BLUEPRINT
INTERGOVERNMENTAL AGENCY

Technical Coordinating Committee Meeting

October 17, 2017
2:00 pm
315 S. Calhoun Street, Ste. 450

Facilitator: Charles Hargraves

Agenda

Page

I. AGENDA MODIFICATIONS

II. INFORMATIONAL ITEMS/PRESENTATIONS

III. GENERAL BUSINESS/PRESENTATIONS

1. Presentation – Capital Cascades Trail Segment 3D-B Regional Stormwater Facility

IV. CITIZENS TO BE HEARD

Citizens desiring to speak must fill out a Speaker Request Form. The Chair reserves the right to limit the number of speakers or time allotted to each speaker.

NEXT TCC MEETING: **Monday, November 13, 2017**

In accordance with the Americans with Disabilities Act and Section 286.26, Florida Statutes, persons needing a special accommodation to attend this meeting should contact Susan Emmanuel, Public Information Officer, 315 South Calhoun Street, Suite 450, Tallahassee, Florida, 32301, at least 48 hours prior to the meeting. Telephone: 850-219-1060; or 1-800-955-8770 (Voice) or 711 via Florida Relay Service.

ITEM #1

Blueprint Intergovernmental Agency
Board of Directors
Agenda Item

TITLE: Capital Cascades Trail Segment 3D Regional Stormwater Facility

Date: October 17, 2017 **Requested By:** Blueprint Staff

Contact: Charles Hargraves **Type of Item:** Discussion

STATEMENT OF ISSUE:

The Blueprint Intergovernmental Agency's Technical Coordinating Committee (TCC) was created to provide professional advice and technical expertise to Blueprint on a project basis. The purpose of this agenda item is to seek technical advice regarding two design alternatives for the Segment 3D Regional Stormwater Facility (RSF).

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The two alternatives being evaluated are:

- Option 1: An in-line SWMF with two double box culverts directing all flow through the pond, detaining the first 5 feet of flow depth prior to discharging through an overflow structure or
- Option 2: An off-line facility which directs the first 5 feet of flow depth into the pond, while bypassing higher flow events.

Blueprint is in the process of selecting which alternative is the best choice from a holistic overall project standpoint. This decision needs to be made following the TCC meeting to include the portion of the preferred stormwater design that is located underneath the 42" Gravity Sewer with the City of Tallahassee's Sanitary Sewer Relocation Project Bid Package.

Blueprint Staff and Design Team will present and compare information on the two alternatives related to aesthetics, water quality, flood control, trash collection, facility maintenance, and construction cost, and how those aspects of the design impact the overall project.

SUPPLEMENTAL INFORMATION:

The current Lake Bradford Road (LBR) Sanitary Sewer project and the Central Drainage Ditch (CDD) gabion basket stormwater project may precede the construction of the CCT-Segment 3D RSF. The selection of the 3D RSF design alternative is needed to determine the location and size of the box culvert under the proposed 42" gravity sewer. The determination of the location will allow Blueprint to provide construction details for inclusion in the sewer project bid documents. This will minimize construction costs by allowing the box culvert section to be constructed at the same time as the sewer. The decision will allow Blueprint and the City to move forward with coordination between the CCT Segment 3D project and the CDD gabion project.

<u>Capital Cascades Trail Segment 3D Status</u>

Capital Cascades Trail Segment 3D is comprised of a multi-use trail from Pinellas Street to the connection at the St. Marks Trail, a double box culvert from the project area west of Pinellas Street to the Central Drainage Ditch, and a regional stormwater facility.

Pinellas Street to Gamble Street – Under Construction

This segment is currently under construction in conjunction with the City's FAMU Way Extension project, including the construction of a roundabout at Gamble Street. This segment of construction is scheduled for completion in November 2018.

Gamble Street to Central Drainage Ditch

This segment includes the project area west of Gamble Street roundabout to the Central Drainage Ditch east of Lake Bradford Road and includes the 3D RSF. Conceptual design has been performed analyzing flood control and water quality for this segment, and conceptual permit from FDEP have been obtained. Blueprint needs to select the preferred alternative design option for the 3D facility so that we can move forward with design and permitting of this segment of the project.

ADVICE SOUGHT:

Objective: To obtain professional and technical advice toward selection of the alternative design option (on-line system or off-line).

Attachments:

1. Stormwater Working Group Meeting Minutes
2. Segment 3D-B RSF Design Options Summary Report
3. Draft PowerPoint Presentation for Tuesday's Meeting

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STORMWATER WORKING GROUP

MEETING MINUTES

Date: September 8, 2017

Subject: Stormwater Working Group – Capital Cascades Trail – Segment 3D-B

- **Location: Blueprint IA, 9:30 AM – 11:30 AM**
- **Attendees:**
  - **Alisha Wetherell – COT UUPI**
  - **Mark Fuller – COT UUPI**
  - **Josh Logan – COT Sewer**
  - **Jason Icerman – COT Water Resources Engineering**
  - **Richard Reinert – COT Water Resources Engineering**
  - **Dan Fendley – Community Beautification**
  - **Theresa Heiker – County Stormwater**
  - **Anna Padilla – County Stormwater**
  - **Charles Hargraves - BP**
  - **Roger Cain - BP**
  - **Gary Phillips - BP**
  - **Cam Snipes - KH**
  - **Kelsey Lewis - KH**
  - **Emily Czelusniak - KH**

<u>ACTION ITEMS</u>

- **KH to provide water quality calculations to Jason for review and comment. KH sent email to group 9/8/17. COMPLETE**
- **KH to provide updated schedule to Blueprint for Segment 3B-C LOMR submittal. KH to provide the LOMR to the City for their review on 9/29/17. COMPLETE**
- **Blueprint to circle back with GM on EMP Close-out for Cascades Park**
  - **EMP Close-out is pending the alum system working operating as permitted.**
- **KH to provide 100-year model results at each node along with finished ground surface elevations. This information was provided to Blueprint on 9/18/17. COMPLETE**
- **KH to provide floodplain elevation at swale east of Coal Chute Pond and at low point of FAMU Way Phase 2. COMPLETE**
- **KH and Blueprint to verify OHE line (higher end distribution) relocation cost along Gamble and update Bypass OPCC. BP contacted City Electric (Tina Drose). Once FAMU Way Phase III underground is installed, existing OHE can be removed. COMPLETE**
- **Blueprint to reconvene SWWG, once decision on bypass vs. inline is made, to discuss BAM and other design issues for the regional SWMF and design alternatives.**
- **Blueprint to schedule Special TCC meeting in October to review alignment options.**
- **KH to provide Josh with cross section at west berm of 3D RSF. COMPLETE**
- **Alisha to ask Jon Yarbrough about maintenance costs associated with bypass vs inline.**
- **Blueprint to discuss box culvert alignment options, trash trap devices, and costs with City Maintenance.**

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- **Blueprint to check if maintenance funding is available for this facility. City/County will receive $10 million ($500K/yr.) starting in 2020 to be used for park maintenance. COMPLETE**

DISCUSSION POINTS

- **3D SWMF Design Options and Considerations**
  - **Water Quality**
    - **Jason will verify KH water quality calcs and methodology, but options shown are similar in total removal.**
    - **Bypass water quality is based on 80/20 split which was used in the FDEP Conceptual Permit that has been approved. This split is a conservative approach compared to original 93/7 that was presented at the last TCC meeting.**
    - **KH will send the water quality calculations spreadsheet to the group.**
    - **Eric/Richard – good with clay liner for pond (2' clay for 2:1 slopes).**
  - **LOMR**
    - **LOMR will be submitted to the City on 9/29/17 for their review**
  - **3D SWMF Design Options and Considerations**
    - **XP SWMM Model**
      - **Jason - mentioned that the City is constructing a new outfall at Madison Street that could affect the St. Augustine Branch and flow coming to it. Potential follow up needed in future.**
      - **Gary - asked if the model includes the gabions. Cam replied that model does not include the gabion project downstream but that Singhofen has a separate model they are using to qualify for a "no-rise" with FEMA.**
      - **Cam - the model is based on mainly design conditions but stage-storage nodes within the Park have been updated to reflect as-built conditions.**
  - **Aesthetics & Park Amenities**
    - **Charles - likely there will be a trail around the pond. The expectation is that the facility will be a park like condition like Cascades due to the Gateway location.**
    - **Jason – if aesthetics drive the design, then bypass option is the route to take.**
  - **Flood Impacts**
    - **Jason - asked if KH could provide 100-year model results at each node along with finished ground surface elevations. This information was provided to Blueprint on 9/18/17.**

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- **Anna - asked if KH has results at the nodes downstream of the project. Cam mentioned this would be included in the summary tables that Jason had requested.**
- **Charles - asked what the floodplain elevation is at the swale east of Coal Chute Pond. KH will follow-up on this item.**
- **KH - LH030 is at the approximate location of the FAMU Way Phase 2 low point. This low point controls peak stage in the pond. Inline option is higher because of the outfall structure size and that water has only one way to go. Based on results from the 100-year event, the inline option is higher because of the size of the outfall structure. The outfall structure size could be increased to make the HGL in the box at LH030 lower. The bypass option allows for water to spill over the knee wall at the inflow and travel through the bypass box culverts to the CDD.**

o **Facility Maintenance/Gross Pollutant Removal (Trash Trap)**
- **Charles – would like input from COT Maintenance to make sure they can maintain what is proposed.**
- **Alisha – For bypass option, a Suntree type system could be utilized at the 60" bypass pipe to collect what would go into pond, then a separate collection system could be installed in the CDD just downstream of the outfall from the bypass. This separate system could be accessed from the west side of the CDD where a maintenance driveway would be installed anyway. A treatment train approach is preferred by City Stormwater.**
- **Charles – lots of upstream trash collection. Put next system on CDD, not on bypass.**
- **Charles – double box culvert underground system would require maintenance to get inside boxes and creates confined space concerns and significant cost.**
- **Alisha – double box underground system, closed underground Jon would be opposed to, Weems is open system.**
- **Alisha – double box culvert, could put one Suntree system on each box, approximately $325K for Suntree system furnished and installed on 60" pipe**
- **Dan – Smokey Hollow trash traps work well in keeping trash out, where Boca Chuba gets lots of trash in pond.**
- **Alisha – Smokey Hollow Trash Trap maintenance has decreased to every other month now that construction nearby is complete.**
- **Cam – could be configured with trash screen but the aesthetics not acceptable to Blueprint.**
- **Charles – difference between options is the trash removal device.**
- **Jason – has anybody quantified the amount of collection needed?**
- **Richard – the trash net bags are high maintenance. A better option is a CDS system but any large vortex system would need to have adequate access for it to be cleaned manually if a vacuum truck could not get everything out. Campus Circle vortex system does not have adequate access.**

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- **Alisha – the trash trap system chosen should have availability to water for cleaning purposes.**
- **Richard – suggest talking with Tom Napier about different trash trap systems.**
- **Jason asked if we were trying to protect 3D RSF or Lake Munson.**
- **Charles said the expectation for the 3D RSF is to be as nice as Cascades Park.**
- **Alisha – speaking on behalf of Jon Yarbrough, 100% certainty, he would prefer bypass option that catches the most trash upstream to minimize maintenance in the ponds and then treatment train further downstream, that is accessible, open air and preferably done with piece of equipment.**
- **Charles – from recreational facility perspective, having big concrete structures at each end of pond creates safety challenges. My desire is the bypass alignment just from aesthetics and the pollutant removal amounts are similar.**
- **Jason – BAM (Bio-Sorption Activated Media) should be considered and would be helpful for pollutant removal. Downside is that only a small amount of flow (< 5 cfs) can be treated.**
- **Charles – could summarize evaluating options from a variety of criteria but is it the desire of this group to go to TCC with bypass as the preferred option? Intend to bring both options to the TCC and describe advantages and disadvantages of each option. Need to determine if it needs to go to CAC for review.**

- **Coordination Requirements**
  - **Sewer Realignment Project**
    - **Trying to let this year (2017) and begin construction in Spring of 2018.**
    - **Plans currently at 90%; sewer elevation is set; Segment 3D-B to be designed around sewer inverts.**
    - **West side of LBR will need to be constructed first.**
    - **Could include phase schedule into plans.**
    - **Needs to set top of manhole elevations per 3D RSF berm in Segment 3D-B. plans; need to make sure manhole top is out of floodplain.**
    - **If trail is aligned with manholes and is concrete, then great.**
    - **Josh needs sheets for the box culvert to include in his plans.**
    - **If project can wait until Mill Street is open, detour would be better.**
  - **Stormwater Gabion Basket Project**
    - **In design – need to know how much flow is coming to the CDD and the location of the flow. This information will be based on the decision of inline vs bypass.**
    - **Would prefer not to wait for Segment 3D-B construction.**
    - **Need to design this as a team, waiting on flows to determine size of ditch.**
  - **FAMU Way Phase III – discussion of bridge and sewer location.**

Kimley»Horn

October 10, 2017

Mr. Roger Cain
Project Manager
Blueprint Intergovernmental Agency
315 S. Calhoun Street, Suite 450
Tallahassee, Florida 32301

RE: ***Segment 3D-B Regional Stormwater Facility (3D RSF) Design Options – In-line vs. Bypass***

Dear Mr. Cain:

Kimley-Horn was tasked to evaluate two conceptual options for the 3D RSF – the In-line Option and the Bypass Option. This letter and its attachments summarize the analysis, methodology, and results from this evaluation.

Summary of Conceptual Options

The two options are similar up to a point southwest of the terminus of the Segment 3D-A project which lies southwest of the FAMU Way Phase 2 and Gamble Street roundabout. The difference between the two options are described below.

Bypass Option Summary

Flow enters the 3D RSF through a pipe where the first 5' of runoff is directed by a weir wall into the 3D RSF. Double box culverts then bypass the flow not diverted through the pipe directly to the Central Drainage Ditch. A small outfall structure (FDOT Type 'C' Inlet or similar) with an orifice set at the permanent pool elevation is provided to drawdown the storage volume in the 3D RSF. See Attachment A.

In-line Option Summary

The entire flow from upstream enters the 3D RSF through double box culverts. A large outfall structure is utilized for peak stage control and drawdown of storage volume within the 3D RSF. The drawdown orifice is the same size and is located at the same elevation as the orifice in the Bypass Option. The inverts of the three (2' x 20') orifices are set at the same elevation as the weir wall in in the Bypass Option for comparison purposes. See Attachment A.

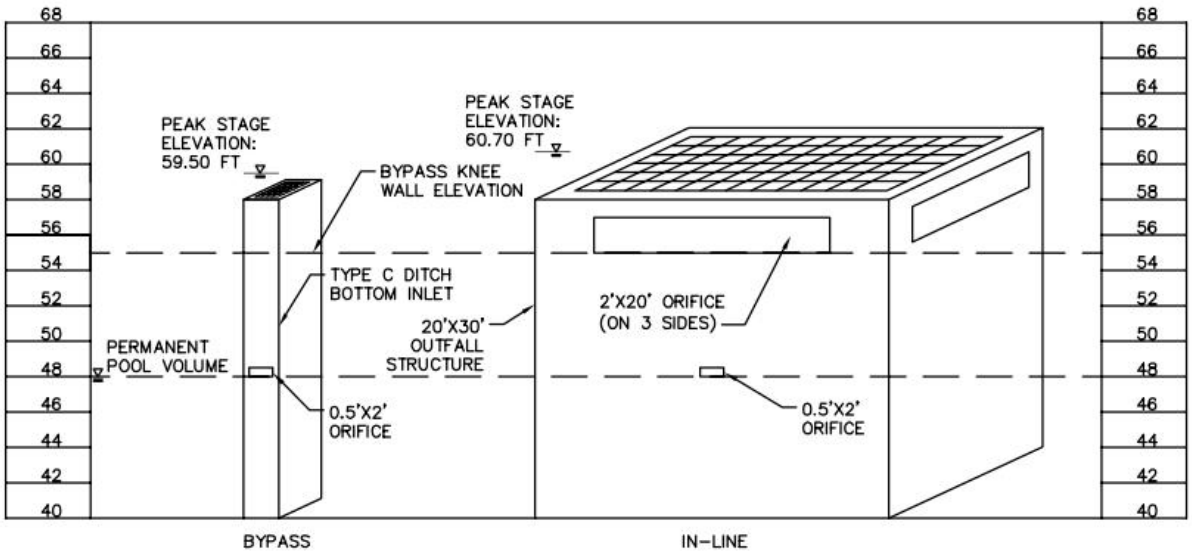

Figure 1: Outfall Structure Comparison

Water Quality – Analysis and Results

The water quality analysis approach and methodology performed as part of this task is generally consistent with FDEP Conceptual Approval Permit No.: 0296409-015-EC/37 issued on February 13, 2017. The water quality analysis was generally based on the *FDEP Design Requirements for Stormwater* Treatment *Systems in Florida (March 2010 Draft)*. The pollutants analyzed in the FDEP Conceptual Permit and this task were nitrogen and phosphorus. It is assumed that treatment efficiencies attained for these nutrients will be sufficient to adequately treat other nutrients that would otherwise cause or contribute to water quality violations. A combination of Esri ArcMap, spreadsheet tools, and the XPSWMM stormwater model for the Segment 3D-B project were used to analyze event mean concentrations (EMCs) associated with future land uses, contributing basin areas, nutrient volume splits, and removal efficiencies for the Capital Cascades Trail related stormwater management facilities within the Saint Augustine Branch.

The Bypass Option was included in the FDEP Conceptual Approval Permit No.: 0296409-015-EC/37. The following statement was included within the Water Quality Report submitted and approved as part of this Conceptual Permit:

"Calculations are based on 80% of the annual runoff volume being routed through the 3D RSF. This is conservative because if a higher percentage of the volume is routed through the RSF slightly higher nutrient removals are achieved. Removal efficiencies and detention time are reduced as annual runoff volume to the 3D RSF increases; however, more nutrients are routed through the 3D RSF which results in greater total nutrient removal."

The dynamic spreadsheet calculates updated values of annual runoff volumes, detention time, and 3D RSF nutrient removal efficiencies for this option. The permanent pool volume for both options is the same.

- **Bypass Option** - 80% of annual runoff volume is routed through the 3D RSF and 20% of annual runoff volume bypasses the 3D RSF, travels directly to the CDD, and is not treated.
- **In-line Option** - 100% of the annual runoff volume is routed through 3D RSF.

Overall the 3D RSF provides a “net improvement” to the SAB watershed.

Table 1: Nutrients Released from the SAB into the CDD (lbs/year)

Condition	Total Nitrogen	Total Phosphorus
Pre-Cascades	13,661	4,634
Bypass (80/20)	11,834	2,308
In-line (100/0)	11,798	2,125

Based on a phone call with Dr. Harvey Harper, P.E., as a rule of thumb, sediment/nutrients will settle within a stormwater pond if the flow velocity through the pond is less than 1.5 ft/sec. Flow velocities greater than 1.5 ft/sec have more potential to flush sediment/nutrients downstream before settling within the pond. Conservative assumptions were made based on the 3D RSF cross section, permanent pool, and peak stages to determine a representative flow area. Flows into the 3D RSF were determined from the XPSWMM model. The flow and cross sectional area was used to determine the flow velocity through the pond. As you can see from Table 2 below, all the velocities are well below 1.5 ft/sec.

Table 2: Flow Velocities Through 3D RSF (ft/sec)

Condition	1.5” Rainfall	100-Year
Bypass	0.07	0.07
In-line	0.08	0.64

XPSWMM Modeling – Analysis

XPSWMM version 10.6.2 was utilized during this modeling effort. This is the same software version used in prior efforts and allows for comparison of results. The hydrology methodology used in the preparation of the In-line vs. Bypass options is consistent with the CLOMR methodology and previous Expanded Consolidated Model efforts. Nodes and links were updated within the model to represent the

3D RSF In-Line vs. Bypass options. The other parts of the XPSWMM models are consistent between the two options.

Bypass Option – A junction box with "knee wall" was modeled upstream of the 3D RSF. The "knee wall" directs initial flow within the box culverts into the 3D RSF through a 60" pipe. When the "knee wall" is overtopped stormwater flows directly to the CDD. This controls the peak stage within 3D RSF. Although a trash collection system would be installed in this option, it was not modeled because the bypass box culverts would offer relief to the system if a blockage to the 60" pipe occurred. However, clogging to the 60" pipe will be taken into considered during design.

In-Line Option – Double box culverts connect directly to the 3D RSF. Upstream of this connection a weir is modeled to represent a trash collection system. In addition, the trash collection system was modeled as a "knee wall" and results were generally consistent. An outfall structure (conceptually similar to Lake Anita) was modeled to control peak stages within 3D RSF.

This analysis is based on the Expanded Consolidated XPSWMM model and not the CDD FEMA Effective Model which is in ICPR. This modeling effort does not account for the Lower CDD construction project (Kissimmee Street to Springhill Road) that is ongoing or the proposed CDD improvements between the existing Gamble Street Bridge and Kissimmee Street. The analysis and permitting of these projects are by others.

XPSWMM Modeling – Results

Kimley-Horn reviewed the results of the In-line vs. Bypass option in the Expanded Consolidated Model. Tables 3 and 4 display the peak 100-year water surface elevations at points within the Central Drainage Ditch and Saint Augustine Branch for each option.

Table 3: 100-Year Peak Water Surface Elevation (WSEL) Summary Table - CDD

Crossing Name (Node Name)	Pre-Cascades (feet)	Bypass (feet)	In-line (feet)
(FU005)	39.61	39.71	39.71
(FU011)	40.41	40.34	40.37
Orange Avenue (FU030)	42.70	42.58	42.62
(FU035)	43.20	43.04	43.07
Springhill Road (FU050)	44.61	44.39	44.43
(FU075)	56.06	55.56	55.53

Table 4: 100-Year Peak Water Surface Elevation (WSEL) Summary Table - SAB

Crossing Name (Node Name)	FEMA Effective (feet)	LOMR (feet)	Franklin Boulevard (feet)	Bypass (feet)	In-line (feet)
E. Park Avenue (E350)	108.34	104.64	108.20	104.32	104.34
E. Pensacola Street (E070)	106.32	102.98	103.50	102.74	102.76
Boca Chuba Pond (BC1)	90.64	96.11	N/A	95.97	96.02
S. Monroe Street (LH170)	85.7	83.95	N/A	82.98	83.40
Lake Anita (VBP)	81.21	81.47	N/A	80.83	81.27
Famu Way Phase 2 Low Point (LH030)	N/A	N/A	N/A	63.80	66.17
(3DP) Top – 62.5	N/A	N/A	N/A	59.50	60.70
(TJP) Top - 57.5	N/A	N/A	N/A	55.84	56.27

In general, the In-line vs. Bypass options have minimal impacts on the peak WSELs within the CDD. The peak stages within the SAB are generally contained within the box culverts or designated pond areas.

South Monroe Street (LH170) – This node represents South Monroe Street. The In-line option results in a peak stage approximately 5” higher than the Bypass option. See Attachment D.

FAMU Way Phase 2 Low Point (LH030) – This node represents the FAMU Way Phase 2 roadway low point. The inline option results in peak stages at LH030 within a few inches of the roadway low point.

This XPSWMM Modeling is not based on “as-built” conditions within the SAB; however, it does provide a direct comparison between the In-line vs. Bypass option.

Opinion of Probable Construction Cost – Analysis

Project quantities have been calculated using AutoCAD Civil 3D and plan measurements.

Unit prices have been determined based on Kimley-Horn’s prior experience with Capital Cascades Trail (Segments 3A, 3B, and 3C) and FAMU Way Phase 1 construction, FDOT Moving Averages, and generally accepted ranges for the industry. Because of the preliminary nature of these opinion of probable construction costs, a 20% contingency has been included.

Items excluded – Segment 3D Amenities, Enhanced Water Quality Elements, Retaining Walls, Right-of-Way for 3D RSF, Coal Chute Pond Amenities, Skate Park, Stearns Street Crossing, Gamble Street Bridge Removal, and Fill Within the Existing SAB.

NOTE: The necessary right-of-way for the 3D RSF and FAMU Way Phase 3 projects is currently being acquired and is projected to be complete near the end of 2018. The construction on FAMU Way Phase 3 will begin once acquisition is complete. These OPCCs assume that the 3D RSF will be bid and constructed in general accordance with the FAMU Way Phase 3 schedule. Should the 3D RSF project not be bid and constructed with FAMU Phase 3, it will likely be delayed until the entire FAMU Way Phase 3 construction is complete. This approximately 2-year delay could result in substantial deviation from the OPCCs. See Attachment E.

Opinion of Probable Construction Cost – Results

Table 5 below shows the OPCC for In-line vs. Bypass options:

Table 5: OPCC Summary

Condition	OPCC
Bypass	$5.7M
In-line	$5.1M

Other Considerations

Amenity

The 3D RSF will be located at the “gateway” to the FAMU Campus and will serve as an amenity for the area. Blueprint desires for the 3D RSF to be more of an amenity than an average stormwater facility; however, it must be functional, maintenance friendly, and be cost feasible. Further coordination is needed regarding the amenities/features of the 3D RSF. These could include but are not limited to terraced permanent pool levels, fountains, gabion basket features, floating islands or skimmers, gravel drain systems, aquatic vegetation, outfall structures with biological activated media, boardwalks, overlooks, multi-use trails, recreation systems, enhanced landscaping, and shade systems.

Maintenance

Ongoing maintenance requirements for the 3D RSF must be considered. Similar to the Weems Pond Facility, floating debris/trash will likely be required to be removed on a regular basis after storm events within the trash collection system proposed on the inflow to 3D RSF. City of Tallahassee Growth Management will likely require a skimmer on the outfall structure – similar to Lake Anita. The improvements upstream will potentially limit the amount of sediment deposited within the 3D RSF; however, exact amounts of sediment, debris, and/or trash are unknown. Items to consider include:

dewatering, protection of the liner system and aquatic vegetation, access to the 42" DIP gravity sewer and Phase 2 gabion project, bank stabilization, and general access to the pond for regular maintenance.

CDD Gabion Projects

The Lower CDD Erosion Control Project (Phase 1) is located between Kissimmee Street and Springhill Road. This project includes gabion walls and ditch bottom improvements. It is currently under construction by the Underground Utilities & Public Infrastructure Department.

Located adjacent to the 3D RSF, the CDD Gabion Project (Phase 2) is located between the existing Gamble Street Bridge and Kissimmee Street. This project is under design and coordination is ongoing and will continue. The box culvert (bypass or from the outfall structure) connection at the CDD will be coordinated with this Phase 2 Project.

Lake Bradford Road at Gamble Street Sanitary Sewer Replacement

This project proposed by Underground Utilities & Public Infrastructure Department removes two aerial sewer crossings across the CDD and proposes a 42" DIP gravity sewer that will run between the CDD Gabion Project (Phase 2) and the 3D RSF. Box culverts (bypass or from the outfall structure) will be required to run under the gravity sewer and connect to the CDD Gabion Project (Phase 2). Kimley-Horn has performed preliminary modeling to analyze 6' tall box culverts to allow for adequate vertical clearance between the box culvert and sewer. Coordination with this project is ongoing and will continue. Kimley-Horn developed a cross section representing the projects and has called the Northwest Florida Water Management District to preliminarily talk through the interaction of the 3D RSF and the CDD. The cross section has been provided to Josh Logan. A future meeting is needed with the NWFWMD and/or FDEP.

Trash/Debris Collection within CDD

Large trash/debris collection systems are utilized at multiple stormwater management facilities within the City of Tallahassee and Leon County. Based on observations and conversations with City and County staff there is not a particular system that is recommended to use within the CDD. There are other options for trash/debris collection systems that can handle flows typical of the CDD. The systems are large and may require flow to be taken offline to provide proper maintenance to the system. Attachment F depicts Blueprint and County-owned parcels adjacent to the CDD. There will need to be further coordination, research, and analysis needed to determine the best trash/debris removal option for the CDD.

Next Steps

The next steps regarding 3D RSF is summarized as follows:

- Stormwater Working Group (held 9/8/17)
- Technical Coordinating Committee (scheduled for 10/17/17)
- 3D RSF In-Line vs. Bypass Option Decision

Kimley»Horn

- Box culvert design for adjacent sanitary sewer project
- 3D RSF Enhanced Water Quality Options and Amenity Features
- 3D RSF Design and Permitting

If you have questions on this information, please do not hesitate to contact me at the number below.

Sincerely,

Cameron Snipes, P.E.

(850) 553-3511

PRELIMINARY			
FOR REVIEW ONLY Not for construction or permit purposes. Kimley»Horn			
Engineer	Cameron R. Snipes		
P.E. No.	75465	Date	10/10/2017

Attachments:

A. Proposed Inline and Bypass Option Exhibits
B. Proposed Inline and Bypass Conceptual Renderings
C. Summary Node Maps – CCD and SAB
D. South Monroe Street Floodplain Exhibit
E. Opinion of Probable Construction Cost
F. Blueprint/County-Owned Parcels Exhibit

Attachment A

NORTH AND SOUTH BOX TO BYPASS SEGMENT 3D POND

TRASH/DEBRIS COLLECTION STRUCTURE

STRUCTURE DIVERTS STORMWATER TO SEGMENT 3D POND

NORTH BOX CULVERT: 10'W x 9'T
SOUTH BOX CULVERT: 12'W x 9'T

CSX RAILROAD

FAMU WAY PHASE 2

TRAILHEAD SITE

COORDINATE CONNECTION WITH CDD PROJECT

CENTRAL DRAINAGE DITCH GABION WALL

CELL TOWER

GAMBLE STREET

SEGMENT 3D RSF

FAMU WAY PHASE 3

MILL STREET

FAMU WAY PHASE 3 ROADWAY BRIDGE

OUTFALL STRUCTURE (FOR POND VOLUME DRAWDOWN ONLY)

LEGEND

CSX R/W

EXISTING GAMBLE STREET R/W

POTENTIAL FAMU WAY PHASE 3 R/W

BYPASS

(NOT FOR CONSTRUCTION)

GRAPHIC SCALE

0 50 100 200

(IN FEET)
1 inch = 100 ft.

JUNE 2017

Kimley»Horn

File: K:\TAL_CIVIL\149079 - Blueprint 2000\Segment 3D\CADD\Design\Exhibits\Seg3D-B\EXH_Seg3D-B Options.dwg [PHASE III BYPASS] 8/3/2017 7:57am
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NORTH BOX CULVERT: 10'W x 9'T
SOUTH BOX CULVERT: 12'W x 9'T

TRASH/DEBRIS COLLECTION STRUCTURE

CSX RAILROAD

ACCESS HATCH

FAMU WAY PHASE 2

TRAILHEAD SITE

COORDINATE CONNECTION WITH CDD PROJECT

CENTRAL DRAINAGE DITCH GABION WALL

SEGMENT 3D RSF

CELL TOWER

GAMBLE STREET

FAMU WAY PHASE 3

MILL STREET

FAMU WAY PHASE 3 ROADWAY BRIDGE

OUTFALL STRUCTURE

LEGEND

CSX R/W

EXISTING GAMBLE STREET R/W

POTENTIAL FAMU WAY PHASE 3 R/W

INLINE

(NOT FOR CONSTRUCTION)

GRAPHIC SCALE

0 50 100 200

(IN FEET)
1 inch = 100 ft.

JUNE 2017

Kimley»Horn

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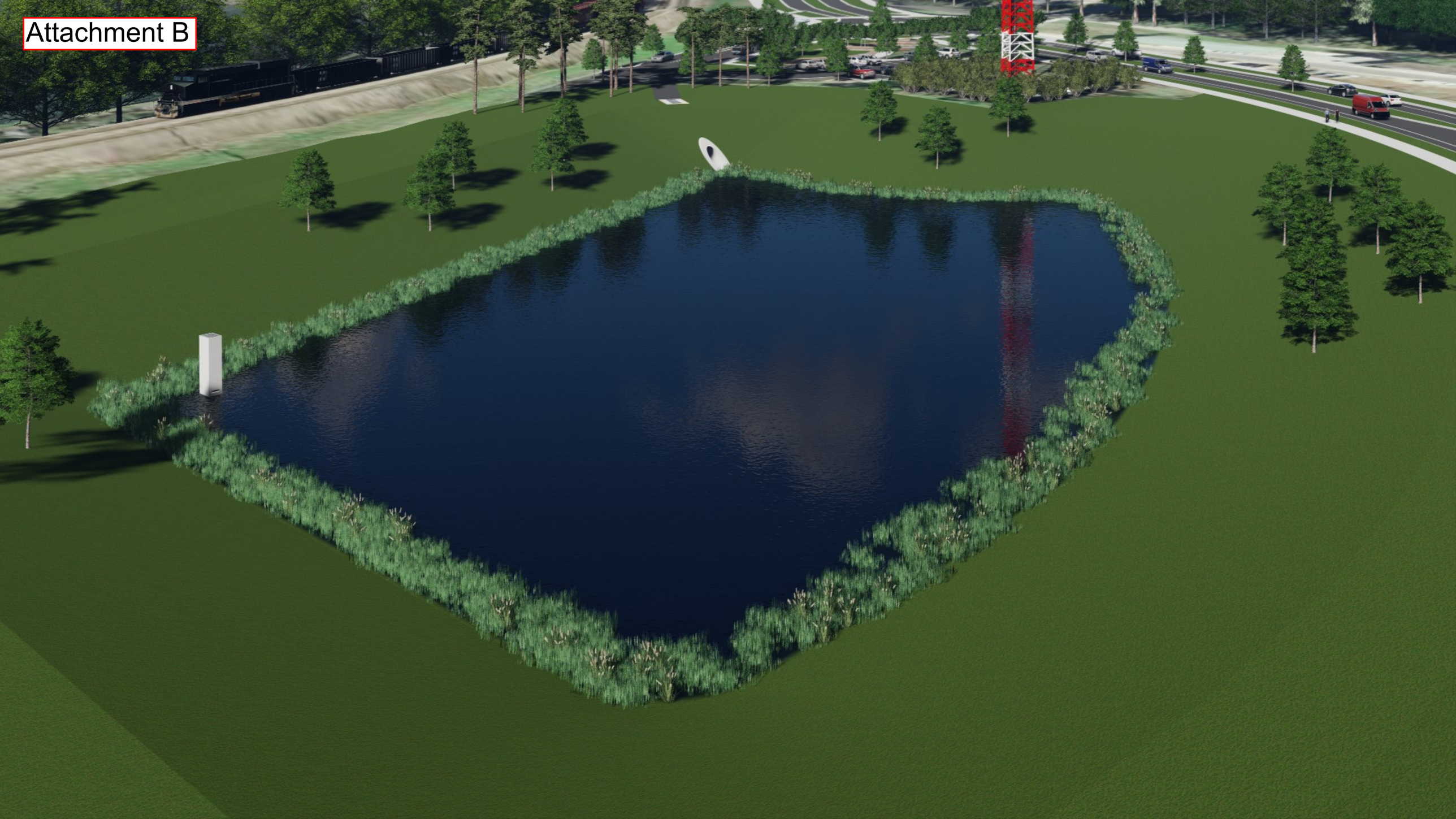
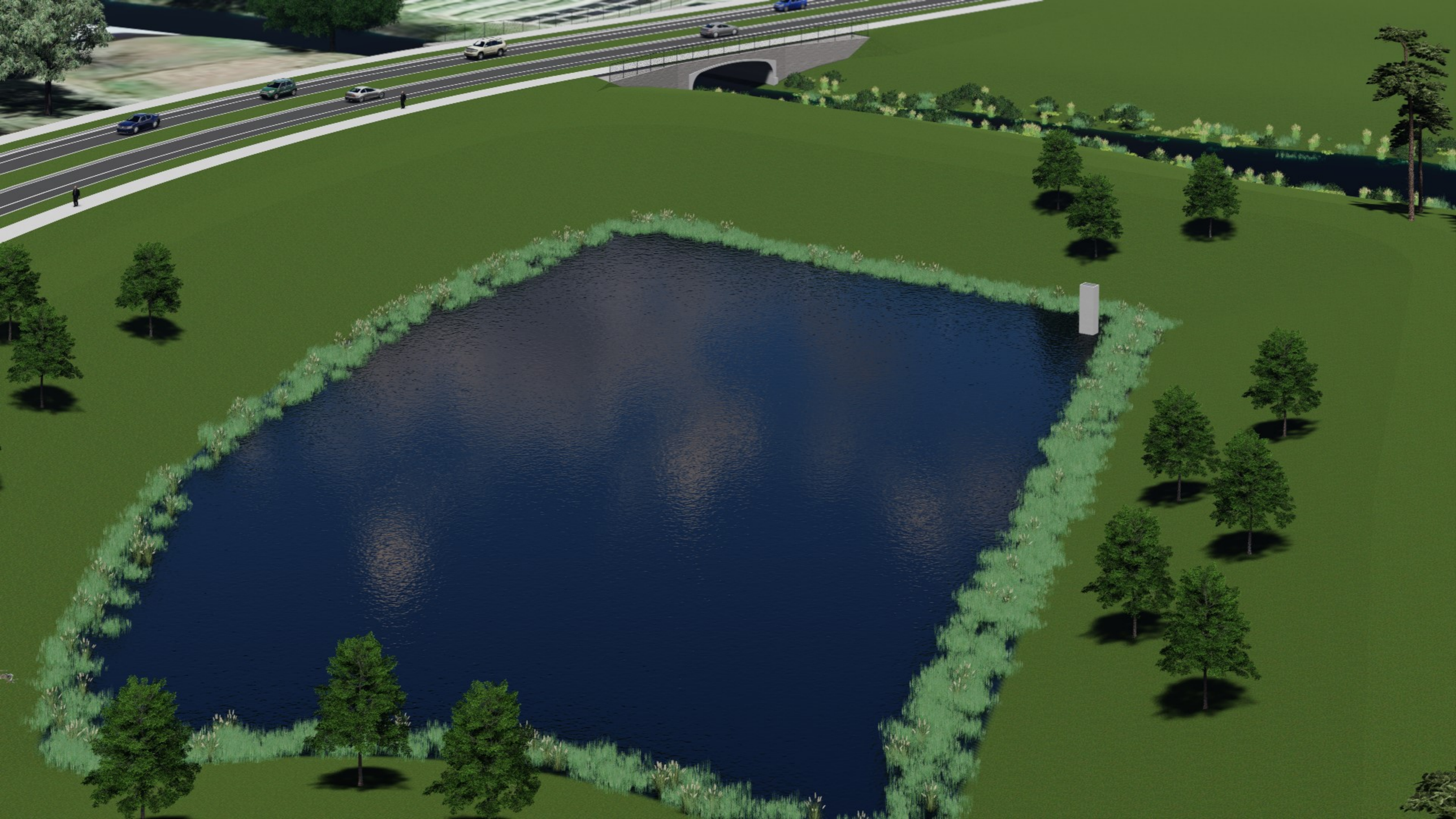
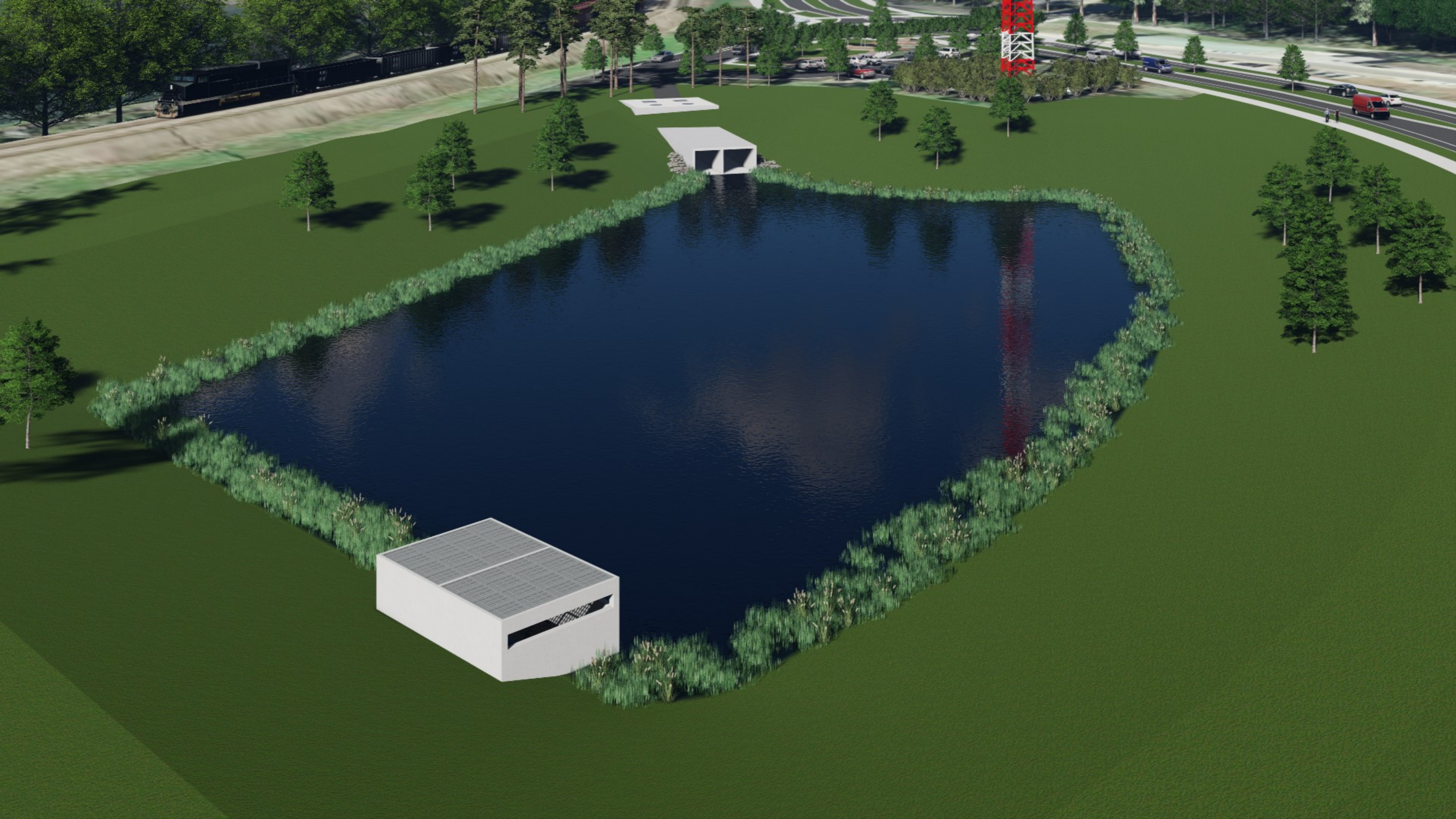
Attachment B







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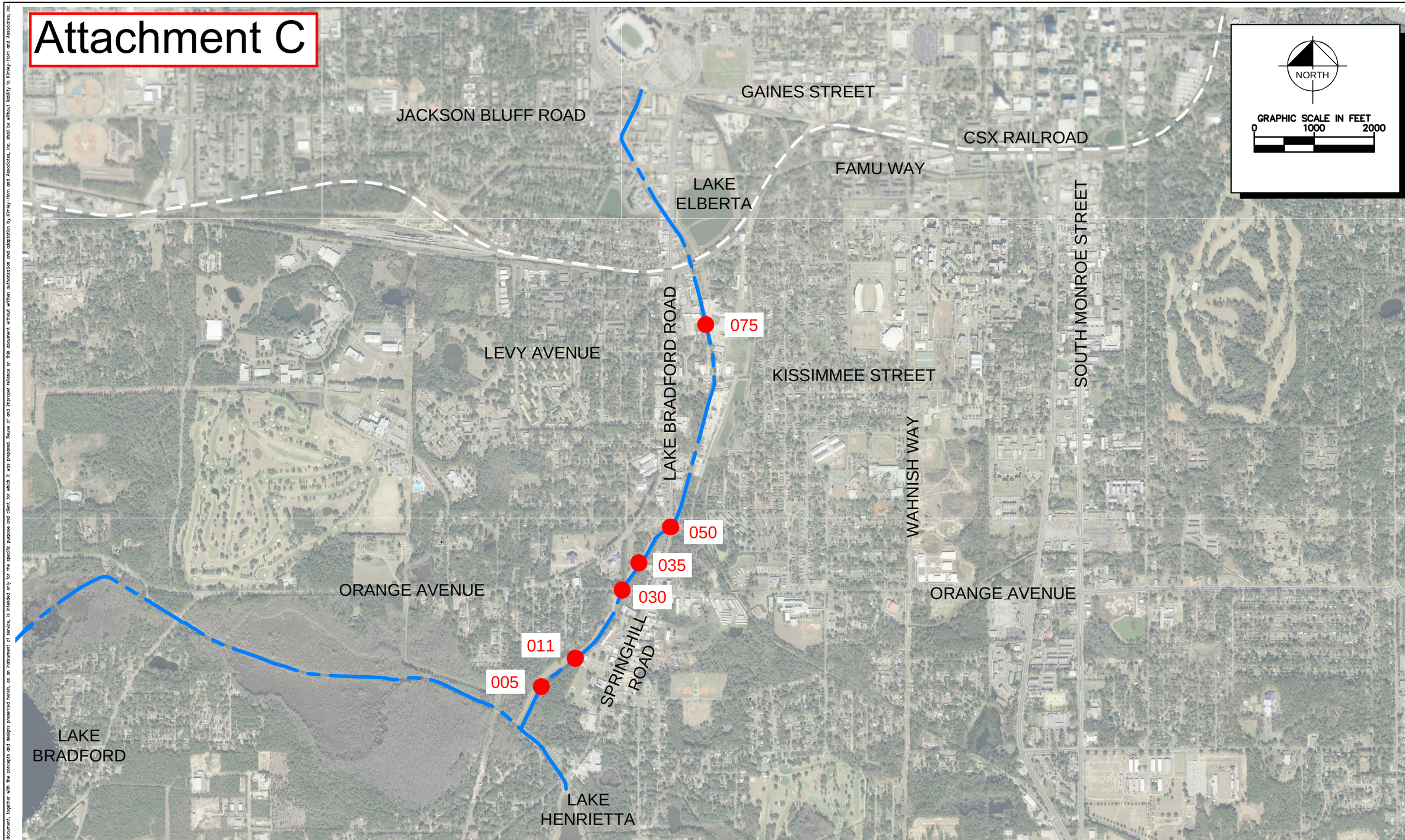

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No.	REVISIONS	DATE	BY

Kimley»Horn

2615 CENTENNIAL BOULEVARD, SUITE 102
TALLAHASSEE, FL 32308 PHONE: 850-553-3500
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT

DATE
JAN 2016

SCALE

DESIGNED BY

DRAWN BY

CHECKED BY

BLUEPRINT 2000
AND BEYOND

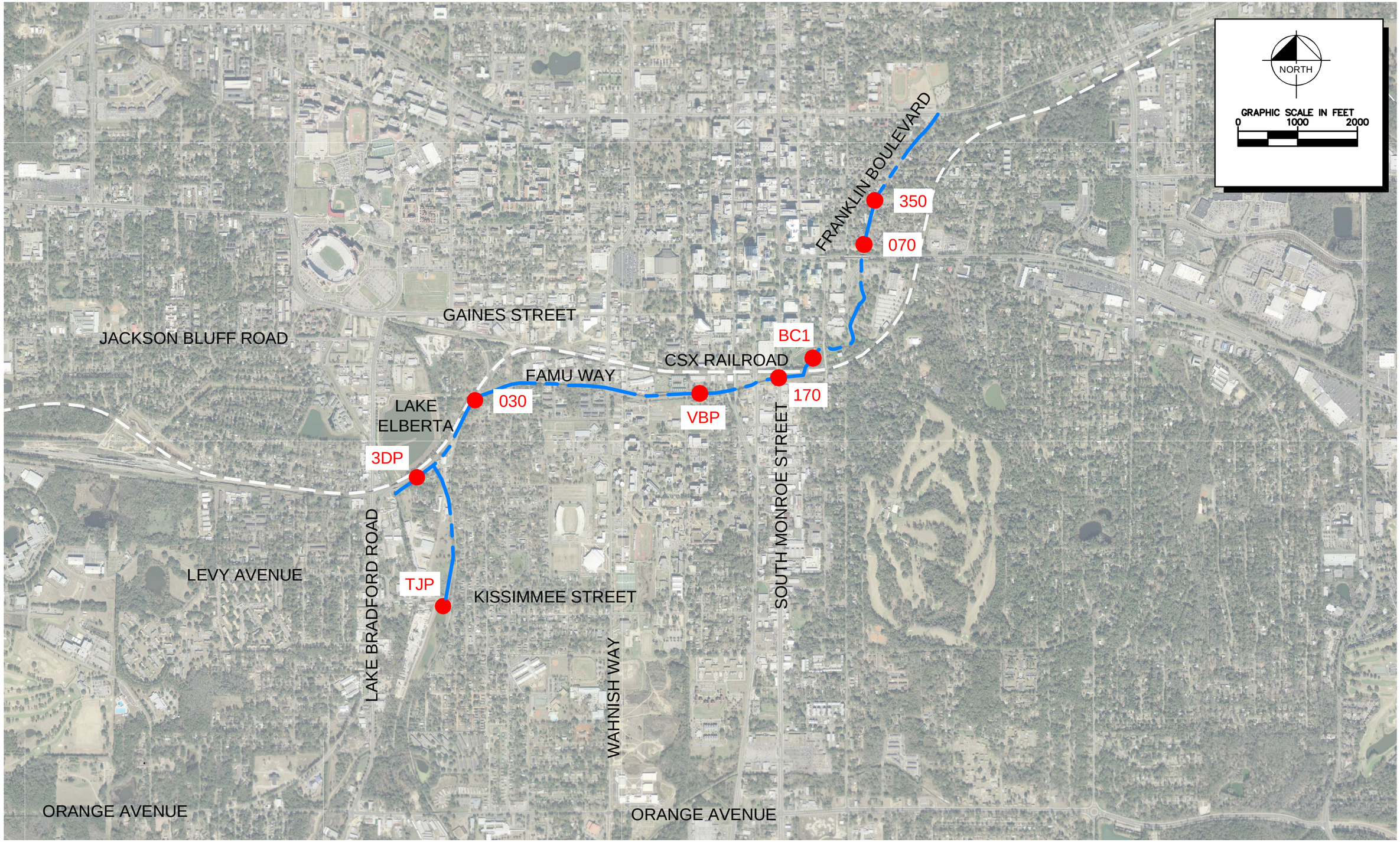
LICENSED PROFESSIONAL

DATE:

CDD SUMMARY TABLES
OVERALL MAP

SHEET NUMBER

1



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TALLAHASSEE, FL 32308 PHONE: 850-553-3500
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT

DATE
JAN 2016

SCALE

DESIGNED BY

DRAWN BY

CHECKED BY

BLUEPRINT 2000
AND BEYOND

LICENSED PROFESSIONAL

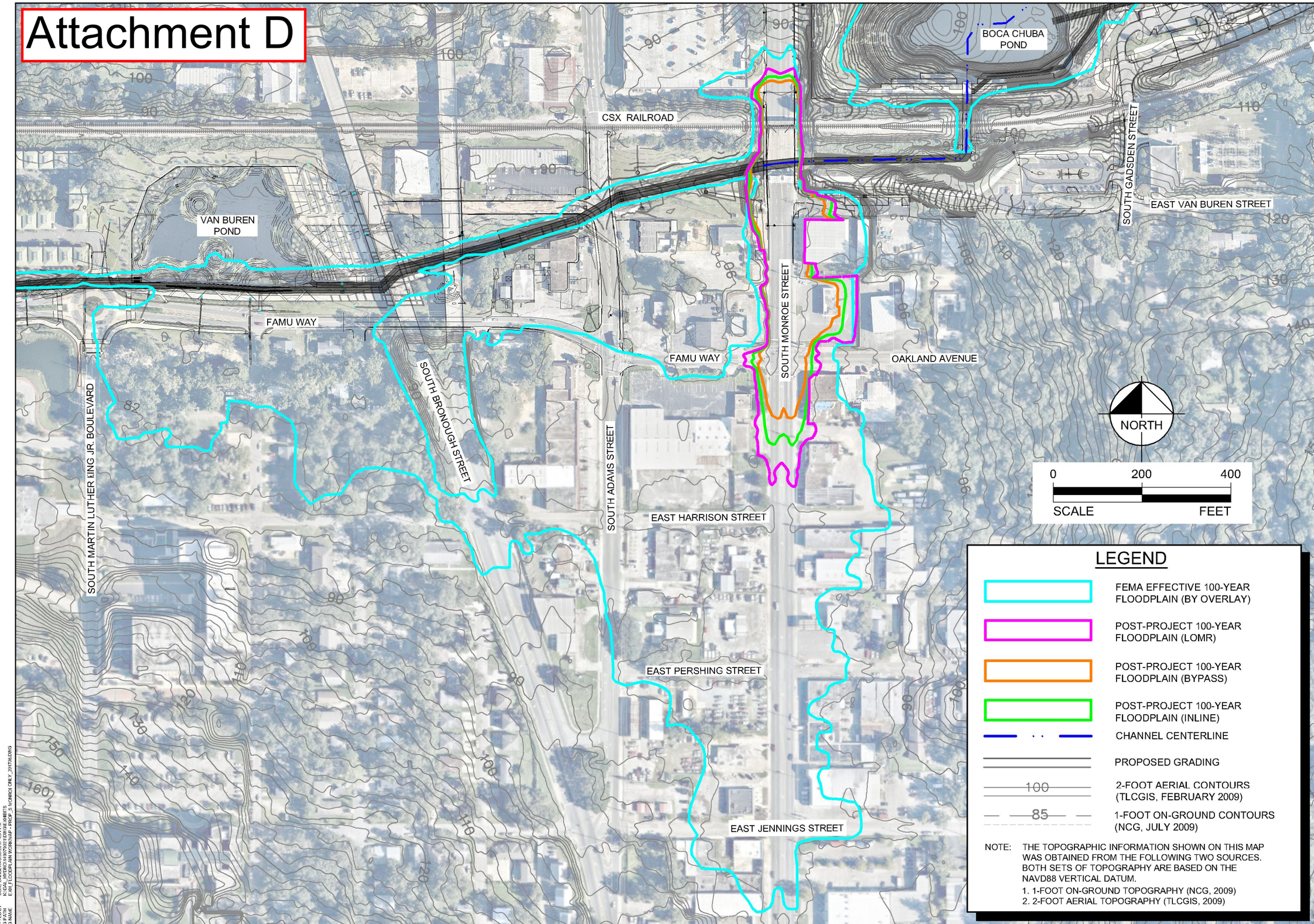
DATE:

SAB SUMMARY TABLES
OVERALL MAP

SHEET NUMBER

1

Attachment D



No.	REVISIONS	DATE	BY

Kimley»Horn

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2615 CENTENNIAL BLVD SUITE 102, TALLAHASSEE, FL 32308
PHONE: 850-553-3500
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 149079021
DATE MARCH 2017
SCALE AS SHOWN
DESIGNED BY CFC
DRAWN BY CFC
CHECKED BY SDG

CAPITAL CASCADES LOMR
PREPARED FOR
BLUEPRINT 2000
CITY OF TALLAHASSEE, LEAN COUNTY, FLORIDA

POST-PROJECT CONDITION FLOODPLAIN

SHEET NUMBER
EXH

IMAGES: Franklin Blvd_102_01 : Franklin Blvd_103_01 : Aerial1 : Aerial10 : Aerial3 : Aerial4 : Aerial5 : Aerial6 : Aerial7 : Aerial8 : Aerial9 : Ad5 : Ar1 : Ar2 : Ad6 : Ar7 : Ad3 :
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Kimley»Horn

Attachment E

OPINION OF PROBABLE CONSTRUCTION COST
CAPITAL CASCADES TRAIL - SEGMENT 3D-B (GAMBLE STREET TO CENTRAL DRAINAGE DITCH)

BYPASS - SEPTEMBER 2017

	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL
	Mobilization (10% of construction cost)	LS	1	$ 428,260.00	$ 428,260.00
	Maintenance of Traffic	LS	1	$ 15,000.00	$ 15,000.00
	Erosion Control/Tree Protection	LS	1	$ 45,000.00	$ 45,000.00
	Clearing & Grubbing	LS	1	$ 300,000.00	$ 300,000.00
	Regular Excavation (Stormwater Pond)	CY	76,000	$ 10.00	$ 760,000.00
	Stormwater Pond Liner	SY	8,100	$ 5.00	$ 40,500.00
	Subsoil Excavation (over box culverts) (above 1')	CY	6,700	$ 12.00	$ 80,400.00
	Subsoil Excavation (below box culverts)	CY	1,350	$ 17.00	$ 22,950.00
	North Box Culvert (10'W x 9'T)	LF	190	$ 1,200.00	$ 228,000.00
	South Box Cuvlert (12'W x 9'T)	LF	190	$ 1,400.00	$ 266,000.00
	Bypass North Box Culvert (10'W x 7'T)	LF	535	$ 1,000.00	$ 535,000.00
	Bypass South Box Cuvlert (12'W x 7'T)	LF	535	$ 1,200.00	$ 642,000.00
	60" Inflow Pipe (HP or RCP)	LF	110	$ 300.00	$ 33,000.00
	Diversion Structure	EA	1	$ 100,000.00	$ 100,000.00
	Riprap	TN	260	$ 120.00	$ 31,200.00
	Outfall Structure (Type C DBI)	EA	1	$ 8,000.00	$ 8,000.00
	18" Outflow Pipe (HP or RCP)	LF	70	$ 150.00	$ 10,500.00
	Box Culvert Connect to Existing	EA	1	$ 30,000.00	$ 30,000.00
	Trash/Debris Collection System (Trash Trap & Junction Box Structure)	EA	1	$ 60,000.00	$ 60,000.00
	Inlets/Manholes	EA	6	$ 5,000.00	$ 30,000.00
	Performance Turf, Sod	SY	21,000	$ 4.50	$ 94,500.00
	Dewatering	LS	1	$ 120,000.00	$ 120,000.00
	Equipment Access Hatch (6' x 6')	EA	3	$ 3,500.00	$ 10,500.00
	Ditch Stabilization (at Central Drainage Ditch)	LS	1	$ 250,000.00	$ 250,000.00
	Trash Trap Maintenance Access Driveway	EA	1	$ 10,000.00	$ 10,000.00
	Mitered End Section (60")	EA	1	$ 10,000.00	$ 10,000.00
	Utility Relocations	LS	1	$ 380,000.00	$ 380,000.00
	Stormwater Pond Landscaping	LS	1	$ 120,000.00	$ 120,000.00
	Protect Existing Cell Tower	LS	1	$ 50,000.00	$ 50,000.00
3D Subtotal (Gamble Street to Central Drainage)					**$ 4,710,810.00**
3D Contingecy - 20% (Gamble Street to Central Drainage Ditch)					**$ 942,162.00**
3D Grand Total (Gamble Street to Central Drainage Ditch)					**$ 5,652,972.00**

Opinion of probable costs has been based on inflated costs derived from bids from the FAMU Way Phase 1, Segment 3B, and Segment 3C projects.

Opinion of probable costs has not been coordinated with City of Tallahassee and includes some items that will require coordination with the FAMU Way project. Additional items that are associated with this area but are not included herein are costs for the following: design, permitting, construction phase services, CEI, as-built surveys, CSX requirements, Stearns Street crossing, utility relocations (unless specified herein), landscaping (unless specified herein), yard drains, FAMU Way, right-of-way, Wastewater Treatment Plant modifications, Gamble Street modifications, retaining walls, Segment 3D Pond amenities, Coal Chute Pond amenities, water quality elements, hardscape elements, and Tallahassee Junction Pond modifications.

The Consultant has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Consultant at this time and represent only the Consultant's judgment as a design professional familiar with the construction industry. The Consultant cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley»Horn

OPINION OF PROBABLE CONSTRUCTION COST
CAPITAL CASCADES TRAIL - SEGMENT 3D-B (GAMBLE STREET TO CENTRAL DRAINAGE DITCH)

IN-LINE - SEPTEMBER 2017

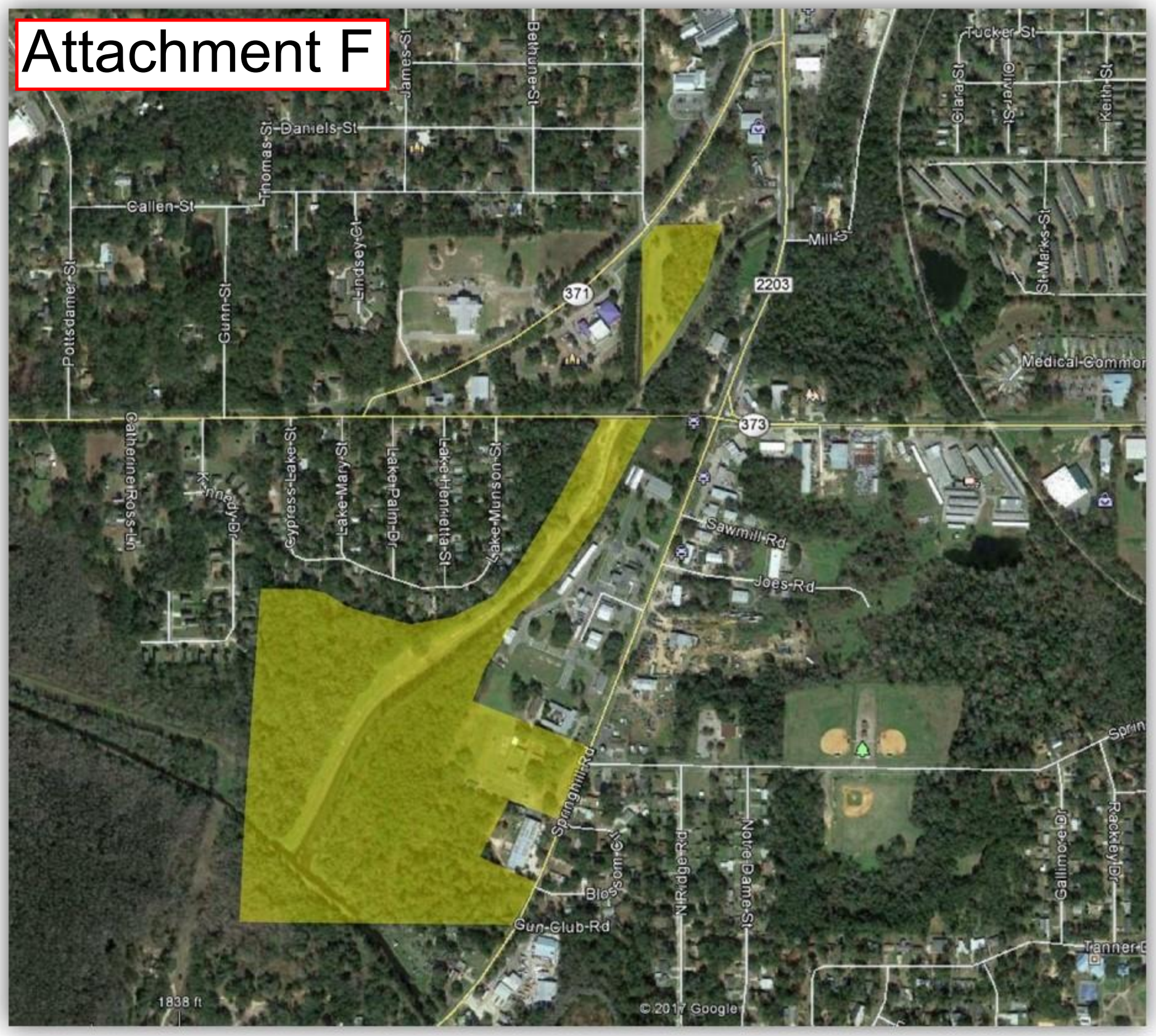
	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL
	Mobilization (10% of construction cost)	LS	1	$ 385,640.00	$ 385,640.00
	Maintenance of Traffic	LS	1	$ 15,000.00	$ 15,000.00
	Erosion Control/Tree Protection	LS	1	$ 45,000.00	$ 45,000.00
	Clearing & Grubbing	LS	1	$ 300,000.00	$ 300,000.00
	Regular Excavation (Stormwater Pond)	CY	76,000	$ 10.00	$ 760,000.00
	Stormwater Pond Liner	SY	8,100	$ 5.00	$ 40,500.00
	Subsoil Excavation (over box culverts) (above 1')	CY	2,800	$ 12.00	$ 33,600.00
	Subsoil Excavation (below box culverts)	CY	800	$ 17.00	$ 13,600.00
	North Box Culvert (10'W x 9'T)	LF	285	$ 1,200.00	$ 342,000.00
	South Box Cuvlert (12'W x 9'T)	LF	285	$ 1,400.00	$ 399,000.00
	Reinforcing Steel (Outfall Structure)	LB	15,000	$ 1.00	$ 15,000.00
	Outfall Structure (20' x 30')	EA	1	$ 190,000.00	$ 190,000.00
	Outfall Skimmer	LS	1	$ 20,000.00	$ 20,000.00
	Handrail	LF	100	$ 100.00	$ 10,000.00
	Outfall Box Culverts (10'W x 7'T)	LF	260	$ 1,000.00	$ 260,000.00
	Riprap	TN	660	$ 120.00	$ 79,200.00
	Box Culvert Connect to Existing	EA	1	$ 30,000.00	$ 30,000.00
	Trash/Debris Collection System (Trash Trap & Junction Box Structure)	EA	1	$ 270,000.00	$ 270,000.00
	Inlets/Manholes	EA	2	$ 5,000.00	$ 10,000.00
	Performance Turf, Sod	SY	21,000	$ 4.50	$ 94,500.00
	Dewatering	LS	1	$ 105,000.00	$ 105,000.00
	Equipment Access Hatch (6' x 6')	EA	4	$ 3,500.00	$ 14,000.00
	Ditch Stabilization (at Central Drainage Ditch)	LS	1	$ 250,000.00	$ 250,000.00
	Trash Trap Maintenance Access Driveway	EA	1	$ 10,000.00	$ 10,000.00
	Utility Relocations	LS	1	$ 380,000.00	$ 380,000.00
	Stormwater Pond Landscaping	LS	1	$ 120,000.00	$ 120,000.00
	Protect Existing Cell Tower	LS	1	$ 50,000.00	$ 50,000.00
3D Subtotal (Gamble Street to Central Drainage)					**$ 4,242,040.00**
3D Contingecy - 20% (Gamble Street to Central Drainage Ditch)					**$ 848,408.00**
3D Grand Total (Gamble Street to Central Drainage Ditch)					**$ 5,090,448.00**

Opinion of probable costs has been based on inflated costs derived from bids from the FAMU Way Phase 1, Segment 3B, and Segment 3C projects.

Opinion of probable costs has not been coordinated with City of Tallahassee and includes some items that will require coordination with the FAMU Way project. Additional items that are associated with this area but are not included herein are costs for the following: design, permitting, construction phase services, CEI, as-built surveys, CSX requirements, Stearns Street crossing, utility relocations (unless specified herein), landscaping (unless specified herein), yard drains, FAMU Way, right-of-way, Wastewater Treatment Plant modifications, Gamble Street modifications, retaining walls, Segment 3D Pond amenities, Coal Chute Pond amenities, water quality elements, hardscape elements, and Tallahassee Junction Pond modifications.

The Consultant has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Consultant at this time and represent only the Consultant's judgment as a design professional familiar with the construction industry. The Consultant cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Attachment F



Technical Coordinating Committee
Capital Cascades Trail
Segment 3D-B
Regional Stormwater Facility

October 17, 2017

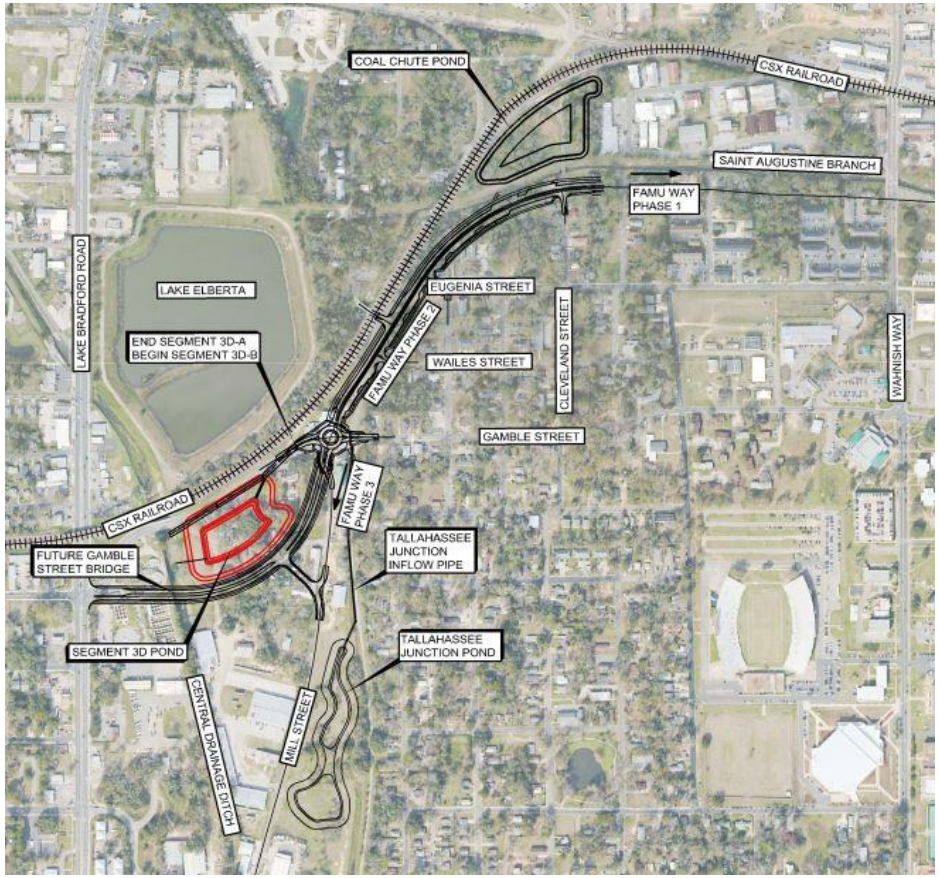
Capital Cascades Trail Segment 3D

- Recap
  - Conceptual Permit
  - Segment 3D-A
  - 60% Plans – R/W
- Objective
  - Obtain technical feedback for alternate Segment 3D-B Regional Stormwater Facility (RSF) configurations
    - Bypass or In-line
    - Trash and debris removal options
    - Alternative treatment enhancements

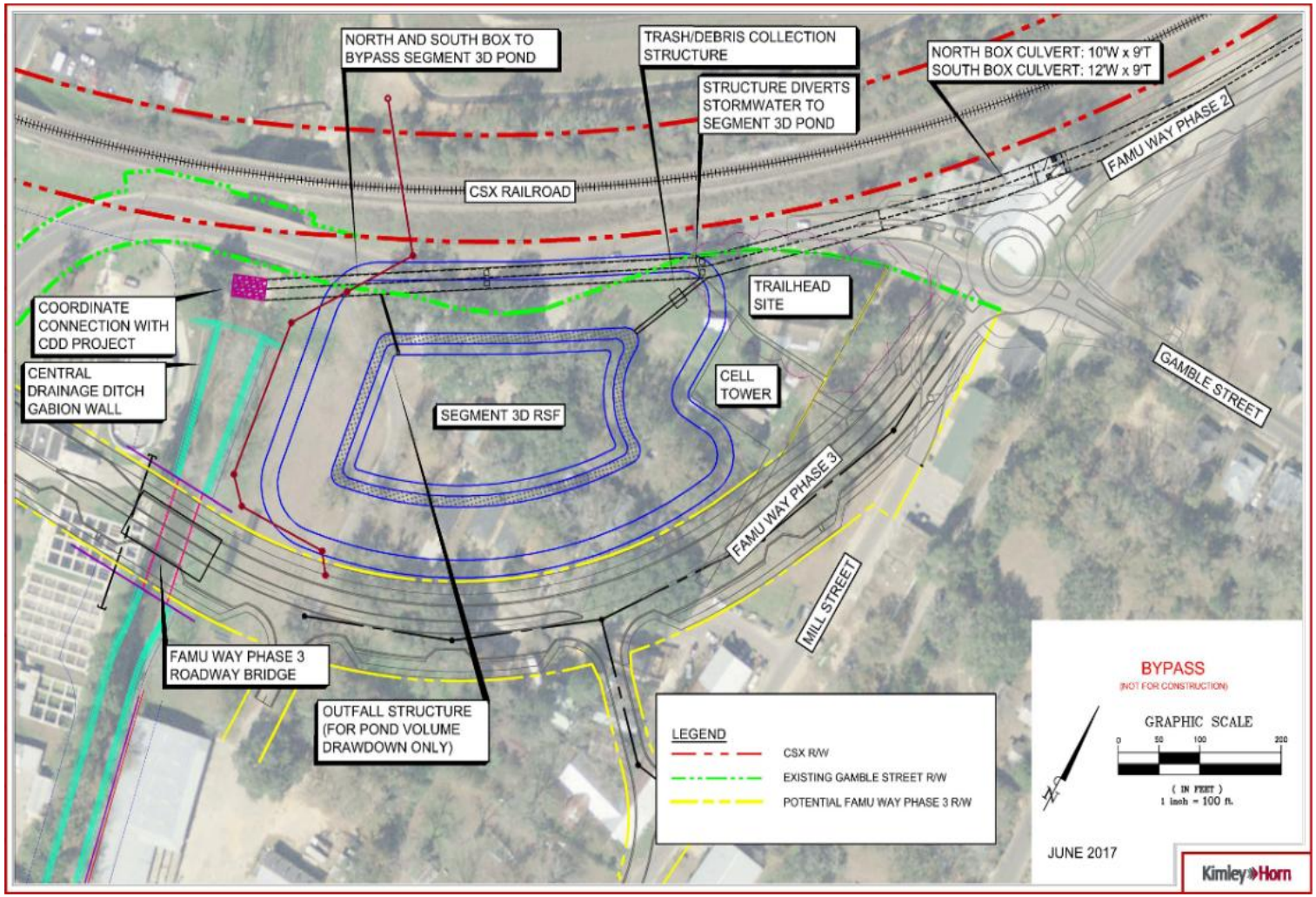
Capital Cascades Trail Segment 3D

<u>Segment 3D-B</u>

- Gamble Street to Central Drainage Ditch
- RSF and double box culvert
- Box culverts and 3D RSF hydraulically connected to Saint Augustine Branch and Central Drainage Ditch



Bypass Box Culvert Exhibit

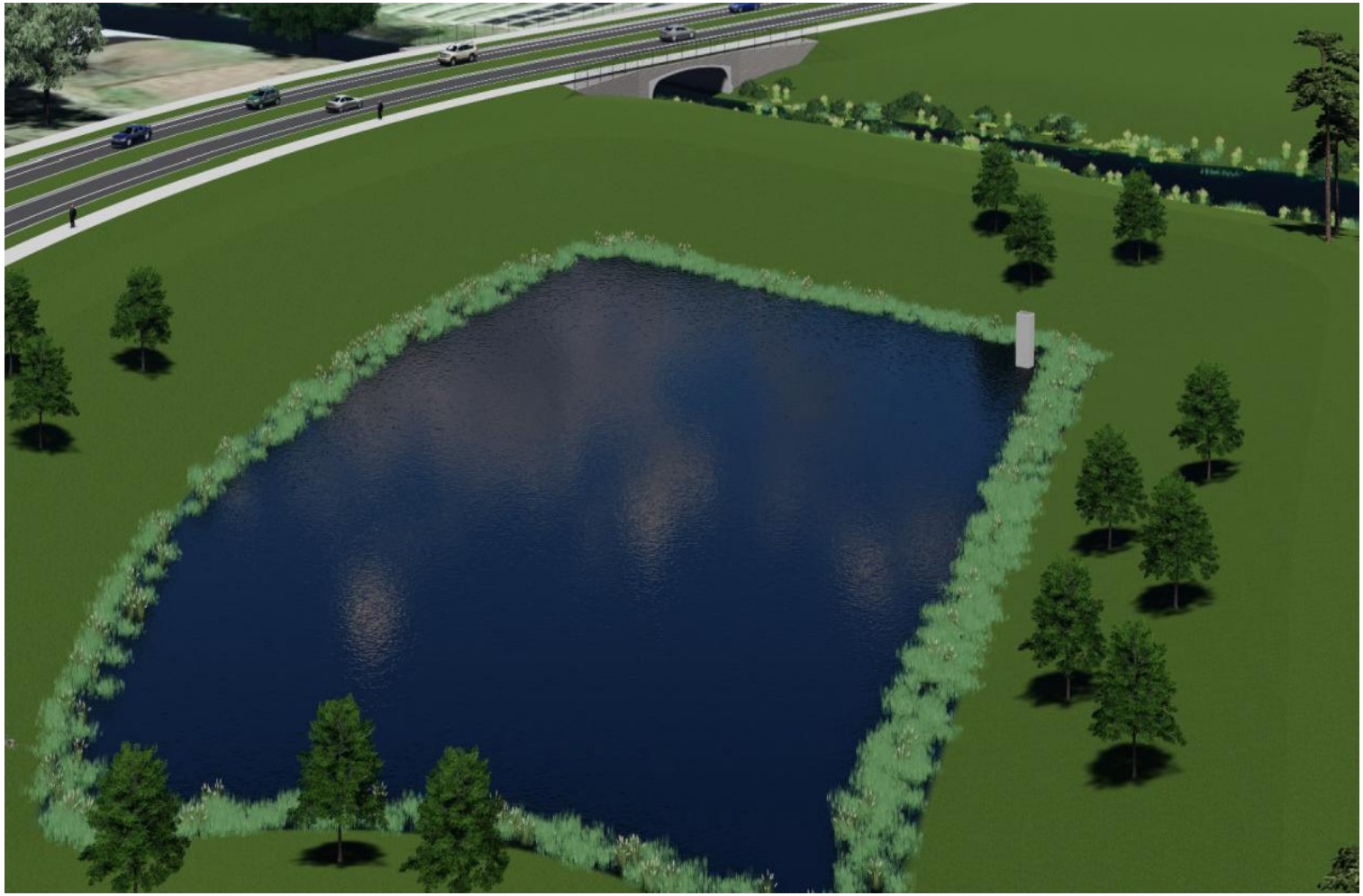


Bypass Box Culvert Overview

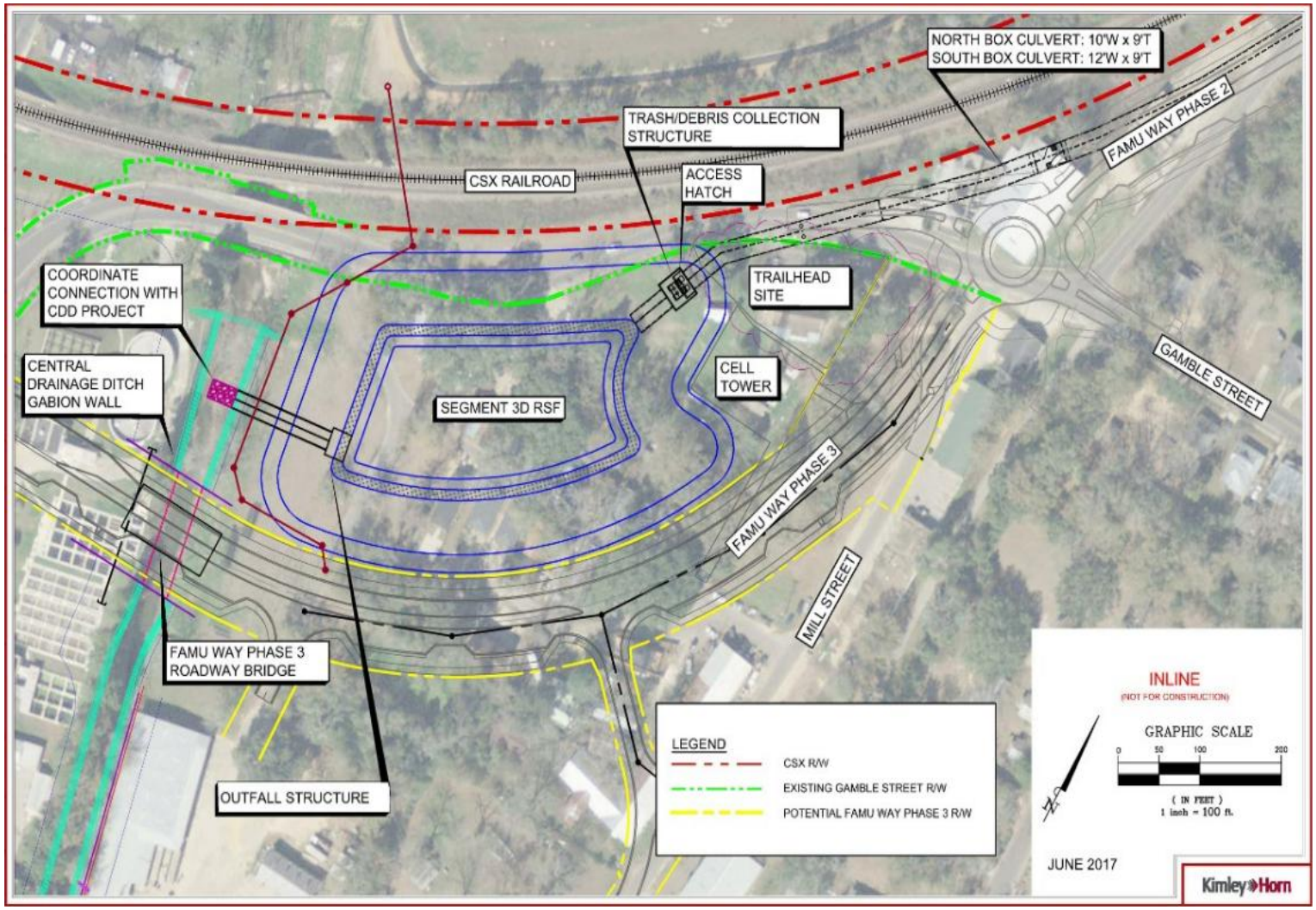
- Box culverts run along north side of pond
- Inflow
  - 60” pipe
- Outfall
  - Small outfall structure for pond drawdown (2’x3’)

Bypass Box Culvert Inflow

Bypass Box Culvert Outfall



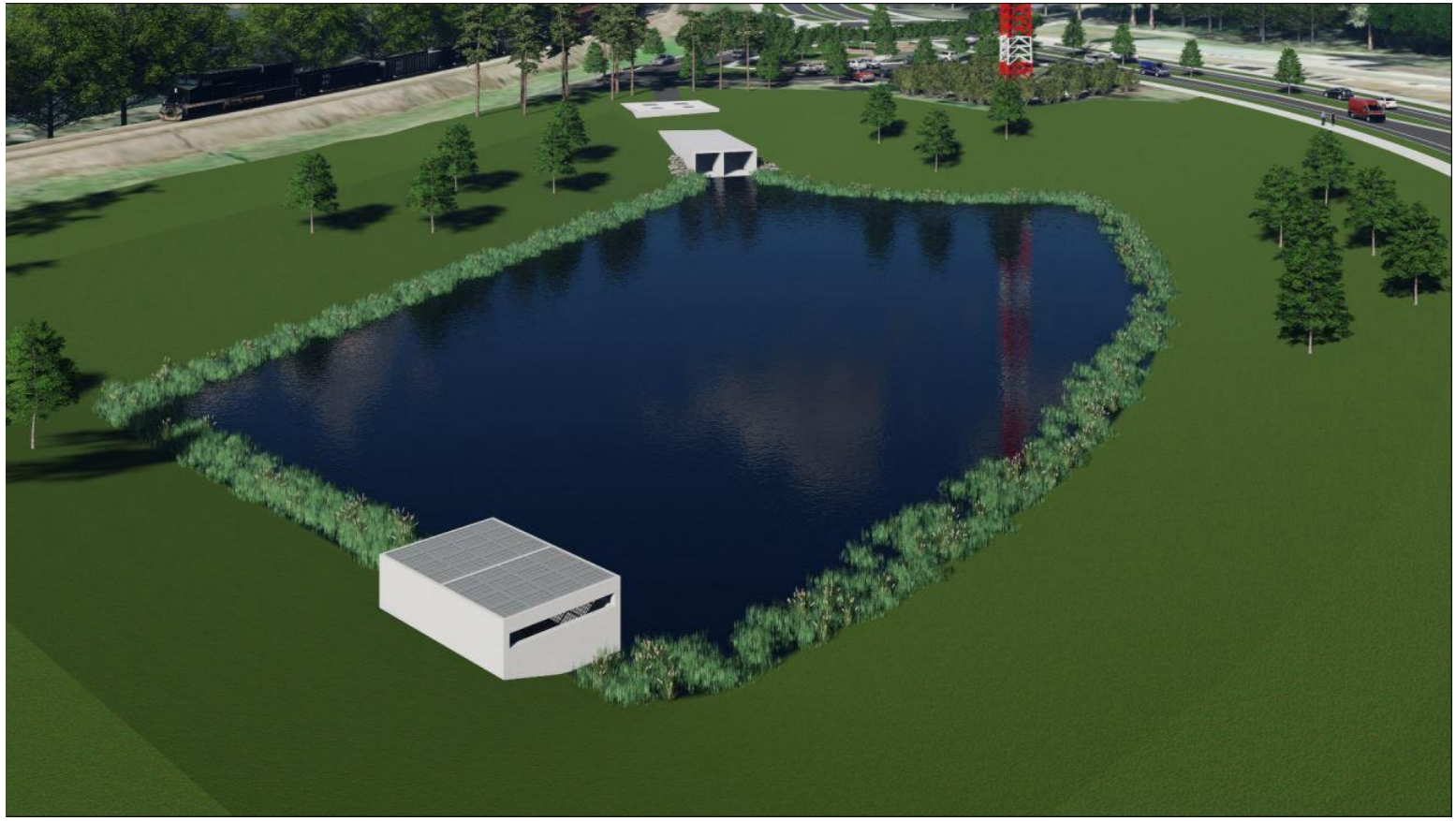
In-line Box Culvert Exhibit



In-line Box Culvert Overview

- Box culverts enter pond
- Inflow
  - Double box culvert
    - 10’W x 9’T and 12’w x 9’T
- Outfall
  - Large outfall structure (20’x30’)
  - Double box culvert to CDD (2 – 10’W x 7’T)

In-line Box Culvert Inflow



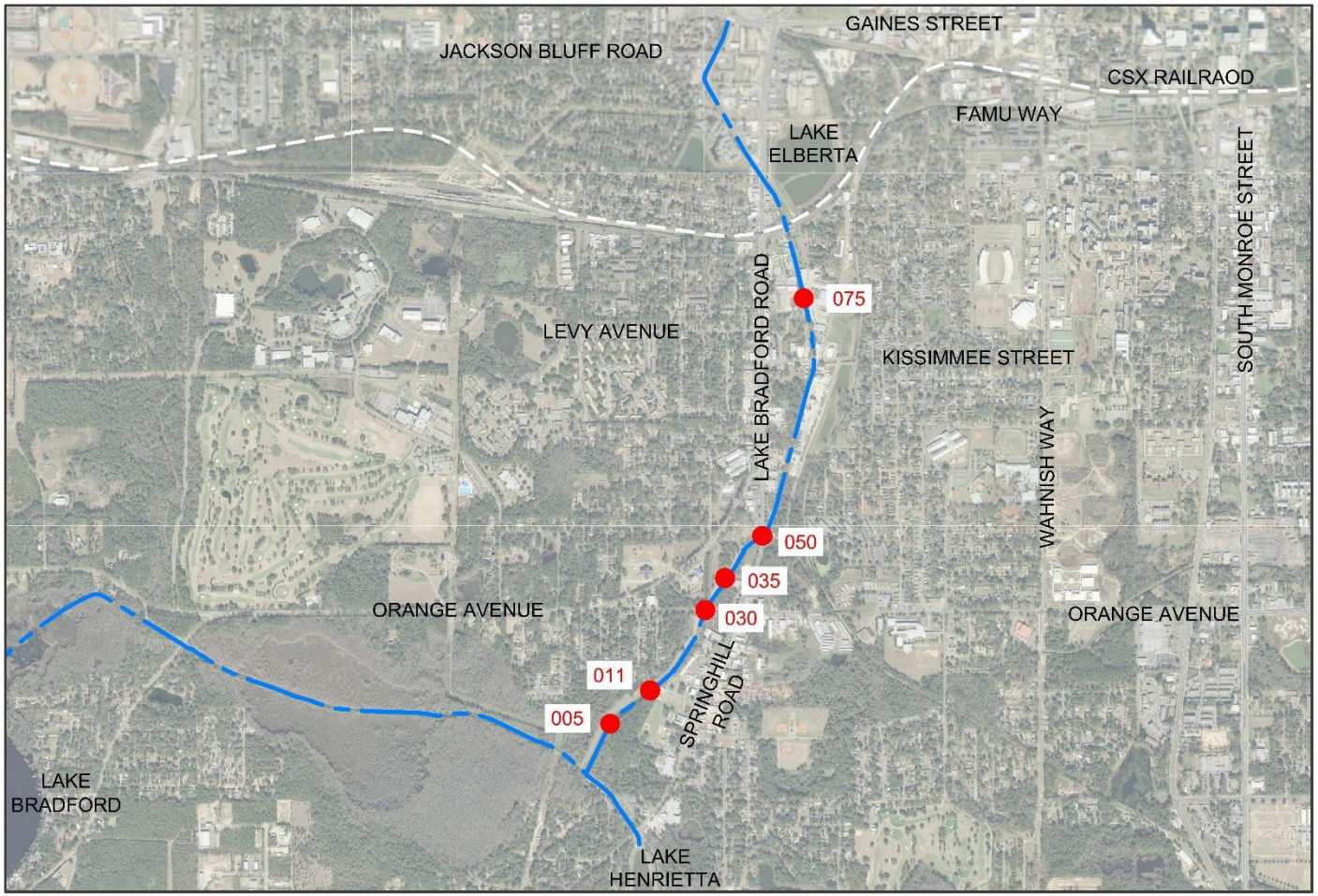
In-line Box Culvert Outfall

Water Quality
Segment 3D-B

- Nutrients to CDD (lbs/year)

Condition	Total Nitrogen	Total Phosphorus
Pre-Cascades	13,661	4,634
Bypass (80/20)	11,834	2,308
In-line (100/0)	11,798	2,125

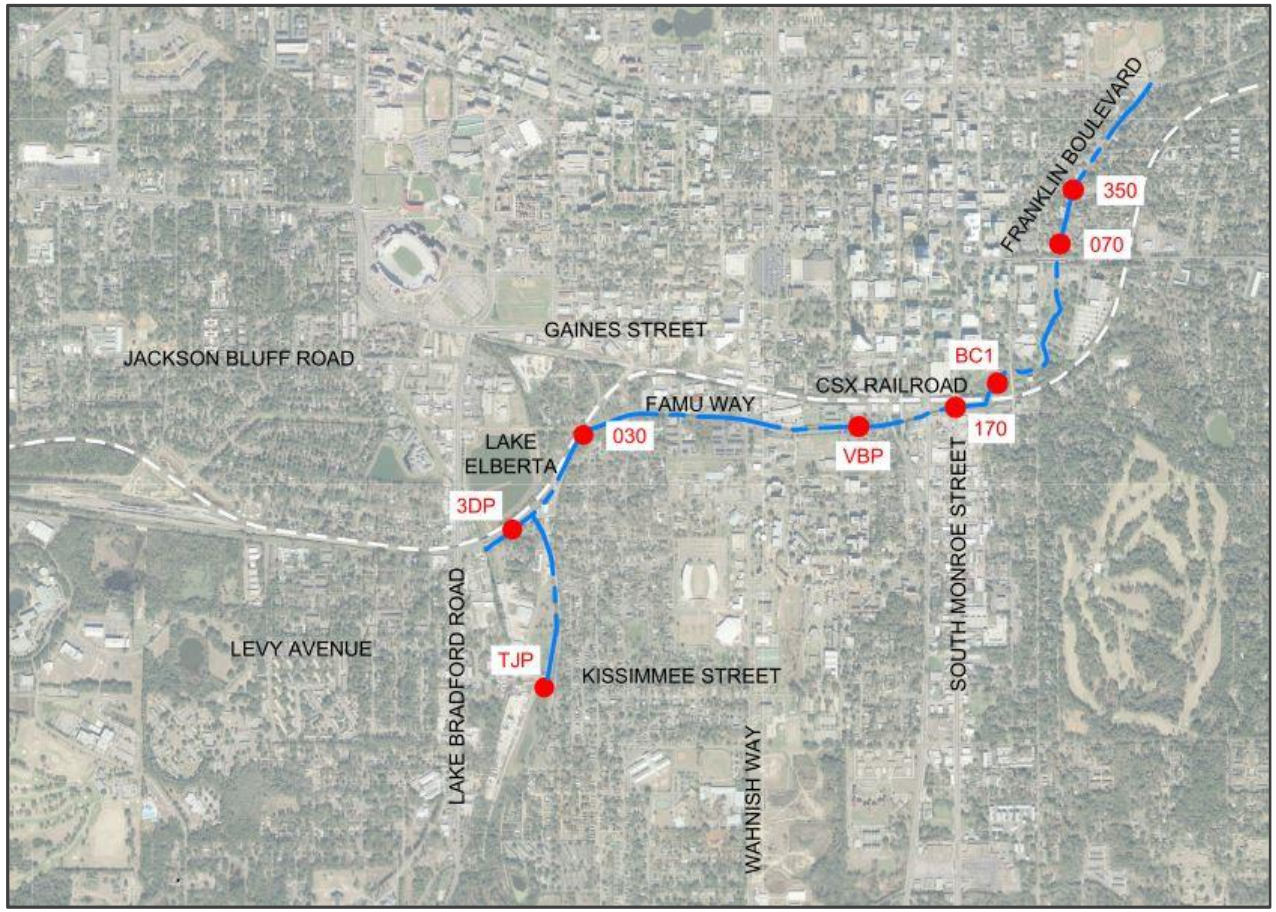
XPSWMM – Flood Control – CDD Segment 3D-B



XPSWMM – Flood Control – CDD Segment 3D-B

Crossing Name (Node Name)	Pre-Cascades (ft)	Bypass (ft)	In-line (ft)
(FU005)	39.61	39.71	39.71
(FU011)	40.41	40.34	40.37
Orange Avenue (FU030)	42.70	42.58	42.62
(FU035)	43.20	43.04	43.07
Springhill Road (FU050)	44.61	44.39	44.43
(FU075)	56.06	55.56	55.53

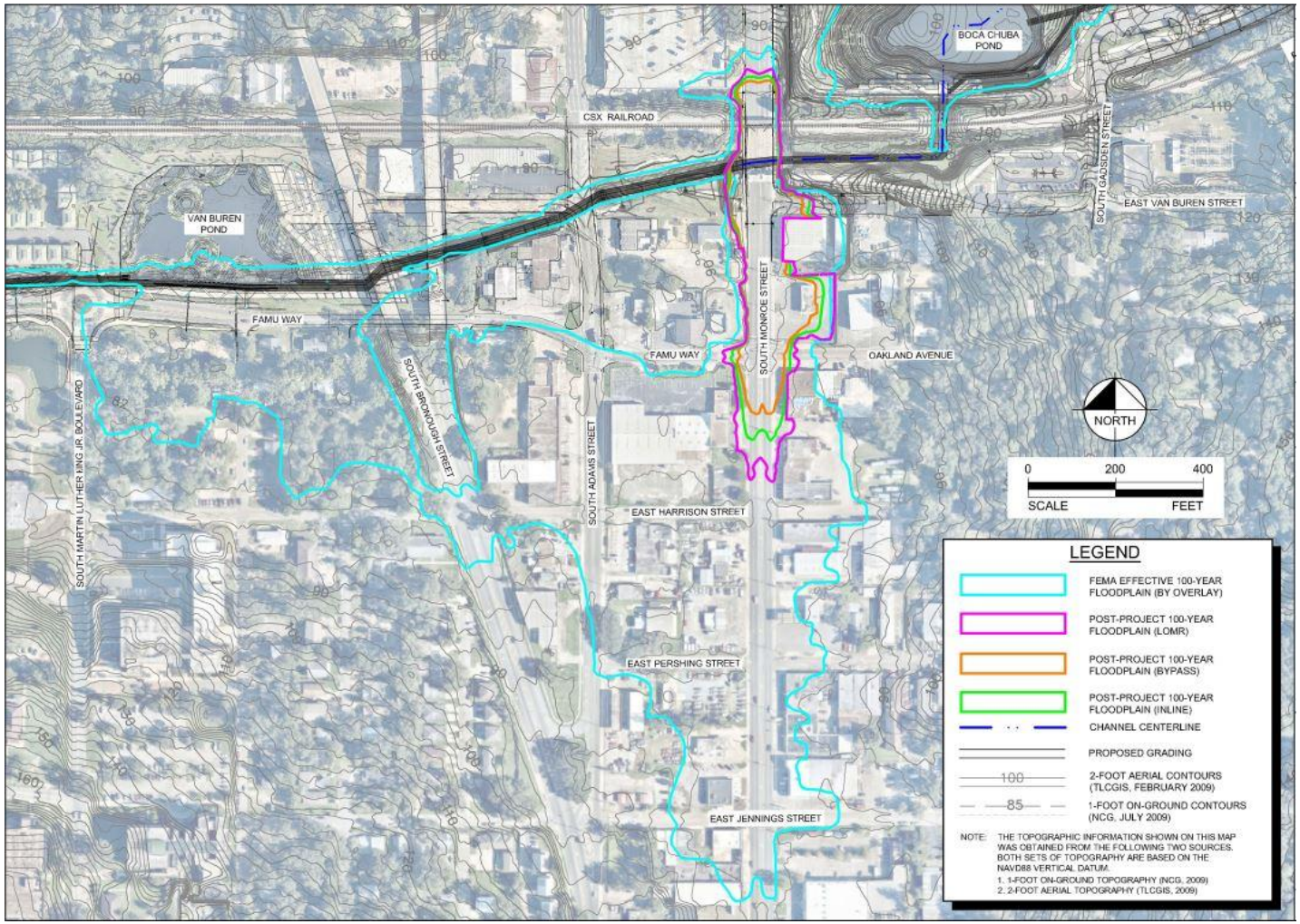
XPSWMM – Flood Control – SAB Segment 3D-B



XPSWMM – Flood Control – SAB Segment 3D-B

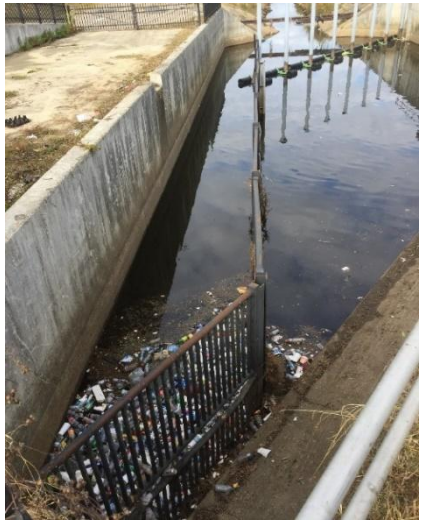
Crossing Name (Node Name)	FEMA Effective (ft)	LOMR (Preliminary) (ft)	Franklin Boulevard (ft)	Bypass (ft)	In-line (ft)
E. Park Avenue (E350)	108.34	104.64	108.20	104.32	104.34
E. Pensacola Street (E070)	106.32	102.98	103.50	102.74	102.76
Boca Chuba Pond (BC1)	90.64	96.11	N/A	95.97	96.02
S. Monroe Street (LH170)	85.27	83.95	N/A	82.98	83.40
Lake Anita (VBP)	81.21	81.47	N/A	80.83	81.27
FAMU Way Low Point (LH030)	N/A	N/A	N/A	63.80	66.17
(3DP)	N/A	N/A	N/A	59.50	60.70
(TJP)	N/A	N/A	N/A	55.84	56.27

South Monroe Street Floodplain



Trash Collection Case Studies

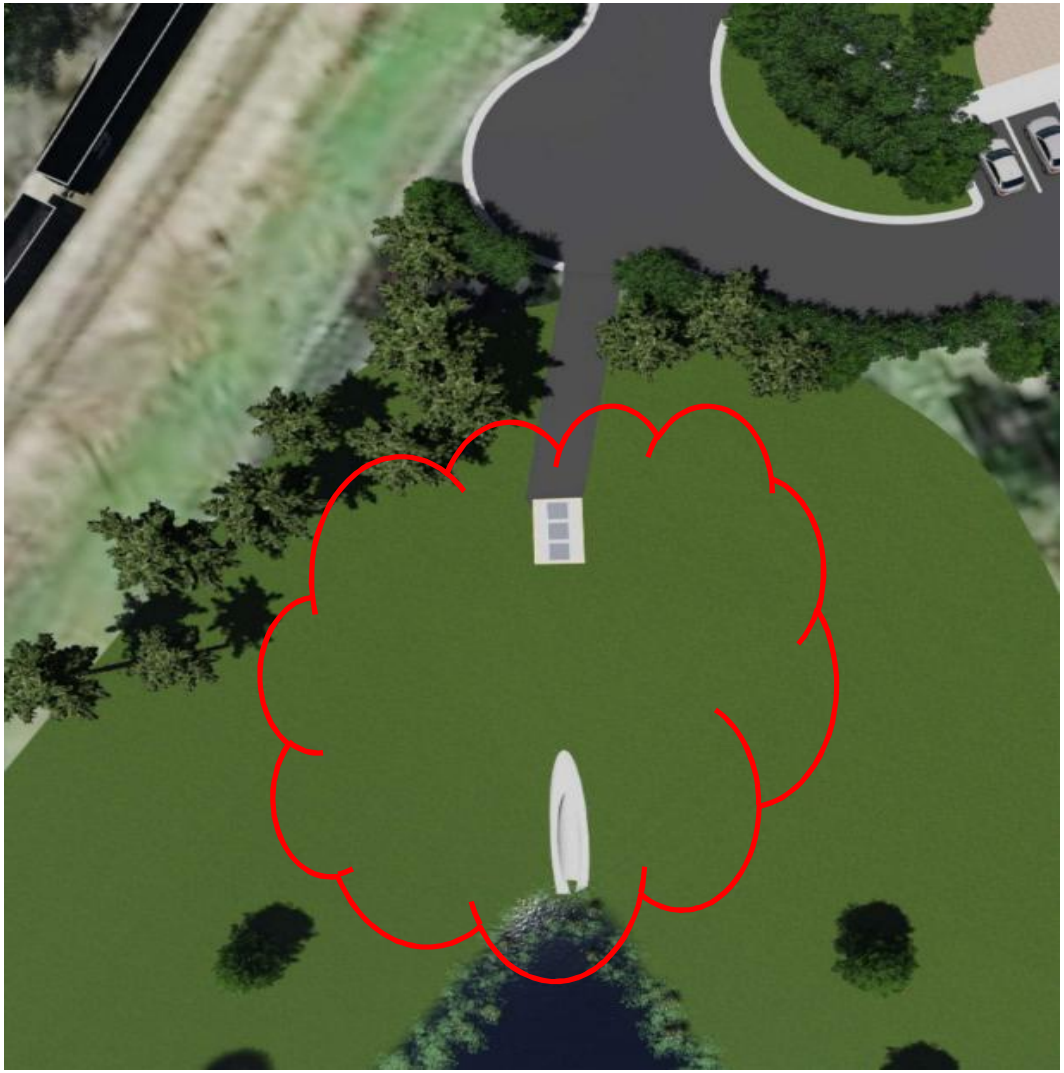
- Lake Elberta
- Lake Henrietta
- Jake Gaither
- Bond Pond



Trash Collection Case Studies-

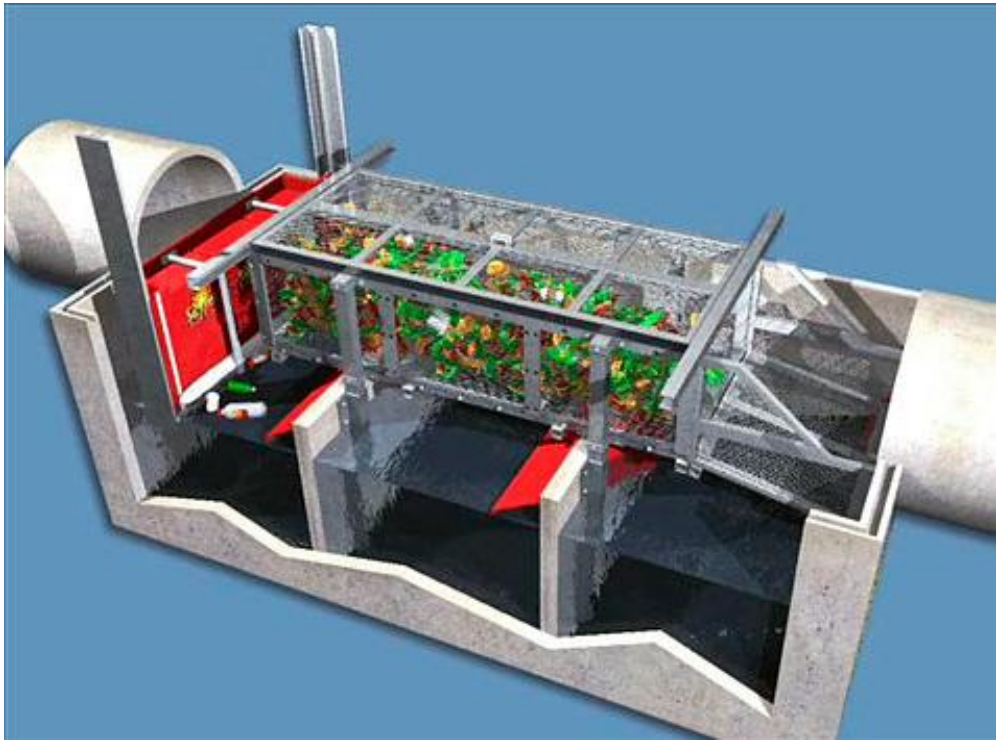
- Orange Avenue
- Centerville Road/McLaughlin Drive
- Weems Pond

Trash/Debris Collection
Segment 3D Regional Stormwater Facility



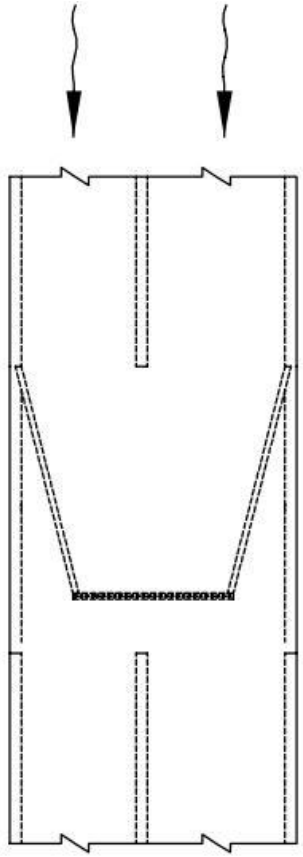
Trash/Debris Collection – Bypass

- Nutrient Separating Baffle Box
  - Suntree or similar
  - 10’ x 16’ on 60” pipe

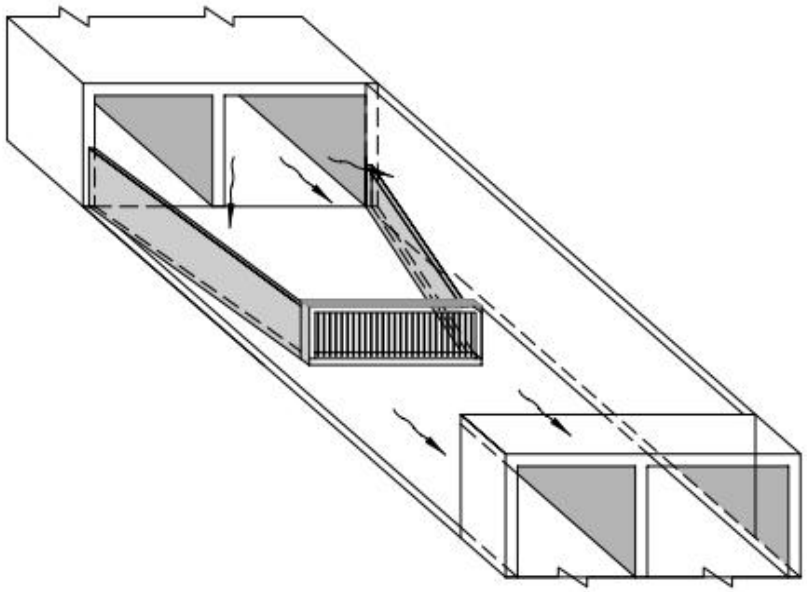


Trash/Debris Collection – In-line

- System similar to Weems Pond



Plan View

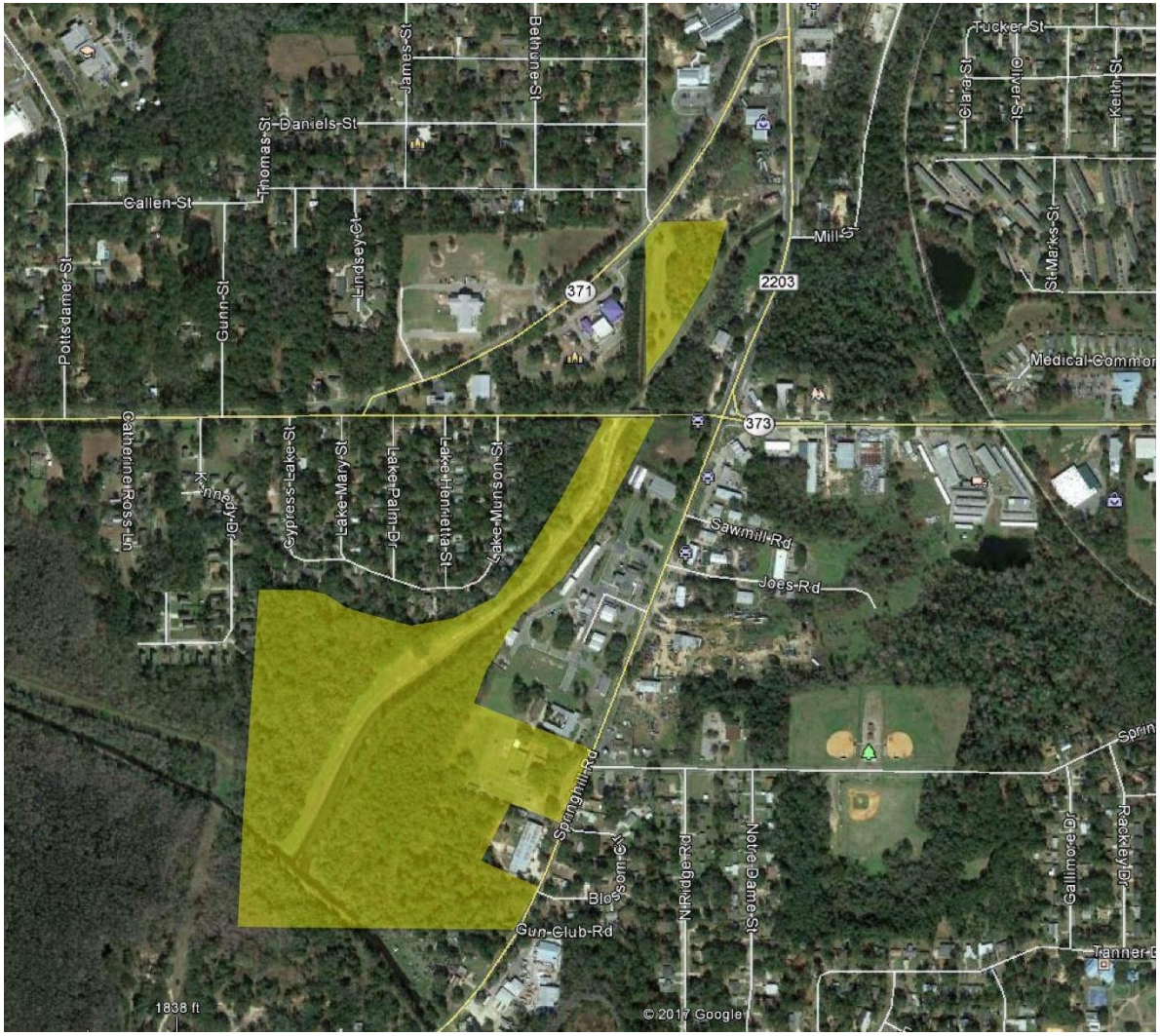


Isometric View

Opinion of Probable Construction Cost Segment 3D-B

Configuration	Cost (includes 20% contingency)
Bypass	$5.7M
In-line	$5.1M

Blueprint/County-Owned Parcels (CDD Area)



Central Drainage Ditch Trash/Debris Collection

- Sydney, Australia – Porters Creek – Graduated Trash Rack

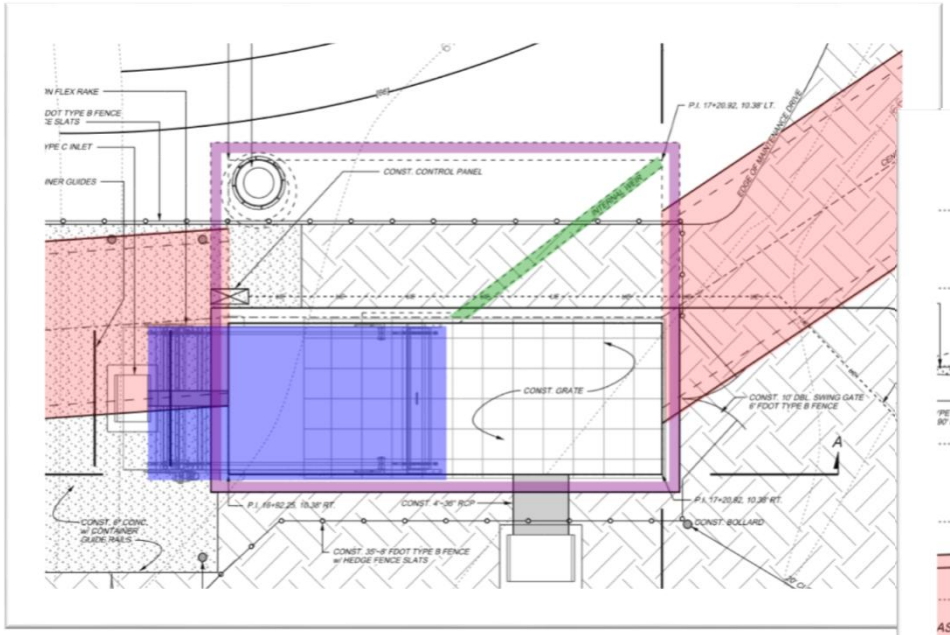
- Katoomba, Australia – Gross Pollutant Trap

- Mackay Regional Council, Australia

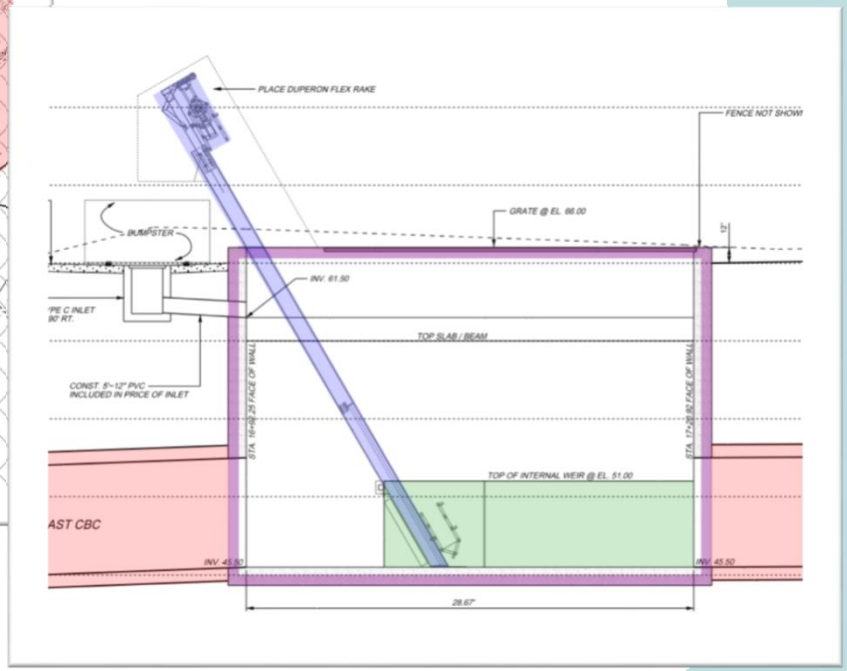
VIDEO

Madison Gaines Supplemental Stormwater Outfall Segment 1

- 10’ x 7’ Box Culvert
- 31’ x 23’ Structure
- Duperon FlexRake



Plan View



Section View

Discussion/ Questions?