

Streetmix Design

ACTIVITY DESCRIPTION:

Digitally design your own street or street network

LEARNING GOALS:

- Problem Solving
- Critical thinking

Recommended Grade Levels: 9-12



What's included:

Activity worksheet



Writing Prompt Questions



Glossary of Bicycle and Pedestrian Terms



What you need:

Streetmix program log-in (free and open source)



Computer/internet access

ENHANCE YOUR LESSON:

To scale up the lesson on bike and pedestrian facilities and take learning outside, bring your class on a walk/field tour nearby the school. You can point out street features on the tour and talk about design and function in the real world after students have a chance to explore Streetmix. Ask students how they incorporated different elements in their designs and how they differ from what they see in their community.

About Streetmix:

Streetmix is an open-source, interactive tool which can be used to design streets and street networks. It visualises the street design process and can be used by transportation planners to design sustainable urban environments.

PROFESSIONAL SPOTLIGHT:



Michael Petesch

Pedestrian & Bicyclist Data Coordinator

Working with many partners across Minnesota for the last five years, Michael uses his environmental and transportation planning degrees to make it safer, easier, and more convenient for people of all ages and abilities to walk, bike and roll where they need to go.

If you would like a MnDOT employee to connect with your classroom, please email Marcia Lochner at marcia.lochner@state.mn.us

Streetmix Design Worksheet

INSTRUCTIONS:

Streetmix is an open-source, interactive tool which can be used to design streets and street networks. It visualises the street design process and can be used by transportation planners to design sustainable urban environments.

Using Streetmix, please create a design for your road using the following considerations and be ready to answer questions about your design. First, complete your design, then use your design components to answer the summary questions and complete the activity.

SCENARIO:

Your local city has decided to make a series of improvements that will benefit bicyclists and pedestrians in the area. City officials have chosen a section of roadway in the city where they will begin implementing their improvements.

In this activity, you will act as a transportation planner and help the city come up with a design for their new roadway. They have a list of considerations to include in your design and would like your help deciding which components to include in the road. Your design should help bicyclists and pedestrians get through the area safely while adding features that can improve quality of life for those in the city. The roadway is only 80 ft wide and has a limited capacity to add new features.

Things you must include:

At least 3 things that improve the roadway for bicyclists or pedestrians (bike share station, bike rack, scooter drop off, bench, waiting area, etc). Be ready to name the things that you included and why.



Before you get started on your design, watch the video from MnDOT's Bicycle and Pedestrian expert to learn what they consider when designing the roadway for bicyclists and pedestrians.

www.youtube.com/watch?v=73_JR4aVZ-c



Login to Streetmix and adjust your road settings to XX feet wide—everything that you want to include must fit within this space.



SUMMARY QUESTIONS:

1. Did everything you wanted fit into your design?
How did you decide which items to include?

2. How will pedestrians use your roadway?

3. How will bicyclists use your roadway?

4. What did you learn about street design?

5. Do you have a roadway nearby you that could benefit from these improvements? Tell me about this roadway. What needs to be improved?

6. What do you think was the most important part of your design?

7. What would you change if your roadway was 20 smaller? 20 bigger?

BICYCLE AND PEDESTRIAN CONSIDERATIONS:

ADA (Americans with Disabilities Act): Requirements for ensuring equal opportunity for persons with disabilities in employment, state and local government services, public accommodations, commercial facilities, transportation, and accessibility.

Bench/ seating: Seating options for use of pedestrians in the area.

Bicyclist: Person travelling via bicycle.

Bicycle rack: Method to provide short-term bike parking in the traditional on-street parking space along the curb.

Bike lane: A portion of roadway that has been designated for preferential or exclusive use by bicyclists with pavement markings and designs, if used.

Buffered bike lane: A bicycle lane accompanied by a designated buffer space, separating the bicycle lane from the adjacent travel lane.

Complete streets: As defined by Michigan law, roadways planned, designed, and constructed to provide appropriate access to all legal users in a manner that promotes safe and efficient movement of people and goods whether by car, truck, transit, assistive device, foot, or bicycle. MCL 247.660p.

Crosswalk: Any portion of a roadway at an intersection or elsewhere that is distinctly indicated for pedestrian crossing by lines or other markings on the surface.

Curb extension: A section of sidewalk or a landscaped area extending into the roadway at an intersection or mid-block crossing that reduces the crossing distance for pedestrians and may help reduce traffic speeds.

Curb ramp: A combined ramp and landing to accomplish a change in level at a curb. This element provides street and sidewalk access to pedestrians using wheelchairs, strollers or other devices with wheels.

Cycle track: A bicycle facility separated from motor vehicle travel lanes, as well as sidewalks and pedestrians, by a physical barrier, such as on-street parking, a curb, or is grade-separated.

Detectable warning: Standardized surface feature built in, or applied to, walking surfaces or other elements to warn pedestrians with vision impairments of hazards on a sidewalk and or loading platform, such as the curb line or drop-off. Detectable warnings are also called truncated domes.

Landscaping: Any plants, trees, sod, or other natural enhancements to an area for aesthetics, shade, or other benefits.

Lighting: Lighting features to an area that can increase safety and visibility for those in the area.

Median island: An island in the center of a road that physically separates the directional flow of traffic that provides pedestrians with a location to safely wait for a gap in the traffic so they can finish crossing the road. This makes crossing the road easier for pedestrians by allowing them to cross in two stages and deal with one direction of traffic flow at a time.

Pedestrian: A person on foot or in a wheelchair.

Pavement markings: Painted line(s) or markings on any travel surface used to convey messages to roadway users. They indicate which part of the road to use, provide information about conditions ahead, indicate where passing is allowed, and more.

Rectangular rapid flashing beacon: A user-actuated amber LED beacon that supplements warning signs at non-signalized intersections or mid-block crosswalks. They are activated by pedestrians manually by a push button or passively by a pedestrian detection system. RRFBs use an irregular flash pattern that is similar to emergency flashers on police vehicles.

Sidewalk: A paved path for pedestrians at the side of a road.

Shared use pathway: A bikeway physically separated from motor vehicle traffic by an open space or barrier, either within the highway right of way or an independent right of way. Shared-use paths also may be used by pedestrians, skaters, wheelchair users, joggers, and other nonmotorized users. Most shared-use paths are designed for two-way travel. Its minimum width is 10 feet. It is separated from vehicular traffic either by a barrier or a minimum lateral separation of 5 feet.

Shared roadway: A roadway open to both bicycle and motor vehicle travel.

Sheltered bus stop: A roofed structure for people to wait under at a bus stop.

Shoulder: A strip of pavement or gravel outside an outer traffic lane that accommodates stopped vehicles, emergency use, and lateral support of sub-base, base, and surface courses. Shoulders, where paved, are often used by bicyclists.

Trail: Non-descriptive general term referring to off-road pathway but with no standardized definition. Use of the term trail should generally be avoided as it may refer to many different types, including a coarse, unpaved hiking/biking route or a paved urbanized route.

Works Cited: AASHTO; NACTO; MnDOT 2020 Bicycle Facility Manual;
https://www.michigan.gov/documents/mdot/MDOTBicycleandPedestrianTerminologyBooklet_445994_7.pdf;
<https://www.dot.state.mn.us/bike/bicycle-facility-design-manual.html>