OpenSidewalks

The OpenSidewalks City Team Mapping Guide

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 for the Microsoft AI4Accessibility program, in partnership with G3ict.

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1. Introduction To OpenSidewalks

1.1 What Is OpenSidewalks Addressing?

Cities and individuals do not have detailed, complete, accurate, widespread, and standardized data about the location of sidewalks, curb cuts, crossings, street furniture and other objects in walking and rolling environments. The OpenSidewalks project proposes to ameliorate the problem by gathering detailed information through community engagement, crowd sourcing, and machine learning. The project aims to ensure consistency using standards and technology that support the standards, and open-source storage and access through OpenStreetMap.

The Taskar Center for Accessible Technology at the University of Washington (TCAT) first deployed these methods in Washington State in three municipalities: Seattle, Bellingham, and Mt. Vernon (supported by the Washington State DOT). In partnership with G3ict, through Microsoft AI4Accessibility sponsorship, we are expanding to other internationally. Additionally, with USDOT support (through the ITS4US program), we will be developing the interoperable data infrastructure to support multiple stakeholders in scaling and maintaining that data. A fully described, connected network is necessary to support personalized trip planning for all kinds of travelers, for first- and last-mile to transit planning, and for safety improvements and community planning.

1.2 Why Do Cities Need To Solve This Problem?

This project would help fill a longstanding gap in data about key roadway attributes associated with sidewalks. Once available, these data will fuel efforts to:

- Help people who have traditionally been disadvantaged in travel information systems, plan trips and overcome barriers through technology and applications that tailor travel information to their needs. (Inclusion, Equity, Practical Solutions)
- Support initiatives and systems that improve first- and last-mile access to transit, walkability, bicycling, accessibility, and trip reduction. (Inclusion, Practical Solutions, Safety).
- Support initiatives to enhance safety with a focus on active transportation use (e.g., pedestrians, micro mobility, and bicycle riders) (Inclusion, Practical Solutions, Safety)
- Support short- and long-term community and transportation planning (Inclusion, Practical Solutions, Safety)
- Support autonomous and connected vehicle development (Practical Solutions, Safety)

1.3 What Is The Significance And Urgency Of The Problem?

This problem is widespread and affects accessible trip planning, transportation planning, project development, design, construction, emergency services and operations at the local, regional, and state levels. Efforts to gather these data on a widespread basis using agency staff or contractors have proven prohibitively expensive.

Existing data sets, where they exist, are incomplete, outdated, incompatible and not in a format that is suitable for many of the potential purposes. The potential benefit is great. For example, by Washington state definition, more than a third of the state's residents have special transportation needs. Taking action to improve a population's mobility and access increases their ability to work, go to school, access health care services, and engage in community. It also reduces transportation agency costs, and enhances the community's overall safety, sustainability, and resilience.

Increasing walking and bicycling and improving access to transit can help reduce greenhouse gas emissions, fuel consumption, traffic congestion and support more efficient land use. Strategically enhancing pedestrian safety using better data will help reduce the risk of fatal and disabling incidents and associated trauma, health care and liability costs.

1.4 The City Team Mapping Guide

This mapping guide represents a subset of the resources available through the OpenStreetMap project as well as the OpenSidewalks project. The guide focuses on mapping and accounting for accessibility in pedestrian spaces and is intended to provide guidance for civic teams organizing a mapping effort in a particular region or locale. Please be sure to coordinate civic mapping efforts locally with others in the OpenStreetMap community to agree and prioritize the classification tags that your community wishes to collect while validating on location.

This guide is also organically changing as we learn more from our diverse city teams and incorporate their lessons in this guide.

1.5 OpenSidewalks City 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 underscored, and in particular, in agreement with the accepted practices of the OpenStreetMap community. Phase I is focused on contributing to a "transportation layer" for pedestrians. This layer describes a connected network of 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 table below summarizes the roadmap of the OpenSidewalks for City Teams program, broken down in three phases.

Phase	Goal	Focus
Phase 1	Create the pedestrian transportation layer	Street crossings, sidewalks, footway links, and curb points
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.

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1.6 OpenSidewalks and OpenStreetMap Interoperability

OpenStreetMap (OSM) is an open-source platform where contributors around the world collaborate to map living environment features.

A substantial number of collaboration applications are built to contribute to OSM mapping such as the HOT Tasking Manager, which is available thru GitHub and can be locally hosted and modified according to the mapping objectives of each agency.

Our own task manager tasks.opensidewalks.com is but one of many such interoperable instances and is discussed in further detail in this guide. The OpenSidewalks instance has been customized to help our project collaborators organize and manage our pedestrian environment mapping priorities. These features that we seek to add to the data set are directly saved to OSM. All contributions to the OSM map, regardless of the tool used to map features, are visible to anyone who has an OSM account.

Hundreds of trip planning applications depend on the quality of the mapped data to help individuals navigate the pedestrian and transit environment, such as AccessMap.io.

The quality of OSM mapping contributions is informed by accepted OSM mapping standards and practices, and there are local mapping experts that monitor changes to their local community data sets.

1.7 OSM Local Mapping Teams

It is important that all contributors to OpenStreetMap (OSM), regardless of what toolset they use to map features in the living environment, subscribe to a local mapping team and agree on a set of mapping principles to ensure consistency and completeness to meet the goals of the local community. This ensures that they have local support when mapping concerns arise.

We encourage you to reach out to and coordinate with the OSM mapping experts in your local community. Some of them have active groups on MeetUp.com, Facebook, Twitter, or other social media; or, they can be found in discussion channels on Slack, WhatsApp, or Telegram.

Be sure to inform yourself of the local mapping expectations and practices of experts in your community before mapping extensively.

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2. OpenSidewalks: Getting Started

This section contains a printable summary of Phase I mapping. If your team already has a tasking manager project, and you have already discussed mapping with contributors, you can distribute this summary of the mapping guide for Phase I. However, if your city can invest in going through the material in a more concerted fashion, please consider educating everyone about specific accessibility features, how different features in the built environment impact people with different disabilities and the importance of connectivity in your graph.

For a more comprehensive guide visit the next chapters, as well as **Getting Started with OpenStreetMap**
http://learnosm.org/en/beginner/id-editor/

2.1 Getting Started With OSM

1. Setup an account at **osm.org,**
2. Setting up an account requires an active connection to the Internet.
3. Open your Internet browser and go to http://www.openstreetmap.org.
4. **Login** using your OpenStreetMap account
5. Pan and zoom the map to any area (for example, the area that you wish to edit). You can pan by holding the left mouse button and dragging the map to your desired area. (for keyboard manipulation,
6. Click on the small arrow next to Edit. Then click Edit NOW (to bring up the in-browser editor).
7. Select **Start the Walkthrough and** follow along with the basics of how to edit using iD Editor.
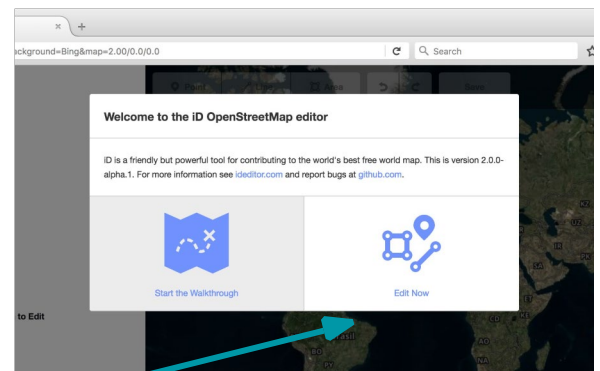
2.2 Identifying Your Mapping Project in the Tasking Manager

 Go to the OpenSidewalks Tasking Manager: tasks.opensidewalks.com.

1. Now click on **Log IN and** use the OpenStreetMap account you created above.
2. Click on "Start Mapping" (a red button on the left side of the screen in the middle of the opening splash screen image).
3. Search for your intended city team project and click on that project.
4. Use the "Zoom to Tasks" button at the top of the map to hand-select a task, or you can just continue
5. Use the "CONTRIBUTE" button to enter the project detail page.
6. Read the instructions for the task carefully before you map. The instructions appear on the left side of the screen
7. Once you are comfortable with the instructions, please click on "Map a task" OR select a particular polygon on the map and click on it. Then you should be able to click on "Map selected task."

3. General Edits in OpenStreetMap using the iD Editor

In this section will introduce some new words and concepts. When we introduce a new word, we will use *italics*.

The main map area shows OpenStreetMap data on top of a background.
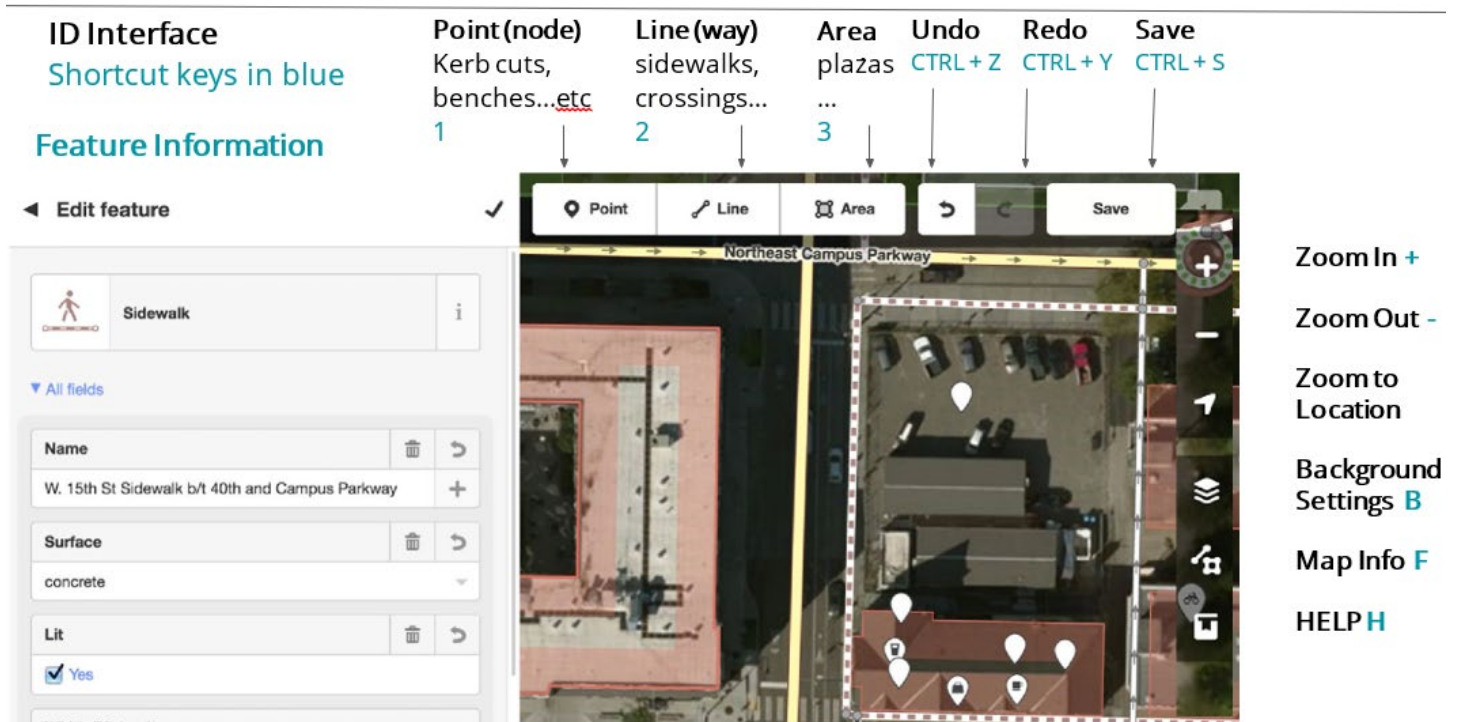
Figure 1. iD editor interface.

3.1 Panning and Zooming

You can zoom the map by scrolling with a mouse wheel or trackpad, or by pressing the - / + buttons.

TRY IT: Pan and zoom the map!

3.2 Mapping Features

Let's describe what we see in Figure 1. iD editor interface. We use the word "*features*" to describe the things that appear on the map. Most (semi)-permanent things in the real world can be mapped as a feature on OpenStreetMap. Map features are represented using one of three types of *geometries: points, lines, or areas* (shown under blue arrows 1, 2, and 3, respectively in the figure or in the Figure 2 below).

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Figure 2 iD Editor geometry drawing toolset

In OpenStreetMap, points are sometimes called "nodes", and lines and areas are sometimes called "ways". All features on the map can be selected by clicking on them.

TRY IT: Click on a point to select it.

Great! The point is now selected. Selected features are drawn with a pulsing glow. (Figure 3 below). When a feature is selected, the "feature editor" is displayed alongside the map on the left.

The top part of the "Edit feature" overlay shows the feature's type. This point represents a "City".
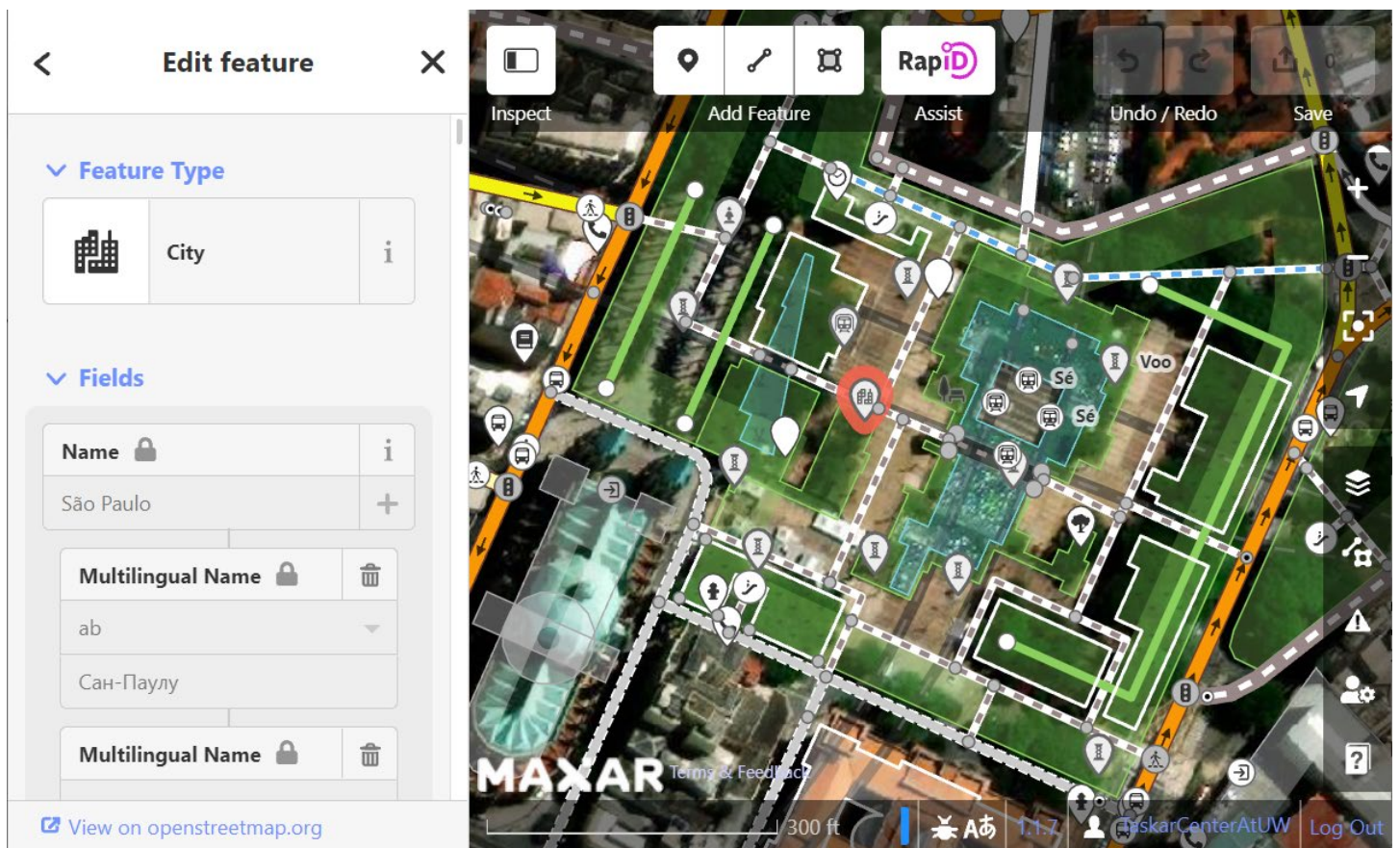
Figure 3 "city" of Sao Paulo is selected, shown as a glowing tear drop.

The middle part of the "Edit feature" overlay contains user-friendly *"fields"* showing some of the feature's attributes, such as its name and address. Try exploring the map and selecting some other features to see what kinds of things can be added to OpenStreetMap.

3.2.1 Mapping and Editing Point Locations

"Points" or *nodes* can be used to represent points of interest such as shops, restaurants, and monuments, they can also be used for point-located objects like fire-hydrants, poles, and trees. They mark a specific location and the feature tags describe what's there.

TRY IT: Press the "POINT" button at the top to add a new point. To place a new point on the map, position your mouse cursor where the point should go, then left click or press Space

In Figure 4 you can see the results of adding a new (empty) point to the map and the left search panel, the result of searching for the mapping presets associated with the word "fire."
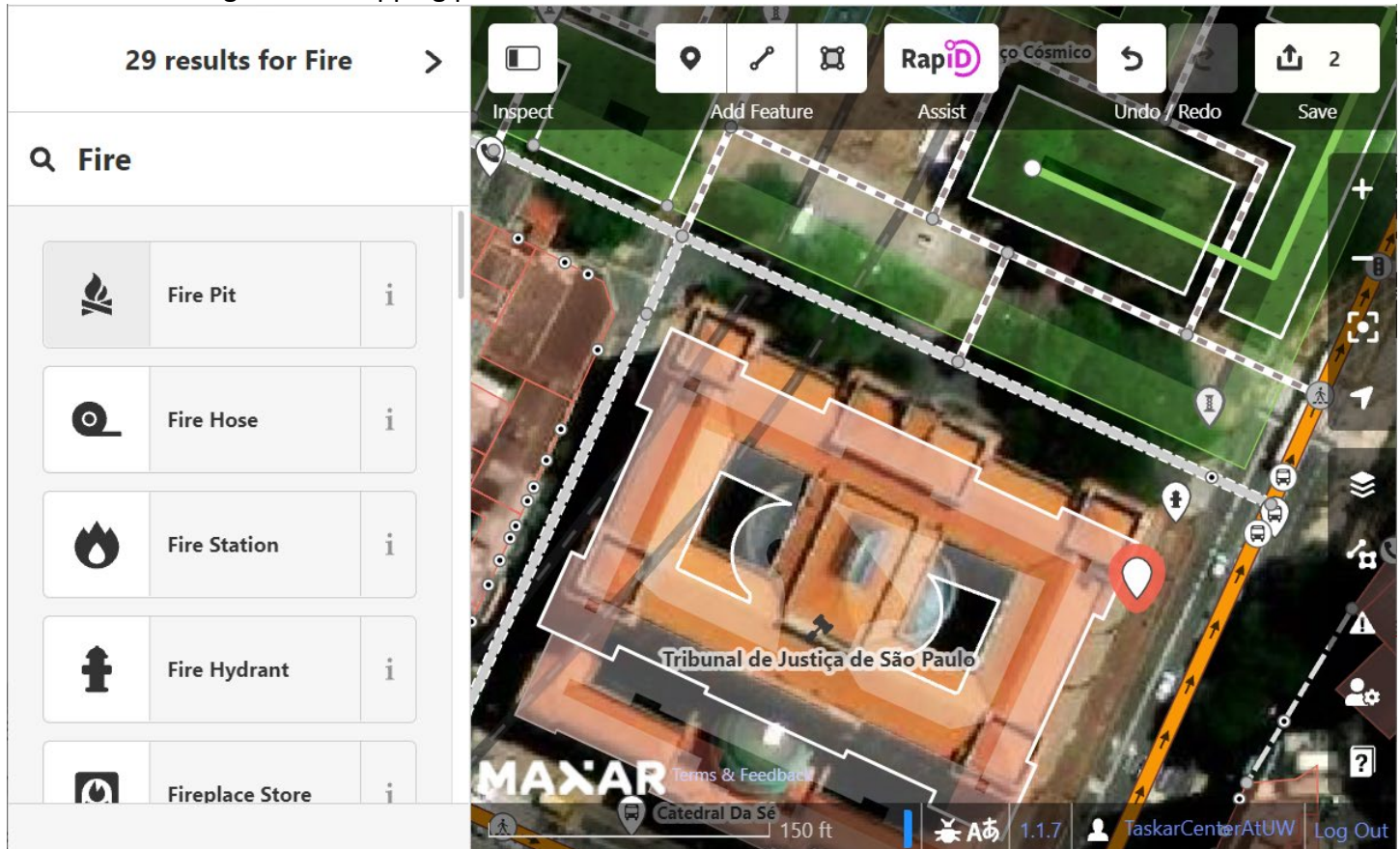
Figure 4 Adding a point to the map and searching in the feature editor for presets.

TRY IT: Move the mouse pointer over a Fire Hydrant, then left click or press Space **to add that point to the map. In the Feature Editor, use the search text field to search for "fire."**

Let's say the point you just added is a fire hydrant, you can just as easily add a bench, a streetlamp, a sculpture, etc. When you searched for "fire" we had 29 results, including "Fire Pit", "Fire Hose," "Fire Station," and then, the one we were looking for,"Fire Hydrant." When clicking on it, the feature values show up in the feature editor. When you scroll down you should see the complete tagging as "emergency=fire_hydrant" and "water_source=main."

The point is now marked as a Fire Hydrant. Using the feature editor, we can add more information about the fire hydrant, as shown in Figure 5.

In OpenStreetMap, all of the fields are optional, and <mark>it's better to leave a field blank if you are unsure.</mark>
Let's pretend that you have local knowledge of this fire hydrant, and you know if its shape is an above ground pillar.

TRY IT: Add the Shape of the hydrant. Use the presets to mark its shape as "Pillar/Aboveground." When you are finished adding the Shape, press the "X" button or `Esc` **to close the feature editor.**

The feature editor will remember all of your changes automatically.
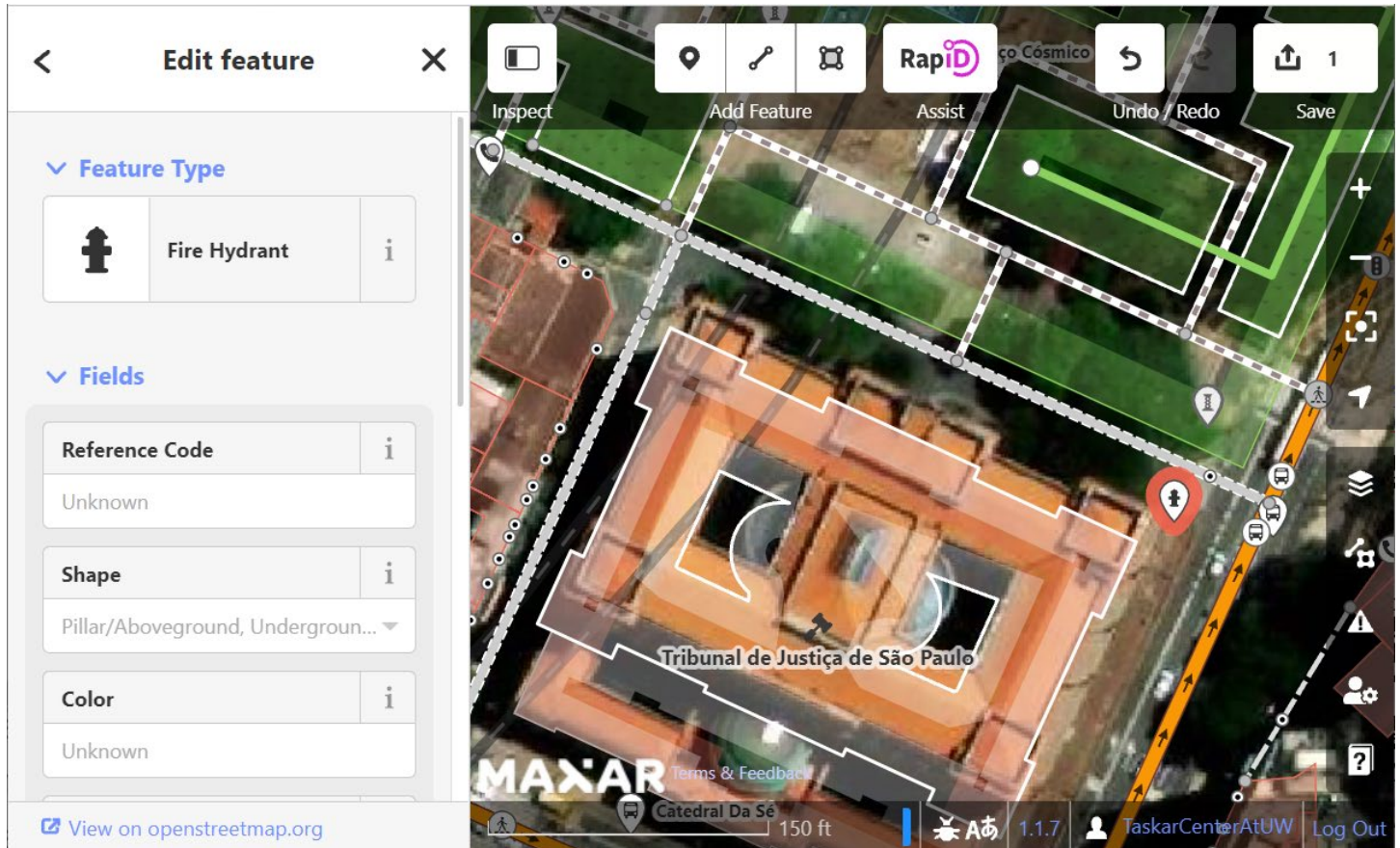
Figure 5 Adding a Fire Hydrant and its associated features in the iD editor.

Sometimes points will already exist, but incorporate mistakes or be incomplete.

Let's take a look at how we can edit existing points.

TRY IT: Select the Fire Hydrant you had just created.

Let's fill in some more details for this fire hydrant. Let's say you want to change the following attributes for it:

TRY IT: Change the hydrant details. You can add or edit the following tags to the feature.

- water_source=water_tank
- fire_hydrant:type=pillar
- emergency=fire_hydrant
- colour=red

Notice that each of the tag-value pairs listed above has an associated wiki page in the osm public documentation that describes the tag and the values that are acceptable for that tag. You can follow the links in this document to read those pages. Likewise, tag-value pairs we will add in the OpenSidewalks schema are also in the OSM wiki.

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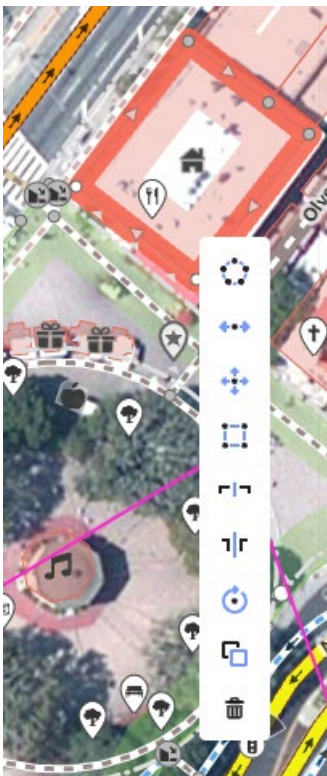
You can edit tag-value pairs by scrolling down in the "Edit feature" overlay and adding your tags in the description list. You can also use the feature editor presets as shown in the next exercise.

TRY IT: Using presets, add the Shape of the hydrant. Use the presets to mark its shape as "Pillar/Aboveground." After you do that, you will see that the tag list at the bottom shows "fire_hydrant:type=pillar". As you can see the presets may look different than the underlying tag that show up in the attribute description list. When you are finished adding attributes, press the "X" button or . Esc to close the feature editor.

If you're wondering what other operations can be performed, You can "right-click" any feature to see the *edit menu*, which shows a list of editing operations that can be performed.

NOTE: A right-click might be the same as a control-click or two-finger click on different operating systems.

TRY IT: Select any feature, whether a Point, a Polygon or a Line, and right click on it. Compare the editing tasks in the editing menu that pops up to those shown in the table below.

Point	Polygon	Line

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It's OK to delete features that don't actually exist in the real world, but you need to be certain that they don't exist. Deleting a feature from OpenStreetMap removes it from the map that everyone uses, so you should make sure a feature is really not there before you delete it. Remember that you are editing the work of other collaborators in the OpenStreetMap community!

You can always undo any changes up until you save your edits to OpenStreetMap.

TRY IT: Press the "UNDO" button at the top toolset to undo your last edit.

Now that you know how to create and edit points, try creating a few more points for practice on your own.

3.2.2 Mapping and Editing Lines

Next we will cover editing *LINES* and *Line Geometries*
Lines are used to represent features such as roads, railroads, crossings and sidewalks.

TRY IT: Press the "LINE" button to add a new line.

Figure 2 iD Editor

geometry drawing toolset)

Identify a place where a sidewalk is missing. Let's add it. In OpenStreetMap, lines should be drawn down the center of the path described, whether it's a road, crossing or sidewalk. Connecting elements together sometimes required fudging this a little, but for the most part, stick to the "center line" rule. Specifically, sidewalk centerlines will **not** be typically drawn out all the way to the curb, but rather to the middle of the sidewalk corner (if one exists).
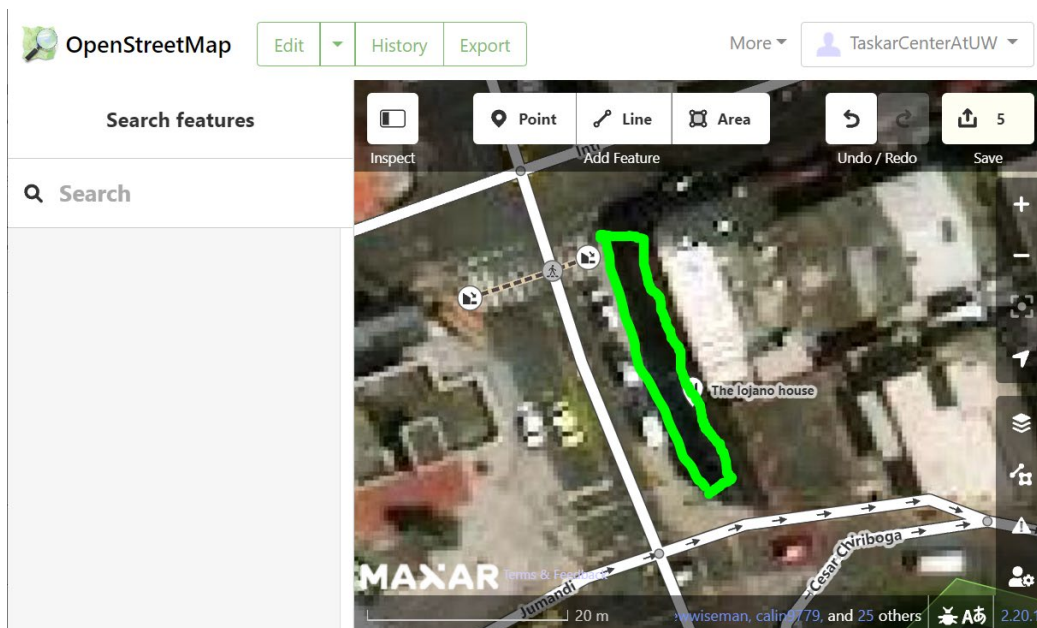
Figure 6 map shows an area with a missing sidewalk line.

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To draw a line, begin by using "left-click" at the starting point of the line. After starting a line, you can drag and zoom the map while drawing if necessary. As you move the mouse, you should see a line extending from the starting point. Any further single click with your mouse will place a node on the trace of the line (this is how you can create roads and sidewalks that are not straight), but single mouse clicks will not create the end point of the line. To finish tracing your line, you have to double-click at the intended endpoint.

Note that the line drawn in Figure 7 shows a line representing a sidewalk centerline. The sidewalk line endpoint is near but not connected to the curb ramp that begins the crossing adjacent to it (see the purple square). In the next chapter we will describe *sidewalk links* which are used to connect these two endpoints of a crossing and a sidewalk.
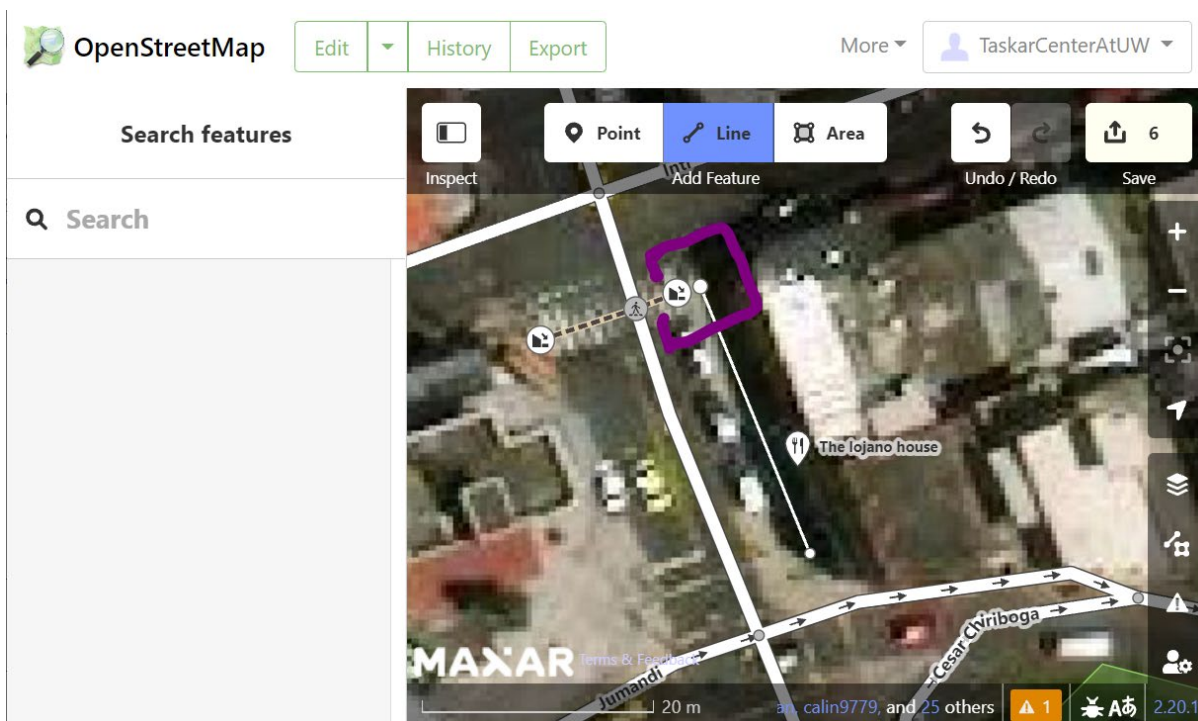
Figure 7 Sidewalk Centerlines are drawn in the center of the sidewalk, not connected to the curb.

The line you just drew has no metadata on it, we need to tag it so that it can be understood as a sidewalk.

TRY IT: Tag the sidewalk. Start by selecting the line you drew. With the line selected, select 'Sidewalk' from the list at the left. If it isn't there, search for 'sidewalk' in the search box then click on the Sidewalk preset.

Looks good! Next, we will learn how to update the shape of a line.

Sometimes you will need to change the shape of an existing line. Sometimes you will encounter data that was added incorrectly, like a sidewalk drawn from corner to corner, but it actually curves in the middle. We can

add some nodes to this line to improve its shape. One way to add a node is to double-click the line where you want to add a node.

TRY IT: Select the line you wish to modify. Double-click on the line to create a new node. You can drag that node to change the shape of the line.

Additionally, small triangles are drawn at the "*midpoints*" between nodes. Another way to create a new node is to drag a midpoint to a new location.

TRY IT: Drag one of the triangular midpoints in a crossing to the place where the centerline of the road meets the crossing line. Wait to see the road highlighted. That means that the new node you created is now shared between the road and the crossing, which is what we want.

Figure 8 Intersection node

Figure 8 shows a street line and a crossing line with a node that was dragged from a midpoint and is intended to be dragged until it is connected to both the crossing and the street it intersects.

Going back to the sidewalk: Imagine that we wanted to map the surface of our sidewalk, but it changed half-way down the block from cement to asphalt. To handle this situation, we need to "split" the line first, at the point of the surface transition, and then add separate surface tags to each new line.

TRY IT: Create a node in the middle of your sidewalk, then right click on it. Select the "split" button to divide that sidewalk in two.

After splitting, the surface tags for each sidewalk need to be separately tagged.

TRY IT: Tag each line with either "surface=cement" or "surface=asphalt".

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3.3 Valuable iD Editor Tips

There are additional actions you should take during every mapping session to appropriately select the aerial and street imagery you are using to verify what is on the ground during your mapping session. Some are listed below.
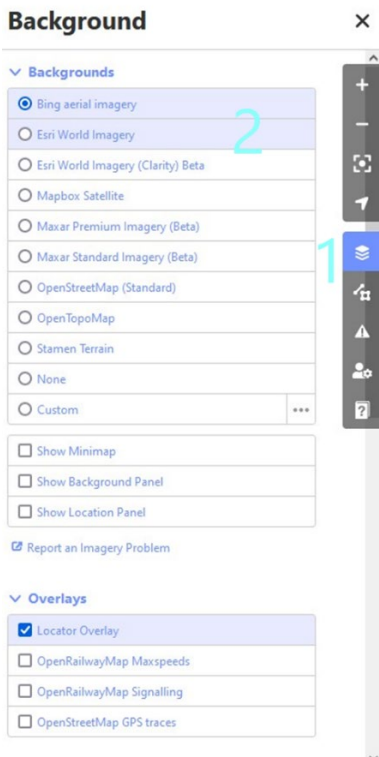
3.3.1 Changing the Aerial Imagery Background

Figure 9 Two steps to selecting background map imagery.

Users can select to see different map background to be able to make assessments of what is there and where to place objects on the map. Several aerial imagery sources are available for use by OpenStreetMap. The MAXAR, Mapbox Satellite, ESRI clarity, and Bing imagery sources are all of high-quality, but some work better in some locations than others.

To swap the aerial imagery:

1. Select background settings (1).
2. Select different backgrounds to see what features you're able to see better with which background. Choose (2) either BING or MAXAR imagery if it exists for your location.
3.

4.

3.3.2 Imagery alignment

You may run into situations where the existing data seems to be spatially offset or wrong: streets that are drawn on top of sidewalks, buildings that overlap with the street. Usually, this has happened because the person who mapped those things was looking at older imagery that is not perfectly aligned with new imagery. It is fine to move those elements that are offset or wrong, but first you need to know: is your imagery more accurate, or are the lines more accurate?

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You can try to answer this question putting user-submitted GPS traces on the map and visually estimating whether your current imagery streets line up with the GPS traces. To do so:

1. Select background settings.
2. Scroll down to the 'Overlays' section.
3. Make the 'OpenStreetMap GPS Traces' list item checked.
4. Return to the map view and zoom in/out to view how well the streets line up with the GPS traces.
5. (optional) Turn off the map data by going to the 'Map Data' button on the right and unchecking "OpenStreetMap data". This will give you a less cluttered view for evaluating imagery alignment.

If the imagery appears offset, you can adjust it under the Background Settings section under 'imagery offset'.

If the imagery is accurate, you can now move the problematic buildings or streets. If it was the buildings that were accurate, take a note on your offsets and let your team know – always map with those offsets for that imagery source and region.

3.3.3 Using street-level imagery

Some aspects of pedestrian spaces cannot be clearly seen from overhead imagery. In particular, curb ramps can be difficult to fully identify from aerial imagery. In these cases, you can make use of street-level imagery.

Mapillary, Bing StreetSide, and OpenStreetCam can be used to verify curb ramps, streets, sidewalks, etc in OpenStreetMap. All three can be embedded directly in the iD editor view by clicking on the 'Map Data' icon on the right toolbar and checking boxes under 'Photo Overlays'.

Sometimes, these embedded views break or are too small. In those cases, you can go directly to the websites and navigate to your area of interest, then investigate with a full-screen experience:

3.3.3.1 Mapillary

- URL: https://www.mapillary.com/app/
- Using the service: click any of the paths near your area of interest. You can now move through the path of the person taking images and navigate in a way that is similar to Google StreetView, but without 360 panoramas.
- Finding your current iD editor location:
  - You can use the search bar to find the cross streets (e.g. 1st & Main, Seattle).
  - You can edit the URL to include the latitude, longitude, and zoom. OSM puts it in the URL as zoom/lon/lat at the end of the URL. You can directly access the same

location as your iD editor view by entering this URL into your browser: https://www.mapillary.com/app/?lat={latitude}&lng={longitude}&z={zoom}, substituting the curly brace values.

3.3.3.2 Bing StreetSide

- URL: https://www.bing.com/maps/
- Using the service: zoom in close to a street. If it highlights in blue, you can click on it and see the street-level view at that location. You will see 360 panoramas, but possibly outdated: this imagery was collected several years ago.
- Finding your current iD editor location:
  - o You can use the search bar to find the cross streets (e.g. 1st & Main, Seattle).
  - o You can edit the URL to include the latitude, longitude, and zoom. OSM puts it in the URL as zoom/lon/lat at the end of the URL. You can directly access the same location as your iD editor view by entering this URL into your browser: https://www.bing.com/maps?cp={latitude}~{longitude}&lvl={zoom}.

3.3.3.3 OpenStreetCam/KartaView

- URL: https://kartaview.org/map
- Karta used to be called OpenStreetCam and you will occasionally see references to both.
- Using the service: select any point along a path highlighted in blue/purple. You can browse through images similarly to Google StreetView, but without a 360 panorama.
- Finding your current iD editor location:
  - o You can use the search bar to find the cross streets (e.g. 1st & Main, Seattle).
  - o You can edit the URL to include the latitude, longitude, and zoom. OSM puts it in the URL as zoom/lon/lat at the end of the URL. You can directly access the same location as your iD editor view by entering this URL into your browser: https://kartaview.org/map/@{latitude},{longitude},{zoom}z, substituting the curly brace values.
  - o

Important: DO NOT USE GOOGLE STREETVIEW!

Using Google StreetView to help map OpenStreetMap data will put our project and the OpenStreetMap project at legal risk, as it is copyrighted by Google and not licensed for our use. If you cannot determine map information from any of the licensed sources (background views, Mapillary, etc), please make a note (you can add notes to OpenStreetMap) and, if using the tasking manager, mark your task as unfinished and leave a comment. If you have added any data to OpenStreetMap based on Google StreetView, you must delete these data and map from scratch using other sources.

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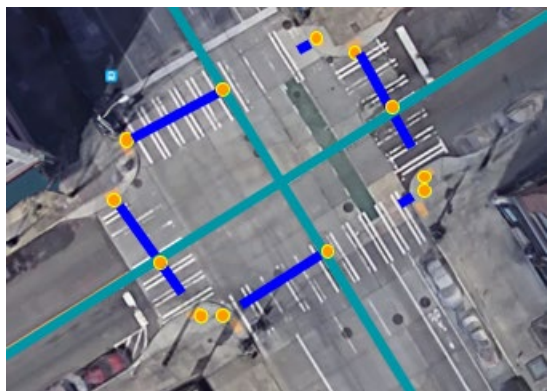# 4.   Mapping Phase 1 With the OpenSidewalks Schema

Figure 10 Intersection markings

4.1   Mapping an Intersection

Intersections are incredibly important spaces to map because they are complex, they are shared among multiple modes of transportation, and in the map, they represent the spaces where the pedestrian ways and crossings are connected to the automobile transportation layer. In Phase I of OpenSidewalks mapping for cities, we begin by focusing on mapping intersections.

In the image (Figure 10) of a marked intersection, streets are turquoise lines, crossings are blue lines, and nodes are orange dots. The orange dots intersecting with streets indicate the shared node between crossing and street. The orange dots dangling at the end of crossings are curb nodes.

Mapping the pedestrian features of an intersection requires adding/validating these map features:

- Street crossing paths (crossings)
- Curbs (kerbs)

While this may seem like a simple task, it can be quite difficult!

4.1.1 Selecting and mapping a crossings task

Crossings tasks have been organized around street intersections in the hope that none of the crossings you draw will extend outside of the task area. To select a crossings task:

1. Go to tasks.opensidewalks.com
2. Log in.
3. Click on 'Projects'.
4. Search for and then click on a project named '{city/neighborhood} - crossings'.
5. On the project page, click 'Contribute'.
6. Click on a task to map. You can do this by clicking on the map or by using the 'tasks' view on the left.

Once a task has been selected, you will be launched into a view that combines the iD editor (left) with tasking manager information (right). Add all crossings that apply (where two footways will need to be connected across streets) and follow the rules below. At the end of your task, for a 2-way street crossing with sidewalks all around, you will have mapped out:

- 4 crossing lines that follow the rules in the next section.
- Between 4 and 8 curb points that follow the rules in the next section.

Once all of these goals have been reached, you can mark the task as completely mapped. If it was too difficult to determine this information from the imagery provided or you otherwise need to exit this task, mark the task as incomplete and add a comment. You have now completed a task!

4.1.2 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, footway=crossing". These tags will be added automatically with the iD presets described below.

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

- Marked (crossing=marked). A "marked" crossing is one with lines on the ground showing where a pedestrian can cross and is (likely) protected to cross. The iD preset in English is "marked crosswalk".
- Unmarked (crossing=unmarked). An "unmarked" crossing is one where a crossing is implied but lacks ground markings, which is usually at most intersections. The iD preset in English is "unmarked crossing".

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

Crossings 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:

- surface=* (surface composition)
- tactile_paving=yes/no (whether the crossing itself has tactile surfaces to aid the blind et al)

4.1.3 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 sidewalk.

Curbs should be mapped as one of the following:

- "Lowered" (kerb=lowered): the curb interface of a curb ramp: a sloped surface meets the street. The iD preset in English is, "Lowered Curb".
- "Raised" (kerb=raised): the curb interface of a typical square-edge curb: a vertical displacement down from the sidewalk to the street. The iD preset in English is, "Raised Curb".
- "Flush" (kerb=flush): no curb. The interface is flat from sidewalk to street. The iD preset in English is, "Flush Curb".
- "Rolled" (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 on the first pass, as we just want the core network established ASAP. Those tags are:

- surface=* (surface composition)
- tactile_paving=yes/no (whether the area around the curb itself has tactile surfaces to aid the blind et al)

4.1.4 Common challenges when mapping intersections

Curb ramp locations
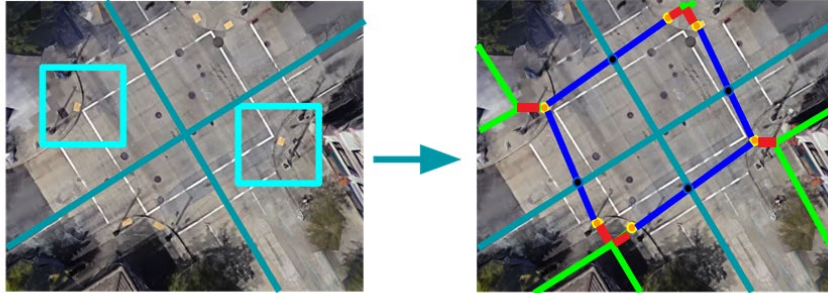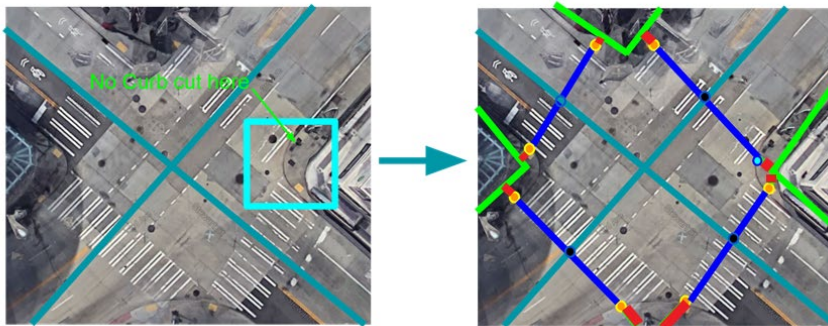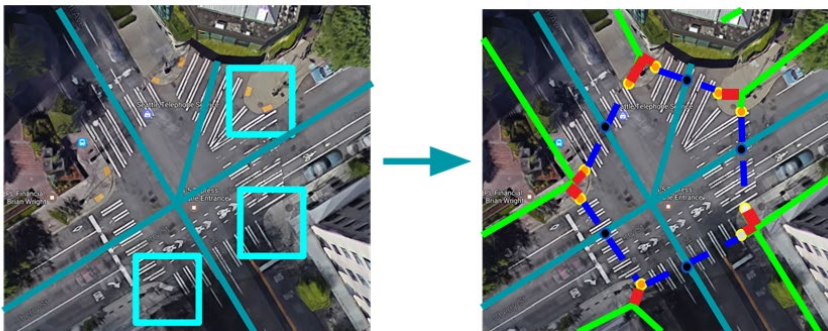
The above situations show cases where the location of the curb ramp determines (1) how many curb nodes to map and (2) how to draw crossings connecting them. The top case shows corner curb ramps, where it is okay to map only a single curb node that is then connected to both crossing lines. The second shows the case where one side of a corner has a curb ramp but the other does not. These are mapped with different curb tags (raised vs. lowered, in this case). The bottom shows a complex intersection to demonstrate the topology in a non-2-way-intersection context.

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4.2 Mapping Sidewalks and Sidewalk Links

Figure 11 An intersection fully-mapped for crossings, curbs, sidewalks, and links.

The second part of Phase I mapping involves placing sidewalks and sidewalk links to properly identify the sidewalk environments and how they are connected to other sidewalks as well as how they are connected to crossings and street environments.

In Figure 11 streets are shown in turquoise lines, crossings are blue lines, and nodes are orange dots. The orange dots intersecting with streets indicate the shared node between crossing and street. The orange dots dangling at the end of crossings are curb nodes. Sidewalks are bright green. Links are red.

Mapping sidewalks around a block requires adding/validating these map features:

- Sidewalks (centerlines)
- Links

This task is usually much easier than mapping intersections, but care should still be taken, particularly when other map elements overlap with sidewalks.

4.2.1 Selecting and Mapping a Sidewalks Task

Crossings tasks have been organized around "blocks", the regions contained by streets, in the hope that none of the sidewalks you draw will extend outside of the task area. To select a sidewalks task:

7. Go to tasks.opensidewalks.com
8. Log in.
9. Click on 'Projects'.
10. Search for and then click on a project named '{city/neighborhood} - sidewalks'.
11. On the project page, click 'Contribute'.
12. Click on a task to map. You can do this by clicking on the map or by using the 'tasks' view on the left.

Once a task has been selected, you will be launched into a view that combines the iD editor (left) with tasking manager information (right). Add all sidewalks where they exist and follow the rules below. Once the sidewalks have been added, there should still be gaps between the sidewalk centerlines and the ends of crossings - curbs. Connect them by drawing a "link", described below. At the end of your task, for a single block with sidewalks all around, you will have mapped out:

- 1 long sidewalk line extending around the block, through the center of the sidewalk. It is okay if you decided to split this into multiple lines so long as they connect appropriately.
- Between 4 and 8 "links" connecting sidewalks to crossings.

Once all of these goals have been reached, you can mark the task as completely mapped. If it was too difficult to determine this information from the imagery provided or you otherwise need to exit this task, mark the task as incomplete and add a comment. You have now completed a task!

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4.2.2 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 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, footway=sidewalk". This will be automatically set by the iD 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:

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

4.2.3 Rules for mapping 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 centerlines to crossings, as this path is not geometrically delineated in any way, but implied.

Links should connect sidewalk centerlines to crossings.

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 (highway=footway) for now, pending the acceptance of the footway=link tag by the OpenStreetMap community. If you would like to support our work in tagging this specific piece of data, please discuss this with your local OpenStreetMap community and 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. Please consider waiting on adding this information on the first pass, as we just want the core network established ASAP. Those tags are:

- surface=* (surface composition)

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4.2.4 Phase I Summary (Print This for Mappers!)

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:
   ◦ barrier=kerb,
   ◦ kerb=lowered (default) / raised / flush / rolled / unknown
• Optional Tag, only if you can see it:
   ◦ 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
   ◦ highway=crossing
   ◦ optional: crossing= marked/ unmarked
• Tag the LINE extending from curb to curb:
   ◦ highway=footway,
   ◦ footway=crossing
   ◦ crossing=marked / unmarked	

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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:
    - 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
    - highway=footway

BE SURE TO SAVE YOUR WORK OFTEN!

THEN BE SURE TO INDICATE THE TASK COMPLETION BEFORE LEAVING A TASK!

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