



# Shelly Park Redevelopment

*Prepared For*

**The City of Manchester**

University of Iowa Engineering

Senior Design

May 14, 2021





**Natalie Wirtz**  
Project Manager  
Civil Engineering  
(Project Management)

**Jason Hua**  
Report Editor  
Civil Engineering

**Bruce Liu**  
Report Editor  
Civil Engineering

**Alec Nelson**  
Technological Support  
Environmental Engineering

# Outline

Site Location

---

Project Statement and Goals

---

Floodway Development Permit

---

Design Elements

---

Construction Cost Estimate

---

Questions

# Site Location

## Shelly Park (201 S. Franklin St.)

Nestled between downtown  
and the Maquoketa River



An aerial photograph of a park area. In the foreground, there is a dark, irregularly shaped pond or water feature. To the right of the pond is a large, light-colored, rocky or gravelly area. Further right, there are several green trees and a paved area with some orange markings. A road with a white car is visible on the right side of the image. A large, dark circular overlay is on the left side of the image, containing text.

# Project Goals

---

- Reduce Flood Impact
- Accessibility For All
- Improve Park Functionality

# Floodway Development Permit

100-yr floodplain

500-yr floodplain

Floodway



Fig. 1. Flood Hazard Map from the Iowa Flood Center.

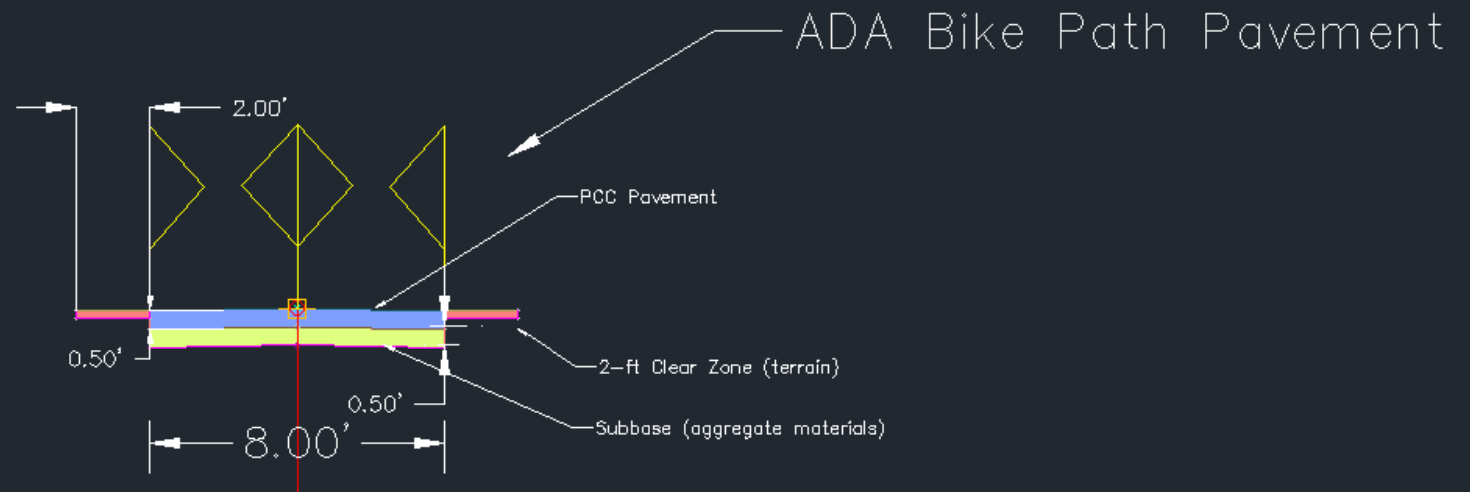
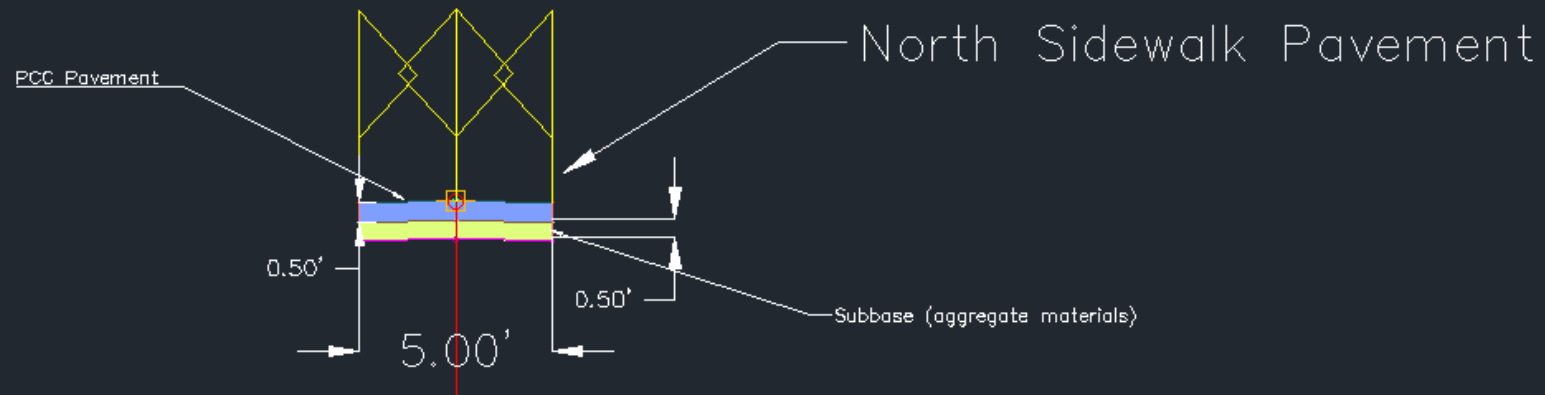
# Sidewalks

North Pathway  
Direct Access to  
Franklin St.

Diagonal Pathway  
ADA Accessible  
Access to Franklin St.



# Sidewalk Pavement Design





# Lookouts

- 7.5' radius with handrails around perimeter
- Integral dye colored concrete
- Specialty lighting



Fig. 2. Handrail lighting example from i2Systems.



Fig. 3. Colored concrete example from Concrete Network.



Fig. 4. Colored bollard lighting example from Outdoor Solar Store.



Fig. 5. Bridge lighting example of Victoria Bridge in Brisbane, Australia.

# Lookout Design



Plexiglass

Semi-Circle Concrete Slab

Reinforced Concrete Wall



Fig. 6. Terry Trueblood Recreation Center in Iowa City, IA.

# Pavilion



Fig. 7. Holiday Shadow Pavilion from NeoOutdoor.com.



Fig. 8. Laminated Wood Arch Beam Hexagon Pavilion from CedarStore.com.

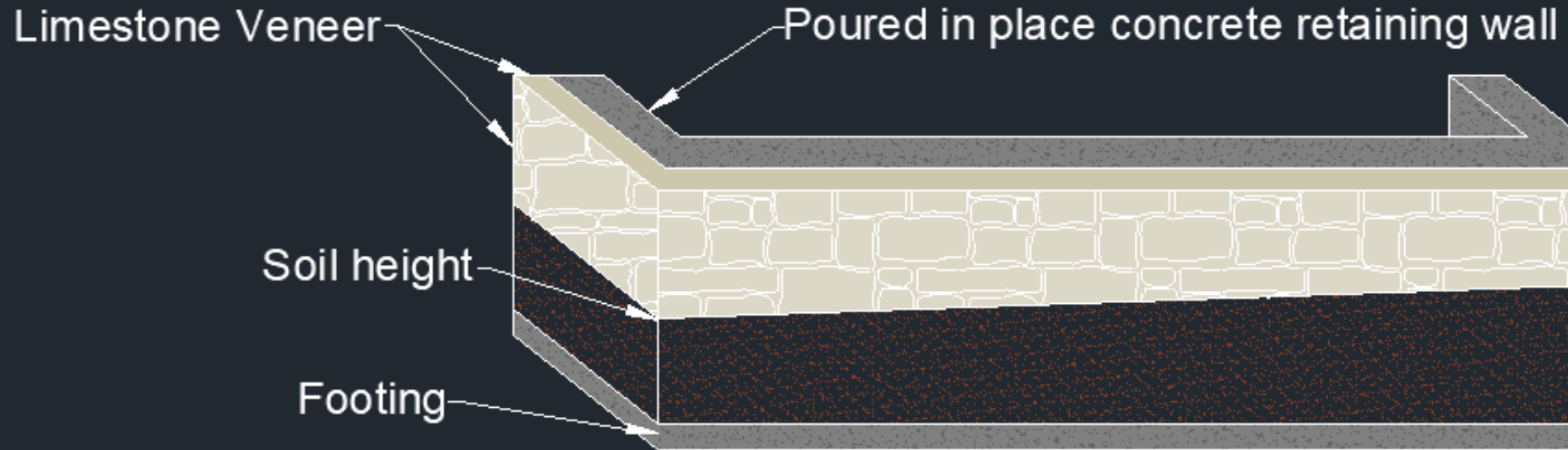


# Retaining Walls

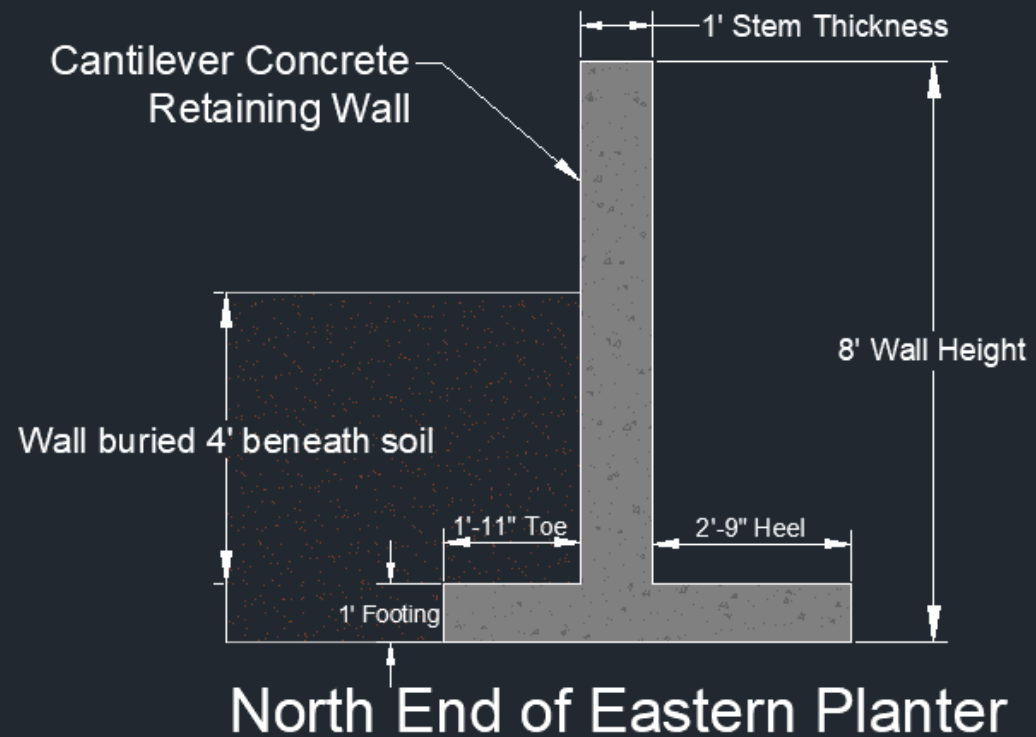


Fig. 9. Poured in place concrete retaining wall with limestone veneer located in Iowa City, IA.

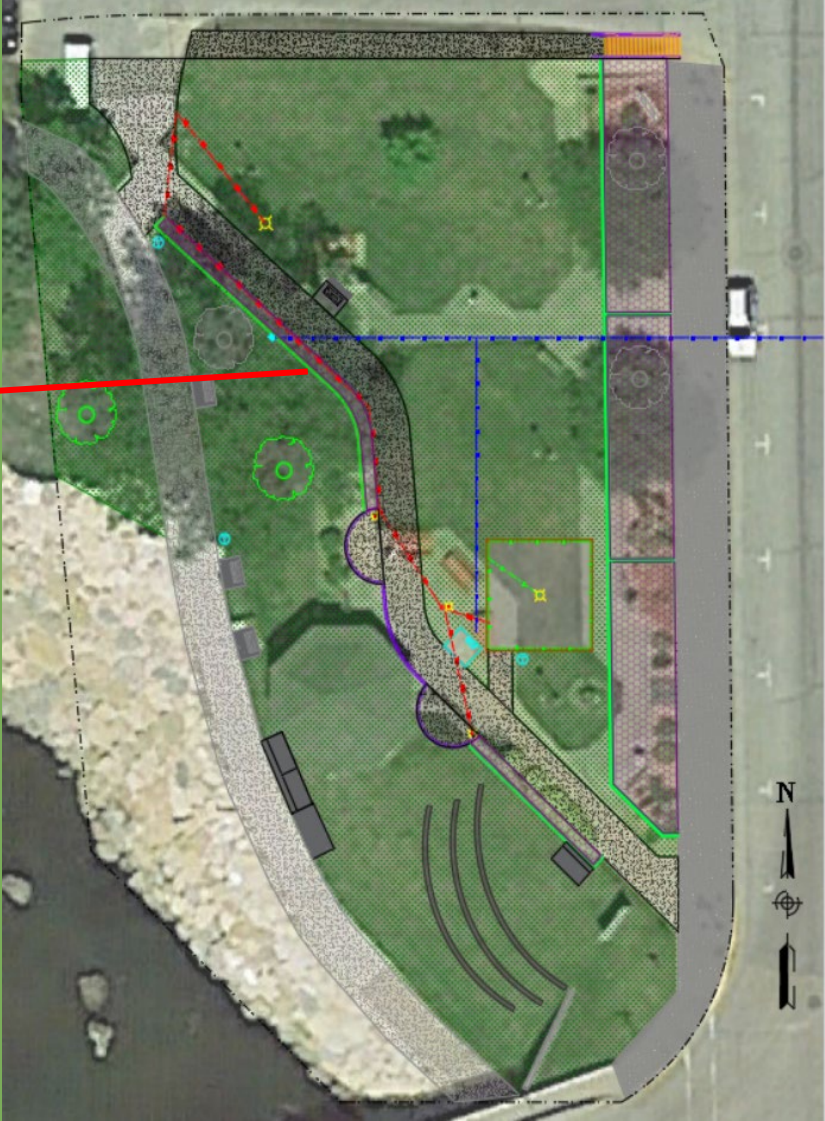
# Retaining Wall Design



# Retaining Wall Design



# Retaining Walls



# Grass Amphitheater

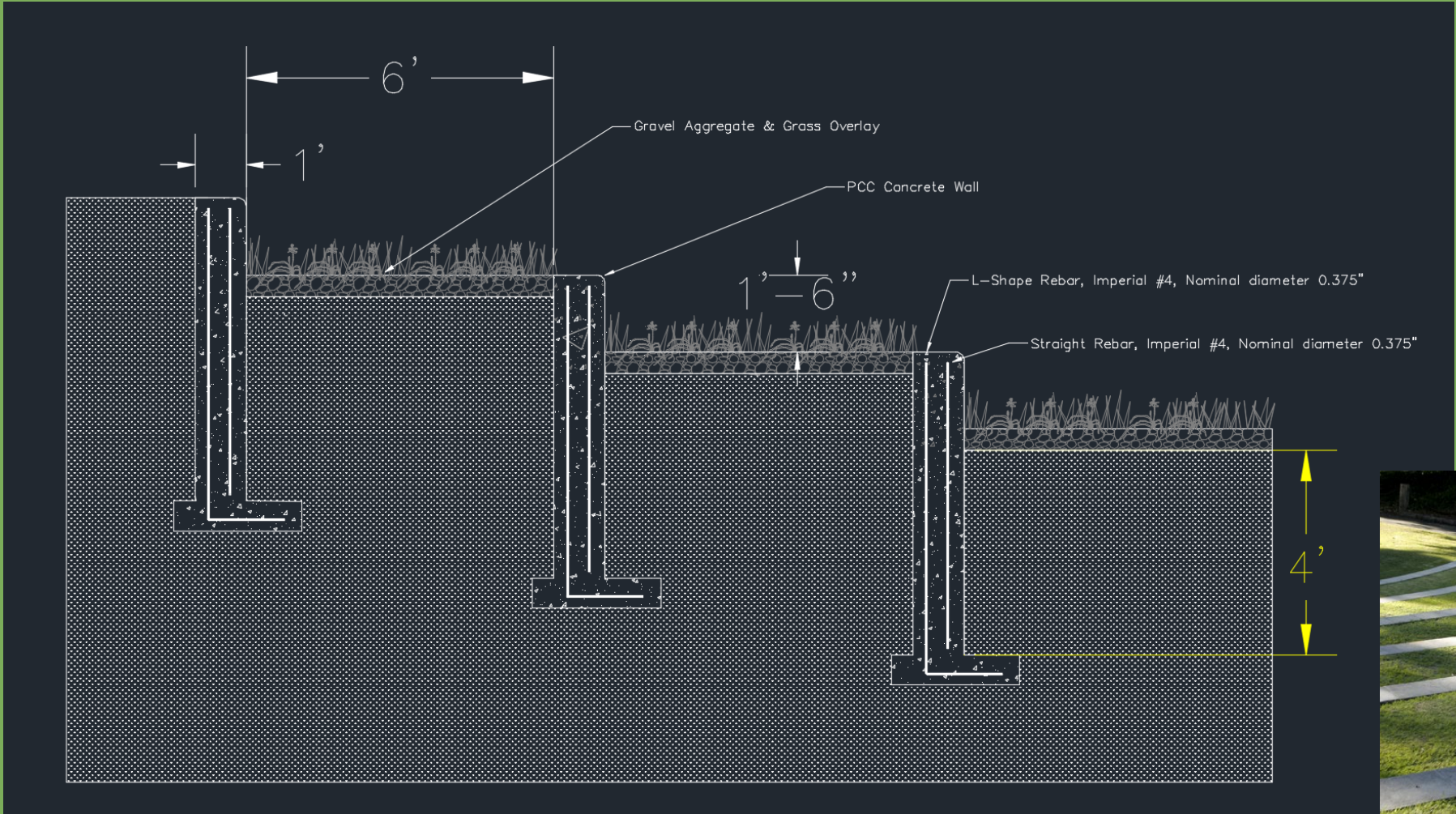
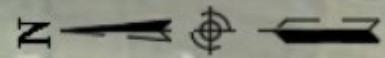


Fig. 10. Outdoor grass amphitheater at Golden West College in California.



# Amenities



Water fountain +  
spigot



Swinging benches

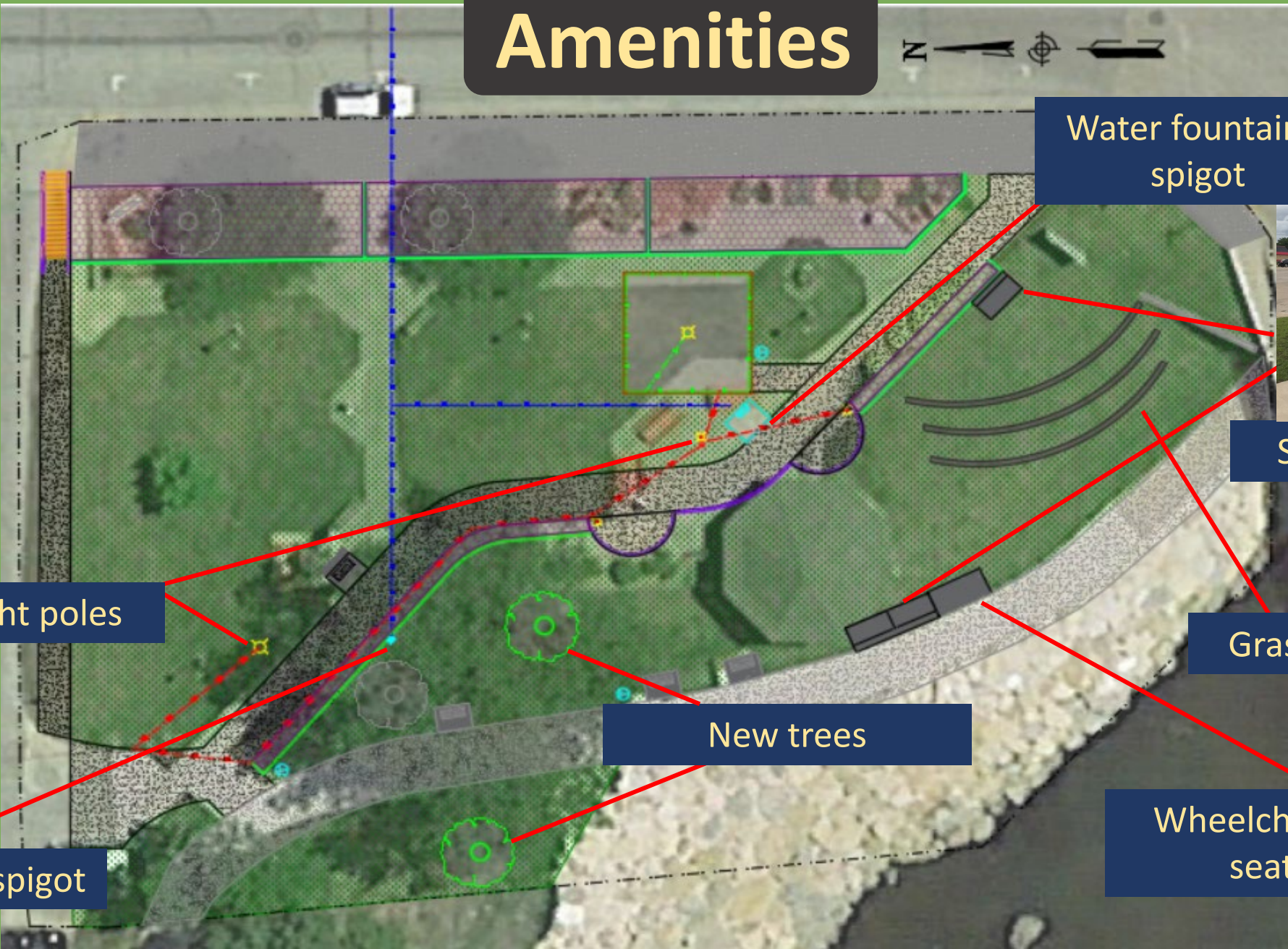
Grass amphitheater

New trees

Wheelchair dedicated  
seating area

New light poles

Water hose spigot



# Demolition and Removals Cost

| Item Description                               | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit         | Estimate     |
|--|-------------------------------------|--------------------------|--------------|--------------|
| Removal of Sidewalks                           | \$ 11.00                            | 536.01                   | SY           | \$ 5,896.11  |
| Removal of Segmented Block Retaining Wall      | \$ 5.00                             | 1315                     | SF           | \$ 6,575.00  |
| Removal of Concrete Foundations of Light Poles | \$ 70.00                            | 5                        | EACH         | \$ 350.00    |
| Removal of Light Poles                         | \$ 50.00                            | 5                        | EACH         | \$ 250.00    |
| Removal of Gazebo and Handrails                | \$ 4,500.00                         | 1                        | EACH         | \$ 4,500.00  |
| Clearing and Grubbing of Tree                  | \$ 125.00                           | 1                        | EACH         | \$ 125.00    |
| Topsoil, Strip, Salvage, and Spread            | \$ 11.00                            | 322.5                    | CY           | \$ 3,547.50  |
| Excavation, Class 10, Roadway and Borrow       | \$ 6.84                             | 352                      | CY           | \$ 2,407.68  |
|  |                                     |                          | <b>TOTAL</b> | \$ 23,651.29 |

# Concrete Costs

| Item Description                                | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit | Estimate            |
|---|-------------------------------------|--------------------------|------|---------------------|
| P.C. Concrete Retaining Walls                   | \$ 2,998.14                         | 50                       | CY   | \$149,907.00        |
| Limestone Retaining Wall Veneer                 | \$ 15.00                            | 1080                     | SF   | \$ 16,200.00        |
| Colored Concrete, 6 IN.                         | \$ 90.00                            | 20                       | SY   | \$ 1,800.00         |
| Sidewalks and Bench Slabs, P.C. Concrete, 6 IN. | \$ 41.53                            | 314                      | SY   | \$ 13,040.42        |
|   |                                     | <b>TOTAL</b>             |      | <b>\$180,947.42</b> |

# Utilities Costs

| Item Description                | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit | Estimate            |
|---------------------------------|-------------------------------------|--------------------------|------|---------------------|
| Electrical Circuits and Conduit | \$ 17.67                            | 270                      | LF   | \$ 4,770.90         |
| Handholes and Junction Boxes    | \$ 1,091.12                         | 2                        | EACH | \$ 2,182.24         |
| Control Cabinet, Complete       | \$ 11,735.17                        | 1                        | EACH | \$ 11,735.17        |
| Water Service Stub, 1 IN        | \$ 34.46                            | 173                      | LF   | \$ 5,961.58         |
| Tapping Valve Assembly, 6 IN    | \$ 3,666.67                         | 1                        | EACH | \$ 3,666.67         |
|                                 |                                     | <b>TOTAL</b>             |      | <b>\$ 28,316.56</b> |

# Pavilion Cost

| Item Description            | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit | Estimate     |
|-----------------------------|-------------------------------------|--------------------------|------|--------------|
| Pavilion Structure and Slab | \$ 33,600.00                        | 1                        | EACH | \$ 33,600.00 |
|                             |                                     | TOTAL                    |      | \$ 33,600.00 |

# Erosion Control Cost

| Item Description | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit | Estimate  |
|------------------|-------------------------------------|--------------------------|------|-----------|
| Straw Wattle     | \$ 2.84                             | 125                      | LF   | \$ 355.00 |
| Silt Fences      | \$ 3.06                             | 160                      | LF   | \$ 489.60 |
|                  |                                     | TOTAL                    |      | \$ 844.60 |

# Drainage Cost

| Item Description | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit | Estimate    |
|------------------|-------------------------------------|--------------------------|------|-------------|
| Subdrain Tiles   | 8.93                                | 254                      | LF   | \$ 2,268.22 |
|                  |                                     | TOTAL                    |      | \$ 2,268.22 |

# Sod and Tree Costs

| Item Description | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit | Estimate    |
|------------------|-------------------------------------|--------------------------|------|-------------|
| Sodding          | \$ 52.21                            | 86                       | SQ   | \$ 4,490.06 |
| Trees            | \$ 233.96                           | 2                        | EACH | \$ 467.92   |
|                  |                                     | TOTAL                    |      | \$ 4,957.98 |

# Amenities Costs

| Item Description          | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit | Estimate     |
|---------------------------|-------------------------------------|--------------------------|------|--------------|
| Lighting Poles            | \$ 6,081.47                         | 2                        | EACH | \$ 12,162.94 |
| Ornamental Metal Railing  | \$ 229.02                           | 71                       | LF   | \$ 16,260.42 |
| Lookout Handrail Lighting | \$ 141.75                           | 71                       | LF   | \$ 10,064.25 |
| Colored Lookout Lights    | \$ 400.00                           | 2                        | EACH | \$ 800.00    |
| Water Fountain            | \$ 500.00                           | 1                        | EACH | \$ 500.00    |
| Hose Spiggots             | \$ 250.00                           | 2                        | EACH | \$ 500.00    |
|                           |                                     | TOTAL                    |      | \$ 40,287.61 |

| Item Description                                | Unit Price in U.S. Dollars Wt. Avg. | Amount Needed on Project | Unit                        | Estimate            |
|---|-------------------------------------|--------------------------|-----------------------------|---------------------|
| Removal of Sidewalks                            | \$ 11.00                            | 536.01                   | SY                          | \$ 5,896.11         |
| Removal of Segmented Block Retaining Wall       | \$ 5.00                             | 1315                     | SF                          | \$ 6,575.00         |
| Removal of Concrete Foundations of Light Poles  | \$ 70.00                            | 5                        | EACH                        | \$ 350.00           |
| Removal of Light Poles                          | \$ 50.00                            | 5                        | EACH                        | \$ 250.00           |
| Removal of Gazebo and Handrails                 | \$ 4,500.00                         | 1                        | EACH                        | \$ 4,500.00         |
| Clearing and Grubbing of Tree                   | \$ 125.00                           | 1                        | EACH                        | \$ 125.00           |
| Topsoil, Strip, Salvage, and Spread             | \$ 11.00                            | 322.5                    | CY                          | \$ 3,547.50         |
| Excavation, Class 10, Roadway and Borrow        | \$ 6.84                             | 352                      | CY                          | \$ 2,407.68         |
| P.C. Concrete Retaining Walls                   | \$ 2,998.14                         | 50                       | CY                          | \$149,907.00        |
| Limestone Retaining Wall Veneer                 | \$ 15.00                            | 1080                     | SF                          | \$ 16,200.00        |
| Colored Concrete, 6 IN.                         | \$ 90.00                            | 20                       | SY                          | \$ 1,800.00         |
| Sidewalks and Bench Slabs, P.C. Concrete, 6 IN. | \$ 41.53                            | 314                      | SY                          | \$ 13,040.42        |
| Electrical Circuits and Conduit                 | \$ 17.67                            | 270                      | LF                          | \$ 4,770.90         |
| Handholes and Junction Boxes                    | \$ 1,091.12                         | 2                        | EACH                        | \$ 2,182.24         |
| Control Cabinet, Complete                       | \$ 11,735.17                        | 1                        | EACH                        | \$ 11,735.17        |
| Lighting Poles                                  | \$ 6,081.47                         | 2                        | EACH                        | \$ 12,162.94        |
| Lookout Handrail Lighting                       | \$ 141.75                           | 71                       | LF                          | \$ 10,064.25        |
| Colored Lookout Lights                          | \$ 400.00                           | 2                        | EACH                        | \$ 800.00           |
| Straw Wattle                                    | \$ 2.84                             | 125                      | LF                          | \$ 355.00           |
| Silt Fences                                     | \$ 3.06                             | 160                      | LF                          | \$ 489.60           |
| Sodding   | \$ 52.21                            | 86                       | SQ                          | \$ 4,490.06         |
| Ornamental Metal Railing                        | \$ 229.02                           | 71                       | LF                          | \$ 16,260.42        |
| Trees   | \$ 233.96                           | 2                        | EACH                        | \$ 467.92           |
| Water Service Stub, 1 IN                        | \$ 34.46                            | 173                      | LF                          | \$ 5,961.58         |
| Tapping Valve Assembly, 6 IN                    | \$ 3,666.67                         | 1                        | EACH                        | \$ 3,666.67         |
| Water Fountain                                  | \$ 500.00                           | 1                        | EACH                        | \$ 500.00           |
| Hose Spiggots                                   | \$ 250.00                           | 2                        | EACH                        | \$ 500.00           |
| Subdrain Tiles                                  | \$ 8.93                             | 254                      | LF                          | \$ 2,268.22         |
| Pavilion Structure and Slab                     | \$ 33,600.00                        | 1                        | EACH                        | \$ 33,600.00        |
|   |                                     |                          | <b>SUBTOTAL</b>             | \$314,873.68        |
|   |                                     |                          | Engineering Design Services | \$ 33,716.00        |
|   |                                     |                          | Contingency (10%)           | \$ 31,487.37        |
|   |                                     |                          | <b>TOTAL</b>                | <b>\$380,077.05</b> |

**Total Project Cost Estimate**



# Shelly Park Redevelopment Summary

---

- ADA Accessible
- Retaining Wall Replacement
- Lighting and Shade
- Openness and flexibility
- Reduce flood threat
- Reimagination