CASE STUDY

Art and Science of Building the East Campus Connector Trail

Andrea Greco, PLA, Senior Project Manager and 2000 UGA MLA Grad!!
Case Study: Art and Science of Building the East Campus Connector Trail

Description: The East Campus Connector was completed in September of 2019 and established a critical link between the South Campus of the University of Georgia, the North Oconee Greenway Trail, and will eventually link to the developing Firefly Trail. While only around 1,100 feet in length, this trail segment had complicating factors including being located within a dynamic floodplain system and being bounded by campus roads and parking lots. This session will use this project as an example to help landscape architects understand processes necessary to understand to lead their design and client team and outline the required studies and discipline efforts that need to be coordinated to create a functional, sustainable and beautiful multi-use trail design in a riverine and floodplain location.
THE BIG PICTURE
STATS

- 3.5 mi of multi-use trail,
- 2.3 mi of street-based trail,
- 12.1 miles of foot trail,
- 3 mi of multi-use trail on UGA’s campus.
- 3.5 mi future
The Transportation Enhancement (TE) program was established to enrich the traveling experience of motorists, bicyclists, and pedestrians through enhancements to our transportation system. Federal funding for TE projects is allotted to provide aesthetic and functional improvements to historical, natural, and scenic areas.
BOOTS ON THE GROUND!
2012-2013
Determine Client /Community Needs/Requirements Including:
Access/ Loading/Width Requirements
STATE WATERS: Is it a state water?
STATE WATERS: Stream Buffers

- Know your buffers!

- Typically, perpendicular crossings for trails are exempt from buffer variances

- Parallel trails/boardwalks/bridges WITHIN buffers are NOT exempt and require variances

- Additional Local Regulations OFTEN apply

*From GSWCC Technical Guides*
WATERS OF THE US: Wetlands/Open Waters

- USFWS Wetland Inventory Mapping Tool
- Hire an ecology consultant
WATERS OF THE US: What’s regulated?

- **Clean Water Rule: Definition of “Waters of the United States”** 40 CFR 230.3
- Includes streams, lakes, wetlands, coastal waters etc.
- Altering or putting structures in waters including: filling, piles, pipes, footings
- Pre Construction Notification (PCN) associated with Nationwide Permit at a minimum
FLOODPLAINS
LOCAL REGULATIONS:

- Local Regulations for Floodplains, Stream Buffers and Wetlands
- **ALSO LOOK FOR SPECIAL PROVISIONS FOR TRAILS and RECREATIONAL FACILITIES**
GDOT Requirements

WORKSHEET FOR REVIEW OF TEICMQ PROJECTS FOR ECOLOGICAL RESOURCES

IMPORTANT NOTE:

- SHOULD THE PROJECT HAVE THE POTENTIAL TO AFFECT ANY ECOLOGICAL RESOURCES YOU WILL NOT BE ABLE TO USE THIS WORKSHEET SINCE AN ECOLOGICAL ASSESSMENT, PREPARED BY AN ECOLOGICAL PRIOR-PERMITtee IN AREA CLAUS, IS REQUIRED AND COULD BE REQUIRED

- SHOULD IT BE DETERMINED THAT A SECTION 404 PERMIT FROM THE U.S. ARMY CORPS OF ENGINEERS (USACE) OR A BUFFER WAIVER FROM THE GEORGIA ENVIRONMENTAL PROTECTION DIVISION (EPD) IS REQUIRED, AND THE PROJECT SPONSOR IS RESPONSIBLE FOR SECURING PERMITS FOR THE PROJECT TO CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE PROJECT SPONSOR TO OBTAIN THESE ITEMS. IF MITIGATION IS REQUIRED FOR THE IME PERMIT AND THE SPONSOR IS RESPONSIBLE FOR PERMITS, ENGINEERING AND RIGHT-OF-WAY. IT IS THE RESPONSIBILITY OF THE SPONSOR TO OBTAIN MITIGATION CREDITS. GDOT WILL NOT OBTAIN THESE ON YOUR BEHALF.

I. GENERAL INFORMATION

A. Project Number: County: Clarke
   NHM Number: 0041935 Project Area: 1.03 Ac.
   Project Name: North Oconee River
   Greenway-East Campus Connector

   Project Location: The project limits are from River Road near the University of Georgia (UGA) East Campus Village area on the west side of the North Oconee River to the proposed North Oconee Greenway Trail Enhancement Project (CSPHP-9001-5004-373) on the east side of the river.

B. Project Description:

   1. Describe the existing facility: The project area is at the edge of the University of Georgia (UGA) campus and consists almost entirely of forest and an old field for approximately 965 ft.

   2. Describe the proposed facility: The East Campus Greenway Connector Project would incorporate the development of a pedestrian and bicycle trail that would traverse from the UGA East Campus Village area on the west side of the North Oconee River to the proposed North Oconee Greenway Enhancement on the east side of the North Oconee River. This project would include the construction of approximately 790 feet of multi-use trail, installation of approximately 300 foot pedestrian bridge crossing over the North Oconee River, and a pedestrian section along the north riverbank of the bridge. Encroachments would need to be approved from the UGA Real Estate Foundation.

   The trail would incorporate a 10-14 foot concrete multi-use trail with three to five foot wide shoulders. An elevated boardwalk (See Approach A) would be required for transition from ground level to bridge deck elevation on the 100 year flood plain elevations.

   Land clearing activities would be conducted at the east and west ends of the proposed trail for the removals and construction of the boardwalks, as well for staging a crane and accessory equipment for the installation of the steel bridge and

GDOT ARCHAEOLOGICAL SHORT FORM FOR NEGATIVE FINDINGS

Report Title: Archaeological Survey of the North Oconee River Greenway - East Campus Connector

Prime Consultant: Pond and Company

Sub Consultant: New South Associates

GDOT Project No.: C035813-0000196

P.J. No.: 0018126

G.P.H.P. Req.: 4

Draft Report Submitted: 10/15/15

PROJECT LOCATION AND AREA OF POTENTIAL EFFECT

County(s): Athens-Clarke

USGS Quadrangle(s): Athens East

Year: 1995

Project Description:

New South Associates was contracted to conduct a Phase I Archaeological Survey of Pond and Company in advance of the development of a multi-use trail that would connect the University of Georgia (UGA) East Campus Village area to River Road on the south side of the North Oconee River to the proposed North Oconee River Greenway Trail Project No. C035813-0000196. The project includes approximately 300 feet of a 10-14 foot wide concrete multi-use trail in addition to the installation of an approximately 350-foot long 12-foot wide elevated boardwalk, and an approximately 300-foot long pedestrian bridge crossing the North Oconee River.

A portion of the proposed trail on the north side of the North Oconee River was previously surveyed by New South Associates (Oakey 2008: Figure 1). The current survey, therefore, focused on the southern and northern banks of the river.

Area of Potential Effect (APE)

The APE for the proposed trail is approximately 1,500 feet (450 m) in length by 50 feet (15 m) in width (based on the trail centerline) from the UGA campus across the North Oconee River and ending in a transmission facility corridor approximately 265 feet (80 m) from U.S. Highway 345/New Hope City. An additional 100 feet (30 m) on each side of the APE was also tested for the Expanded Survey Corridor (ESC) as required by GDOT in the Environmental Procedures Manual. The area of archaeological emphasis for this project focused on the southern and northern banks of the North Oconee River for a length of approximately 525 feet (160 m) as the remainder of the APE was covered during the 2008 survey.
Concept
Reevaluation & Determining Permitting Needs
OUR APPROACH

- Explored options
- Stayed out of the floodway
- Minimized impacts to floodplain
- Coordinated with proposed North Oconee Greenway plans (by Others) and UGA
PROJECT LAYOUT: Conceptual Alignment
Athens Clarke County North Oconee Greenway
East Campus Connector Trail - Option 2A

DRAFT

KH Trail, (Typ.)
Approximate sewer line location
Approx 350 LF Prefab Bridge

Concrete Trail
Retaining Wall

Boardwalk

Concrete Trail
Retaining Wall

Approximate conc. drainage ditch location

Legend
- PREFAB WALL
- CONCRETE TRAIL
- ROADS/MARK
- WALKWAY

Note: Background topo, drainages, utilities, right of way and roadways from GIS data and is approximate. Floodplain and floodway for Options A, B, and C is approximate based upon GIS.
## And Cost Estimates

### North Oconee River Greenway - East Campus Connector - Option 1

**Cost Estimate**

<table>
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<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Cost</th>
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<td>Creek Control</td>
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### Additional Information

- **RIPRAP**: Design fees or additional permitting not included.
- **Subtotal**: $477,555.00
- **Landscaping**: $25,000.00
- **Subtotal**: $25,000.00
- **Total**: $1,753,000.00

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**Planning and Engineering**

- **Quantity**: 1.00
- **Unit**: EA
- **Unit Price**: $185,000.00
- **Cost**: $185,000.00

### Additional Exploratory Costs

- **Total Project Cost**: $1,838,095.00

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**Project Number**: C517-0010-0031E0

**P. I. Number**: 0001396

**County**: Athens-Clarke County

**Cost Estimate**: DRAFT

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**Project Number**: C517-0010-0032E0

**P. I. Number**: 0001396

**County**: Athens-Clarke County

**Cost Estimate**: DRAFT

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**Published Date**: 5/5/2015

**Revised Date**: 5/5/2015

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**POND**
Revised
Includes approximate length of 532 linear feet, based upon : West trail terminating into River Road sidewalk with level grade. East side, 180’ of 2% slope and 232’ of 4.5% slopes.
H-piling Permatrack option removed

<table>
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<th>Elevated Walkway</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Estimated Unit Price</th>
<th>Total Cost</th>
<th>Notes</th>
<th>Pricing by?</th>
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</thead>
<tbody>
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<td>12’ wide elevated wood boardwalk with wood piers/42’’ wood railing, 10’ sparcings on piers</td>
<td>532</td>
<td>LF</td>
<td>$755.00</td>
<td>$401,660.00</td>
<td>10,000#/sf veh. load, wood railing not req due to floodplain impact &amp; damage potential.</td>
<td>Nature Bridges</td>
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<td>12’ wide wood boardwalk with wood piers/ cable railing, 10’ sparcings on piers</td>
<td>532</td>
<td>LF</td>
<td>$835.00</td>
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<td>10,000#/sf veh. load,</td>
<td>Pond</td>
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<td>12’ wide wood boardwalk with wood piers/ metal railing, 10’ sparcings on piers</td>
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<td>LF</td>
<td>$815.00</td>
<td>$433,580.00</td>
<td>10,000#/sf veh. load.</td>
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<td>23’-4” wide Permatrack concrete boardwalk with railing (for 12” clear), with timber or plexiglass style aluminum railing, timber piles 20’ spacing.</td>
<td>532</td>
<td>LF</td>
<td>$863.00</td>
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<td>10,000#/sf veh. load. SF is based on 12’ wide surface clear based upon 13’4” wide.</td>
<td>Permatrack</td>
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<td>13’-4” wide Permatrack concrete boardwalk with railing (for 12” clear), with cable rails, timber piles, 20’ spacing</td>
<td>532</td>
<td>LF</td>
<td>$1,023.00</td>
<td>$544,236.00</td>
<td>10,000#/sf veh. load. SF is based on 12’ wide surface clear based upon 13’4” wide.</td>
<td>Permatrack w/Pond adjustment for railing</td>
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<tr>
<td>12’ wide poured concrete with caissons approx 20’-25’ O.C. and cable rails with metal posts</td>
<td>532</td>
<td>LF</td>
<td>$1,082.00</td>
<td>$575,694.00</td>
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<td>Astra w/Pond adjustment for railing</td>
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NEXT STEPS

• Get A Bridge Engineer Involved
• Talk to Bridge Manufacturers
• Talk to Specialty Contractors about Access Requirements/Staging/and HUMONGOUS cranes
• Scour analysis (civil engineer)
• Geotechnical/ BFI Coordination
• Utilities/Impacts
UGA (Go Dawgs!)

APPROXIMATE LOCATION OF FEMA CROSS-SECTION O (XS: 8.556)

100-YR FLOODPLAIN

100-YR FLOODWAY

PROPOSED TRAIL

APPROXIMATE LOCATION OF FEMA CROSS-SECTION N (XS: 8.373)

APPROXIMATE LOCATION OF FEMA CROSS-SECTION M (XS: 8.310)

SCALE: 1" = 200
FLOODPLAINS: Flood Modelling

- Speciality consulting
  - Civil Engineers with speciality in water resources – coordinate with your bridge engineer, grading and anything in floodplain/floodway

- HEC-RAS: Modeling software

- Use existing hydraulic models with pre and post trail conditions
FLOODPLAINS: CLOMRS, LOMRS and No Rises

- No Rise
  - In this case the impact was less than .01 foot of rise which equates to GDOT requirement of “No Rise” condition

YOU MAY NEED THESE, YOU ALSO MAY NEED TO NOTIFY ADJACENT PROPERTIES

- CLOMR= “Conditional Letter of Map Revision”
  - Before project is built. Submit to Floodplain manager
  - When rises of (0.00 ft in floodway) and/or 0.1 ft in floodplain

- LOMR= “Letter of Map Revision”
  - When flood levels increase or decrease due to built conditions
  - Performed after project is built.
  - As builts required and As built flood study
  - Goes to Floodplain Manager/Community
Right of Way/Easement Coordination
Finalize CD’s, Permitting and Out to Bid
Begin Construction!
July 2018
Piers and Abutments First
Bridge Installation Day
March 20, 2019
In Summary

- 8 Years Total, 15 Months Construction
- $3,175,000
- Total approx 1100 lf
  - 340 Linear feet on grade concrete trail
  - 235 Linear feet 10’ wide prefabricated weathering steel bridge
    (168’ River Road side, 257’ Greenway side)
  - 425 Linear feet elevated concrete trail, up to 15’ht
- Less than 5% Slope entire length
Why is that bridge so long and so high?

https://twitter.com/acccgov/status/1121213483377258496?lang=de
Athens Clarke County
Derek Doster, PE, SPLOST Project Manager
Melody Melton
Todd Miller, PLA, Athens County Leisure Services

Astra Construction
Shawn Springston, Project Manager
Travis Davenport, Project Superintendent

Heath & Lineback-Bridge Engineers
Josh Dover, PE Brian Adams, PE, Wes Hunt, PE

SM&E Geotechnical

CCR Environmental

Moreland Altobelli- Surveying, also Reviewing/Administrative Agency for GDOT

POND
Kenn Ussery, PE, Elen Poje, PE, Fred Halterman, PE
Matthew Wilder, PLA, Pedro Torres, PLA

YAY TEAM!