FORD PARK:
CREATING NEW HYDROLOGICALLY SENSITIVE CONNECTIONS TO THE MISSISSIPPI RIVERFRONT SYSTEM

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CHANGES IN CITIES RIVERFRONT
Effects of Post Industrialism

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Mississippi Classification:
At the region near Saint Paul the river would be a B-Type stream with a lower slope and sinuosity.

Sediment Removal:
Image showing the difference between sediment in Mississippi River (Top) and the Minnesota River (bottom). This is caused by the fact that the Mississippi River is damned and the Minnesota River is not.
In research practice roughness is a coefficient that can help determine the health of a stream and predict erosion.

Tall native grasses are good to reduce erosion, but they are not as good at slowing down stream speeds in flooding events.

Roughness on mowed grass is very low which leads to faster moving waters and higher erosion.

Having woody debris and large trees on stream edges not only reduce the impact of erosion; they can also slow the flow speeds when a river is in a full flood event.
Effect of Backwater Areas

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Case Study: Balzac Park Angiers, France
DESIGN PLAN

MARK MILLER | PRIMARY ADVISOR: JAY KOST | SECONDARY ADVISOR: YOUNG JAE KIM
**QUESTION: 1**
How can we create an urban space that celebrates the riverfront at all times of the year, while also creating new viable flood protection?

**QUESTION: 2**
What methods of river flow change will allow for the most efficient and long-lasting form of flood control?
Ford Plant: Opened 1912 Closed 2011
Demolition completed summer 2013
GOAL: 1
Create new connections to the river that change according to the different flood levels

GOAL: 2
Reinforce old and generate new connections to the Saint Paul and Minneapolis riverfront park systems

GOAL: 3
Develop program elements to fill needs of the region based on case studies and survey
GOAL 1: ANALYSIS OF FLOOD PATTERNS

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Pre-Action

Action

Flood

Moderate

Major
Goal 1: Analysis of flooded regions

Non-Flooding Zone:
This region is an opportunity to use more structures. The purpose of this area should be to connect the park to the feeling of the city environment of Saint Paul.

Flooding Zone:
This region should not have any structures because of the risk of flooding. The purpose of this area should be to connect the park to the feeling of the rest of the park system.

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Goal 1: Analysis of Flooded Regions
Goal 2: Analysis of Current Circulation
Goal 2: Analysis of barriers to site entry
GOAL 3: ANALYSIS OF REGIONAL PARKS SYSTEM
**How Does it Interact?**

**Direct Water Interaction**
- Concrete Channel (Step Pools, Touch)
- Extending Edge of Flood Plain (increase usable land during flood)
- Flood Festival (Flood Art, Amphitheater Island)
- Fountain (Touch, Play, Watch)
- Kayak Tour Connections (Landing, Navigable Routes)
- Land Art (Flood Islands, Divert Water Flow)
- Natural Stream (Step Pools, Kayak, Swim, Fish)
- Pedestrian Bridge (Fish, Views, Cross)
- Sculpture Art (Touch, Watch)
- Swimming Area (Swimming)
- Ice Skating (Warming House, Trails, Hockey Rinks, Free Skating)

**Indirect Water Interaction**
- Amphitheater (Views Toward Water, Water Fluctuation Changes)
- Picnic Shelter (Views Towards Water)
- Playground (Water Forms, Stream Theme)
- Replanting Displaced Vegetation (Increase wildlife, Intercept runoff)
- Sculpture Art (Frames Water Views)
- Seating Areas Off Trails (Views of Water)
- Steam Plant Re-Use (Higher Elevation Water Views)
- Wildlif-viewing (Water is essential to attract certain wildlife)

**Does it Alter Flood Water?**

**More Rough (Reduces Speed)**
- Extending Edge of Flood Plain
- Fountain
- Land Art
- Natural Stream
- Pedestrian Bridge
- Replanting Displaced Vegetation
- Sculpture Art
- Seating Areas Off Trails

**Less Rough (Increases Speed)**
- Amphitheater (can be little)
- Concrete Channel
- Mixed Use Field
- Mowed Turf Grass
- Trails

**No Change**
- Kayak Tour Connections
- Pedestrian Bridge
- Picnic Shelter
- Restrooms
- Steam Plant Re-Use
- Winter Warm House
- Wildlife Viewing

**Where Does it Belong?**

**Natural Environment**
- Cut Trails
- Flood Art
- Flood/Snow Festival
- Land Art
- Natural Stream

**Built Environment**
- Concrete Channel
- Concrete Paths
- Mixed Use Field
- Picnic Shelter
- Playground
- Restrooms
- Steam Plant Re-Use

**No Change**
- Amphitheater
- Extended Flood Plain Edge
- Fountain
- Kayak Tour Connections
- Replanting Displaced Vegetation
- Sculpture Art
- Seating Areas Off Trails
- Swimming Area/Ice Skating
- Winter Warm House
- Wildlife Viewing

**Goal 3: How Program Elements Work Together**

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Master Plan introduction: Flooding

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Flood

Action

Pre-Action

Moderate

Major

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MASTER PLAN INTRODUCTION: FLOODING
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Master Plan Introduction: Programs

- Natural Area
- Mixed Use Open Field
- Land Art Area
- Swimming Beach
- Amphitheater
- Kayak Landing
- Natural Stream
- Concrete Channel
- Steam Plant Re-used as Photographic Destination
These regions are considered to be the most densely vegetated areas on the site with a full canopy and a dense understory. This vegetation region stays within the floodplain for the entire site and utilizes plant types that are native to the riparian areas of Minnesota.

These regions buffer the different flood zones in order to slow the water that is flowing in the land art areas. This allows for easier interactions with the water during flooding and increases the feeling of enclosure when in the land art mounds.

These regions are on steep slopes and are very important to reduce erosion especially along the southwest of the cliff side where regrading occurred. The planting will be done in phases to incorporate measures to cut back on the amount of erosion from construction.

These regions are within the floodplain of the lower bluff and are planted with a canopy and some lower understory with the purpose of increasing the amount of edge roughness for the floodplain. The areas feel less full to increase view shed distance within the park.

These regions are surrounding the park area on top of the bluff. The plant types of these areas are not within the floodplain so the plants are selected from native prairie savannah plant types. It is an even mix of canopy and understory plants.
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Master Plan
Site furnishings as well as the buildings and rest areas of the site are designed as concrete with wood inlaid. The materials are to represent the natural and built environments working together to make an enjoyable experience for the users of the space. They are also intended to work well with both the natural areas as well as the traditional areas in order to help tie the entire site together.
SITE PLAN
The beginning of the channel is filled with large sediment to represent the amount of sediment build-up that usually goes with headwater areas. The channel here represents an A-Type Stream. This means that the riparian area is not big enough to support large vegetation. This is why this area is mostly native grass species with breaks where people can make their way down to the water’s edge.
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Edge Seating Areas
The exit to the kayak run is also the point where the stream expands out and evolves into a B-Type stream. After the step pool there is a mock dam that causes a problem with the stream similar to the dams that are along the Mississippi river. This causes a drop out of all sediment and causes a deep incision in the channel. The landing is a raised lip that allows for the kayak to stop and the user to get out and get back to the pathway.
This region of the channel is to represent a streams recovery from the dam where sediment has been brought back and the channel is no longer cutting downwards. This area represents a B-Type Stream, which can be seen in the Mississippi River at Saint Paul. The children’s area is raised for a crossing with the rest of the water going underneath. The water in the crossing itself is two inches deep.
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WATER JUMP PADS
The end of the channel is to represent a D-Type Stream. This is characterized by multiple channels and is often within the largest riparian area of the stream. D-Type Streams are either found in mountain regions in a valley, or they are going to be found at a delta point. The design of this area is to replicate the large riparian area with dense vegetation that also works as a noise barrier to the nearby children’s play area.
THANK YOU
ARE THERE ANY QUESTIONS?