INTRODUCTION

The City of Opelika, located in east-central Alabama, has plans to renovate Floral Park, a 23-acre community park close to downtown Opelika. Included in the $1,000,000 park renovation is a new soccer field, playground, and north parking lot expansion. The engineering team was tasked with designing a functional and aesthetically pleasing stormwater management plan as part of these renovations, to include improvements to infrastructure and incorporation of stormwater best management practices. The park is located within the impaired Pepperell Branch Watershed, and the stormwater management system must follow guidelines and standards set by Opelika Public Works.

DESIGN OBJECTIVES

- Design a functional and aesthetically pleasing stormwater plan for the City of Opelika's 23-acre park that will slow, collect, and passively treat runoff from a 25-year, 24-hour design storm without exceeding the pre-construction runoff and cost no more than the 15% of the total $1,000,000 project.
- Produce a set of preliminary engineering plans for renovations for the park to include the proposed features given by the City of Opelika.

DESIGN SUMMARY

The proposed stormwater management plan includes improvements to infrastructure and incorporation of stormwater best management practices for a 25-year, 24-hour design storm. Existing pipes had adequate capacity to accommodate runoff, however, the existing inlets will be replaced because of their state of disrepair and safety hazard. To slow and treat stormwater runoff from the north parking lot addition, a rip-rap channel was incorporated that will divert flow to a dry extended detention basin. This basin will reduce erosion and flooding while providing an aesthetically pleasing vegetated area. A bioretention basin serves the purpose of collecting, treating, and slowly allowing runoff from the soccer field to infiltrate into surrounding soils. In total, the design cost is $70,815.00.

DETAILED COST ESTIMATE

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Specifications</th>
<th>Units</th>
<th>Price/unit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioretention Basin</td>
<td>Catchment for soccer field sports field area (grass or cell)</td>
<td>SF of area to be introduce</td>
<td>400</td>
<td>$7.00/construction</td>
<td>$2,800 maintenance</td>
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<tr>
<td>Catch Basin w/Grate</td>
<td>Prefabricated replacement catch basin for detritus structures</td>
<td>48&quot; sq. x 48&quot; 15&quot; Sq. x 36&quot;</td>
<td>1</td>
<td>$150.00</td>
<td>$150.00</td>
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<tr>
<td>Engineered Soils</td>
<td>Sedimented for constructed bioretention basin</td>
<td>Gravel Surf Match 2 (27CY/Order) 300 (3CF/bag)</td>
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<td>$6.00</td>
<td>$3,600.00</td>
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<td>Erosion and Sediment Control</td>
<td>All BMP for site erosion and sedimentation control structures</td>
<td>Geotextile Fencing 300'</td>
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<td>$250.00</td>
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<tr>
<td>Grading and Earthwork</td>
<td>Grading associated with new constructed BMP/ED systems</td>
<td>ED Basin (CF) Channel (CF)</td>
<td>126.52</td>
<td>$12.00</td>
<td>$1,518.24</td>
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<td>Outlet Control Structure</td>
<td>Prefabricated overflow protection structure for ED basin</td>
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<td>Pipe</td>
<td>Concrete pipe for outlet control structure</td>
<td>18&quot; x 8' sections 18' Routed</td>
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<td>Riprap</td>
<td>Stones for channel coming from parking lot</td>
<td>8&quot;-12&quot; CY coverage</td>
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<td>$45.00</td>
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<td>Vegetation/Landscaping</td>
<td>Access for channel, detention basin, bioswale basin, and landscape areas</td>
<td>Crape Myrtle 20 Evergreen Ornamental Grass 60 (1/3 bales)</td>
<td>50 (2CF/bag)</td>
<td>$20.00</td>
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| Acknowledgements | • Dr. Mark Doughtery – Professor at Auburn University Biosystems Engineering • Jon Davis – Professor at Auburn University Biosystems Engineering • City of Opelika Planning Department

SUBTOTAL | $54,471.06
Contingency | 30% contingency added for any unforeseen expenses | $16,341.32
TOTAL | $70,815.00

Photo courtesy of charlottenc.gov

Photo courtesy of denver.org

Photo courtesy of parkusa.com

Photo courtesy of Auburn University Biosystems Engineering

Vegetated Riprap Channel

Dry Extended Detention Basin

Bioretention Basin

Inlets

Replacement

Existing

Property Boundary

Soccer Field

Playground

North Storm Pipe Network