

# MŮJ PRAHA

A MORE LIVABLE CITY: INTEGRATING A BIKE  
NETWORK TO ENHANCE THE URBAN ENVIRONMENT  
AND PROMOTE HEALTH & SUSTAINABILITY

# PRAGUE

A more livable city: Enhancing the urban environment to promote  
health & sustainability

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I would like to thank the faculty for their dedication, patience and support through this wonderful journey through landscape architecture.

My friends in studio, for the support and for all the laughs. You guys are like a second family.

I want to thank all my professors for making it possible for me to explore the world and discover who I am. Because of you, I have found what I love to do.

My family, friends and my bestie of my life (you know who you are). You guys helped me get through it all, through thick and thin.

Gracias a mi mami y a mis Abuelos por su apoyo y sus oraciones. Sobre todo, quiero dar gracias a Dios. Sin ti nada sería posible.



# Motivation

I was born in El Salvador and moved to the United States when I was young. Moving to America at a young age I saw the contrast of how cities were designed and how they functioned. I gained a desire to travel to new places to experience different ways of life. My time studying in Prague only deepened this desire and created a passion within me to learn about how public space can influence and enhance the lives of a community. Design influences quality of life, it shapes people's experiences. I chose Prague as my site after spending a semester there, it has become a second home to me. While I was there, my eyes were opened to the need, desire by the locals and to the great possibilities of having biking included in its urban transport. The benefits of this kind of system are significant and would elevate the quality of life of residents and create another amenity for tourists. I want to use this project to demonstrate how valuable a bike system can be as part of the urban transport system as well as the opportunities of having one in such historic, walkable city that wasn't built to accommodate as many cars as it does.

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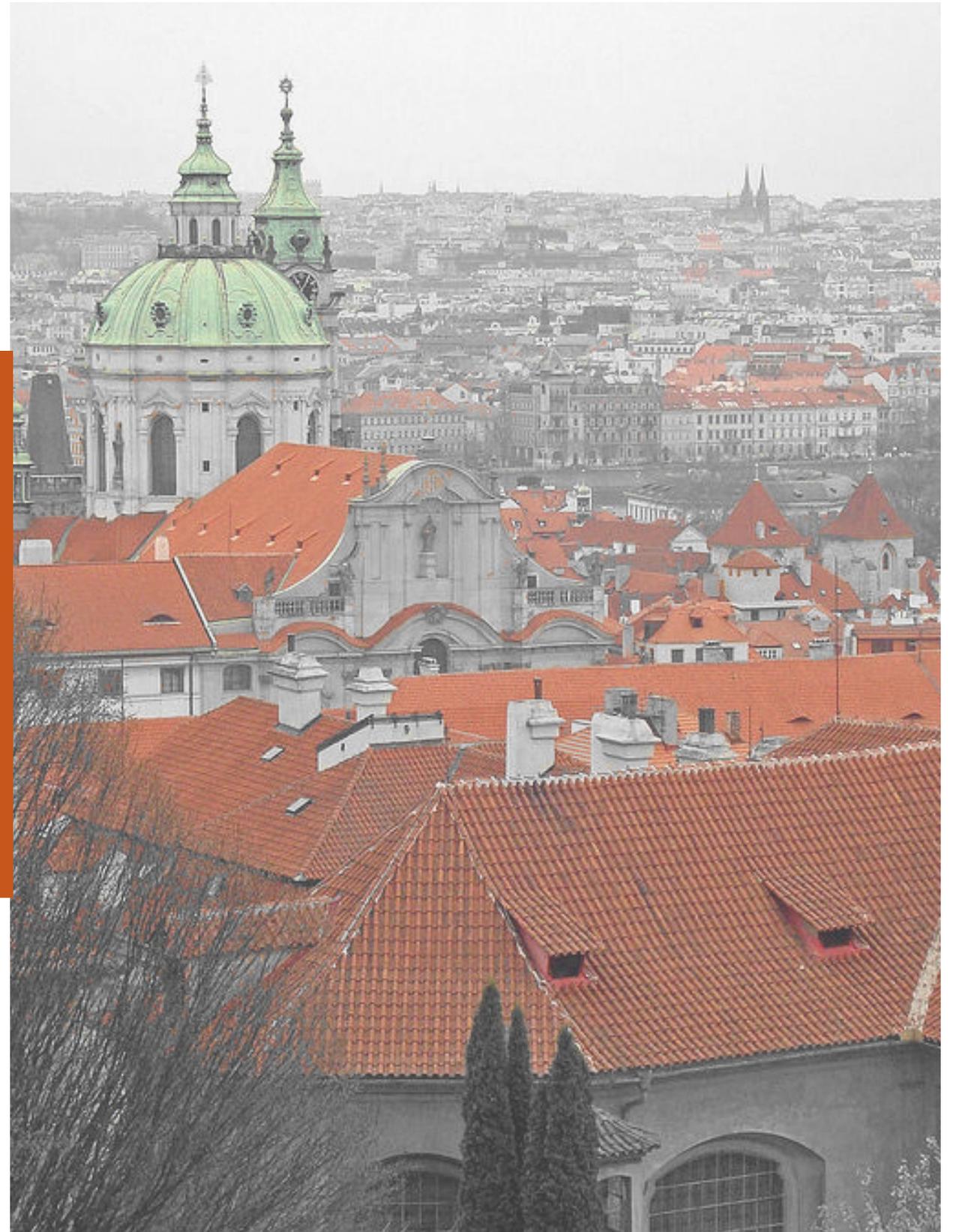
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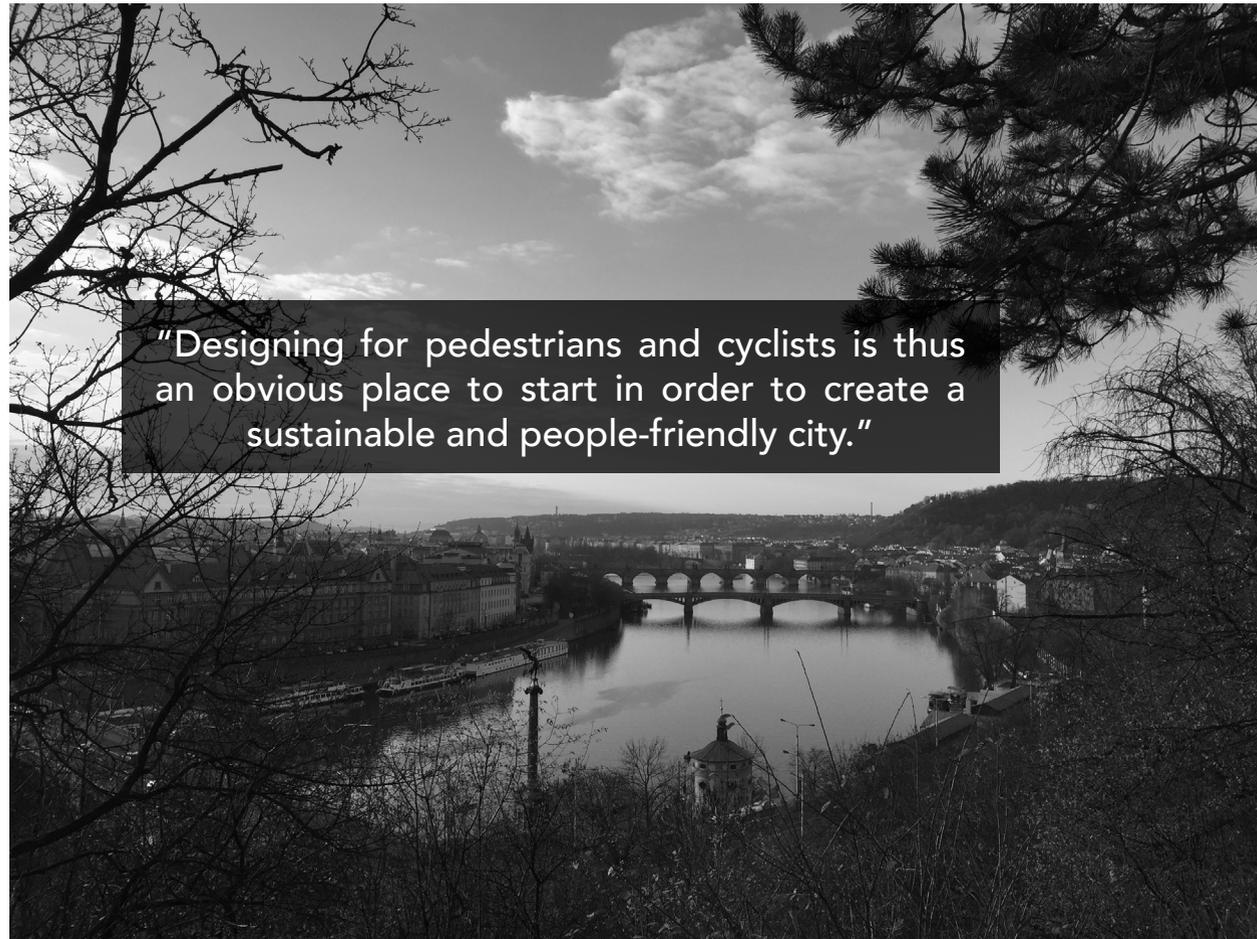


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01

PROJECT  
INTRO





"Designing for pedestrians and cyclists is thus an obvious place to start in order to create a sustainable and people-friendly city."

# 01 Introduction

## Prague

Prague is a city full of history. Being mostly spared from bombings in WWII, it has retained much of its historic structures and infrastructure. Situated in the north-west of the country on the Vltava River, the city is home to about 1.26 million people, while its larger urban zone is estimated to have a population of nearly 2 million. As a big city, Prague suffers from the same ailments as many other large cities - rapid increase of traffic density and congestion, air pollution as a result of increased vehicular use, and rapid population growth. Prague, unlike most other European cities, lacks fully developed cycling infrastructure. The existing bike "infrastructure" is underused during the warmer months and unused during cold months. The current paths are inconspicuous and can go easily unnoticed. The benefits of having a fully functional cycling system as part of the urban transit system would help Prague be a more complete and livable city.

Prague was a city originally built for people. Since the 20th century, the right of way has been degraded in favor of vehicular infrastructure. The purpose of this project is to take the city back from cars and create better cyclist and pedestrian experience to improve quality of life. By integrating cycling as part of the urban transit system through connectivity, safety design strategies, and making the trails more prominent, it creates an opportunity to reduce the impact of cars in the city in favor of public space and cyclists. These trails will link to and improve existing public spaces to increase the quality of existing living and restore the public realm according to its fullest potential.

The purpose of this project is to enhance Prague's urban environment by creating a cycling network and designing streetscapes that integrate cycling paths through key corridors and revitalizing public space to promote varied outdoor activity, active living, health and wellbeing. This project will look at how the existing bike system can be improved by making better connections and safe, inviting paths that will take back the streets from cars and give bikes their rightful place in the city. Pocket parks along these paths will peak curiosity, stimulate the senses, and encourage physical activities and recreation.



## The Situation

The city of Prague has realized the importance of integrating a bike system into their urban transport and as such have created proposals and goals for expanding and improving this system. The Prague Council approved a proposal of further development of the system of cycle paths in Prague after 2002. This material includes main points of the development of the cycle paths system in the entire Capital of Prague in the near future. Proposed changes in the law from the Ministry of Transport in the Czech Republic are now looking to give cyclists higher priority with their own cycle roads in some city centers and help fill in the gaps between existing cycle routes. Even with these plans, the cities bike infrastructure is still highly lacking. Bike culture is starting to develop but there is still a great need for new infrastructure and advocacy for using cycling as an alternate mode of transport.

As a landscape architect, I will build on the existing system and on the new proposals and recommendations to create a visual, site specific example, as well as incorporate an advocacy campaign that helps to encourage urban cycling and user involvement in the different phases of the system's improvements and additions. The new bike paths will have a clear presence as part of the city's character by using way-finding and visual additions to create clear bike paths.

The benefits of this kind of system, one in which connects open space and the community are significant and would elevate the quality of life of residents and create another amenity for tourists. I want to use this project to demonstrate how valuable a bike system can be as part of the urban transport system as well as the opportunities of having one in such historic, walkable city that wasn't built to accommodate as many cars as it does.





## Goals & Objectives



### bike system

To create a bike network as part of the urban transit system to encourage **active transportation** and engage public space



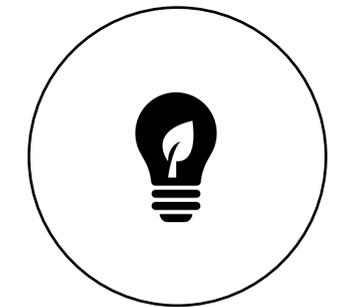
### enhance public

To reduce cars in the historic center and enhance the public realm to **engage** public space and increase quality of life



### pedestrian

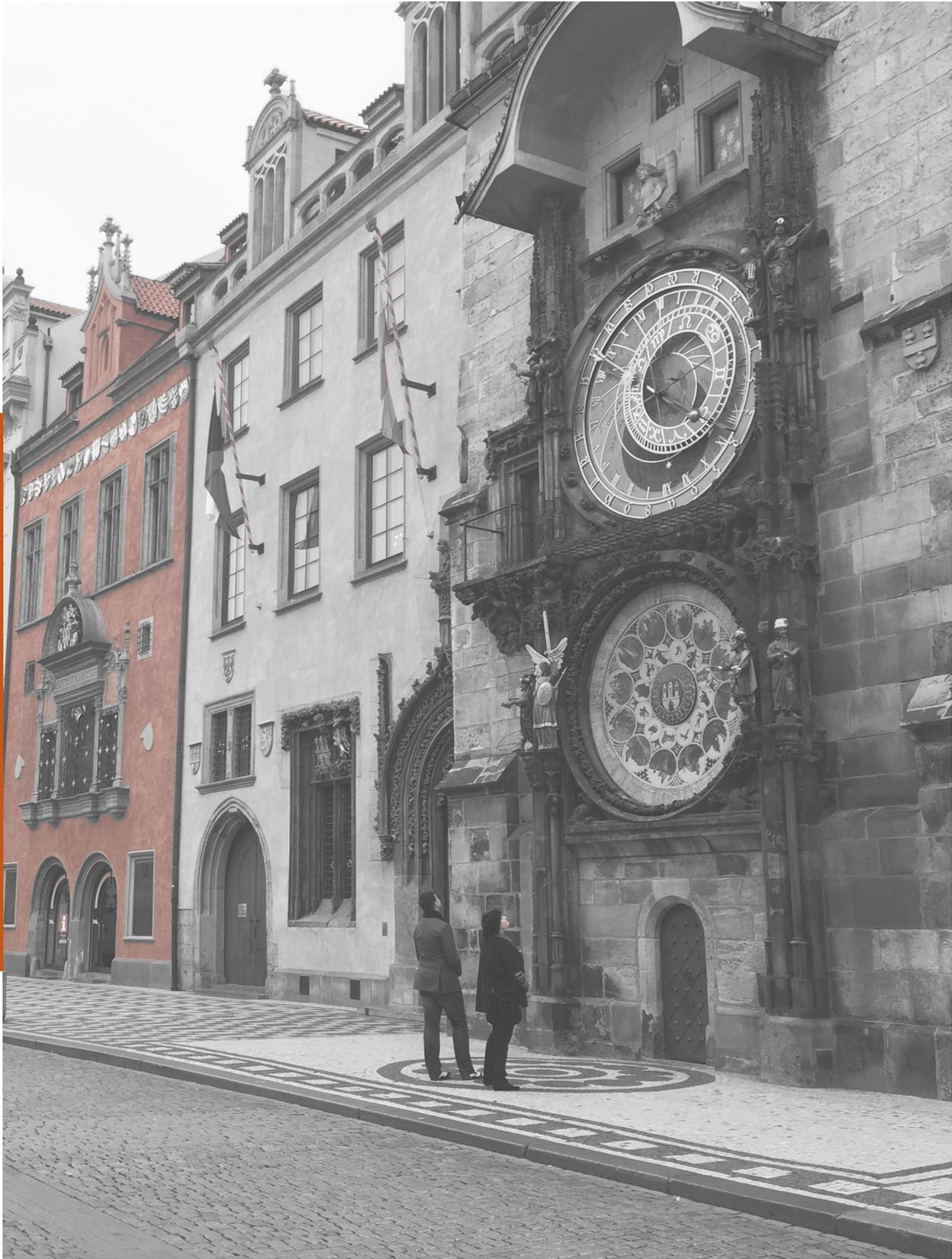
To create a **safe environment** for cyclists and pedestrians to take back their place in the city by prioritizing pedestrians and cyclists over cars.



### sustainability

To advocate & educate about the importance of **sustainable** mobility and green practices for healthy communities

02 MAJOR ISSUES



# 02 Major Issues

Few commuter lanes exist in Prague. Today, there are marked bike lanes on some main thoroughfares. In 2006 a law was established that forces cycling facilities be incorporated into all new and refurbished roads. Another law mandating parking for bicycles in all new buildings and efforts to make Prague's trams and its underground systems more accessible to bikes. Other local problems include: the system of cycleways are only around half complete and there are trails that end suddenly out of nowhere and you are forced to get off your bike and merge with greater traffic which can be uncomfortable and dangerous. About 1,000 km of cycling routes need to be either finished or improved.

Other issues, according to cyclists, include turf battles between city agencies in charge of streets, traffic signals and transport. Interdepartmental bureaucracy can delay projects for months – even longer. A law requiring the installation of 1,000 bicycle parking stands per year in the city, yet only a few were installed. Prague also does not have a citywide bicycle share system, though there have been efforts in some districts. Public perceptions are also an issue that must be addressed if the system is going to change. As of now, there is no culture of cycling but not for lack of trying. Local groups and businesses sponsor a Bike to Work campaign and there are Czech groups that regularly participate in cycling events such as the April Bike Festival at Vienna's city hall.



POLLUTION



CONGESTION



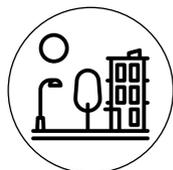
LACK OF GREEN IN THE CITY



OBESITY



CAR ACCIDENTS



DEGRADATION OF PUBLIC SPACE

## issues of current 'infrastructure'



Biking in the historic  
<https://praguewandering>

Urban cycling is becoming more common, an estimated 100,000 who ride at least once a week according to a 2012 poll. There are people who ride to work and many others who ride during the weekend for leisure or sport. But many improvements are still needed. Only 1% of mobility in Prague is cyclists compared to the European Union average of 6.24%, According to the ECF. Even greater still compared to Berlin (13%), Ljubljana (12%), Vienna (6%), Copenhagen(45%) being the greatest.

**Bike accidents increased by 100% since 2007<sup>2</sup>**

**cyclists double in 2013 despite daily dangers<sup>3</sup>**

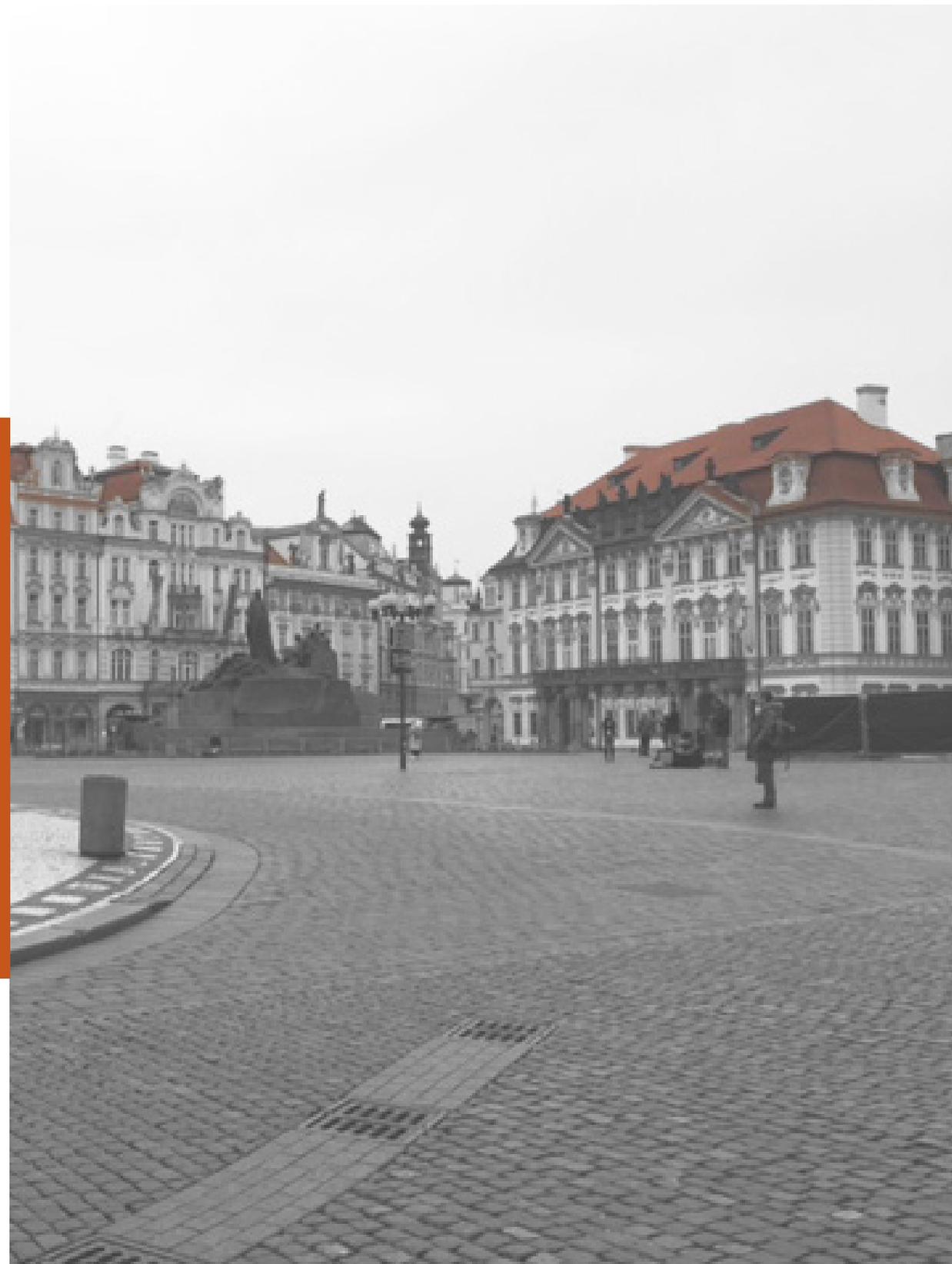
**Only 1% of mobility in Prague is cyclists<sup>1</sup>**

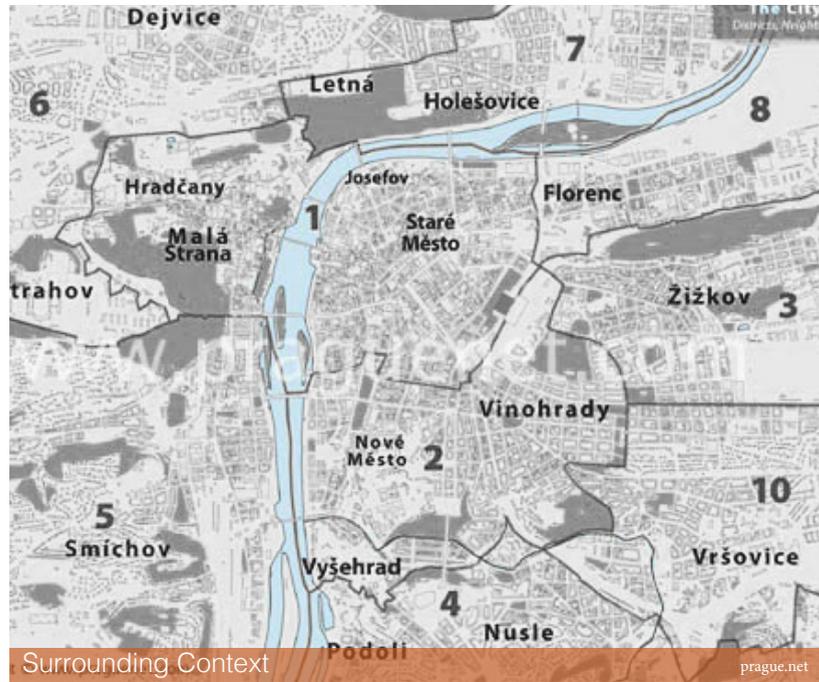
**Insufficient infrastructure & lack of safety most common concerns of Prague cyclists<sup>1</sup>**

APPARENT ISSUES	PRELIMINARY GOALS
- Lack of completed bike Infrastructure; bike paths that lead no where, end suddenly	- Improved bike routes through key corridor(s) - Improve continuity of routes
- Lack of bicycle parking	- Install accessible bike parking
- Lack of citywide bike share system	- Conceptual city wide bike share system
- Health; the Czech Republic is now the most obese country in Europe	- Provide exercise stations - Educate people about health through signage, urban farming
- Car crashes with pedestrians and bikes	- Focus on safety, clear separation of bikes from cars
- Existing bike system unnoticed and unclearly marked or separated	- Visually interesting, integrated bike paths with way-finding elements
- Pollution from cars	- Reduce car footprint through increase of bike usage
- Irregular surface caused by cobblestones	- Smoothing out surface, alternative materials
- Congestion from traffic	- Get more cars off the street and onto bikes
- Lack of bike culture - Negative perception of biking	- Involve people through bike advocacy and campaigning - Invite people through design

03

BACK-  
GROUND





Surrounding Context

prague.net

# 03 Background

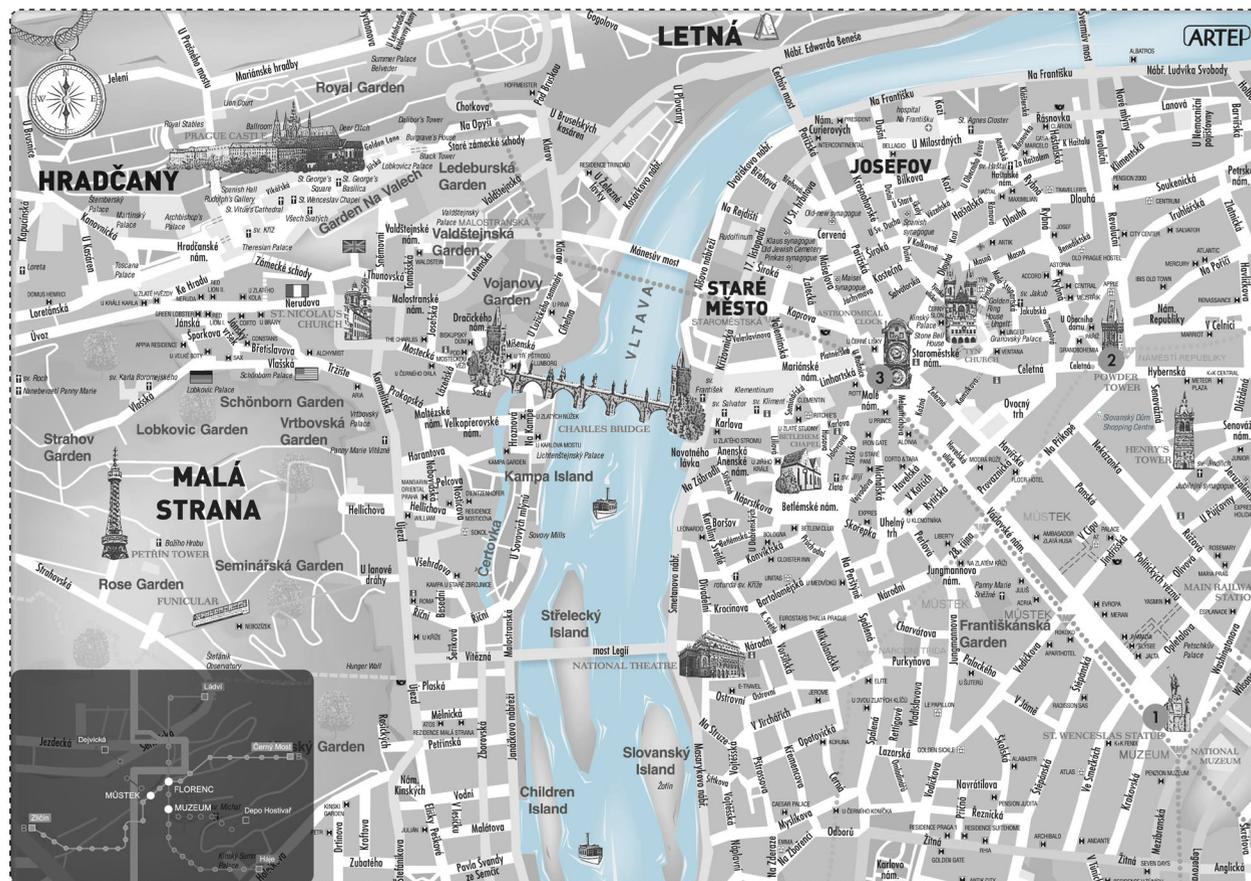
## History

The Czech Republic is located in the heart of Europe and stuns with its unique river landscapes, picturesque villages and fairy tale castles, whose history and architecture can often be traced back to the Middle Ages.

Prague, located on the River Vltava in central Bohemia, is known as “the Golden City” and “the City of a Hundred Spires” for its Gothic style cathedrals and its many historic buildings with gold accents. It is widely considered one of the most beautiful cities in the world. Narrow streets, impressive squares and small towers, it is a city made for people. The city center has all the main sites within 1.5 miles of each other. The river Vltava runs through city and is crossed by 18 bridges, the most famous one being Charles Bridge. In 1992, The historic city center was included in the UNESCO list of world heritage.

## Surrounding Context

Around the perimeter of Prague 1 is Prague 2 (Vinohrady) - Located at the top of the hill, one of the most desirable Prague neighborhoods; it's most popular among young professionals, international residents, and other well to do residents who like its chic cafes, upscale shopping centers and restaurants, Prague 8 (Florenc) - For the most part one of the outlying Prague districts, Prague 7 (Letna) - Just across the river from Old Town, Letna is a quiet residential area popular among students, as well as those who want to be close to the center for a reasonable price, Prague 6 Known for its many embassies and numerous houses and villas as well as being the district that is nearest to Prague airport, Prague 6 is the location of some of Prague's most exclusive neighborhoods and Prague 5 One of the largest Prague districts, the Smichov neighborhood, alongside the river and around the Metro station Andel, is an upscale neighborhood with newly renovated buildings, hotels, restaurants and the large Novy Smichov shopping center.



Prague 1 (Old Town) Key Sites

<http://www.maps-of-europe.net/maps-of-czech-republic/maps-of-prague/>

# Alternate Modes of Transportation



Existing: Walking



Existing: Trams



Existing: Subway



Proposed: Cycling

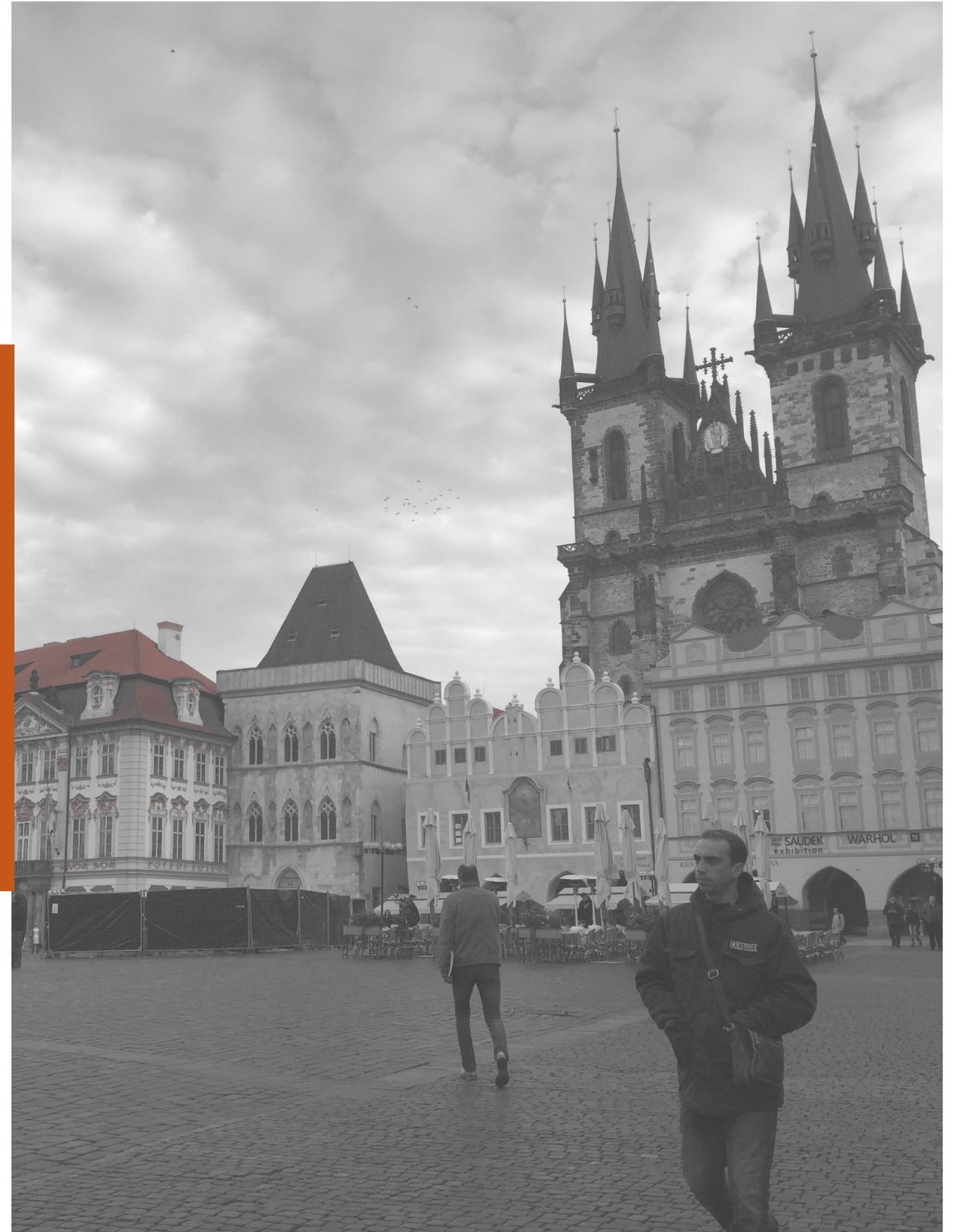
## Towards a Bikable City

According to the vice-president of the European Cyclists' Federation (ECF), Daniel Mourek, the setting is good now for new infrastructure and civic activism to encourage riding in Prague. Conditions for cyclists need to be improved while at the same time not constraining drivers. The city center is already full of too many cars. According to Vratislav Filler of the NGO Auto\*Mat which advocates sustainable development in Prague, restricting cars in the city center to only those who really need to such as delivery vans would help to bypass vehicular traffic away from the historic center.

In spite of all the roadblocks keeping Prague from having a viable cycling system, urban cycling is becoming more common, an estimated 100,000 who ride at least once a week according to a 2012 poll. There are people who ride to work and many others who ride during the weekend for leisure or sport. But many improvements are still needed. Most cycling in the city are bike tours for tourists. Only 1% of mobility in Prague is cyclists compared to the European Union average of 6.24%. According to the ECF. Even greater still compared to Berlin (13%), Ljubljana (12%), Vienna (6%), Copenhagen(45%) being the greatest.

Organizations like Auto\*Mat, an association that promotes better environment for a good-quality life in the city, are advocating for pedestrian and bicycle traffic as well as rational use of cars. Inspired by European capitals, they activate people to a positive change of streets and public spaces to help create a city people want to live in. Currently, Auto\*Mat is part of an international initiative to improve the situation in the cities of World Car-free Network and the Association of NGO Green Circle.

04  
RESEARCH



# 04 Land use



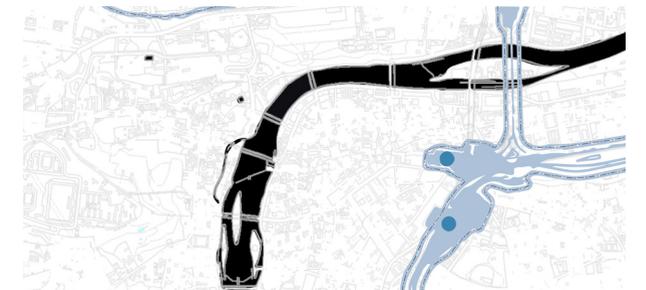
Commercial Buildings



Residential Buildings



Public Service Buildings



Railroads Stations



Public Space - Paths



Public Space - Squares



Landscape



Sports & Recreation

# 04 Context - Prague 1

| cycling map - existing and proposed |

This map dissects the cities bike paths piece by piece to show the current and proposed conditions. This map is useful in pointing out the strengths and weaknesses of the system and where it needs to improve.

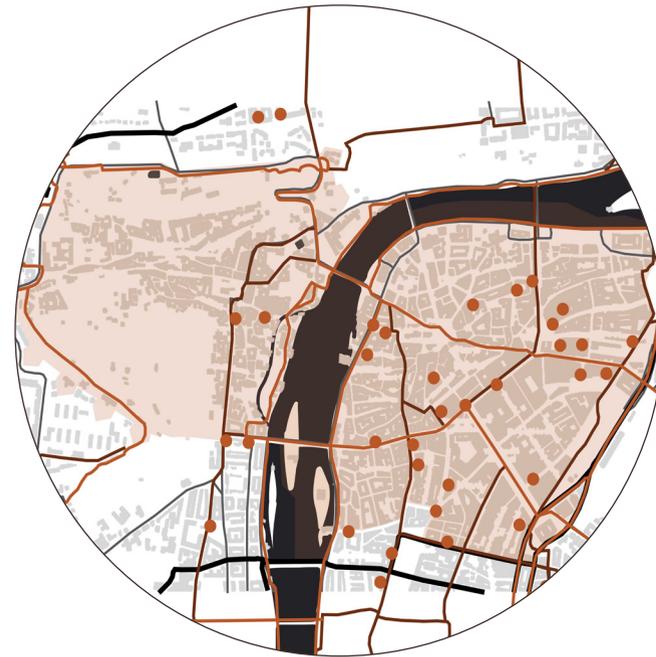


# 04 Analysis Maps

These maps illustrate key points of interest in Prague 1 with the city's existing and proposed bike routes as well as key corridors used currently by cyclists and runners.



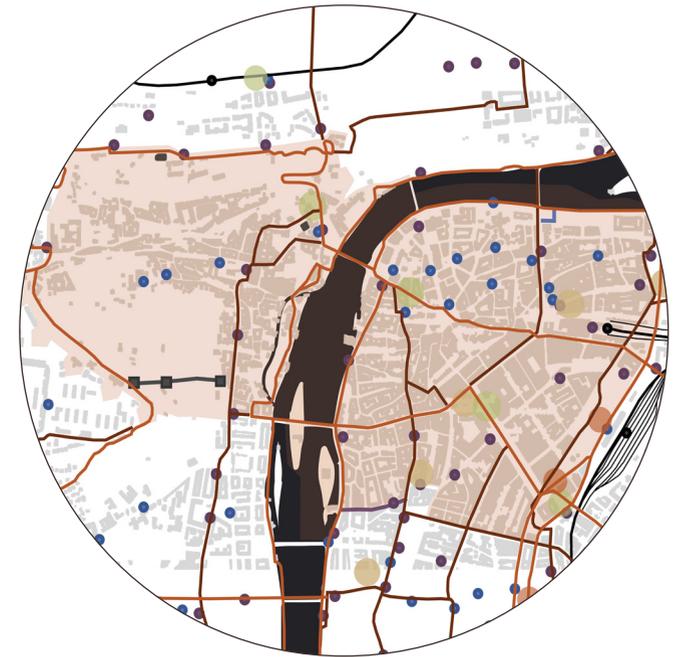
Figure Ground



Market Center



Cultural & Historical Centers



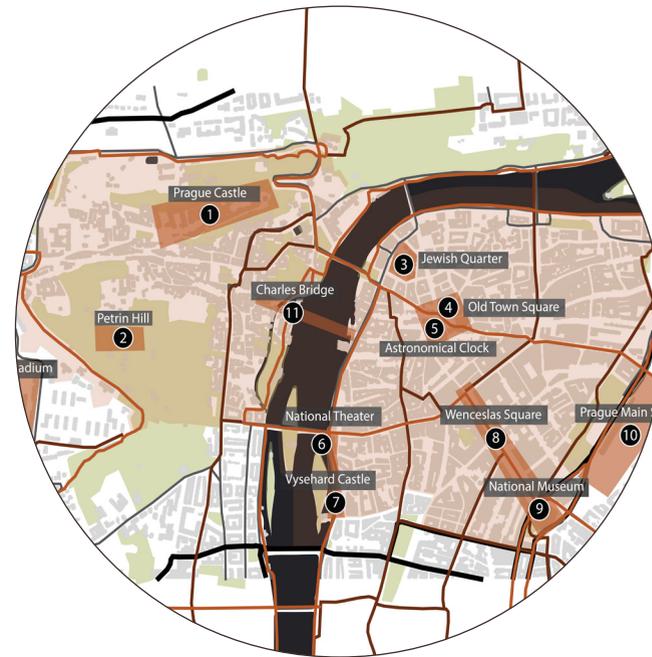
Public Transportation Stops



Heat Map - Bike Routes



Heat Map - Running Paths



Major Activity Centers



Public Transportation Routes

# 04 Analysis Maps

| heat map - frequently used bike routes |

This map shows exactly what routes cyclists are already taking. The river is already heavily used by cyclists so this will be a key area for revitalization. All of the bridges are also important corridors as well as a few main streets and plazas in the old town. To the left side of the river the perimeter is used by cyclists but the topography makes it challenging for cyclists to cross through and thus its use is limited.



# 04 Site Analysis

In the Site Analysis, I have overlaid the heat map of frequently used bike routes with the city's existing and proposed trails. The city's plan is incomplete and other than designating roads on a map, little has been done in terms of creating and improving cycling infrastructure.

## Site Analysis ||

Local and national health trends, current pedestrian circulation, accident statistics as well as demographics were examined to show the need Prague is in to make changes for the current and future wellbeing of its citizens and its potential for revitalization.

Existing Riverwalk has the potential to be transformed into a lively linear park. New connections can be made across the river to increase connectivity and provide a new experience of the Vltava River

Hradcany

Old Town

New Town

32.7%

Percentage of obese adults in the Czech Republic. The main factor responsible for the Czech population getting fatter is the lack of exercise. Obesity rate is projected to grow drastically in the next 15 years.

75%

Percentage of total emissions of nitrogen oxides in Prague. Vehicular traffic is the primary source. It causes respiratory infections, asthma, decreased lung function and diseases of the circulatory system.



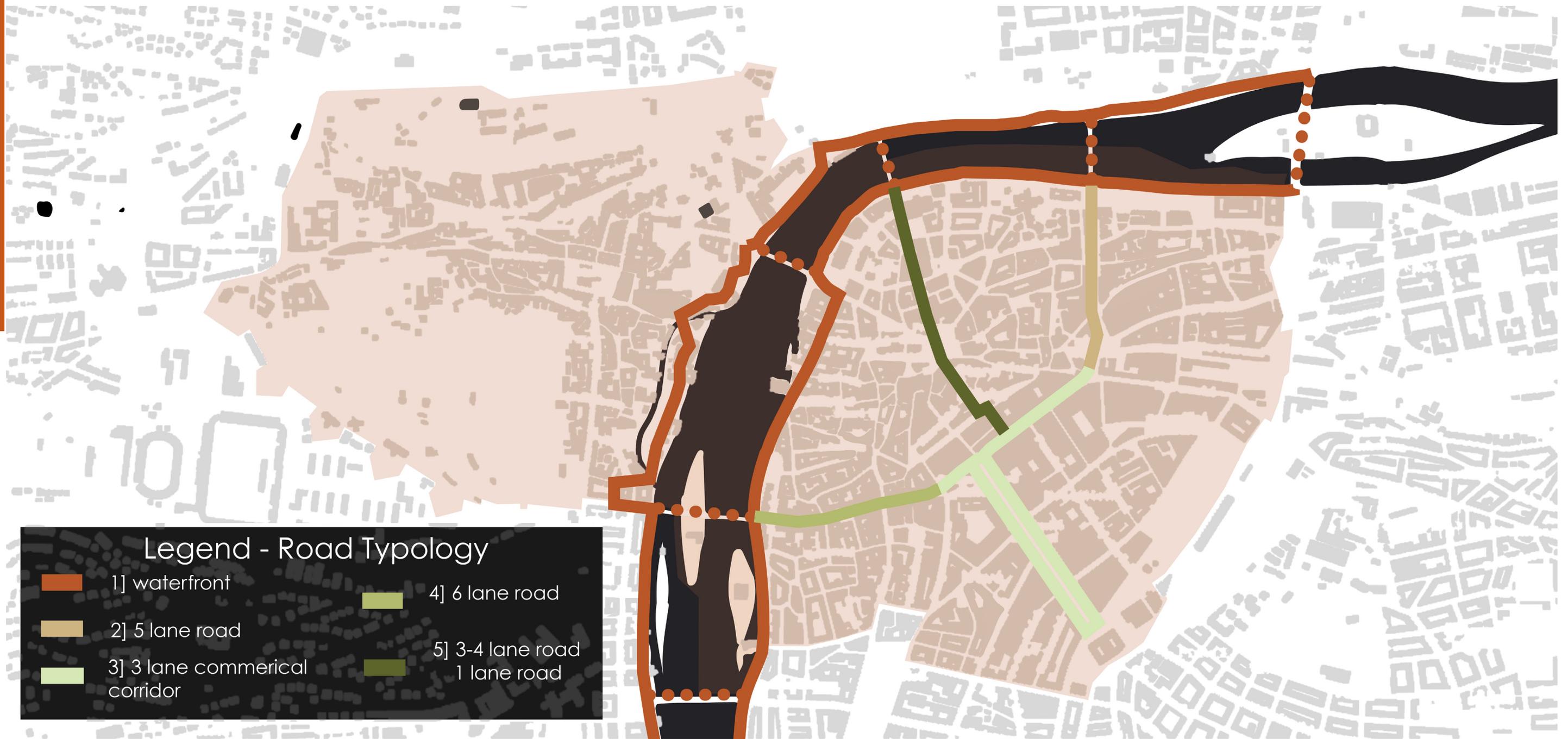
Deaths caused by vehicular accidents per 100,000 people. Half of the accidents that take place are on pedestrian crossings

PRAGUE (capital) Population: 1.3 million

Prague's urban and social structure has potential for the development of high-quality public spaces for good quality of life for the city's inhabitants.

# 04 Site Synthesis

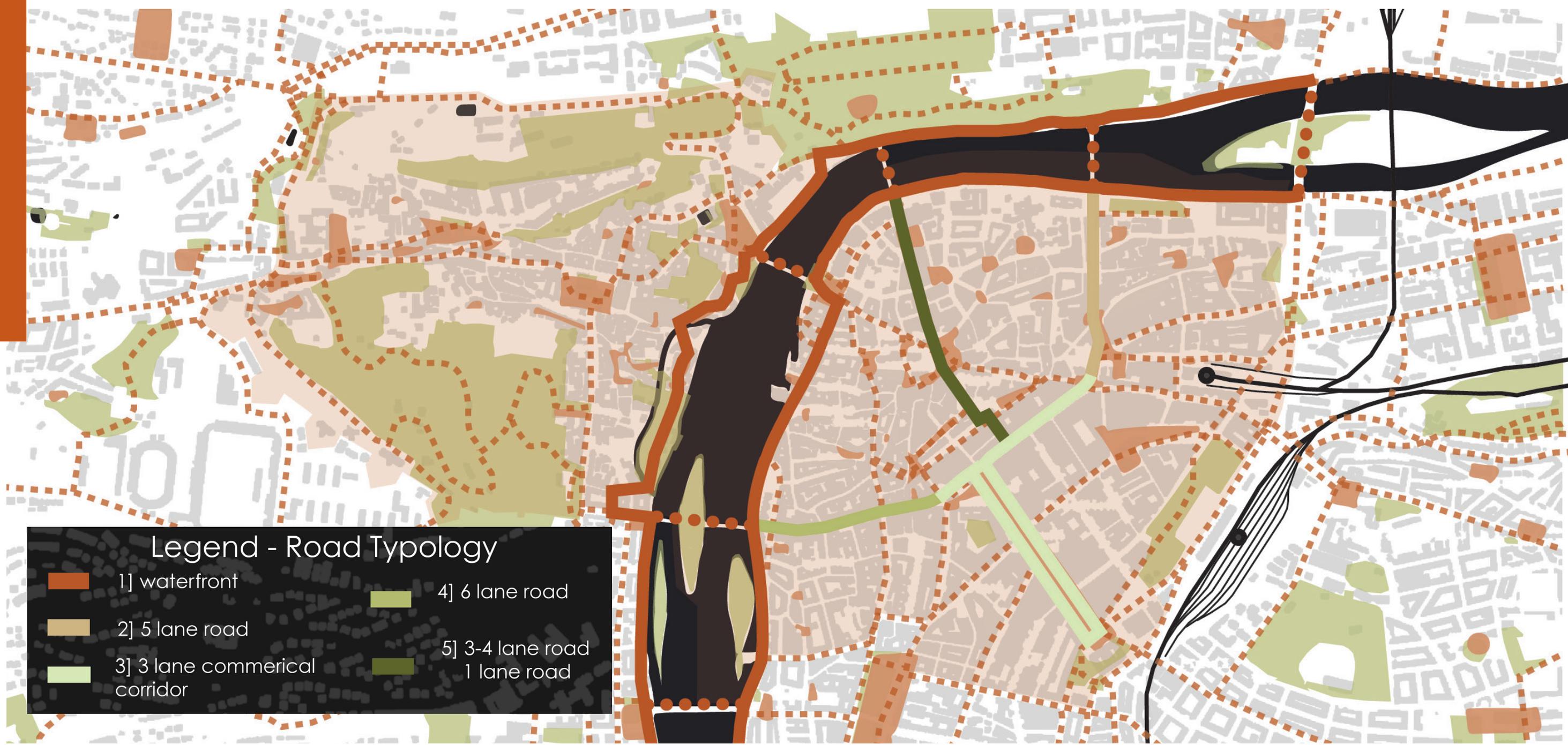
| prague 1 - proposed bike routes |



# 04 Site Synthesis

| prague 1 - proposed bike routes |

The new system intersects with all major public spaces and connects both sides of Prague 1. The paths now give cyclists access to all major activity centers, to markets, commercial centers, parks, as well as access to many public transportation stops.



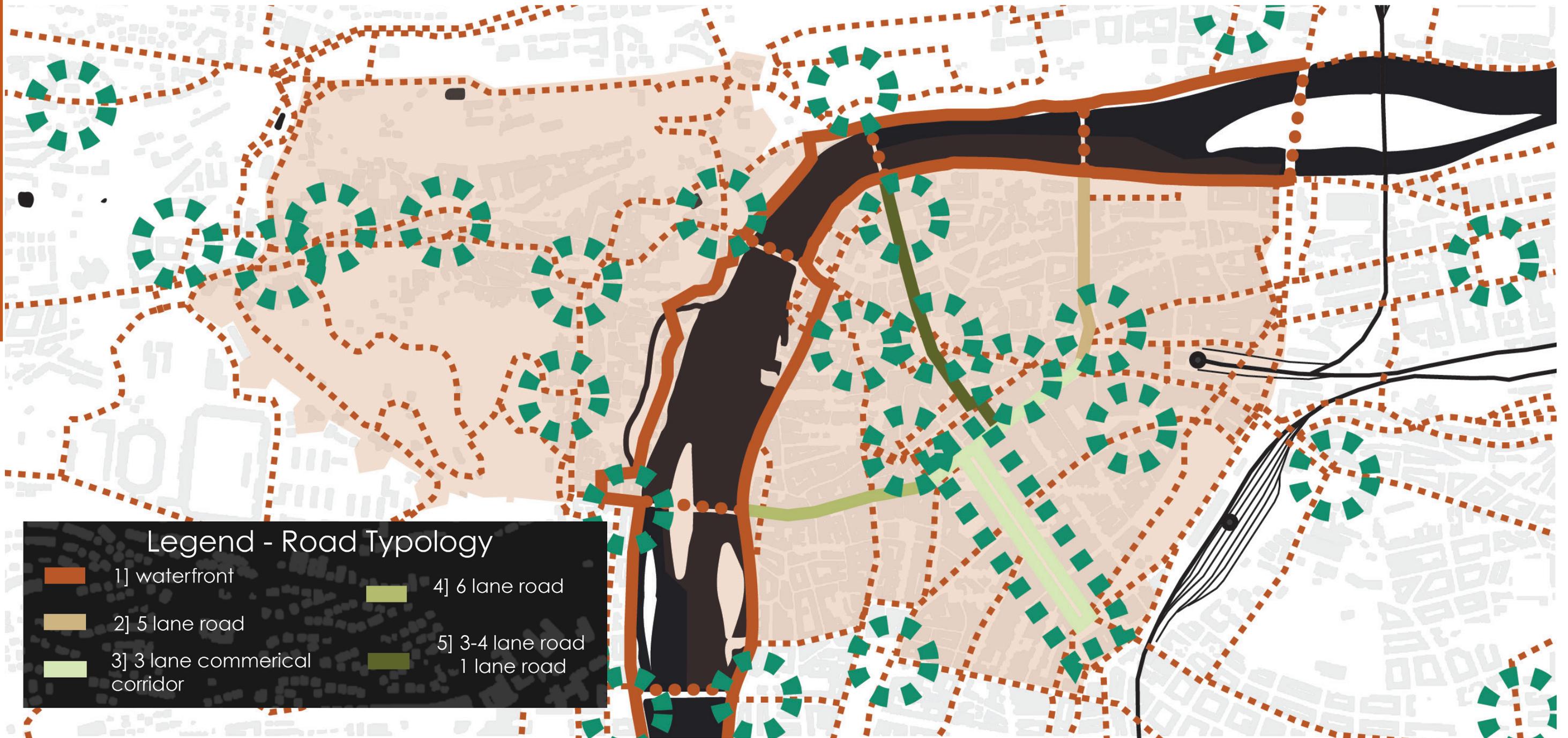
**Legend - Road Typology**

 1] waterfront	 4] 6 lane road
 2] 5 lane road	 5] 3-4 lane road 1 lane road
 3] 3 lane commercial corridor	

# 04 Site Synthesis

| routes through public space |

The paths intersect through all major squares giving the opportunity to revitalize these squares for people to stop along the way for a variety of activities.



# 04 Site Synthesis

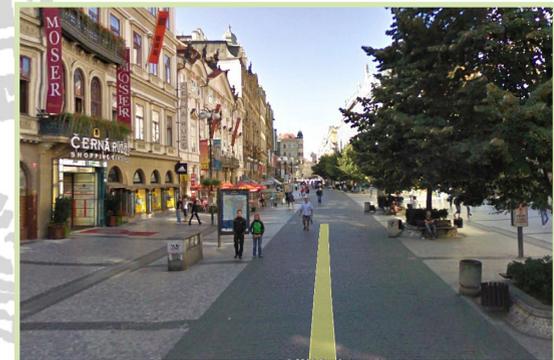
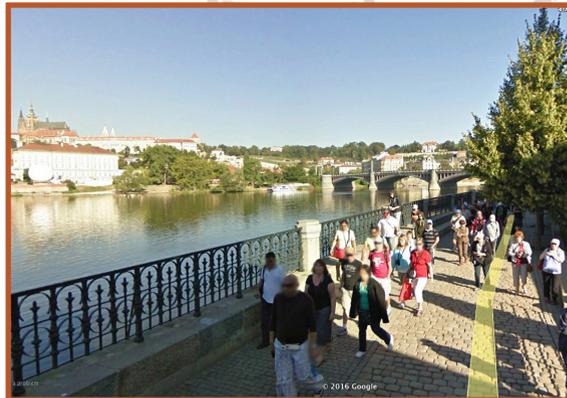
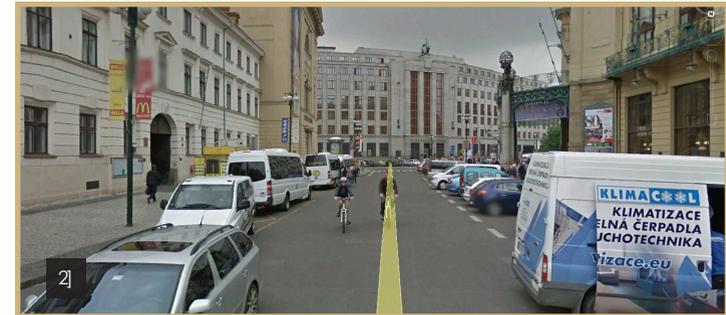
| prague 1 - proposed bike routes |

After synthesizing all the data, these trails were chosen because they go through the most important corridors that have the greatest opportunity for integrating bike. Five typologies were chosen for being typical conditions that could be encountered.



# 04 Site Synthesis

| proposed road type typologies |

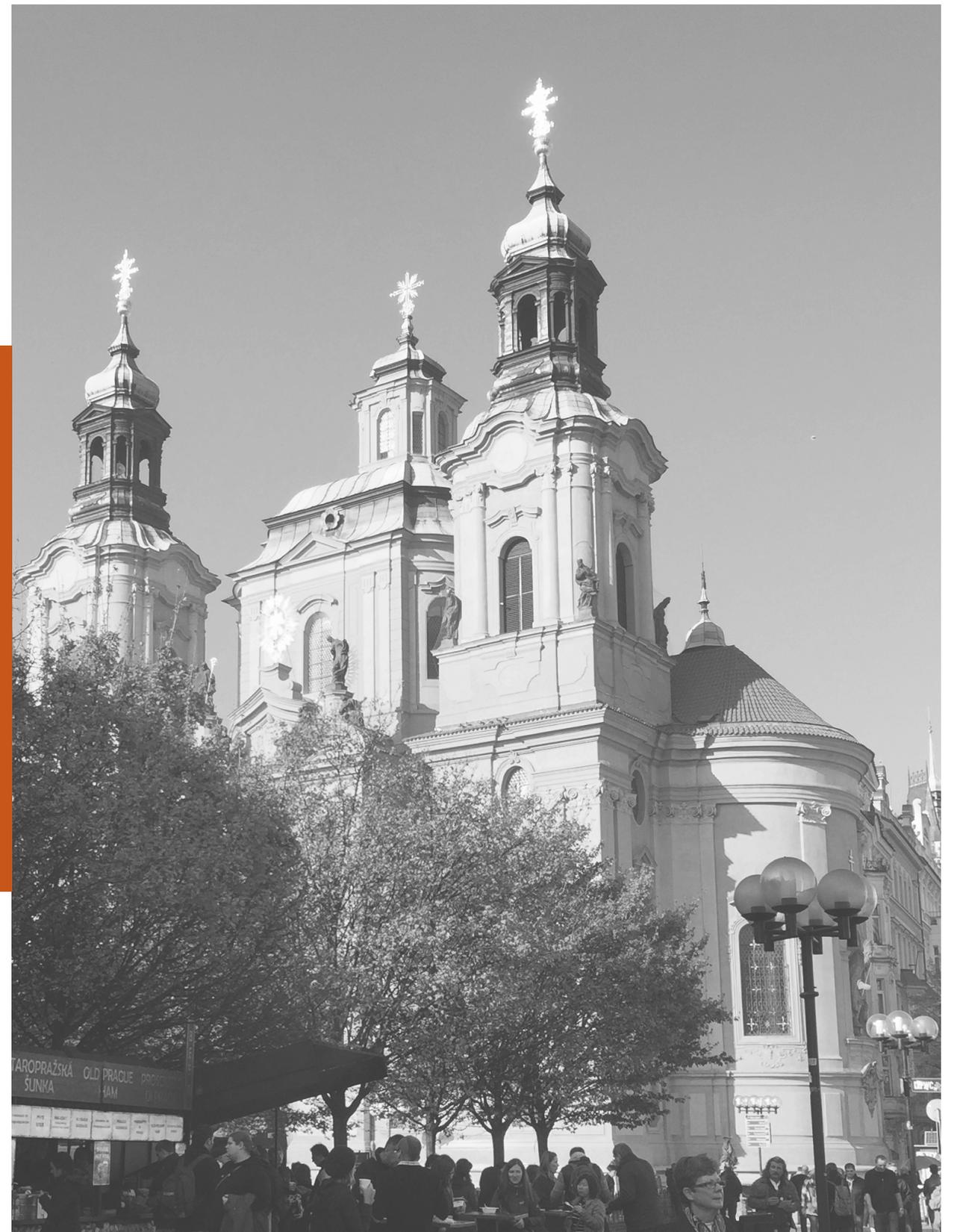


**Legend - Road Typology**

	1] waterfront		4] 6 lane road
	2] 5 lane road		5] 3-4 lane road
	3] 3 lane commercial corridor		1 lane road

05

CASE  
STUDIES



# 05 Case Studies

## Copenhagen, Denmark



### Project Description

The City of Copenhagen has a vision to become the worlds most livable city by enhancing urban life in the existing city. Emphasis is on three areas: Good conditions for pedestrians, good places to spend time, and a wide and varied range of possible activities and events in the urban space.

### Strategies

- Urban landscapes, Urban Water Areas, Urban Development Areas
- A typology with four urban space categories guides the planning of an effective urban space hierarchy - Lighting strategy, New Parks, Pocket Parks & Green Links
- Urban Life Scorecard - monitors the development of urban life by evaluating the cities urban space projects based on quality criteria in order to follow up on the cities goals
- They work in cooperation with the affected building clients.

### Lessons Learned - Public Space

- Architecture and urban spaces should invite more people to stay longer, encourage more people to walk more, and provide more urban life for everybody
- New urban spaces should expand the existing network and therefore support urban connectivity
- Should encourage movement, activity and experiences
- Emphasis on aesthetics, safety & comfort
- Urban spaces should reflect a larger architectural concept that creates the desired settings conceptually, aesthetically and functionally, and which matches traffic needs and the functions and design of the surrounding buildings.

**“It is essential to address the peripheral zones and the transitions between public and private space, where people can meet and spend time”**

### Application

A similar method can be used in Prague of focusing on maximizing the cities resources in creating urban landscapes, urban water areas, improving the cities pocket parks and creating green links.



# 05 Case Studies

## Copenhagen, Denmark



### Project Description

The City of Copenhagen also has a vision to become the world's most bikable city, which is also an important element in Copenhagen's goals of having good city life, reducing pollution and improving the health of their citizens. In other words, cycling is not the goal but a tool to create a more livable city.

### Strategies

- Prioritizing - prioritizing bicycle infrastructure, increase sense of security, ambitious short cuts like tunnels and bridges over water, railways and large roads, infrastructure expansion and campaigns focused on more considerate behavior in traffic.
- Innovation - a strategy to encourage many new cyclists to get onto their bike by creating more cycle tracks, making certain streets one-way for cars to improve cycling conditions, new types of bicycle parking and improving cobblestone streets for attractive cycle routes.
- Infrastructure - foot rests, air pumps as well as integrating technology, communication and partnerships such as IT solutions

### Lessons Learned - Bicycle Paths

- Cycling should be the easiest and fastest way to get around - new cycle tracks, direct routes, shortcuts, traffic calming and speed pumps can improve travel time, safety and sense of security for cyclists
- Coherent network of attractive routes that criss-cross the city will help reduce travel times
- Cycling should be a comfortable, unique experience that allows people to get up close and personal to their surroundings. New routes over water, railways and squares can improve travel times and create new ways to experience the city
- Smooth surface to bike on
- A bike share system
- Bicycle parking is essential, especially around metro and bus terminals
- The more people that choose to bike results in better every day life because of increased accessibility, reduced pollution, less noise and safer traffic conditions
- Room for diversity of cyclists types and ages

**"...the bicycle [is now] the most popular transport form for commuting in Copenhagen"**

### Application

All of these methods can be implemented in Prague to give citizens and tourists an alternate way to move through the city while benefiting its overall health and wellbeing

**56% of people commute by bicycle per day**



# 05 Strøget

## Copenhagen, Denmark

Strøget is a **pedestrian, car free** shopping area converted in 1962 when cars were beginning to dominate Copenhagen's old central streets.

**"The pedestrianization of Strøget marked the beginning of a major change in the approach of Copenhagen to urban life; following the success of the initiative the city moved to place a much greater emphasis on pedestrian and bicycle access to the city at the expense of cars. This approach has in turn become internationally influential."**

The streets was temporarily closed to traffic for some days at Christmas in the 50's but was made permanent in 1964.

The idea was **controversial**, some people believing that the Danes did not have the mentality for "public life" envisioned by such a street, and many local merchants believed the move would scare away business. The 'father' of a carfree Strøget, Alfred Wassard, Copenhagen's 'mayor for town planning' even faced death threats.

However the project proved a huge success with **renewed street life** and soon started expanding the network with more streets and squares being emptied of cars.



# 05 Case Studies

## Amsterdam, Netherlands



32% of people commute by bicycle per day

### Project Description

The City of Amsterdam has been growing its cycling culture since the 1970's. Despite the growth of car traffic, bikes have remained an important part of mobility due to a combination of public pressure, policy making, and physical planning design.

### Strategies

- Cycle policy is an integral part of the Amsterdam mobility policy. It is based on four pillars: road safety; infrastructure; parking, education and promotion.
- Pedestrian space was reduced, which policy makers now regret.
- City council required a new national standard traffic system called 'sustainable safety' which allowed them to create separate bike lanes for main roads and roads for through traffic

### The new approach to mobility

Proposing a new system of so-called 'Plus nets', a system in which, in general, only a couple different modes of transport take precedence in a street; for instance, public transport and bicycles, cars and bicycles or public transport and cars.

### Challenges

The popularity of cycling has led to a volume of cycle traffic that is overwhelming the city, with frequent bicycle traffic jams at certain intersections. Cyclists are increasingly using space outside their allocated area.

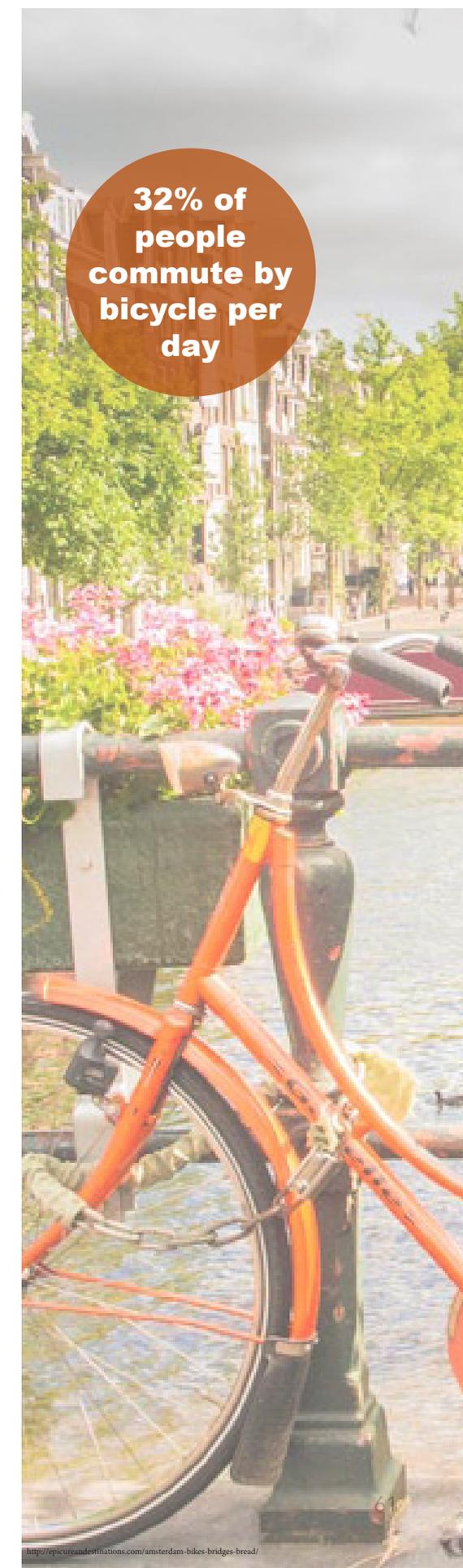
### Lessons Learned

- The basis for easier, quicker and safer cycling is the design and construction of a sophisticated cycle network with a clear hierarchy of routes.
- Bicycle parking facilities are essential and could come in the form of stands for individual, parking facilities at railway stations, city center hubs and entertainment venues, garages or even going underground
- 1.5 meters needed per bicycle
- Cycling streets help reduce congestion and provide a sense of safety

**"As more and more data was acquired, it turned out that the major problem was not so much that we needed a new policy to stimulate cycling, but rather practical solutions to facilitate the increase in cycling traffic."**

### Application

The method of 'Plus nets' could be useful in Prague to make transportation clearer and more specific. Creative bicycle parking solutions can be used to prevent bikes congesting the city.



# 05 Case Studies

## Barcelona, Spain



12% of people commute by bicycle per day

### Project Description

Barcelona is now widely known for being innovative in planning. Barcelona continues to strive to become a more sustainable city model. It is known for having accessible open space and its walk ability. The city council is working to renew the Urban Mobility Plan of the city in order to improve citizens' quality of life, strengthen the economy and meet European regulatory parameters for environmental issues.

### Strategies

- The plan has four goals:
- Safety by decreasing accidents
- Sustainability by reducing the use of private motorized vehicles
- Equity by guaranteeing access to mobility for all people
- Efficiency by reducing the economic/congestion costs of the transport system

### Lessons Learned

- Bike share stations should be located near Metro stations and major parking areas
- Provide real time information on bike availability on the Internet
- Open city to waterfront
- Get priorities straight (public amenities)
- Sustainable development (brown-fields, open space and parks)

**“Barcelona is absolutely a world class city. From its architecture to its boulevards to its parks, it is a vast, diverse, center of culture and entertainment. It literally pulsates with energy.”**

### Application

Barcelona's canopy lined streets and activated public squares are good examples of Prague's potential for activated spaces. Their successful bike share system is an effective way to promote cycling as an alternate form of transportation. They also are a good example of using their city's potential by opening the city to the waterfront

# 05 Case Studies

## Paris, France



### Project Description

Paris is investing into its cycling infrastructure with the purpose of providing a solution to its pollution problem and reduce the excessive smog in the city.

### Strategies

- Create an express way that will follow Paris's main roads and avenues and river along with 700km of cycle lanes around the rest of the city.
- Speed limits reduced on roads with cycle lanes while transport was made free
- Create 10,000 bike parking spaces
- Created Quartiers Verts (Green Neighborhoods) to improve pedestrian space and reduce traffic in residential areas
- Parking modifications: higher rates, reduction in the amount of on-street parking, elimination of free parking (created residential parking permits for a yearly nominal fee)
- Espaces Civilises (Civilized Spaces): took aim at Paris's most car friendly boulevards and significantly reduced them converting lanes for pedestrians and street trees
- Created separate lanes for buses and bikes

### Successes

The Green Neighborhoods and Civilized Spaces increased the bicycle modeshare by 50%. With the addition of a bike share system, Velib, with 10,000 bikes available the number of bike trips doubled.

### Lessons Learned

- On street parking can be turned into dedicated bus corridors. This would make the public space more comfortable as it is no longer choked with traffic
- For a Successful Bike Share System:
- Bikes should be easily accessible and at a low cost (the first 30 min free)
- A dense network of bike share stations across the coverage area, with an average spacing of 300 meters between stations
- A fully automated locking system that allows users to check bicycles easily in or out of bike-share stations
- A wireless tracking system, such as radio-frequency identification devices (RFIDs), that locates where a bicycle is picked up and returned and identifies the user

**"The battle against greenhouse gas emissions and air pollutants is also at stake with this project."**

### Application

A bike share system in Prague would be an easy way to make bikes accessible to people that can be stored and maintained by the city.

**5% of people commute by bicycle per day**



# 05 Case Studies

## Chicago, Illinois



2% of people commute by bicycle per day

### Project Description

The City of Chicago's vision is to make bicycling an integral part of daily life in Chicago to improve the city's quality of life.

### Strategies

- Bike-way Network – Establish a bike-way network that serves all Chicago residents and neighborhoods.
- Bicycle-friendly Streets – Make all of Chicago's streets safe and convenient for bicycling.
- Bike Parking – Provide convenient and secure short-term and long-term bike parking throughout Chicago.
- Transit – Provide convenient connections between bicycling and public transit.
- Education – Educate bicyclists, motorists, and the general public about bicycle safety and the benefits of bicycling.
- Marketing and Health Promotion – Increase bicycle use through targeted marketing and health promotion.
- Law Enforcement and Crash Analysis – Increase bicyclist safety through effective law enforcement and detailed crash analysis.

### Lessons Learned

- Protected bikeways help create "low stress" paths that are inviting to people of all ages and abilities
- A highly engaging advocacy group important to the success of a cycling network
- Provide a bicycle accommodation within 1/2 mile of every citizen
- Provide a greater number of bikeways where more people live.
- Increase the amount of infrastructure where ridership is high, while establishing a strong backbone of infrastructure where ridership is currently lower.

**"The Streets for Cycling Plan 2020 establishes the framework for Chicago to be the most bike friendly city in the US and will create economic opportunity in our neighborhoods and throughout the city"**

### Application

Chicago is a great example of a city with minimal bike infrastructure that with the implementation of best practices has transformed the city and inspired thousands of residents to engage with the outdoors

# 05 European Cities taking back the streets - car free cities

People don't own cars because they don't need to

COPENHAGEN  
AMSTERDAM  
VIENNA  
BUDAPEST

PARIS & BARCELONA MOVING IN SAME DIRECTION

World Car free Network is the hub of the global car free movement, which promotes alternatives to car dependence and automobile-based planning, and works to improve quality of life for all.

Most European cities are at an advantage in that they were designed for people to move through without cars

According to Vratislav Filler of the NGO Auto\*Mat which advocates sustainable development in Prague, restricting cars in the city center to only those who really need to such as delivery vans would help to bypass vehicular traffic away from the historic center.

Prague is warmer than Copenhagen and mostly flat and therefore the conditions are more desirable for a bike network



**Benefits of reducing cars in a city:**  
More space for people, cleaner air, safer cities, affordable, Eco-friendly, increase attractiveness of cities, provides exercise for healthier citizens, **better quality of life**

06 +  
DESIGN  
CONCEPTS



# 06 Approaches: Creating Healthy corridors



How Prague's right-of-way is prioritized now



How Prague should be designed

## Guiding principles:

- 1) **Woonerf** - shared street concept design to that allows all users to share the same space
- 2) **Green Boulevard Active Street Design** - street type that separates through traffic from local access through the use of medians and tree lined streets
- 3) **Bike Highway/Bicycle Boulevard** - streets prioritized for bicycle use through advisory warnings to motorists, traffic calming measures and guidance to encourage bicycle users

**SAFETY**

**PLACE-MAKING**

**GATHERING**

**PLAY**

**ACTIVATE**

**MOVEMENT**

**SUSTAINABILITY**

**NATURE**

# 06

## 5 requirements for a successful bike system

- 1) **Safety** - cyclist needs a safe traffic environment
- 2) **Directness** - route needs to be as short as possible and easy to ride
- 3) **Coherence** - coherent network with no missing links
- 4) **Attractiveness** - routes should be attractive; low air pollution, social safety, nice surroundings (the paths should be well lit and maintained)
- 5) **Comfortable** - pavement smooth and even

## Successful Bike System Design Qualities

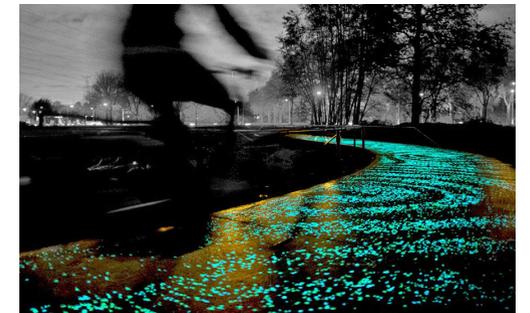
Separated Bike Lanes



Bike Share Stations



Lighting



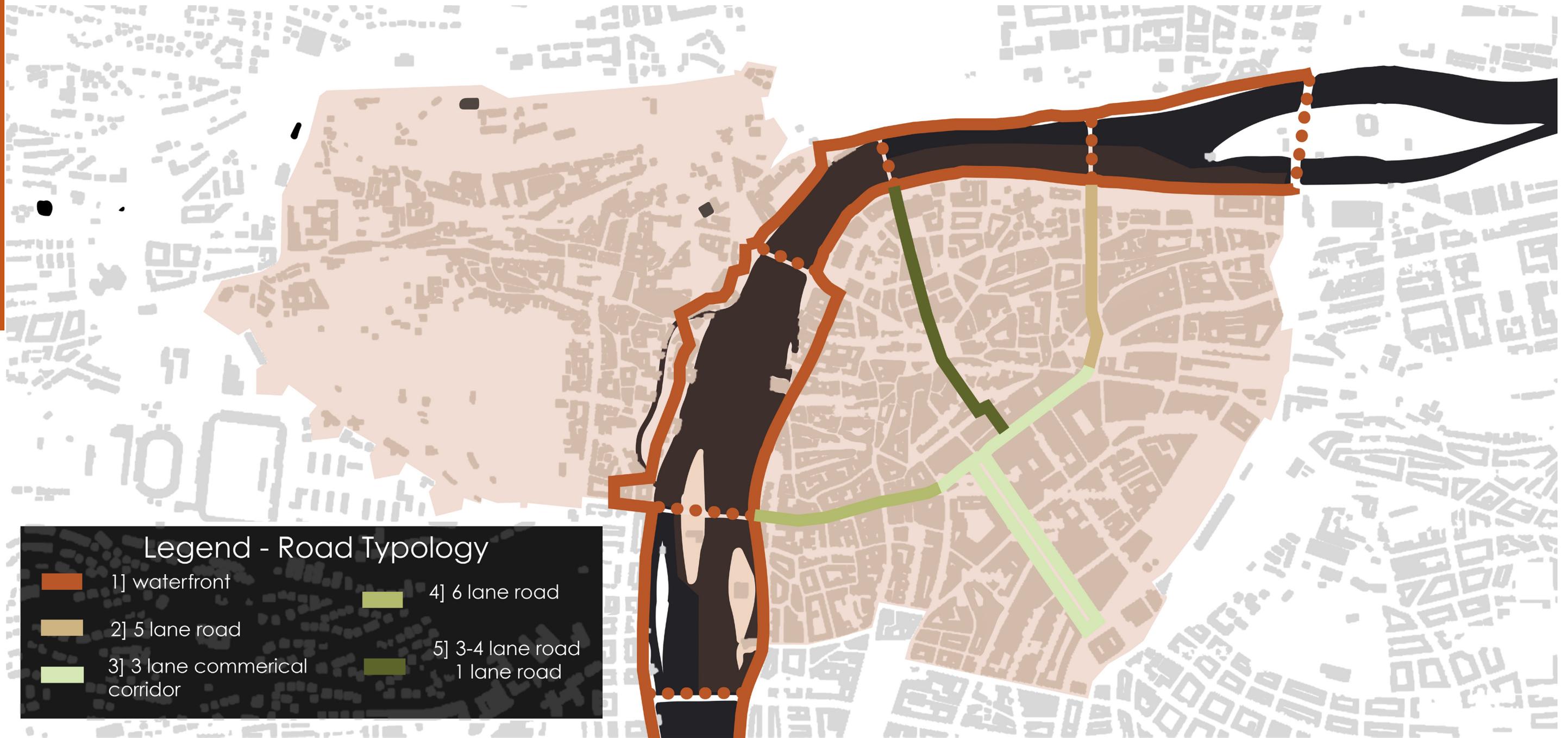
Clearly Marked



Wide, Comfortable Lanes



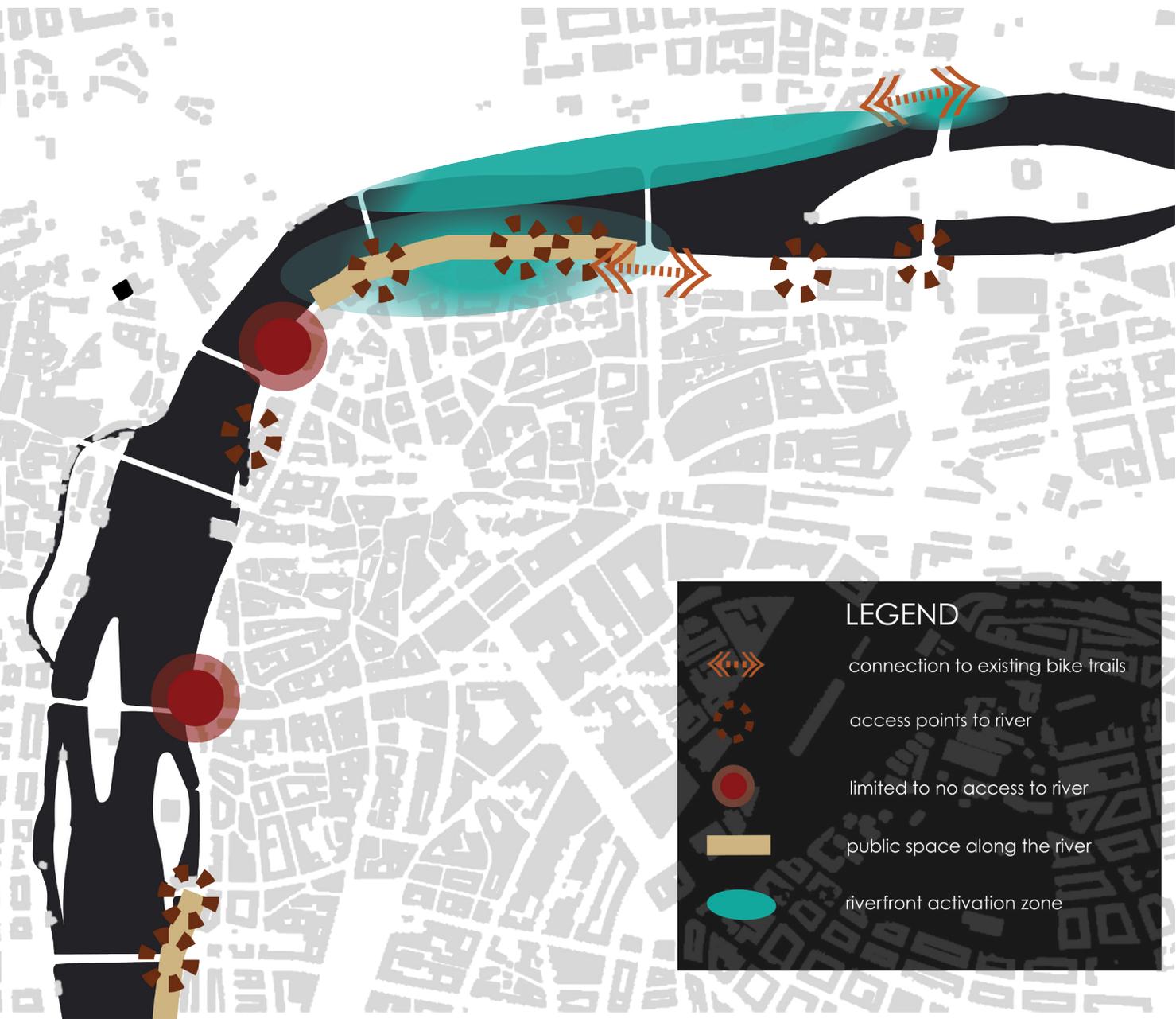
# 06 Road Typology



# 06 1] Road Typology - Waterfront

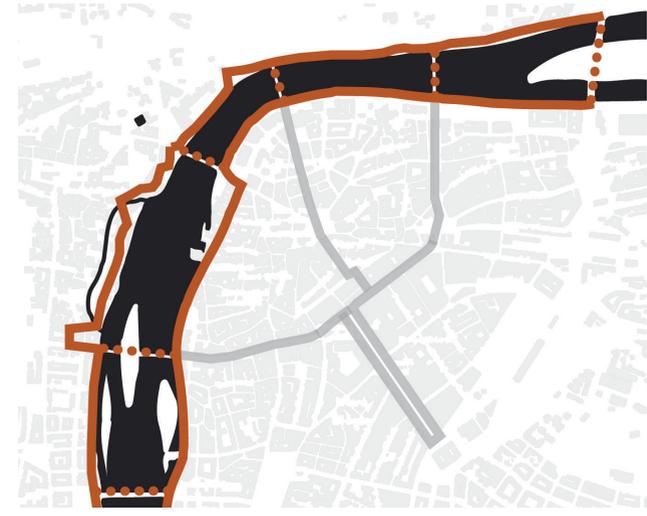


# 06 River Analysis



**LEGEND**

-  connection to existing bike trails
-  access points to river
-  limited to no access to river
-  public space along the river
-  riverfront activation zone



Connections to other bike lanes are opportunities for better access to bikes along the riverfront



Connect to Existing Bike Lanes

Enough width on lower level of waterfront to create activities and activate space



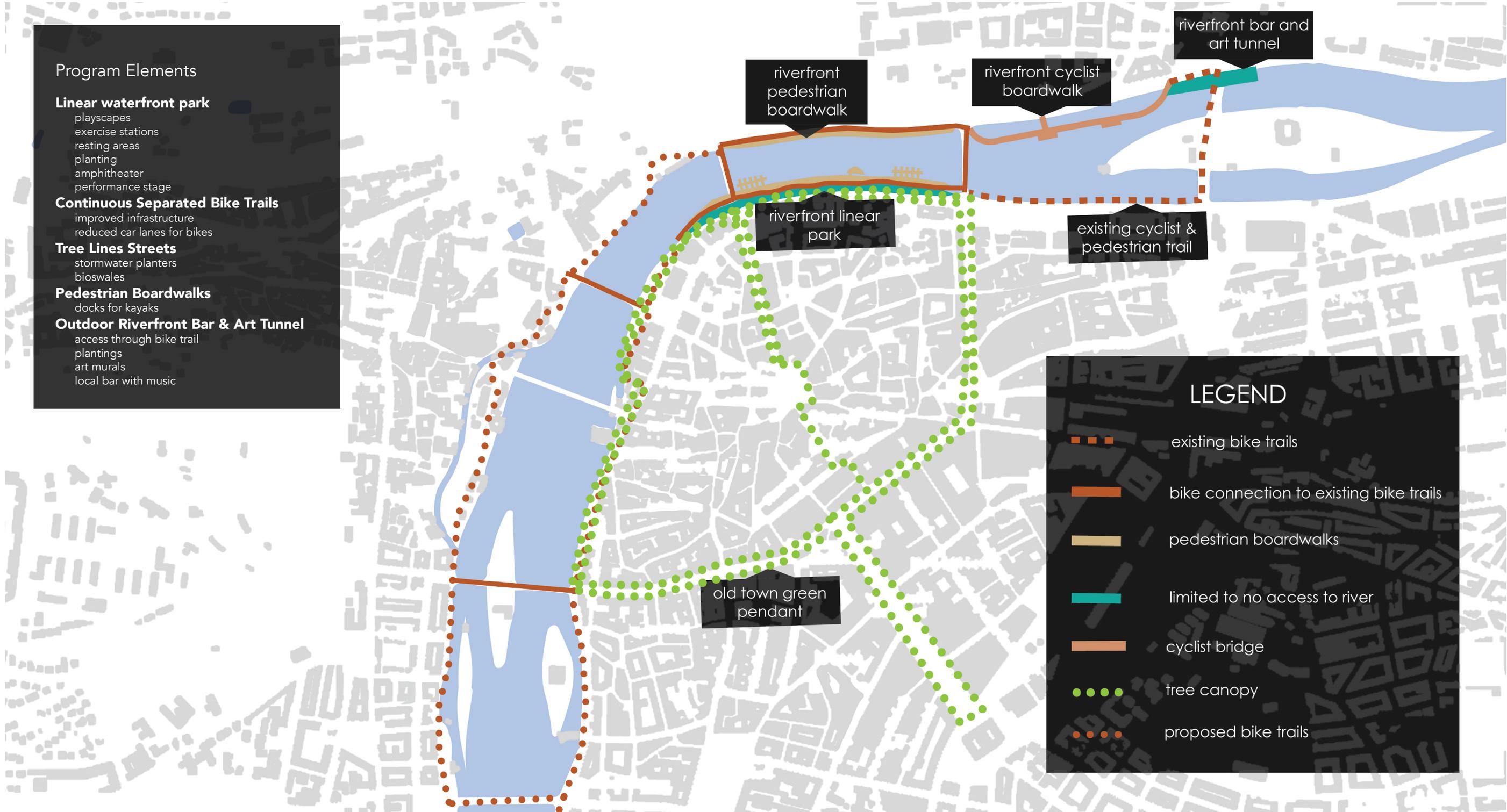
Activate Riverfront Space

Limited space; opportunity for boardwalk for better pedestrian experience along the river



Create New River Access

# 06 Conceptual Masterplan



- Program Elements**
- Linear waterfront park**
    - playscapes
    - exercise stations
    - resting areas
    - planting
    - amphitheater
    - performance stage
  - Continuous Separated Bike Trails**
    - improved infrastructure
    - reduced car lanes for bikes
  - Tree Lines Streets**
    - stormwater planters
    - bioswales
  - Pedestrian Boardwalks**
    - docks for kayaks
  - Outdoor Riverfront Bar & Art Tunnel**
    - access through bike trail
    - plantings
    - art murals
    - local bar with music

**LEGEND**

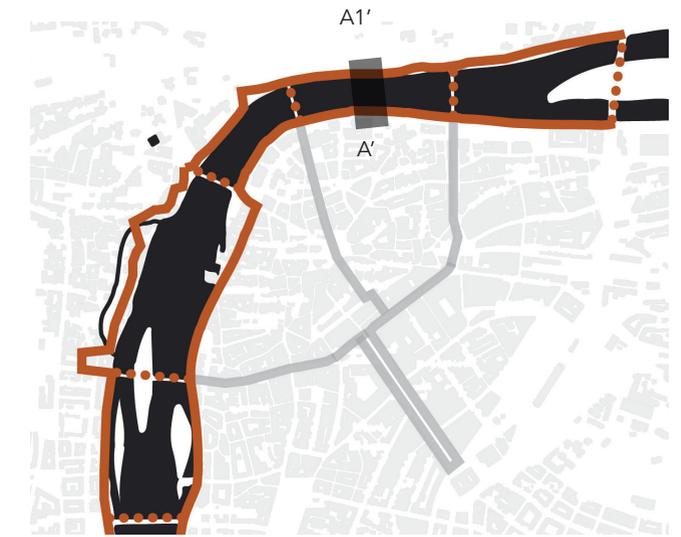
- existing bike trails
- bike connection to existing bike trails
- pedestrian boardwalks
- limited to no access to river
- cyclist bridge
- tree canopy
- proposed bike trails

# 06 1] Waterfront

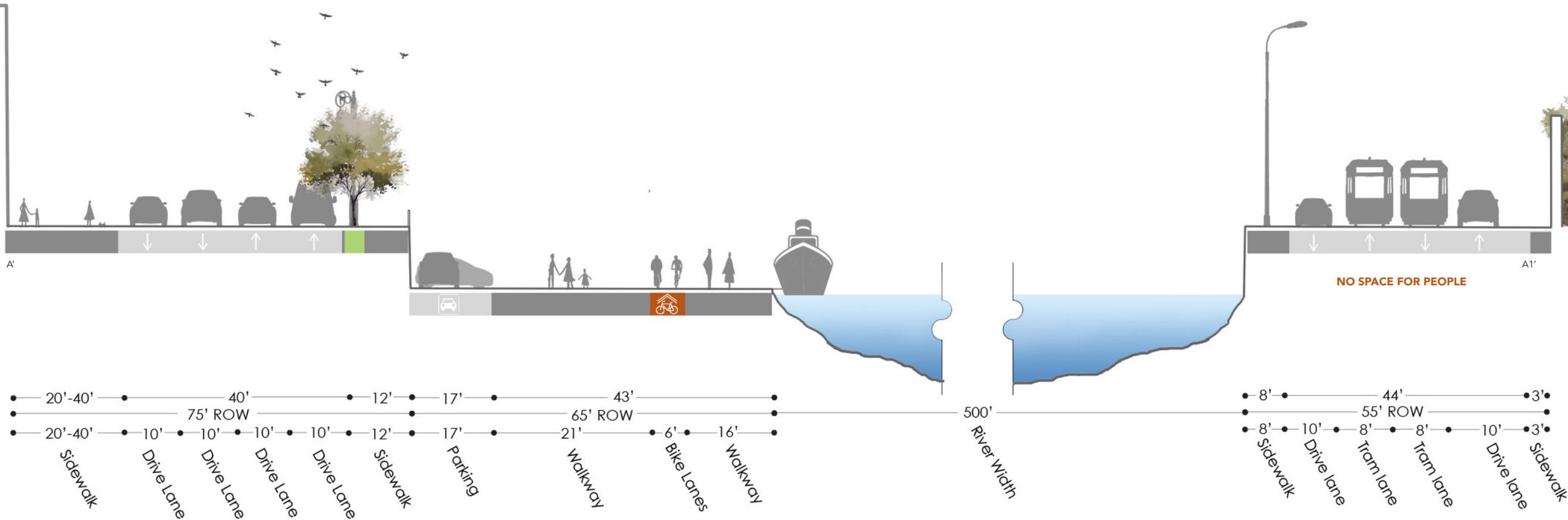
## The River

The Vltava River is a historically valuable public space of citywide importance yet it is highly underused. Permanently anchored boats block most views of the panorama of Prague. Boats face practically no restrictions. The lower part of the river is also used for parking cars. It holds the city's greatest potential to create an amenity for the city's residents and tourists alike

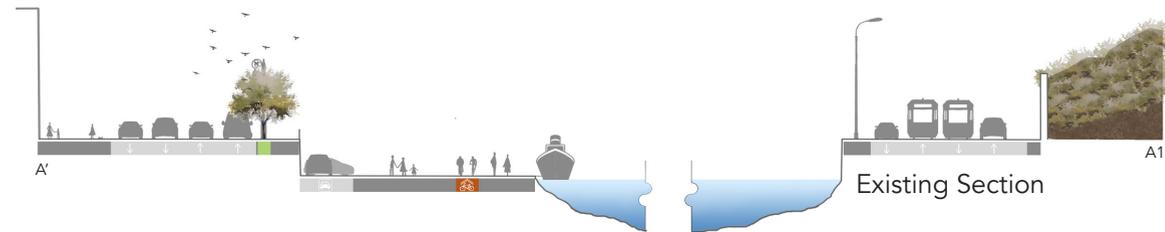
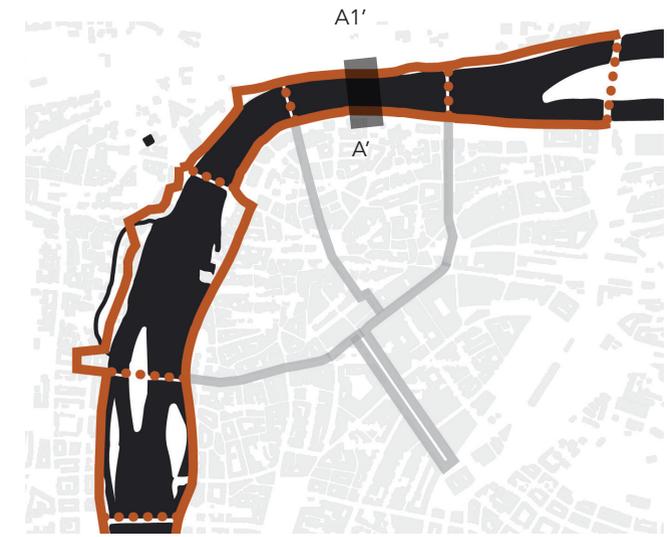
## Existing Conditions



- UNDERUSED**
- BLOCKED VIEWS**
- CARS**
- LACK OF GREEN**
- COBBLESTONES**



# 06 1] Waterfront Design

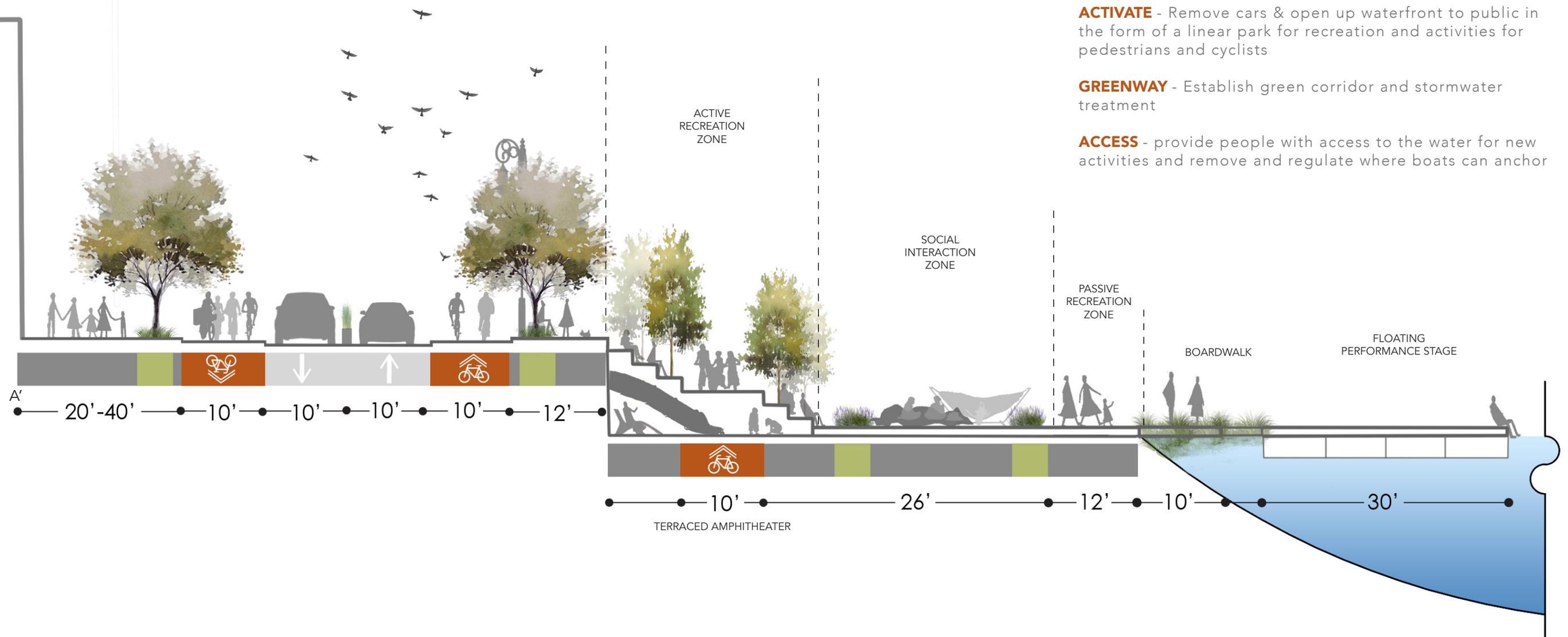


**CIRCULATE** - Create multi-modal streetscapes with designated paths for bikes on both levels of the waterfront

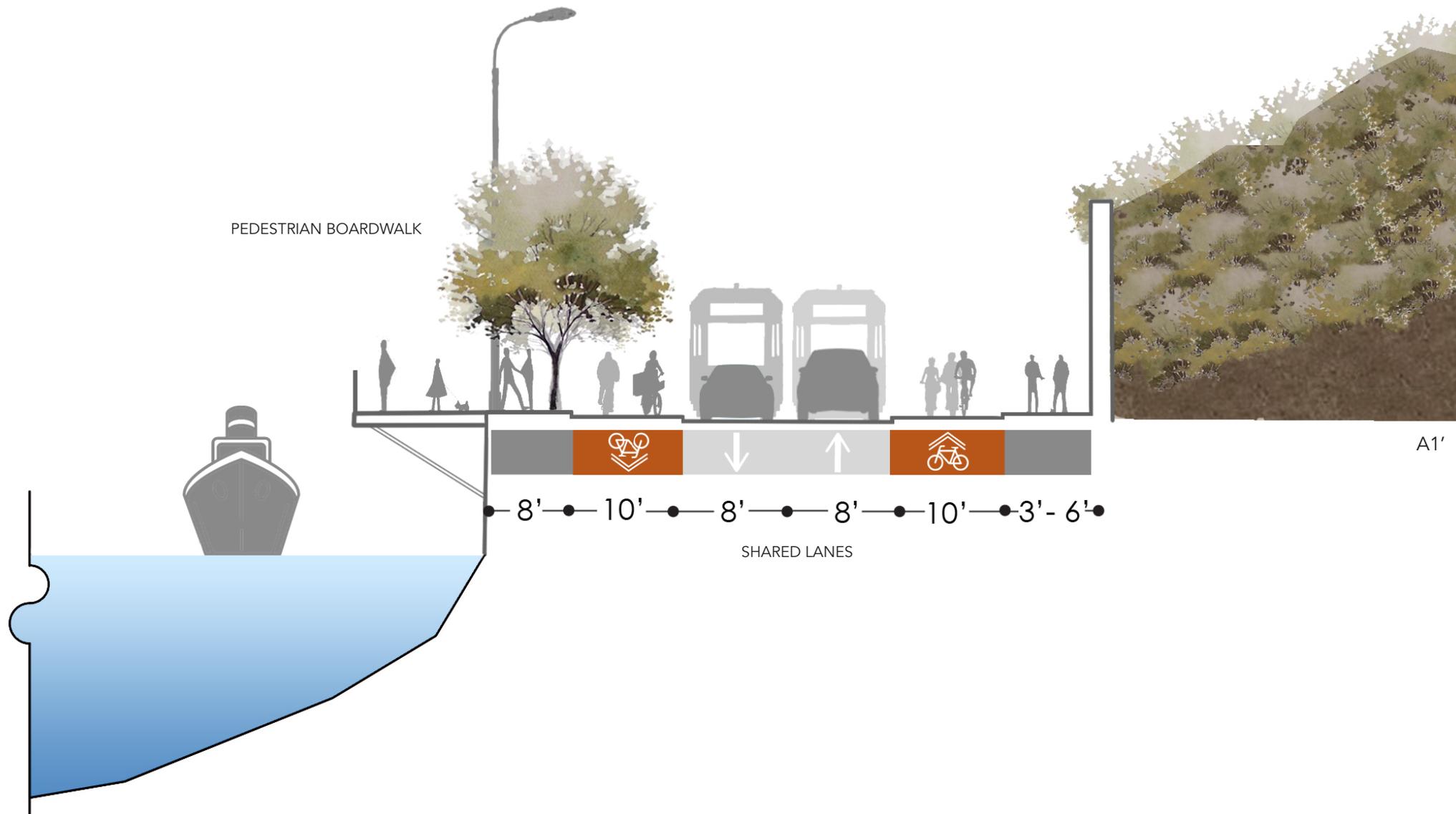
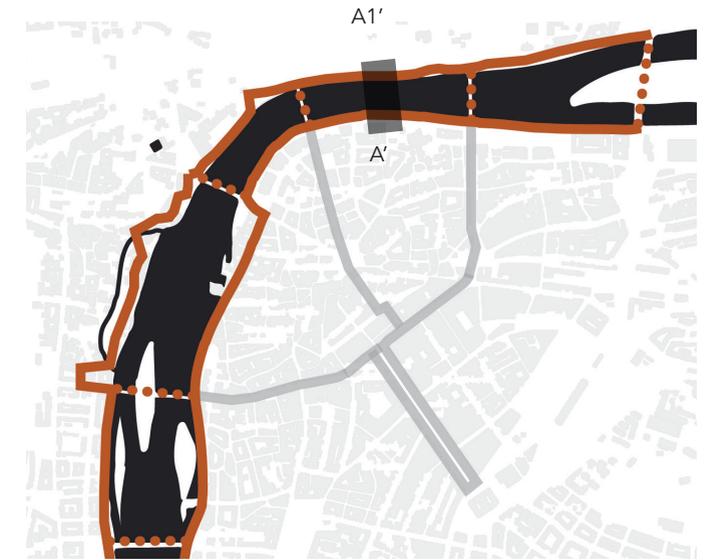
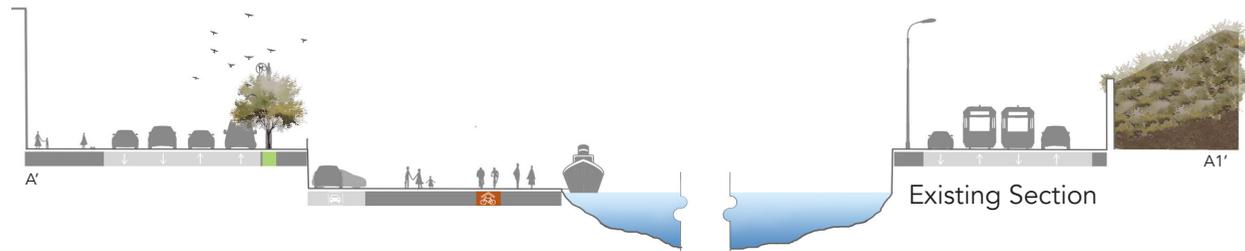
**ACTIVATE** - Remove cars & open up waterfront to public in the form of a linear park for recreation and activities for pedestrians and cyclists

**GREENWAY** - Establish green corridor and stormwater treatment

**ACCESS** - provide people with access to the water for new activities and remove and regulate where boats can anchor



# 06 1] Waterfront Design



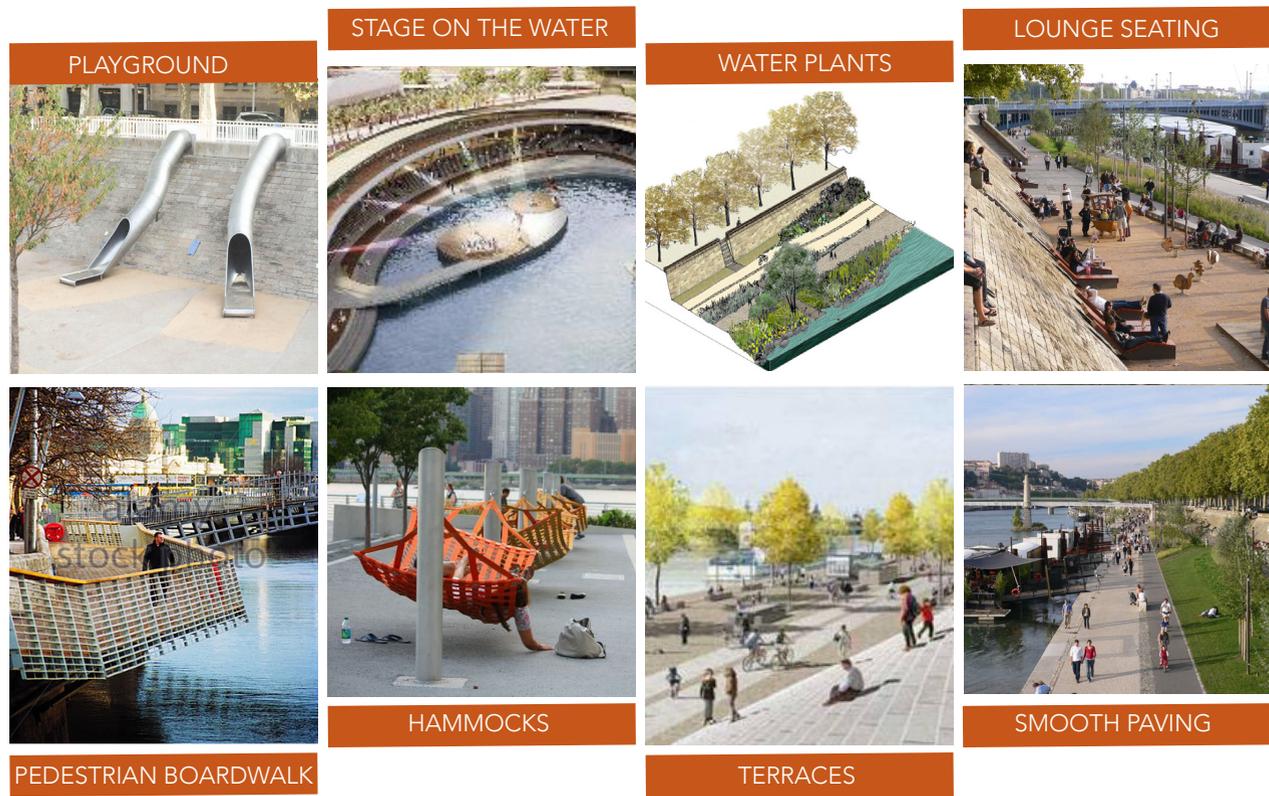
**CIRCULATE** - Create multi-modal streetscapes with designated paths for bikes on both levels of the waterfront

**ACTIVATE** - Cars and trams share lanes to provide for equal right of way for cyclists

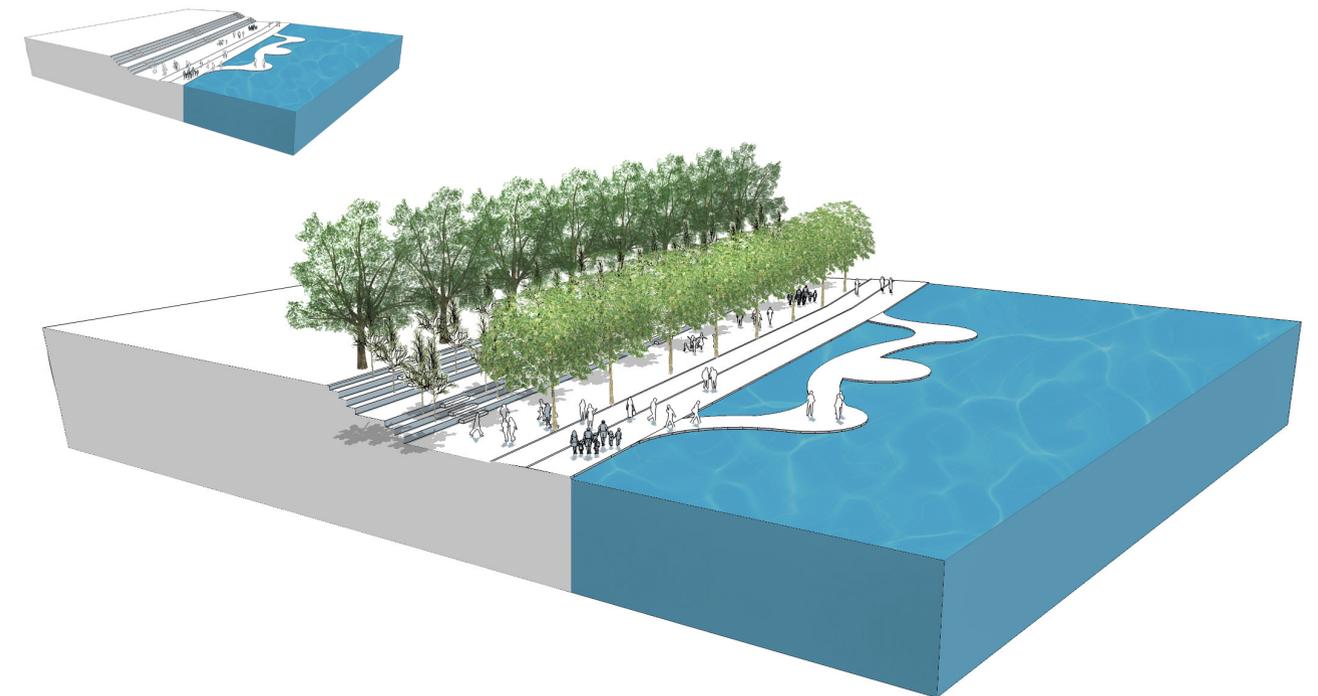
**ACCESS** - Create boardwalks to allow for better pedestrian access to the water

# 06 Uses Along the River

## Character Images



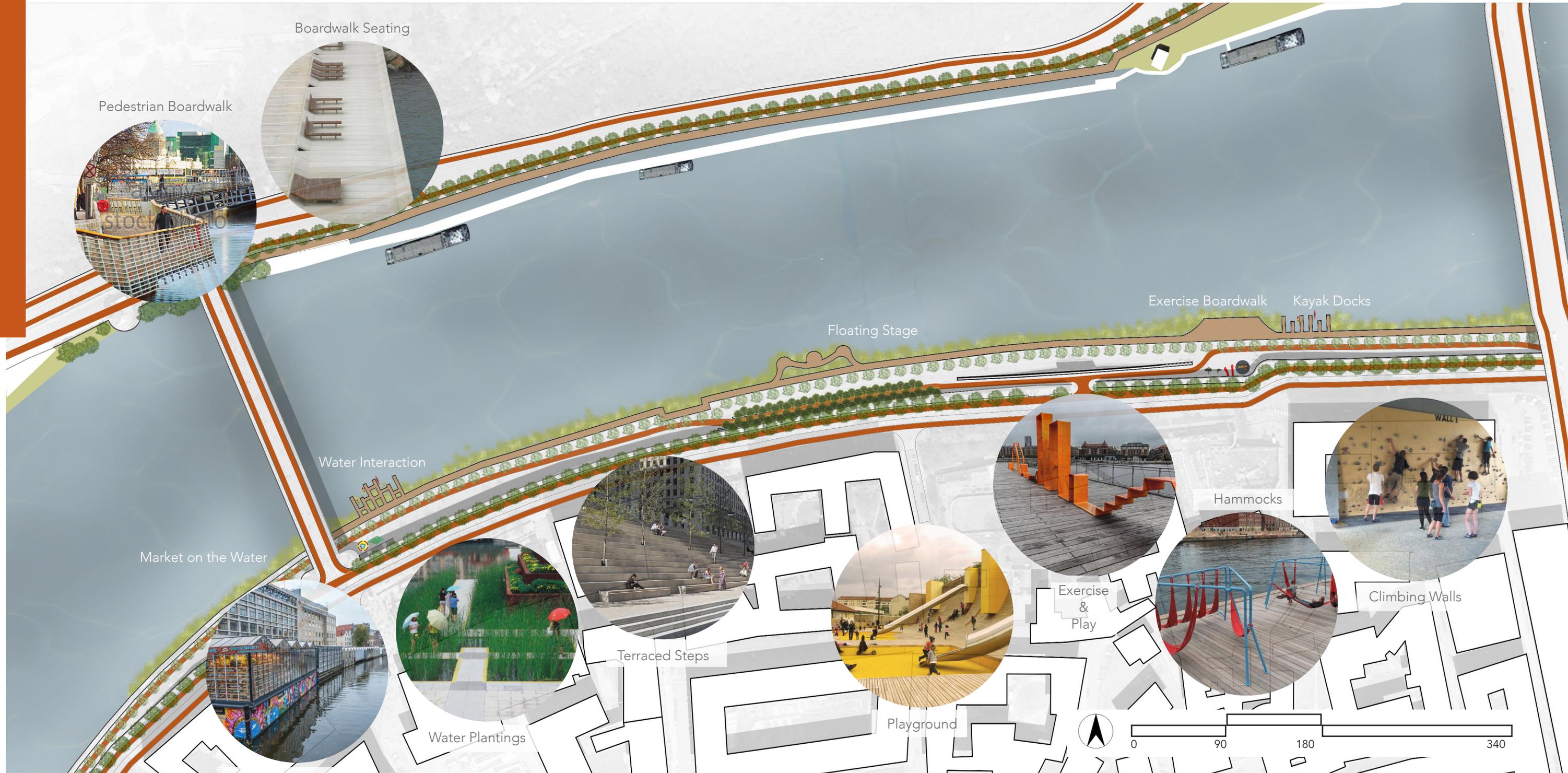
# Terraces On the Water



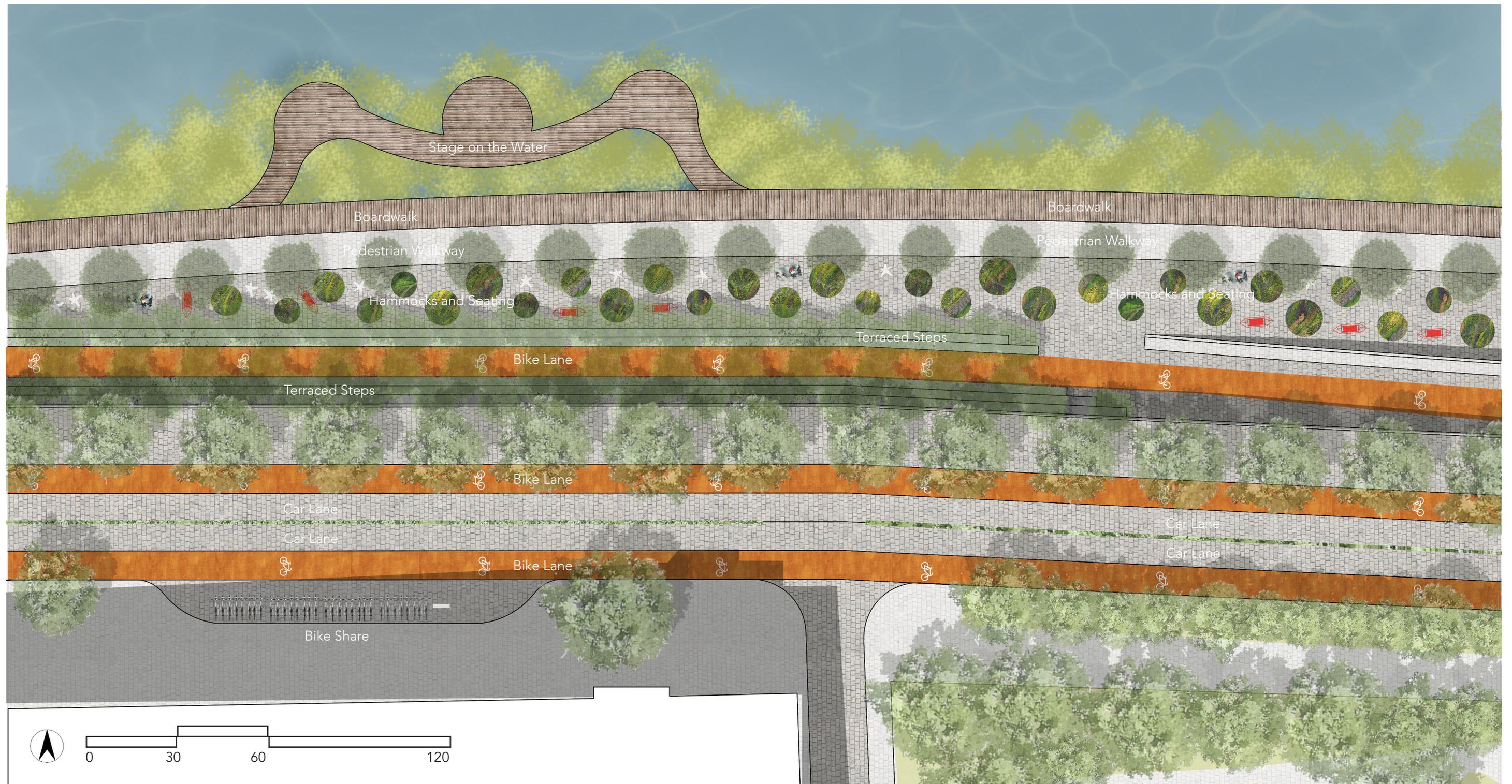
This diagram shows how the terraces work on the water with a conceptual design for a stage on the water.

# 06 Waterfront Design

THIS SECTION OF THE RIVERFRONT ALLOWS FOR ENOUGH SPACE FOR A LINEAR PARK



# 06 Waterfront Design



# 06 Waterfront Design



# 06 Waterfront Design



# 1) UPPER LEVEL WATERFRONT RENDER



Before



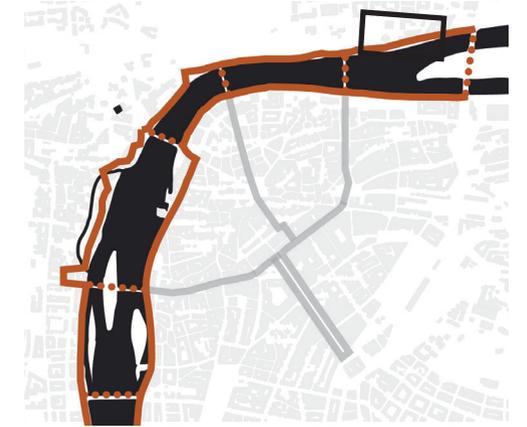
# 1 | LOWER LEVEL WATERFRONT RENDER



Before



# 1) WATERFRONT ART BAR



Before

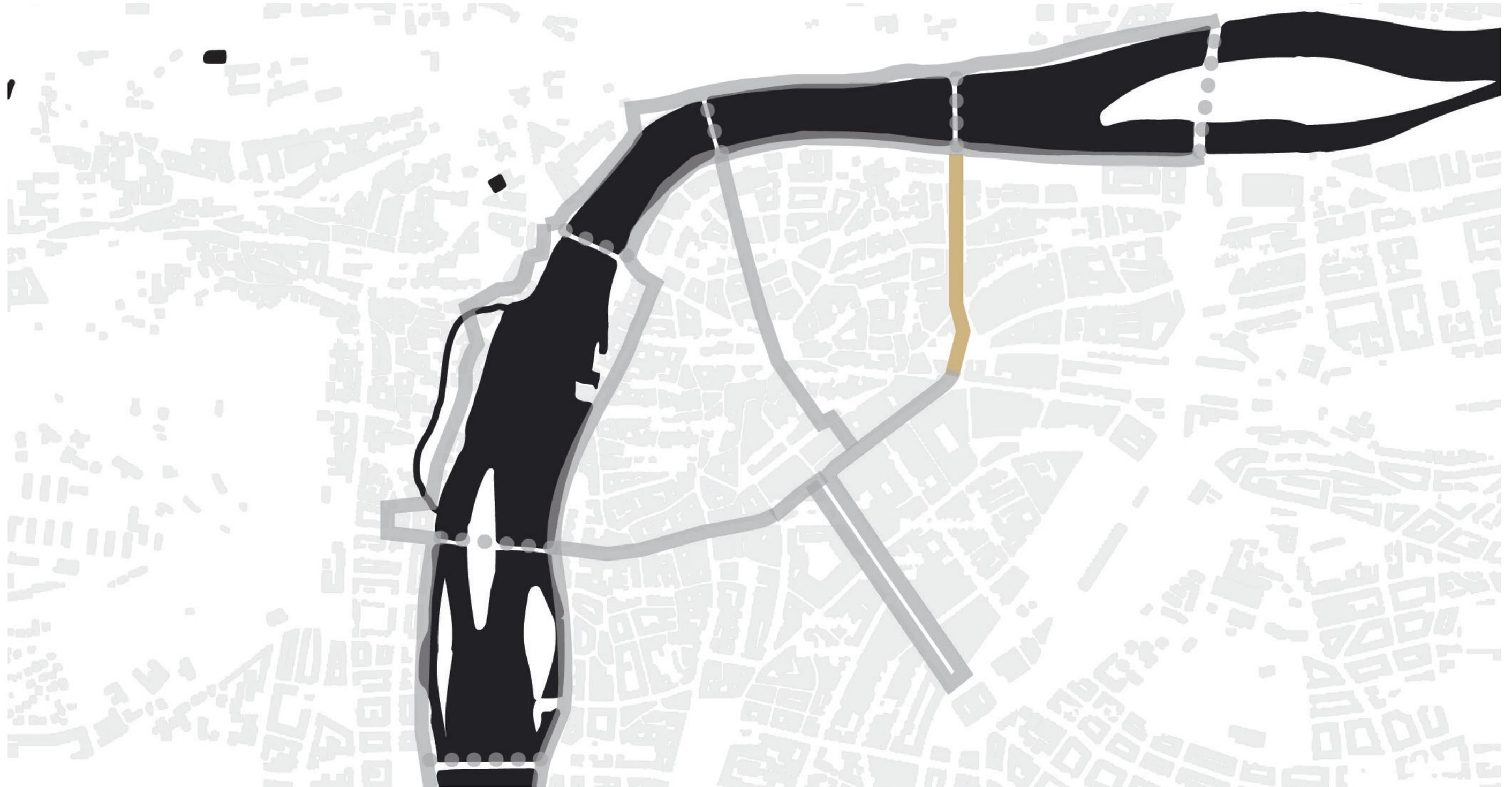


Connection with Existing Bike Trails

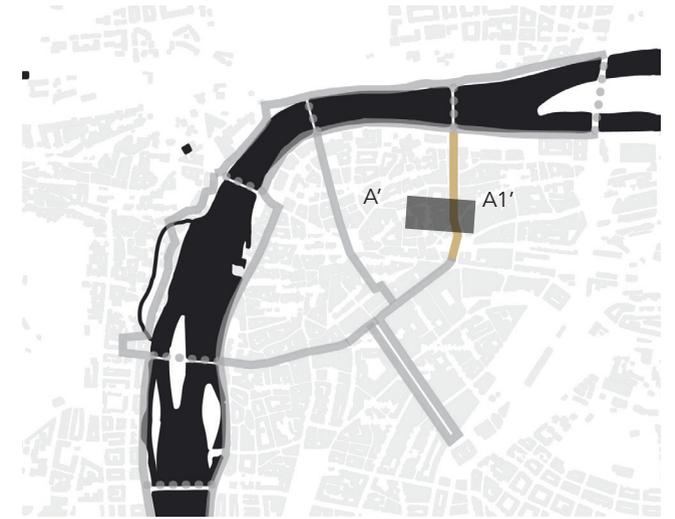


# 06

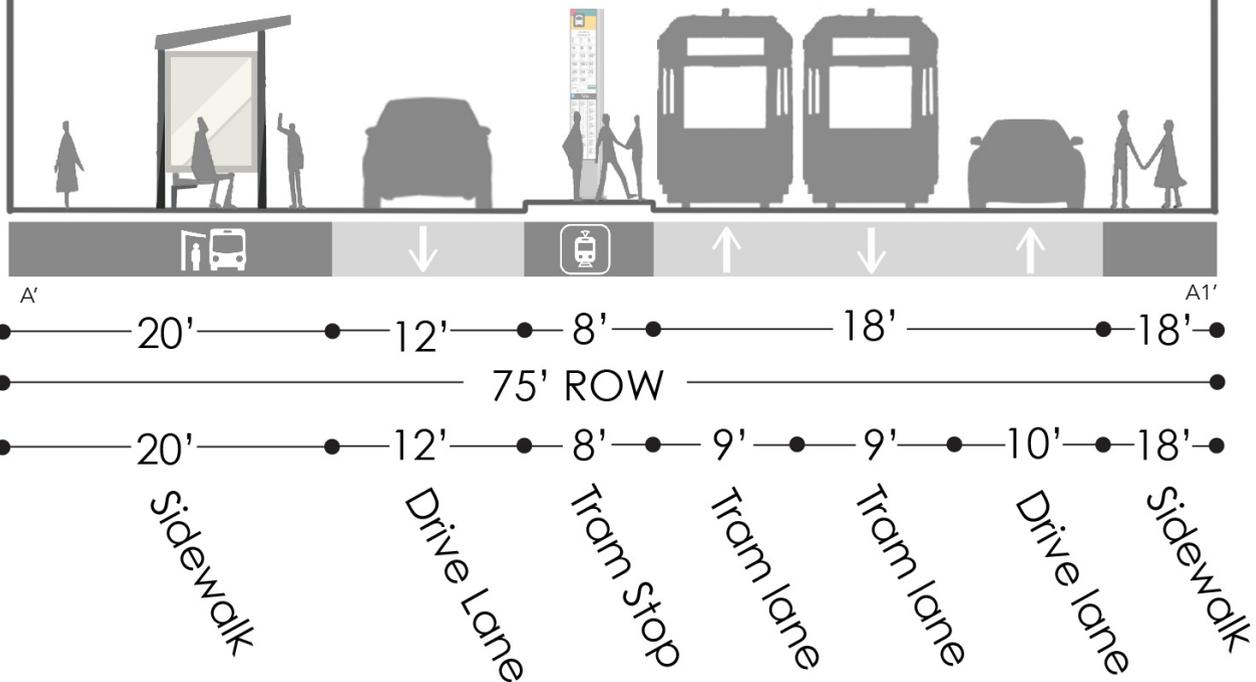
## 2] Road typology - 5 lane road



# 06 2] 5 Lane Road Boulevard



- UNSAFE FOR PEDESTRIANS
- NARROW SIDEWALK
- CARS PARK ON SIDEWALK
- LACK OF GREEN
- UNCOMFORTABLE



## Revoluční

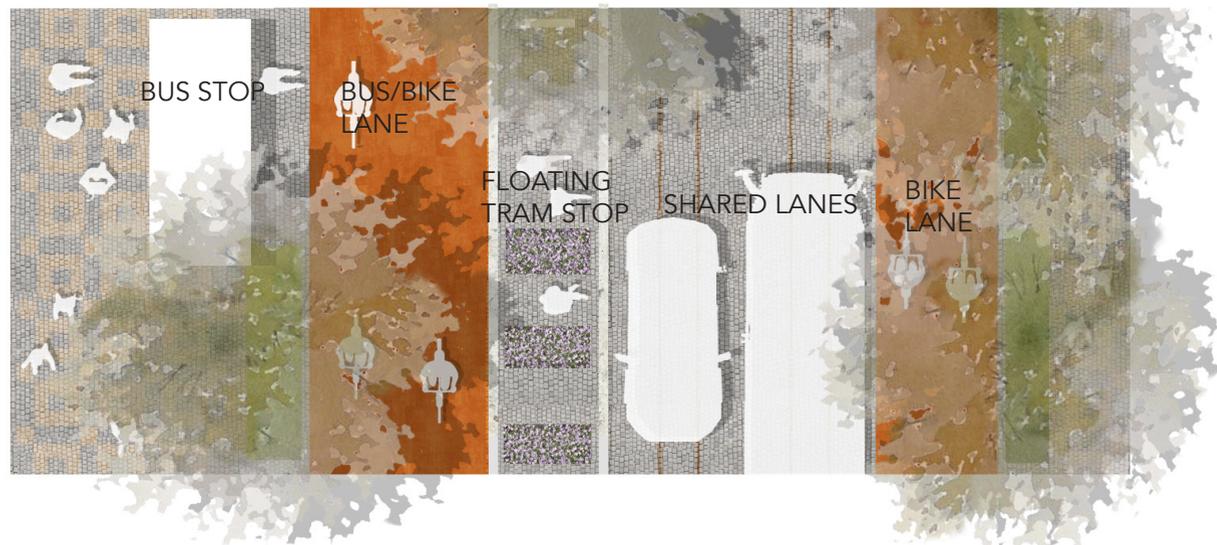
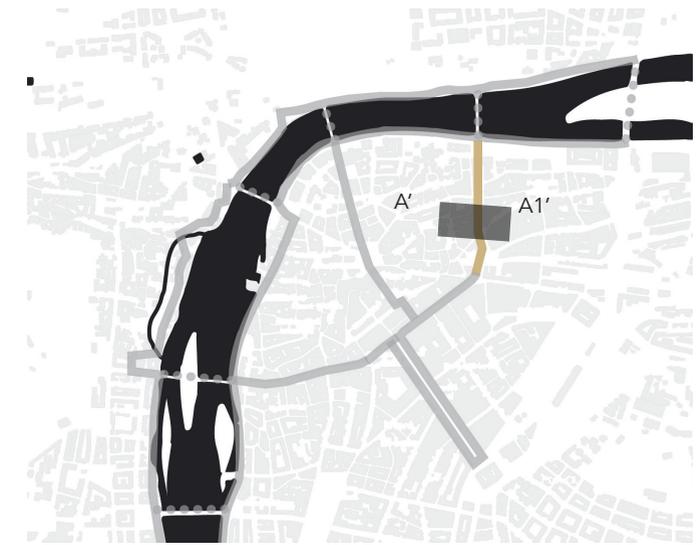
This street has 2 lanes dedicated to trams and 3 lanes dedicated to cars. One of the 3 lanes occasionally turns into a floating tram stop. Buses share the lanes with cars and trams. One side has ample space for pedestrians, however cars park on this sidewalk even through the curb distinctly separates the roadway from the sidewalk. The other side has a very narrow sidewalk separated from the road by a railing. This road has no green and feels very uncomfortable and unsafe to pedestrians.

### Existing Conditions



# 06

## 2] Multi-Modal Boulevard



### Design Principles

**SAFETY** - Create multi-modal streetscapes with designated paths for bikes and pedestrians

**SEPARATED BIKE LANES** - Even children feel safe & confident enough to bike in lanes that are completely separated from traffic

**CIRCULATE** - Create multi-modal streetscapes with designated paths for bikes. Cars share the lanes with trams in this low volume street

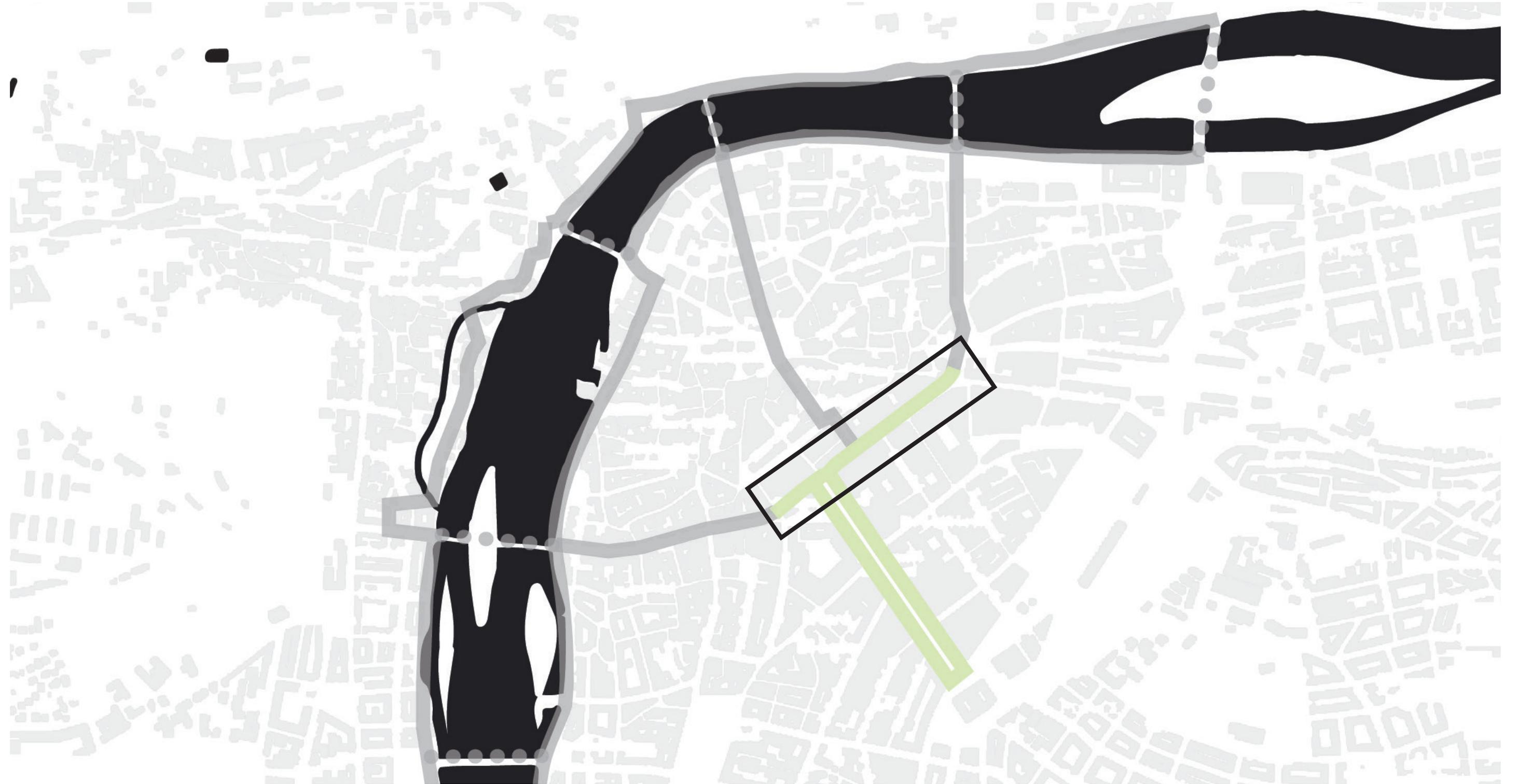
**GREENWAY** - Establish green corridor and stormwater treatment

**ACCESS** - This boulevard allows from trams, cars, buses, cyclists and pedestrians all with about an equal amount of space

**PLACE** - Native plantings in this green boulevard can help recall the Czech landscape and provide a sense of place

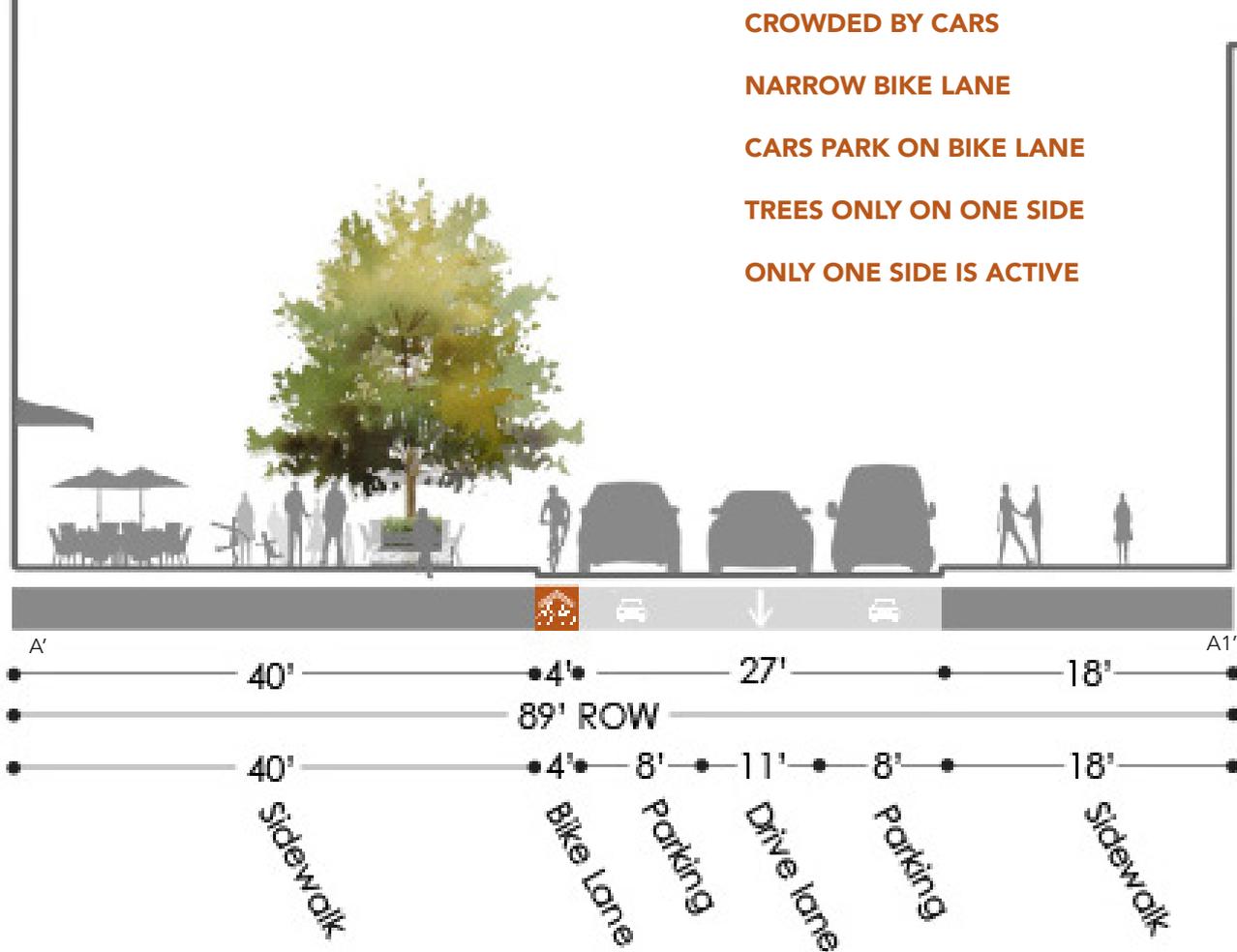
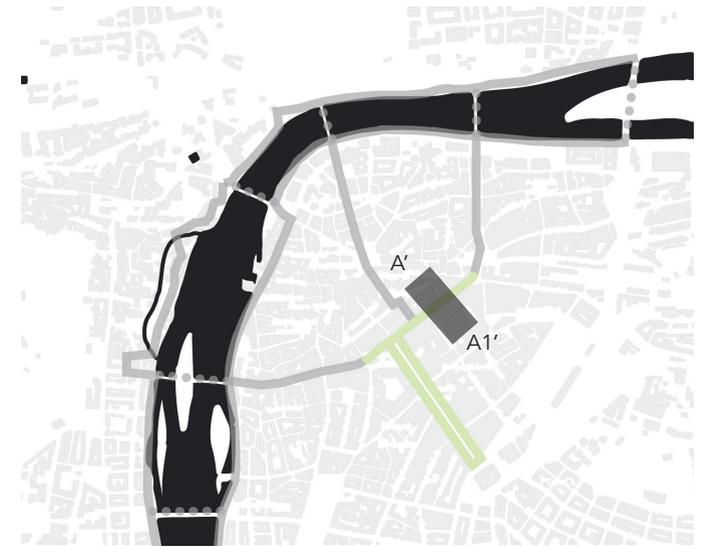
# 06

## 3] Road typology - 3 Lane Commercial Corridor



# 06

## 3] 3 Lane Shopping Corridor



### Na příkopě

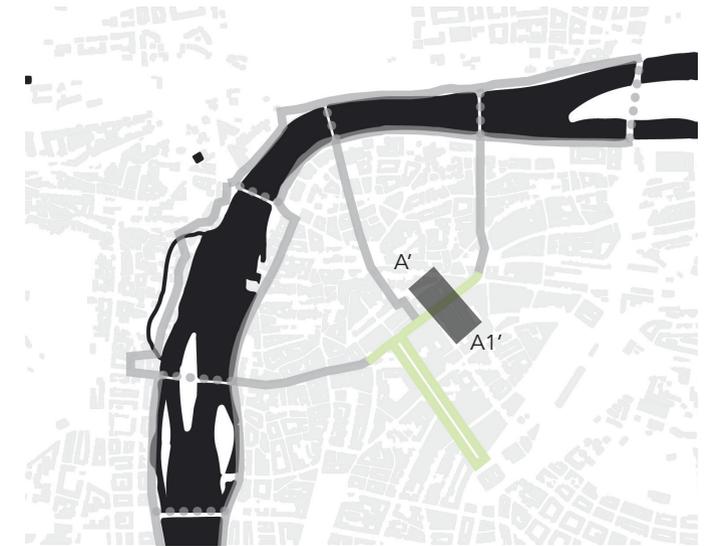
This shopping street that connects to Wenceclas Square to Square of the Republic. It is heavily used by locals and tourists. It holds many shops and restaurants on one side while the other is full of advertisements and objects. Not much through traffic goes through this corridor but it is full of parked cars at all times of the day

### Existing Conditions



# 06

## 3] Shared Shopping Street



### Design Principles

**SAFETY** - Shared streets force drivers and cyclists to be more careful and more aware of their surroundings, therefore slowing them down and creating a safer environment

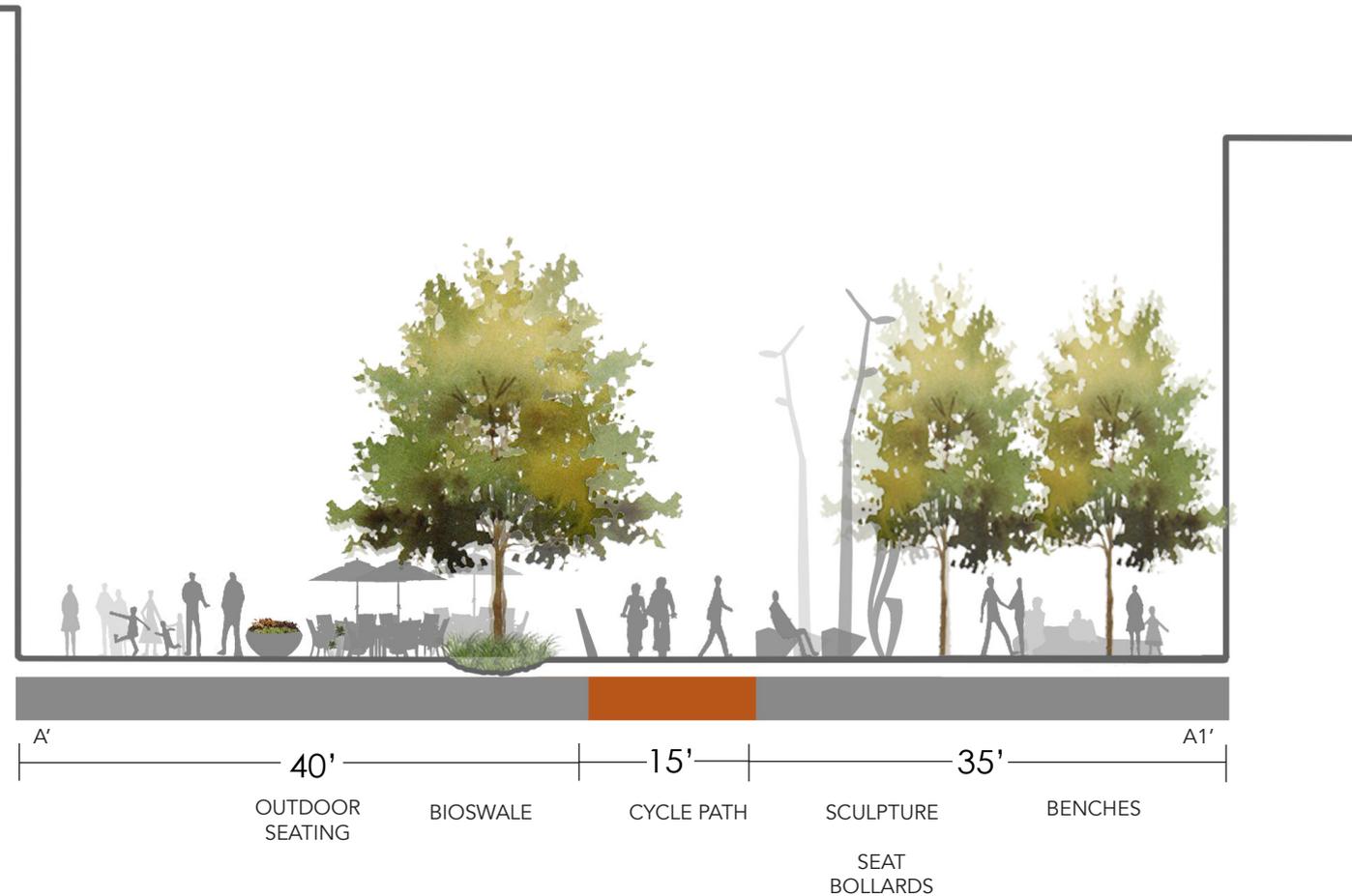
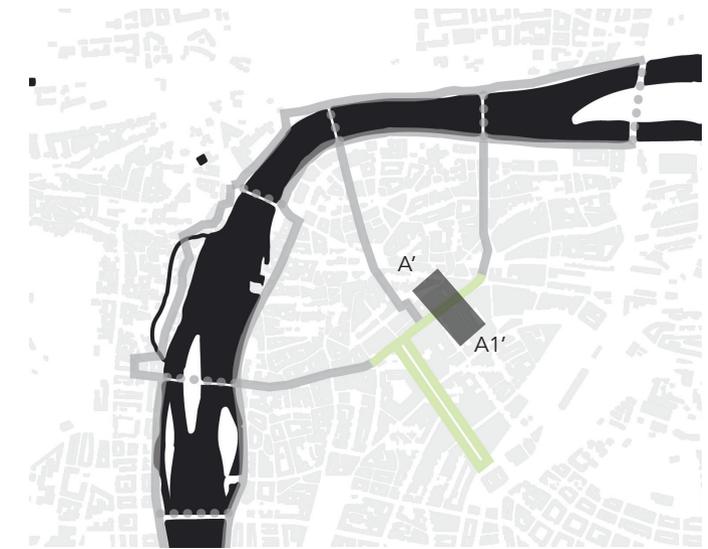
**CIRCULATE** - Create multi-modal streetscapes

**ACTIVATE** - Remove cars some cars and create parklets for extra pedestrian space and activities

**GREENWAY** - Establish green corridor and stormwater treatment

**ACCESS** - Remove all barriers and allow street to be shared by cars, cyclists and pedestrians. This makes everyone feel like they belong in the space

# 06 3] 3 Lane Commercial Corridor



## Design Principles

**SAFETY** - Shared streets force drivers and cyclists to be more careful and more aware of their surroundings, therefore slowing them down and creating a safer environment

**CIRCULATE** - Create multi-modal streetscapes

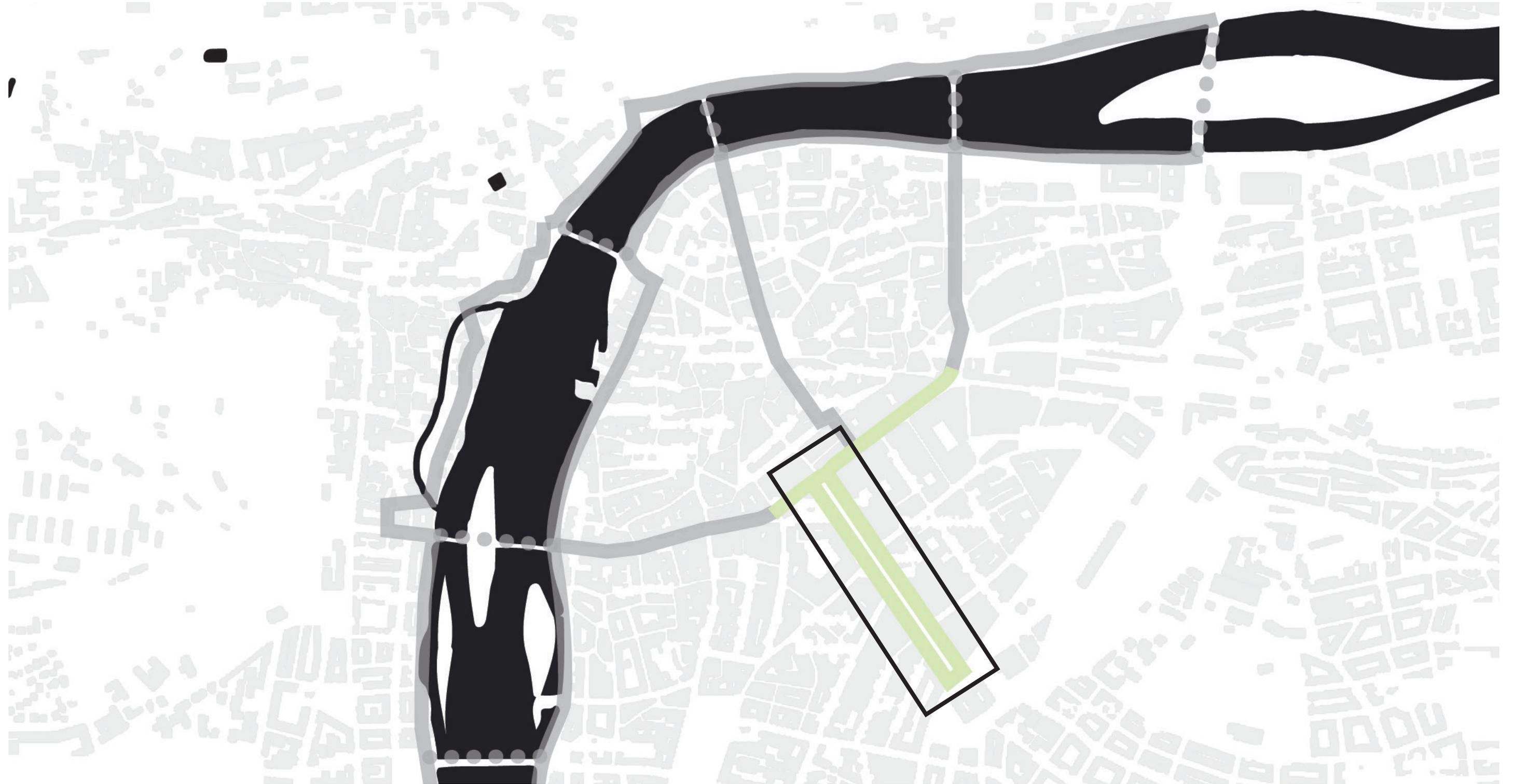
**ACTIVATE** - Remove cars some cars and create parklets for extra pedestrian space and activities

**GREENWAY** - Establish green corridor and stormwater treatment

**ACCESS** - Remove all barriers and allow street to be shared by cars, cyclists and pedestrians. This makes everyone feel like they belong in the space

# 06

## 3] Road Typology - 8 Lane Commercial Corridor



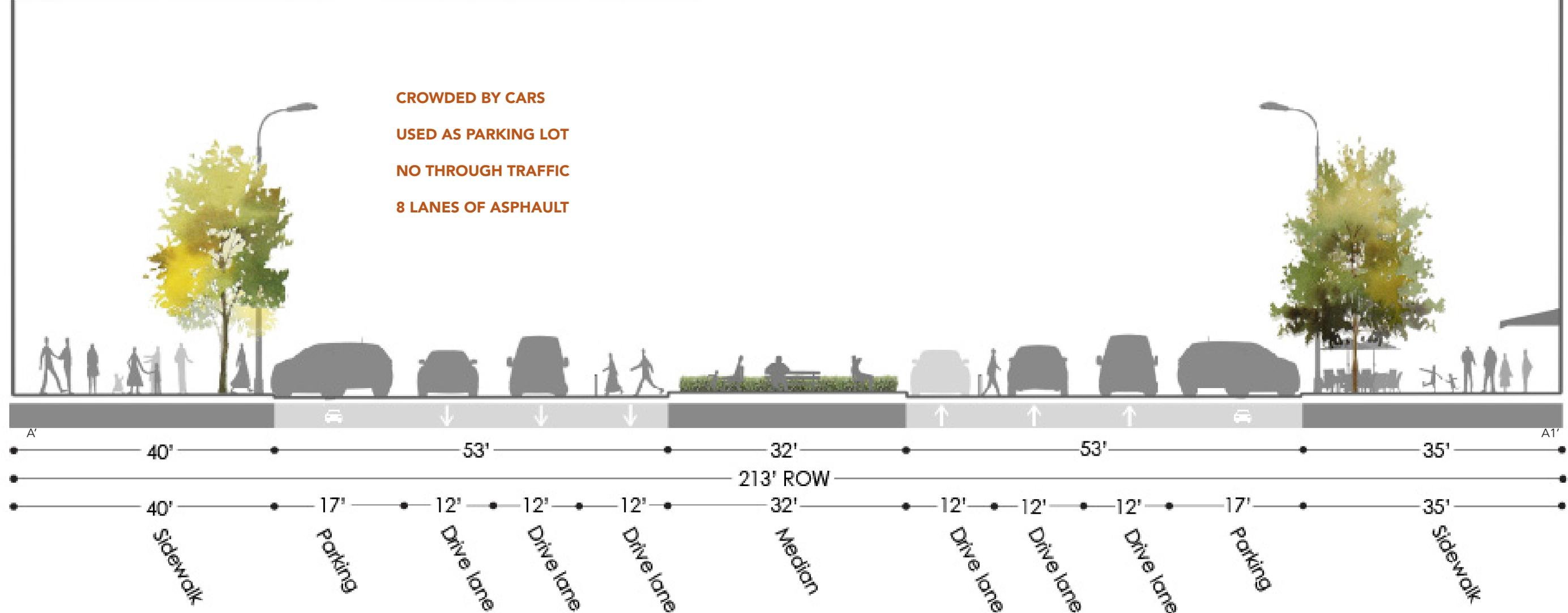
# 06 3] Commercial Corridor

## Existing Conditions



## Wenceclas Square

This is one of the main city squares and the center of the business and cultural communities. It is used for demonstrations, celebrations, and other public gatherings. This square is always full of people but it is also always full of cars. Through traffic is not allowed but the city uses it as a parking lot, degrading the square hundreds of cars at one time. The removal of cars in this space would be to revive the square back to its intended purpose, as a gathering space for people.



# 06 Phase I - Tree Lined Pedestrian Mall

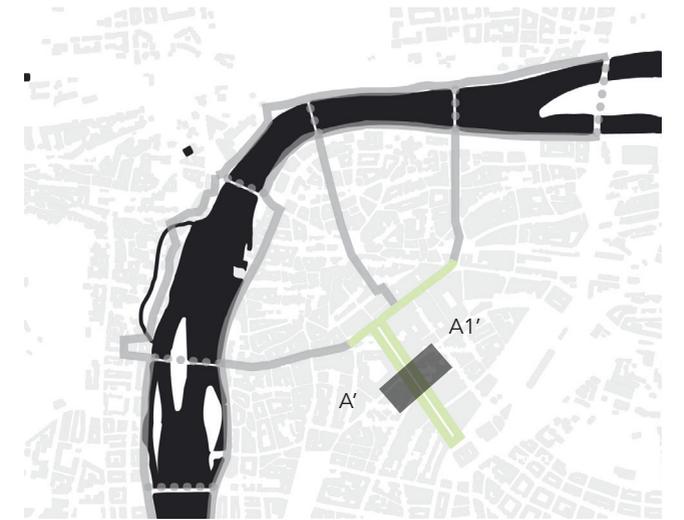
## Design Principles

**ACTIVATE** - Removing cars creates lots of space for new pedestrian activities

**GREENWAY** - Establish green corridor and stormwater treatment

**ACCESS** - Only accessible to cyclists and pedestrian, it gives back public space to the community

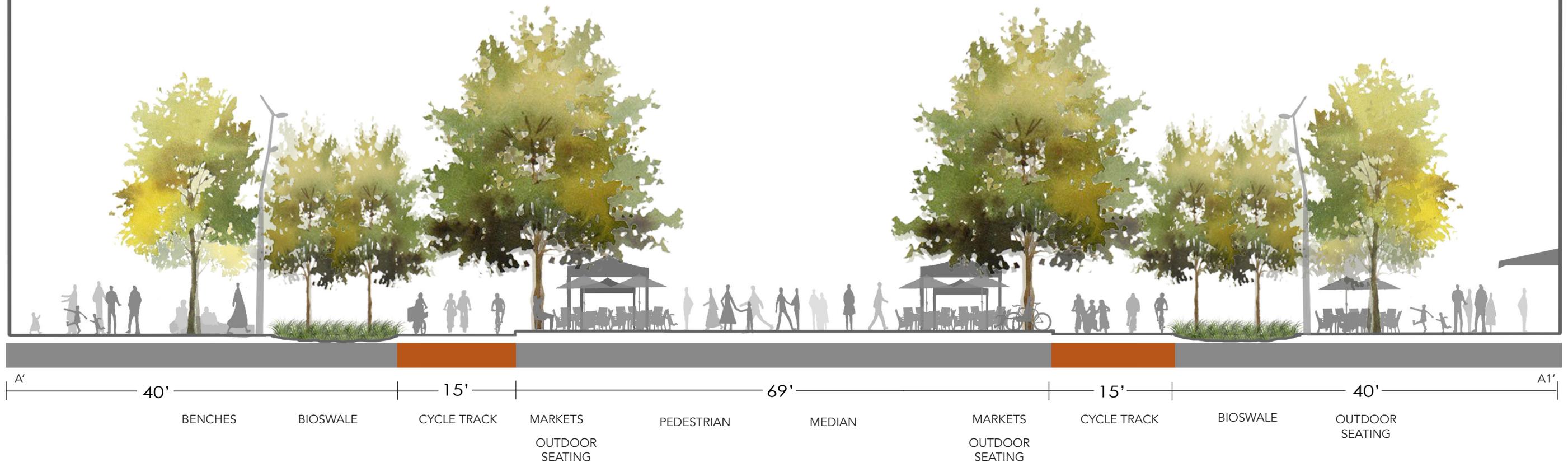
**PLACE** - Outdoor markets allow for local artisans to sell their wares and creates a sense of character to a space



**SAFETY** - Removing cars completely is the ultimate form of safety for cyclists and pedestrians

**SEPARATED BIKE LANES** - Even children feel safe & confident enough to bike in lanes that are completely separated from traffic

**CIRCULATE** - This design creates a cycle track around



# 06 3]Phase II - Boulevard of Urban Rooms

## Design Principles

**ACTIVATE** - Removing cars creates lots of space for new pedestrian activities

**GREENWAY** - Establish green corridor and stormwater treatment

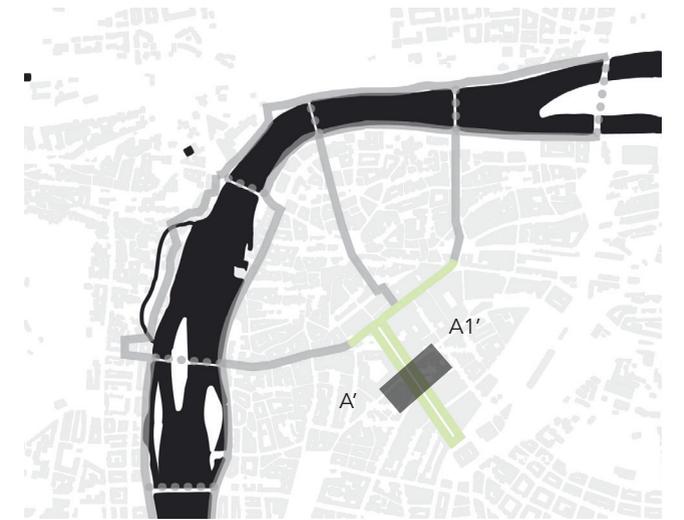
**ACCESS** - Only accessible to cyclists and pedestrian, it gives back public space to the community

**PLACE** - Outdoor markets allow for local artisans to sell their wares and creates a sense of character to a space

**SAFETY** - Removing cars completely is the ultimate form of safety for cyclists and pedestrians

**SEPARATED BIKE LANES** - Even children feel safe & confident enough to bike in lanes that are completely separated from traffic

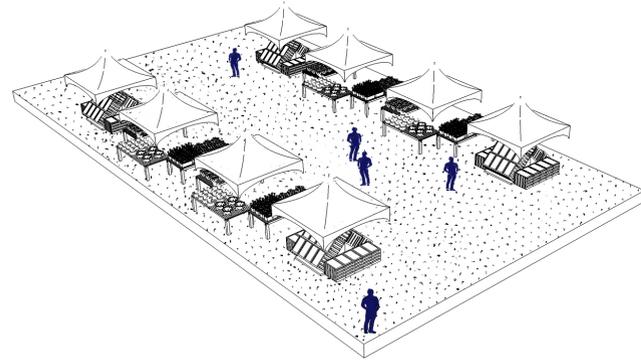
**CIRCULATE** - This design creates a cycle track around



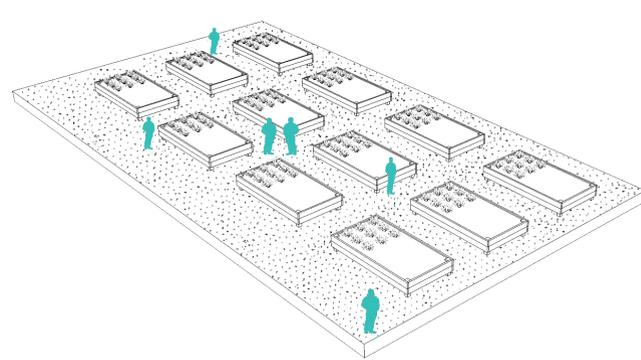
# PROGRAM

**1.SQUARE:** The new design for Wenceclas square contains spaces that form flexible, open, urban space that is uniquely positioned to enable and host (un)programmed activity. It is a forum for exchange, both social and economic, and a focus for civic pride and community expression - an urban living room

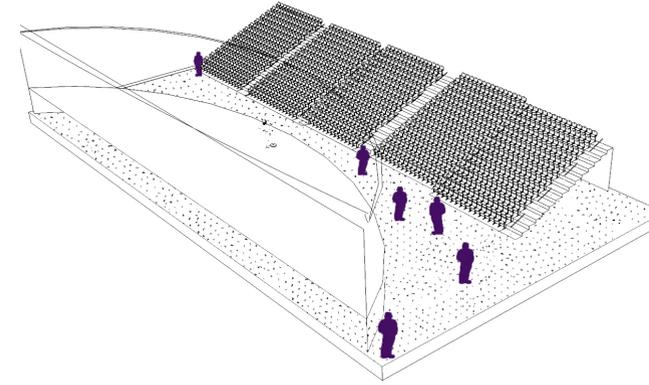
Local Market



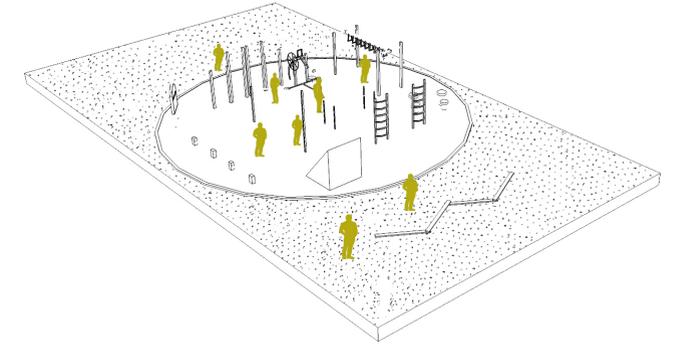
Urban Farm



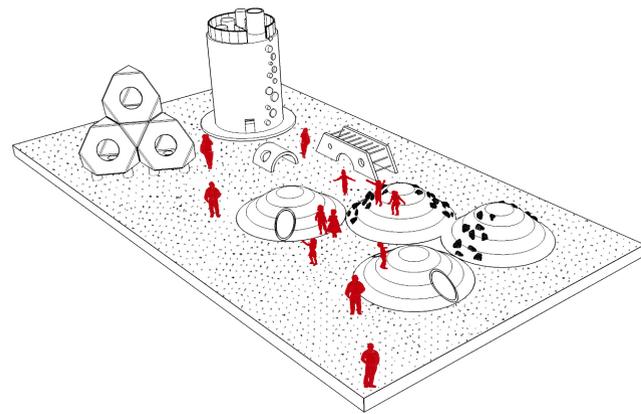
Performance Space



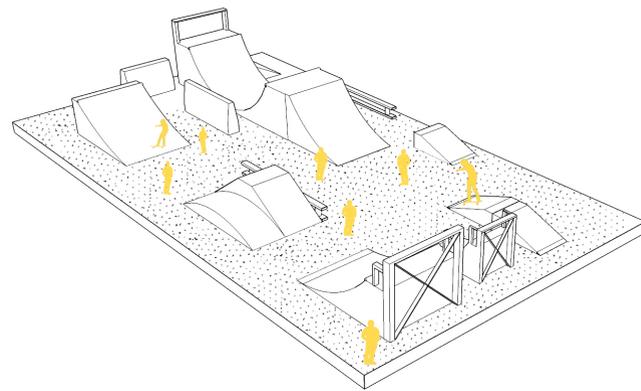
Exercise Circuit



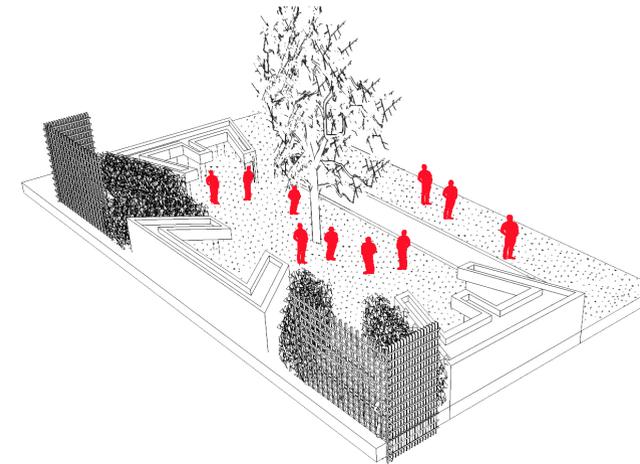
Playscape



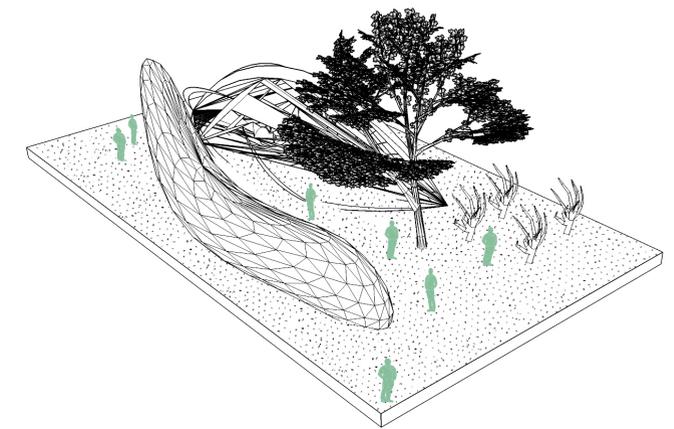
Skate Park



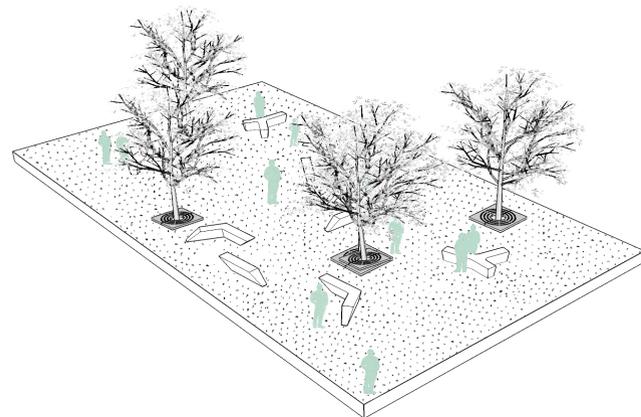
Urban Garden



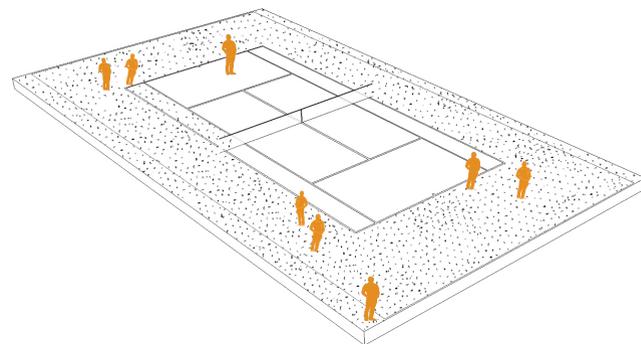
Sculpture Garden



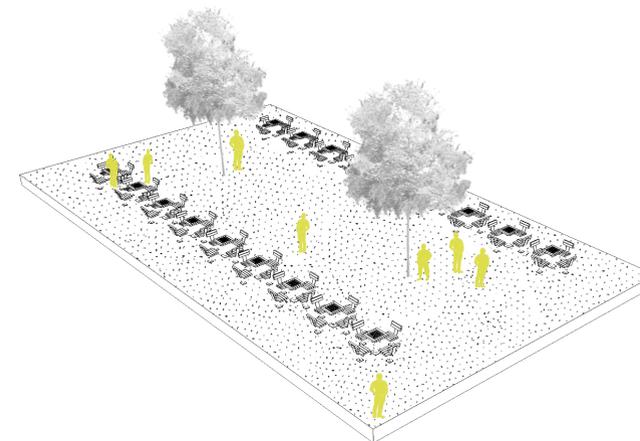
Outdoor Meeting Area



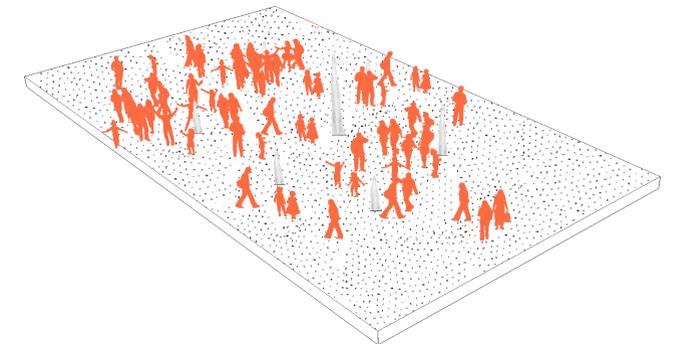
Sports Courts



Outdoor Board Games



Wet Zone



# 06 3] Boulevard of Urban Rooms



Planter Boxes



Outdoor Meeting Area



Playscape



Outdoor Boardgames



Game tables



Exercise Circuits



Skate Park



Sculptures



Local Market



Urban Farm



Performance Space



Outdoor Gathering Space



Playscape



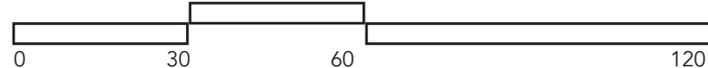
Mounds



Wet Zone



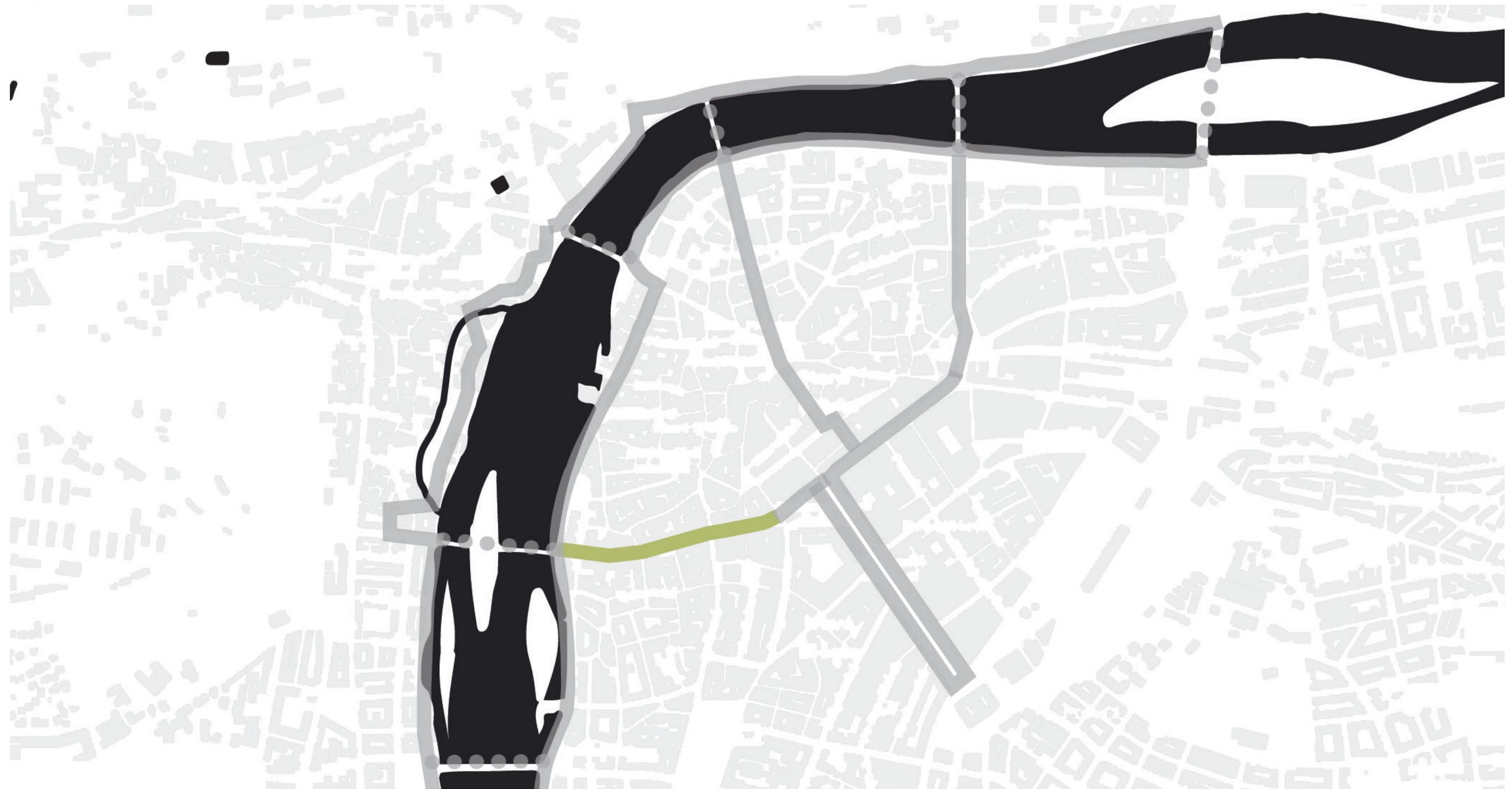
Sports Courts



# 06 Commercial Corridor Design



# 06 4] Road Typology - 6 Lane Road



# 06 4] 6 lane road

IMPORTANT AVENUE

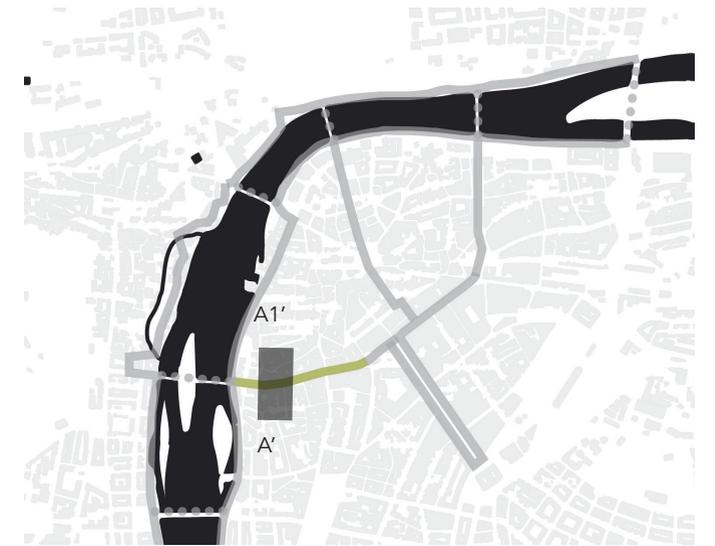
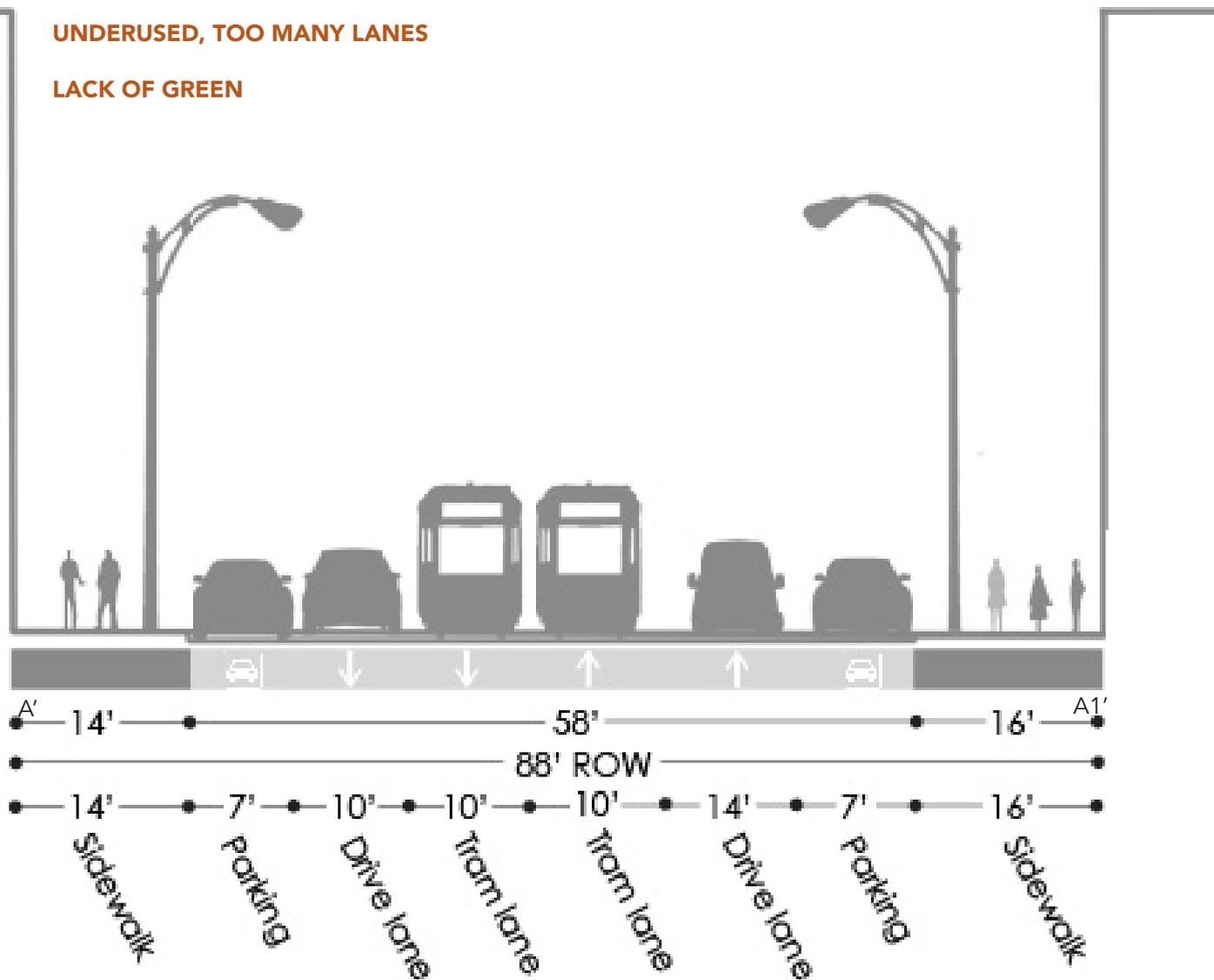
DOMINATED BY CARS AND TRAMS

UNCOMFORTABLE FOR PEDESTRIANS

UNSAFE

UNDERUSED, TOO MANY LANES

LACK OF GREEN



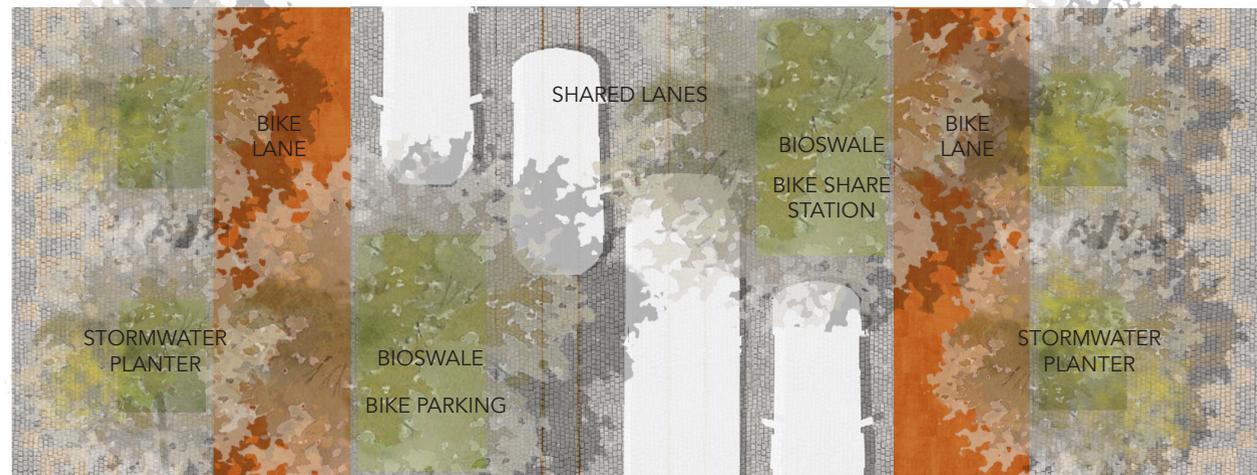
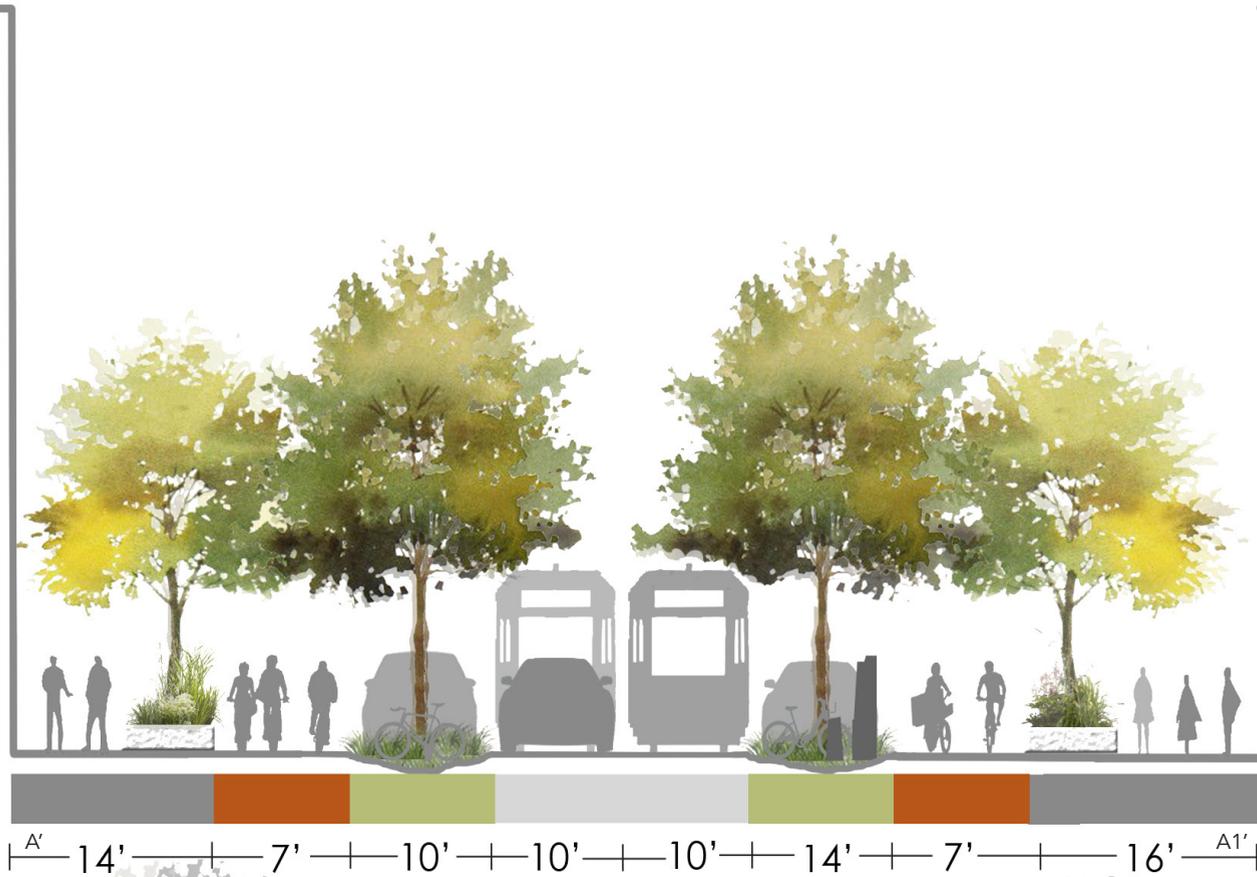
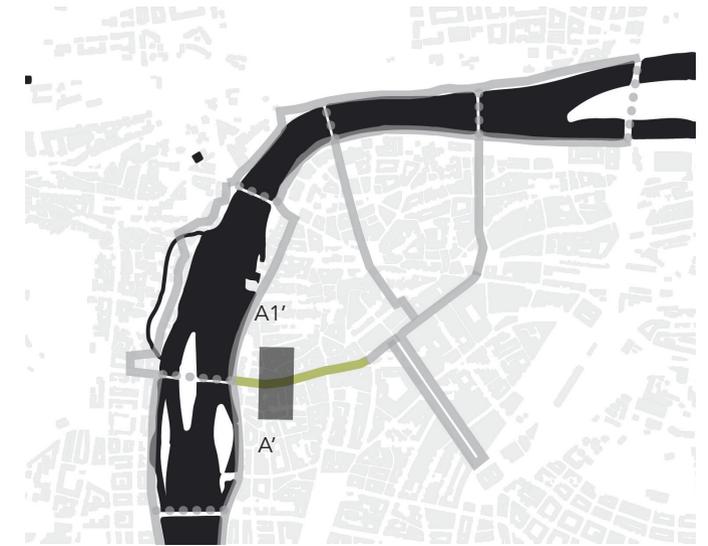
## Národní třída

This is one of the important avenues in Prague. In the 19th century, important buildings and institutions, such as the National Theatre and the Czech Academy of Sciences were built here. It is an avenue of significant historical importance because of its involvement with the Velvet Revolution however it is a street that is dominated by cars and trams with little thought to the pedestrian.

### Existing Conditions



# 06 4] 6 lane road



## Design Principles

**SAFETY** - Create multi-modal streetscapes with designated paths for bikes and pedestrians

**SEPARATED BIKE LANES** - Even children feel safe & confident enough to bike in lanes that are completely separated from traffic

**CIRCULATE** - Create multi-modal streetscapes with designated paths for bikes. Cars share the lanes with trams in this low volume street

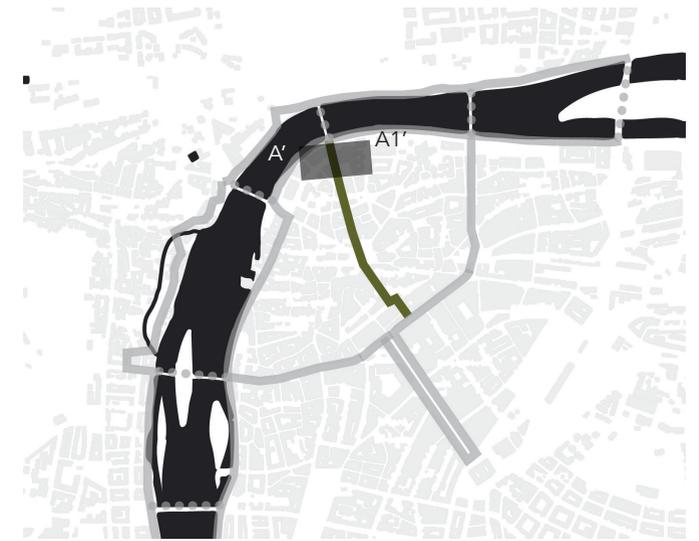
**GREENWAY** - Establish green corridor and stormwater treatment

**ACCESS** - This boulevard allows for trams, cars, cyclists and pedestrians all with about an equal amount of space

**PLACE** - Native plantings in this green boulevard can help recall the Czech landscape and provide a sense of place

# 06

## 5] 4 lane road

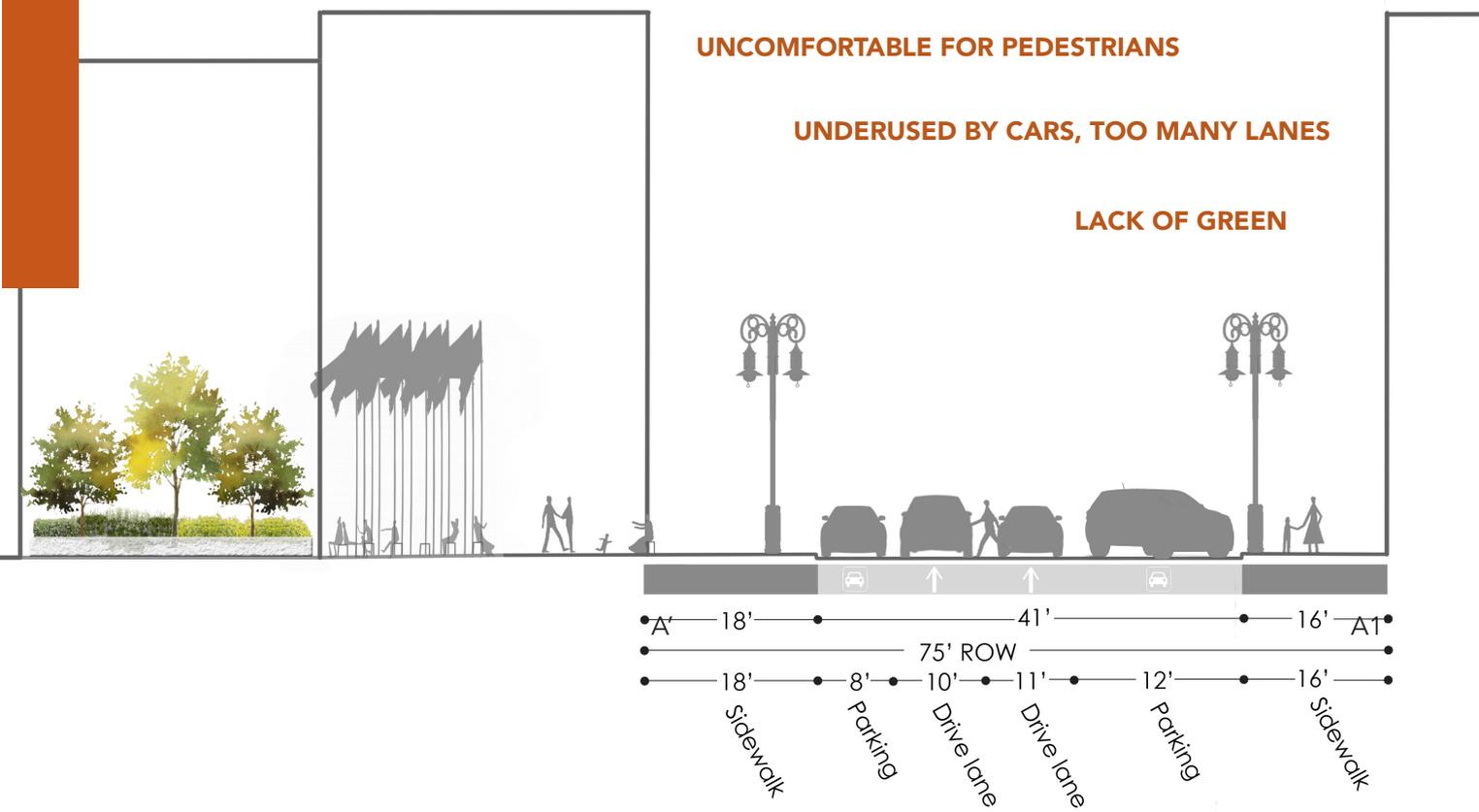


**A LOT OF ASPHALT**

**UNCOMFORTABLE FOR PEDESTRIANS**

**UNDERUSED BY CARS, TOO MANY LANES**

**LACK OF GREEN**



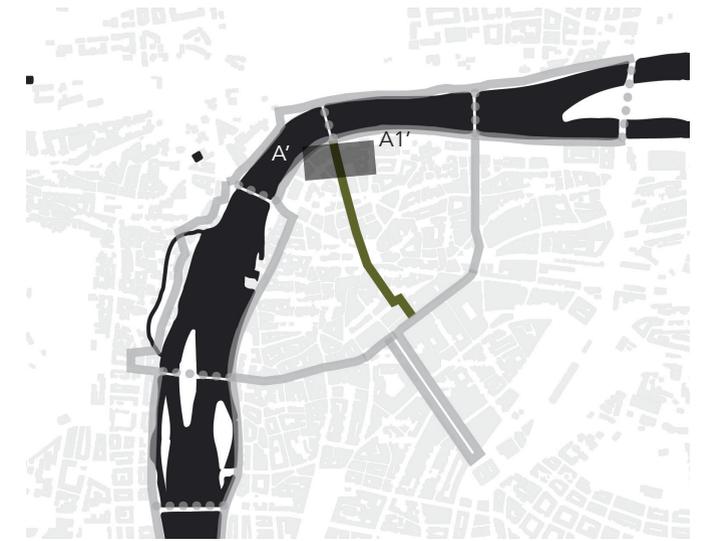
### Pařížská Street

This shopping street is the most exclusive – and expensive – street in all of Prague. The street links the Old Town Square with the Čechův Bridge and on both sides it is lined with mainly Art Nouveau beautifully decorated residential buildings, most of them were built in the first decade of the 20th century. For a street with a lot of traffic, the sidewalks are too narrow and most of the right of way is taken up by parked cars as not much through traffic flows through this street.

#### Existing Conditions



# 06 5] 4 lane road - Connection to Shopping Street Phase 1



## Design Principles

**SAFETY** - Create multi-modal streetscapes with designated paths for bikes and pedestrians

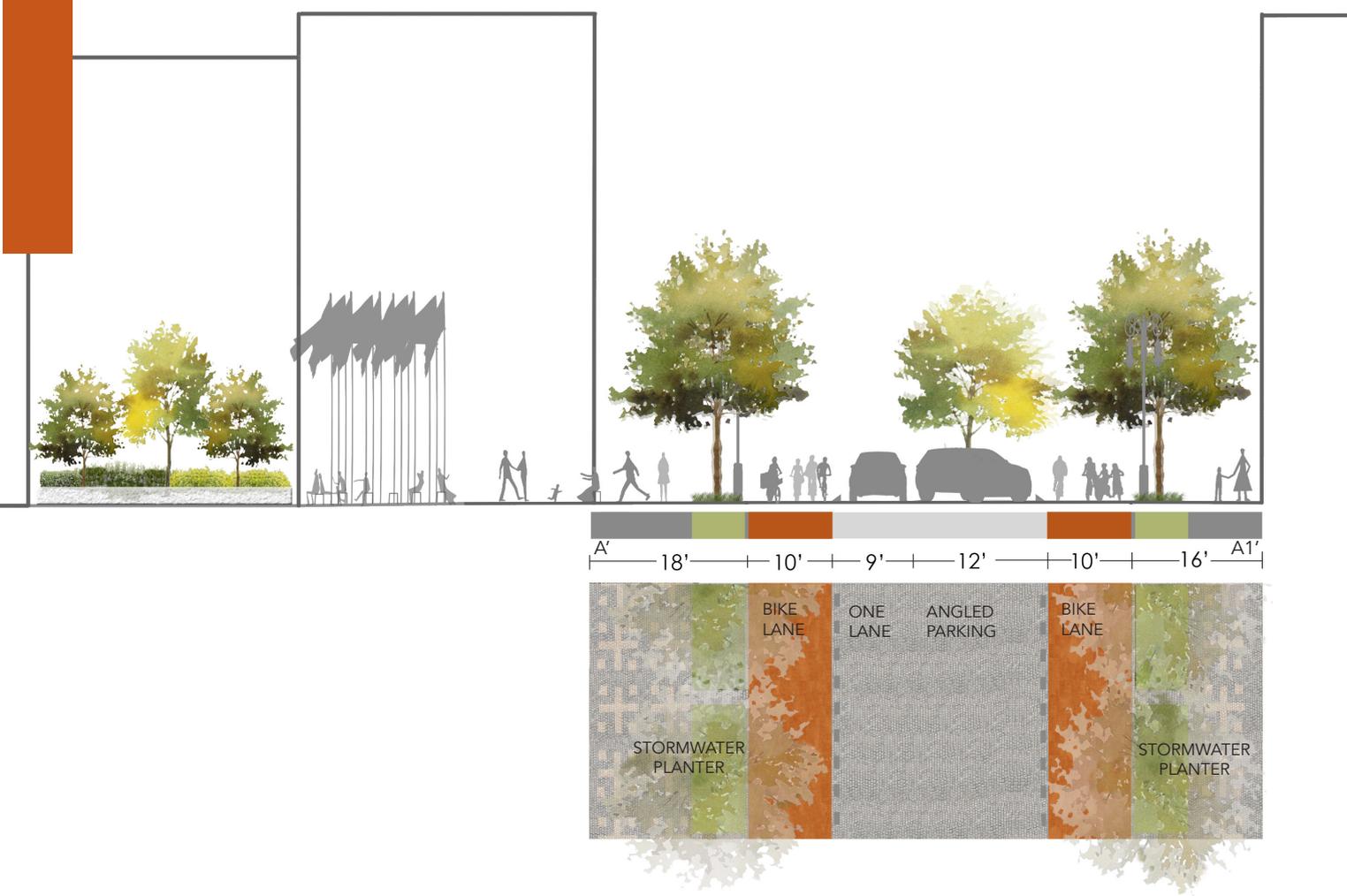
**SEPARATED BIKE LANES** - Even children feel safe & confident enough to bike in lanes that are completely separated from traffic

**CIRCULATE** - Create multi-modal streetscapes with designated paths for bikes. Cars share the lanes with trams in this low volume street

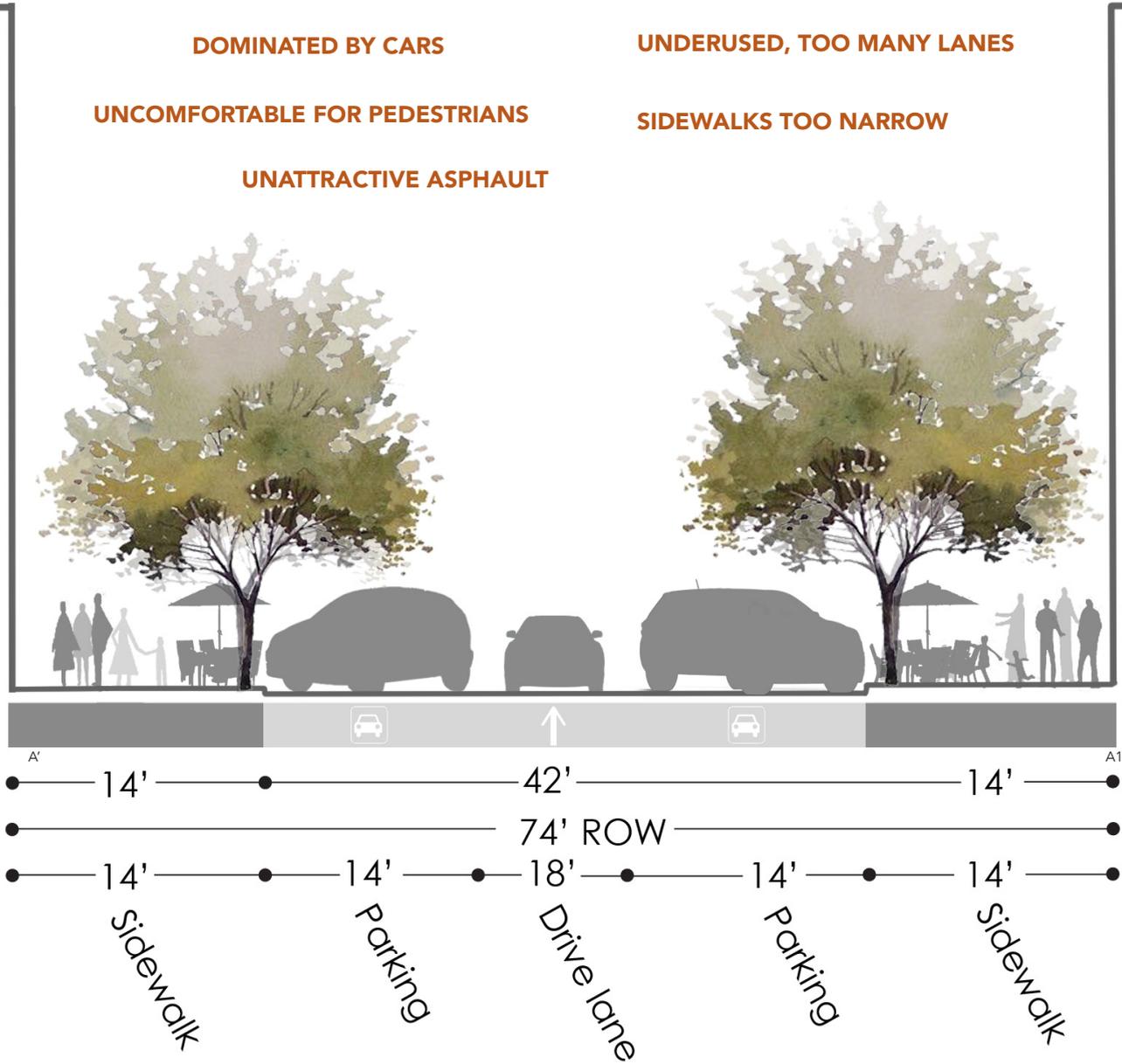
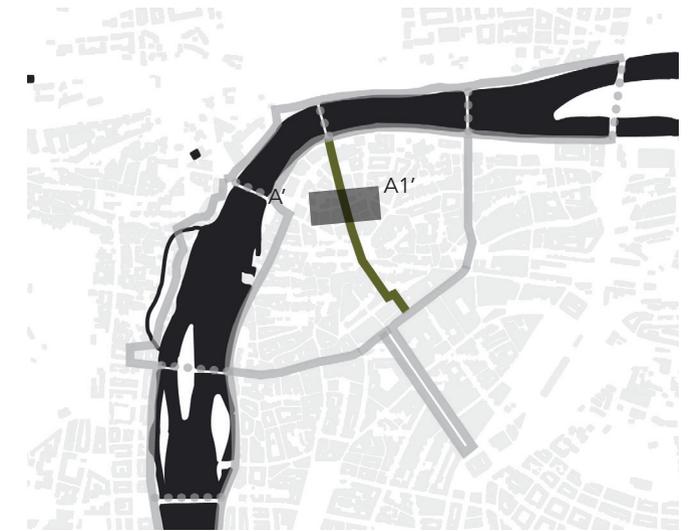
**GREENWAY** - Establish green corridor and stormwater treatment

**ACCESS** - This boulevard allows for trams, cars, cyclists and pedestrians all with about an equal amount of space

**PLACE** - Native plantings in this green boulevard can help recall the Czech landscape and provide a sense of place



# 06 5] Existing: 3 Lane Road



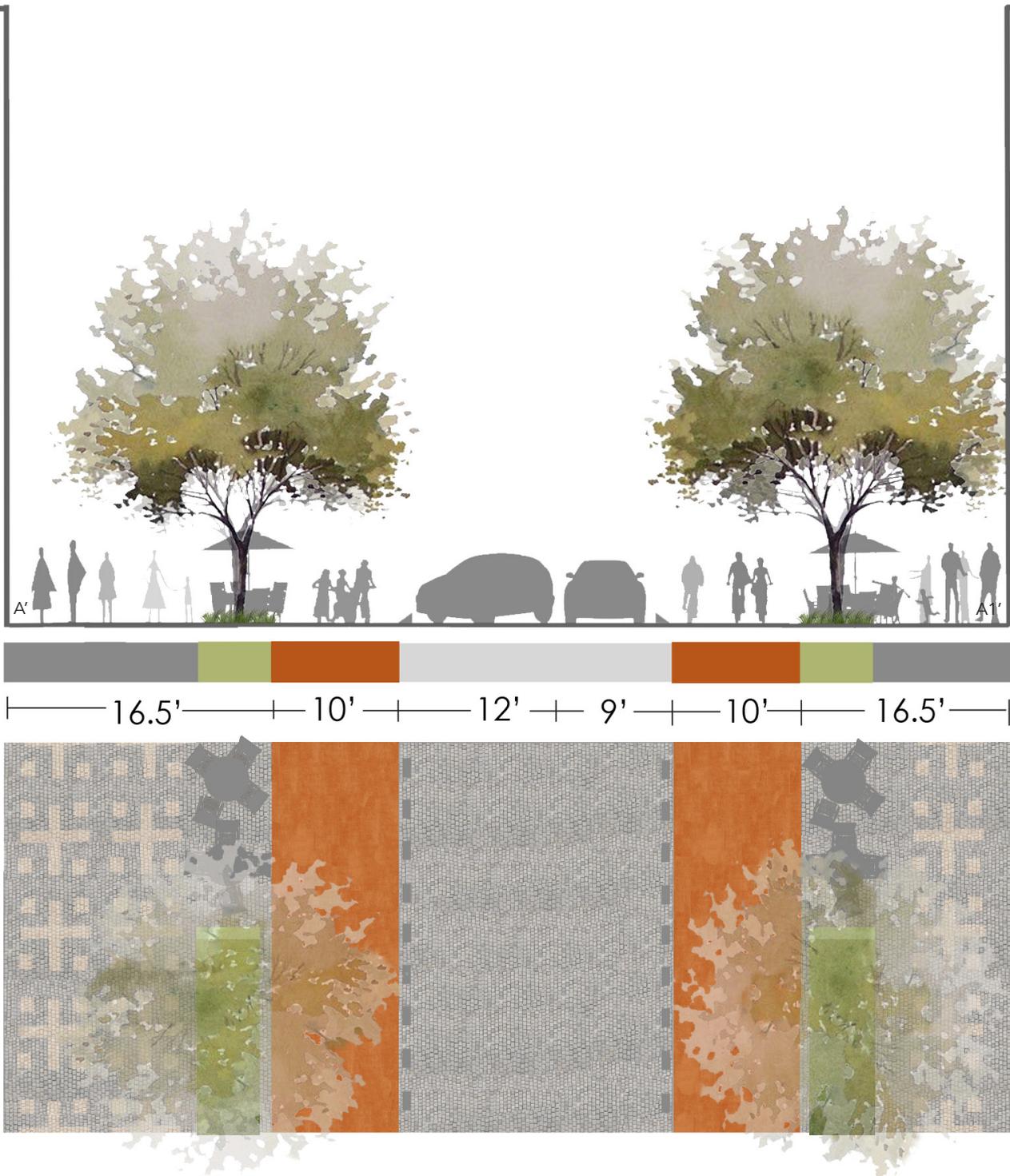
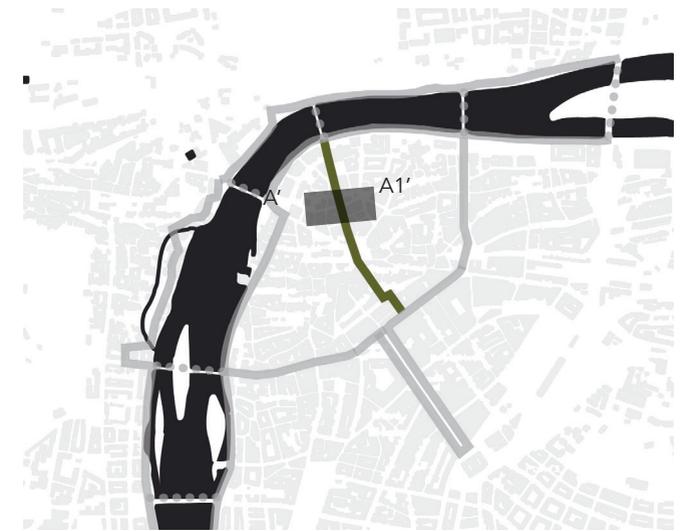
## Pařížská Street

The street already has beautiful canopy the lines the street, a rare find in the historic center but could benefit greatly from a road diet and re-purposing the new space for cyclists and pedestrians. This street is especially important because it leads to the biggest tourist destination in Prague, Old Town Square.

### Existing Conditions



# 06 5] Shopping Street Phase 1



## Design Principles

**SAFETY** - Create multi-modal streetscapes with designated paths for bikes and pedestrians

**SEPARATED BIKE LANES** - Even children feel safe & confident enough to bike in lanes that are completely separated from traffic

**CIRCULATE** - Create multi-modal streetscapes with designated paths for bikes. Cars share the lanes with trams in this low volume street

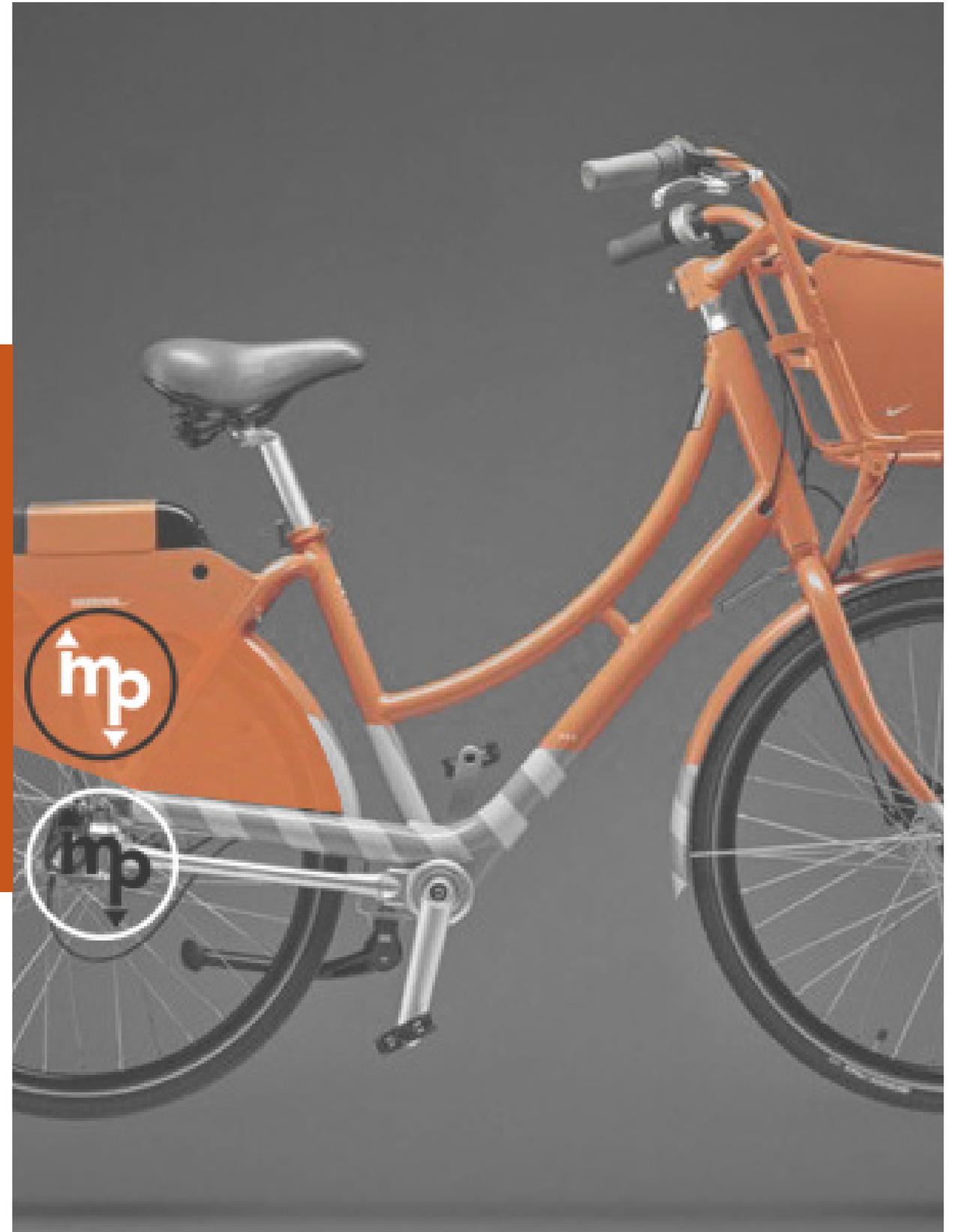
**GREENWAY** - Establish green corridor and stormwater treatment

**ACCESS** - This boulevard allows for trams, cars, cyclists and pedestrians all with about an equal amount of space

**PLACE** - Native plantings in this green boulevard can help recall the Czech landscape and provide a sense of place

+

**07**  
BRANDING  
&  
ADVOCACY

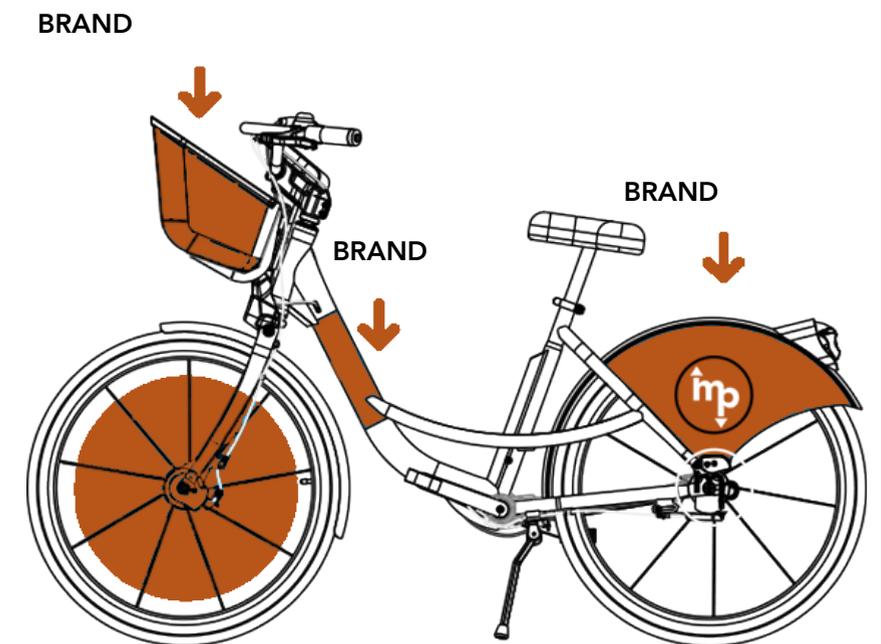




BRAND AND IDENTITY OF CYCLING TO INTEGRATE INTO THE URBAN FABRIC

# MŮJ PRAHA

MY PRAGUE: inspire a sense of pride and ownership of the city and it's streets and encourages public activity and movement



# 07 Advocacy

The next step to take is to start advocating in order to create and promote a culture of cycling in Prague. A small culture already exists but the need to promote cycling as an alternate mode of transport is an important part of increasing cycling after the existing bike infrastructure has been improved and new cycling paths have been integrated into the streets.

Advocacy can be used to promote cycling for cyclists at all different levels of comfort, public outreach in order to get the locals involved, and to help create and promote a new bike share system that can be used and enjoyed by locals and tourists. Educating people on the importance of promoting health, sustainability and public space and activity can help rouse people to start hitting the streets and enjoying public space instead of driving or using public transport in order to benefit the city along with the locals themselves ultimately leading to a better quality of life for all.



ENCOURAGE CYCLING AT ALL LEVELS



PUBLIC OUTREACH



BIKE SHARE



SUSTAINABILITY



HEALTH



PUBLIC SPACE & ACTIVITY

# 09 Resources

- [Opencyclemap.org](http://Opencyclemap.org)
- [Expatz.cz](http://Expatz.cz) (Czech online news articles)
- [Bike Citizens - bikecitizens.net](http://BikeCitizens.net)
- BICY - The concept of development of city cycle transport and recreational cycling in the Capital City of Prague up to the year 2020
- BICY - Cities & Regions of Bicycles
- European Platform on Mobility Management (EPOMM) - Bike Sharing
- Cycling: the way ahead for towns and cities - European Commission
- Bicycle infrastructure: can good design encourage cycling? - Angela Hull & Craig O'Holleran
- [http://www.amazingplaces.com/Europe/czech\\_republic/prague/the-story-behind.html](http://www.amazingplaces.com/Europe/czech_republic/prague/the-story-behind.html)
- (Interview Vratislav Filler of the NGO Auto\*Mat) - Prague was never considered bike friendly in the past: have things changed? - [czech.cz/](http://czech.cz/)
- <http://www.praguenet.com/praguemap.html>
- Plan Amsterdam: Cycling policy and design - Putting knowledge into practice
- [1] [Radio.cz](http://Radio.cz) (Czech Online News Site)
- [2] Portal of Prague - [Praha.eu](http://Praha.eu)
- [3] [Praguwandering.com](http://Praguwandering.com)
- [4] Czech Republic: The Bradt Travel Guide
- [5] Prague Public Space STRATEGY / Proposal [http://www.iprpraha.cz/uploads/assets/dokumenty/obecne/do\\_you\\_know\\_prague.pdf](http://www.iprpraha.cz/uploads/assets/dokumenty/obecne/do_you_know_prague.pdf)
- <https://www.expats.cz/prague/article/weekly-czech-news/czech-republic-fattest-country-in-europe/>
- <http://www.radio.cz/en/section/talking/czechs-fight-the-flab-as-obesity-rates-soar>
- Copenhagen City Of Architecture - The Architecture Policy of the City of Copenhagen
- <http://denmark.dk/en/green-living/bicycle-culture/the-cities-of-the-future-are-people-friendly-cities>
- <http://www.cyclingweekly.co.uk/news/latest-news/paris-aiming-to-become-global-cycling-capital-165372>
- <http://www.streetsblog.org/2008/04/22/paris-is-the-new-london-will-new-york-be-the-new-paris/>
- <http://www.electraproject.eu/attachments/article/115/BCNecologia%20st%20e-article.pdf>
- <https://www.lta.gov.sg/ltaacademy/doc/IS02-p23%20Bike-sharing.pdf>
- [http://app.iprpraha.cz/js-api/app/mapa-online/?service\[\]=21](http://app.iprpraha.cz/js-api/app/mapa-online/?service[]=21)
- <https://www.expats.cz/prague/article/weekly-czech-news/czech-republic-has-europe-deadliest-roads/>
- [http://www.praha.eu/jnp/en/transport/by\\_car/slight\\_increase\\_in\\_car\\_accidents\\_in.html](http://www.praha.eu/jnp/en/transport/by_car/slight_increase_in_car_accidents_in.html)
- <http://prahounakole.cz/2013/02/modal-share-z-pohledu-cyklistickeho-advokata/>
- <http://www.gaadi.com/cycles/news/list-of-top-countries-with-most-bicycles-per-capita>
- <http://latitude.to/articles-by-country/dk/denmark/16369/stroget>



**CRISTINA  
SLANEY**

A SENIOR CAPSTONE PROJECT