

# Turn Restrictions

## References

OSMWiki Turn Restrictions - <https://wiki.openstreetmap.org/wiki/Relation:restriction>  
OSMWiki Relation - <https://wiki.openstreetmap.org/wiki/Relation>  
OSMWiki Conditional restrictions - [https://wiki.openstreetmap.org/wiki/Conditional\\_restrictions](https://wiki.openstreetmap.org/wiki/Conditional_restrictions)  
iD Editor Tutorial - Turn Restriction Help

## Key Terms

**Turn Restriction** - A maneuver that is not allowed by a vehicle, or is only allowed by a vehicle.

**Explicit Restriction** - A turn restriction that is indicated by physical signage or road markings.

**Implicit Restriction** - A turn restriction that is not indicated by a physical sign or road marking, but is derived from driving norms or local laws.

**Conditional Restriction** - A turn restriction that is in effect at a certain time of day or day. Conditional restrictions can also restrict a type of vehicle.

**Turn Icon** - The symbol that represents an Allowed, Restricted, or Only turn restriction on a way within the Turn Restriction Field.

**Junction** - Where two or more ways meet and join at one node.

**Relation** - A OSM data type, consisting of tag(s) and also an ordered list of a group of member(s) (nodes, ways, and/or relations) used to define logical or geographic relationships between other elements.

**Relation Member** - A node, way, or relation that describes the part that a particular feature plays within a relation

**Way** - An ordered list of nodes which also has at least one tag or is included within a relation. Based on the tags, a way can represent a physical road, physical pedestrian path, and other elements.

**Node** - A single point defined by its latitude, longitude and node id. Based on the tags, a node can represent a physical stop sign, crossing, yield, or other traffic elements.

## Project Scope

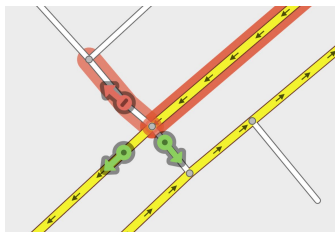



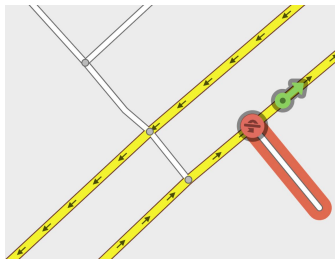

## Tags

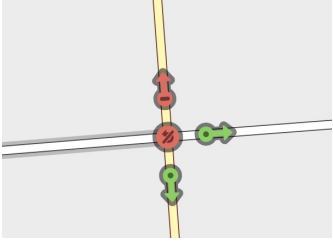



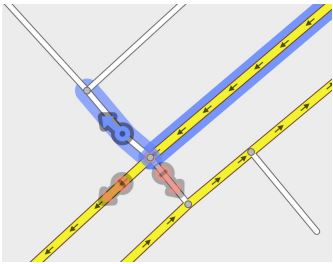

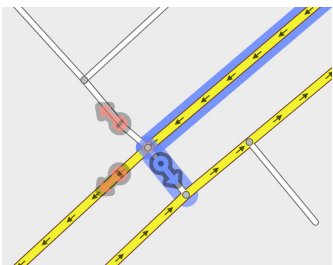

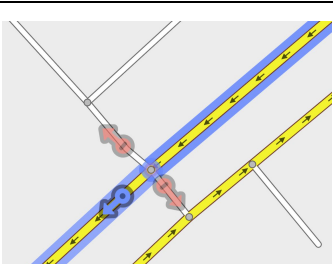

Tag (key=value)	Feature	Description
Highway Type		
<b>type=restriction</b>	node	Relation type for restriction relations.
<b>restriction=*</b>	node	Tag that identifies the type of turn restriction. A turn restriction at a junction is represented by a relation that has a set of tags describing the type of turn restriction.
<b>restriction=no_right_turn</b>	node	Restriction where a right turn is not allowed at the junction from the <b>FROM way</b> to the <b>TO way</b>
<b>restriction=no_left_turn</b>	node	Restriction where a left turn is not allowed at the junction from the <b>FROM way</b> to the <b>TO way</b>
<b>restriction=no_u_turn</b>	node	Restriction where a U-turn is not allowed at the junction from the <b>FROM way</b> to the <b>TO way</b>
<b>restriction=no_straight_on</b>	node	Restriction where a through is <i>NOT</i> allowed at the junction from the <b>FROM way</b> to the <b>TO way</b>
<b>restriction=only_right_turn</b>	node	Restriction where a right is <i>only</i> allowed at the junction from the <b>FROM way</b> to the <b>TO way</b>
<b>restriction=only_left_turn</b>	node	Restriction where a left is <i>only</i> allowed at the junction from the <b>FROM way</b> to the <b>TO way</b>
<b>restriction=only_straight_on</b>	node	Restriction where a right is <i>only</i> allowed at the junction from the <b>FROM way</b> to the <b>TO way</b>
<b>restriction:conditional=*@*</b>	node	Tag that identifies the type of the <b>restriction</b> , which is limited by time frames.
<b>except=*</b>	node	The tag that indicates the type of vehicles that are not subject to a time limit. <b>Used only in combination with the "restriction:conditional" tag</b>

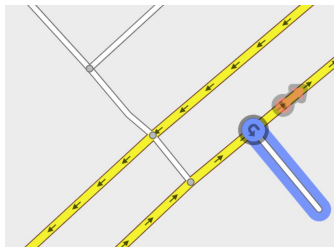




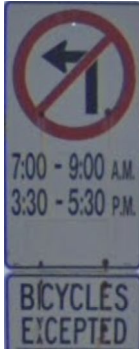
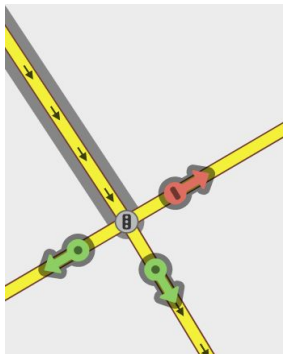
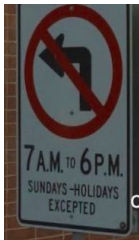
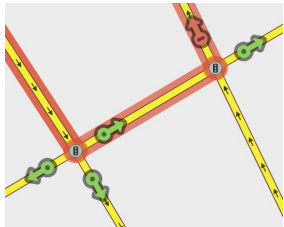

# Turn Restrictions

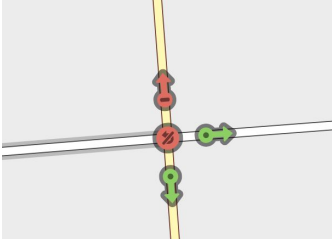

1. Turn Restrictions at junctions are represented by a relation.
  - a. Each relation is a set of tags describing the type of turn restriction.
  - b. Adding a Turn Restriction to a node will create multiple relations with associated elements.
2. Turn Restrictions are used to indicate which maneuvers a vehicle is allowed or not allowed to take from a specific way representing a road.
  - a. Always apply a Turn Restriction for the direction of travel that the restriction is intended for.
  - b. Turn Restrictions are not applied for turns onto a one-way road.
  - c. Turn Restrictions only apply to vehicle traffic, and will not imply a restriction for pedestrian travel.
3. There are three types of Turn Restrictions; *Allowed*, *Restricted* and, *Only*
  - a. *Allowed* restrictions are used for all directions by default, unless the way is considered a one way.
  - b. *Restricted* restrictions do not allow a vehicle to permit a specific maneuver. There are 6 different types of these restrictions:
    - i. NO Right Turn
    - ii. NO Left Turn
    - iii. NO U-turn
    - iv. NO Straight On
    - v. NO Entry
    - vi. NO Exit
  - c. *Only* restrictions permit only one maneuver at a junction. There are 4 different types of these restrictions:
    - i. ONLY Right Turn
    - ii. ONLY Left Turn
    - iii. ONLY Straight On
    - iv. ONLY U-Turn
4. Turn Restrictions are represented by restriction tags and/or separate relations.
  - a. Turn Restrictions are applied through the Turn Restriction Field, and not directly to a node's tags.
  - b. NO Entry and NO Exit restrictions are added by creating a restriction relation, along with adding the correct tags. ***These restrictions are rare and are not used unless advised by a lead.***
5. A Turn Restriction is only applied if there is a dedicated sign or road marking that is an explicit indication of the restriction.
  - a. Do not add any additional turn restrictions that are not present.
  - b. If a turn restriction is mapped incorrectly by another community member, escalate the task to your lead.
  - c. If a turn restriction is already mapped by another community member that is an implicit restriction, do not remove the turn restriction.
6. Conditional restrictions are not applied as Turn Restrictions, *unless within a special project.*

- a. A conditional restriction can be a time sensitive turn restriction, or a physical turn restriction sign that can change from lit or unlit.
  - b. A conditional restriction can be for the type of vehicles restricted from entering a roadway.
- 7. A U-turn at a dual carriageway intersection is represented as a left turn to the opposite traveling way. It is not represented as a U-turn node.
- 8. The scope of a task is what way or node is highlighted. Do not edit any other feature within the task, that is not highlighted. No edits outside of the project scope are created for the way.
  - a. If a way is given that has multiple possible turns for a way but no implied direction of travel, record as a tasking issue.

Turn Restrictions - 3			
Turn Restriction	Tags	Turn Restriction Field	Signage
<b>NO Right Turn</b>	<b>type=restriction restriction=no_right_turn</b>		
<b>NO Left Turn</b>	<b>type=restriction restriction=no_left_turn</b>		
<b>NO U-turn</b>	<b>type=restriction restriction=no_u_turn</b>		




<b>NO Left Turn and U-turn</b>	<b>2 relations needed:</b> 1) type=restriction restriction=no_u_turn 2) type=restriction restriction=no_left_turn		
<b>NO Straight On</b>	type=restriction restriction=no_straight_on		
<b>ONLY Right Turn</b>	type=restriction restriction=only_right_turn		
<b>ONLY Left Turn</b>	type=restriction restriction=only_left_turn		
<b>ONLY Straight On</b>	type=restriction restriction=only_straight_on		

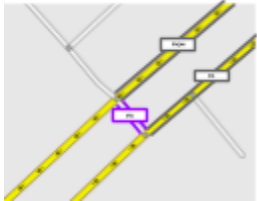
<b>ONLY U-Turn</b>	N/A		
<b>NO Entry</b> (Rarely Used)	type=restriction restriction=no_entry	N/A	
<b>NO Exit</b> (Rarely Used)	type=restriction restriction=no_exit	N/A	
<b>Conditional NO Left Turn</b>	type=restriction restriction:conditional= =no_left_turn @ (Mo-Su 07:00-09:00,15:30-17:30) except=bicycle		
<b>Conditional NO Left Turn</b>	type=restriction restriction:conditional= no_left_turn @ (Mo-Sa 07:00-18:00; PH off)		
<b>Conditional NO U Turn</b>	type=restriction restriction:conditional=no_u_ turn @ (Mo-Fr 07:00-08:30, 14:30-15:30; SH off)		

<p><b>Conditional NO Left and U Turn</b></p>	<p><b>2 relations needed:</b></p> <p><b>1) type=restriction</b> restriction:conditional=no_u_turn @ (Mo-Fr 07:30-09:30, 13:30-15:30; SH off)</p> <p><b>2) type=restriction</b> restriction:conditional=no_left_turn @ (Mo-Fr 07:30-09:30, 13:30-15:30; SH off)</p>		
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# Turn Restriction Relations

There are three elements that make up a turn restriction relation, a **FROM way**, a **TO way**, and a **VIA element**. The VIA element of a turn restriction can be either a **VIA way** or a **VIA node**. The VIA element connects the beginning and end ways that represent the specified maneuver.

Turn Restriction Relations			
Role	Element	Description	Example
<b>FROM</b>	Way	The way from where a restriction begins.	
<b>TO</b>	Way	The ending way of a restriction.	
<b>VIA</b>	Node	The node that connects the FROM and TO way in a turn restriction.	

	Way	The way that connects the FROM and TO way in a turn restriction.	
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## Turn Restriction Field

Turn Restrictions are **only** modified within the Turn Restriction Field in iD Editor. The Turn Restriction Field within iD Editor allows for inspecting and modifying turn restrictions. The field displays a model of the selected intersection node and the ways connected to the intersection node.


### Turn Restriction Field

1. A turn restriction will always contains:
  - One **FROM way**
  - One **TO way**
  - Either one **VIA node** or **VIA way**
2. A **FROM way** can connect to multiple **TO ways** within an intersection, with a **VIA node** that connects the two.
3. A **FROM way** can connect to multiple **TO ways** within an intersection, with a **VIA way** that connects the two.
4. Click on a node joining multiple ways that forms an intersection to view turn restrictions.
5. The Turn Restriction Field will be displayed on the left sidebar if the selected node can be edited for turn restrictions.
6. Simple restrictions are used over any complex restriction combinations.
  - a. Avoid creating a **VIA way** restriction if a simpler **VIA node** turn restriction can be applied.


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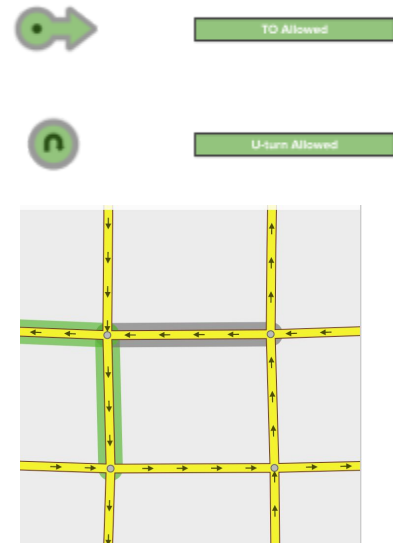




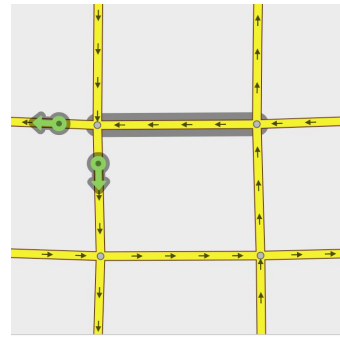
## FROM and TO ways

1. FROM way
  - a. A **FROM way** is highlighted in gray when hovered over. When selected, the gray highlight color will pulse.
  - b. Selecting a **FROM way** will display the Turn Restrictions on the **TO way**.
2. TO way
  - a. A **TO way** is a way that is a destination road for the selected or highlighted **FROM way**.
  - b. There are three types of restriction types, *Allowed*, *Restricted* and, *Only*. Clicking on a way will toggle through the **Allowed TO ways** have no restrictions from the **FROM way**. A vehicle is allowed to turn onto the street representing the **TO way** from the road the selected **FROM way** is representing. Allowed **TO ways** are highlighted in green.
    - i. "TO Allowed"
    - ii. "U-Turn Allowed"
  - c. *Restricted TO ways* have a turn restriction from the selected **FROM way**. Restricted **TO ways** are highlighted in red.
    - i. "TO Restricted"
    - ii. "NO U-Turn"
  - d. *Only TO ways* are those that a vehicle may only travel to from the **FROM way**. Only **TO ways** are highlighted in blue. When adding a Only restriction, this will apply 1 tag for the only direction along with any other tags for the directions that are not allowed.
    - i. "TO Only"
    - ii. "ONLY U-Turn"

1a



1b

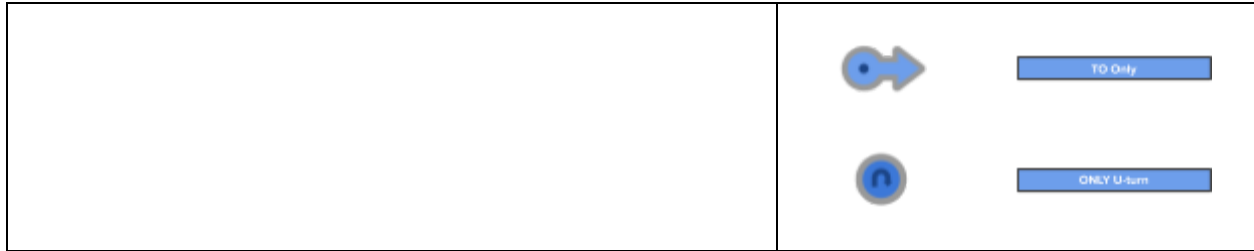


2c

2d



2e



## Indirect Restrictions

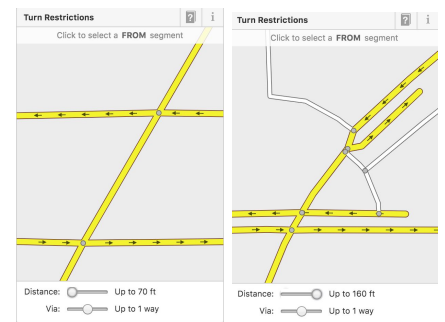
1. Indirect restrictions are created from nearby restrictions.
  - a. An Only turn restriction will indirectly create Restricted turn restrictions for all other paths within the intersection.
  - b. You may not edit indirect restrictions, the direct restriction must be edited first to edit indirect restrictions.
  - c. Indirect restrictions display the text “(indirect)” and are drawn lighter.



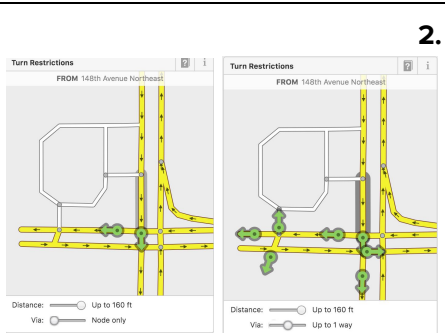
1

## Distance and Via

1. The “Distance” slider controls how far to search for additional connected roads.
  - a. Increase the slider to the right to zoom out and view more ways attached to the selected node
2. The “Via” slider adjusts how many via ways may be included in the search.
  - a. Increase the “Via” slider to see the proceeding ways from the selected node, and the turn restrictions associated with them.



1

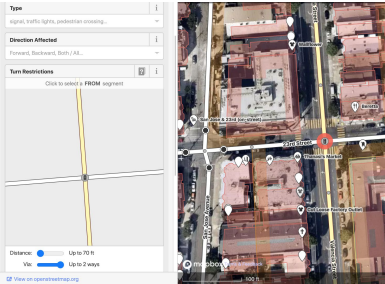
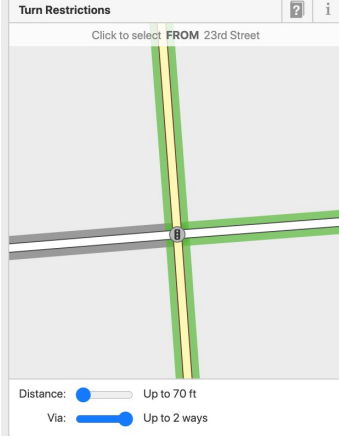


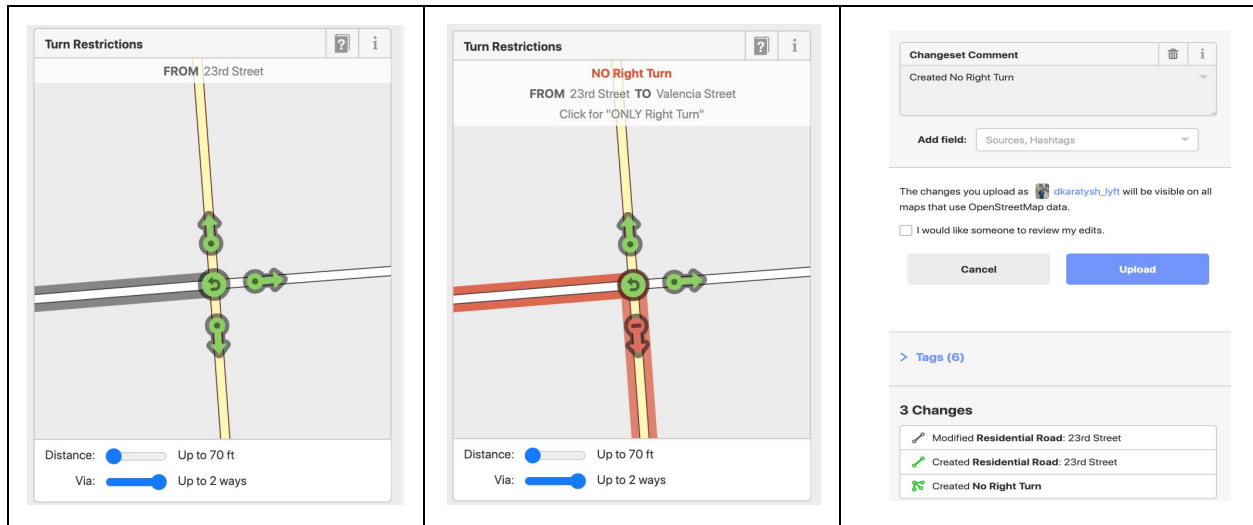
2.

# Process

## Workflow

1. After selecting a node in iD Editor, the Turn Restriction Field will become active.
2. In the Turn Restriction Field, hovering over a way will highlight it grey as the lane being analyzed.
3. To modify a turn restriction, click on any **FROM way** to select it. The selected way will pulse grey.
4. All possible **TO ways** will appear with turn restriction icons. By clicking on a turn restriction icon it will change between an Allowed, Restricted, and Only restriction type.
  - a. Turn restriction icons appear in the middle of their associated way if the restriction is not a U-turn restriction. U-Turn restriction icons appear on the node the U-turn would occur.
5. Click on the way until the correct turn restriction is applied to the **TO way**.
6. Save and Submit edits after reviewing the changes that were created.

<div>1</div> 	<div>2</div> 	<div>3</div> 
<div>4</div>	<div>5</div>	<div>6</div>



## Dual Carriageway U-Turn Workflow

To apply a turn restriction for a 'No U-turn' restriction within a dual carriageway, follow these steps to create the correct restriction.

1. Select the intersection node in the map that the turn restriction is within.
2. In the Turn Restriction Field, select the way that the restriction is intended for and where the vehicle would begin its turn from.
3. All possible turns from that way are displayed as **TO ways**.
4. Located at the bottom of the Turn Restriction Field is a slider for the distance and via nodes.
5. Increase the slider of the via nodes to "Up to 1 way" or "Up to 2 ways", depending on the number of ways away the opposite side of the road is from the selected way. More turn restrictions will be available to modify.
6. Create a turn restriction for the way that is on the opposite side of the dual carriageway selected to make the accurate U-turn restriction.
7. Save and Submit edits after reviewing the changes that were created.

