

# Improving Physical Health

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Designing urban environments for better physical health.

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Sarah Mauel

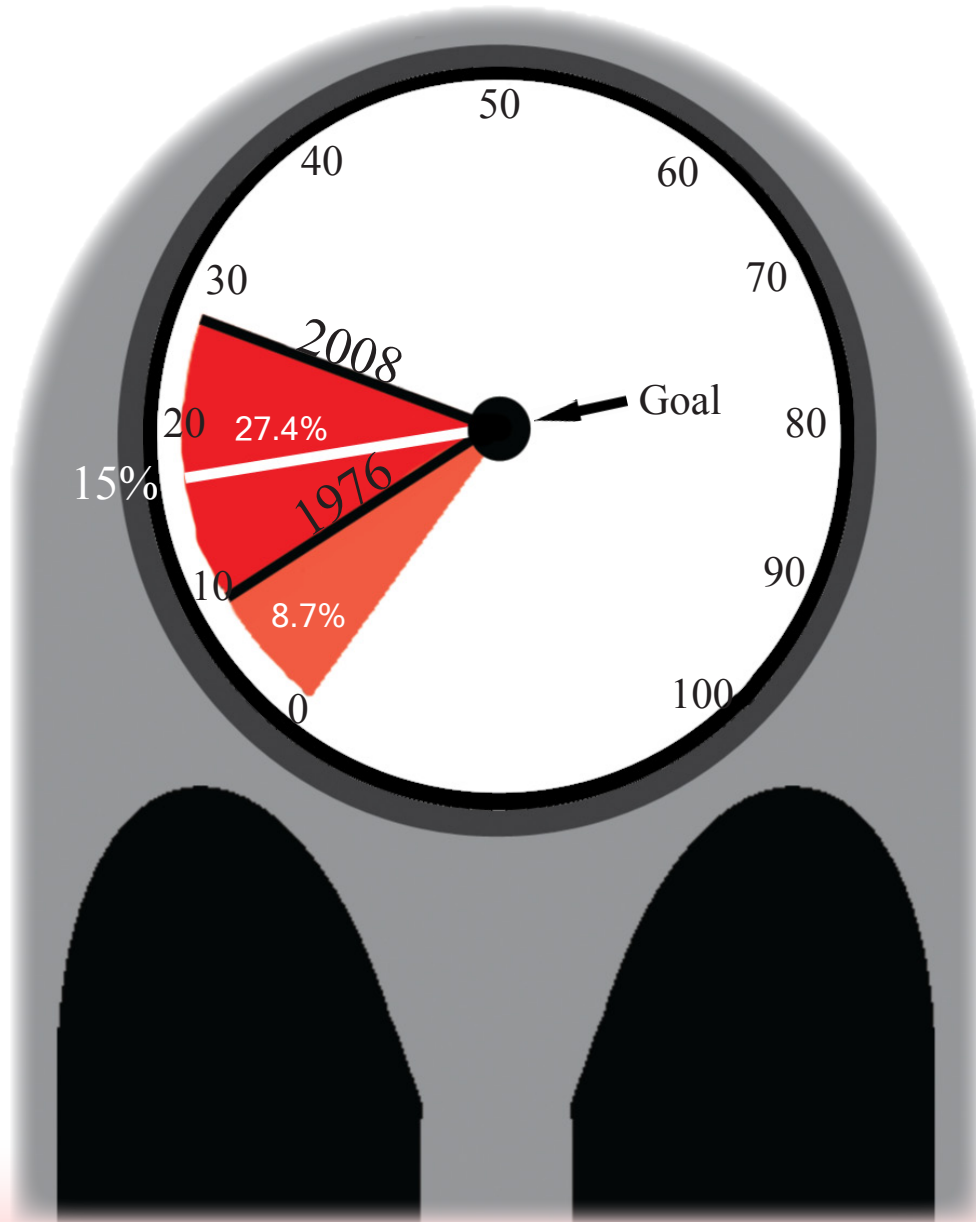
Landscape Architecture Thesis  
North Dakota State University  
Spring 2012

# Problem Statement

How can responsible urban design practices encourage physical activity and improve physical health?



# Obesity Rate in the United States



## Reason for the Increase

- Dependent of the Automobile
- Urban Sprawl
- Sidewalks and Crosswalks disappeared, disconnected or lead nowhere.
- Foods rich in fats and sugars and low in vitamins and micronutrients.
- Increase in total calorie intake
- Eating Out
- Convenience of Unhealthy Food
- TV Replaced Recreational Activity
- Lack of Physical Activity at Schools
- Home and Work Life

# People Prefer Outdoor Activities



Minnesota Biking 2007-2008

*“66% of respondents who reported some degree of physical activity, while only 21% used an indoor gym and 25% used a treadmill” - Lee & Moudon*

*“Participants also reported greater enjoyment and satisfaction with outdoor activity and stated that they were more likely to repeat the activity at a later date.”- The Peninsula College of Medicine and Dentistry*

# Cost and Convenience

*“46% of the respondents use their neighborhood streets for exercise, compared with only 11% using gym and health clubs, or exercise centers, and 9% using sport of recreation centers.” - Lee & Moudon*

*“Walking is the most practical way to achieve healthful levels of physical activity.” - Lee & Moudon*

*“Outdoor and freely available neighborhood facilities are more frequently used for physical activity.” - Lee & Moudon*

*“The average gym membership cost between \$40 and \$50 a month, but when you add the initiation fee, you’re looking at as much as \$800 a year.” - Carlo Dellaverson*



# Health Benefits

*“Significant health benefits can be obtained through moderate activities such as walking and bicycling.” - L. D. Frank*

*“Regular physical activity helps improve your overall health and fitness, and reduces your risk for many chronic diseases” – Center Disease Control and Prevention*



High Blood Pressure

*“To maintain and improve weight 30 min. or more of moderate- intensity physical activity on all, or most days of the week.” – CDC*

# Site Location



# Site Images



## Positive

- Up and coming downtown area
- Pathway along the river
- River neighborhoods are dense
- Newer developments have sidewalks, paths and neighborhood parks.



## Negative

- Wide streets with no place for pedestrians.
- No large pedestrian network
- Sidewalks start and stop
- Reliant on the automobile
- Urban sprawl

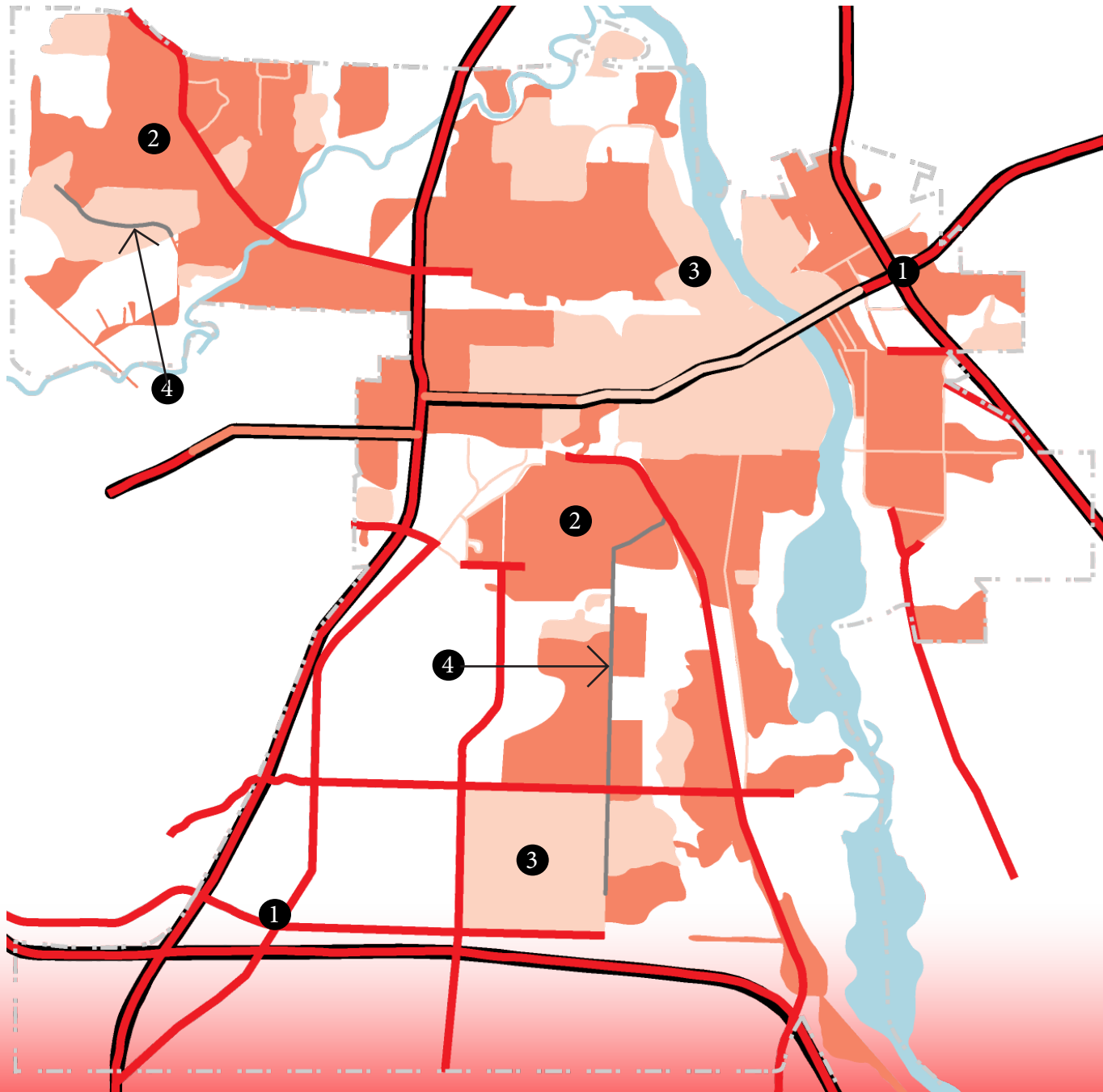


## Images

1. Major residential street with sidewalk
2. Highway 23 a wide road with many lanes
3. Highway 23 sidewalk with wide shoulder
4. Existing bike trail along the river
5. Railroad corridor
6. Ditch along 33rd Street South



# Street Network



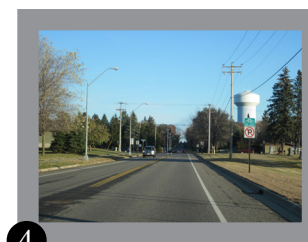
**Rating 1:**  
Roads that are only used for the car, traffic speeds are fairly high.



**Rating 2:**  
Cars and pedestrians/bikers can use this road. No designated lane/sidewalk and lacks connections.



**Rating 3:**  
Roads used for cars and sidewalks, or bike lanes located near the streets for pedestrians and bikers.

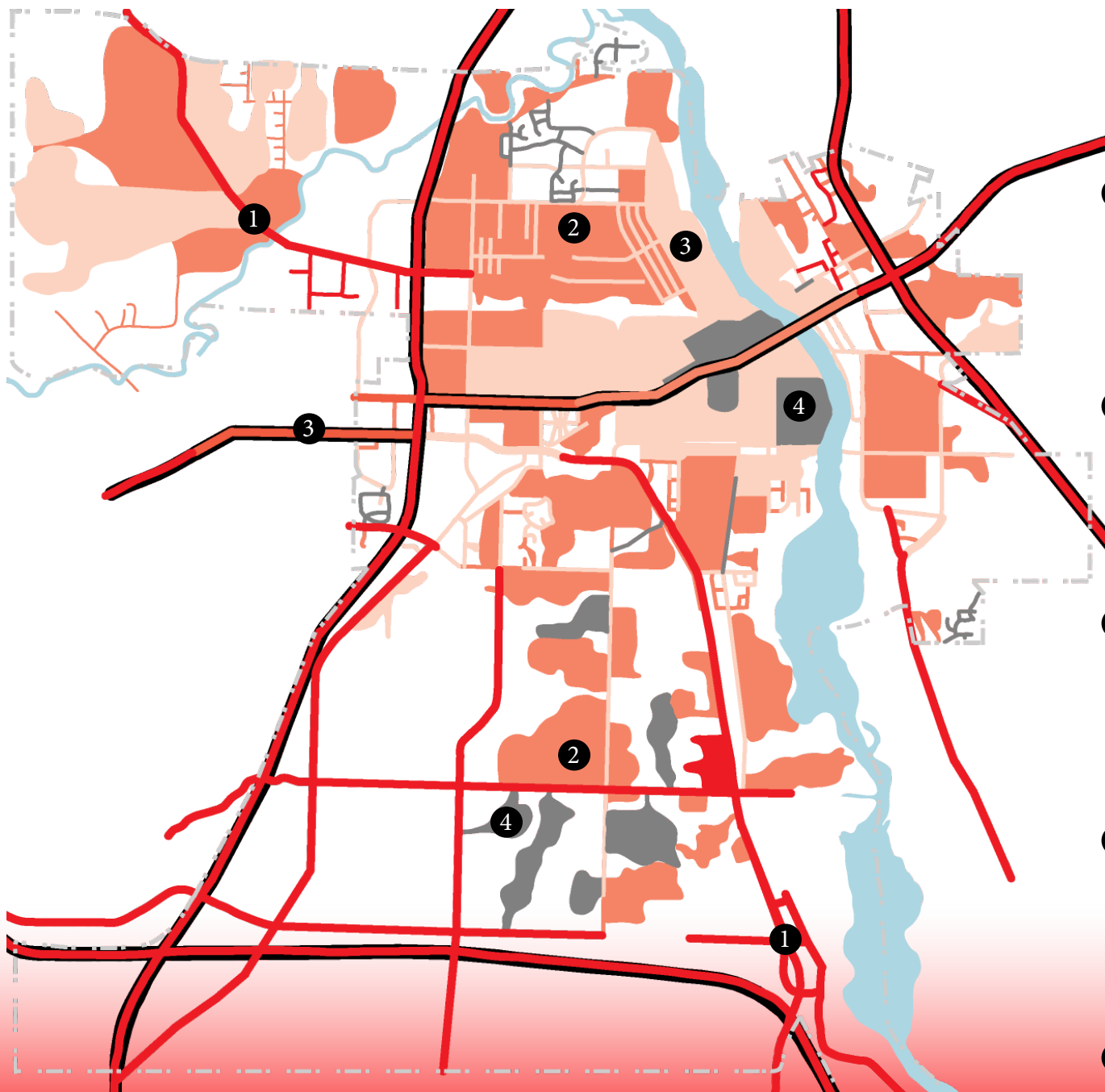


**Rating 4:**  
Roads can be used for cars, bikes, and pedestrians. Street with sidewalks and designated bike lanes.



**Rating 5:**  
High quality roads that are used by cars, bikers, and pedestrians. Well maintained and used daily.

# Supportive Site Design



1

**Rating 1:**  
Street doesn't support any pedestrian or bike traffic.



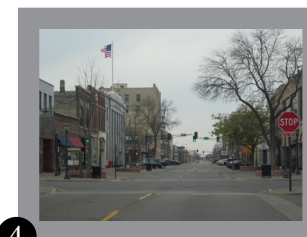
2

**Rating 2:**  
Street provides room for travel, but it doesn't have built structures for travel.



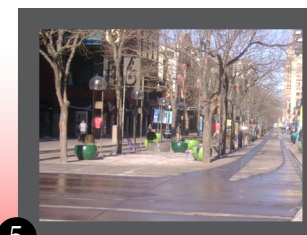
3

**Rating 3:**  
Supports some pedestrian travel, but lacks close buildings and little to no amenities.



4

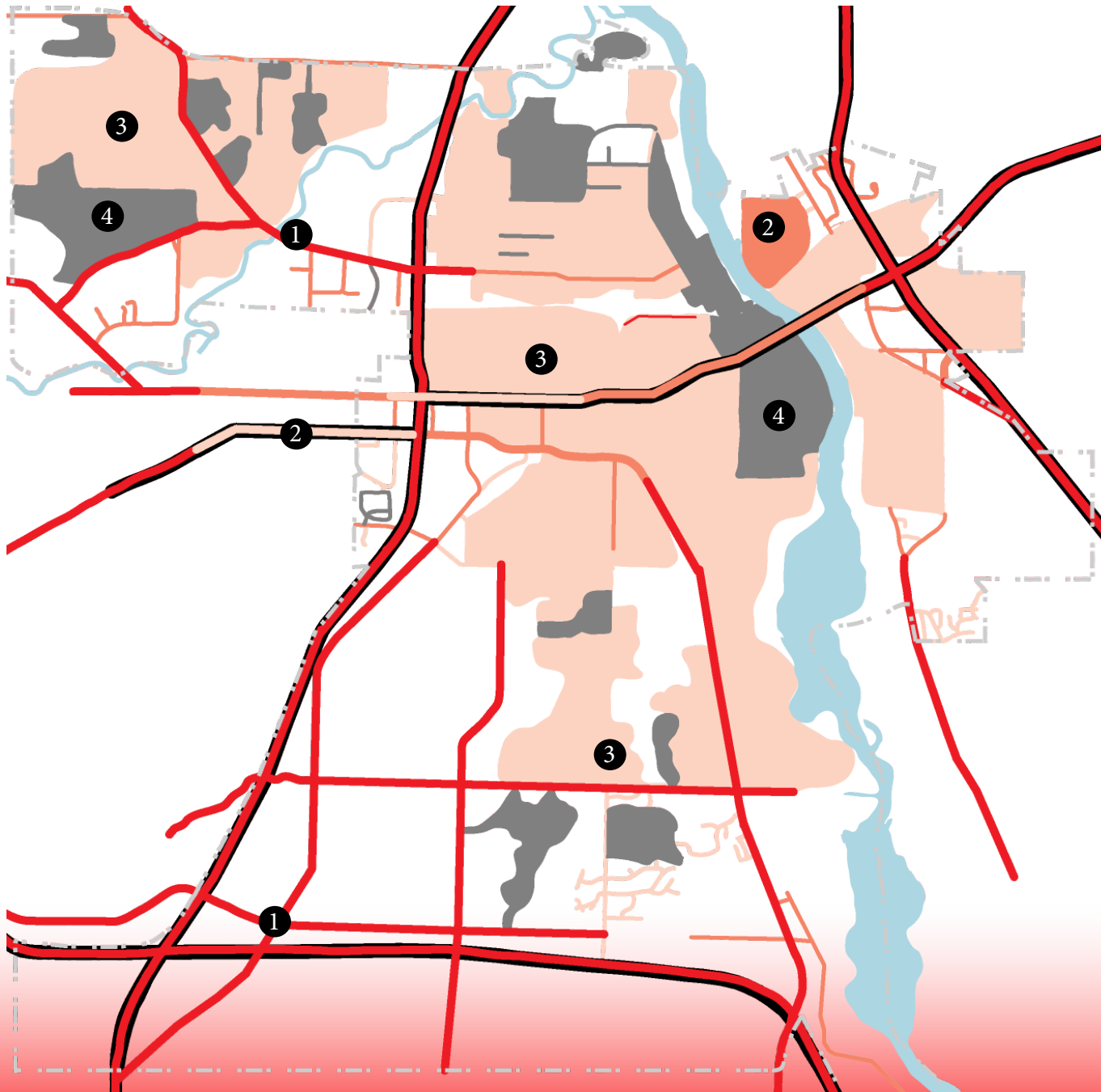
**Rating 4:**  
Supports pedestrian travel with close buildings. Amenities are present, but are scattered along the street.



5

**Rating 5:**  
Supports pedestrian travel with nearby buildings, benches, public art, and strong character.

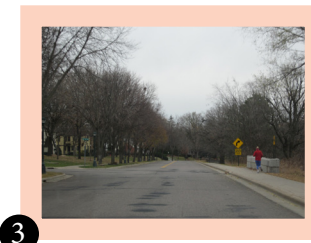
# Umbrella of Safety



**Rating 1:**  
Street feels extremely unsafe for walking and biking.



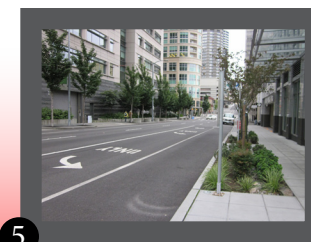
**Rating 2:**  
Streets feel uncomfortable, but has a light amount of pedestrian traffic.



**Rating 3:**  
Relatively safe for both pedestrians and bikers. Slight uneasy feeling, but won't discourage travel.

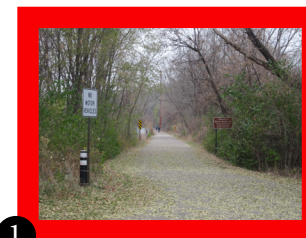
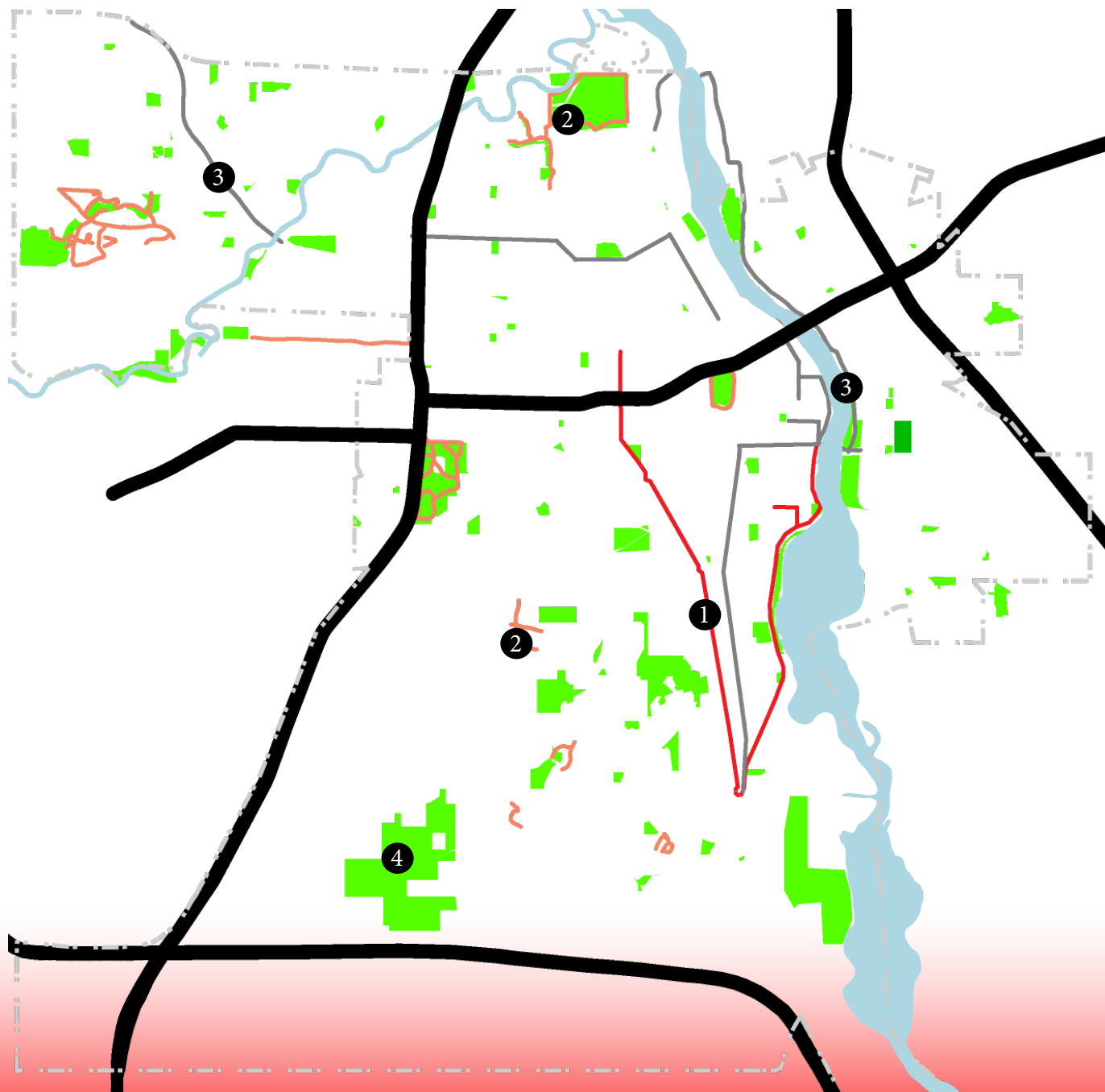


**Rating 4:**  
Roads can be used for the car, bike and pedestrian. Street with sidewalks and designated bike lanes.



**Rating 5:**  
High quality roads that are used by cars, bikers, and pedestrians. Well maintained and used daily.

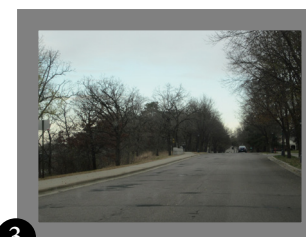
# Existing Pathways



**Bike & Walking Paths:**  
Separated from vehicular traffic and cannot be used by motorized vehicles.



**Neighborhood Trails:**  
Trails help connect neighborhoods and provide a space for recreation.



**Bike Routes:**  
These bike and walking trails are marked trails, but they are along sidewalks.

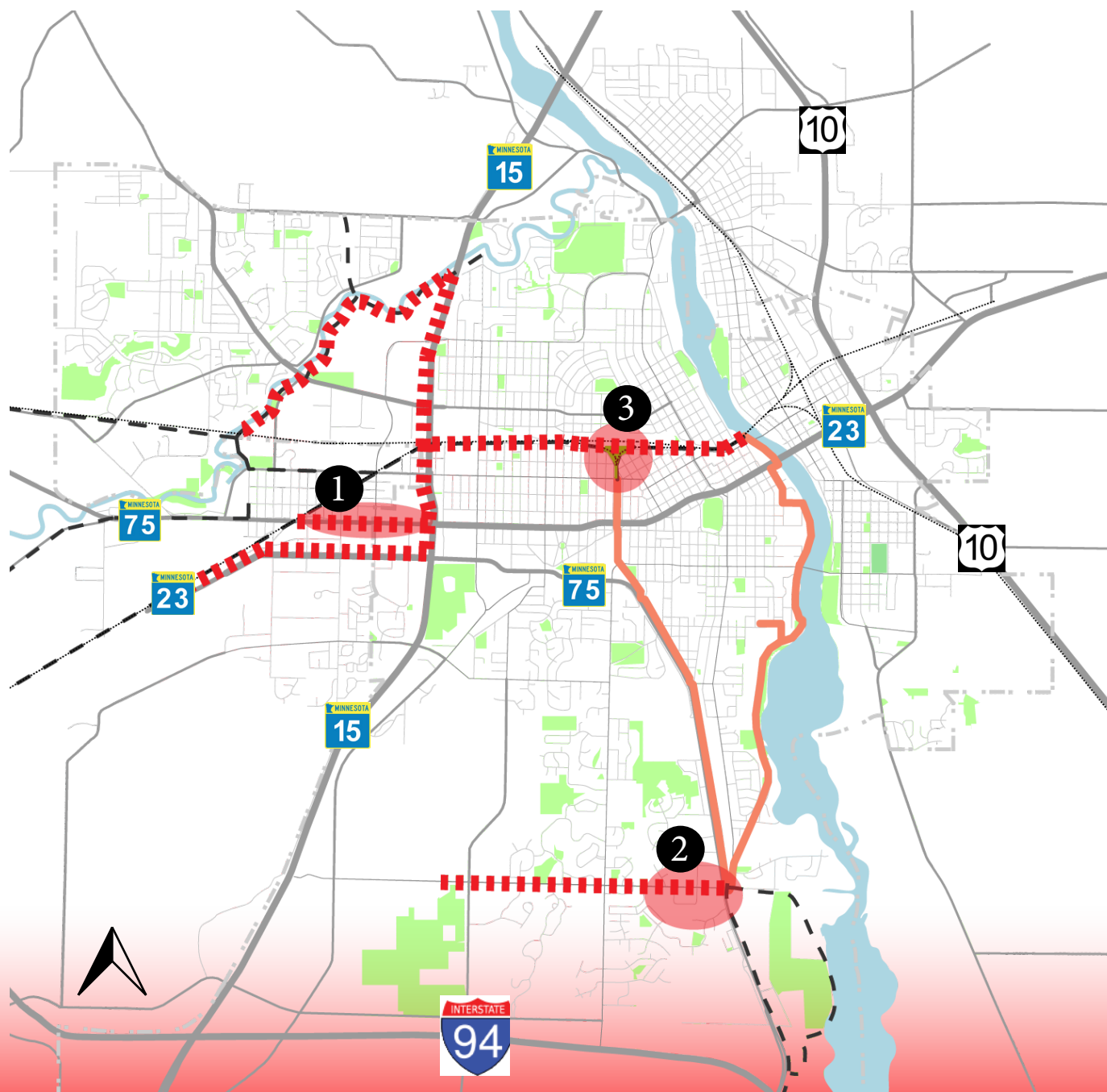


**Parks:**  
St. Cloud has many parks of various sizes located throughout the city.

# Project Goals




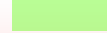

- Encourage physical activity among the residents of St. Cloud to improve physical health.
- Create a large connected pedestrian network throughout the city and connect to the greater trail system outside of town.
- Encourage as many forms of alternative forms of transportation for all seasons.

# Master Plan



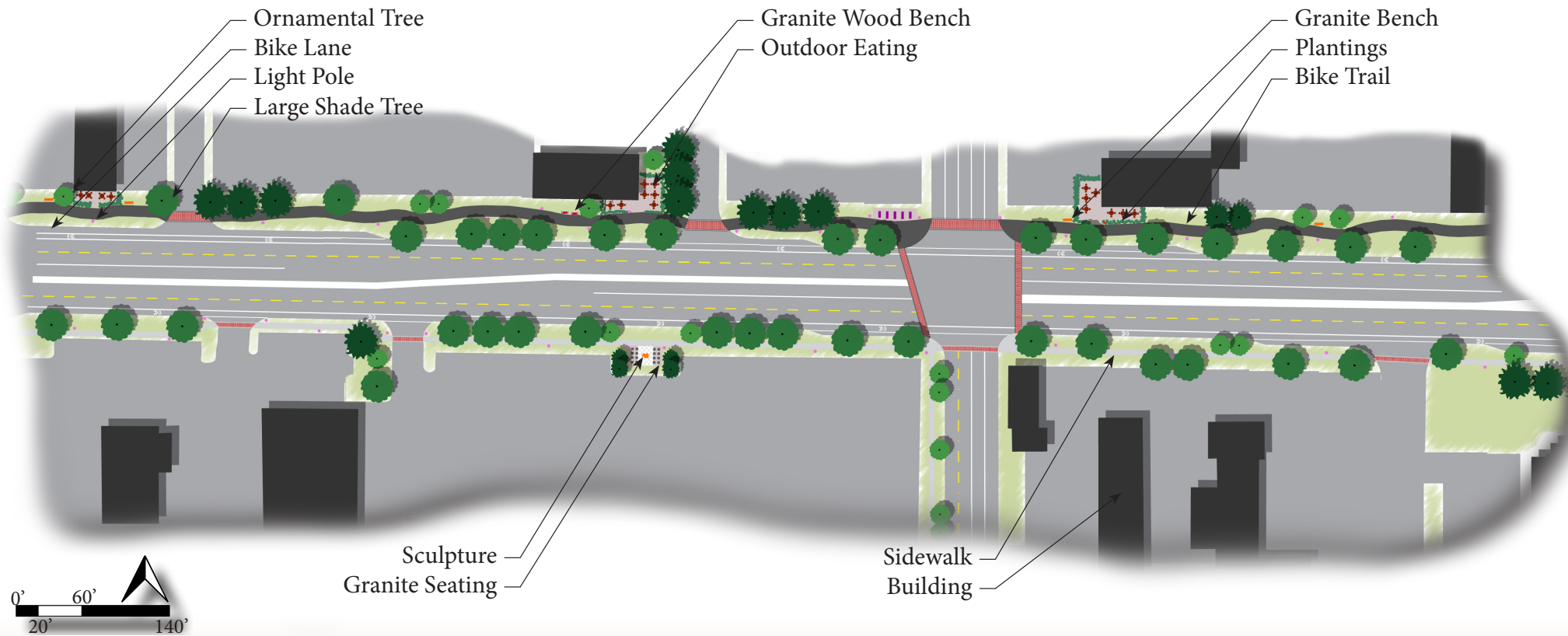
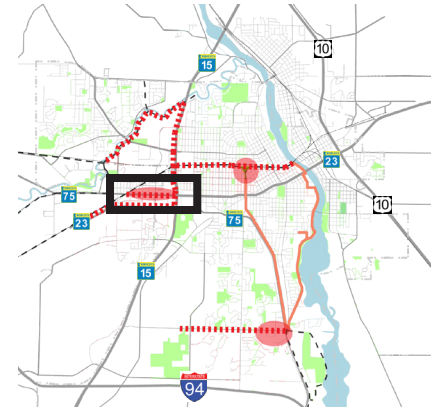
1. Highway 23
2. 33rd Street
3. Railroad Park

### Key

-  New Trail Extensions
-  Existing Trail
-  Designed Areas
-  Parks
-  Cities Proposed Trails

# Highway 23

## Master Plan

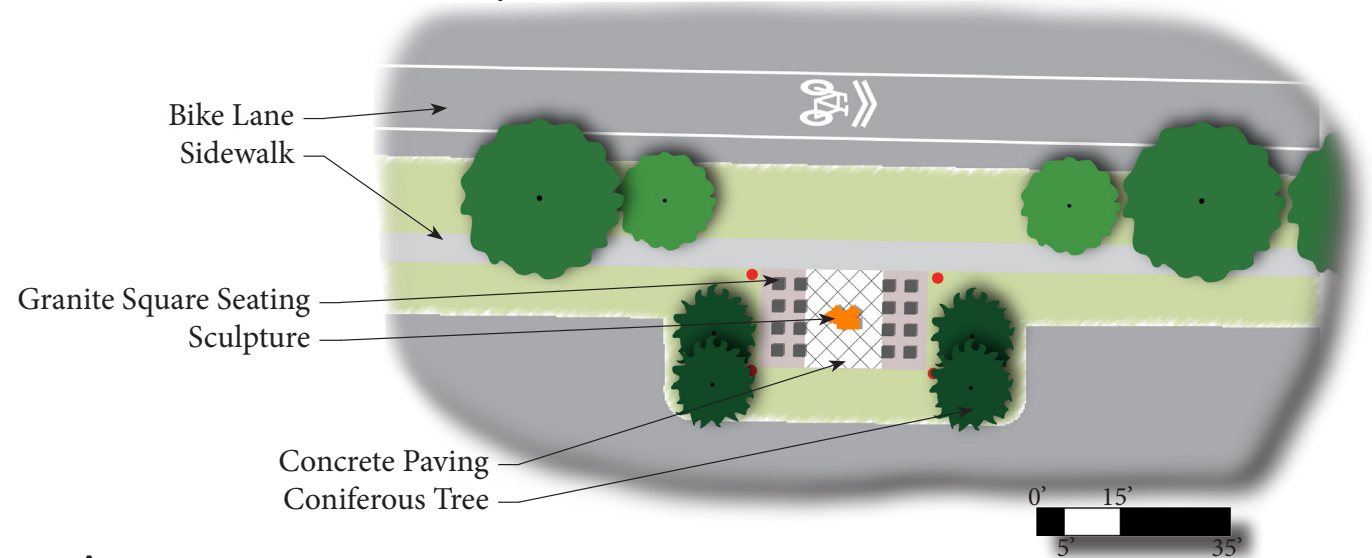


# Highway 23

Current Site Image



Sculpture Plaza Detail Plan



Summer View of Sculpture Area



Left:

Smooth white granite blocks provide a place for seating around a granite sculpture.



# Highway 23

Current Site Image



Cafe Eating View with Trail



Right:

Pedestrians travel across stamped concrete crosswalk to the meandering bike trail that brings travelers to restaurants with outdoor eating that helps create a comfortable street life along the road.

Large Shade Tree

Examples:  
Bur Oak  
Elm  
Maple



Coniferous Tree

Examples:  
Spruce  
White Pine  
Douglas Fir

Driving Lane  
5' Wide Bike Lane  
23' Buffer Zone

Outdoor Patio  
10' Wide Bike Trail

Turf Grass  
Plantings

0 13' 7'

# Highway 23

## Night View of Benches



**Left:**  
Urban Mile Marker  
**Far Left:**  
Smooth granite benches and trail markers are found along the trail in the urban area. Lights line the trail for illumination.

## Mile Marker Detail

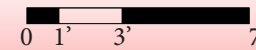
## Current Site Image



Ornamental Tree  
Examples:  
Amur Maple  
Crabapple  
Lilac

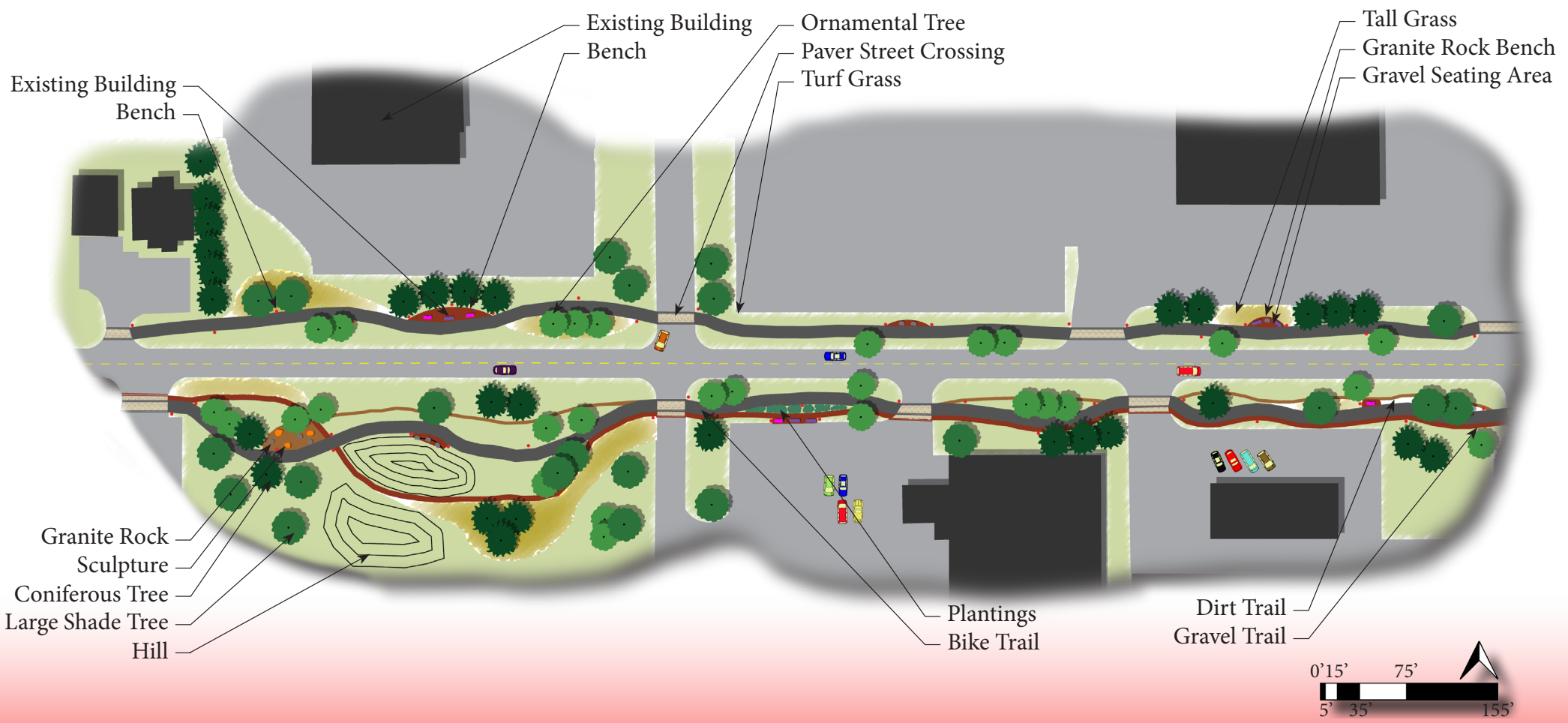
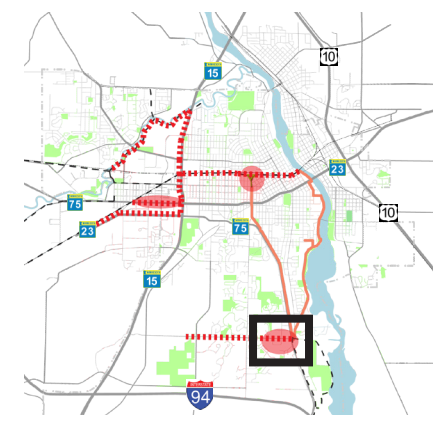
Urban Mile Marker  
10' Wide Bike Trail

Urban Light Pole  
Turf Grass



# 33rd Street

## Master Plan



# 33rd Street

## Sculpture View



Above Right:

Example of how the sculpture would be carved.

Left:

St. Cloud's strong granite history is carved into large granite rock sculptures. Granite rocks provide places for people to sit along the bike, dirt and gravel trails that weave in and out.

## Winter View



Left:

During the winter the gravel and dirt trails turn into skiing and snowshoeing trails.

# 33rd Street

## Trail Seating



Above:  
Rural mile marker

Left:  
Tall grass frames out the granite seating area along the bike trail. Along the trail mile markers also made from granite. Trail can be used for biking, walking and rollerblading.

## Mile Marker Section

Current Site Image



4' Gravel Trail  
10' Tar Trail  
Rural Mile Marker

Tall Grass  
2' Dirt Trail  
Turf Trail



# Railroad Park

## Master Plan



Information Center  
Dirt Trail  
Tall Grass

Gravel Trail  
Rural Light Pole  
Bench  
Urban Light Pole

Large Shade Tree  
Picnic Area  
Coniferous Tree

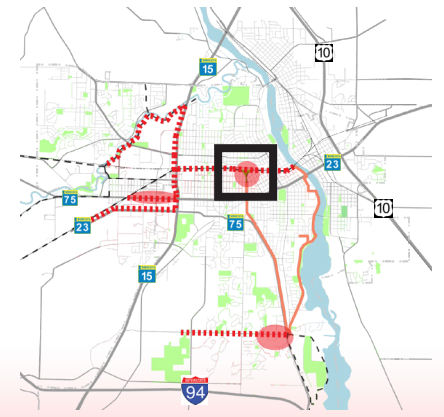
Rock Seating Bench  
Hill  
Kids Zone

Parking Lot  
Granite Park Sign  
Picnic Shelter

Building

Bench

## Park Sign



# Railroad Park

## Winter Section

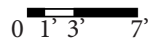
Large Shade Tree

Coniferous Tree



Tall Grass  
4' Gravel Trail  
Granite Rock Bench

10' Tar Trail  
Rural Light Pole



Tall Grass Examples:  
Big Bluestem  
Sideoat Gama  
Switch Grass

# Railroad Park

Front Plaza Space



Left:

The front plaza space has a granite water feature with black and white granite blocks for seating a long with planters and flowering ornamental trees frame space.

Raining Picnic Shelter



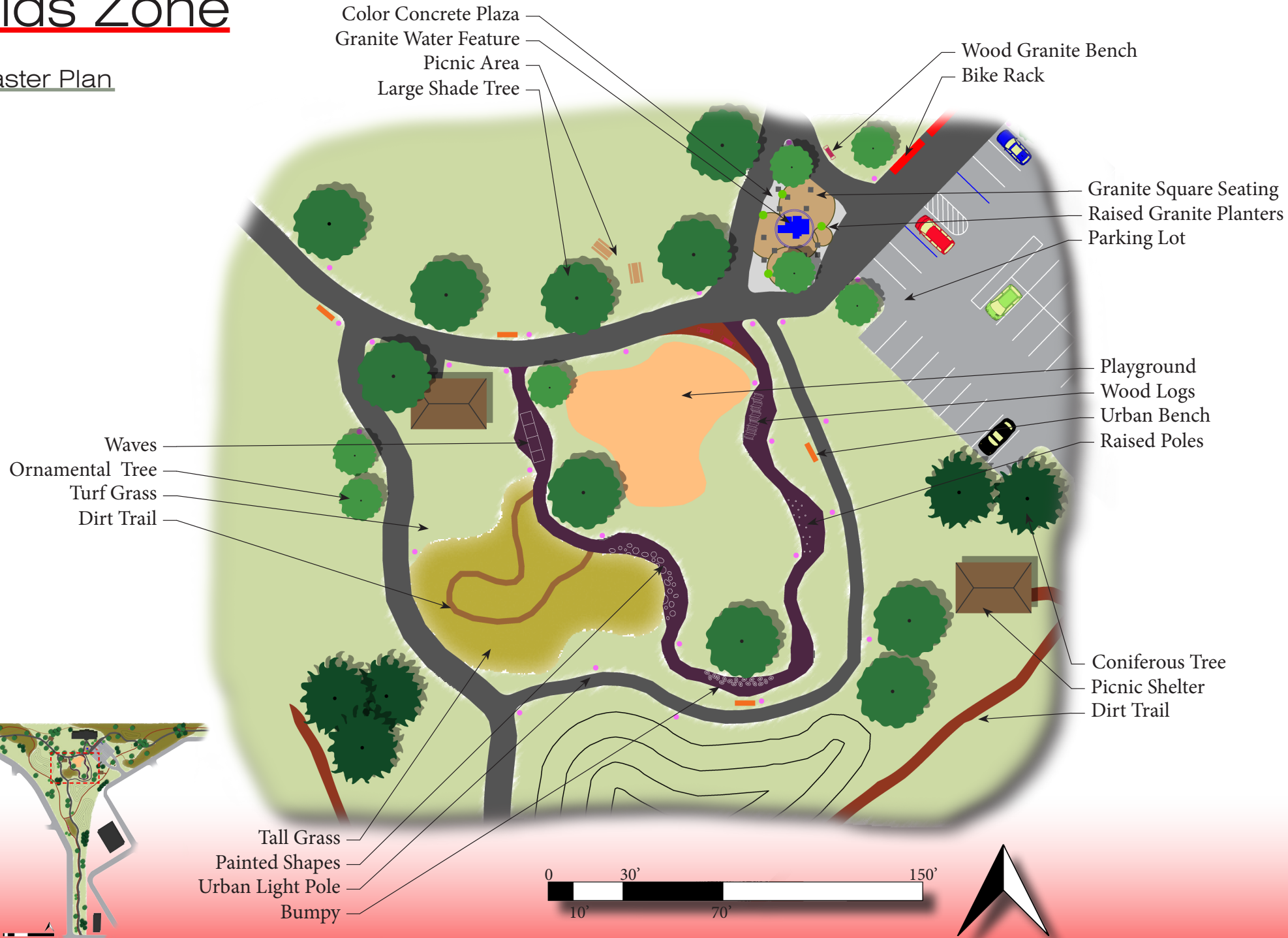
Left:

Large picnic shelters provide a place for group gathering with picnic tables and provide covering in all kinds of weather.



# Kids Zone

## Master Plan



# Kids Zone

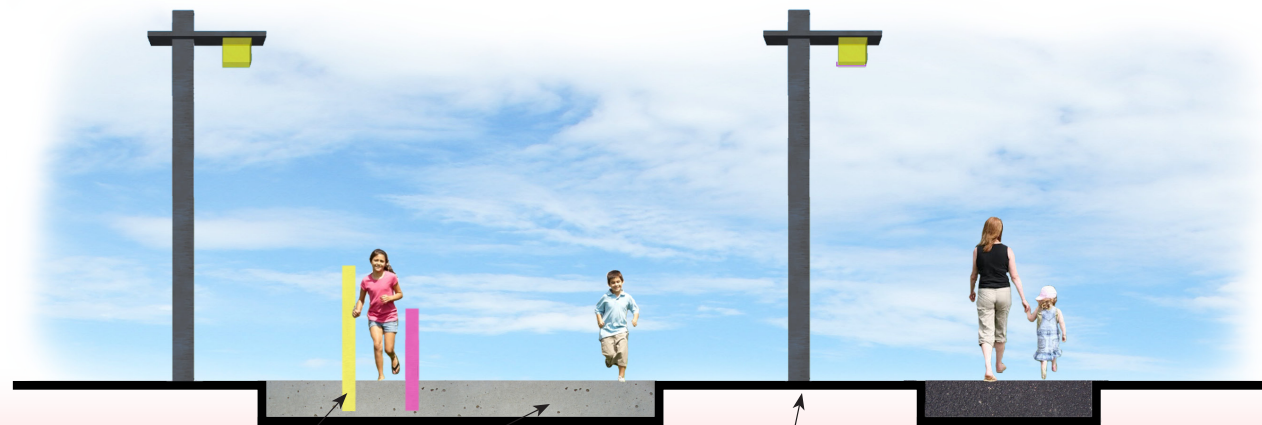
## Kids Playing Area



Left:

Kids concrete trail has a short logged section for kids to walk and bike over. The center piece of the Kids Zone is a large playground. An existing railroad building was remodeled into an information center with restrooms and large rooms for the community to use.

## Kids Trail Section



Color Metal Poles  
14' Concrete Path

Urban Light Pole  
5' Tar Trail

0 1' 3' 7'

# Answer to the Question

## How can responsible urban design practices encourage physical activity and improve physical health?

- Providing a place for physical activities in **sidewalks**, **trails** and **parks**.
- Creating a large **network** among the city.
- Trails have **multiple** activities for the trails and parks.
- They can be used **year round** in all types of weather

### Other Benefits

- Creates an **attractive** city
- A place people **want** to live
- Better **quality** of life for people living in the city



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