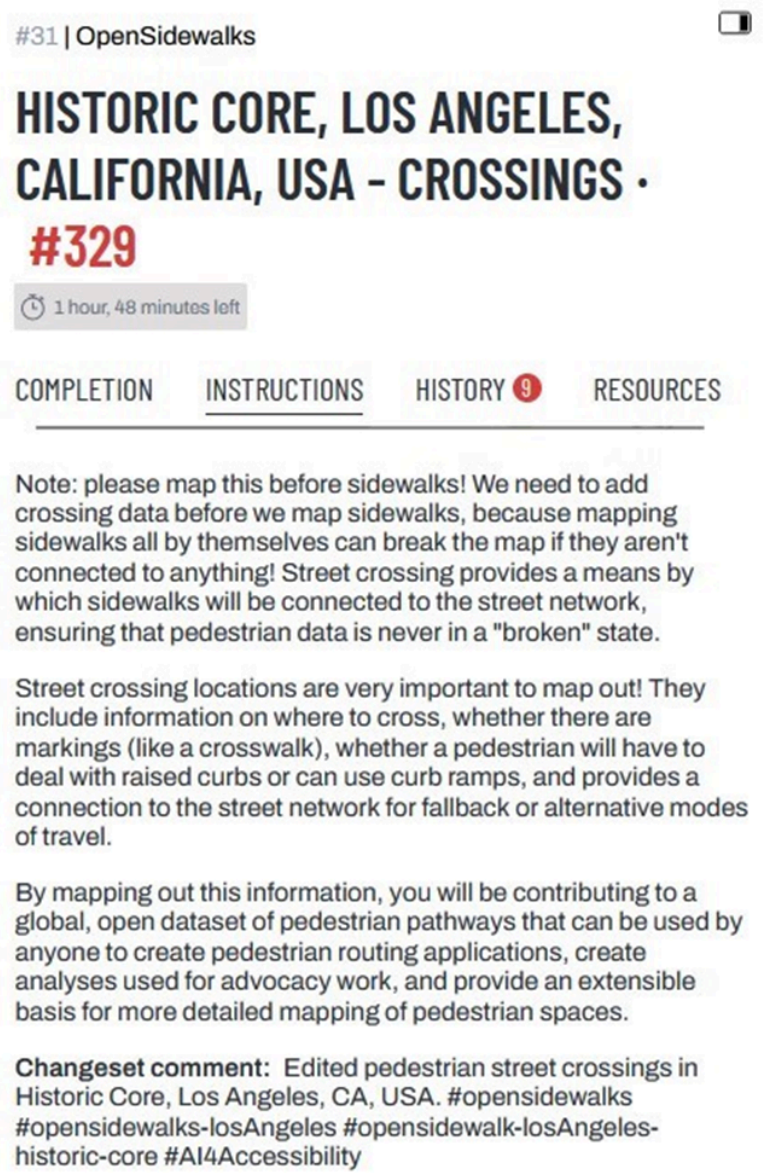


The "Tasks map" link at the bottom of this Completion tab downloads a map of the current state of all the tasks polygons within the project boundary.



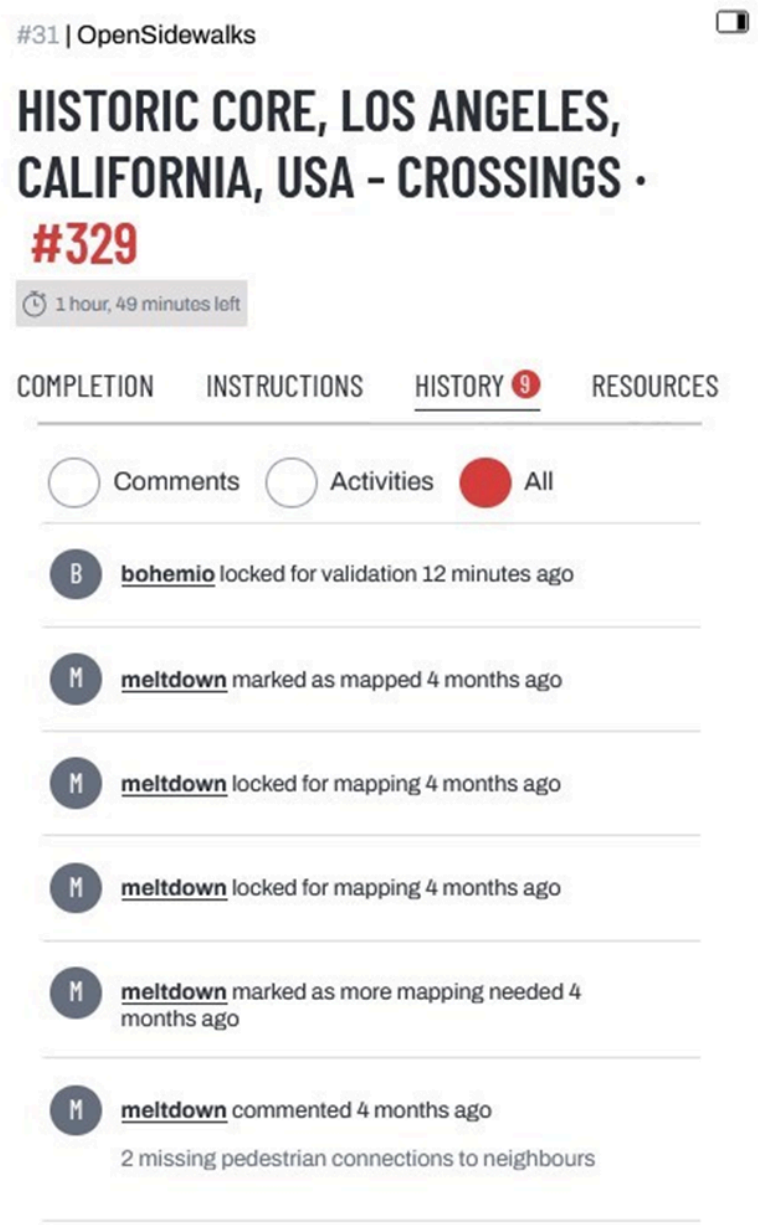
Reviewing Task Level Instructions

The Tasking Manager information panel includes task level Instructions tab where OpenSidewalk mapping guidelines are listed--these are preset by the project coordinator when the project is configured in the Tasking Manager and appear in all tasks of the project. If not familiar with OpenSidewalks Rules For Mapping, validators should review this list of Rules before proceeding to examine the mapped pedestrian network features.



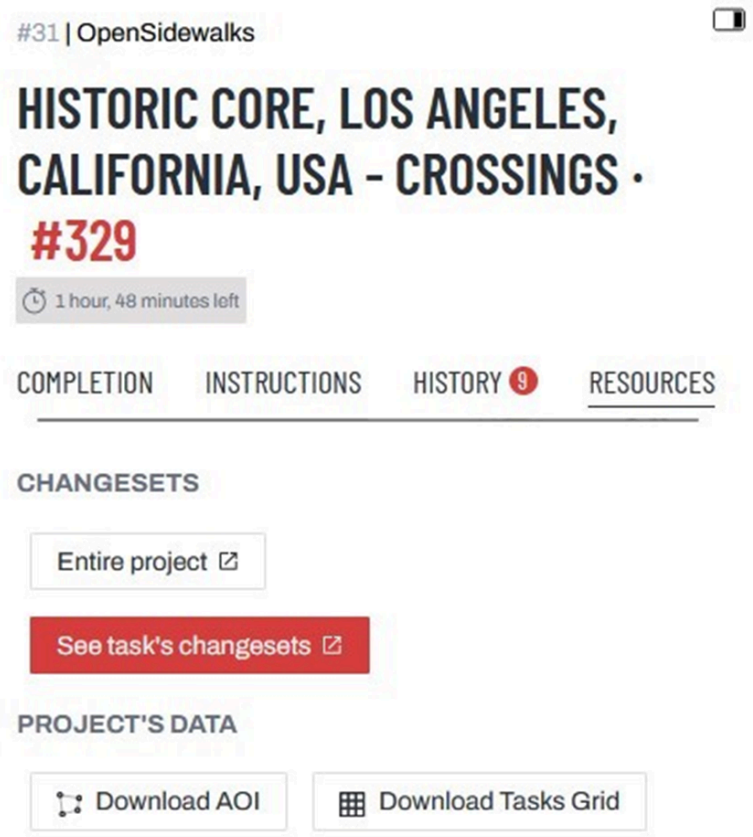
Review The Task History

As discussed earlier, you can see the task activity and comments in the History tab of the Tasking Manager task information panel.



Take Advantage Of The Task Resources

The Resources tab gives you access to Changesets links and the Project's Data. The Changesets links take you to OSMCha, the OpenStreetMap changesets database where all mapping committed to the OpenStreetMap database can be examined.



The "Download AOI" link downloads a geojson file that contains the coordinates of the perimeter of the project boundaries. The "Download Tasks Grid" link downloads a geojson file that contains the coordinates of each of the task polygons in that project.

We will now move on to use the iD Editor to analyze mapped features and make corrections to mapping errors. Let's revisit the resources of the iD Editor.



You will use the map and the map tools to analyze mapped features. Once you select a feature you will see the feature data panel (6) appear to the left hand side of the screen. You are provided access to other Map Information (7) data at the bottom of the screen such as a list of the users who have contributed to the map within this boundary. If you find the need to make corrections, especially because you suspect the placement (it's alignment) of a feature, you can use the Map Tools (3) to use other map backgrounds, access street side images, and GPS trace data.

Validating Mapped Features

Now that you have familiarized with previous task activity, you are ready to validate the features mapped in the task boundary. This section will provide several examples of mapping errors and how to correct them. This document does not offer examples of all the scenarios that you will encounter that need correction--a list of bad mapping examples would run several pages! We hope to provide you a primer on what we look for when we validate the pedestrian network features that we seek to document to extend the data set associated with pedestrian network features that we use to inform downstream routing and information applications.

The most valuable resource we can offer is to be very familiar with the mapping guidelines documented in the How To Map Pedestrian Pathways module lessons.

Examine A Pedestrian Network Feature

Look at the map and zoom into the magenta boundary of the task that you are examining to identify the pedestrian features that appear in the map. You want to look for crossings at intersections, curbs at the edge of the street, ways that connect curbs to sidewalks, sidewalk center lines, barriers (blocks, lighting poles, bollards, etc.), signals and signs, and other pathways such as alleys, transitions and ways that intersect with entrances into parking lots and building driveways. Ways also include pathways that traverse recreational and natural areas.

1. *Validate Crossing Features*

Crossings are ways (lines) that are drawn across intersections. They should have curb nodes (points) at each end where the street meets the pedestrian environment. There should also be a point that connects the crossing line with the road or street that it intersects with. Crossings should not be connected directly to sidewalks. A short pathway is added to connect the crossing curb to the sidewalk center line.

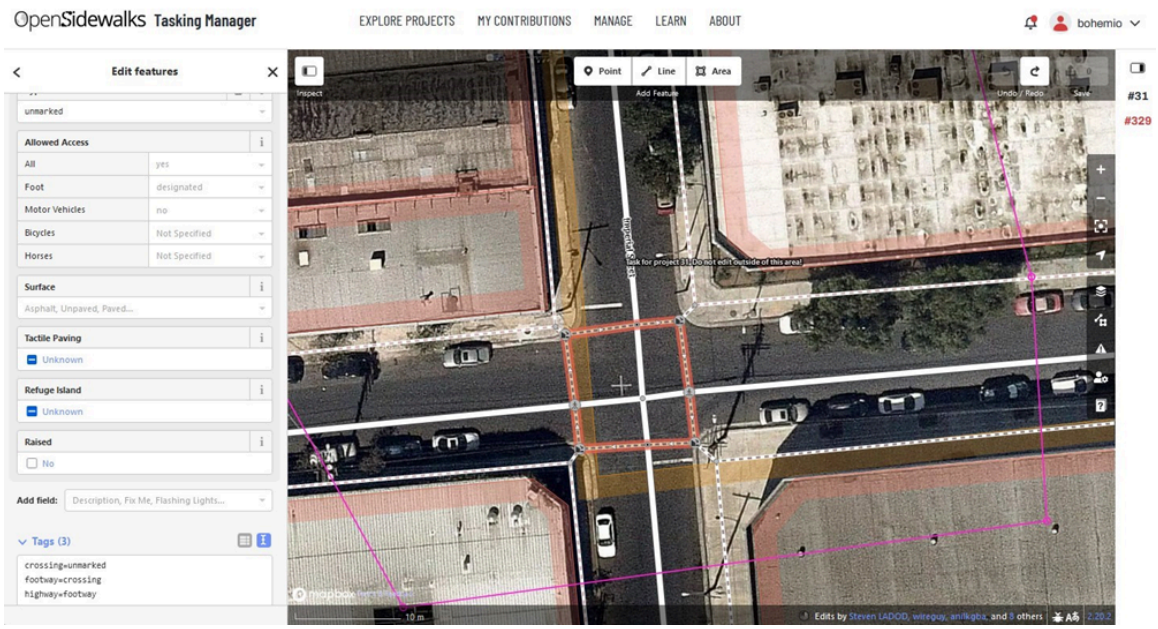
This image below shows the selected crossing lines that document the unmarked crossing ways in a city intersection. Because all ways documented were similar, we used the multiple select option to select all the crossing ways at once--which you do by holding down the SHIFT key and clicking on each line. The features data will load on the left panel, and you will be able to see whether the features mapped are all identical and share the same tags, or if some have different tags. For example, if one of the lines contains unique tags that the others don't share then that tag will appear with an asterisk as it's value (example: surface=*). If you need to correct that particular tag, you will need to click on each way line separately to confirm it's unique tags.

It will be helpful to revisit the lesson that provides images of a number of crossing scenarios--Mapping A City Intersection Under Different Scenarios, so you can

understand the variations in how crossings in a city or urban environment should be tagged.

Crossings ways (lines) must contain highway=footway and footway=crossing, crossing:markings=yes/no.

Crossing nodes, the point that connects the crossing ways with the street or road they intersect (which documents the intersectionality of pedestrian and transportation networks), must contain highway=crossing, crossing:markings=yes/no.



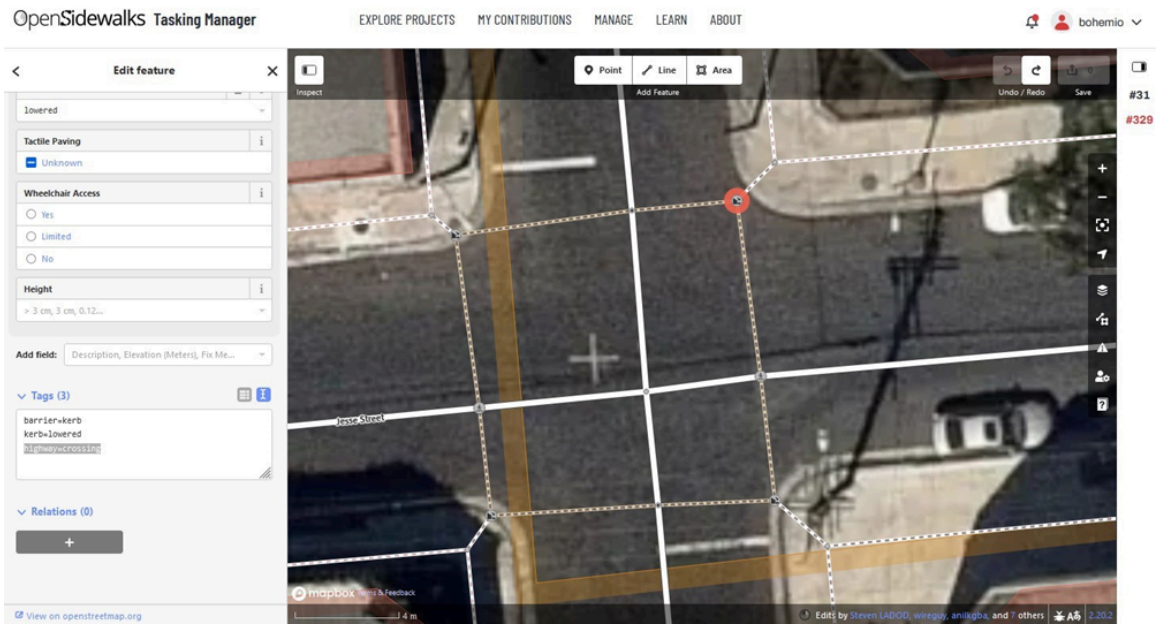
We discuss how curb nodes should be tagged in the section below.

2. *Validate Curb Features*

The next thing to confirm is the placement (alignment) of curb nodes, to be sure they appear at the edge of the street where the transition from road to pedestrian areas occurs. Curbs should rarely if ever be directly connected to the sidewalk center line.

When you validate Curbs, you want to check that at least the required tags have been documented.

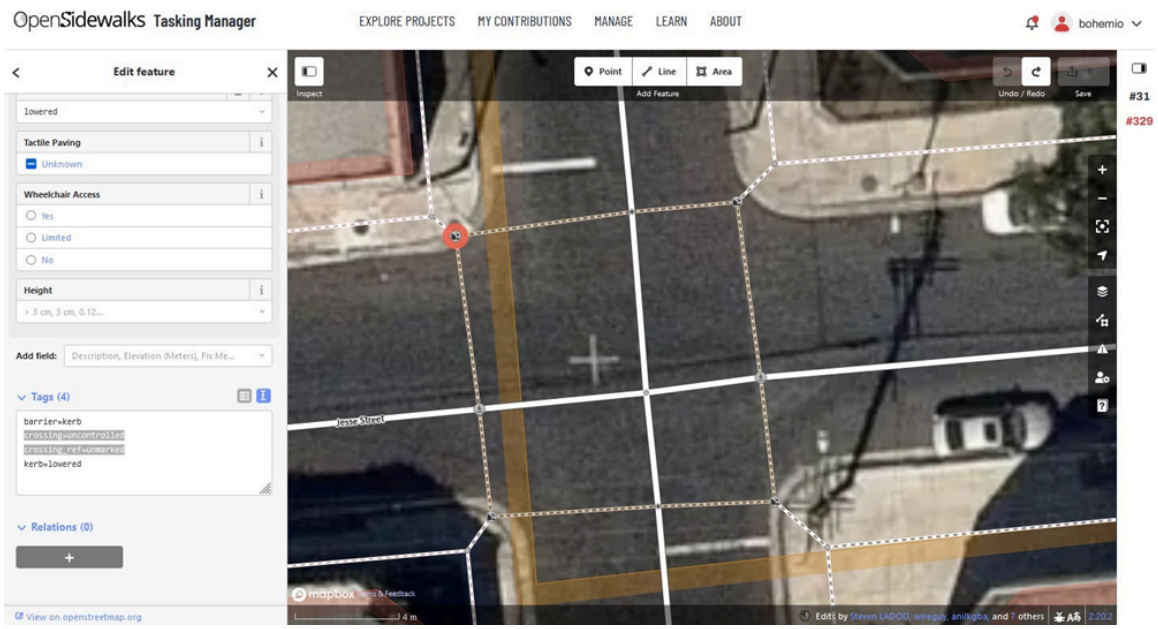
Curbs are tagged as barrier=kerb, kerb=raised/unraised. You can also add other tags to document whether they have tactile paving, tactile_paving=yes/no.



Here is an example of a curb feature that needed correction. The curb node was tagged having a crossing_ref, which is not needed for the curb node, and is actually an outdated tag--we use crossing:markings=yes/no, now. We don't normally use the crossing=uncontrolled, except to add that tag to the node that connects the crossing to the road or street it intersects, at the middle of the crossing. These tags were removed from this feature, before saving the changes.

3. *Validate Foot Ways*

Foot ways are the short lines that connect the curbs with the sidewalk centerline, which you can observe in each of the corners in the image above. These connect the intersection features with the sidewalk features. Foot ways are always labeled with highway=footway. Sometimes mappers will also add the surface=* tag.

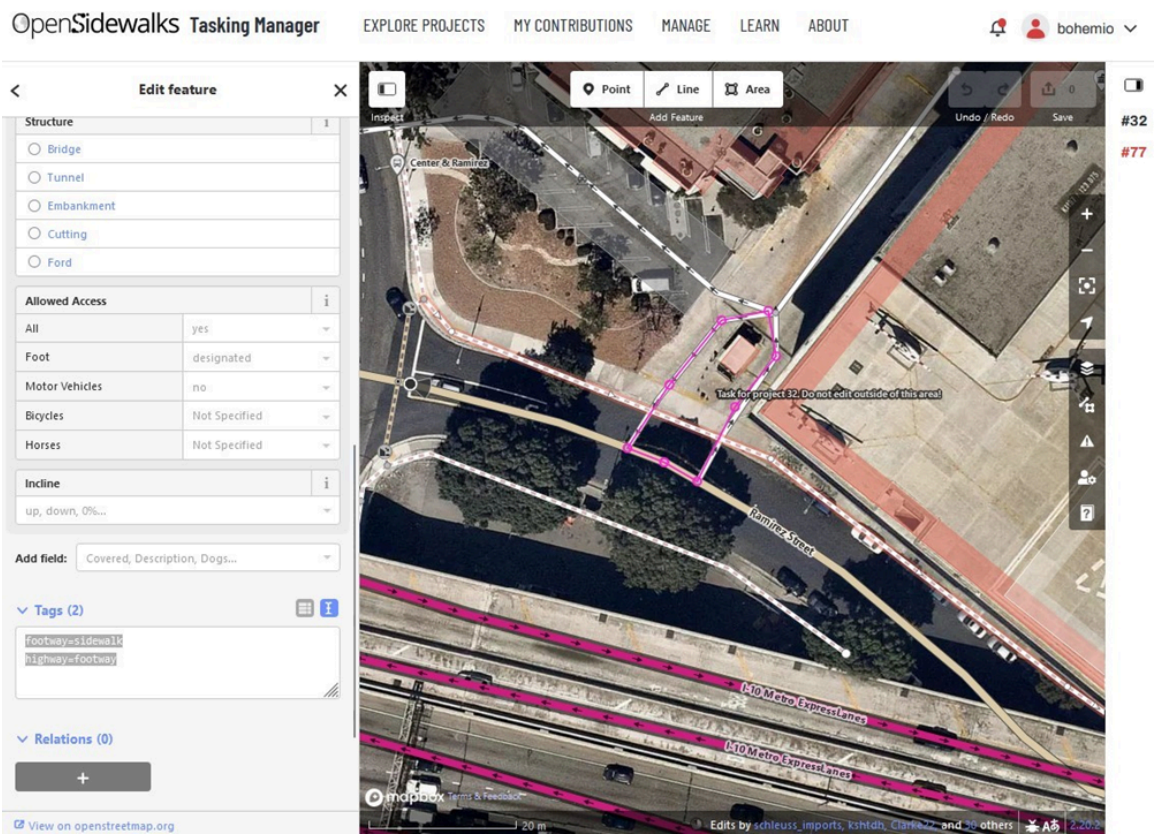


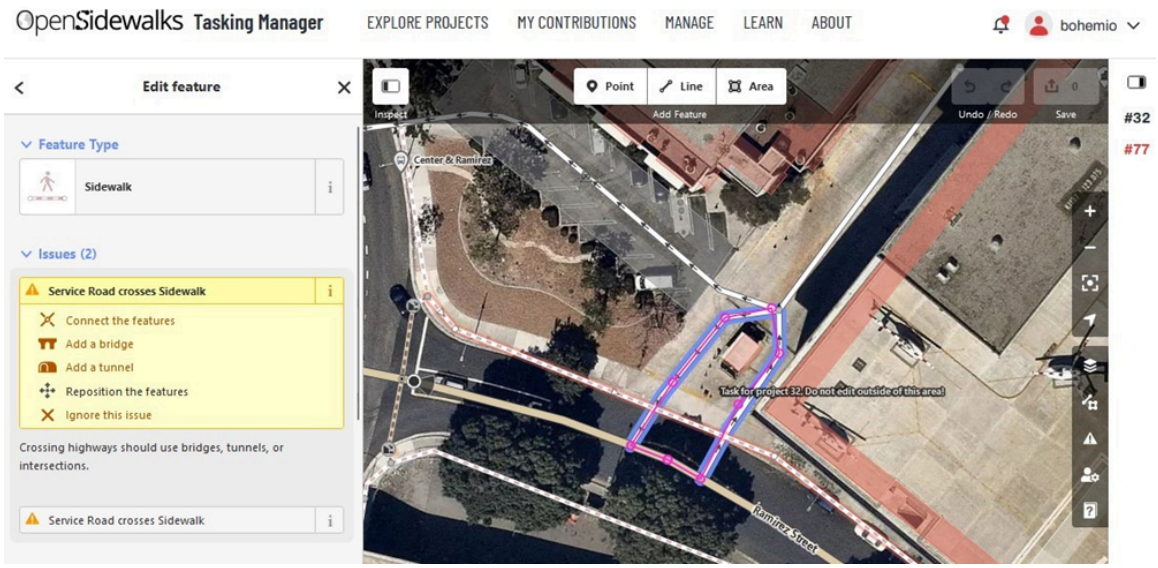
4. *Validate Sidewalk Features*

When we validate sidewalk features we need to be on the lookout not just for the basic sidewalk center line tags, along with it's other classifications on surface and inclination; but, also for any other pedestrian network feature that has been documented in that area.

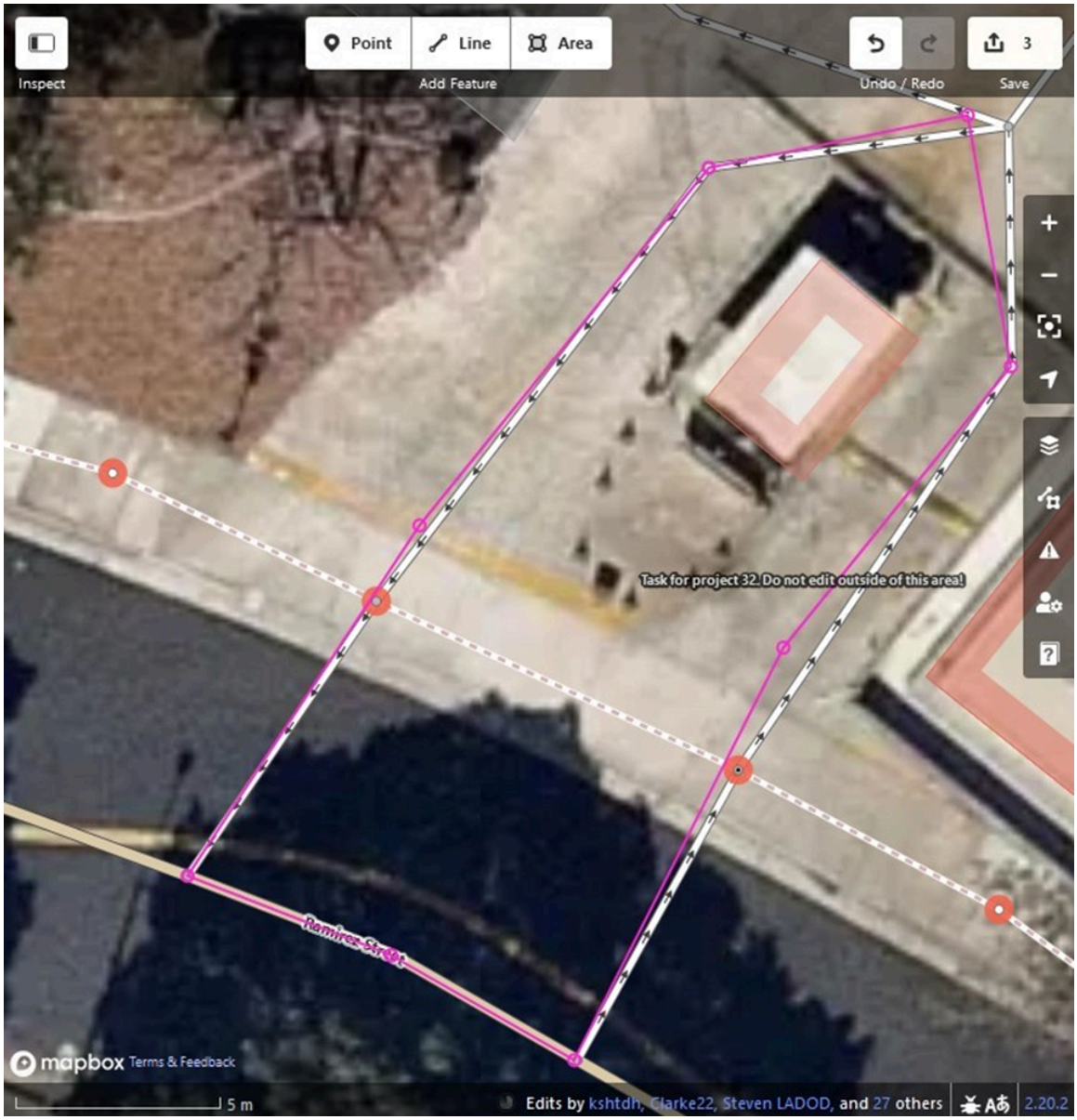
Sidewalks should be classified with the tags highway=footway and footway=sidewalk, along with other tags to document inclination or surface type. You can see these tags associated with the sidewalk selected in the image below. The labels are correct in the image below. But, there are a few issues that need correction.

The first is an issue of placement or alignment: the sidewalk line is not marking the center line of this pedestrian network feature. Then notice how the iD Editor has flagged an issue with the sidewalk line crossing (intersecting) a driveway.





We correct this by adding new nodes so that we are able to move the sidewalk line so that it is in the appropriate location, while we also add nodes where the the sidewalk and the service road intersect. We then select the sidewalk again, so that we may review the warning and click on the "Connect the features" option to connect the sidewalk and service road lines.

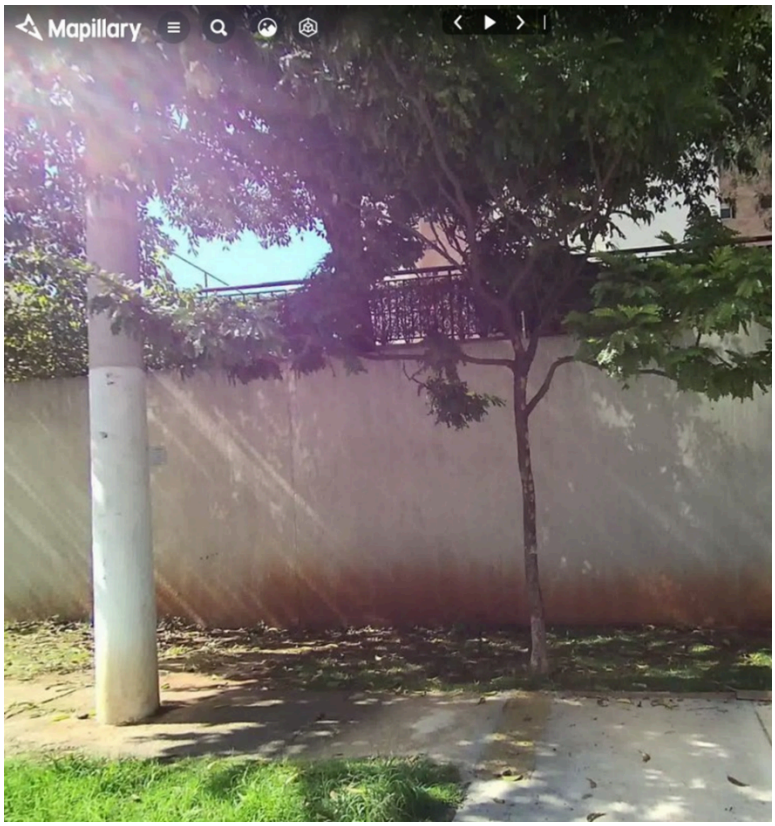


5. *Validate Barriers That Affect Accessibility*

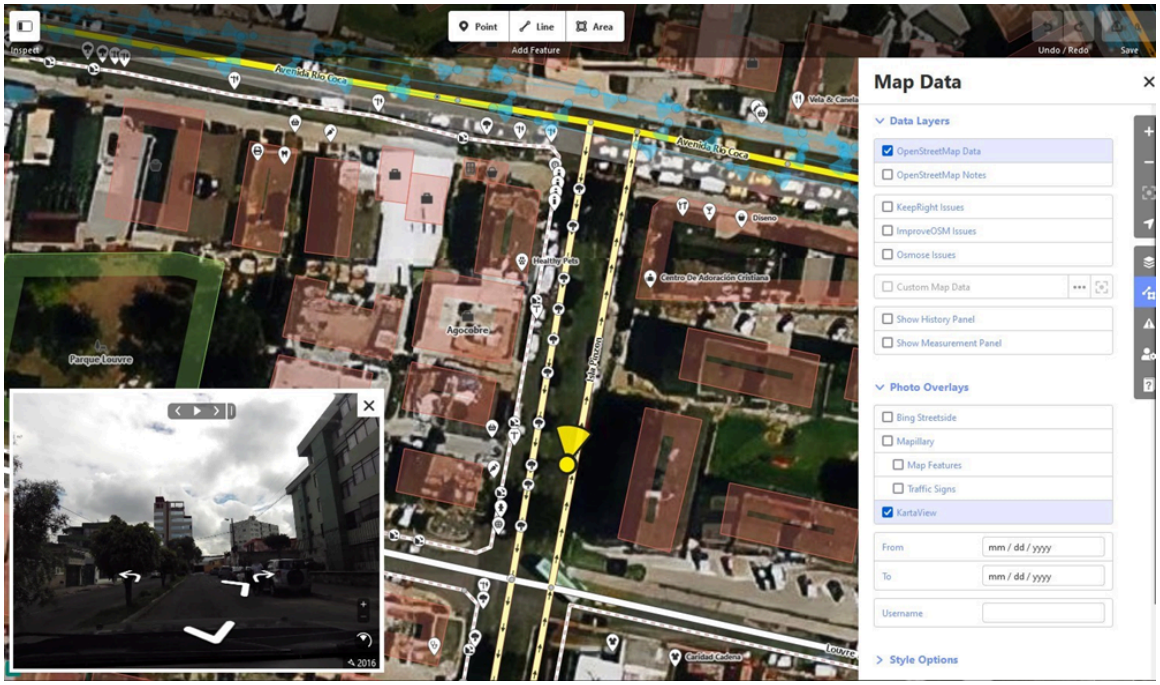
Barriers that may affect accessibility include such features as steps, blocks, bollards, chains, fences, gates, lighting or electrical transmission poles, among others. These features are generally mapped at the periphery of the sidewalk center line. When such features are attached directly to the sidewalk center line this is interpreted as the barrier feature blocking the foot way or sidewalk; so, we must be very careful to ascertain the placement of these features to make sure that we are not improperly documenting the pedestrian network.

Please refer to the list of tags by feature type to be sure to use the appropriate tags for each barrier feature.

The image below shows an example of a lighting pole that is in fact blocking the sidewalk. These cases are very rare, but they do happen, and is an exception to the rule that such barrier features should not typically be mapped as attached to the sidewalk center line.



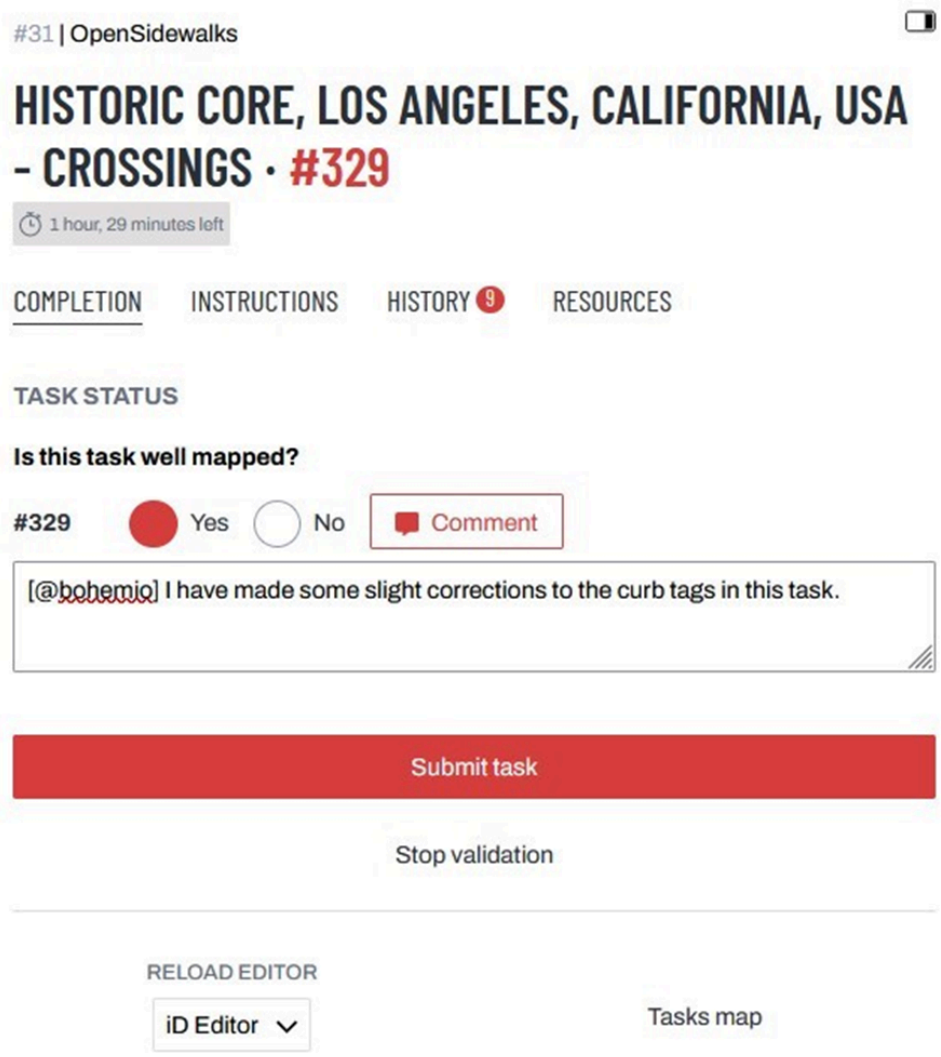
This next image shows the incorrect placement of trees attached to the road way line. An analysis of street side images reveals there is a line of trees that divides the road into two lanes each dedicated to traffic going in opposing directions. The trees should have been mapped as being located between the two yellow lines that mark the roadway.



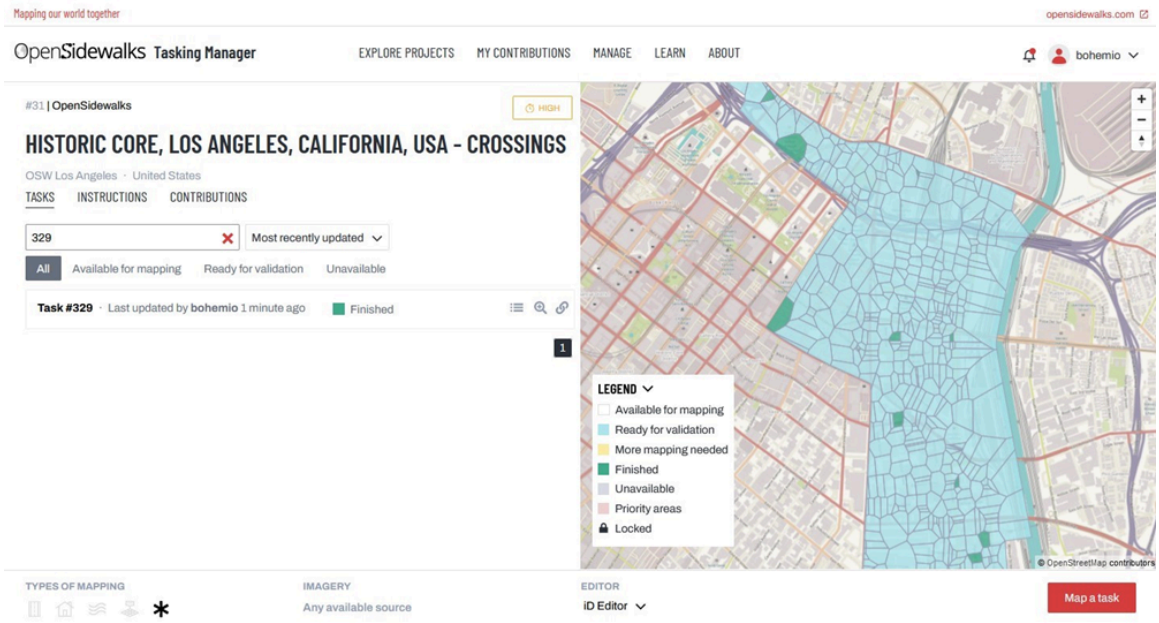
Completing A Validated Task In Tasking Manager

Once you have completed your validation of mapped features, and have committed any changes you've made to the OpenStreetMap database, we now focus on marking the task for completion. For this, we move our attention to the right hand panel in the Tasking Manager task level view, the Task Information panel. We mark the task as well mapped, and we Submit the change so the task is now moved to a status of "Finished" in the project map.

If you feel like more mapping work needs to be done, or if you are unable to validate the documented features proper, you can stop validation after adding a comment that sends the previous mapper a notification. Stopping validation will keep the task in a "Ready for validation" status.



You will now see the task marked as Finished in the task list, and the polygon tile in the project map turns from blue to green.



Other Resources On Validating Mapped Data

Here are other resources that provide information about the validation process.

OpenStreetMap Tasking Manager Validation Wiki. This wiki (https://wiki.openstreetmap.org/wiki/Tasking_Manager) goes into more details about validating different types of map features that have been added to the OpenStreetMap database.

OpenStreetMap Validation Team Model. This model (https://wiki.openstreetmap.org /wiki/File:Validation_Team_Model_(A).pdf) included in the wiki linked above is a comprehensive overview of the various roles that need to be addressed in the structure of validation teams. Consider that this is a comprehensive model for all OpenStreetMap features, beyond just the pedestrian network features that we focus on in the OpenSidewalks project.

Article About The Need For Validation. This article (https://www.hotosm.org/updates/validators-experienced-mappers-making-an-outsized-difference/) by the HOT Development Team provides an argument for the

need to validate mapped features, and includes links to video learning resources and to the application to become a registered validator on the OpenStreetMap platform.

HOT Development Team Validator Training Video. This video (https://www.youtube.com/watch?v=oH4Q18nBT68&list=PLb9506_-6FMFhgnFqmOVCBCWIGP2SHAwF&index=11) provides a comprehensive overview of what validators are looking to resolve in the OpenStreetMap platform. Mapbox Validation Guide. This technical guide (https://labs.mapbox.com/mapping/validatingosm/) dives deep into the process of validation, and the tools used to validate and repair OpenStreetMap data.

The next lesson will provide you direction on how to approach Correcting Mapping Issues.

Correcting Mapping Issues

We covered the process of validation, and the issues that validators should be on the lookout for. This lesson provides direction on how to deal with mapping issues that you have found need to be corrected.

This information will strengthen your understanding of the importance of adhering to the guidelines documented in the How To Map Pedestrian Pathways module, which are the OpenSidewalks standards for mapping pedestrian network features and are intended to ensure good data quality. These guidelines emerged from our past validation sessions with partner community projects.

This lesson covers the following topics:

- Scenarios That Should Not Occur But Happen Nonetheless
- Which Is The Correct Shape To Map The Feature?
- Was The Feature Mapped In The Right Place?
- Are The Pedestrian Networks Features Connected?
- Did The Mapper Use The Correct (Required) Tags?
- What Tools Can You Use To Validate These Issues--And Even Avoid Them??
- Validation Cheat Sheets

Once you complete this lesson you will be presented a series of recommendations on how to Organize Local Validation Teams.

Scenarios That Should Not Occur But Happen Occasionally

Each of the following scenarios are situations that require mapping corrections, either because the wrong labels were used or the feature was placed in the wrong location. At other times the "wrong" shape is used to describe a feature--how to map a bollard (point) vs. a row of bollards (line)?

These situations arise because the mapper perhaps was not observing the pedestrian network in person, and failed to use the analytic resources in the Map

Data options of the iD Editor that allow us to access street side images to determine placement and condition.

The map background may also not have the clarity we need and mappers sometimes don't realize they can switch to different backgrounds in the Background settings of the iD Editor before mapping a feature so that the placement of the feature is properly aligned with the map background.

Mappers sometimes copy a shape and paste it to save time. We've encountered scenarios in which a mapper documented curbs or crossings in an intersection and all the crossings were tagged as "marked" when in reality only 3 out of 4 crossings in the intersection are visibly marked.

Remember that when we validate mapping we are seeking to validate that:

- The correct shape has been used to document the pedestrian network features.
- The features have been mapped in the right place, or aligned, on the map.
- The features are part of a pedestrian network that has been connected to the transportation network it intersects with.
- The required tags have been used to classify the features.

Let us review a few scenarios that we have corrected during validation that highlight the importance of understanding the How To Map Pedestrian Pathways (https://canvas.uw.edu /courses/1507295/modules/2476539?wrap=1) module guidelines before forming and coordinating mapping engagement teams. Your mapping and validation sessions will go much more smoothly if you agree on how to map your own local complex scenarios early in the process.

Which Is The Correct Shape To Map The Feature?

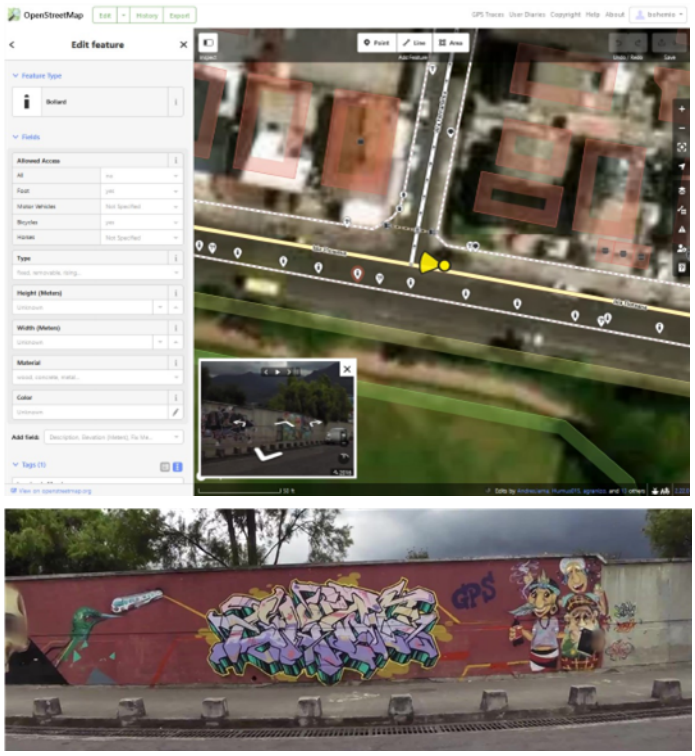
The first thing to determine in mapping a pedestrian network feature is to decide what shape to use to document it on the map. Crossings and sidewalks are mapped as ways (lines), and curbs and the point at which the crossing intersects the road it traverses are mapped as nodes (points). Clear enough!

But, what about other features that appear along the pedestrian network: signals, trees, bushes, hedges between the road and the sidewalk, electric transmission lines, lighting posts, and other barriers?

Most of these will take the shape of a node mapped alongside (not attached to) the sidewalk or road. Yet, sometimes a debate ensues: how do we map it if it's a single feature vs. a series of them?

Let's use the typical bollard, which is generally used to restrict vehicular access to designated biking and pedestrian ways. A single bollard will be tagged as a node (point). But, if there's more than one bollard, and they are close to each other, we have the choice of mapping them as a way (line)--a decision that has to be made at the local level. Take a look at the OpenStreetMap bollard wiki page (https://wiki.openstreetmap.org/wiki/Tag:barrier=bollard) to learn more.

Single Bollard This type of bollard would be mapped as a single node (point), and tagged barrier=bollard.	

Short Row Of Bollards This row of closely spaced bollards would be mapped as a short way (line), which is then mapped barrier=bollard--in the same way that you would use a line to map a gate barrier.	
Long Row of Bollards The mappers in Quito, Ecuador, mapped short concrete bollards along the edge of the sidewalk as single nodes (points). These nodes would run along the areas next to the sidewalk where drainage trenches had been built. Based on the street side image analysis embedded in the map, how would you decide to map these types of pedestrian safety features?	

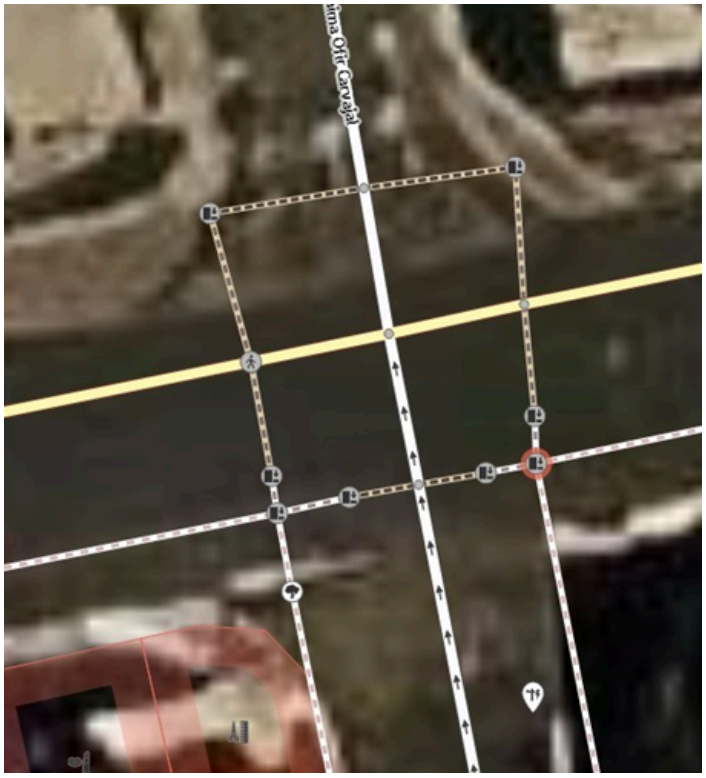
The same applies to mapping gates, which can be either a node (point) or a way (line). Check out the OpenStreetMap wiki page on mapping gates (https://wiki.openstreetmap.org/wiki/Tag:barrier%3Dgate) for more examples. For example: when the gate is attached to a wall, it will be mapped as a node that is connected to that wall with the tag barrier=gate; and, if the gate is across a road, it will be mapped as a way with the tag barrier=gate whose nodes are connected to the adjacent fence.

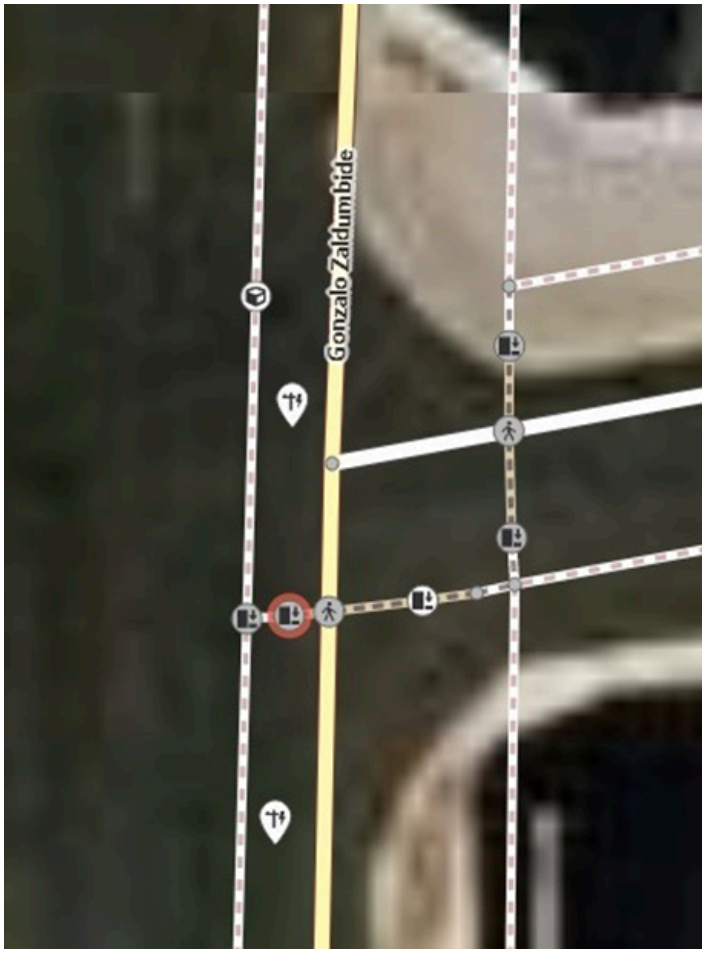
Was The Feature Mapped In The Right Place?

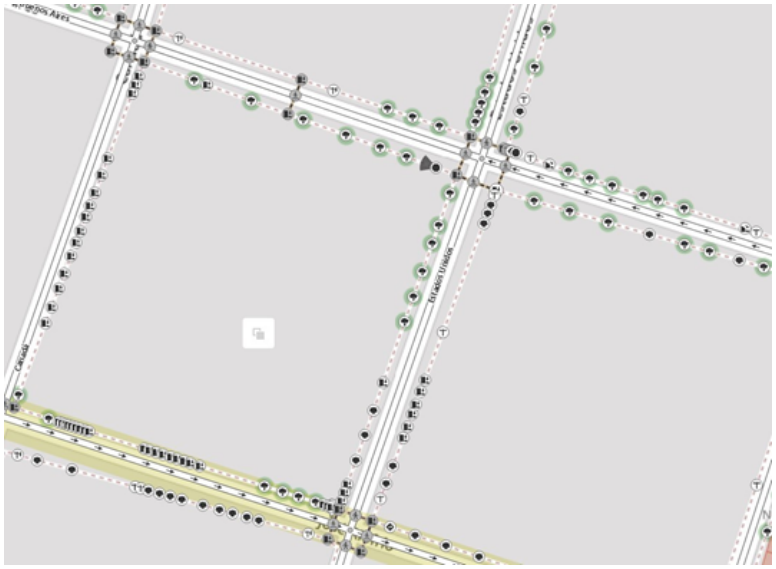
Proper alignment (placement) of a pedestrian network feature on the global map is very important, as it has significant consequences for how downstream routing apps enable users with different mobility profiles to get to their destination. The safety of these individuals could be compromised if mappers don't spend sufficient time analyzing the area before mapping. If you are unable to visit the pedestrian area in person, or if you still have doubts, you have tools at your disposal that can help you sort it out.

We will discuss some of these analytic tools that will help you determine how to correct these alignment mapping errors further below. But first, let's go over some examples of alignment (placement) issues.

Here are Some of the most typical OpenSidewalks alignment issues we run into when validating pedestrian network mapping.

Curbs that are in the middle of the road. Here are two images where raised curbs were mapped on the street. Notice the poor quality of the background image, which likely affected the mappers decisions. Recall that the OpenSidewalks Rules For Mapping Curbs direct mappers to map curbs at the edge of road, where it meets with the pedestrian network. We will discuss further below how to use different map backgrounds to better ascertain where to map the curbs that connect the pedestrian network to the crossing that intersects the transportation network.	

	Gonzalo Zaldumbide

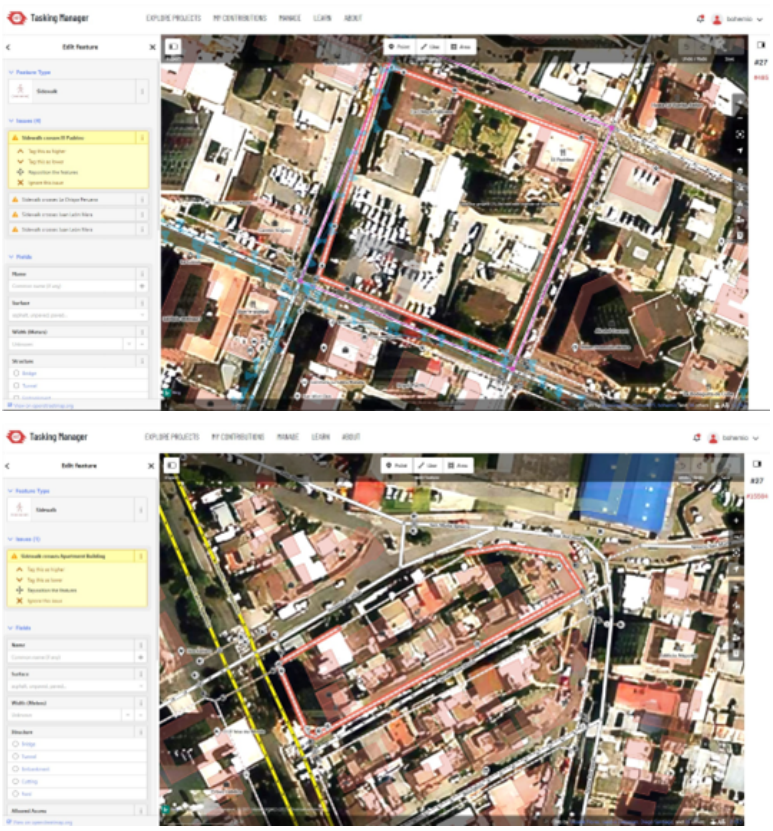
Barriers that are mapped attached to a way-the sidewalk center line or the road. This includes curbs, signals, trees, lighting posts, etc. Unless a barrier feature is actually blocking the road or foot path, barriers should generally NOT be attached to a way (line). Take a look at the the first image to the right. This is an image of the OpenStreetMap map background showing a block where sidewalks and nearby crossings have been mapped. It also shows several barrier features that were mapped right on top of the sidewalk center line.	 Recall that the OpenSidewalks Rules For Mapping Sidewalks direct mappers to *map pedestrian network features where they have been built*. Thus our interpretation in this case would be that all these mapped features are blocking pedestrian transit. Yet, this was a very unique case we discovered in Quito that we had to debate with the local mapping coordinators. This mapping needs corrections. But, there are several factors on the ground that could have influenced the mapper's interpretation of the guidelines.

Quito has very narrow sidewalks, as you can see in the next image, with the trees planted right at the edge of the sidewalk. What is difficult to ascertain without being on the ground is whether the trees impact the transit of pedestrians or those who are using assistive devices, such as wheelchairs.	 The issue here comes down to whether a wheelchair could use this sidewalk. The trees should've been mapped at the edge of the sidewalk regardless. The decision to be made is whether we need to add the *wheelchair=no* tag to that sidewalk center line.

Consider this other scenario in Quito. The mapper from the first image in this scenario mapped raised curbs attached to the sidewalk center line, which is a misuse of the raised curb feature altogether. Closer inspection of street side imagery revealed that the mappers interpretation may have not been too far off.	 Quito has steep hills, and building codes may not be in place for certain construction. The residences in these hills in Quito each have their own driveway. Proximity to the next uphill lot determines the height gain where the next driveway is built. This has the effect of creating single or double step barriers.

With proper guidance, the mapper in this situation would have been directed to use the *highway=steps* tag—see https://wiki.openstreetmap.org/wiki/Tag:highway%3Dsteps. But, to date, this tag is not allowed to be used on nodes. So, we continue to debate how best to represent these particular driveways that cause a change in surface elevation.

These issues demonstrate the need for early conversations in the mapping process to ensure there is common agreement across the local mapping teams.

Sidewalks that cross the street or are mapped across a building's perimeter. The two images on the right show sidewalks that have mapping issues in need of correction. Notice that during validation review the iD Editor is showing a warning on the feature information panel to the left of the screen telling us there is something that needs correction--a warning shown to the mapper at the time their changes were saved to OpenStreetMap.	

The top image shows that the upper left corner segment of the sidewalk was mapped crossing the nearby road. There are a few possibilities about why this was mapped that way. The resolution of the map background image is not very good, to begin with. But, it is more likely that in the haste of completing the mapping task, the user chose to draw a square at a high level and failed to zoom in for closer inspection.

The bottom image shows that the lower and upper right segments of the sidewalk appear to be crossing over the perimeter polygon that is outlining the buildings. There are two issues here: the accuracy of the map alignment; and, the likelihood that, again, the mapper chose to map the sidewalk at a high level and failed to zoom in for closer inspection.

Both of these scenarios point to a failure in the onboarding training for new mappers. Before documenting any feature on OpenStreetMap it is necessary to conduct a thorough analysis of the area being mapped, particularly if the mapper has not conducted a review of the area in person.

Mappers need to zoom in closely to capture details on the ground. They also need to be on the lookout for map background alignment issues. We will revisit how to do so later in this document.

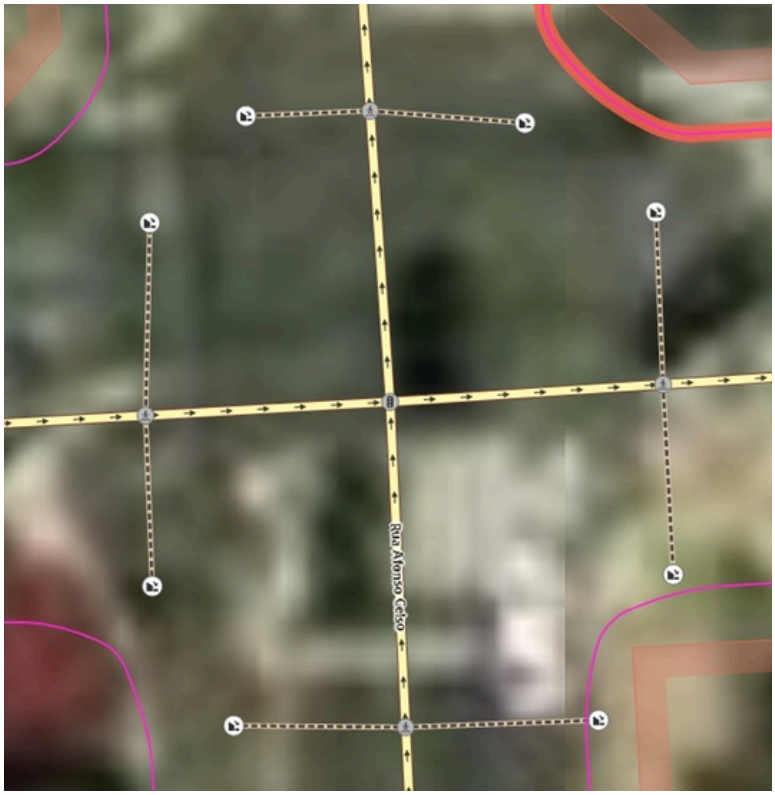
Are The Pedestrian Networks Features Connected?

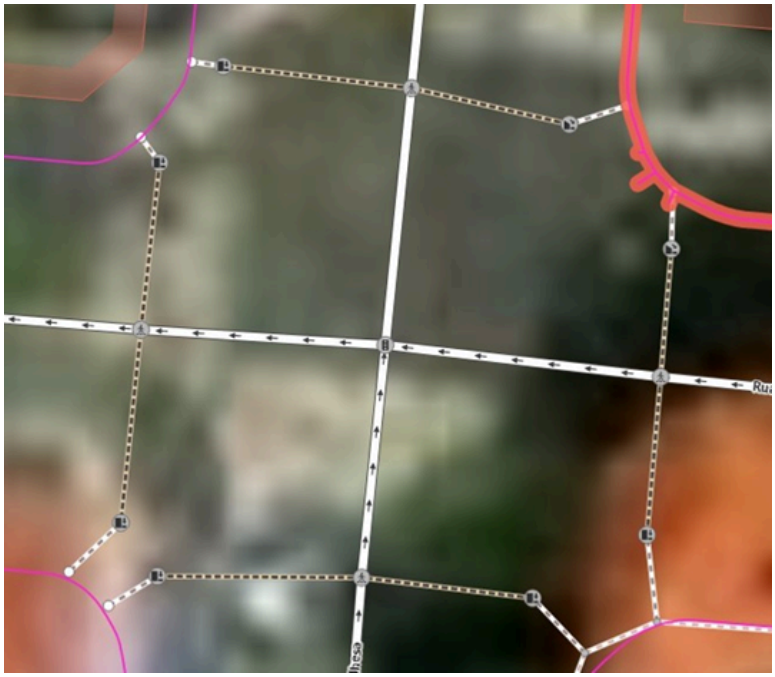
As discussed earlier, barrier features should generally NOT be connected to the foot ways, sidewalks, and roads in the pedestrian network, unless they are actually blocking the pedestrian way.

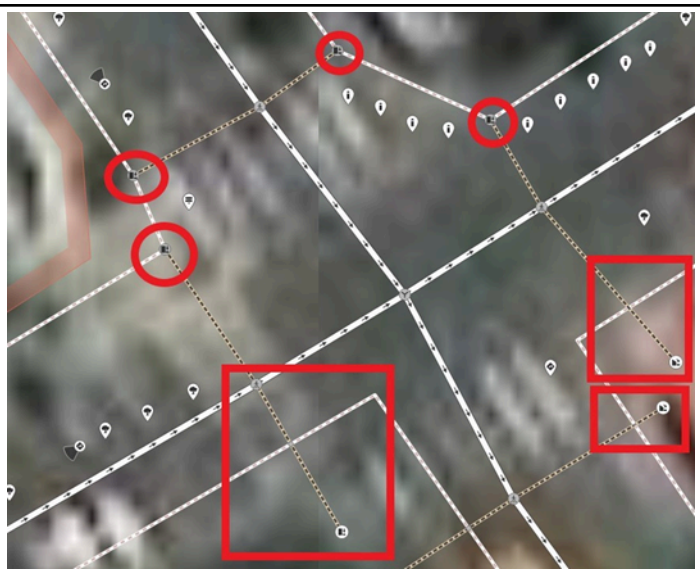
This section focuses on the need for Crossings, Sidewalks and Footways to be connected. Crossing ways should be connected to the road that they traverse by a node point at the location where they intersect. The crossing ways should end in curb nodes placed at the edge of the road or street. The curb nodes should then be connected to the sidewalk center line by a short footway.

Once these connections have been made the pedestrian network is connected to the transportation network, allowing for the development of downstream routing solutions.

Let's take a look at some examples of mapping that lacks sufficient connectivity!

Crossings that are not connected to the sidewalk network. The images to the right illustrate how we should proceed to connect pedestrian network features; with the last image illustrating how we should not.	 The first is an image of crossings and curb features mapped at an intersection which have not yet been connected to the sidewalk center line. Take note of the node (point) that has been placed at the center of each crossing to where it intersects with the road that it is traversing. The purple marks at each corner are derived from a geojson data file that shows the location of sidewalk data in the city of Sao Paulo--it is a reference file loaded into the iD Editor interface, the sidewalks have not been mapped in the background image, making it more difficult for the mapper to properly align (place) the features.

The second is an image of crossings and curb features mapped at an intersection, with a short foot way (highway=footway) added to connect these intersection features with the sidewalk network.	 You can see in the lower right hand of the image that a sidewalk has been mapped and properly connected to the short foot way. Once this has been completed the pedestrian network is now connected properly to the transportation network, by way of the crossing node placed where the crossing meets the road that was mapped in the previous step.

The last image is that of pedestrian features at an intersection which have not been properly connected. Let's go over the issues annotated in the image. At the top of the image we find a series of curb nodes (point) that have been attached directly to the sidewalk center line, violating the OpenSidewalks rule that curbs should connect to the sidewalk with a short foot way. Notice the crossing on the lower left that has not been mapped entirely across the road, or connected with a foot way to the sidewalk center line.	 Last, observe how the curb nodes in the lower right have been mapped beyond where the sidewalk center line was placed, not at the edge of the road. There is an issue of placement here, but also an absence of foot ways to connect the curbs to the sidewalk. Our hypothesis is that the crossing was mapped first, but the connecting foot ways were not added. The sidewalk was later mapped, but the mapper did not take the time to check whether the sidewalk was properly connected to the curb. This single image illustrates the importance of understanding the How To Map Pedestrian Pathways module guidelines, before adding pedestrian network features to the OpenStreetMap database.

Did The Mapper Use The Correct (Required) Tags?

The number of tags that characterize a feature will depend on the community where the feature is mapped and the local standards that the mappers have

subscribed to. Yet, all tags documented for a given feature must adhere to the OpenStreetMap global tagging standards

(https://wiki.openstreetmap.org/wiki/Map_features) which have been approved after proposal, revision and acceptance by the administrative committee of the open source platform.

Your ability to validate a particular feature will depend on your own mapping and validation experience over time. Contributors to the OpenSidewalks project are asked to ensure that the minimum required tags for a feature are documented while mapping.

The list of pedestrian network features that OpenSidewalks is interested in documenting and their minimal required tags can be found in the OpenSidewalks Tags By Feature Type page.

What Tools Can You Use To Validate These Issues--And Even Avoid Them??

OpenStreetMap uses a variety of open source resources to enable mappers to properly document features in their built environment. Some of the most useful in these scenarios are:

- Using different map backgrounds
- Checking GPS traces
- Changing the map offset
- Analyzing street side images

Experienced mappers make the most of these tools when they are mapping and validating features. You can visit the Navigating The iD Editor lesson to review how to access the first three of these options. Find more information below, along with instructions on how to access street side images.

Using different map backgrounds.

You have access to different background images in OpenStreetMap which you can switch to help in your analysis to decide the correct placement of a feature. The number of background image choices that you have access to in the iD Editor interface, and their resolution and quality, will depend on what region or community you are currently mapping. Access to satellite and survey data imagery will also depend on the politics of a particular region in the world; in some countries there are restrictions on the capture and dissemination of that data.

You can visit the Navigating The iD Editor lesson to review how to select other backgrounds, under the Map Background menu [] in the iD Editor.

Checking GPS traces.

GPS traces are data sets collected from devices that mark the routes users of those devices transited thru--whether by foot, bicycle or vehicle. They help to understand which areas of a community see the most traffic. You can choose to load the data into iD Editor to help you analyze whether the map background is well aligned--meaning: you can confirm if the roads and ways mapped in OpenStreetMap correspond with the routes the traces appear. If they do not correspond, you may need to use the offset option in iD Editor to realign the map background you selected.

You can visit the Navigating The iD Editor lesson to review how to enable GPS traces, under the Map Background menu [] in the iD Editor.

Changing the map offset.

The map background image can be offset to properly align the image with the features already mapped in OpenStreetMap. Note that if you change to another background image choice, your selected offset points will be reset.

You can visit the Navigating The iD Editor lesson to review how to use the map offset option, under the Map Background menu [] in the iD Editor.

Analyzing street side images.

What if you can't be present in the built environment to observe its pedestrian features? Or, how do you revisit a location remotely if you realize you overlooked some of its details?

We are fortunate to live in a world where we have access to street side images, particularly in most major cities, that allow us to analyze mapped features remotely.

Two of the services that are used in OpenStreetMap are the image collections captured by everyday citizens using their smart devices which they can capture using the KartaView (www.kartaview.org) and Mapillary (www.mapillary.org) mobile applications. These image capture sets can be enabled in the iD Editor interface by using the Map Data menu [].

You can also explore the collections of images captured based on location by going to KartaView and Mapillary websites directly.

Validation Cheat Sheets

For all these reasons covered in this document we provide links to download the OpenSidewalks Mapping Guide which are included in the instructions of the OpenSidewalks Tasking Manager projects for your reference. The How To Map

Pedestrian Pathways module guidelines are also included in the task-level instructions of each project.

The next lesson provides guidance on how to Organize Local Validation Teams.

Organize Local Validation Teams

The previous sections noted the importance of validation in the process of mapping the pedestrian network in your local area.

We cannot stress enough the importance of having experienced mappers embedded within your teams as you proceed to collaborate through a local mapping engagement. Below are several scenarios to consider that we hope will inform how you ultimately decide to organize your validation process.

The workflow you decide to adopt depends on the number of people mapping, how many of them have prior OpenStreetMap experience, and how much time you are allocating for your team's mapping period.

This lesson will cover the following topics:

- Relying On Local Community Resources
- Reaching Out To External Resources

This is the final lesson in the Validating Completed Mapping Tasks In The Tasking Manager module.

Relying On Local Community Resources

1. **Reach Early Common Agreement On Local Mapping Goals**.

Above all else is the need to have agreement across the mappers collaborating in a local mapping engagement on: (1) which features will be documented; and, (2) to what degree will the features be tagged.

This ensures consistent mapping, and provides validators a roadmap on what issues to look out for to properly correct mapping errors, particularly because sometimes experienced

OpenStreetMap validators will volunteer to help your cause but have worked in the past outside of your region (where building standards may be different) or without much experience mapping pedestrian network features.

2. **Be Sure To Allocate Enough Time For Validation**.

How many validators you will need depends on how many active mappers you have contributing at any given time. It's safe to say that a dedicated validator can support the daily mapping contributions of 4-6 mappers.

Outcomes of validation are also tied to the duration of the mapping periods. Many teams we have engaged with have joined us in onboarding workshops to provide an overview of OpenSidewalks practices to the individual mappers. These teams then hold local mapping sessions on their own timelines. Some teams map over a period of weeks or months; other teams will hold a mapathon on a particular day.

Each community will need to determine how many mapping and validation resources they can rely on, and how much time will be needed so both mappers and validators can complete their work. It is also important to decide early on how will communication flow between mappers and validators, which we discuss further below.

3. **Organize Joint Mapping and Validation Sessions**.

An approach that works very well is to coordinate a few hours of joint validation sessions. Validators can join on a virtual conference call and work jointly to validate completed mapping tasks--a section on how to use the OpenSidewalks Tasking Manager to validate contributions is presented next.

This approach is used by the Open Columbus (https://www.meetup.com/OpenColumbus/) initiative in Ohio, which holds Remote Sidewalk Mapping Party sessions every other Tuesday. Their mappers get together in a virtual call every other Tuesday evening, and spend a few hours mapping or validating. They alternate the focus of their sessions every two weeks, one Tuesday to map and another to validate. Or, they split up into groups: while some map others validate past contributions.

This allows for mappers or validators to ask for immediate help when they are making decisions, which contributes to them learning from each other without

having to wait out responses via OpenStreetMap comments, Slack, Telegram or email.

4. **Organize Kickoff Mapping Audits**.

The best validation approach we have seen is for validators to catch the most common errors being made, document them early on in the mapping period, and then hold a joint review session with the local mapping team.

If you are mapping over a period of a week, or even during a single day, set an hour aside for mappers to document features in a discreet geographic area--to reduce the wide propagation of mapping errors.

Freeze mapping activity for a short period to allow the validators to then complete an audit round during which they can document examples of mapping errors that can be discussed with the mapping team before they are allowed to renew their mapping work.

This provides an opportunity to revisit the guidelines documented in the How To Map Pedestrian Pathways module lessons-especially the Phase 1 lessons--that may have been overlooked or misinterpreted. It also gives an opportunity to discuss how mappers approach how to document features with a different mindset.

This also helps everyone to resolve any misunderstanding about the local mapping goals.

If you are holding the mapping sessions in person, the validation audit may be a good time to have a pizza lunch for the volunteers. If your mapping session is being held virtually, you could break out to a virtual meeting space such as Kumo Space (https://www.kumospace.com) to hold an ice breaker session while the validators complete their audit.

You could also use the audit period to hold an unstructured conversation with community leaders about how they'd like to benefit from the mapping efforts of volunteers.

5. **Establish Periodic Mapping Limits And Conduct Parallel Audits**.

Depending on whether you can afford a longer engagement and have validators predictably available, you should try to set mapping limits so your validators are able to effectively complete their work, especially at the beginning of the mapping period. For example, you could ask mappers not to complete more than 10 crossings in a given day. The validators can then better track the contributions of each mapper in the local team, and provide them timely feedback on corrections.

You can eliminate those mapping restrictions once the mappers gain confidence and the validators have helped the mapping team significantly reduce mapping errors.

The now more experienced mappers can alternate between mapping new features and validating their peer's completed tasks, so you are not only much less reliant on external validators but you have now increased the pool of validators for the whole of the OpenStreetMap community!

...

Before proceeding to finalize your validation workflow, there is one more thing to take into account.

Should Mappers Correct Their Own Errors? Validation can proceed in two ways: validators can correct errors and comment on what they corrected before completing the validation process; or, mappers can be messaged about needed changes, and be allowed to correct their own errors-this will be covered in the Tasking Manager Validation section.

Which approach to use is very much determined by the extent of the mapping period that you have set, and the availability of your validators. Particularly where validators are internal to your organization or well embedded in your local mapping group, you may be in a position to put a higher premium on mappers learning from their mistakes.

While the latter approach, letting mappers correct their errors, ensures that mappers avoid making the same mistake in the future, it can also be time

consuming because it means that the task would need to be re-evaluated by a validator after the corrections have been made.

Reaching Out To External Resources

1. **Consider Involving Youth Mappers**.

Youth Mappers is a global nonprofit organization dedicated to teach young adults about how to map geospatial features and introduce them to geospatial data and analytic tools. Every year they hold several mapping engagements, whether regional or virtually, in which they rely on a dedicated team of Youth Mapper validators located in Cincinnati.

You should reach out to a Youth Mapper Regional Ambassador (https://www.youthmappers.org/regional-ambassadors) if you are planning a local mapathon. They may be in a position to provide guidance, resources, and even make a wide callout to their mail list to invite other Youth Mappers to join your local mapping team in a virtual mapathon session.

2. **Reach Out To OpenStreetMap Telegram Channels**.

There are local and regional OpenStreetMap channels in the Telegram messaging application where you can seek guidance on how to recruit validators. Simply type in "OpenStreetMap" in the Telegram search.

3. **Connect With Us On Slack Or Twitter**.

The OpenSidewalks project can be reached via its Slack channel (https://opensidewalks.slack.com) , and you can find us on Twitter (@OpenSidewalks (https://twitter.com/OpenSidewalks)). Do feel free to message us with any concern, so that we may ensure that your goals to coordinate a local mapping engagement can be realized.

This is the final lesson in the Validating Completed Mapping Tasks In The Tasking Manager module.

OpenSidewalks Academy: Miscellaneous Guides and Data Quality Practices

Mapping A City Intersection Under Different Scenarios

You previously completed the module of lessons on How To Map Pedestrian Pathways, where we provided you step-by-step instructions using the OpenSidewalks mapping standards.

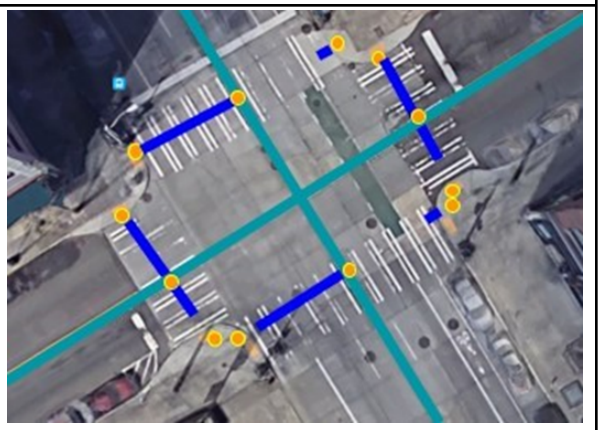
This lesson provides examples of how to map a city intersection under different scenarios.

Phase 1: Mapping An Intersection

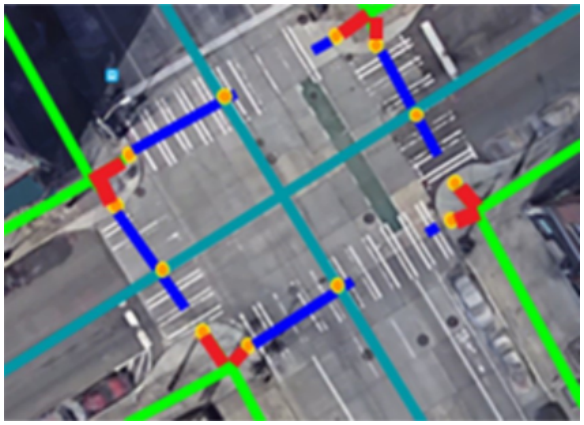
This table lists different mapping scenarios at a city intersection.

Intersection Data Goals • **Accurate** feature locations • **Connected** features • **Detailed** feature types	

Curbs: Understanding the street / sidewalk interface allows us to know what pedestrian modes (like travelers with wheelchairs, bikes, or white canes) can cross.
 	
Put down curb points.
 	
● Map Accurate locations
● Required Tags:
  o barrier=kerb
  o kerb=lowered (default)/raised/flush/rolled/ unknown
● Optional Tag, only if you can see it:
  o tactile_paving=yes/no
	

Crossings: Connecting sidewalks to the automobile streets.
Map Crossing line from CURB to CURB, with a midway point that connects to the street.
● Tag the node shared with the street
  o highway=crossing
  o optional: crossing:markings = yes/no
● Tag the LINE extending from curb to curb:
  o highway=footway
  o footway=crossing
  o crossing:markings=yes/no
	

Sidewalks: Where protected paths for pedestrians are and
• Draw lines at accurate locations following the sidewalk centerline. Line endpoints should be where sidewalk segments end (they may connect to another sidewalk or to a sidewalk link or just end abruptly)
• Required tags:
  ○ highway=footway
  ○ footway=sidewalk
• Optional tags:
  o surface=paved/unpaved
	

Footway Links: Links are crucial to complete the connectivity of the network, connecting the sidewalks to the curb locations. • Draw a line connecting the sidewalk centerline to the curb. Try to draw out the path a wheelchair might take from the center of the sidewalk to the curb. • Endpoints should connect one node ON the sidewalk line, and a curb endpoint **o** highway=footway	

City Mapping Team Best Collaboration Practices

You've now reviewed the How To Map Pedestrian Pathways module lessons which will lead to good data quality in documenting pedestrian network features in your community. This lesson encapsulates our Learned Lessons in our most recent community engagements.

We hope that this lesson makes it all the more productive to coordinate mapping collaborations in your community. We encourage you to read through this document before proceeding to organize a City Mapping Team.

This lesson is part of the Miscellaneous Guides and Data Quality Practices module. It is a stand alone lesson intended to provide guidance to City Mapping Team coordinators so teams can adapt their own productivity methods under different capacity scenarios.

Quantity vs Quality. Some local communities have a very small number of mappers with a very short engagement timeline, and tend to want to map as much as possible in one take. They are not inclined to have to revisit the same areas of the city, even though surveying and documenting living environment features is naturally a progressive endeavor. It is critical to the success of the local mapping community to engage in a conversation about the importance of quality over quantity. We have learned that it is best to provide the mapping community with a smaller mapping perimeter to map, so as not to overwhelm their intentions.

Local Mapping Priorities. Once a general introduction to OpenSidewalks has been provided, local teams can move to coordinate more focused workshops and mapathons. It is important to keep mapping teams manageable; to focus on mapping a local community that has been prioritized; and, to collectively prioritize what pedestrian network features will be ideal to document during the engagement. This includes the need for a conversation on what other local

pedestrian network features, beyond crossings and sidewalks, should be documented. To determine which features to prioritize in your community you should revisit the list of pedestrian network features and their required tags in the List Of Tags By Pedestrian Feature lesson.

The local mapping priorities of each community should be documented in the OpenSidewalks Tasking Manager (http://tasks.opensidewalks.com) project page instructions, along with mapping guidelines that have been tailored to each community.

Identify local validators. Before any collaborative local mapping takes place you will want to ensure that you have identified experienced OpenStreetMap mappers that can validate your mapping contributions by auditing and correcting the documented pedestrian network features. To connect with local experienced mappers you can scan OpenStreetMap in iD Editor to look at mapped features in your area. Select some features and examine the history of the mapped contributions which will note who mapped or validated that feature. You can then connect with them in a number of different ways. Please review the OpenStreetMaps Contact Channels (https://wiki.openstreetmap.org/wiki/Contact_channels) wiki page to learn more.

If you are unable to recruit experienced OpenStreetMap users, you will need to allocate time to train mappers in your group to ensure they follow the mapping practices detailed in the How To Map Pedestrian Pathways module lessons--especially Phase 1; and, then have those mapping validators complete the Validating Completed Mapping Tasks In The Tasking Manager module lessons.

Encourage local mappers to work in tandem. Columbus, Ohio, OpenSidewalks mappers have been very effective by organizing biweekly joint virtual mapping sessions. These engagements incentivize the mappers to collect and document a high degree of detail for the features they map. The joint mapping sessions also

have the advantage of providing a single venue in which questions and concerns can be immediately addressed, and where they are able to learn from each other.

Monitor activity report and OSMCha changeset logs. It is a good practice to frequently monitor local mapping contributions in the OpenSidewalks Tasking Manager or using OMSCha (https://osmcha.org) changeset logs to catch mapping errors early. Identifying mappers that need guidance early on is critical to reduce data quality issues from multiplying. The activity reports for each project in the OpenSidewalks Tasking Manager (https://tasks.opensidewalks.com) make this a very simple task that can be completed at the end of each day or week.

Messaging new OpenSidewalks mappers when corrections are needed. Local validators that correct other users contributions can quickly message the community mappers about adjustments that were or need to be made using the OpenStreetMap user tagging function in the OpenSidewalks Tasking Manager (http://tasks.opensidewalks.com) validation comments. You can send a message to another OpenStreetMap user by including their username in brackets using the ampersand, for example: [@bohemio]. Once you save the comment, the user will receive an email with your message and a link to that particular task in the Tasking Manager.

Onboarding project resource library. Every project landing page in the OpenSidewalks Tasking Manager should provide links to our cheat sheets, videos, Slack chat channel, and the backlog of technical and operational issues. The OpenSidewalks mapping practices guides should be classified to provide resources for new contributors to OpenSidewalks as well as to experienced OpenStreetMap users.

Examples of mapping complex intersections. One singular mapping resource that simplifies local mapping decisions is a document relating to the mapping of complex crossings and their pedestrian network features at urban intersections, particularly if the design and construction of this pedestrian environment is unique to their country or locality. Local mapping coordinators should provide us with examples of their own complex pedestrian environments so that we both document them in the Tasking Manager instructions and discuss them when we hold mapping training sessions.

This lesson is part of the Miscellaneous Guides and Data Quality Practices module. It is a stand alone lesson intended to provide guidance to City Mapping Team coordinators so teams can adapt their own productivity methods under different capacity scenarios.

Capturing Your Own Street Side Images

This lesson is part of the Miscellaneous Guides and Data Quality Practices module. The lesson will focus on how to use open source tools to capture street side images and share them with other OpenStreetMap users--images that can be accessed thru the OpenStreetMap iD Editor to help analyze the built environment remotely.

This lesson covers the following topics:

- Karta View
- Mapillary

The resources in this lesson will walk you through how to prepare to capture and share the images of built environment features.

These applications were designed to aid OpenStreetMap users. The images you capture and upload to these open data archives can be referenced by any other OpenStreetMap user. The images can be accessed in the Map Data options  of the OpenStreetMap iD Editor interface that we use thru the OpenSidewalks Tasking Manager (https://tasks.opensidewalks.com), so you and others can use them for remote visual analytical reference when mapping local pedestrian pathways features.

Scenario: "You find yourself mapping in the OpenStreetMap iD Editor and you reach into the Map Data resource options in the iD Editor to access the street side image sets so you can evaluate a particular intersection for accessibility.

While you are using the image sets available from Bing, Mapillary (http://mapillary.com) or Karta View (http://kartaview.org) you realize that a particular intersection nearby is lacking street side images.

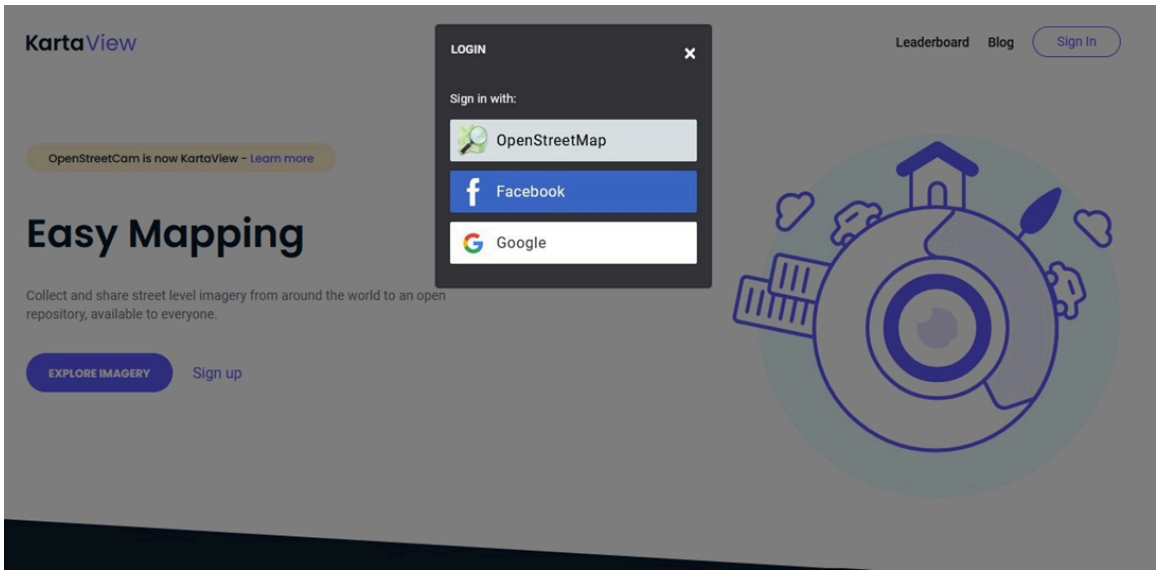
Since you regularly transit through that area, you decide that the next time you're there you will take a moment to capture images of the area so they can be used by any OpenStreetMap mappers in the future."

KartaView

KartaView (http://kartaview.org) (formerly known as OpenStreetCam) is a mobile application that allows you to capture and upload your own images as you navigate the built environment.

You can use the mobile app to capture images as you travel on foot, bike or in a car (please do not drive and capture at the same time).

These street view images are then uploaded to the KartaView (http://kartaview.org) cloud database, where they are made available publicly, both for download and as a data overlay in the OpenStreetMap iD Editor that can be accessed by any user of the mapping tool.

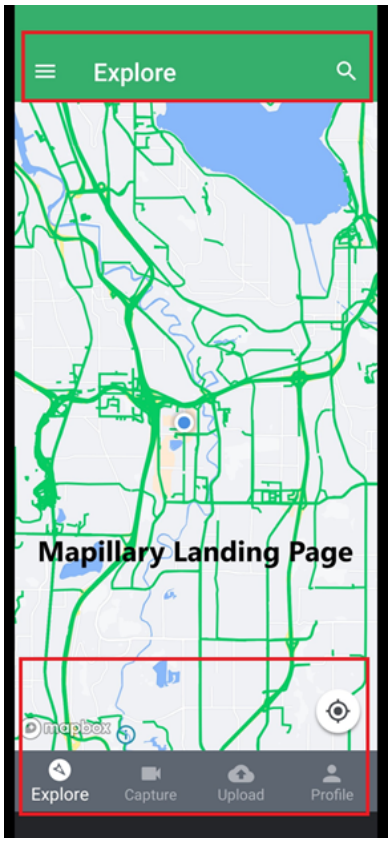


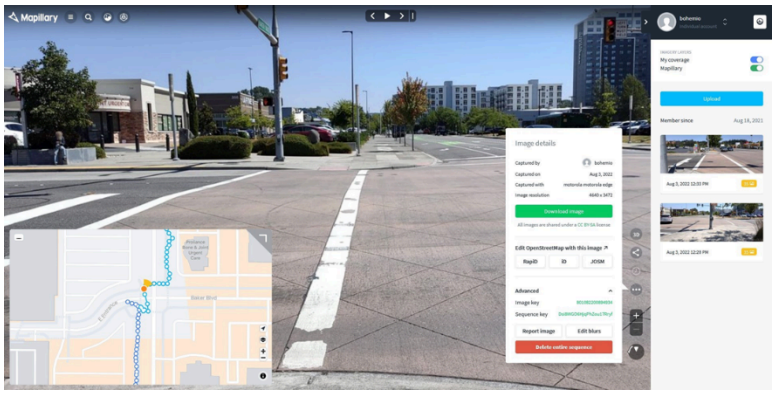
Mapillary

The Mapillary (http://mapillary.com) is a mobile application that allows you to capture and upload your own images as you navigate the built environment.

You can use the mobile app to capture images as you travel on foot, bike or in a car (please do not drive and capture at the same time).

These street view images are then uploaded to the Mapillary (http://mapillary.com) cloud database, where they are made available publicly, both for download and as a data overlay in the OpenStreetMap iD Editor that can be accessed by any user of the mapping tool.





**Mapillary no longer uses OpenStreetMap user credentials to sign into the application. You will need to create an account at Mapillary.com to use the mobile application, and to access and manage your collected images online.

This lesson is part of the Miscellaneous Guides and Data Quality Practices module. It is a stand alone lesson intended to provide targeted guidance to users who want to add their own street side images so other OpenStreetMap users can have access to them for analytic reference.

Glossary Of Pedestrian Features

This section provides OpenSidewalks mappers a list of definitions for the most common features we encounter when mapping the pedestrian network.

OpenSidewalks Features Glossary

Items in bold are the features that the OpenSidewalks initiative is most interested in documenting.

Audible Signals [line]	Pedestrian crossings may be installed with an audible indicator for people with visual impairment.
Barriers [point]	Point location along a line representing the threshold or transition between two domains, for example sidewalk to crossing (curb), bollards, gate, fence, etc.
Controlled Crossing [line]	Crossings with traffic lights or traffic control installations.
Crossing [line]	Legal road crossings for pedestrians to travel between street corners. This is a line between curbs on opposite sides of a street identified by GPS locations with a midpoint node where it crosses the street.
Curb Lowered or Raised [point]	Street corner curbs (or kerbs) constructed raised (elevated from the street) or lowered to connect with the street.
Directionality [line]	The vector direction of a line of which it was annotated.
Elevators [node]	Public access buildings that provide options when traversing areas with hills, high elevation change, or stairs. These features can be interior to the building or on the exterior.
Footway Links [line]	Line or path that connects sidewalks to curb ramps.

Footways [line]	Walking way for pedestrian transportation. This feature should be indicated as a line between GPS located points.
Marked Crossing [line]	Crossings that have visual signalization.
Marked Crossing Type [line]	When the crossing is a 'marked crossing,' indicate what kind of visual signalization is in place, whether zebra, pelican, ladder, continental, dashed, standard, or solid.
Mitigating Features [point]	Features along the pedestrian pathways that improve awareness and reduce risks of harm for people with limited mobility.
Outdoor Ramp [point]	Ramps mitigate difficulties for pedestrians with wheelchairs.
Outdoor Stairs or Escalators [point]	Stairs or escalators mitigate difficulties in outdoor footways with drastic elevation change.
Pedestrian Signalization [line]	The presence or absence of visual signs to indicate where the crossings are located.
Raised Pedestrian Crossings [line]	Pedestrian crossings may be raised from the street level, meaning the street is raised instead
Sidewalk [line]	Footways for pedestrian transportation usually elevated along the sides of the street. This is a line between crossing points.
Surface Hazard [point]	The location of a surface hazard that may impede or affect the way of navigating a pedestrian environment.
Task	A bounded mapping area in HOT Tasking Manager that is part of a community project. Contributors select a task to document the pedestrian environment in an area of the community.

List Of Tags By Pedestrian Feature

This page includes a list of the required tags used in the classification of pedestrian network features, according to their type. As you map or validate other's mapping contributions, please ensure that the features documented include these values.

Remember to include the hashtag #opensidewalks to any of your mapping contributions or corrections before you save to OpenStreetMap so that we may be able to track the changes you have made to the map.

You may find it useful to print or bookmark this page for quick reference, as you grow used to which required tags correspond to each type of feature.

- Crossing Tags
- Footway Tags
- Sidewalk Tags
- Sidewalk Signaling Features Tags
- Curbs Tags
- Surface Features Tags
- Hazard Features Tags
- Barrier Features Tags
- Mitigating Features Tags

Crossing Tags (Phase 1)

This table summarizes the basic OpenStreetMap tags to classify Crossing features.

Here is an OpenStreetMap wiki on Crossings:
https://wiki.openstreetmap.org/wiki/Key:crossing.

Feature Type	**Tags**
Marked Crosswalk	highway=footway footway=crossing crossing:markings=yes
Unmarked Crossing	highway=footway footway=crossing crossing:markings=no
Crossing NODE (Middle Point connecting the footway and the road)	highway=crossing* *This is the middle point in the crossing! Also, highway=crossing crossing:markings=yes/no

Footway Tags (Phase 1)

Footways are walking paths for pedestrian transportation. This feature should be indicated as a line between GPS located points. This tag would apply to features that are not considered as sidewalks. Here is an OpenStreetMap wiki on Footways: (https://wiki.openstreetmap.org /wiki/Tag:highway%3Dfootway).

Feature Type	Tags
Footway	highway=footway

Sidewalk Tags (Phase 1)

To mark a sidewalk you simply draw a line on the map where the footpath is located. Once you have marked a sidewalk, you will want to document as many conditions about the footpath as possible, and in agreement with the priorities and guidelines of your local mapping collaboration group. Here is an OpenStreetMap wiki on Sidewalks: https://wiki.openstreetmap.org /wiki/Sidewalks (https://wiki.openstreetmap.org/wiki/Sidewalks) .

Feature Type	Tags
Sidewalk	highway=footway footway=sidewalk

Sidewalk Signaling Features Tags (Phase 1)

You can use the point marking tool to document the locations of auditory or visual signaling devices, which are typically at a crossing point (node) or along the edge of the sidewalk--a point not connected to the sidewalk!

Once you mark the location of the device, and label its type, you will want to create a footway path from the location point of the signal to the closest sidewalk or crossing line—unless the signal is already located at the crossing. This ensures that the signaling data is related to the local pedestrian pathways and transit networks into a coherent transportation information layer.

OpenSidewalks recommends that most Traffic Signal features should be tagged as part of the data of crossing mid points connected to the road.

This table summarizes the basic OpenStreetMap tags to classify common Signaling features. Notice that these examples all relate to signals that are connected to the crossing mid point. Here is an OpenStreetMap wiki on Traffic Signals: https://wiki.openstreetmap.org/wiki/Tag:highway%3Dtraffic_signals.

Feature Type	**Tags**
Traffic Sign: Yield (Crossing Midpoint)	highway=crossing traffic_sign=yield_ahead
Traffic Signals (Crossing Midpoint)	highway=crossing traffic_signal=yes/no
(Crossing Midpoint)	traffic_signal=blink_mode* https://wiki.openstreetmap.org/wiki/Key:traffic_signals *This is an example out of a range of possible values!
Crossing Signal Device: Sound (Crossing Midpoint)	highway=crossing traffic_signals:sounds=yes/no *These are suggestions that need to be vetted and agreed by your local mapping team!

Curbs Tags (Phase 1)

There are other aspects of a crossing that we want to document, such as barriers, whether the curb is raised or has a ramp (lowered curb). Select a particular corner node of a crossing, to apply the following tags. Here is an OpenStreetMap wiki on curbs: https://wiki.openstreetmap.org /wiki/Tag%3Abarrier%3Dkerb.

Feature Type	**Tags**
Curb	barrier=kerb
Lowered Curb (Ramp)	barrier=kerb kerb=lowered
Raised Curb (Barrier)	barrier=kerb kerb=raised
Flush Curb	barrier=kerb kerb=flush
Rolled Curb	barrier=kerb kerb=rolled
Curb Barrier Height	barrier=kerb* height=3 cm* https://wiki.openstreetmap.org/wiki/Key:height *This is an example out of a range of values, please see the wiki page for correct annotations

Surface Features Tags (Phase 2)

Information about surface features, tactile types, width, and pathway barriers is important to people who use the transportation network and who manage visual or auditory conditions. These tags are optional, to be prioritized by each community according to their agreed collaboration objectives.

Note that these classification tags can relate to either a point or a line in the mapping area, so they can apply to both crossings and sidewalks.

Feature Type	**Tags**
Surface	surface=concrete* https://wiki.openstreetmap.org/wiki/Key:surface *This is an example out of a range of values!
Tactile Crossing or Node	tactile_paving=yes https://wiki.openstreetmap.org/wiki/Key:tactile_paving
Incline	incline=*value*% {Example: incline=15%} https://wiki.openstreetmap.org/wiki/Key:incline
Pathway Width	width=2 m* https://wiki.openstreetmap.org/wiki/Key:width *This is an example out of a range of values! *Width should only be recorded after an adequate measure has been taken at the site! *See the wiki page for examples of correct annotation!
Pathway Barrier	barrier=bollard* or barrier=kerb* https://wiki.openstreetmap.org/wiki/Key:barrier *This is an example out of a range of values!
Curb Barrier Height	barrier=kerb* height=3 cm* https://wiki.openstreetmap.org/wiki/Key:height *This is an example out of a range of possible values!

	*See the wiki page for examples of correct annotation!

Hazard Features Tags (Phase 3)

There are features (points) on a sidewalk or footpath that will impede mobility of a particular area. These hazards can become a barrier that will force some individuals to re-route to their destination, or that will force the person to consider whether they may be able to get around the hazard (if they know the residual width of the affected area). Here are guidelines on how to label these hazard feature points (nodes). Here is an OpenStreetMap wiki on sidewalk and crossing hazards: https://wiki.openstreetmap.org/wiki/Key:hazard.

This table lists the OpenStreetMap tags used to describe accessibility hazards.

Feature Type	**Tags**
Dip	hazard=dip
Hole	hazard=hole
Loose Gravel	hazard=loose_gravel
Effective Width	width:effective=2 m* *This measurement represents the area of navigable space around the hazard, which would tell us if an assistive device can get around the hazard. This is a measurement that should be taken on location! *This is an example out of a range of values!

Barrier Features Tags (Phase 3)

Barriers are footway features that might impede access or may affect how an individual navigates a pedestrian environment. Here is an OpenStreetMap wiki on Barrier Features: https://wiki.openstreetmap.org/wiki/Key:barrier.

Feature Type	**Tags**
Gate (Point)	barrier=gate
Bollard (Point)	barrier=bollard
Fence (Point)	barrier=fence
Debris (Point)	barrier=debris
Entrance / Exit (Point)	barrier=entrance

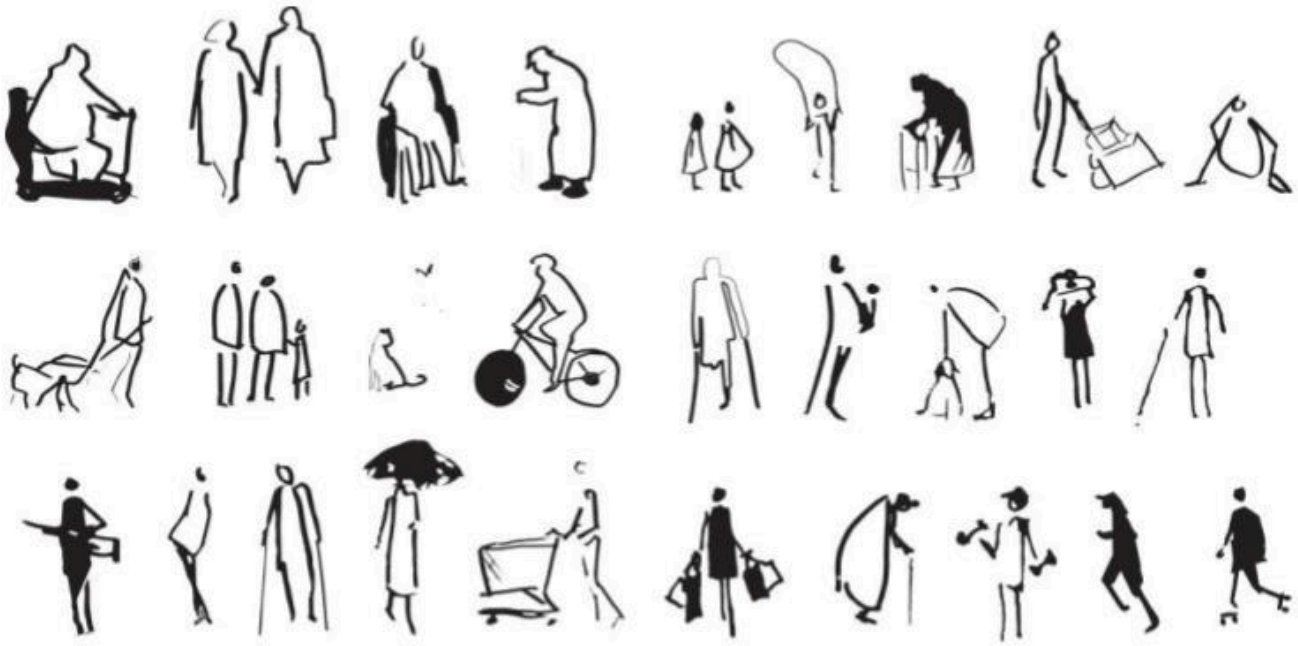
Mitigating Features Tags (Phase 3)

There are instances in which pedestrian areas will include mitigating features, such as stairs, ramps, or escalators. Here are guidelines on how to label these pathway feature points (nodes).

Here is an OpenStreetMap wiki on Steps, Ramps, Escalators: https://wiki.openstreetmap.org/wiki/Tag:highway%3Dsteps.

This table lists the OpenStreetMap tags used to describe mitigating features.

Feature Type	**Tags**
Outdoor Steps	highway=steps
Outdoor Ramps	highway=steps ramp=yes (or no)
Outdoor Escalator	highway=steps conveying=yes* (or no) https://wiki.openstreetmap.org/wiki/Key:conveying *This is an example out of a range of possible values!
Building Elevator	highway=elevator https://wiki.openstreetmap.org/wiki/Tag:highway%3Delevator



OpenSidewalks

THANK YOU for taking this journey with OpenSidewalks. Keep Mapping!

OpenSidewalks is an open data project by the Taskar Center for Accessible Technology, through the Paul G. Allen School at the University of Washington in Seattle, WA.

This Mapping Guide was developed with the support of the ITS4US (USDOT) program, Microsoft AI4Accessibility program, and Washington State DOT.

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