



# Draft Drainage Report

## Wekiva Parkway Section 8

Financial Project ID 240200-4-52-01

Florida Department of Transportation  
District 5

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## 1.0 PROJECT LOCATION AND DESCRIPTION

This Drainage Report is provided to document the design of the stormwater management facilities associated with Section 8 of the Wekiva Parkway. A location map that identifies the project location is presented in **Exhibit 1 (Appendix A)**. **Exhibit 2** illustrates the project on the USGS Quadrangle Map. The Wekiva Parkway's (SR 429) eastern limit is at the existing Interstate-4 (I-4)/SR 417 Interchange.

The Florida Department of Transportation (FDOT) proposes to construct a four-lane expandable to six-lane limited access roadway on a new alignment from Orange Blvd to Rinehart Road in Seminole County using the Design-Build project delivery. Refer to **Exhibits 3 through 8** for the project's typical sections. The mainline roadway consists of 2-12-foot wide travel lanes, 8-foot wide inside shoulders (4 feet paved), and 12-foot wide outside shoulders (10 feet paved) in each direction with median guardrail. The roadside ditches are typically 3.5 feet below the shoulder breakpoint from 0.06 feet/foot to the 1:6 slope with a 5-foot bottom width and a 2-foot high outside berm. Right-of-way ditches are proposed where offsite areas drain towards the right-of-way. These ditches collect and convey offsite flows through the corridor to maintain existing drainage patterns. The Line and Grade project plans are attached in **Appendix B**.

The proposed construction includes 1.7 miles of SR 429, a new interchange with I-4 and SR 417, a surface water management system with both dry retention and wet detention ponds. Wetland impacts are addressed in the ERP Application and Environmental Report prepared for the project. Floodplain impacts are to be addressed with a floodplain compensation pond.

The Project is located near Sanford, in Sections 30, 31, and 39 (Moses E. Levy Land Grant) of Township 19 South, Range 30 East in Seminole County, which is in the Middle St. Johns River Lake Monroe Planning Unit. This section of the Wekiva Parkway falls outside the Wekiva River Protection Area (WRPA).

Survey for this project was conducted in 1988 NAVD (North American Vertical Datum). Previously permitted projects within the project area were completed using 1929 NGVD (National Geodetic Vertical Datum) and there is a difference of approximately 1.0 foot between 1988 NAVD and 1929 NGVD (NAVD + 1' = NGVD). All elevations shown are in NAVD unless otherwise noted.

### 1.1 Purpose and Need

In October, 1989 and November, 2002, FDOT documented the need for this project through a state-level Environmental Impact Statement (EIS) and a presentation to the Wekiva Basin Area Task Force, respectively. The Wekiva Parkway (SR 429/SR 46) Realignment project is to complete the Western Beltway (SR 429) around metropolitan Orlando, improve safety in the SR 46 travel corridor, and provide congestion relief on study area roadways. The Wekiva Parkway includes substantial design measures to

minimize harm to the environmentally sensitive Wekiva River basin and enhance the connectivity of the existing wildlife habitat corridors within the project area.

The overall Wekiva Parkway project will provide system continuity, alleviate traffic congestion, and correct safety and roadway deficiencies. The specific transportation improvements include the following:

- Completion of the Western Beltway (SR 429) around metropolitan Orlando;
- Provides a higher capacity east-west travel corridor in Orange County, east Lake County and west Seminole County;
- Improves safety to reduce vehicle crash fatalities on SR 46 through re-alignment of the existing highway; and
- Develops a transportation facility that minimizes impacts to the Wekiva Basin Area resources and specifically improves wildlife habitat connectivity between conservation lands and reduces vehicle-wildlife conflicts.

Due to the length and associated funding phasing, the overall Wekiva Parkway will be designed and permitted in phases, each of which will require a separate permit action. This project consists of Section 8 of the Wekiva Parkway and includes the construction of SR 429 on a new alignment from Orange Boulevard to the Interstate-4 (I-4)/SR 417 Interchange in Seminole County.

## **1.2 Design-Build Project Delivery**

The current line and grade roadway design is being used to develop the drainage design and stormwater treatment and attenuation facilities. The calculations in this document are based upon generally conservative assumptions and will be refined as the roadway design progresses by the successful Design-Build Team. The line and grade roadway plans were used to delineate the drainage basins each facility will treat and attenuate. For these reasons there is no detailed storm sewer design. A conservative time of concentration (short) was used to determine the post-development maximum runoff rates.



## **2.0 EXISTING CONDITIONS**

### **2.1 Land Use**

This section of the Wekiva Parkway occurs within an under developed area with adjacent residential developments. Land uses within the project area were classified using the Florida Land Use, Cover and Forms Classification System (FLUCCS) developed by the Florida Department of Transportation (FDOT, 1999). Land use cover types were determined using aerial photographs and ground truthing. The following natural communities exist on the site: both improved and unimproved pastures, dry prairie, oak hammock, mixed hardwoods, lakes, freshwater marshes and wetlands. In depth descriptions and exhibits are provided in the ERP Permit Application.

### **2.2 Soils**

The soils within the proposed roadway limits were identified using maps and definitions formulated by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). The soil characteristics were mapped by NRCS within the project limits and are shown on **Exhibit 9**. The majority of the project consists of Adamsville-Sparr fine sand with lesser amounts of Tavares-Millhopper fine sands, Astatula-Apopka fine sands, Tavares fine sand, and Myakka and Eau Gallie fine sands.

### **2.3 Tailwater**

The Tailwater values used in the drainage analysis for this project were determined using ICPR for the closed basins or were based on previously permitted ponds that will be modified as part of this project. Elevations are in NAVD '88.

### **2.4 Drainage Patterns**

The existing drainage basins in the northwest portion of this project drain to several low, land-locked areas along the project corridor, while the remainder of the project corridor indirectly discharges into the Lockhart-Smith Canal and ultimately into Lake Monroe. A FEMA floodplain map is illustrated on **Exhibit 10**, and **Exhibit 11** shows the Existing Drainage Map.

### **2.5 Offsite Drainage Features**

All offsite drainage patterns are being maintained through the use of providing cross drains under SR 429 and constructing offsite ditches, where necessary. Several existing ponds are being impacted and accounted for in the proposed drainage design.

### **3.0 METHODOLOGY AND SOFTWARE**

#### **3.1 Design Criteria**

The current drainage design criteria for this project are from the following sources:

- Legislation
  - Wekiva River Protection Act, Chapter 369,301, F.S.
  - Wekiva Parkway and Protection Act, Chapter 369 Part III, F.S.
  
- FDOT
  - Drainage Manual (1/2016)
  - Drainage Manual Volumes 2A, 2B and 3 (1987) (Reference)
  - Open Channel Handbook (11/2009)
  - Culvert Design Handbook (1/2004)
  - Cross Drains Handbook (8/1996) (Reference)
  - Hydrology Handbook (2/2012)
  - Erosion and Sediment Control Designer and Reviewer Manual (7/2007)
  - Stormwater Management Facility Handbook (1/2004)
  - Storm Drains Handbook (2/2012)
  
- SJRWMD
  - Applicant's Handbook: Environmental Resource Permit (ERP) (10/1/2013)
  - Applicant's Handbook: Management and Storage of Surface Waters (12/27/2010) (Reference)
  - Applicant's Handbook: Regulation of Stormwater Management Systems (12/27/2010) (Reference)
  - Applicant's Handbook: Regulation of Stormwater Management Systems (12/3/2006) (Reference)
  - Technical Publication SJ 88-3: Rainfall Analysis for Northeast Florida (5/1998)
  
- FDEP
  - Evaluation of Current Stormwater Design Criteria within the State of Florida (6/2007)

#### **3.2 Software**

The following software was used for this project:

- ICPR Version 3.10, Service Pack 11
- HY-8 (Culvert Design)

### 3.3 Line and Grade

The design high water (DHW) for setting roadway grades is typically based on roadway base clearance, a determination of the water elevation that occurs for duration of 24 hours or more. The roadway base clearance is the distance between the design high water (DHW) elevation and the roadway base course. The minimum base clearance is 3 feet for the mainline and 2 feet for the ramps, per FDOT criteria, Chapter 2, Table 2.6.3 (FDOT Plans Preparation Manual, Volume 1, Chapter 2).

The estimated seasonal high water table elevation was used to determine the roadway base clearance. The proposed profile for SR 429 mainline is significantly elevated above existing ground elevations as well as the estimated seasonal high water table elevation (SHGWT) until the profile ties down to the existing SR 417 east of I-4. There should be no base clearance issues for the mainline.

One ramp tie down has been identified to have base clearance issues and will need to have black base and/or underdrain incorporated into the roadway design in order to meet separation criteria. The location is at Ramp GG where International Parkway ties into the ramp at Westbound SR 429.

### 3.4 Pond Design Criteria

#### Water Quantity (Attenuation) Criteria

Water quality and quantity volumes were used to size the stormwater facilities per basin. Onsite basin boundaries are within the right-of-way and generally defined by the proposed profile high points and proposed bridges profile. Runoff increases are calculated by subtracting the pre-development runoff from the post-development runoff for the FDOT and SJRWMD storms. The exception is for closed basins within Seminole County, which require the total post development runoff to be stored. The largest of these values will be used as the volume required to meet criteria for the Stormwater Management Facilities.

The NRCS TR-55 will be used to determine the pre-development and post-development runoff as follows:

$$Q = (P - 0.2S)^2 / (P + 0.8P), \text{ where } S = 1000/CN - 10 \text{ where:}$$

Q = runoff, inches

P = rainfall, inches

S = soil storage, inches

CN = Curve Number, dimensionless

1. Closed Basins: When there is no surface discharge for the 100-year storm, the following criteria must be met:

- a. SJRWMD: The post-development volume of direct runoff must not exceed the pre-development (*historic*) volume of direct runoff for the 25-year/96-hour storm.

The 25-year/96-hour storm precipitations 11.3 inches based on the Maximum Rainfall for Northeast Florida (SJRWMD technical Publication 88-3).

- b. FDOT: The design of a retention/detention system must be of sufficient size to ensure that the post-development discharge volume does not exceed the pre-development discharge volume for the critical duration storm events. The volume to meet critical duration is estimated using the 100-year/240-hour storm for closed basins.

The precipitation for the 100-year/240-hour storm is 18.5 inches based on the FDOT Zone 7 Intensity-Duration-Frequency curve (Appendix B of FDOT Drainage Manual).

2. Open Basins: When there is positive discharge, the following criteria must be met:

- a. SJRWMD: The post-development peak discharge must not exceed the pre-development peak discharge for the 25-year/24-hour duration event.

The 25-year/24-hour storm precipitation is 8.6 inches based on the Maximum Rainfall for Northeast Florida (SJRWMD technical Publication 88-3).

- b. FDOT: The design of a retention/detention system must be of sufficient size to ensure that the post-development discharge rate does not exceed the pre-development discharge rate for the critical duration storm events.

The precipitation for the critical duration storm events is included in the table below and based on the FDOT Zone 7 Intensity-Duration-Frequency curve (Appendix B of FDOT Drainage Manual).

FDOT Storms - Rainfall Amount								
Storm Event		Rainfall (in)	Storm Event		Rainfall (in)	Storm Event		Rainfall (in)
2 YR	1 HR	2.40	5 YR	1 HR	2.90	10 YR	1 HR	3.20
2 YR	2 HR	2.85	5 YR	2 HR	3.40	10 YR	2 HR	3.90
2 YR	4 HR	3.30	5 YR	4 HR	4.00	10 YR	4 HR	4.60
2 YR	8 HR	4.00	5 YR	8 HR	4.72	10 YR	8 HR	5.56
2 YR	24 HR	4.75	5 YR	24 HR	6.25	10 YR	24 HR	7.50
2 YR	72 HR	6.00	5 YR	72 HR	7.60	10 YR	72 HR	9.00
25 YR	1 HR	3.70	50 YR	1 HR	4.00	100 YR	1 HR	4.50
25 YR	2 HR	4.50	50 YR	2 HR	5.00	100 YR	2 HR	5.60
25 YR	4 HR	5.30	50 YR	4 HR	6.00	100 YR	4 HR	6.64
25 YR	8 HR	6.32	50 YR	8 HR	7.20	100 YR	8 HR	7.84
25 YR	24 HR	8.60	50 YR	24 HR	9.50	100 YR	24 HR	10.60
25 YR	72 HR	10.90	50 YR	72 HR	12.70	100 YR	72 HR	13.80
25 YR	96 HR	11.30				100 YR	240 HR	18.50

### **Water Quality (Treatment) Criteria**

All waters within the project limits are Class III waters.

#### 1. Discharge to Class III Waters

##### a. Wet Detention:

i. The design treatment volume is the greater of the following:

1. One inch of runoff over the drainage area
2. 2.5 inches times the impervious area (excluding water bodies)

ii. The average length to width ratio of the pond must be at least 2:1

b. Dry Retention: The first flush of runoff should be routed to the retention pond and percolated into the ground. The rule also specifies one of the following:

- i. Off-line retention of the first one half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater
- ii. On-line retention of an additional one half inch of runoff from the drainage area over the volume specified above.
- iii. On-line retention that provides the percolation of the runoff from the 3-year, 1-hour storm.
- iv. On-line retention of the runoff from one inch of rainfall or 1.25 inches of runoff from the impervious area, whichever is greater, for areas with less than 40% impervious and SCS type A hydrological soils.

- c. Swales: Swales shall be designed to percolate 80% of the runoff from the 3-year, 1-hour storm event. The remaining 20% of the runoff from the 3-year, 1-hour storm event may be discharged offsite by the swale system.
- d. Overland Treatment: For soils with good infiltration rates and/or low ground water table conditions, the required width of a vegetated natural buffer can be determined by infiltrating the desired runoff volume through the buffer. For soils with poor infiltration rates and/or high groundwater tables, the required width of the vegetated natural buffer can be determined through overland sheet flow of runoff through the buffer.

### **Recovery**

- Dry retention systems must provide the capacity for the treatment volume of stormwater listed above to recover within 72 hours following a storm event assuming average antecedent moisture conditions. (Per FDEP Criteria)
- Wet detention systems shall be designed such that the outfall structure must drawdown the required treatment volume within 48 and 72 hours following a storm event, but no more than one-half of this volume will be discharged within the first 24 hours. (Per FDEP Criteria)
- Swale systems shall provide the capacity for the specified treatment volumes above and contain no contiguous areas of standing or flowing water within 72 hours following the storm event referenced above, assuming average antecedent moisture conditions. The treatment volume must be provided by percolation through the soil, evaporation, or evapotranspiration. (Per SJRWMD Criteria)

### **Pond Configuration**

Ponds shall be designed to meet the following criteria:

1. Ponds shall be accessible from the right-of-way or have an access easement.
2. Ponds shall have a minimum of 20 feet of horizontal clearance between the top edge of the normal pool elevation and the right-of-way line and a 15-foot wide maintenance berm at a slope of 1V:8H or flatter.
3. Provide a minimum of 30 foot radii to all inside maintenance berm curves/corners.
4. One foot of freeboard between the design stage and the low edge of the front of berm is required to compensate for grading irregularities. Outfall Structures must include a drawdown device (orifice, "V" notch or square notch weir) in order to control the release of the treatment volume. The minimum circular orifice size is 2 inches. Outfall structures must also include a device such as a skimmer to prevent the discharge of accumulated sediment, minimize exit velocities, and prevent clogging. The outfall structure's control elevation shall

be set at or above the design tailwater elevation so the basin can recover effectively.

5. The permanent pool will be sized to provide at least a 14-day residence time for a littoral zone, or 21-day residence time for a non-littoral zone option during the 153-day wet season (June – October).
6. The pond mean depth (pond volume divided by the pond area at the control elevation) must be between 2 and 8 feet.
7. 10-foot by 10-foot sediment sumps may be used when in unavoidable situations when discharging into a pond at an elevation lower than the pond's bottom elevation.
8. Ponds having side slopes steeper than 1:4 shall provide a protective barrier to prevent unauthorized entry. Standard Type B fencing with double 10-foot swing gates for access are proposed for this project.

### 3.5 Conveyance

#### Storm Drain Systems

The storm drain system will be design in accordance with the tables below for frequency and maximum pipe lengths. The minimum pipe size for storm drain systems is 18 inches.

**Storm Drain Design Storm Frequency**

<b>FACILITY TYPE</b>	<b>FREQUENCY</b>
Sag Vertical Curve on Interstate (where the only outlet is a storm drain)	50 Years
General design on Interstates and Limited Access Facilities	10 Years
Replacement of roadside ditch by extending existing side drains	10 Years
Other	3 Years

**Maximum Pipe Lengths without Access Structures**

<b>PIPE SIZE</b>	<b>MAXIMUM LENGTH</b>
18 inches	300 feet
24 inches to 36 inches	400 feet
42 in. & larger & all box culverts	500 feet

Inlets in sag vertical curves that have no outlet other than the storm drain system and do not have open throats, should have flanking inlets on one or both sides. Flanking inlets should be located in order to satisfy spread criteria assuming the sag inlet is blocked.

Shoulder gutter shall be used on all fill slopes higher than 20 feet, on fill slopes higher than 10 feet if the roadway grade is greater than 2 percent and at bridge ends to protect the slopes from erosion. At the bridge ends, the gutter should be long enough in order to construct the transitions shown in Design standards 400 and 220. The terminal shoulder gutter inlet should intercept all of the flow draining towards it for a 10-year storm event.

The spread resulting from a rainfall intensity of 4.0 inches per hour shall not encroach on the travel lanes. In addition, for sections with shoulder gutter, the spread resulting from a 10-year frequency storm shall not exceed 15 inches outside the gutter in the direction toward the front slope.

U-endwalls shall be used for all end treatments, where practical, in order to provide erosion control, ease of maintenance and safety.

### **Cross Drains**

Wekiva Parkway is considered a high use or essential roadway and an evacuation route, therefore, the 50-year storm event is the design storm for cross drain analysis. The minimum pipe size for cross drains is 18 inch. The maximum allowable headwater for design flood frequency is at or below the edge of shoulder. The maximum allowable headwater for the base flow frequency shall allow a minimum of one flood-free travel lane in each direction.

### **Ditch Design**

The design frequency for roadside, median and interceptor ditches or swales is 10 years and the design frequency for outfall ditches and canals is 25 years. The minimum slope for ditches where positive flow conditions are required is 0.05%. Other design parameters, including Manning's "n" values and allowable velocities for bare soils and maximum velocities for various lining types, can be obtained from the FDOT Drainage Manual.

## **3.6 Flooding Protection**

Systems discharging to closed lakes shall not cause an increase in total pre-development flood stage. A system will not cause a net reduction in flood storage if compensating storage is provided outside the floodplain or if flood rights are purchased in areas adjacent to and connected to the floodplain. Minimization and compensation will be used for this project to ensure no adverse effects.

A system may not cause a net reduction in flood storage within a 10-year floodplain, except for structures elevated on pilings or traversing works. A system will not cause a net reduction in flood storage within a 100-year floodplain if compensating storage is provided outside the 100-year floodplain. Compensation shall be provided through excavation of a volume within uplands equivalent to the loss of storage within the regulatory floodplain or other agreed upon means.



## 4.0 PRE-DEVELOPMENT CONDITIONS

Pre-development conditions for the drainage features and environmental characteristics are described in this chapter. Refer to **Exhibit 11** for the overall existing drainage map. The project consists of 9 existing drainage basins named Basin SJ1, Lake Sten Basin, Seminole Town Center Basin, Borrow Pit Pond Basin, Pond 13 Basin, I-4 North Basin, Loch Lehman Basin, Pond 17 Basin, and SR 417 Basin. A detailed discussion of each drainage basin follows:

### 4.1 SJ1 Basin

Basin SJ1 is a closed basin with a FEMA determined base flood elevation and outfalls to Lake 21 as shown on **Exhibit 12**. Lake 21 is located behind a single family community on Kimberly Court and frequently floods. FEMA's flood insurance study shows a 100-year floodplain elevation of 72.0 ft-NAVD in the basin, and contours within the basin range between 65.0 ft-NAVD and 73.0 ft-NAVD. **Exhibit 10** shows the FEMA flood map within the project area.

The contributing drainage area was delineated using one-foot contours for Seminole County, and the area was divided into two sub-basins in order to make it easier to compare the results of the pre and post-development models. The first sub-basin (SJ1-S1) shows the approximate footprint of the proposed right-of-way within the basin; the remainder was named the Wilson Road Sub-Basin

Runoff from the contributing area was routed to the basin low point using ICPR and a stage-storage relationship that was developed from the contours. The elevation of the 10-year floodplain was determined to be 69.84 ft-NAVD.

The runoff volume for the 100-year, 240-hour storm was computed using the SCS runoff curve number method following the guidelines in TR-55. Refer to **Appendix C** for the pre-development ICPR model input and results.

### 4.2 Lake Sten Basin

Lake Sten is located in Seminole County approximately 0.5 mile south of the intersection of International Parkway and Wilson Road, as shown on **Exhibit 13**.

The Lake Sten Basin is a landlocked basin composed of multiple contributing sub-basins and two permitted stormwater facilities, Pond 2 and Pond A. Pond 2 is a wet retention pond and treats and attenuates runoff from International Parkway, a portion of the adjacent apartment complex, and an offsite area. Pond A is a dry retention pond and provides treatment and attenuation for the SR 417 ramps to International Parkway.

Pond 2 is a joint use facility between Seminole County and the adjacent apartment complex and recovers through infiltration. The critical storm events are the 25-year, 96hour (SJRWMD) and the 25-year, 24-hour (Seminole County). Pond A is an FDOT owned and maintained facility. The existing ICPR model created uses the post-

development calculations from two permits. The SR 417/International Parkway project SJRWMD permit #40-117-22514-7 and the Grantline Road (International Parkway) SJRWMD permit #4-117-22295-3.

The hydrologic soils groups have been re-classified since the original permit submittal. The calculations have been updated to reflect the new soil classifications and to establish the pre-development conditions for the project.

The Borrow Pit Pond basin was created as a result of the site being used as a borrow pit and is a land locked basin 36.30 acres in size. This basin is located in the northeast quadrant of the I-4/SR 429 Interchange as shown in the existing drainage map for Lake Sten, **Exhibit 13**. This basin is combined with the Lake Sten Basin in the proposed conditions.

The existing ICPR model is included in the calculations in **Appendix D**.

### **4.3 Seminole Towne Center Basin**

The existing Seminole Towne Center Basin is located in Seminole County and contains the intersection of International Parkway and SR 417, as shown on **Exhibit 14**. Seminole Towne Center Basin is an open basin comprised of Sub-Basins 3A, 3B, 4, 4A, 4B, and 8 that discharge to the Lockhart-Smith Canal.

#### **Sub-Basins 4A, 4B, & 8**

The original pre-development basin was delineated by the SR 417 Greenway, Project 2 Section 3 (URS Greiner, March 2000) and was designed using metric units and elevation datum NGVD 1929. The original ICPR routing model was converted to English units and NAVD 1988 datum by the I-4 Interchange at SR 46 project (URS Greiner, March 2006) and permitted under SJRWMD permit number 4-117-22514-3. The flow rates established by this conversion were used for comparison in this report at node JUNC3-4. These calculations were recreated using ICPR. See **Appendix E** for the calculations.

Existing Basins 4A, 4B, and 8 contribute to existing Ponds 4A, 4B, and 8, respectively, which discharge to the Lockhart-Smith canal with ultimate outfall to Lake Monroe. The existing ponds are interconnected and are controlled by one outfall structure located in Pond 8. The ponds have been designed to provide treatment for the ultimate I-4 roadway design according to SJRWMD permit 4-117-22514-3.

The basin areas to Ponds 4A and 4B were modified for the International Parkway and SR 417 interchange project FPID 415587-1-52-01 and SJRWMD permit 4-117-22514-7. However, to establish the pre-existing conditions for this project, the changes made for the International Parkway and SR 417 interchange project were not used because the proposed project will be demolished to construct the Wekiva Parkway. Therefore the pre-existing basin conditions from the previous permit, 4-117-22514-3, were used in this analysis.

### **Sub-Basins 3A and 3B**

Ponds 3A and 3B are in open basins and discharge to the Lockhart-Smith Canal. The ponds originally were permitted under SJRWMD permit number 4-117-22391-1 and modified by permit number 4-117-22391-2 in April of 1995. This modification increased Pond 3A's size and treatment volume to accommodate the movie theater. After this modification the contributing basins to Ponds 3A and 3B were reduced due to the construction of SR 417 and the I-4 Interchange. These current conditions were used to establish the pre-development conditions used for comparison. The I-4 Interchange at SR 46 (prepared by URS) is permitted under SJRWMD Permit #4-117-22514-3. The pre-existing conditions for this project were calculated using metric units and have been converted to English units. **Appendix E** contains excerpts from the above modifications. Pond 3B utilizes existing wetlands and therefore, permanent pool requirements are not applicable.

### **Sub-Basin 4**

Pond 4 was originally permitted within Basin 4 as part of the master surface water management system approved by SJRWMD for Seminole Towne Center, permit number 4-117-22391-1. The master stormwater management system was modified under permit number 40-117-22391-4 for the construction of a car dealership and reduced the original permitted area of 54.71 acres to 33.15 acres to account for changes due to the construction of SR 417 and property development to the south. Pond 4 was subsequently modified by permit number 40-117-22391-9 for the car dealership. Pond 4 is not associated with basins 4A and 4B.

#### **4.4 Pond 17 Basin**

Pond 17 Basin is a 57.28 acre closed basin located east of Seminole Town Center Parkway and along SR 417, as shown on **Exhibit 15**. Pond 17 is designed as a dry retention facility with a control structure that discharges to Pine Lake southwest of the pond. The existing condition was taken from the post condition for the SR 417 Greenway, Seminole County Expressway, Project 2, Section 3 drainage calculations dated March 1999. Additionally, the pre-development ICPR routings have been recreated to compare the stages in Pine Lake. The calculations were originally in metric and NGVD 29 datum and have been converted to NAVD 88. See **Appendix F**.

#### **4.5 SR 417 Basin**

The SR 417 basin is a 45.06 acre closed basin located east of the Seminole Town Center Parkway along SR 417. The basin is shown on **Exhibit 16**. SR 417 basin is composed of 3 contributing sub-basins named Pond 18, 417-East, and Pond 21. Pond 18 and 21 are both dry total retention facilities that are interconnected with no outfall structure. The pre-condition was taken from the post condition for the SR 417 Greenway, Seminole County Expressway, Project 2, Section 3 (Rinehart Road Interchange Basin) drainage

calculations dated September 1999. The calculations were originally in metric and NGVD 29 datum and have been converted to NAVD 88. See **Appendix G**.

#### **4.6 Loch Lehman Basin**

The Loch Lehman basin is a closed basin located in the south west quadrant of the I-4/SR 429 Interchange, as illustrated on **Exhibit 17**. The pre-condition was taken from the post condition for the SR 417 Greenway, Seminole County Expressway, Project 2, Section 3 drainage calculations. The calculations have been converted from metric and are included in **Appendix H**. The summaries of existing characteristics are shown in the Post design section for ease of comparison.

#### **4.7 Pond 13 Basin**

The pre-development condition for the permitted Pond 13 Basin is taken from the post-development ultimate condition (SJRWMD Permit #4-117-22514-10). The basin is located west of I-4, north of SR 429, as shown in **Exhibit 18**, and is an open basin. Pond 13 is a wet detention pond with the control elevation at 54.12 feet and discharges to an existing storm sewer network along I-4 and ultimately outfalls to the Lockhart Smith Canal.

#### **4.8 I-4 North Basin**

This existing 64.98 acre open basin includes sub-basin 4I comprised of a 50.09 acre portion of I-4 north of SR 429, an 11.49 acre sub-basin Pond 4I, and a 3.40 acre sub-basin 4I Offsite. The basin is already permitted (SJRWMD Permit #4-117-22514-11) for the I-4 ultimate conditions. The basin is illustrated on **Exhibit 19**.

#### **4.9 Pond C Basin**

This 46.74 acre closed basin includes a portion of I-4 east bound lanes north of CR 46A, existing CD roads, ramps, Rinehart Road, and CR 46A. Pond C is permitted under SJRWMD permit # 4-117-22514-1. The basin is illustrated on **Exhibit 20**.

## 5.0 POST-DEVELOPMENT CONDITIONS

Post-development conditions for the drainage features are described in this section. Refer to **Exhibit 21**, the overall proposed drainage map, for the drainage basins. The project consists of 8 proposed drainage basins named Basin SJ1, Lake Sten Basin, Seminole Town Center Basin, Pond 13 Basin, I-4 North Basin, Loch Lehman Basin, Pond 17 Basin, and SR 417 Basin. A detailed discussion of each drainage basin follows:

### 5.1 Basin SJ1

Although similar in size, the post-development basin differs slightly from pre-development. Refer to **Exhibit 22** for an illustration of the basin. Approximately 6.7 acres of the pre-development area on the southeast side of the Wilson Road Sub-Basin has been diverted to Lake Sten through ponds SJ2-S-1 and SJ2-S-2. An area of similar size (about 6.1 acres) has been added at the northwest end of the SJ1 sub-basin.

In post-development conditions, Basin SJ1 has been divided into three sub-basins: SJ1-S1, Wilson Road East, and Wilson Road West. (The pre-development Wilson Road sub-basin has been bisected into two smaller sub-basins, one to the east and one to the west of the proposed alignment).

Runoff from the post-development basin was routed to the basin low point, Lake 21, using ICPR. Impacts to the 10-year floodplain were determined by comparing the proposed road right-of-way to the pre-development 10-year stage. Floodplain compensation, FP-SJ1, has been provided south of Lake 21 by grading the existing ground to provide for the volume filled by the Wekiva Parkway. **Exhibits 26 and 27** show the floodplain impacted by the 10 year and 100 year frequency design storm events.

Refer to **Appendix C** for a summary of the project's floodplain impacts and the basin calculations.

#### **Pond SJ1-S1**

The proposed project increases the runoff volume in this closed basin. Pond SJ1-S1 (**Exhibits 23 and 24**) is sized to retain the pre vs. post volume difference since this volume is larger than the required water quality volume. The required water quality for sub-basin SJ1 was determined to be 2.08 ac-ft.

The soils in the pond vicinity do not allow the pond to recover through infiltration within the required time frames. Therefore, the pond has been designed as a wet detention pond which slowly releases the increased water volume over a longer duration to avoid adverse impacts downstream. A 2.75" circular orifice is used for recovery.

The pond meets all FDOT and SJRWMD requirements for all modeled storm events. In combination with the proposed floodplain compensation area (**Exhibit 25**), FP-SJ1, the pond reduces Basin SJ1 (Wilson Road Basin) flood stages for all modeled storm events, and the neighborhoods within the floodplain will experience reduced flooding impacts.

Refer to **Appendix C** for the supporting documents.

## **5.2 Lake Sten Basin**

Lake Sten will be partially filled due to the construction of the Wekiva Parkway as shown on **Exhibit 28**, and these impacts result in a loss of floodplain storage volume. Refer to **Exhibit 37** for floodplain impacts to Lake Sten. See **Appendix D** for the location of proposed impacts and compensatory floodplain volume calculations.

### **Sub-basin SJ2-S1**

In the post condition, Basin SJ2-S1 discharges directly into Lake Sten, and has increased in size to 19.92 acres. The additional area is taken from the Wilson Road Basin.

### **Pond SJ2-S1**

Pond SJ2-S1 (**Exhibits 29 and 30**) is a wet retention pond sized to retain the greater of the treatment volume (0.5" over the basin area plus the greater of 0.5" over the basin area or 1.25" of runoff over the impervious area) or the increase in runoff volume over the basin for the 25-year, 96-hour (SJRWMD) or the 100-year, 240-hour (FDOT) storm event. The required volume for Pond SJ2-S1 is 19.05 acre-feet which is the increase in the runoff volume for the 100-year, 240-hour storm event.

The weir elevation for Pond SJ2-S1 is set at EL. 77.75 based on the runoff volume from the 100-year, 240-hour storm event. Pond SJ2-S1 is designed to meet both FDOT and SJRWMD criteria for wet retention ponds and discharges more total runoff volume to Lake Sten in the post condition. An orifice is used to recover the pond because the soils within the vicinity of the pond have low infiltration rates. The additional volume is released over a long duration (1,432 hours) and increases the stage in Lake Sten by 0.5' over the duration of the 240-hour event. This increase in stage has the potential to impact the property owner adjacent to FP-SJ2. See **Appendix D** for supporting documentation.

### **Sub-basin SJ2-S2**

In the post condition, Basin SJ2-S2 is created and drains to Swale SJ2-S2, then directly to FP-SJ2. The basin is 6.47 acres.

### **Swale SJ2-S2**

Swale SJ2-S2 (**Exhibit 31**) is sized to retain its basin's treatment volume. The required treatment volume for Swale SJ2-S2 is 0.54 acre-feet. The increase in runoff volume, 5.60 ac-ft, for the 100-year, 240-hour storm event is provided in FP-SJ2 to minimize the required right of way needs of the project.

The weir elevation is set at EL. 74.00 based on the treatment volume required. A 10' wide maintenance berm is graded to keep the swale within proposed right of way, and

the side slopes are graded at 1:3. The swale recovers the treatment volume within (x)\* hours. See **Appendix D** for all supporting documentation.

\*To be provided in Final Submittal

## **FP-SJ2**

A floodplain compensation pond, FP-SJ2, and the remainder of Lake Sten are required to provide for the loss of storage in the basin as required by SJRWMD and FDEP rules. The remainder of Lake Sten and FP-SJ2 (**Exhibit 34**) are sized to provide the equivalent storage in the 100 year floodplain and accommodate the required runoff volume from Basin SJ2-S2.

## **Pond 2**

Basin 2 in the post-development condition changes from 17.03 acres (75.5 CN) to 16.99 acres (78.5 CN). The post development Basin 2 is modeled in ICPR, and the additional area causes an insignificant stage increase to Pond 2 for the 25-year, 96-hour storm. The increase in stage is less than 0.10 foot, EL. 70.44 pre vs. EL. 70.53 post. No changes are proposed for Pond 2 because it meets the required criteria. Refer to **Appendix D** for all supporting documentation.

The rainfall depth for the permitted ICPR routing is 12.33 inches for Pond 2 for the 25-year, 96-hour storm event. This is different from the rainfall depth for the 25-year, 96-hour event established for this project, 11.3 inches, and used for all other pond designs. In order to compare the pre (permitted) versus post conditions for Pond 2, 11.3 inches is used for both the pre and post ICPR models.

## **Pond A**

Basin A increases in size from 2.26 acres to 3.03 acres in the post condition. The new Ramp LL3 alignment impacts the existing pond and to mitigate the impacts, new grading is proposed along the south side of the ramp. Pond A is designed to retain the increase in runoff for the 25-year, 96-hour event below the weir and have a minimum of 1 foot freeboard as currently permitted. Pond A recovery calculations will be provided at the next submittal. Refer to **Appendix D** for revised calculations.

## **Borrow Pit Pond**

The Borrow Pit Pond has been combined with FP-SJ2 and is now part of the Lake Sten Basin. Refer to the Lake Sten exhibits and calculations.

## **5.3 Seminole Towne Center Basin**

### **Sub-basins 4A, 4B, 8 & 8A**

Four wet detention ponds within this basin (**Exhibit 38**) will be interconnected in the proposed conditions. Pond 4A (**Exhibits 39 and 41**) will be slightly regraded and enlarged. Pond 4B (**Exhibits 40 and 41**) will be enlarged and relocated to northwest of Pond 4A. Pond 8 (**Exhibits 42 and 43**) will be moved slightly and reshaped to avoid the existing power easement. The existing contributing basins remain similar to the existing conditions, with the exception of basin 8 which will lose some existing area south of Pond 8 to basin 8A. Basin 8A encompasses 15.1 acres in the southeast portion of Seminole Town Center Basin, which is part of basin 8 in the existing conditions. Pond 8A is a dry detention pond that will be interconnected with Ponds 8, 4A, and 4B (**Exhibit 44**). A new control structure will be required in Pond 8 to meet recovery requirements. Refer to **Appendix E** for summary tables and the basin calculations.

### **Sub-basins 3A and 3B**

The Wekiva Parkway improvements to SR 417 will impact the southern sides of existing Ponds 3A and 3B (**Exhibits 45 and 47**), and will reduce the size of Basin 3A and Basin 3B. The overall sizes of Ponds 3A and 3B will be reduced however, both ponds will provide sufficient treatment and permanent pool volume to meet the permitted requirements. Both ponds were modeled for the mean-annual and 25year-24hour storm events to use as comparison with the pre, permitted, and proposed conditions. All calculations have been converted to NAVD 88 elevation datum. Basin summary tables and basin calculations can be found in **Appendix E**.

### **Sub-basin 4**

Pond 4 (**Exhibits 46 and 47**) will provide the required treatment and permanent pool volume as required by SJRWMD after the roadway construction and impacts occur. However, the orifice will need to be modified to 5.5 inches in diameter to meet the treatment volume recovery timeframe. All calculations have been converted to NAVD 88 elevation datum. See **Appendix E** for the impacts to Pond 4.

## **5.4 Pond 17 Basin**

Pond 17 drains to Pine Lake which is a closed basin with no positive outfall. The proposed alignment will impact the northern portion of Pond 17 and increase the required storage volume by 1.3 acre feet, to a total of 14.8 acre feet for the 100-year, 240-hour storm. The pond will remain dry with the same bottom elevation, but will be regraded to an elevation of 62.5 to accommodate the additional volume and the impacts to the northern edge of the pond. Additionally, the existing control structure in the pond will be adjusted to an elevation of 61.25, to provide the required storage volume. For recovery analysis, pond calculations show Pond 17 recovers half of volume from the 25-year, 96-hour storm in 1 day, with total recovery occurring in 11.4 days. Refer to **Exhibits 48, 49, and 50** for basin location and Pond 17 details.



The rainfall depth for the 100-year, 240-hour original ICPR routing is 18.83 inches as currently permitted for Pond 17. This differs from the 100-year, 240-hour rainfall depth using 18.5 inches for other ponds designed on this project. In order to compare the pre (permitted) versus post conditions for Pond 17, 18.83 inches was used.

No impacts are proposed to Pine Lake. The post-development Pine Lake stages are less than pre-development.

## **5.5 SR 417 Basin**

The proposed improvements to SR 417 as part of the Wekiva Parkway Interchange will impact the northern portion of Pond 18 (**Exhibit 52**). Existing Pond 21 is not impacted by the proposed roadway improvements therefore, no changes will be made to the pond. The existing control structure elevation is 44.46 and will remain in the proposed condition. The additional 0.58 acres of impervious area increased the total runoff volume for the proposed closed basin by 4.98 ac-ft for the 25-year, 96-hour storm. The pond maintenance berm will be regraded to a top of bank elevation of 49.20 but will retain the existing bottom elevation to accommodate for the additional volume as well as the impacts to the northern edge of the pond. The proposed basin and pond conditions are shown in **Exhibit 51 and Appendix G**.

The rainfall depth for the 100-year, 240-hour original ICPR routing is 18.83 inches as currently permitted for Pond 18 and 21. This is different than the 100-year, 240-hour routing using 18.5 inches for other ponds designed on this project. In order to compare the pre (permitted) versus post conditions for Pond 18 and 21, 18.83 inches was used.

Pond 18 and 21 are total retention facilities with no outfall. Therefore, two 25-year, 96-hour storm events were modeled back to back in ICPR as part of the recovery analysis for Pond 18 and Pond 21. The stages in Pond 18 and 21 after the second storm event are 47.88 and 47.89, respectively.

## **5.6 Loch Lehman Basin**

Loch Lehman (**Exhibits 54, 55 and 56**) is located west of I-4 and south of SR 429. This is a closed basin with no outfall and will be impacted by the construction of the Wekiva Parkway Interchange. The impacts will consist of partially filling and re-contouring the northern and eastern portions of the pond. Also, the contributing basin has been revised based on the permitted development. **Exhibit 53** shows the revised basin limits.

The pre-condition was taken from the post conditions for the SR 417 Greenway, Seminole County Expressway, Project 2, Section 3. These calculations were converted from metric to English and a revised ICPR model was created for comparison. The proposed impacts result in an increased stage of 0.82' for the permitted storm event (25-year, 96-hour). The increase is below the original modeled stage shown in the SR 417 drainage calculations report of 61.75' (NGVD). All ICPR calculations were completed using NAVD datum. Refer to **Appendix H** for the drainage calculations.

## **5.7 Pond 13 Basin**

The ultimate Pond 13 Basin area is smaller than the pre-condition area and the impervious area has increased to accommodate the ultimate design. The basin is located on the west side of I-4, north of SR 429, as shown in **Exhibit 57**. Pond 13 (**Exhibits 58 and 59**) will remain a wet detention pond with control elevation at 54.12 feet and will be reduced in size due to the widening of I-4. The control structure for Pond 13 will be adjusted and relocated. The proposed weir elevation is 56.50 feet. The ultimate discharge will be to the Lockhart Smith Canal as in existing conditions.

## **5.8 I-4 North Basin**

The proposed I-4 North Basin is smaller than the existing basin, but approximately 2.08 acres of additional impervious area is proposed with this project. However, the provided treatment in Pond 4I is greater than the required treatment for the additional impervious area. Therefore, Pond 4I still meets treatment volume criteria and no impacts will occur to the existing system. Refer to **Exhibit 60** for the basin location.

## **5.9 Pond C Basin**

Pond C basin has been revised in the proposed condition, but total impervious area is unchanged. Therefore, Pond C still meets treatment volume criteria and no impacts will occur to the existing system. Refer to **Exhibit 61** for the basin location

## 6.0 FLOODPLAIN ANALYSIS

This project impacts two existing natural floodplains; Lake 21 and Lake Sten, which require floodplain compensation. The other floodplains shown on the FEMA map are manmade ponds, and include Ponds 3A, 3B, 4, and the Borrow Pit Pond. These ponds do not require floodplain compensation.

The impact to Lake 21 is 2.12 acres of the 10-year floodplain. Floodplain compensation, FP-SJ1, has been designed to mitigate the impact to Lake 21 for all storm events. See **Exhibit 25** for grading details for FP-SJ1. Below is a summary of the impacts to the floodplain elevation for the 10-year, 24-hour and 100-year, 240-hour storm events. The ICPR routing calculations can be found in **Appendix C**.

<b>Lake 21 Floodplain Impact Summary</b>		
Storm Event	Existing Stage (FT)	Proposed Stage (FT)
10YR/24HR	69.83	69.11
100YR/240HR	72.20	71.90

A portion of Lake Sten will be filled with this project. See **Exhibits 33** and **34** showing Lake Sten impacts and the proposed compensation pond (FP-SJ2). The corresponding calculations can be found in **Appendix D**.

## 7.0 EXISTING PERMITS

An existing permit list will be provided with the next submittal.

# Appendices

**APPENDIX A: Exhibits**

**APPENDIX B: Wekiva Parkway Section 8 - 15% Line and Grade Plans**

**APPENDIX C: Basin SJ1 (Wilson Road) Calculations**

**APPENDIX D: Lake Sten Basin Calculations**

**APPENDIX E: Seminole Towne Center Basin Calculations**

**APPENDIX F: Pond 17 Basin Calculations**

**APPENDIX G: SR 417 Basin Calculations**

**APPENDIX H: Loch Lehman Basin Calculations**

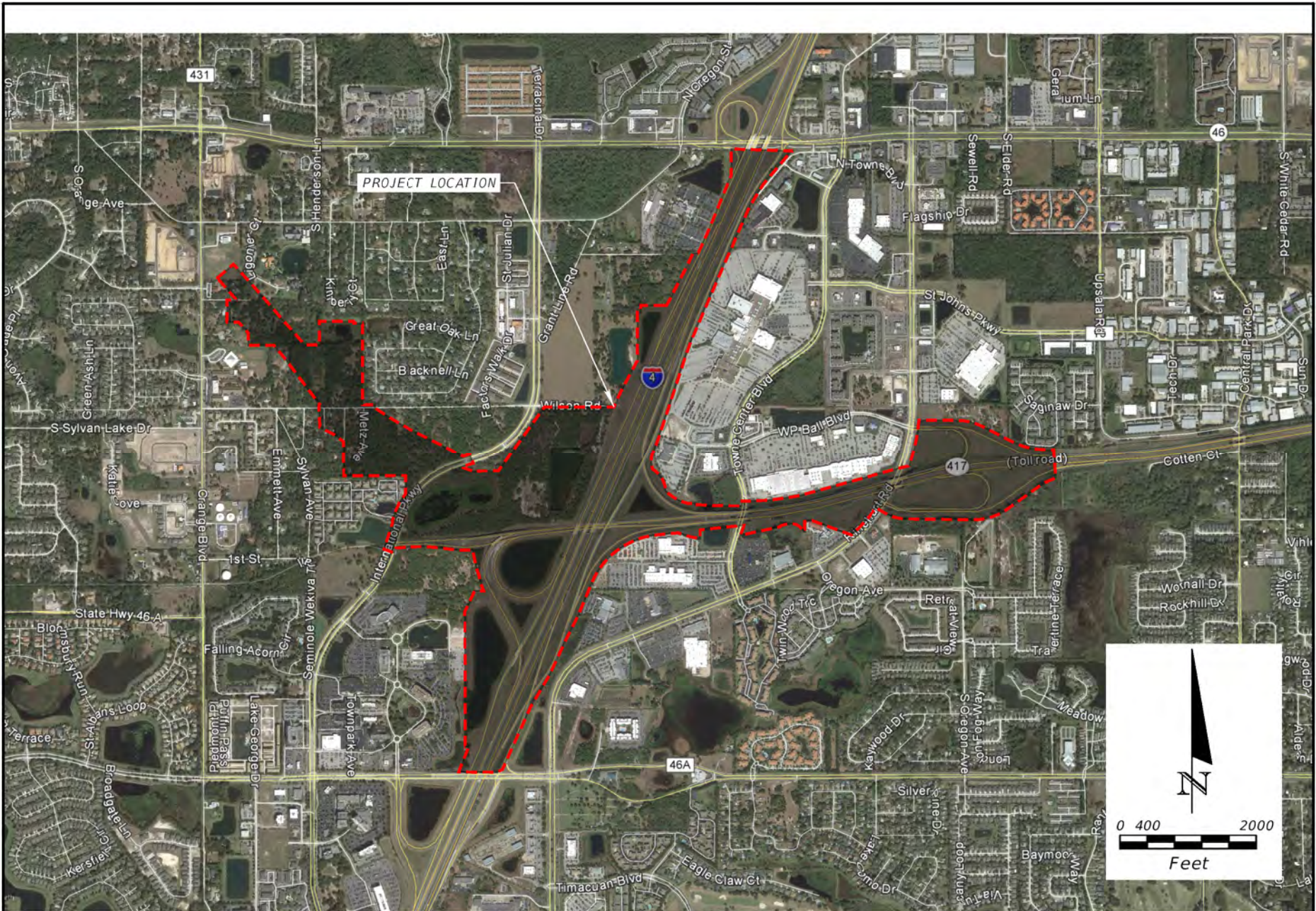
**APPENDIX I: Pond 13 Basin Calculations**

**APPENDIX J: I-4 North Basin Calculations**

# Appendix A

## Exhibits

1. Project Location Map
2. Quadrangle Map
3. Typical Section No. 1 SR 429 (Wekiva Pkwy)
4. Typical Section No. 2 SR 417
5. Typical Section No. 3 SR 400 (Interstate 4)
6. Typical Section No. 4 Ramps
7. Typical Section No. 5 Ramps
8. Typical Section No. 6 International Parkway
9. Soils Map
10. FIRM – Flood Insurance Rate Map
11. Existing Overall Drainage Map
12. Basin SJ1 Exist. Drainage Map
13. Lake Sten Basin Exist. Drainage Map
14. Seminole Towne Center Basin Exist. Drainage Map
15. Pond 17 Basin Exist. Drainage Map
16. SR 417 Basin Exist. Drainage Map
17. Loch Lehman Basin Exist. Drainage Map
18. Pond 13 Basin Exist. Drainage Map
19. I-4 North Basin Exist. Drainage Map
20. Pond C Basin Exist. Drainage Map
21. Proposed Overall Drainage Map
22. Basin SJ1 Prop. Drainage Map
23. Pond SJ1-S1 Details (1/2)
24. Pond SJ1-S1 Details (2/2)
25. Pond FP-SJ1 Details
26. Basin SJ1 10YR Floodplain Impacts
27. Basin SJ1 100YR Floodplain Impacts
28. Lake Sten Basin Prop. Drainage Map
29. Pond SJ2-S1 Details (1/2)
30. Pond SJ2-S1 Details (2/2)
31. Swale SJ2-S2 Details
32. Pond A Details
33. Lake Sten Details
34. Pond FP-SJ2 Details
35. Lake Sten Basin 10YR Floodplain Impacts
36. Lake Sten Basin 100YR Floodplain Impacts
37. Adjacent Parcel Floodplain Impacts
38. Seminole Towne Center (STC) Basin Prop. Drainage Map
39. Pond 4A Details (1/3)
40. Pond 4B Details (2/3)
41. Pond 4A/4B Details (3/3)
42. Pond 8 Details (1/2)
43. Pond 8 Details (2/2)
44. Pond 8A Details
45. Pond 3A & 3B Details (1/3)
46. Pond 4 Details (2/3)
47. Pond 3A, 3B & 4 Details (3/3)
48. Pond 17 Basin Prop. Drainage Map
49. Pond 17 Details (1/2)
50. Pond 17 Details (2/2)
51. SR 417 Basin Prop. Drainage Map
52. Pond 18 Details
53. Loch Lehman Basin Prop. Drainage Map
54. Loch Lehman Details (1/3)
55. Loch Lehman Details (2/3)
56. Loch Lehman Details (3/3)
57. Pond 13 Basin Prop. Drainage Map
58. Pond 13 Details (1/2)
59. Pond 13 Details (2/2)
60. I-4 North Basin Prop. Drainage Map
61. Pond C Basin Prop. Drainage Map

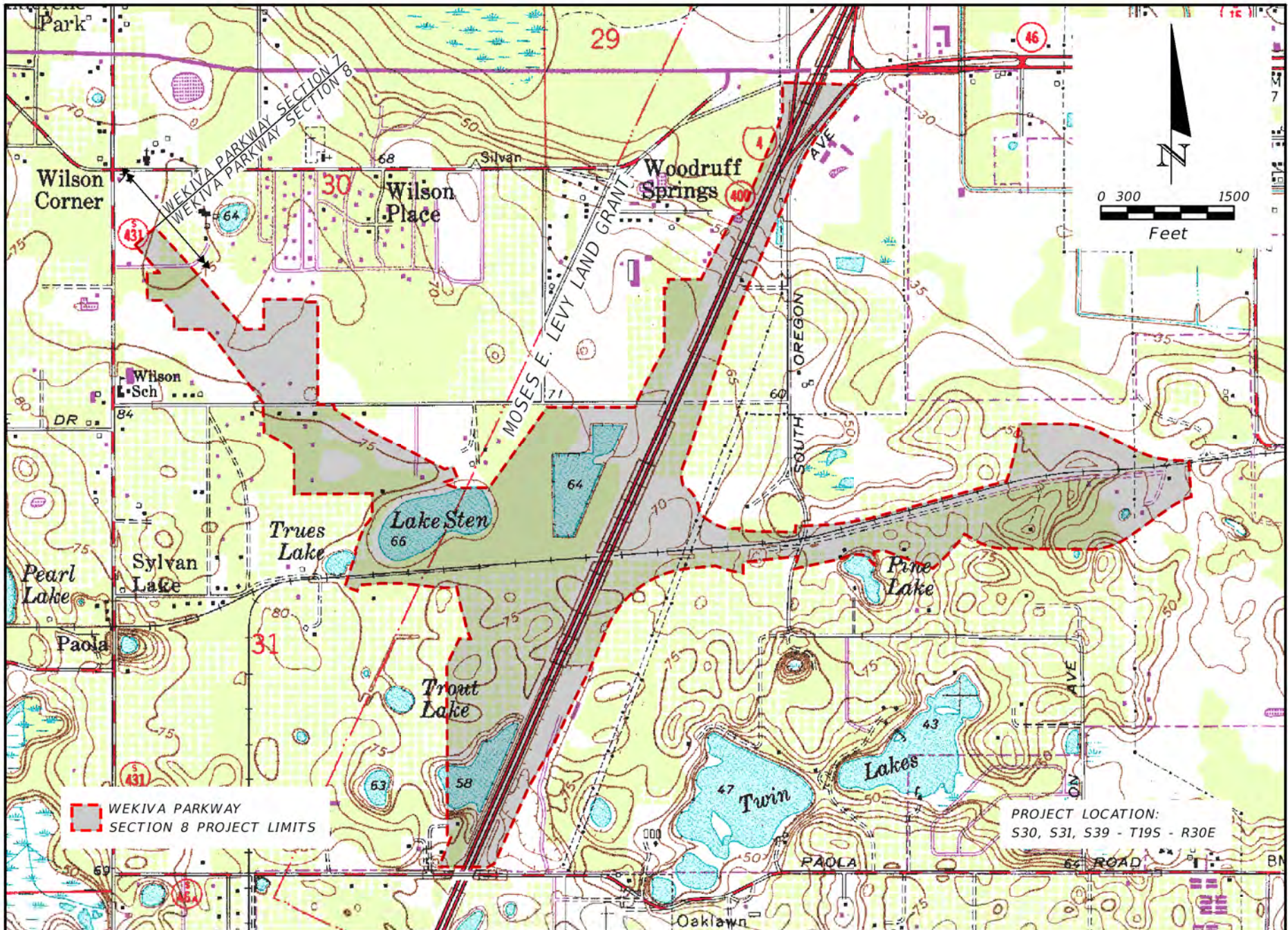


ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
 (407) 647-7275  
 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**PROJECT  
LOCATION MAP**

EXHIBIT  
NO.  
  
1



ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
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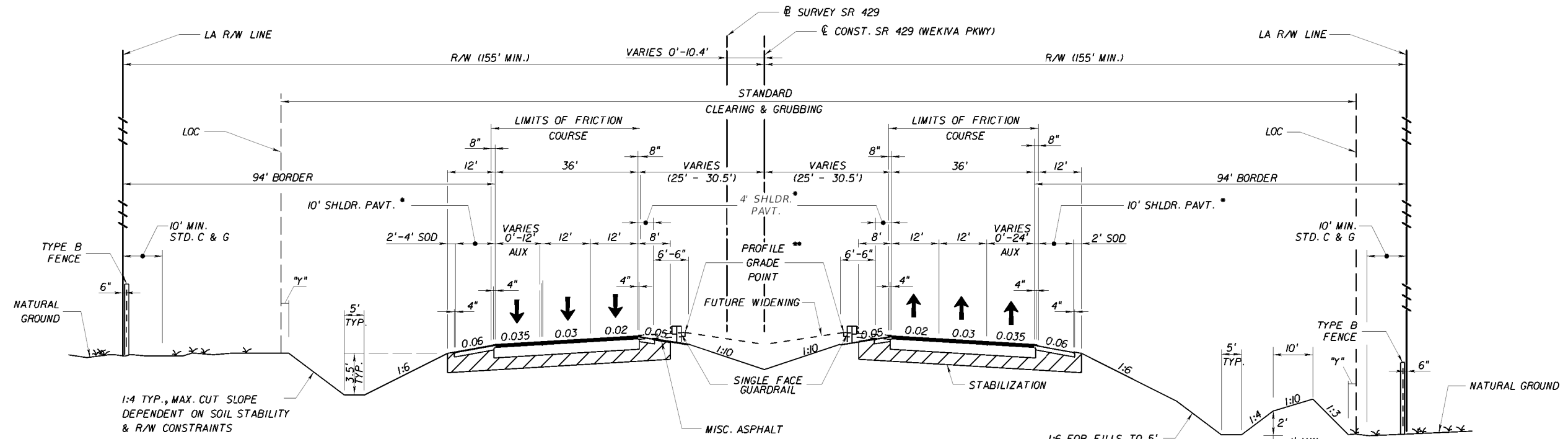
STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

QUADRANGLE MAP

EXHIBIT  
 NO.

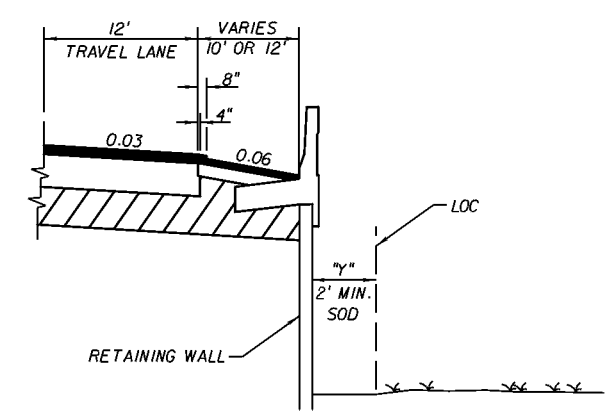
2



\* WITH GROUND-IN RUMBLE STRIPS.  
 \*\* PROFILE GRADE POINT IS LOCATED AT THE THEORETICAL EOP OF THE FUTURE TRAVEL LANE. THE CROSS SLOPE OF THE FUTURE TRAVEL LANE IS THE SAME AS ADJACENT LANE (0.02 TYP.)

NOTES:  
 (1) "Y" THE AREA DISTURBED VARIES, 2' MIN.

**TYPICAL SECTION No. 1**  
**SR 429 (WEKIVA PKWY)**  
 STA. 1114+56.17 (BK) / STA. 1114+87.25 (AH)  
 TO  
 STA. 1217+80.71 (BK) / STA. 2169+83.96 (AH)  
 4-LANE URBAN EXPRESSWAY  
 DS = 70 MPH



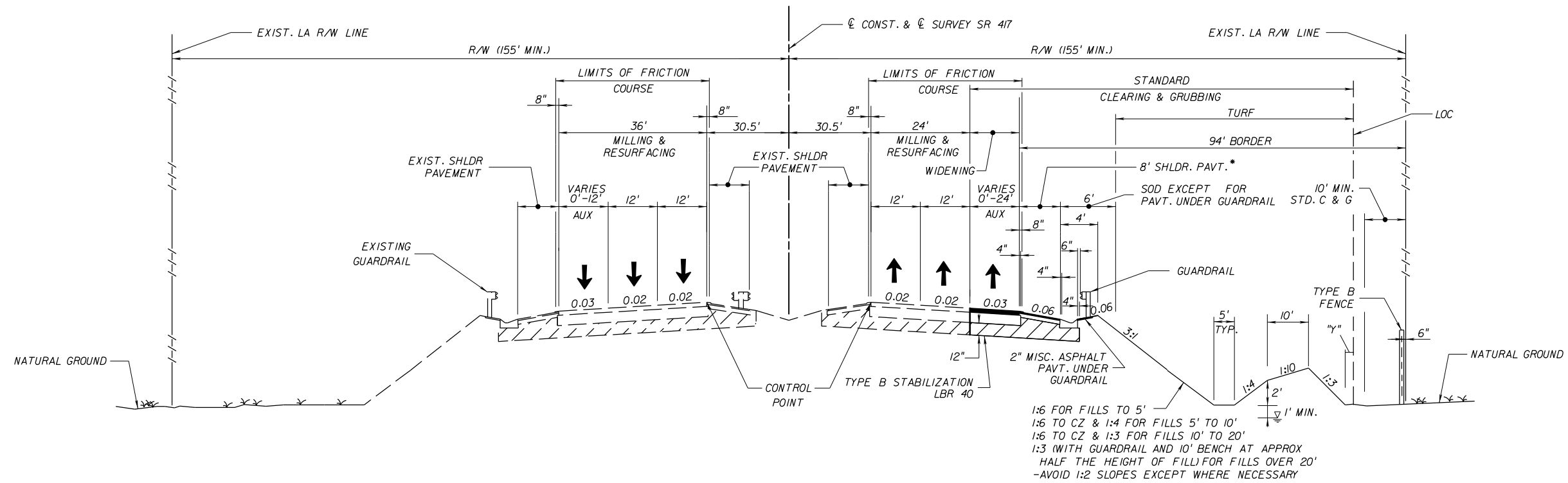
SHOULDER PAVEMENT & RETAINING WALL DETAIL

**TRAFFIC DATA**

ESTIMATED OPENING YEAR = 2020 AADT = 43,000  
 ESTIMATED DESIGN YEAR = 2040 AADT = 82,500  
 K = 9.00% D = 56.42% T = 10.52% (24 HOUR)  
 DESIGN HOUR T = 7.72%  
 DESIGN SPEED = 70 MPH

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 WILLIAM A. TERWILLEGER, P.E. P.E. NO.: 43427	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>TYPICAL SECTION</b>	SHEET NO.  3
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 429	SEMINOLE	240200-4-52-01			





1:6 FOR FILLS TO 5'  
 1:6 TO CZ & 1:4 FOR FILLS 5' TO 10'  
 1:6 TO CZ & 1:3 FOR FILLS 10' TO 20'  
 1:3 (WITH GUARDRAIL AND 10' BENCH AT APPROX  
 HALF THE HEIGHT OF FILL) FOR FILLS OVER 20'  
 -AVOID 1:2 SLOPES EXCEPT WHERE NECESSARY

**TYPICAL SECTION No. 2**  
**SR 417**

**STA. 1217+80.71 (BK) / STA. 2169+83.96 (AH)**  
**TO STA. 2198+78.76**

**4-LANE URBAN EXPRESSWAY**  
**DS = 70 MPH**

\* WITH GROUND-IN RUMBLE STRIPS.

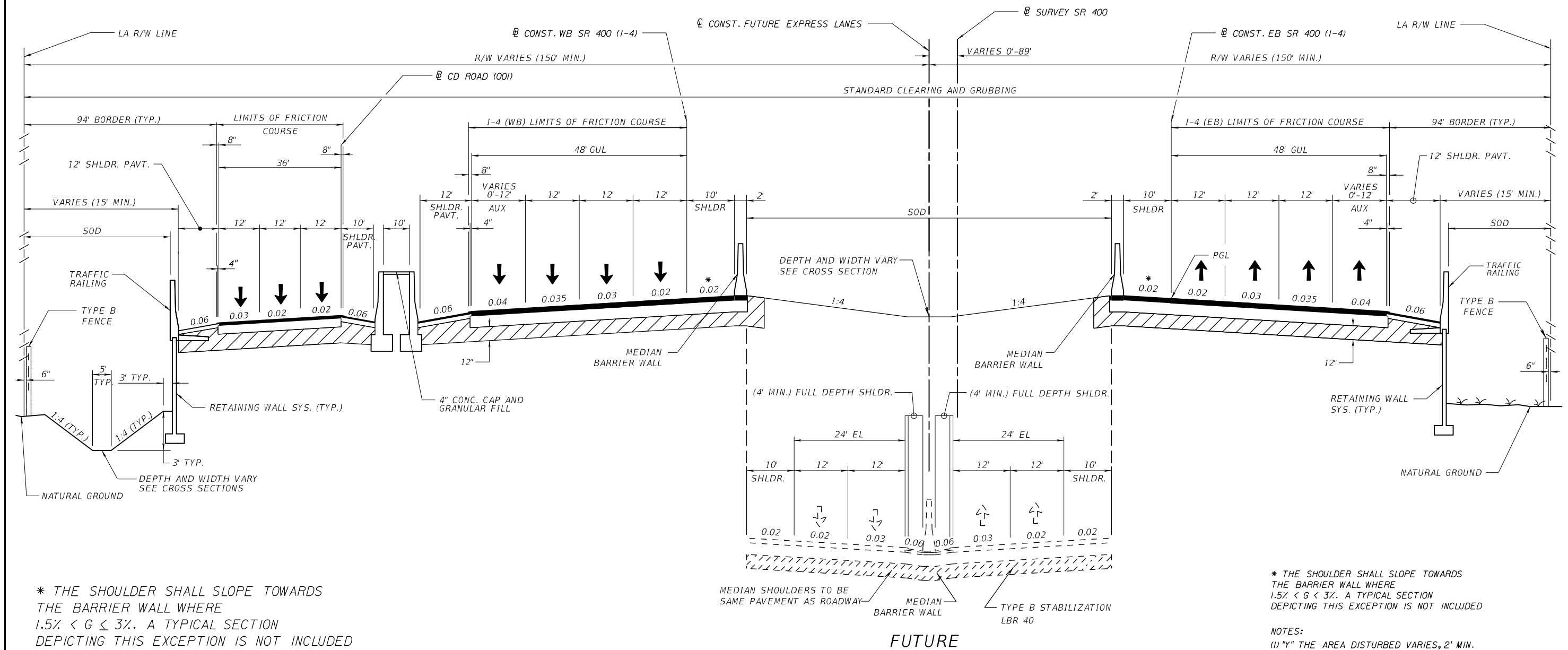
NOTES:

(1) "Y" THE AREA DISTURBED VARIES, 2' MIN.

**TRAFFIC DATA**

ESTIMATED OPENING YEAR = 2020 AADT = 43,000  
 ESTIMATED DESIGN YEAR = 2040 AADT = 82,500  
 K = 9.00% D = 56.42% T = 10.52% (24 HOUR)  
 DESIGN HOUR T = 7.72%  
 DESIGN SPEED = 70 MPH

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 WILLIAM A. TERWILLEGER, P.E. P.E. NO.: 43427	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>TYPICAL SECTION</b>	SHEET NO. <b>4</b>
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 429	SEMINOLE	240200-4-52-01		



\* THE SHOULDER SHALL SLOPE TOWARDS THE BARRIER WALL WHERE  $1.5\% < G \leq 3\%$ . A TYPICAL SECTION DEPICTING THIS EXCEPTION IS NOT INCLUDED

\* THE SHOULDER SHALL SLOPE TOWARDS THE BARRIER WALL WHERE  $1.5\% < G < 3\%$ . A TYPICAL SECTION DEPICTING THIS EXCEPTION IS NOT INCLUDED

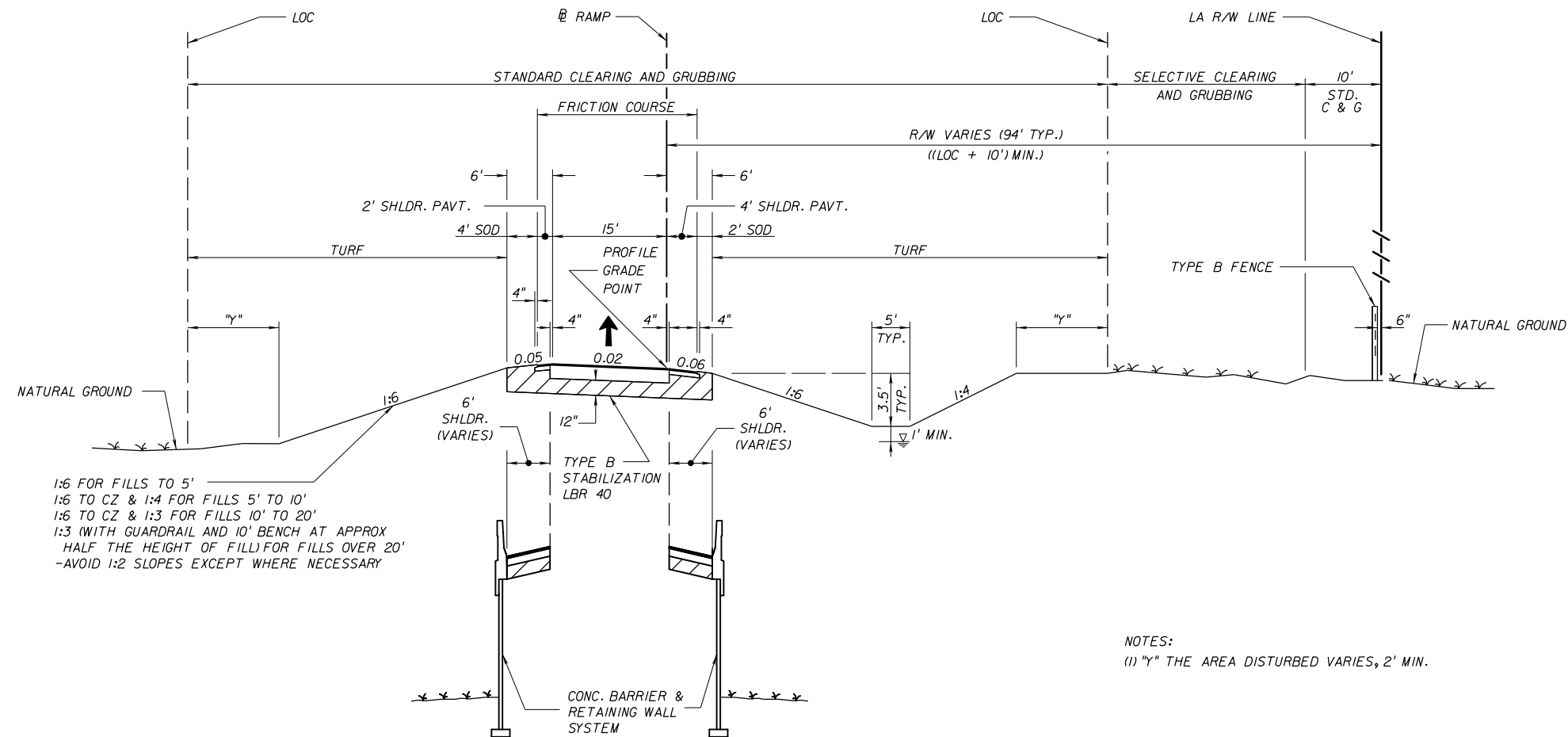
NOTES:  
(1) "Y" THE AREA DISTURBED VARIES, 2' MIN.

CD ROAD (001)  
STA. 133+14.56 TO 212+50.00  
3-LANE URBAN CD ROAD  
DS = 55 MPH

**TYPICAL SECTION No. 3**  
SR 400 (INTERSTATE 4)  
WB: STA. 2037+10.27 TO 2134+00.99  
EB: STA. 1025+61.49 TO 1134+44.43  
6-LANE URBAN FREEWAY  
DS = 70 MPH

**TRAFFIC DATA**  
ESTIMATED OPENING YEAR = 2020 AADT = 202,000  
ESTIMATED DESIGN YEAR = 2040 AADT = 269,000  
K = 7.40% D = 52.92% T = 10.20% (24 HOUR)  
DESIGN HOUR T = 7.72%  
DESIGN SPEED = 70 MPH

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 WILLIAM A. TERWILLEGER, P.E. P.E. NO.: 43427	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>TYPICAL SECTION</b>  SHEET NO. <b>5</b>
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					SR 429	SEMINOLE	240200-4-52-01	



**TYPICAL SECTION No. 4**

**RAMPS:**

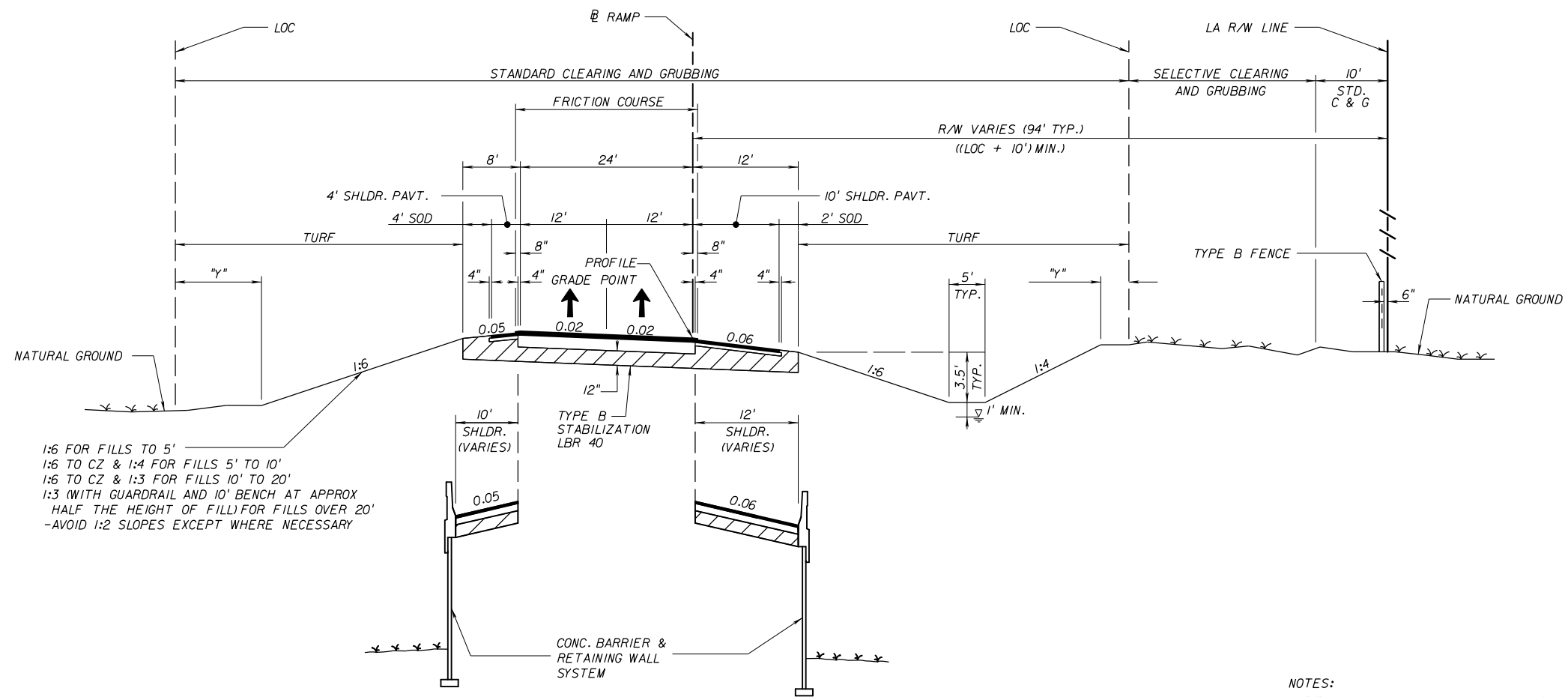
- "003" (STA. 10+00.00 TO 61+77.51)
- "004" (STA. 5+70.01 TO 35+45.62)
- "HH1" (STA. 10+00.00 TO 56+85.79)
- "HH2" (STA. 6+69.89 TO 20+57.78)
- "LL1" (STA. 10+00.00 TO 60+40.72)
- "LL2" (STA. 10+00.00 TO 54+54.22)
- "LL3" (STA. 8+68.82 TO 50+98.35)
- "MM2" (STA. 10+00.00 TO 35+65.28)
- "NN2" (STA. 10+00.00 TO 56+26.89)
- "GG" (STA. 10+00.00 TO 40+04.15)
- "RR" (STA. 10+00.00 TO 18+10.78)
- "CR 46A" (STA. 4+68.13 TO 19+41.62)

SINGLE LANE RAMP  
DS = 35-50 MPH

1:6 FOR FILLS TO 5'  
1:6 TO CZ & 1:4 FOR FILLS 5' TO 10'  
1:6 TO CZ & 1:3 FOR FILLS 10' TO 20'  
1:3 (WITH GUARDRAIL AND 10' BENCH AT APPROX  
HALF THE HEIGHT OF FILL) FOR FILLS OVER 20'  
-AVOID 1:2 SLOPES EXCEPT WHERE NECESSARY

NOTES:  
(1) "y" THE AREA DISTURBED VARIES, 2' MIN.

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 WILLIAM A. TERWILLEGGER, P.E. P.E. NO.: 43427	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.  6
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					SR 429	SEMINOLE	240200-4-52-01	



NOTES:  
 (1) "Y" THE AREA DISTURBED VARIES, 2' MIN.

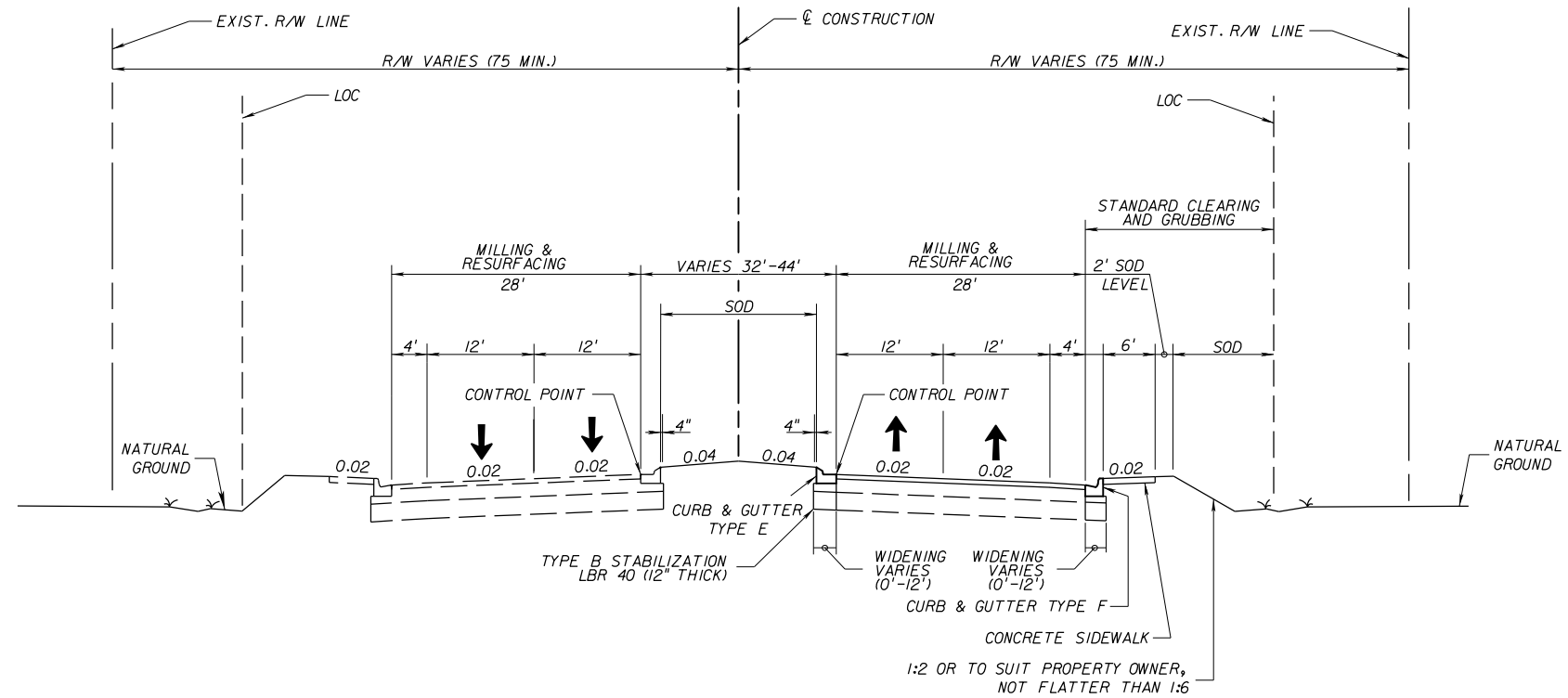
**TYPICAL SECTION No. 5**

**RAMPS:**

- "MM1" (STA. 10+00.00 TO 81+53.10)
- "MM3" (STA. 10+00.00 TO 55+67.69)
- "NN1" (STA. 10+00.00 TO 76+94.13)
- "001" (STA. 134+10.06 TO 215+14.00)
- "002" (STA. 10+00.00 TO 26+79.84)

TWO LANE RAMP  
 DS = 35-50 MPH

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 WILLIAM A. TERWILLEGER, P.E. P.E. NO.: 43427	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>TYPICAL SECTION</b>	SHEET NO. 7
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 429	SEMINOLE	240200-4-52-01		

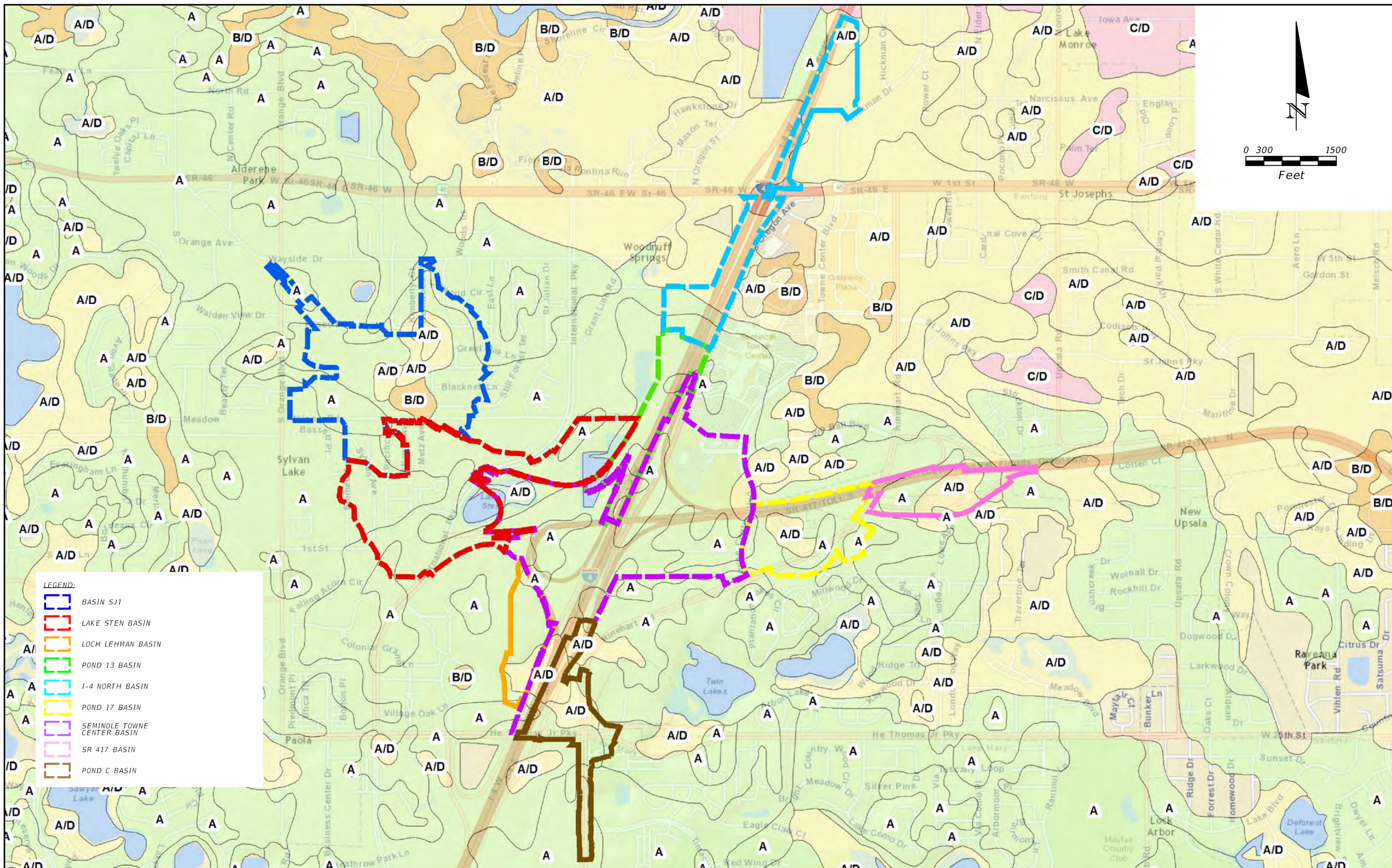


NOTES:  
 (1) IF LIMITS OF CONSTRUCTION EXCEED RIGHT OF WAY  
 A PROPERTY AGREEMENT IS REQUIRED.

**TYPICAL SECTION No. 6**  
**INTERNATIONAL PARKWAY**  
**STA. 99+70.32 TO STA. 118+36.42**

4-LANE URBAN ROAD  
 DS = 45 MPH

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 WILLIAM A. TERWILLEGER, P.E. P.E. NO.: 43427	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>TYPICAL SECTION</b>  SHEET NO.  <b>8</b>
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					SR 429	SEMINOLE	240200-4-52-01	



- LEGEND:**
- BASIN SJ1
  - LAKE STEN BASIN
  - LOCH LEHMAN BASIN
  - POND 13 BASIN
  - I-4 NORTH BASIN
  - POND 17 BASIN
  - SEMINOLE TOWNE CENTER BASIN
  - SR 417 BASIN
  - POND C BASIN

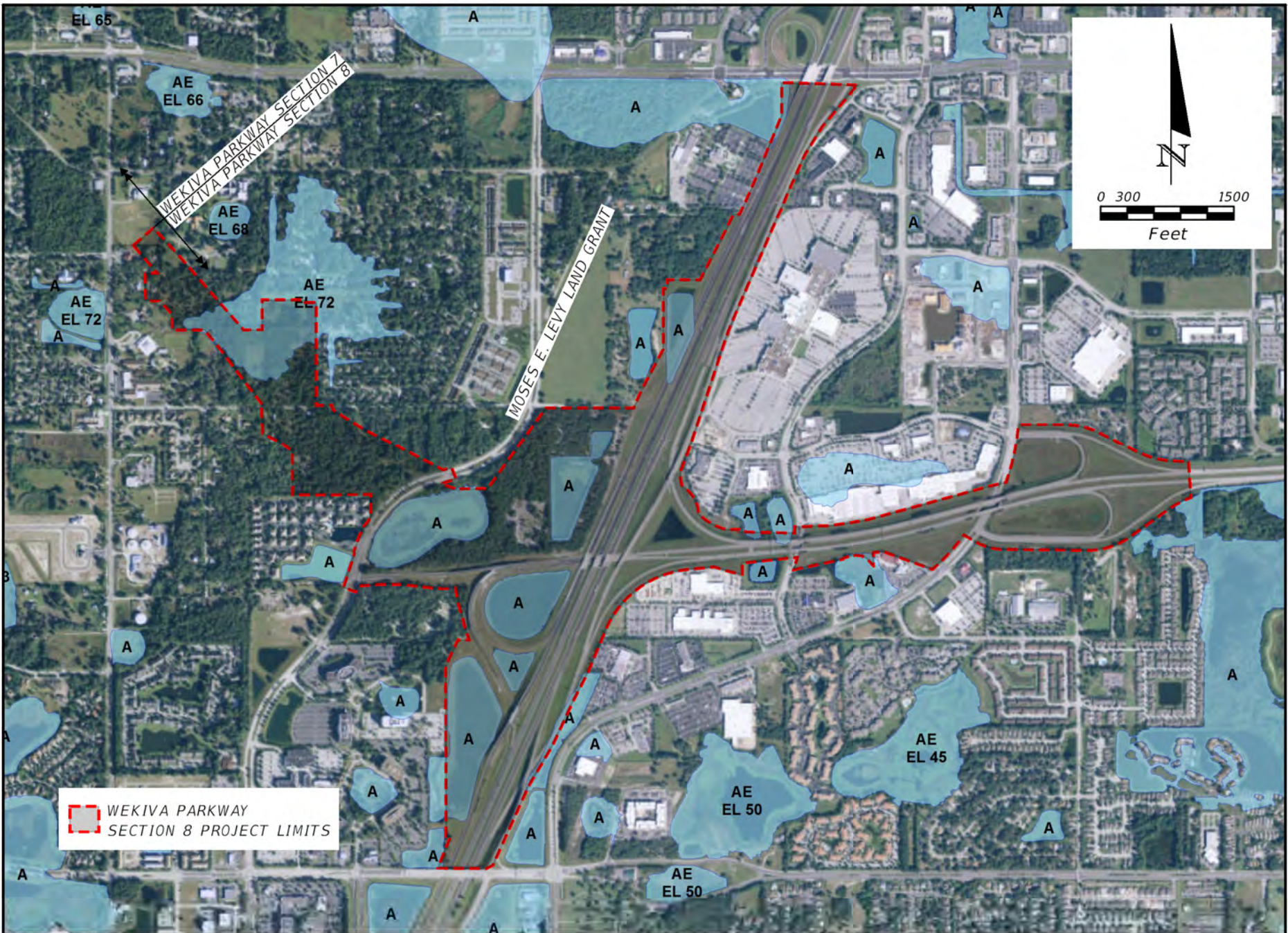
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
 (407) 647-7275  
 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**SOILS MAP**

EXHIBIT NO.  
9



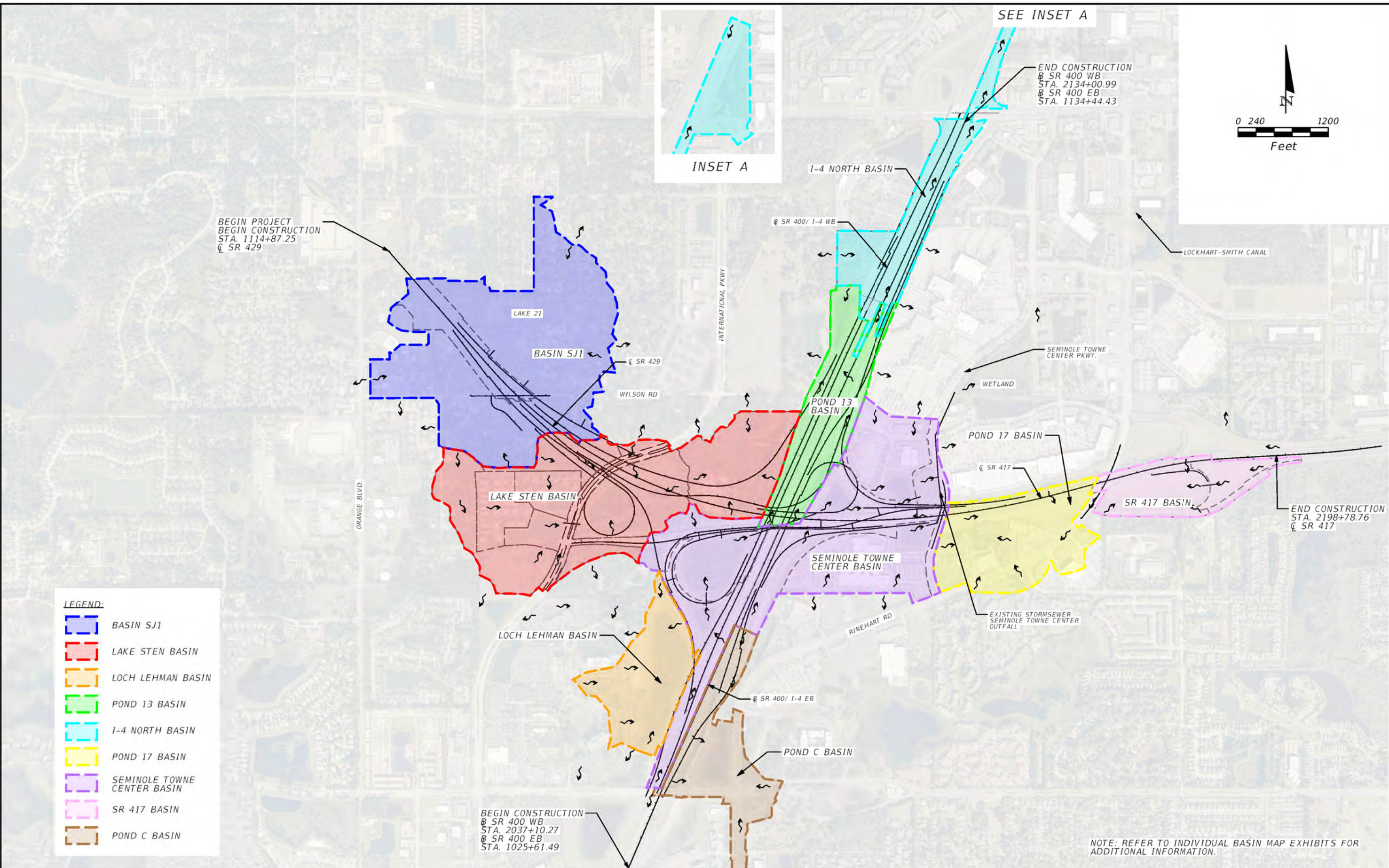
**WEKIVA PARKWAY SECTION 8 PROJECT LIMITS**

ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
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 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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**FIRM - FLOOD INSURANCE RATE MAP**

EXHIBIT NO.  
**10**



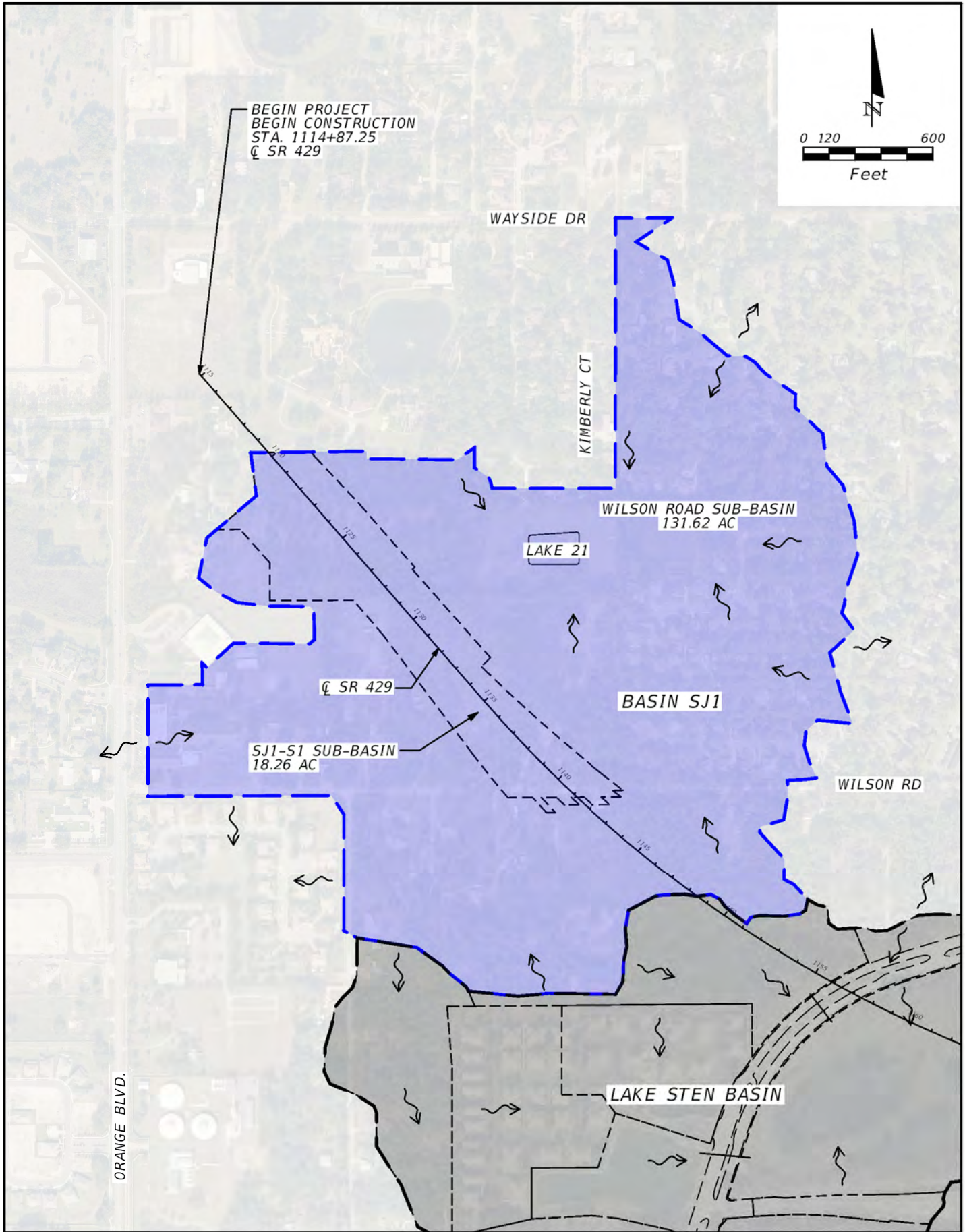
**LEGEND:**

	BASIN SJ1
	LAKE STEN BASIN
	LOCH LEHMAN BASIN
	POND 13 BASIN
	I-4 NORTH BASIN
	POND 17 BASIN
	SEMINOLE TOWNE CENTER BASIN
	SR 417 BASIN
	POND C BASIN

NOTE: REFER TO INDIVIDUAL BASIN MAP EXHIBITS FOR ADDITIONAL INFORMATION.

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>EXISTING OVERALL DRAINAGE MAP</b>	EXHIBIT NO.  11
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 429	SEMINOLE	240200-4-52-01		



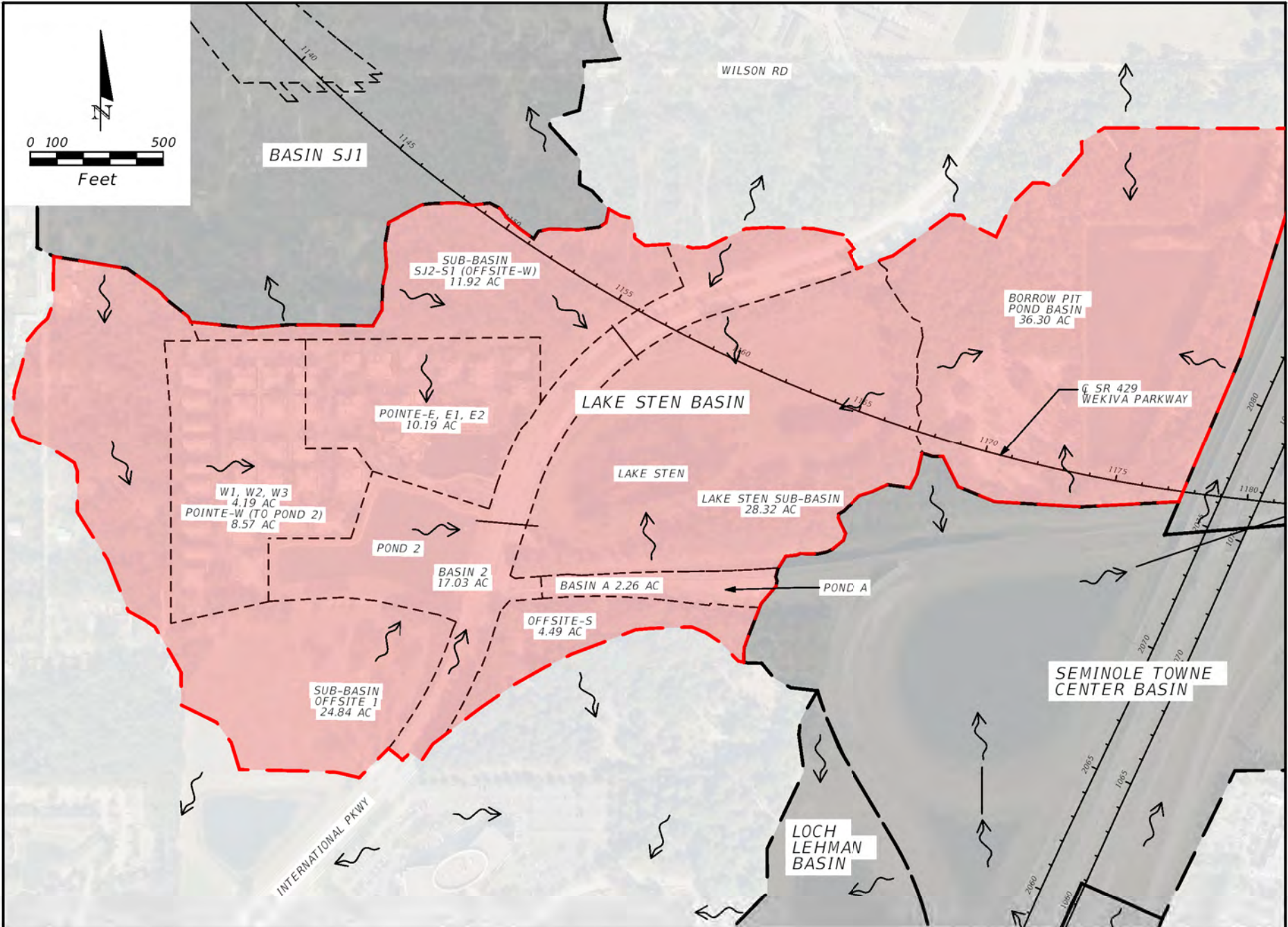


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 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
SR 429	SEMINOLE

**BASIN SJ1**  
**EXIST. DRAINAGE MAP**

EXHIBIT NO.
12

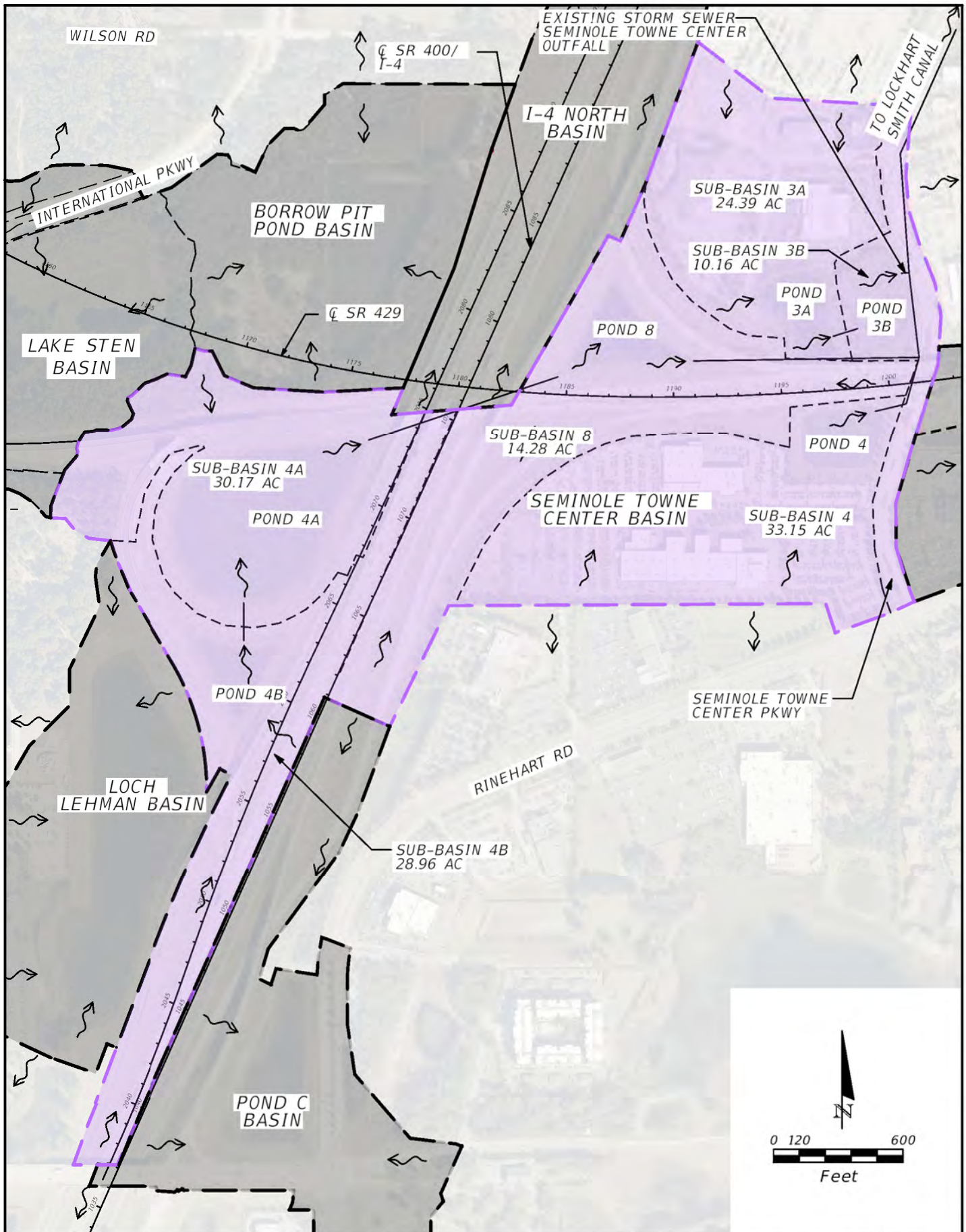


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 CERTIFICATE OF AUTHORIZATION NO.: 24  
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 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**LAKE STEN BASIN  
 EXIST. DRAINAGE MAP**

EXHIBIT NO.
13

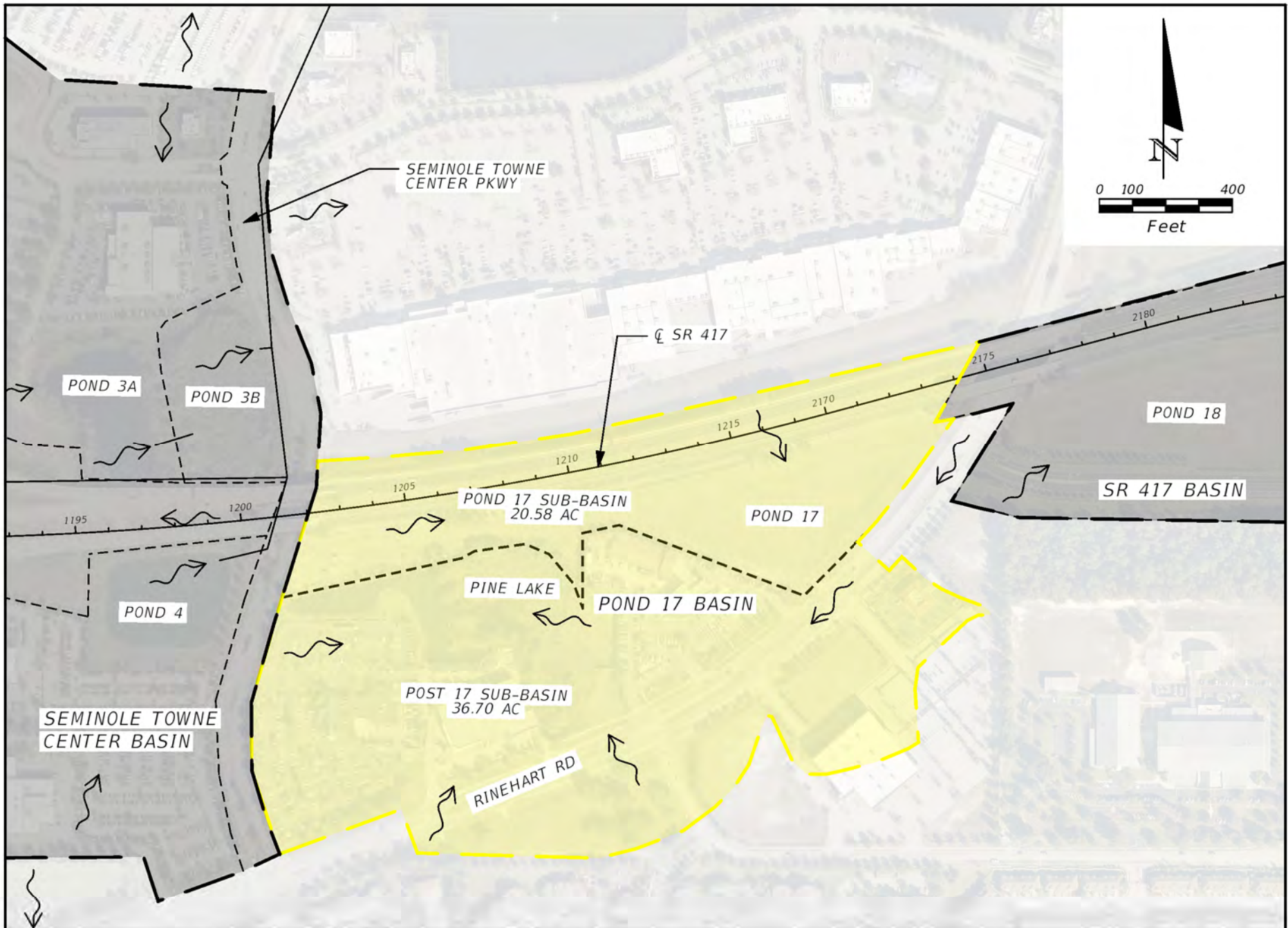


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 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
SR 429	SEMINOLE

**SEMINOLE TOWNE  
 CENTER BASIN  
 EXIST. DRAINAGE MAP**

EXHIBIT  
 NO.  
 14

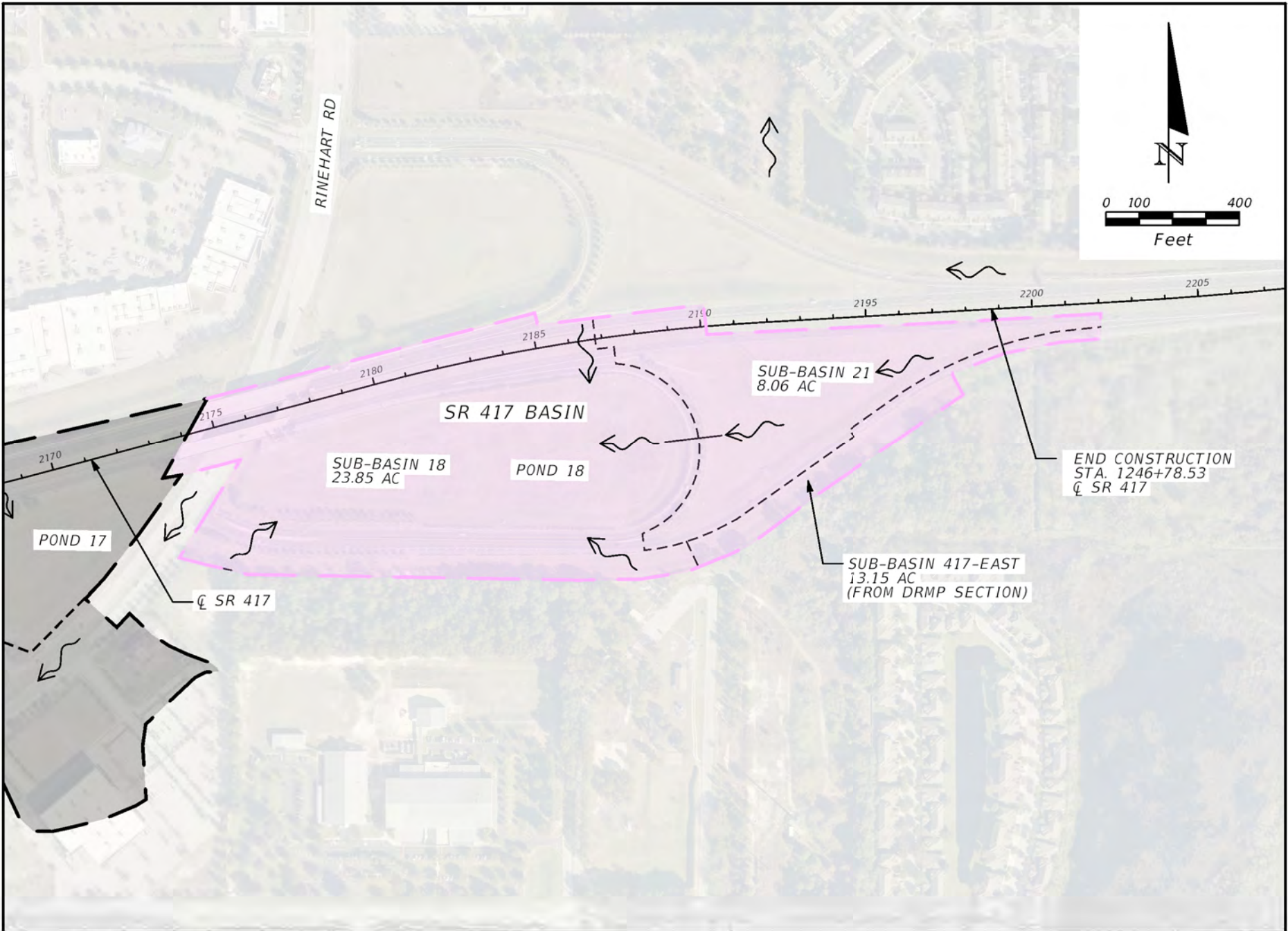


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 CERTIFICATE OF AUTHORIZATION NO.: 24  
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 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**POND 17 BASIN  
 EXIST. DRAINAGE MAP**

EXHIBIT  
 NO.  
 15

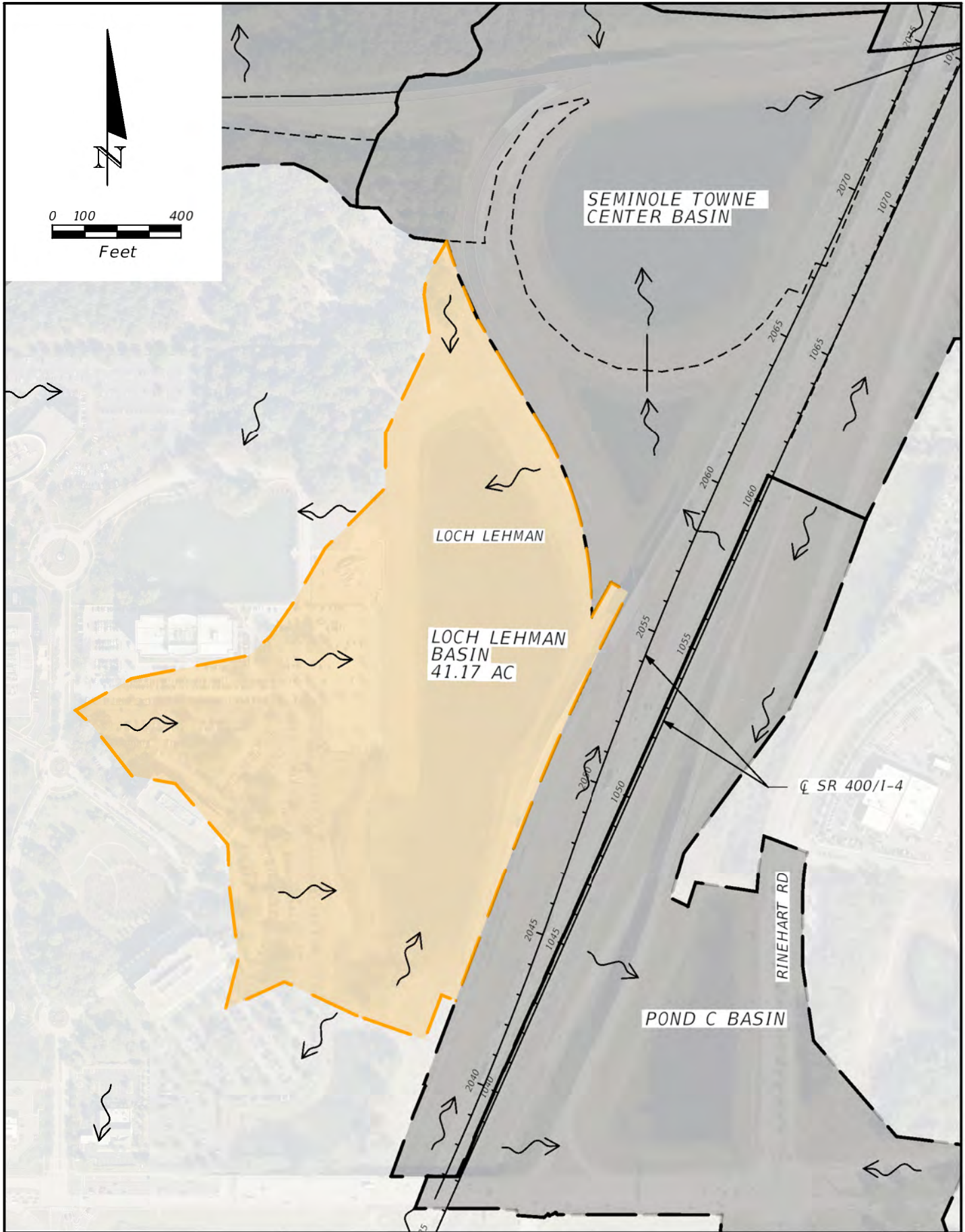


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 (407) 647-7275  
 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

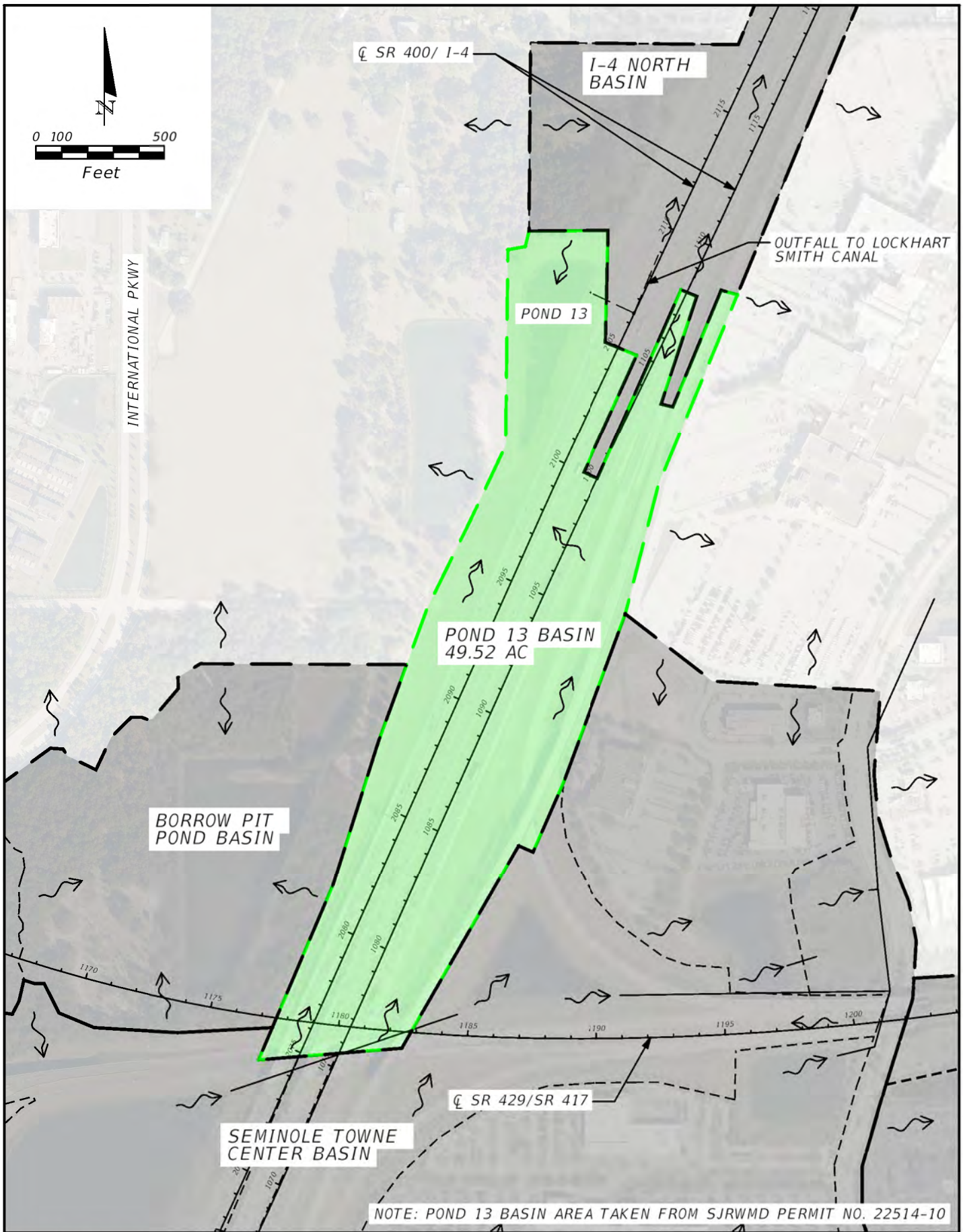
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**SR 417 BASIN  
EXIST. DRAINAGE MAP**

EXHIBIT NO.
16

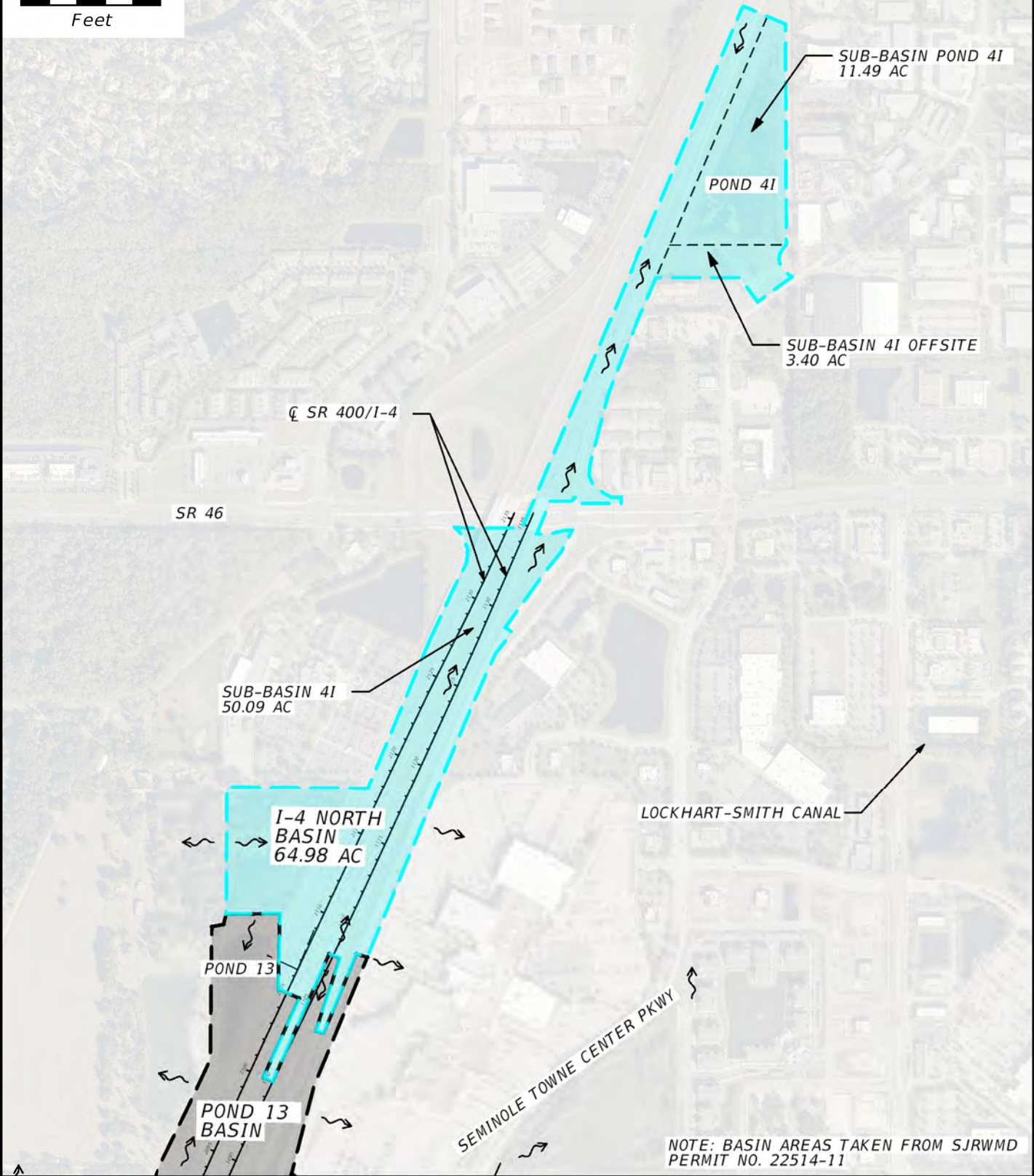
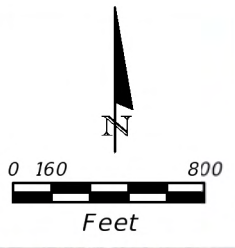


ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		<b>LOCH LEHMAN BASIN          EXIST. DRAINAGE MAP</b>	EXHIBIT NO. 17
	ROAD NO.	COUNTY		
	SR 429	SEMINOLE		



NOTE: POND 13 BASIN AREA TAKEN FROM SJRWMD PERMIT NO. 22514-10

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	ROAD NO.	COUNTY		
	SR 429	SEMINOLE		



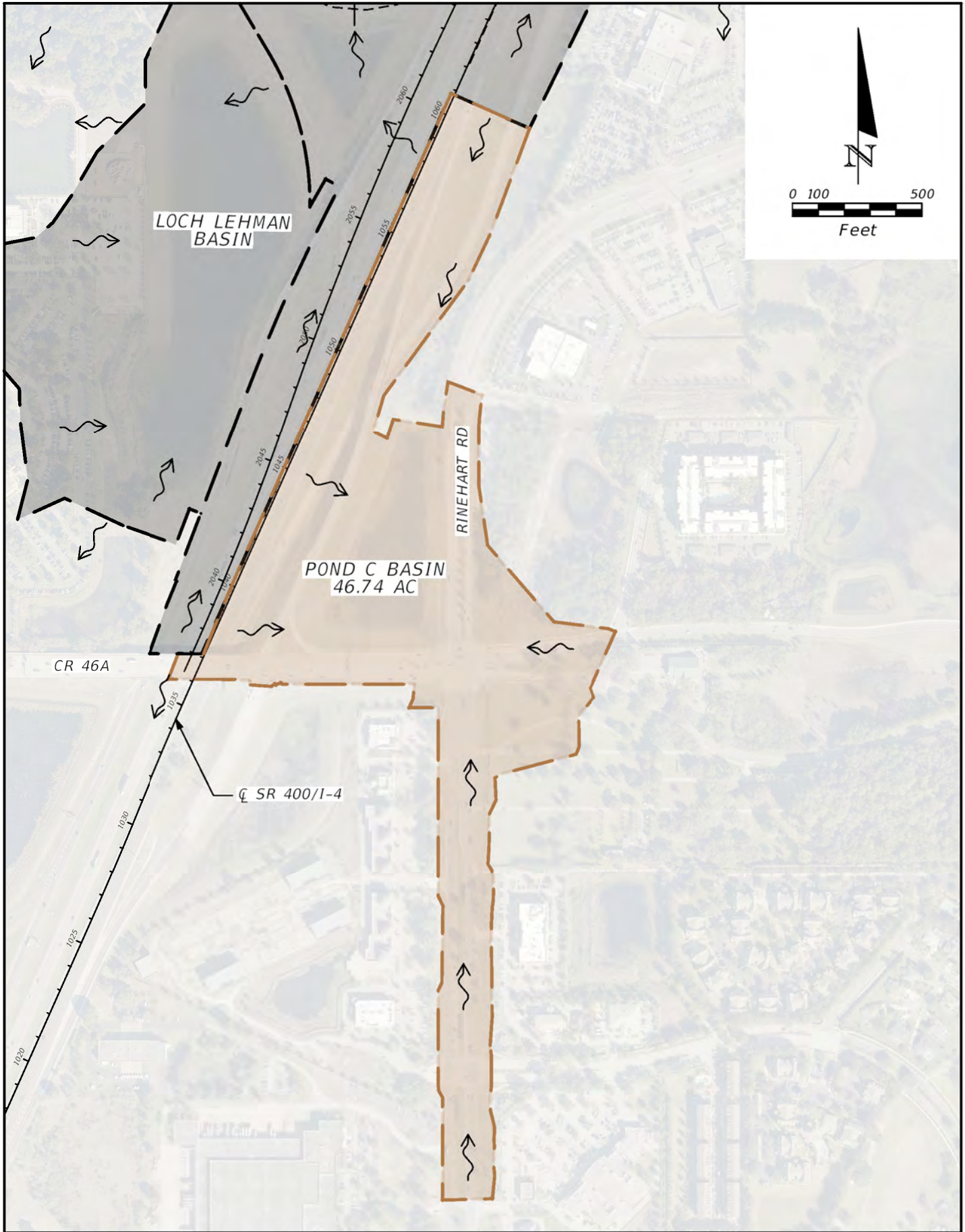
ATKINS NORTH AMERICA, INC.  
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 ORLANDO, FL 32810  
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 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
SR 429	SEMINOLE

**I-4 NORTH BASIN  
 EXIST. DRAINAGE MAP**

EXHIBIT NO.  
 19



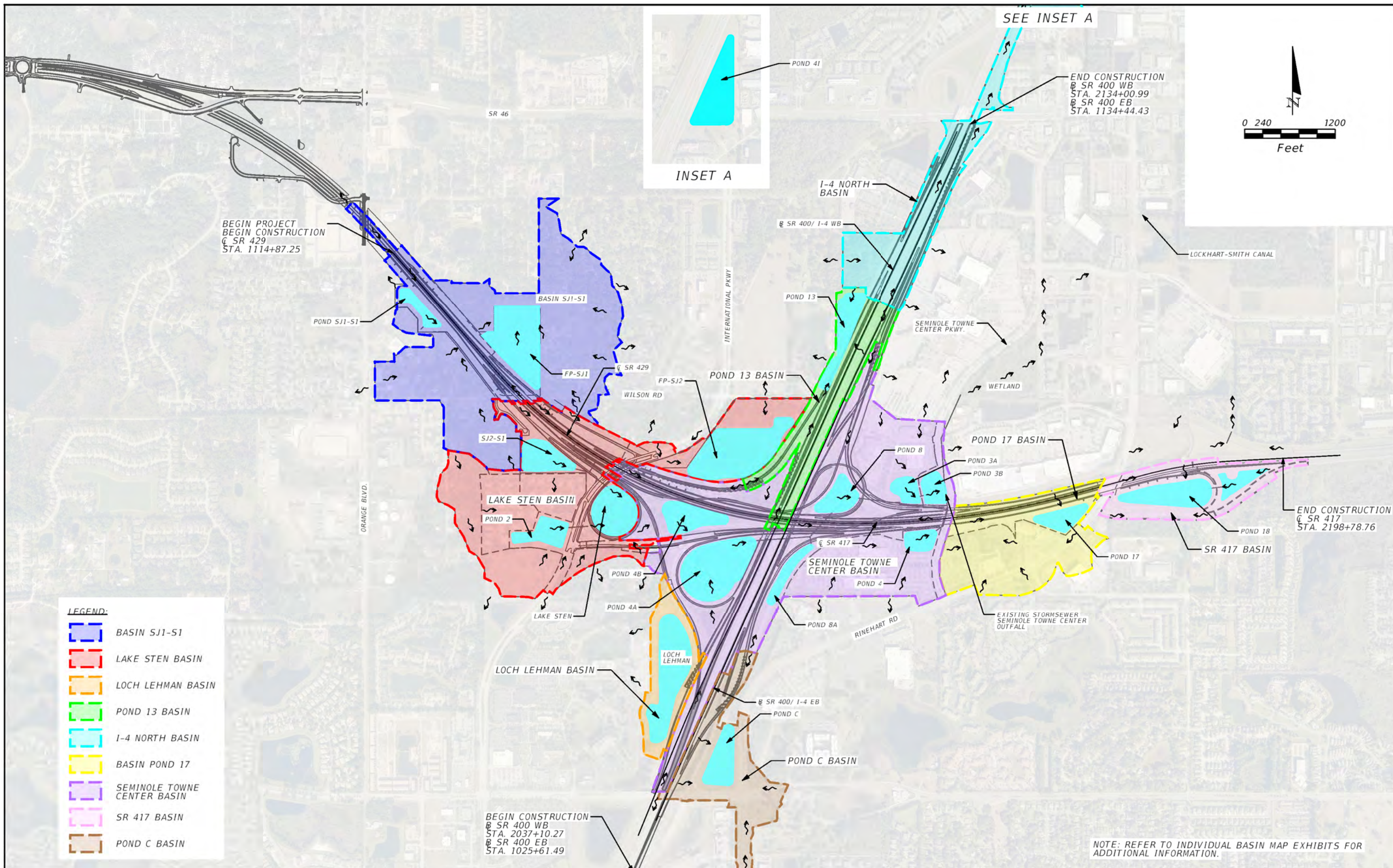


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 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
SR 429	SEMINOLE

**POND C BASIN  
 EXIST. DRAINAGE MAP**

EXHIBIT NO.
20

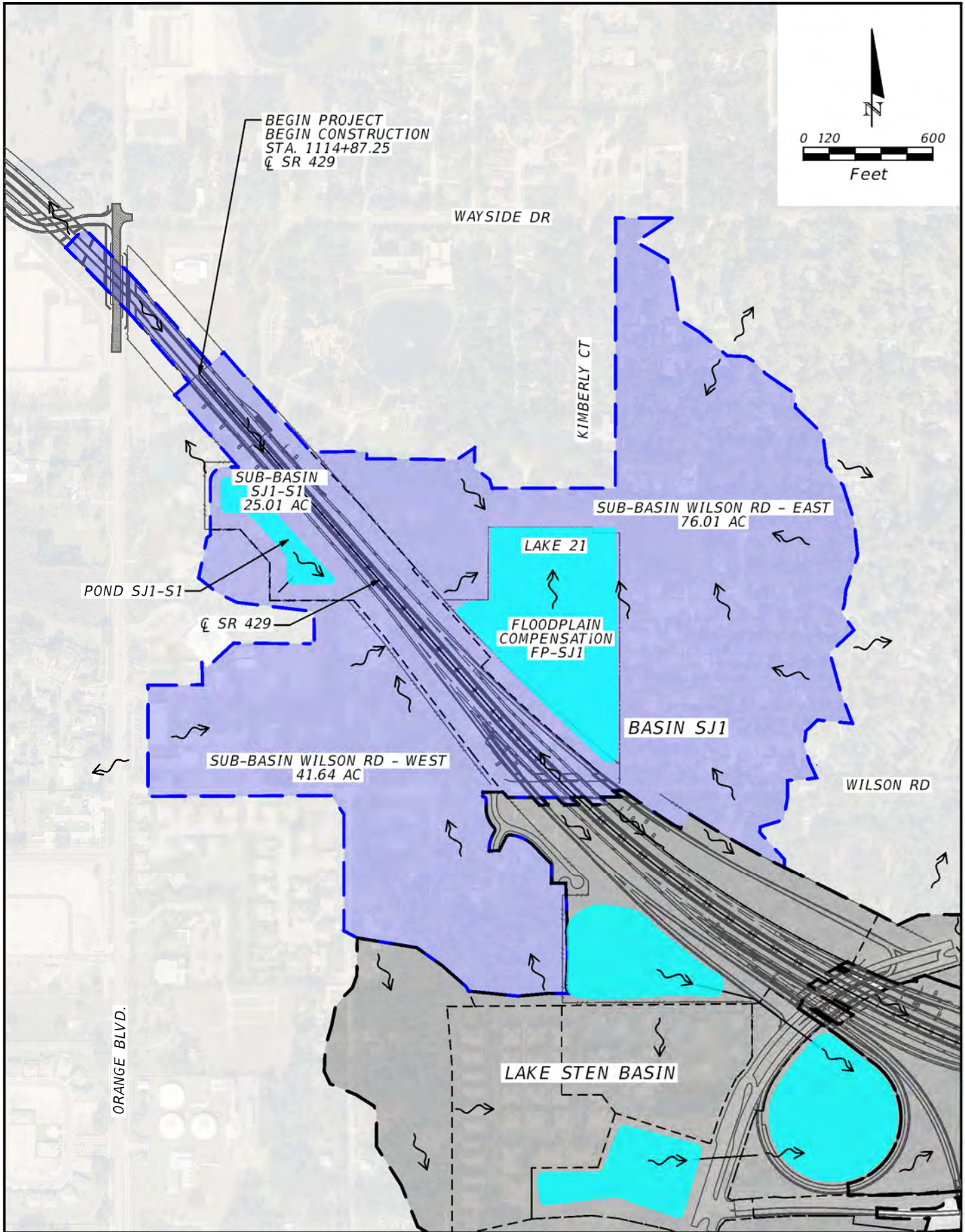


**LEGEND:**

	BASIN SJ1-S1
	LAKE STEN BASIN
	LOCH LEHMAN BASIN
	POND 13 BASIN
	I-4 NORTH BASIN
	BASIN POND 17
	SEMINOLE TOWNE CENTER BASIN
	SR 417 BASIN
	POND C BASIN

REVISIONS		REVISIONS		ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			EXHIBIT NO.  21
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					SR 429	SEMINOLE	240200-4-52-01	

NOTE: REFER TO INDIVIDUAL BASIN MAP EXHIBITS FOR ADDITIONAL INFORMATION.

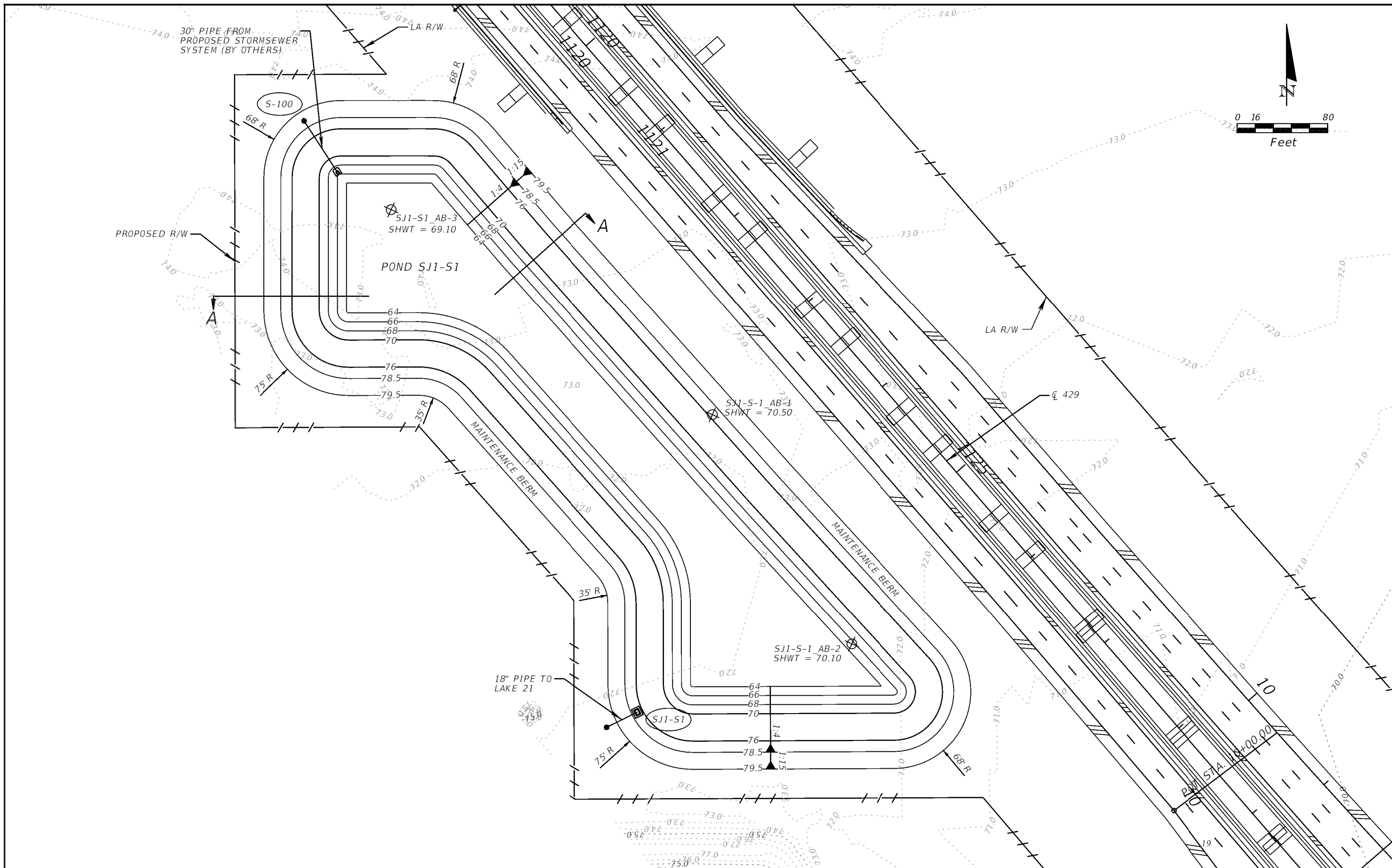


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 (407) 647-7275  
 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
SR 429	SEMINOLE

**BASIN SJ1**  
**PROP. DRAINAGE MAP**

EXHIBIT NO.
22



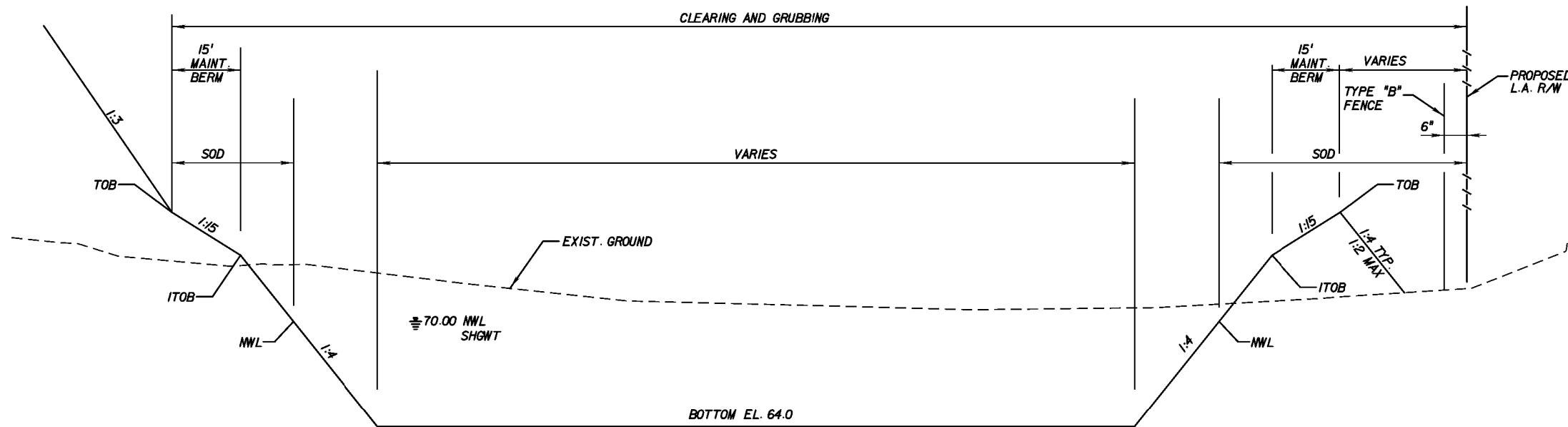
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
 (407) 647-7275  
 CERTIFICATE OF AUTHORIZATION NO.: 24  
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 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**BASIN SJ1  
 POND SJ1-S1  
 DETAILS (1/2)**

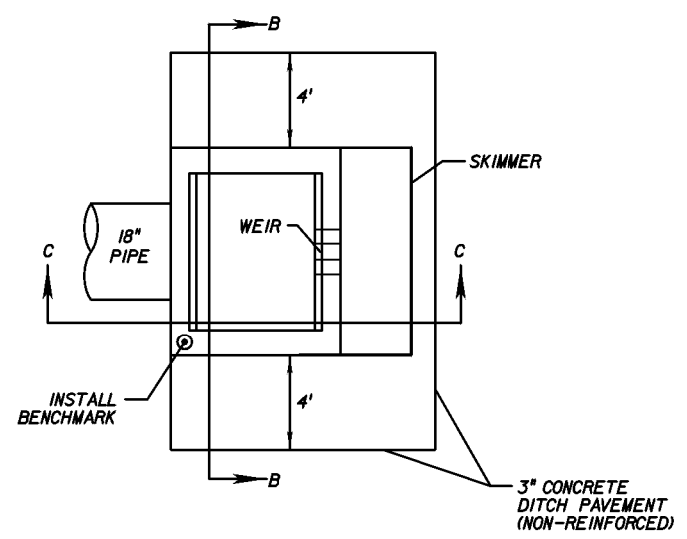
EXHIBIT NO.  
 23



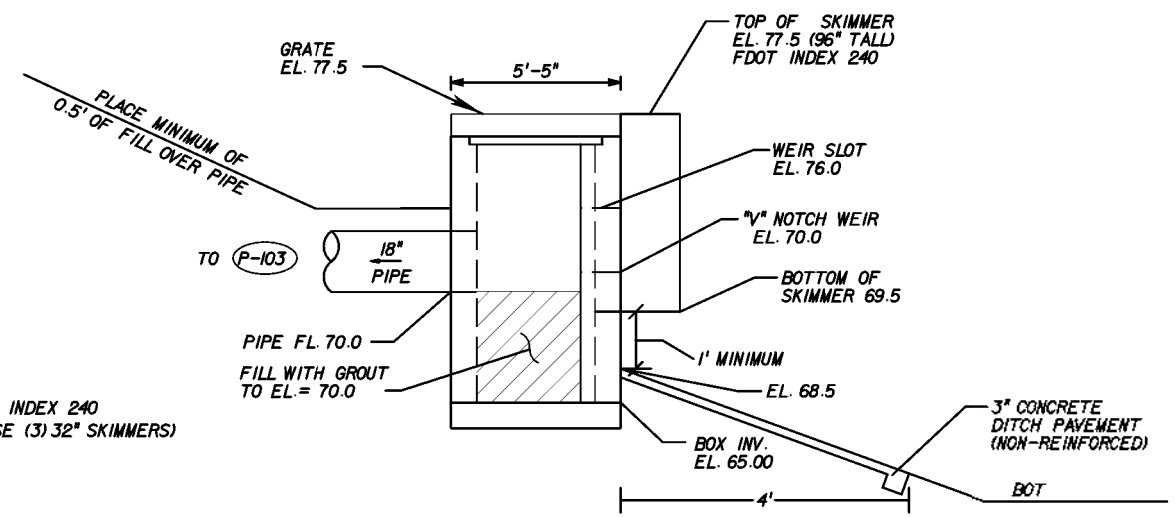
**POND DATA (WFT POND)**

TOP OF BERM (TOB)	= 79.50
INSIDE TOP OF BERM (ITOB)	= 78.50
DESIGN HIGH WATER 100 YEAR/240 HOUR (DHW100/240)	= 77.42
DESIGN HIGH WATER 25 YEAR/96 HOUR (DHW25/96)	= 76.26
NORMAL WATER LEVEL (NWL)	= 70.00
SEASONAL HIGH GROUNDWATER TABLE (SHGWT)	= 70.00

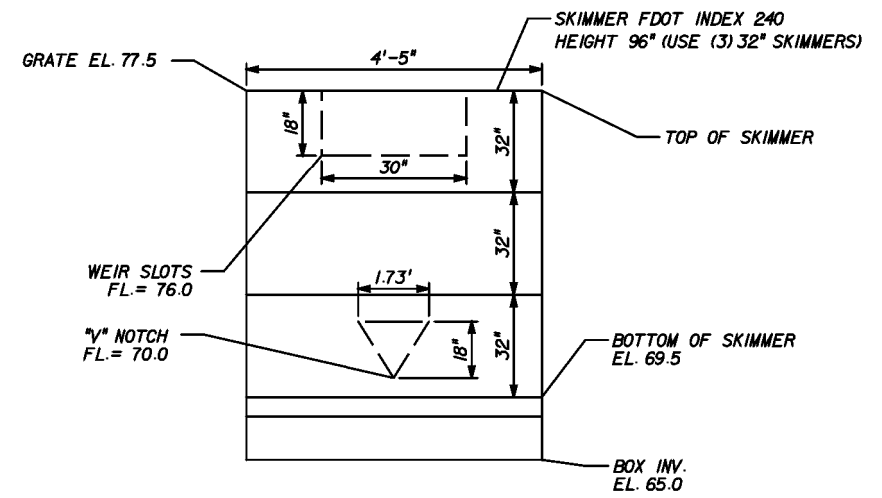
**SECTION "AA"**  
N.T.S.



**PLAN VIEW**  
CONTROL STRUCTURE SJI-S1  
D.B.I. TYPE D MODIFIED  
N.T.S.



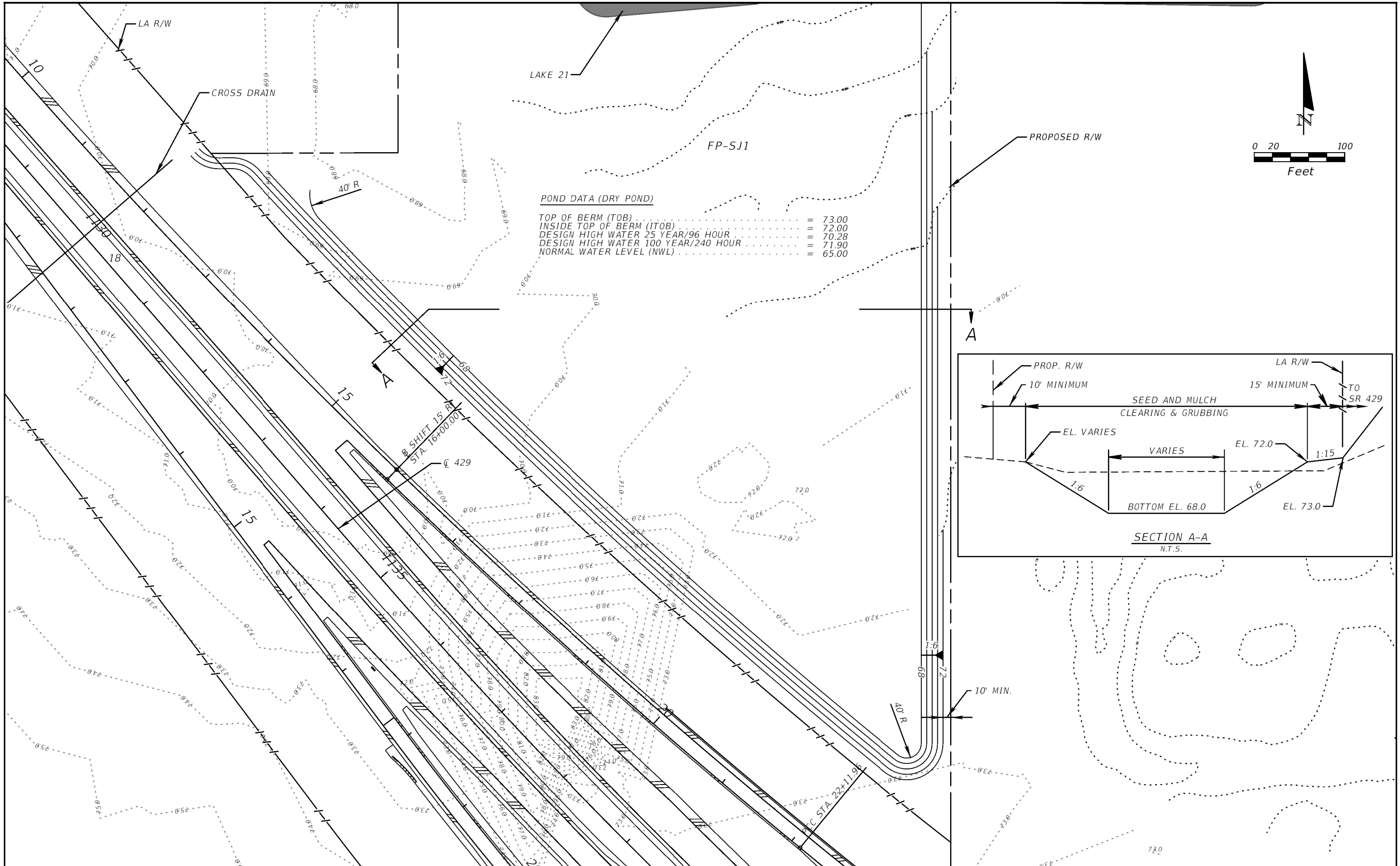
**SECTION "CC" of SJI-S1**  
N.T.S.



**SECTION "BB" of SJI-S1**  
N.T.S.

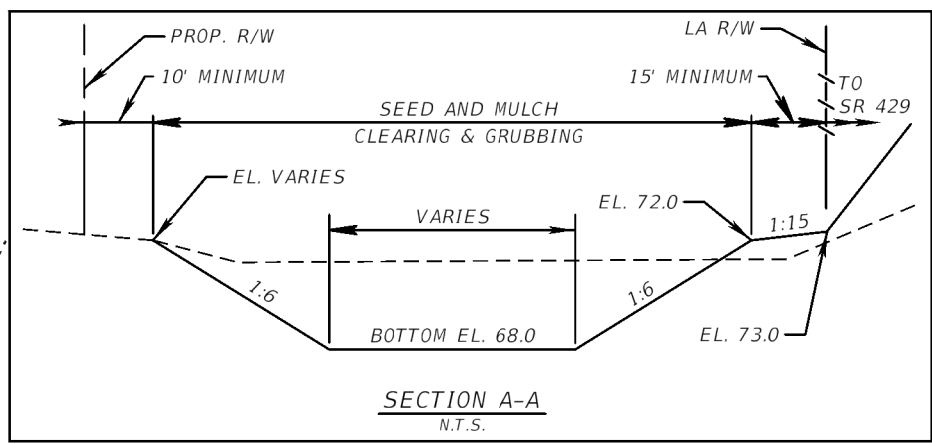
**NOTES :**  
1. THE SKIMMER AND THE GROUT ARE INCLUDED IN THE COST OF THE INLET.

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>BASIN SJI POND SJI-S1 DETAILS (2/2)</b>	EXHIBIT NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						SR 429	SEMINOLE		240200-4-52-01



**POND DATA (DRY POND)**

TOP OF BERM (TOB)	=	73.00
INSIDE TOP OF BERM (ITOB)	=	72.00
DESIGN HIGH WATER 25 YEAR/96 HOUR	=	70.28
DESIGN HIGH WATER 100 YEAR/240 HOUR	=	71.90
NORMAL WATER LEVEL (NWL)	=	65.00



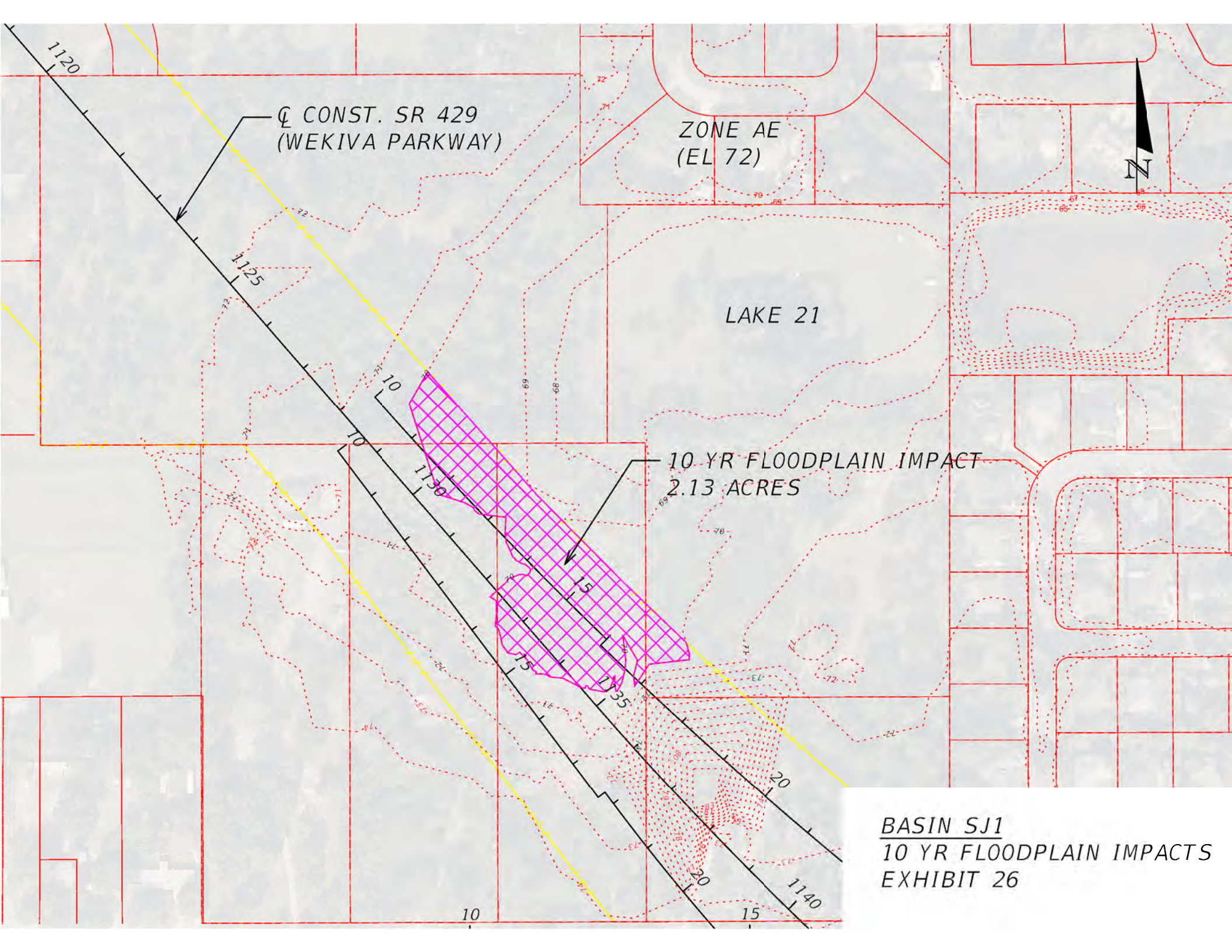
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
 (407) 647-7275  
 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**BASIN SJ1  
 POND FP-SJ1  
 DETAILS**

EXHIBIT NO.  
 25



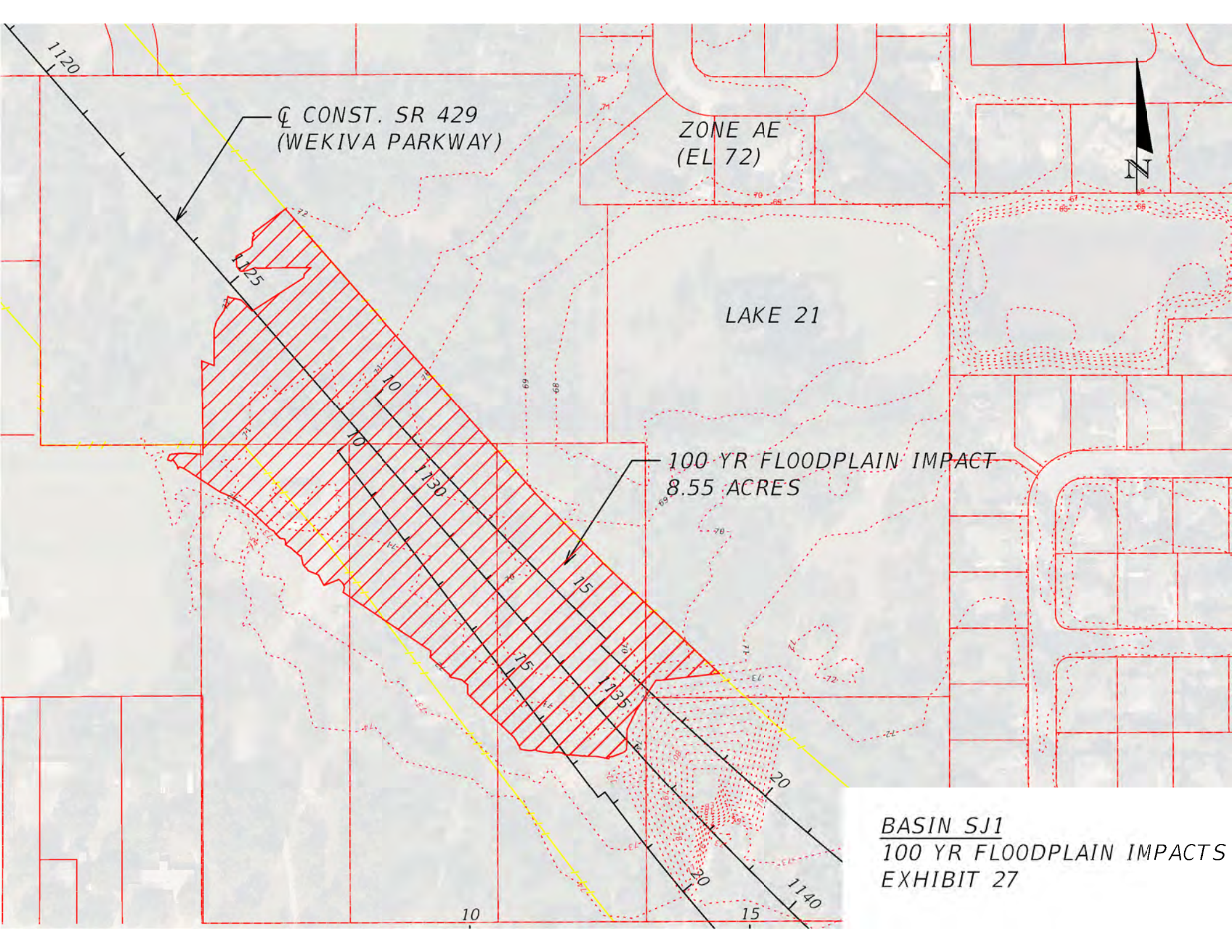
☒ CONST. SR 429  
(WEKIVA PARKWAY)

ZONE AE  
(EL 72)

LAKE 21

10 YR FLOODPLAIN IMPACT  
2.13 ACRES

BASIN SJ1  
10 YR FLOODPLAIN IMPACTS  
EXHIBIT 26



☒ CONST. SR 429  
(WEKIVA PARKWAY)

ZONE AE  
(EL 72)



LAKE 21

100 YR FLOODPLAIN IMPACT  
8.55 ACRES

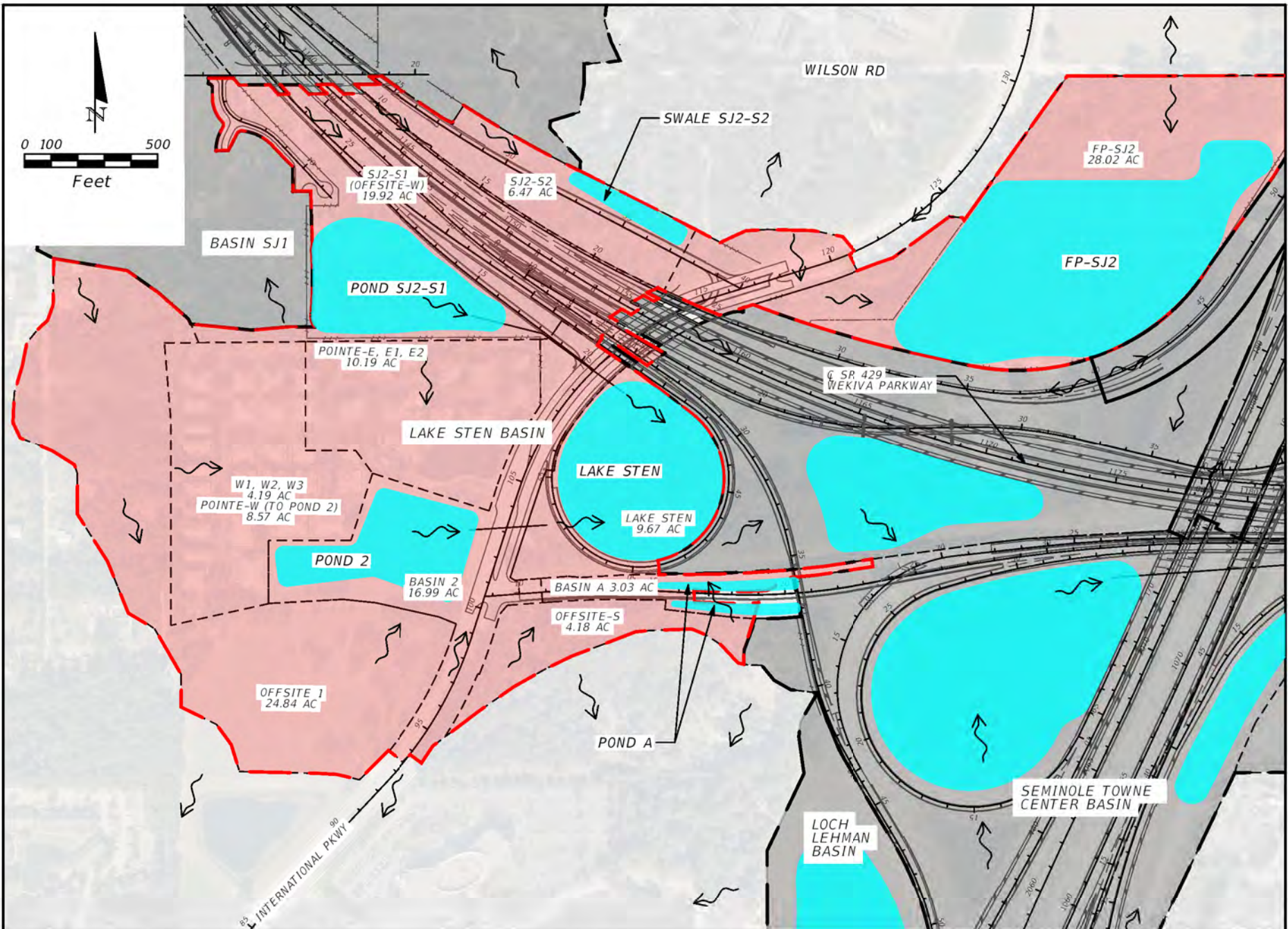
BASIN SJ1  
100 YR FLOODPLAIN IMPACTS  
EXHIBIT 27

10

15

1140



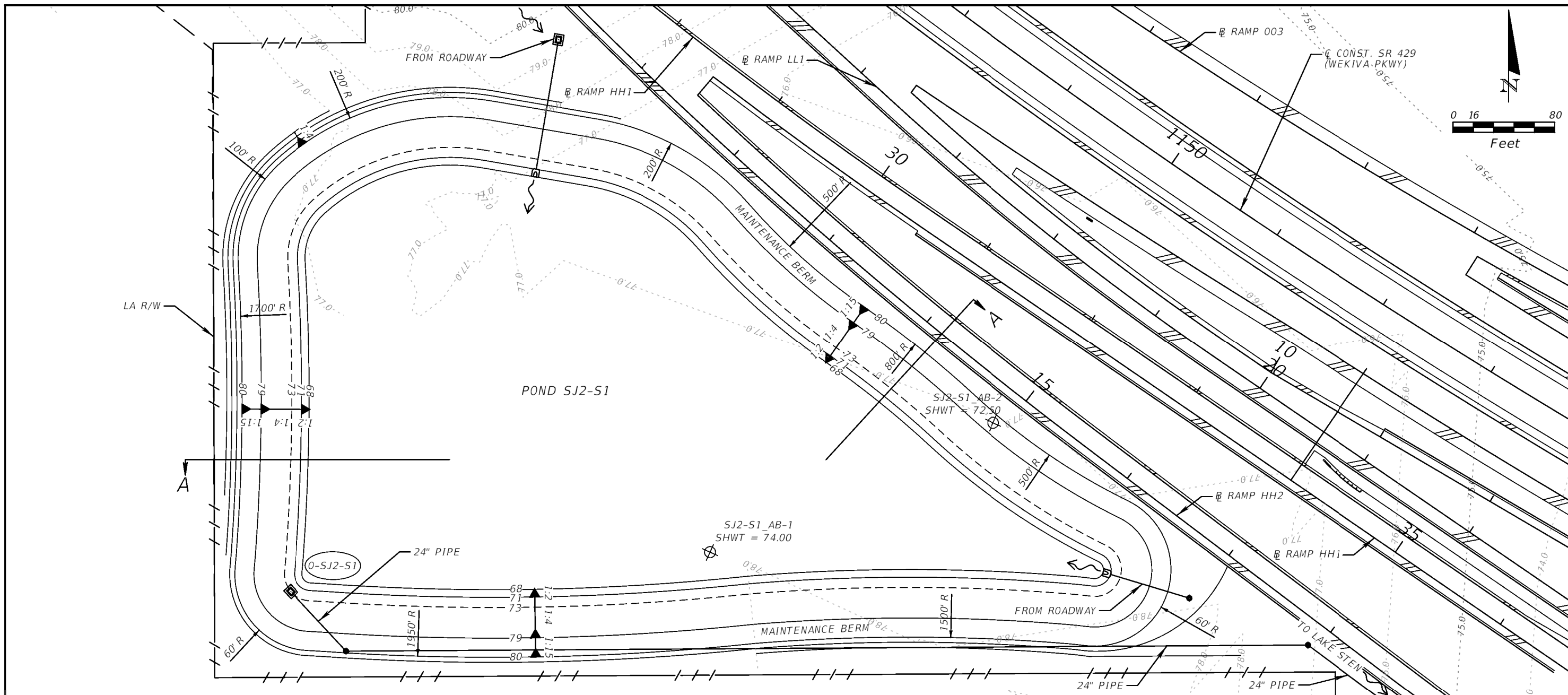


ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
 (407) 647-7275  
 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

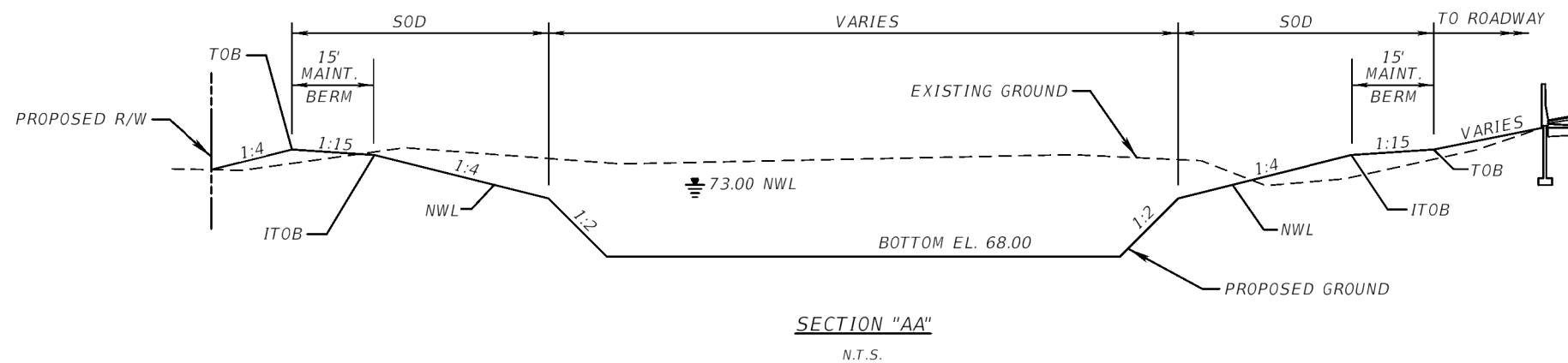
**LAKE STEN BASIN  
 PROP. DRAINAGE MAP**

EXHIBIT NO.
28



**POND DATA (WET POND)**

TOP OF BERM (TOB)	=	80.00
INSIDE TOP OF BERM (ITOB)	=	79.00
DESIGN HIGH WATER 25 YEAR/96 HOUR	=	76.14
DESIGN HIGH WATER 100 YEAR/240 HOUR	=	77.88
NORMAL WATER LEVEL (NWL)	=	73.00



**SECTION "AA"**  
N.T.S.

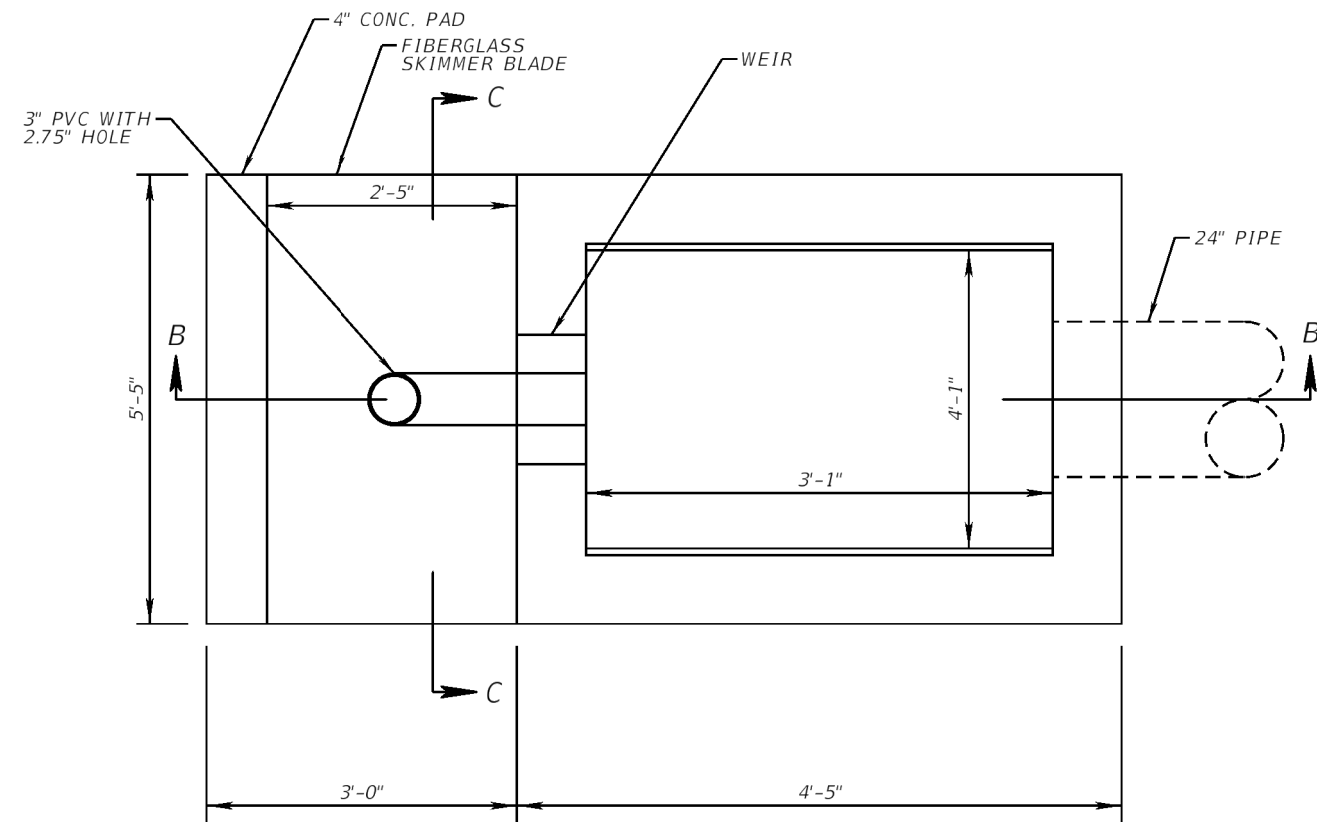
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
482 S. KELLER ROAD  
ORLANDO, FL 32810  
(407) 647-7275  
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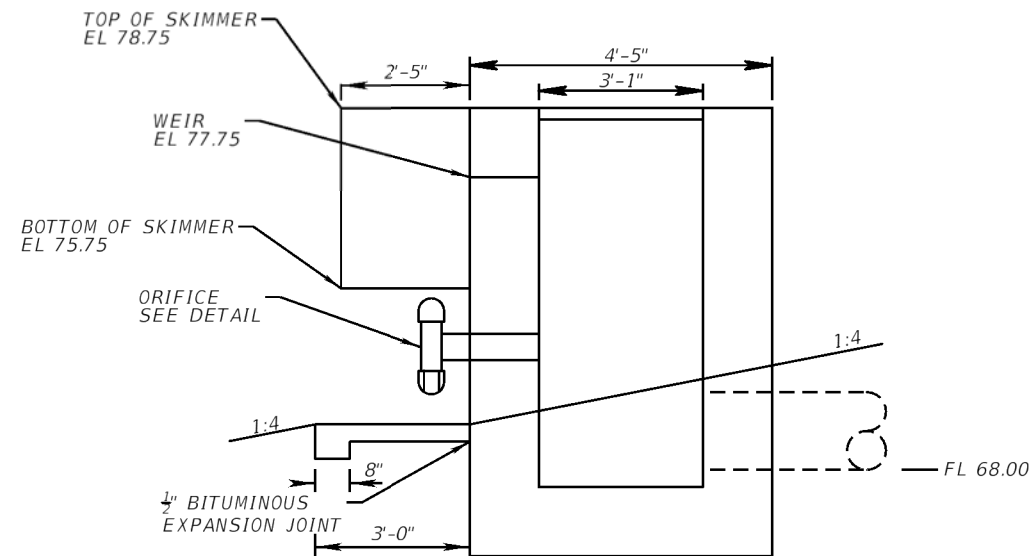
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**LAKE STEN BASIN  
POND SJ2-S1  
DETAILS (1/2)**

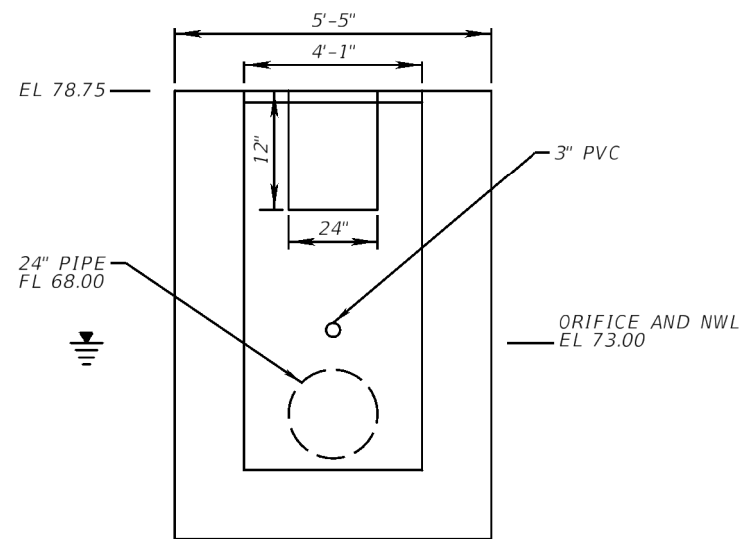
EXHIBIT NO.
29



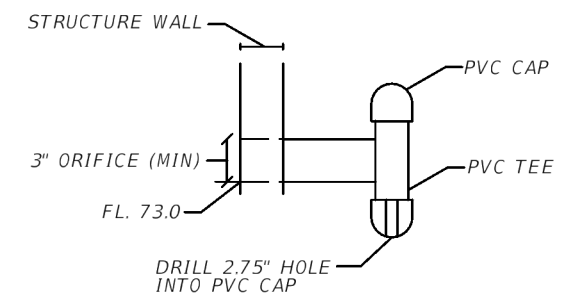
PLAN VIEW  
CONTROL STRUCTURE  
D.B.I. TYPE D MODIFIED  
N.T.S.



SECTION B-B  
N.T.S.

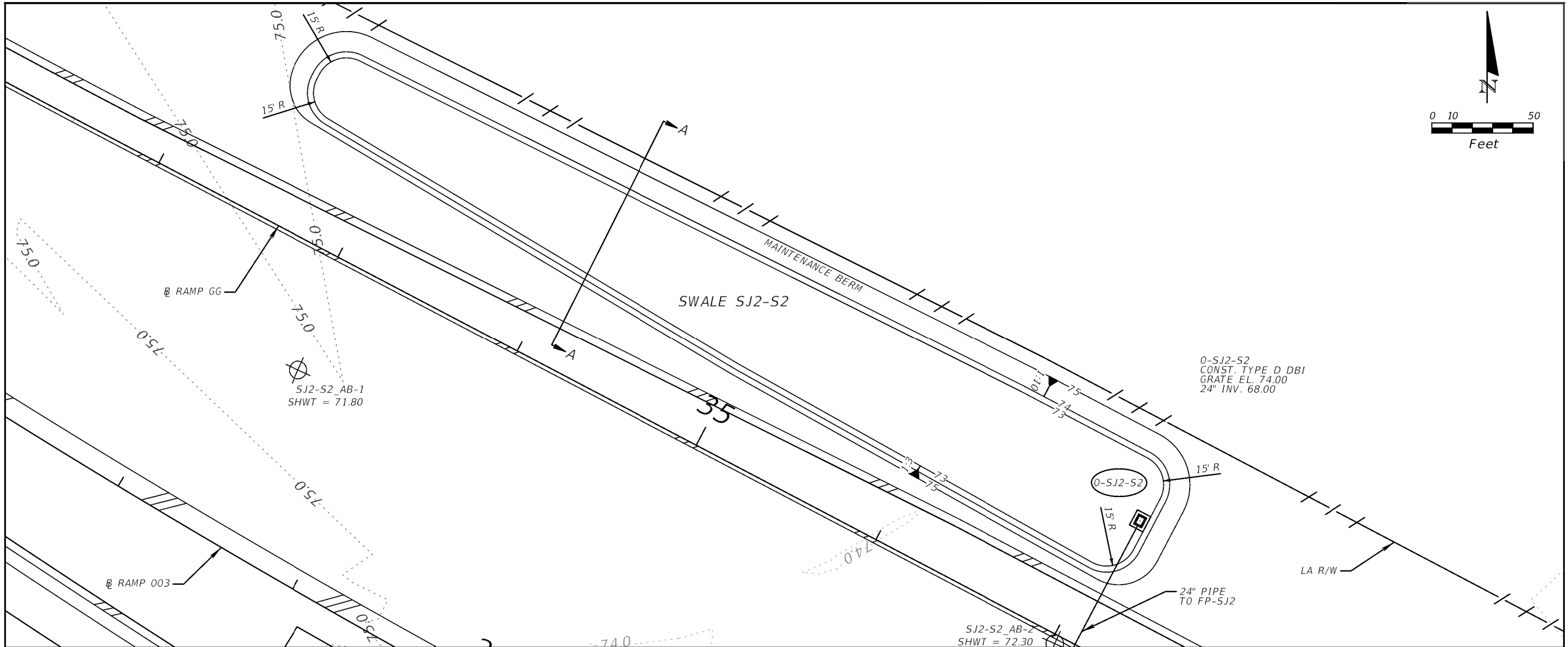
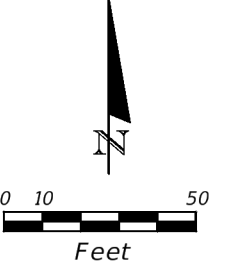


SECTION C-C  
N.T.S.



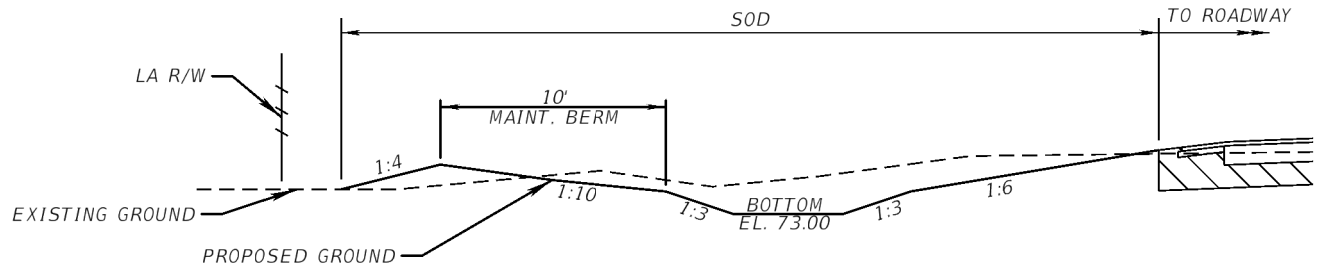
ORIFICE DETAIL  
N.T.S.

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>LAKE STEN BASIN POND SJ2-S1 DETAILS (2/2)</b>	EXHIBIT NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						SR 429	SEMINOLE		240200-4-52-01



**POND DATA (RETENTION SWALE)**

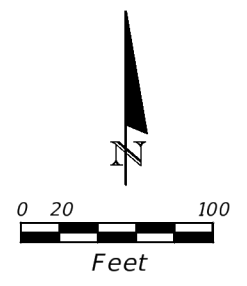
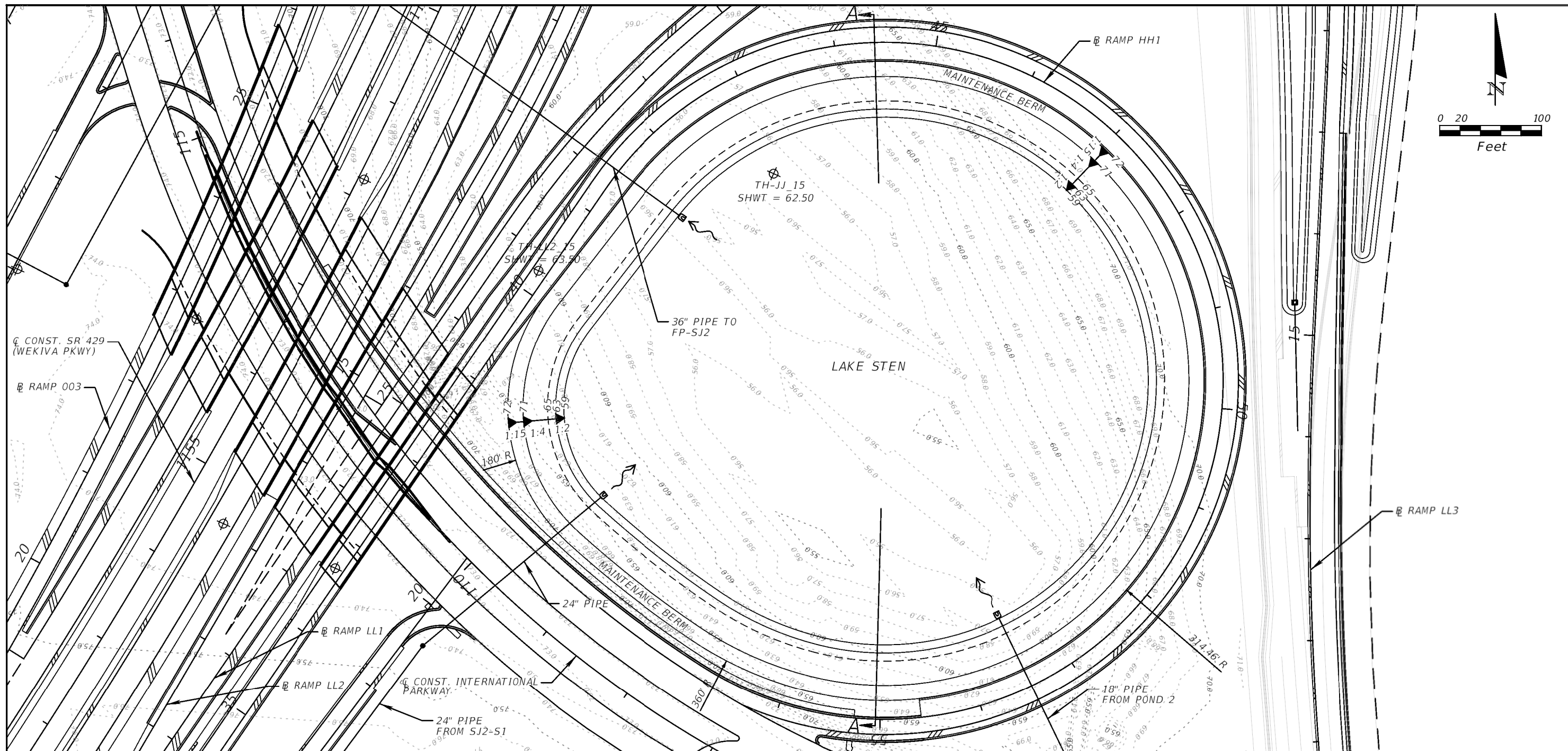
TOP OF BERM (TOB)	= 75.00
INSIDE TOP OF BERM (ITOB)	= 74.00
DESIGN HIGH WATER 25 YEAR/96 HOUR	= 74.31
DESIGN HIGH WATER 100 YEAR/240 HOUR	= 74.17



**SECTION "AA"**  
N.T.S.

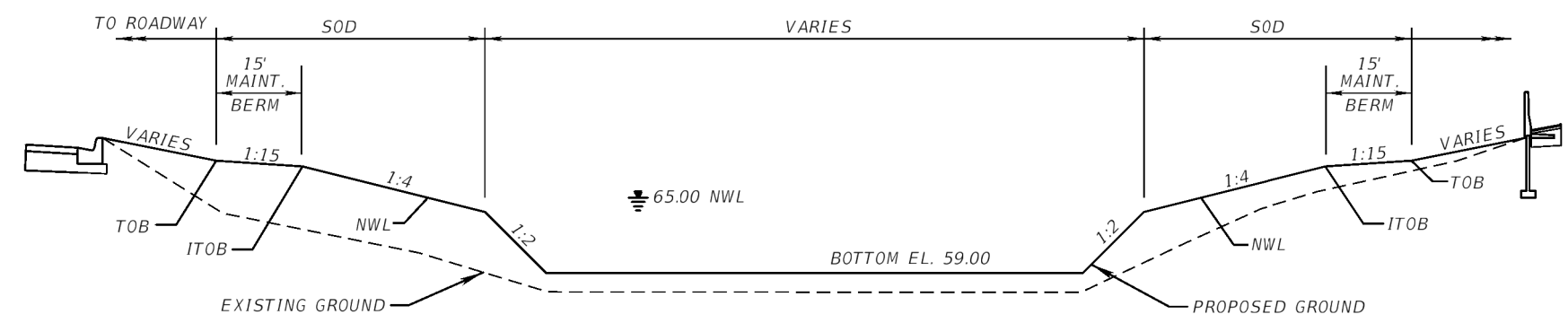
REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>LAKE STEN BASIN</b> <b>SWALE SJ2-S2</b> <b>DETAILS</b>	EXHIBIT NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		31
					SR 429	SEMINOLE	240200-4-52-01		





**POND DATA (WET POND)**

TOP OF BERM (TOB)	=	72.00
INSIDE TOP OF BERM (ITOB)	=	71.00
DESIGN HIGH WATER 25 YEAR/96 HOUR	=	66.77
DESIGN HIGH WATER 100 YEAR/240 HOUR	=	69.95
NORMAL WATER LEVEL (NWL)	=	65.00



**SECTION "AA"**  
N.T.S.

REVISIONS	
DATE	DESCRIPTION

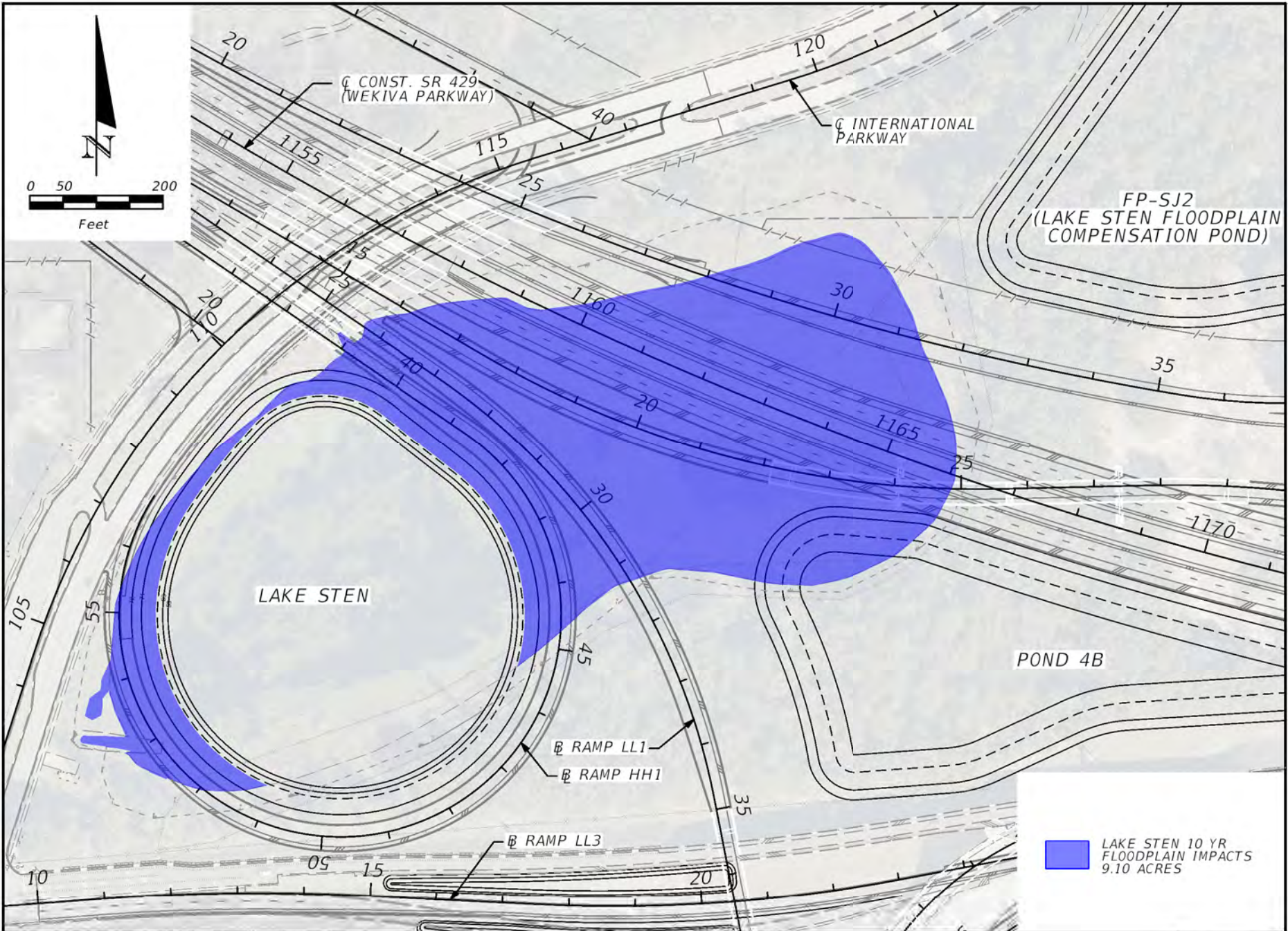
ATKINS NORTH AMERICA, INC.  
482 S. KELLER ROAD  
ORLANDO, FL 32810  
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CERTIFICATE OF AUTHORIZATION NO.: 24  
SCOTT P. WESSON P.E.  
P.E. NO.: 52801


STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**LAKE STEN BASIN  
LAKE STEN  
DETAILS**

EXHIBIT NO.  
**33**

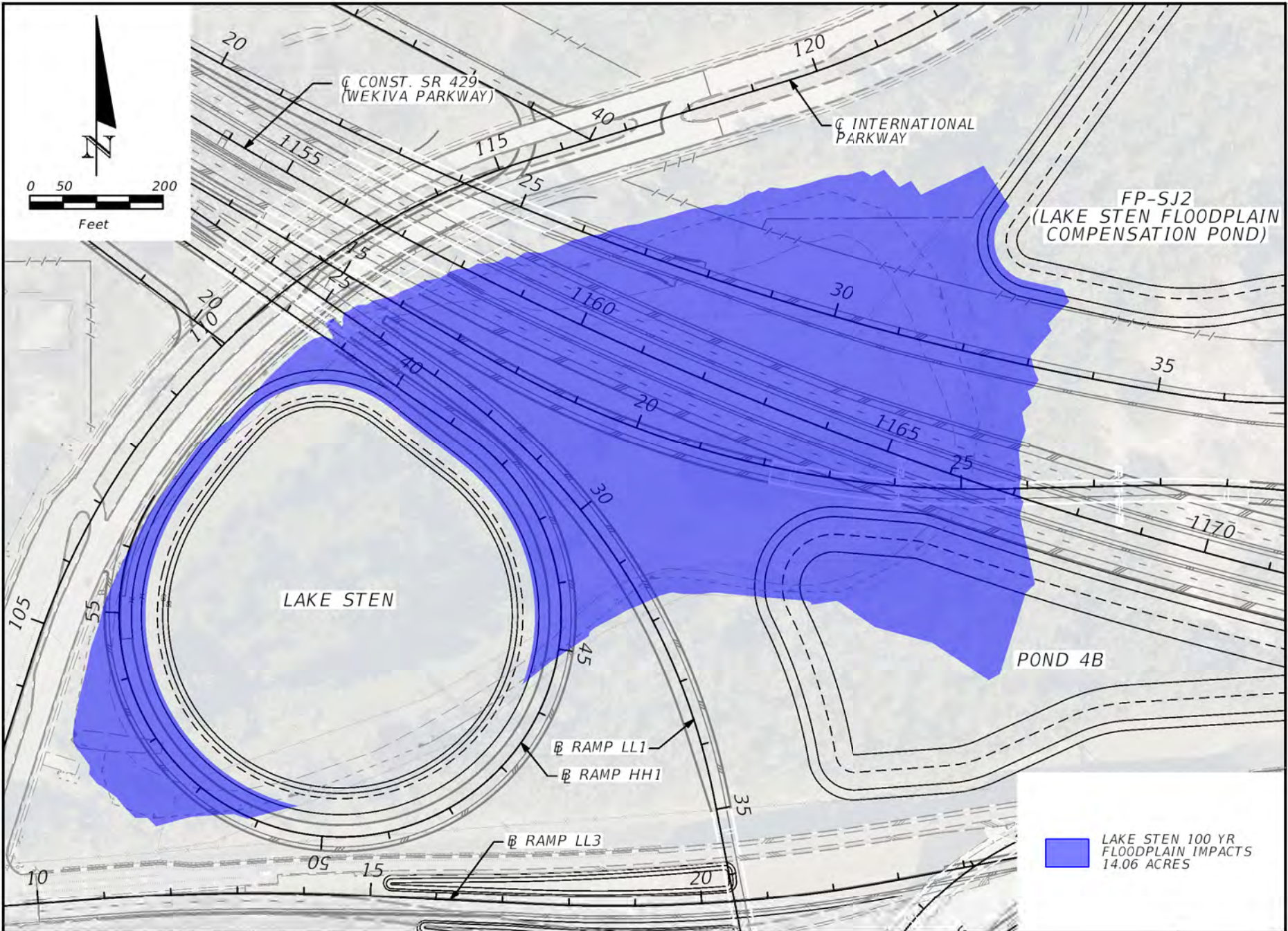




 LAKE STEN 10 YR FLOODPLAIN IMPACTS 9.10 ACRES

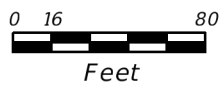
ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>LAKE STEN 10YR          FLOODPLAIN IMPACTS</b>	EXHIBIT NO.  <b>35</b>
	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
	SR 429	SEMINOLE	240200-4-52-01		





LAKE STEN 100 YR  
 FLOODPLAIN IMPACTS  
 14.06 ACRES

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	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		36
	SR 429	SEMINOLE	240200-4-52-01		



CONST. INTERNATIONAL  
PARKWAY

R/W

R/W

120

POND FP-SJ2

70.00

69.50

R/W

LA R/W

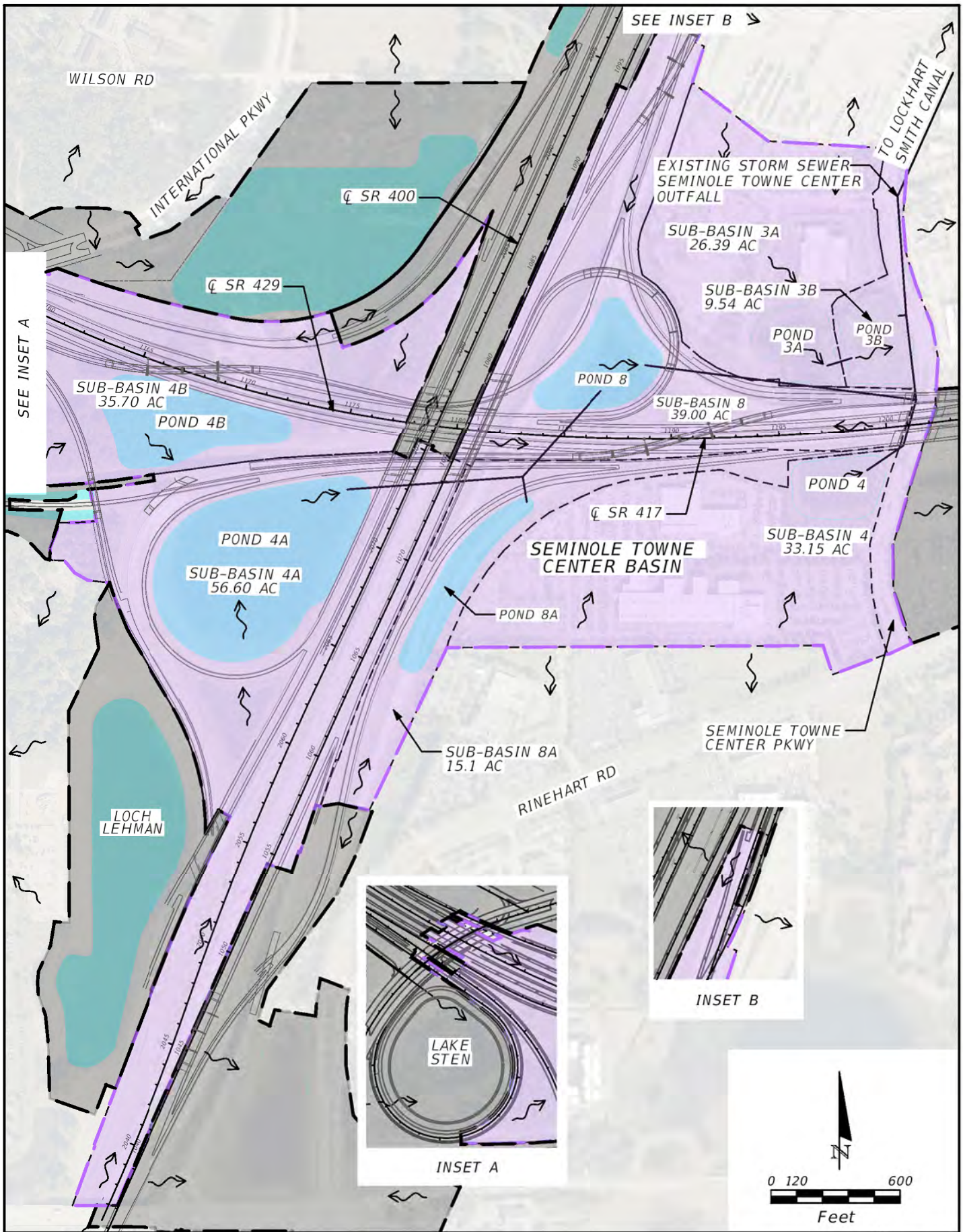
30

RAMP 003

**LEGEND**

- PRE-DEVELOPMENT 100 YR MAX STAGE
- POST-DEVELOPMENT 100 YR MAX STAGE
- ▣ 0.21 AC NEW FLOODPLAIN IMPACTS
- PARCEL

**ADJACENT PARCEL  
FLOODPLAIN IMPACTS  
EXHIBIT NO. 37**

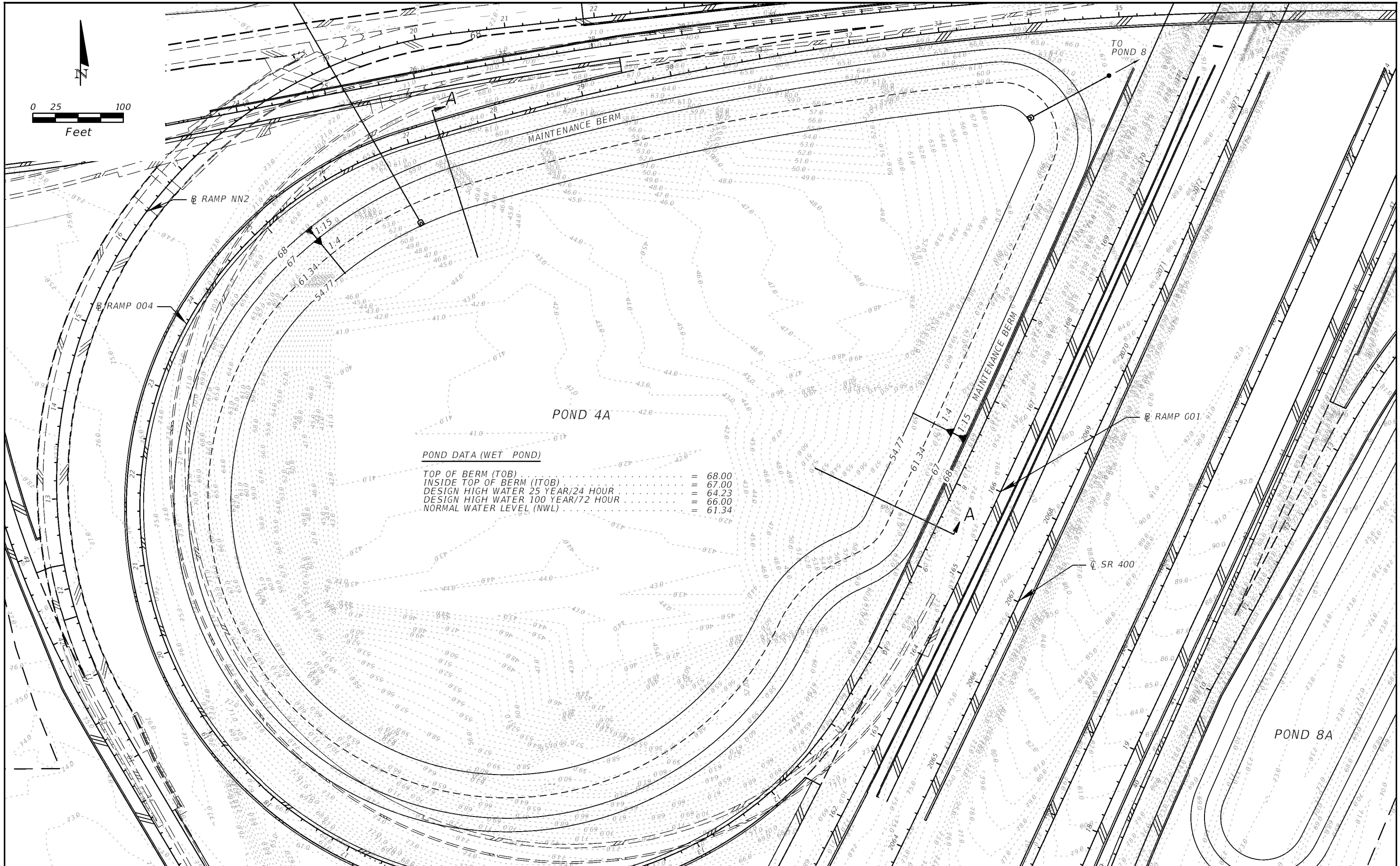


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 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
SR 429	SEMINOLE

**SEMINOLE TOWNE  
 CENTER (STC) BASIN  
 PROP. DRAINAGE MAP**

EXHIBIT  
 NO.  
 38



**POND DATA (WET POND)**

TOP OF BERM (TOB)	68.00
INSIDE TOP OF BERM (ITOB)	67.00
DESIGN HIGH WATER 25 YEAR/24 HOUR	64.23
DESIGN HIGH WATER 100 YEAR/72 HOUR	66.00
NORMAL WATER LEVEL (NWL)	61.34

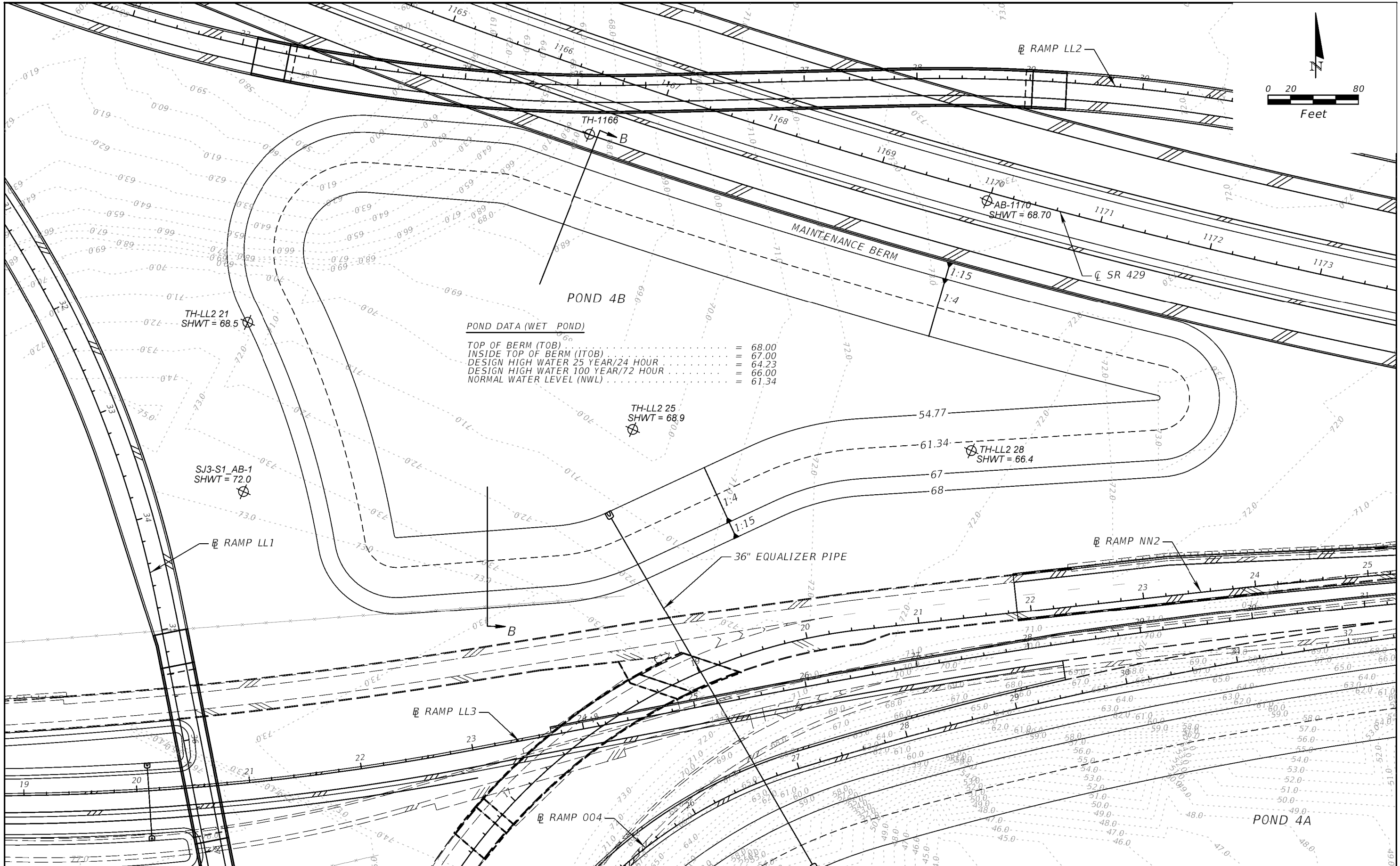
REVISIONS	
DATE	DESCRIPTION

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 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
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 CERTIFICATE OF AUTHORIZATION NO.: 24  
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**STC BASIN  
 POND 4A  
 DETAILS (1/3)**

EXHIBIT NO.  
39



**POND DATA (WET POND)**

TOP OF BERM (TOB)	=	68.00
INSIDE TOP OF BERM (ITOB)	=	67.00
DESIGN HIGH WATER 25 YEAR/24 HOUR	=	64.23
DESIGN HIGH WATER 100 YEAR/72 HOUR	=	66.00
NORMAL WATER LEVEL (NWL)	=	61.34

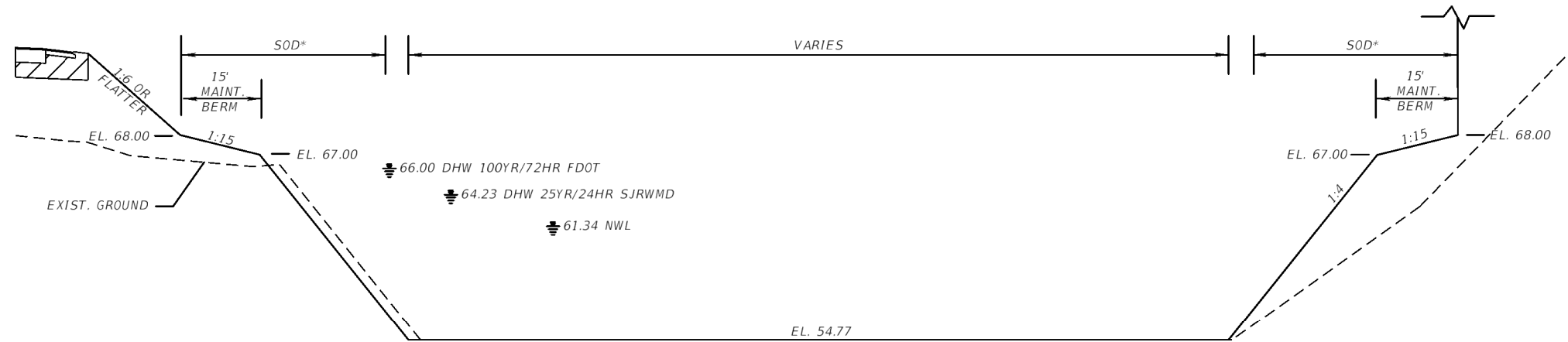
REVISIONS	
DATE	DESCRIPTION

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

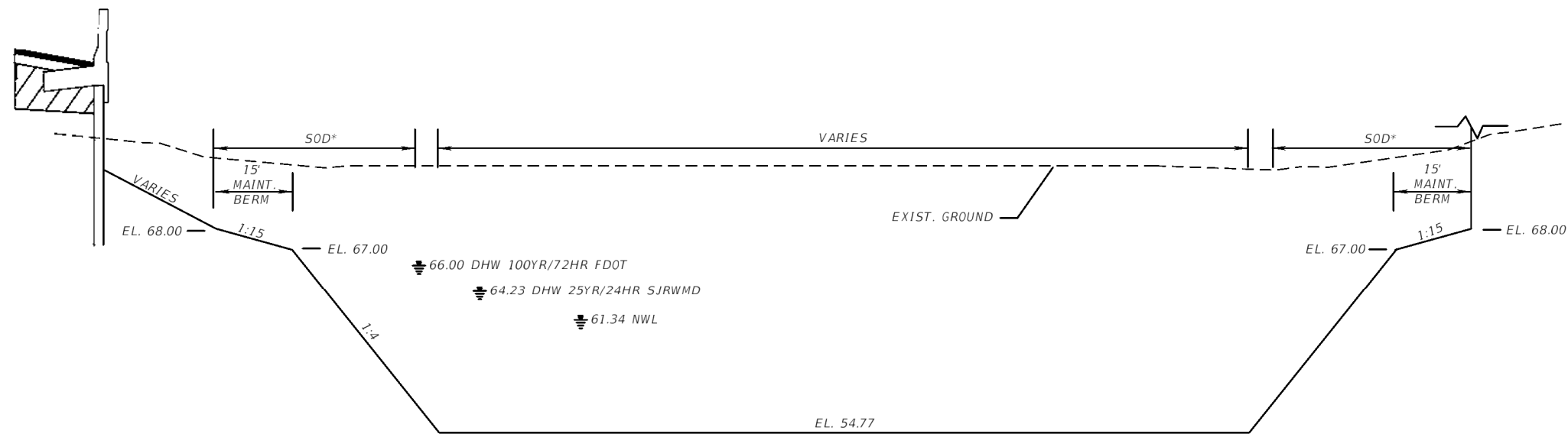
**STC BASIN  
 POND 4B  
 DETAILS (2/3)**

EXHIBIT NO.  
40



POND 4A TYPICAL SECTION A-A

N.T.S.

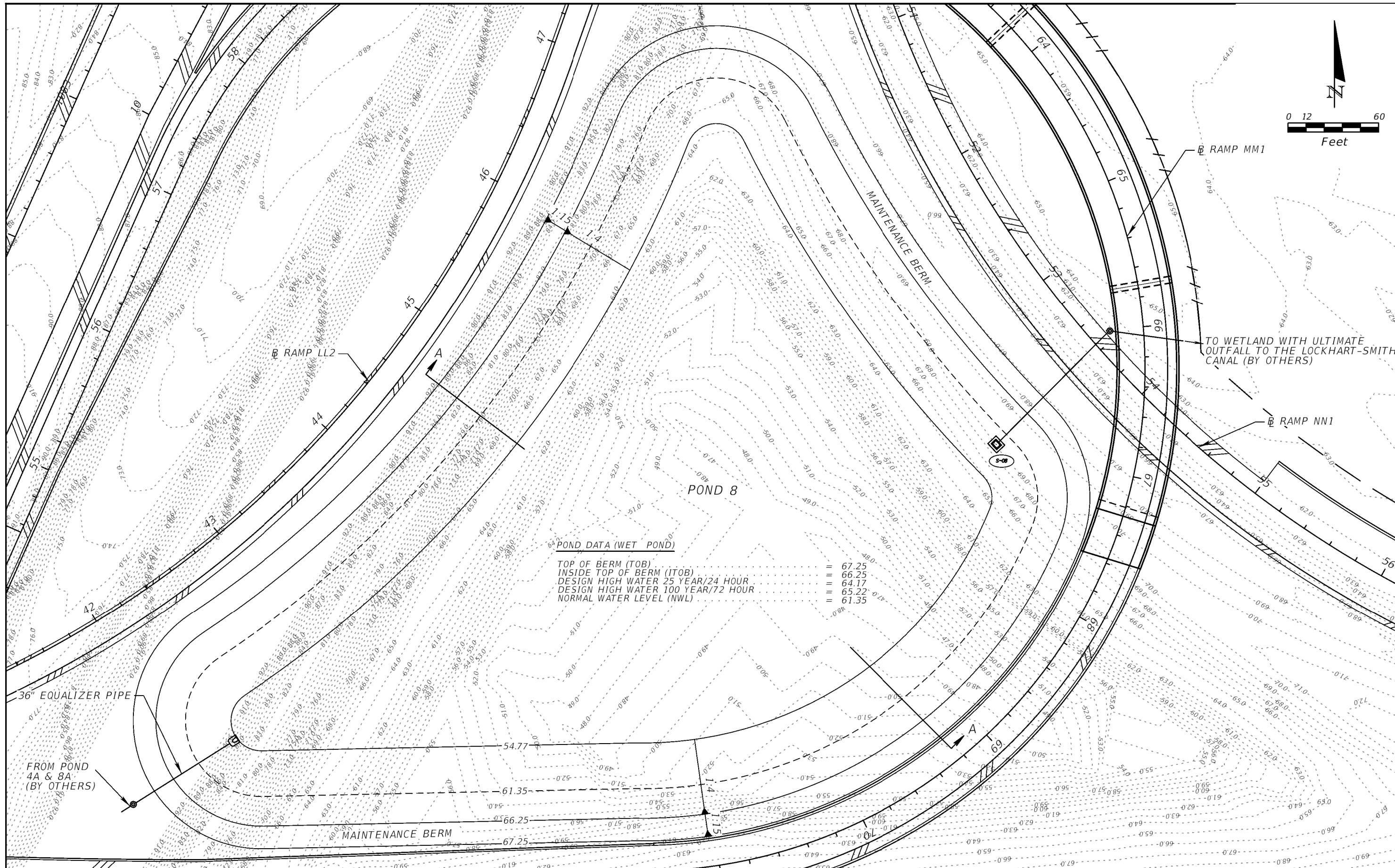


POND 4B TYPICAL SECTION B-B

N.T.S.

\*SOD ALL DISTURBED SLOPES TO 2 FEET BELOW NWL

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>STC BASIN POND 4A/4B DETAILS (3/3)</b>	EXHIBIT NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		41
					SR 429	SEMINOLE	240200-4-52-01		



**POND DATA (WET POND)**

TOP OF BERM (TOB)	67.25
INSIDE TOP OF BERM (ITOB)	66.25
DESIGN HIGH WATER 25 YEAR/24 HOUR	64.17
DESIGN HIGH WATER 100 YEAR/72 HOUR	65.22
NORMAL WATER LEVEL (NWL)	61.35

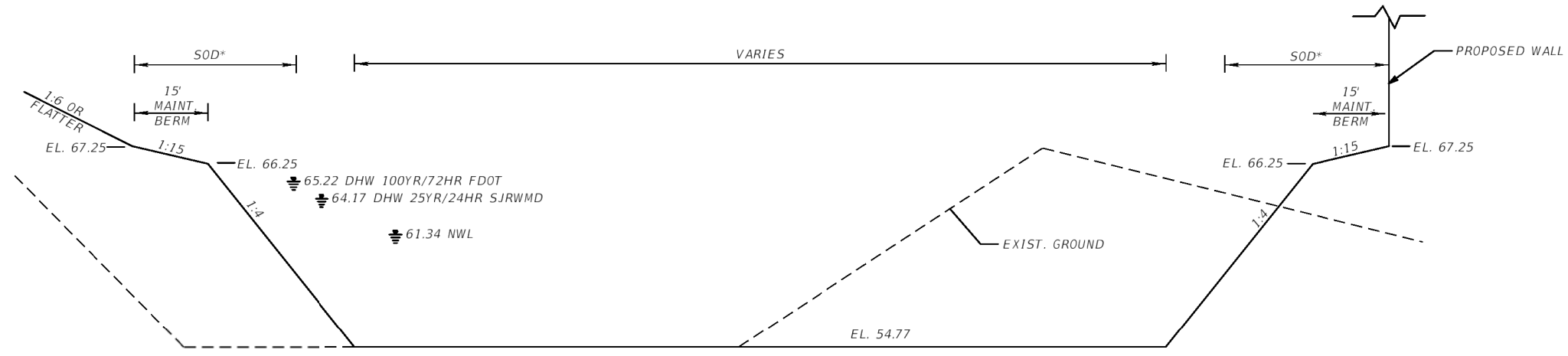
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
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 CERTIFICATE OF AUTHORIZATION NO.: 24  
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

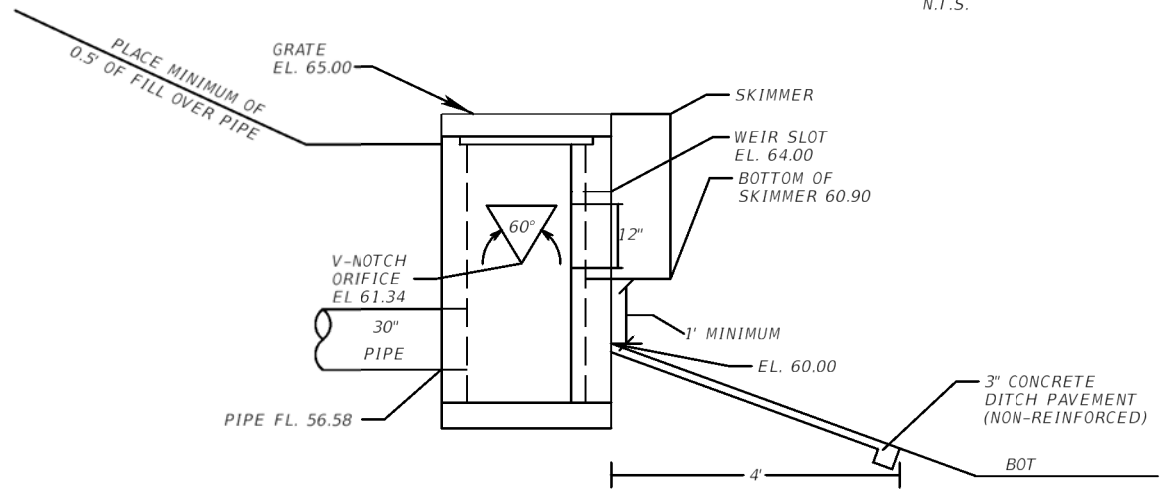
**STC BASIN  
 POND 8  
 DETAILS (1/2)**

EXHIBIT NO.  
 42

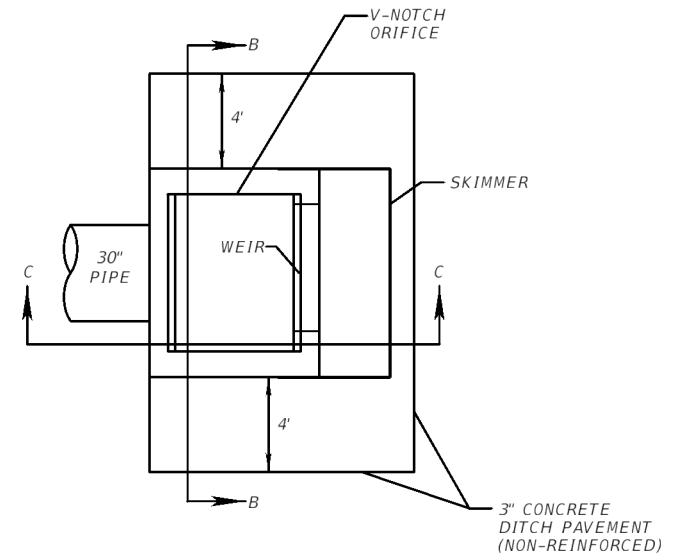


\* SOD ALL DISTURBED AREAS TO 2 FEET BELOW NWL

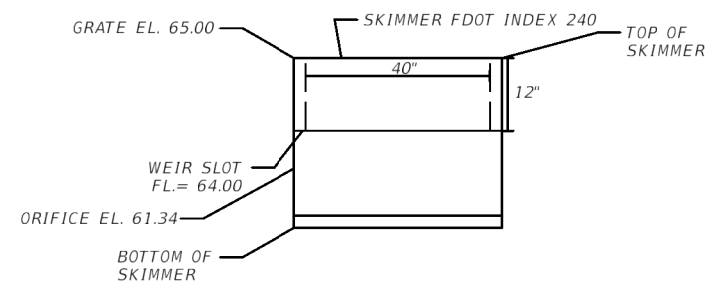
**POND 8 TYPICAL SECTION A-A**  
N.T.S.



**SECTION C-C**  
N.T.S.



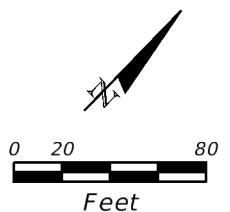
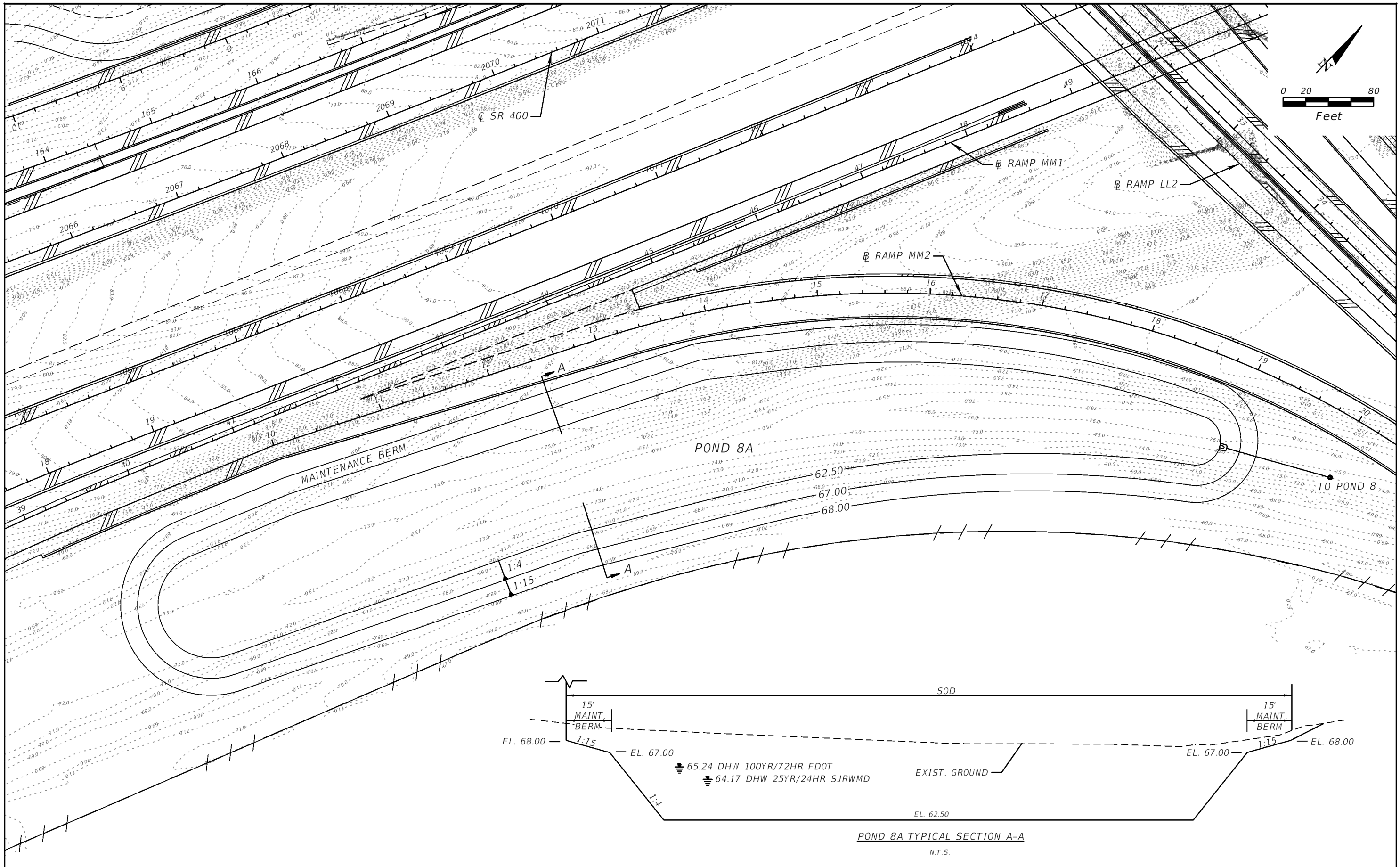
**CONTROL STRUCTURE - D.B.I. TYPE D**  
**PLAN VIEW**  
N.T.S.



**SECTION B-B**  
N.T.S.

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>STC BASIN POND 8 DETAILS (2/2)</b>	EXHIBIT NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		43
					SR 429	SEMINOLE	240200-4-52-01		





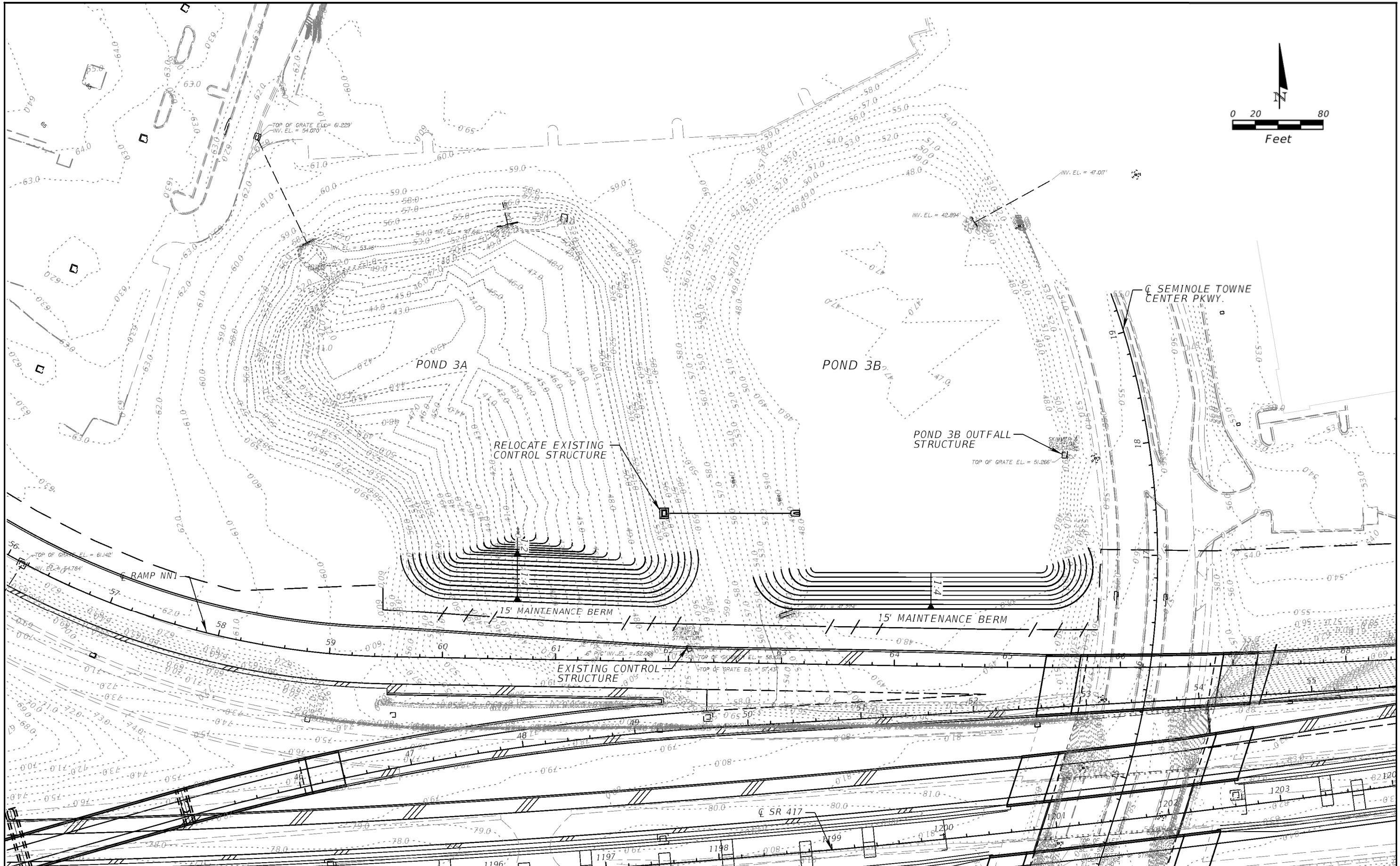
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
482 S. KELLER ROAD  
ORLANDO, FL 32810  
(407) 647-7275  
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**STC BASIN  
POND 8A  
DETAILS**

EXHIBIT NO.  
44



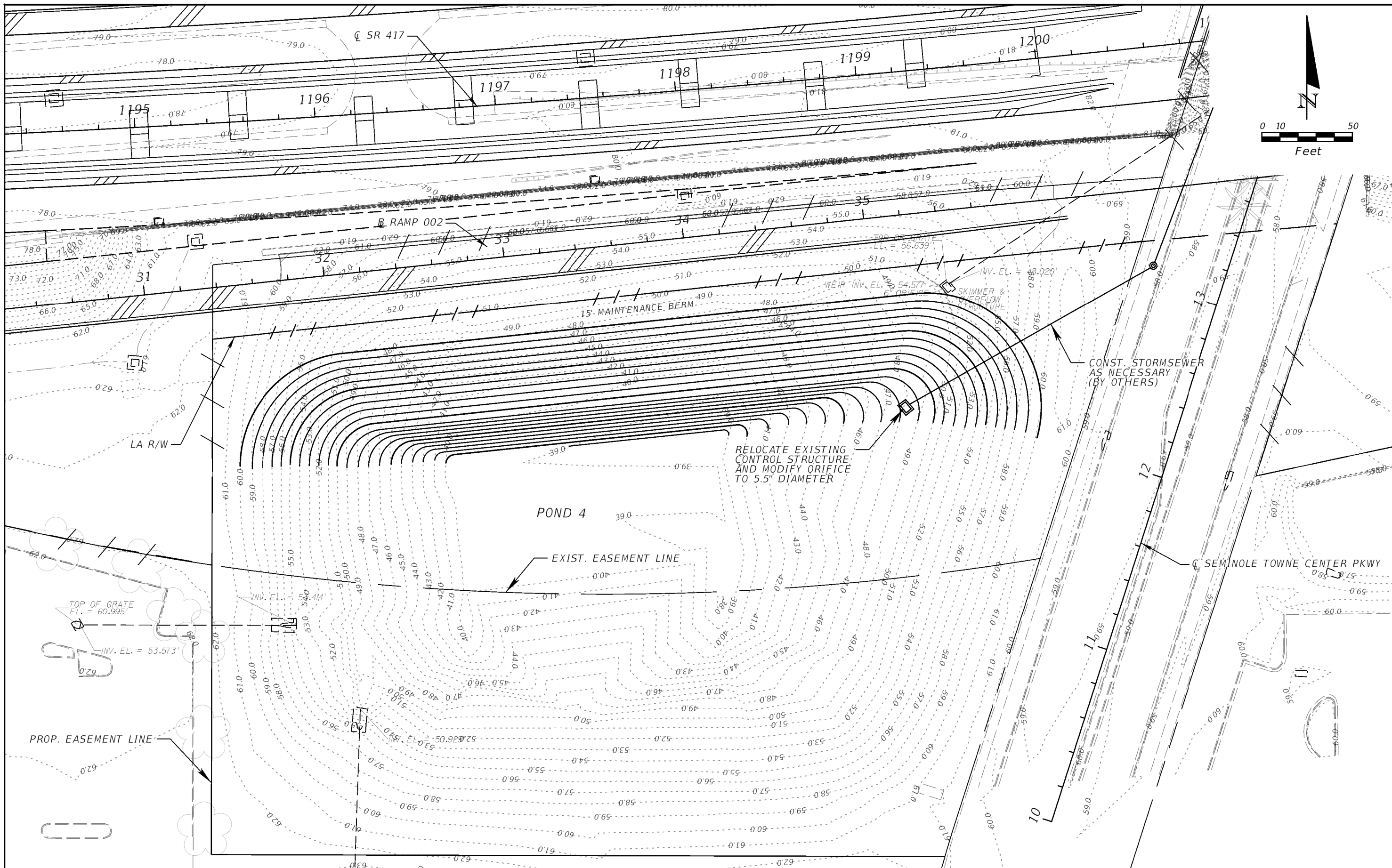
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**STC BASIN  
 POND 3A & 3B  
 DETAILS (1/3)**

EXHIBIT  
 NO.  
 45



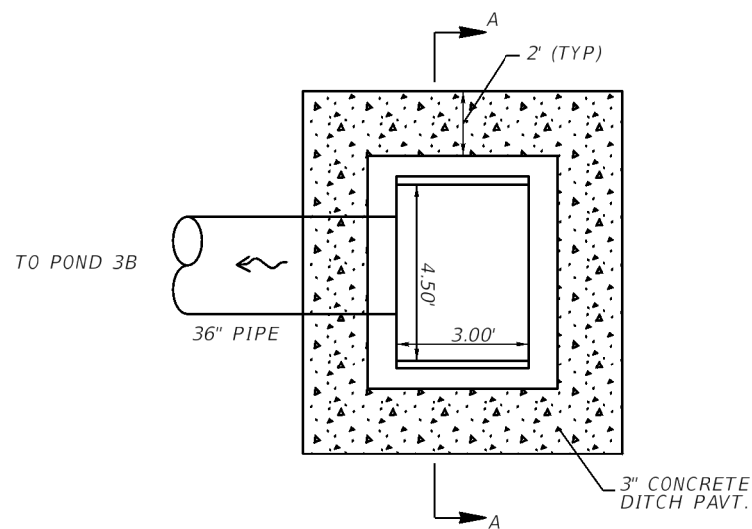
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
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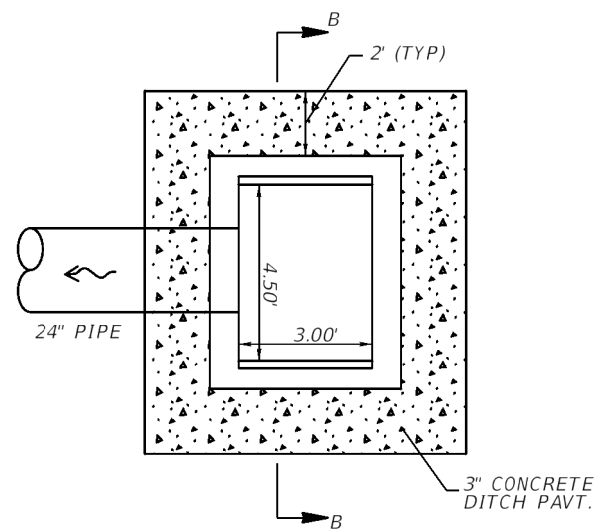
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**STC BASIN  
 POND 4  
 DETAILS (2/3)**

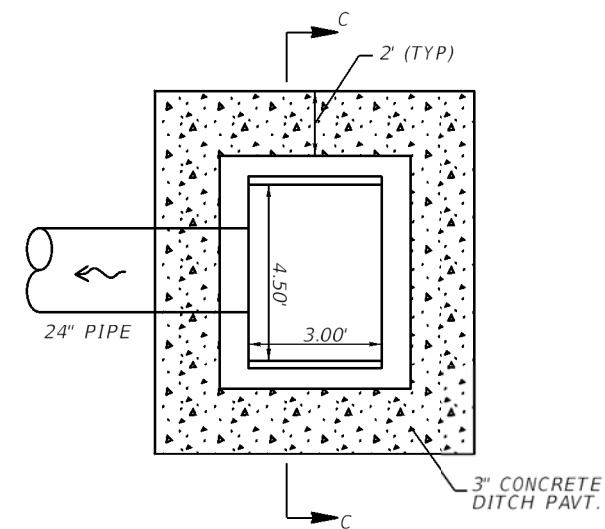
EXHIBIT NO.  
 46



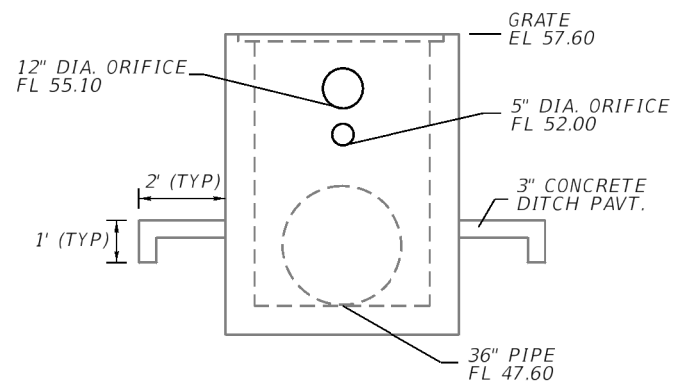
PLAN VIEW  
N.T.S.



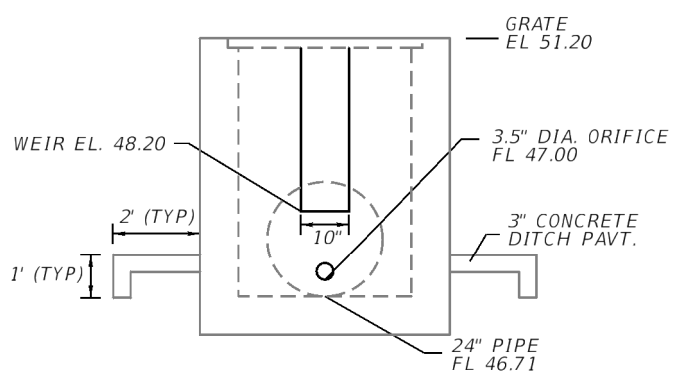
PLAN VIEW  
N.T.S.



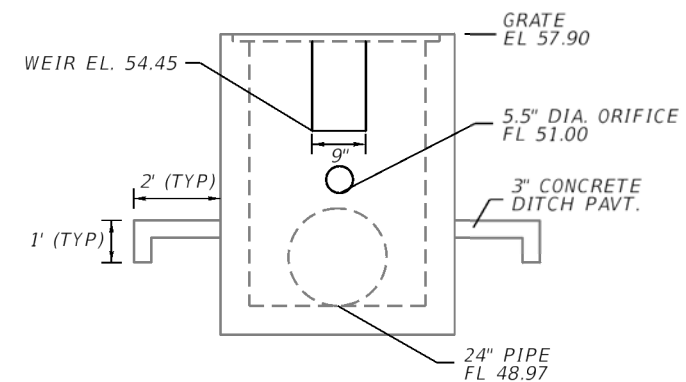
PLAN VIEW  
N.T.S.



SECTION A-A  
N.T.S.



SECTION B-B  
N.T.S.



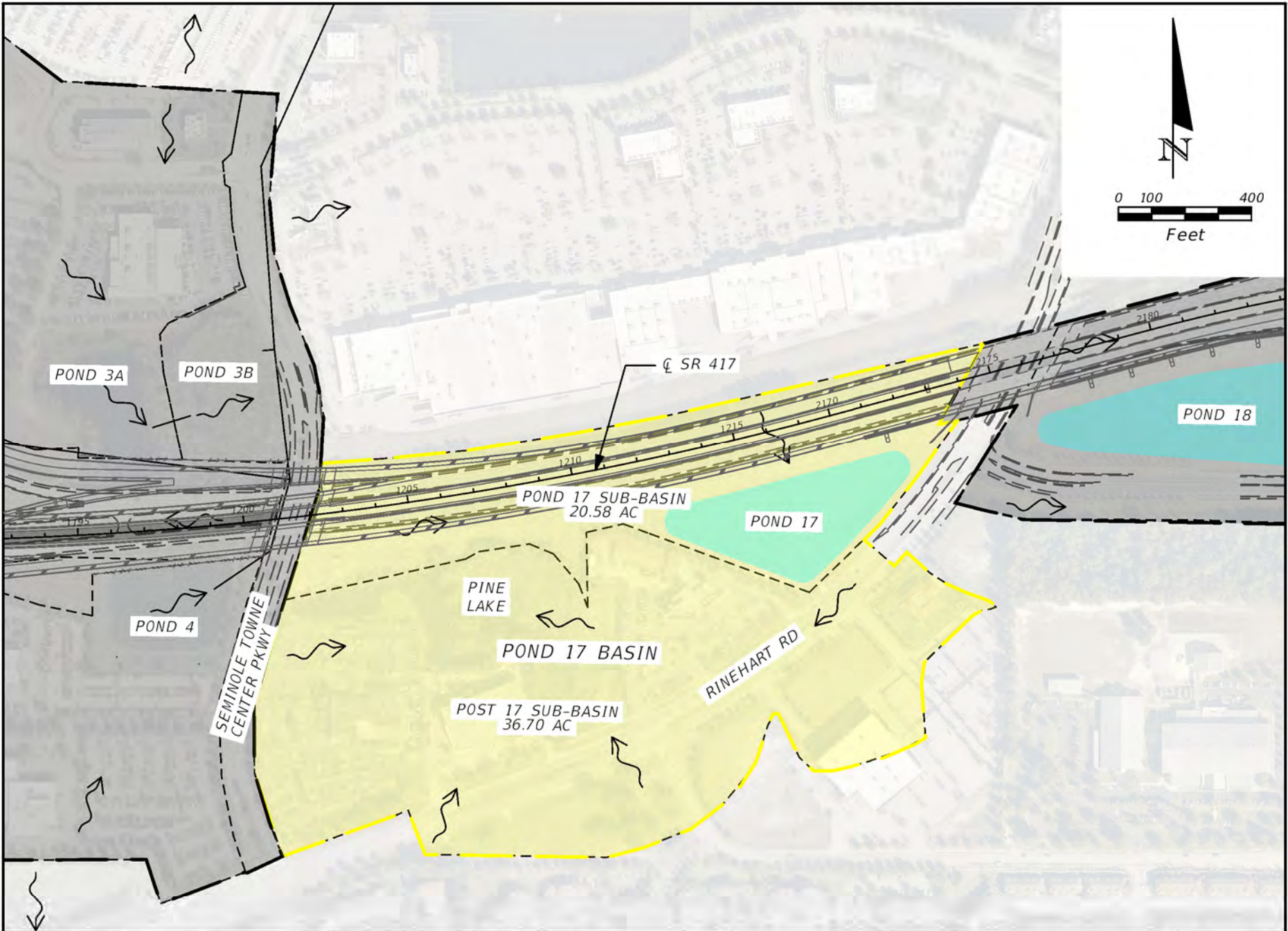
SECTION C-C  
N.T.S.

POND 3A OUTFALL DETAIL  
N.T.S. DBI TYPE E, INDEX 232

POND 3B OUTFALL DETAIL  
N.T.S. DBI TYPE E, INDEX 232

POND 4 OUTFALL DETAIL  
N.T.S. DBI TYPE E, INDEX 232

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>STC BASIN</b> <b>POND 3A, 3B &amp; 4</b> <b>DETAILS (3/3)</b>	EXHIBIT NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		47
					SR 429	SEMINOLE	240200-4-52-01		

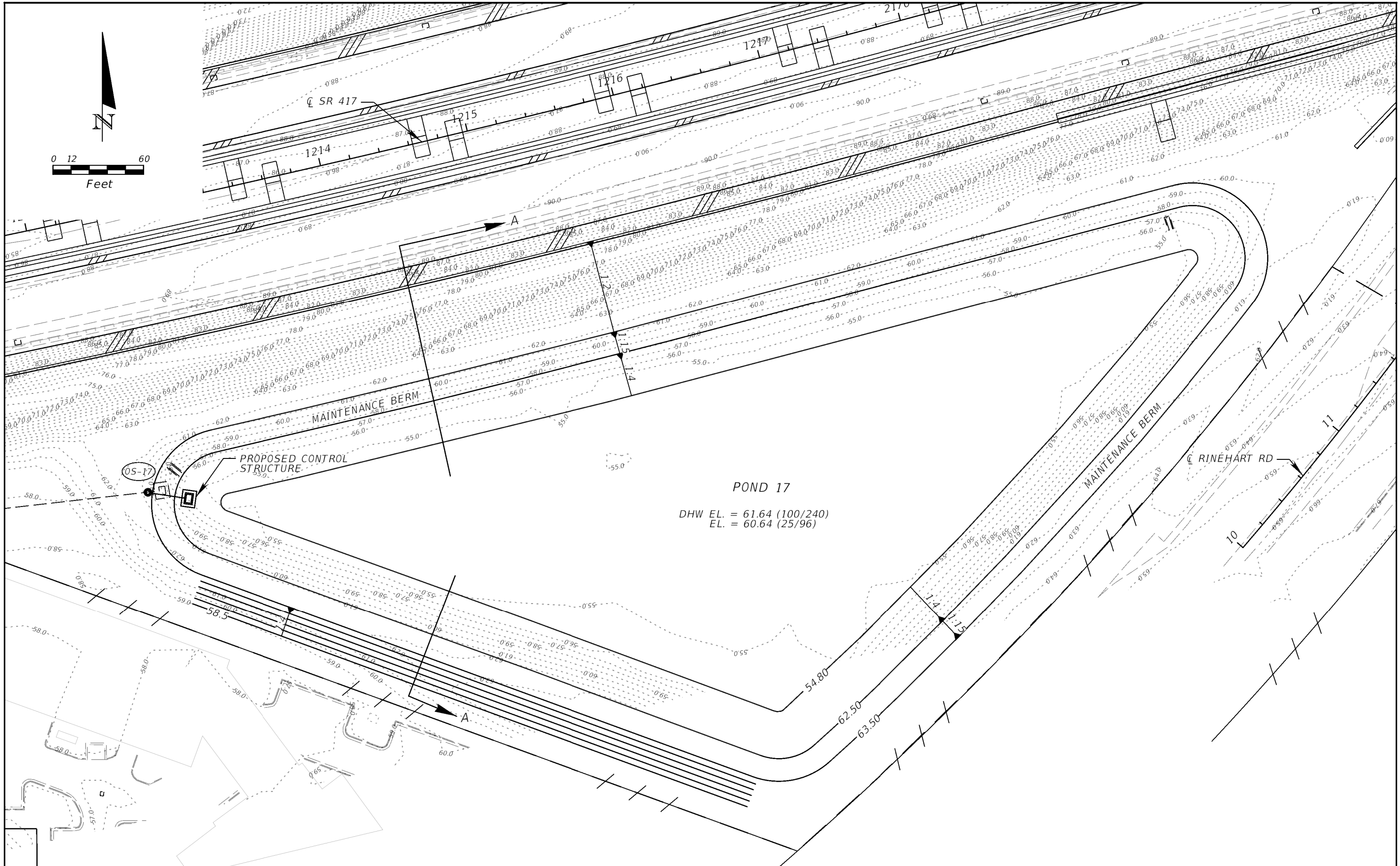


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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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**POND 17 BASIN  
 PROP. DRAINAGE MAP**

EXHIBIT  
 NO.  
 48



**POND 17**  
 DHW EL. = 61.64 (100/240)  
 EL. = 60.64 (25/96)

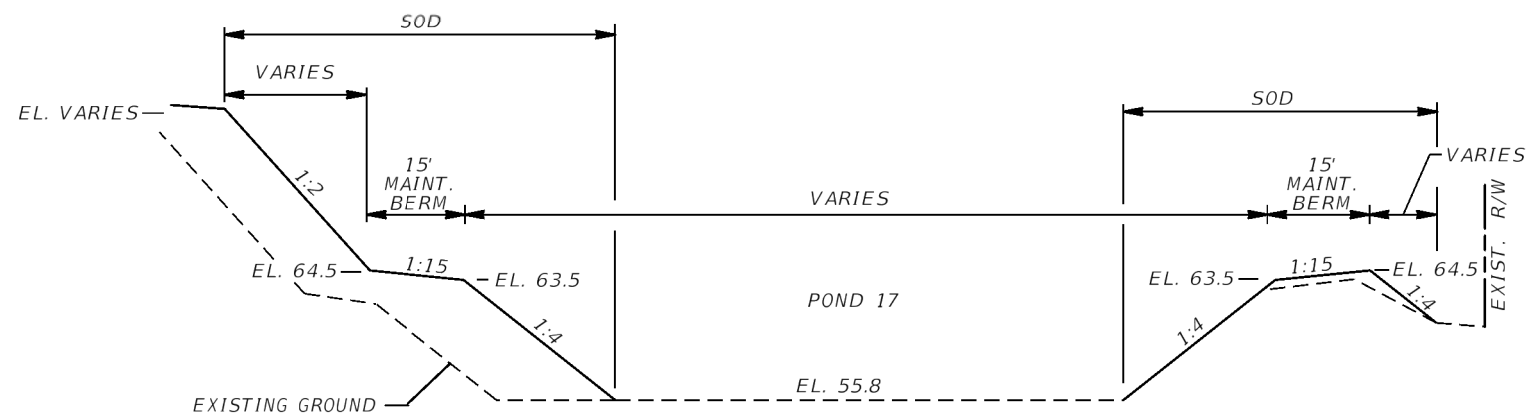
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
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 P.E. NO.: 52801

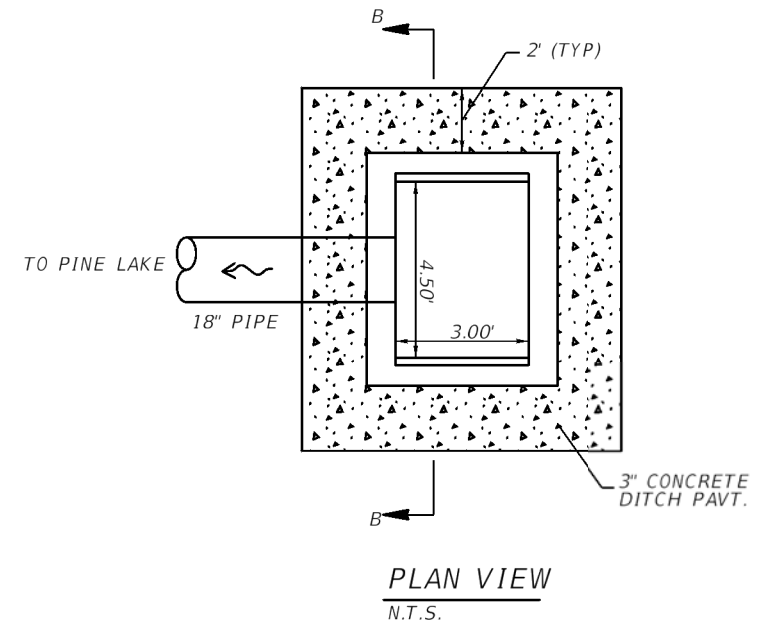
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**POND 17 BASIN  
 POND 17  
 DETAILS (1/2)**

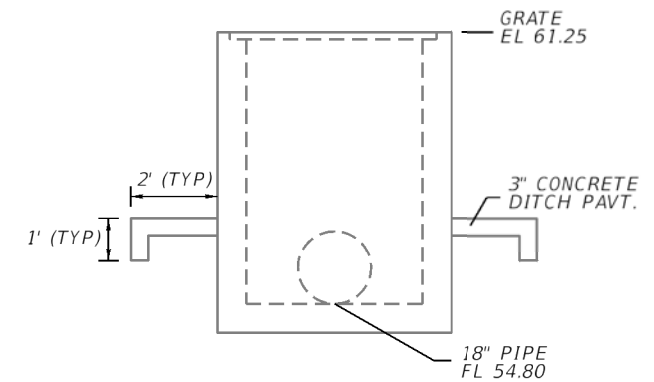
EXHIBIT NO.  
 49



**POND 17 TYPICAL SECTION A-A**  
N.T.S.



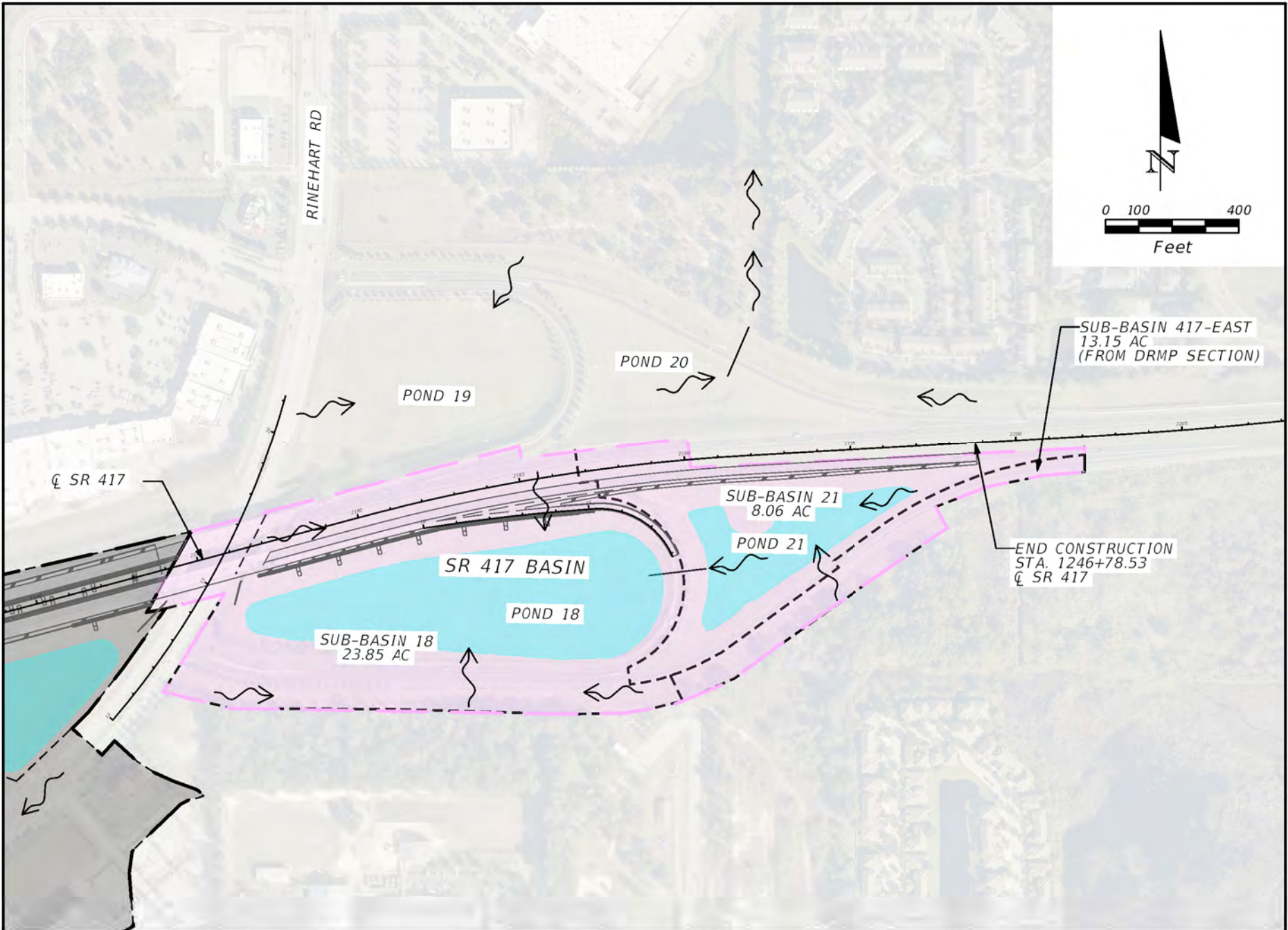
**PLAN VIEW**  
N.T.S.



**SECTION B-B**  
N.T.S.

**05-17** OUTFALL DETAIL  
N.T.S. DBI TYPE E, INDEX 232

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>POND 17 BASIN</b> <b>POND 17</b> <b>DETAILS (2/2)</b>	EXHIBIT NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		50
					SR 429	SEMINOLE	240200-4-52-01		



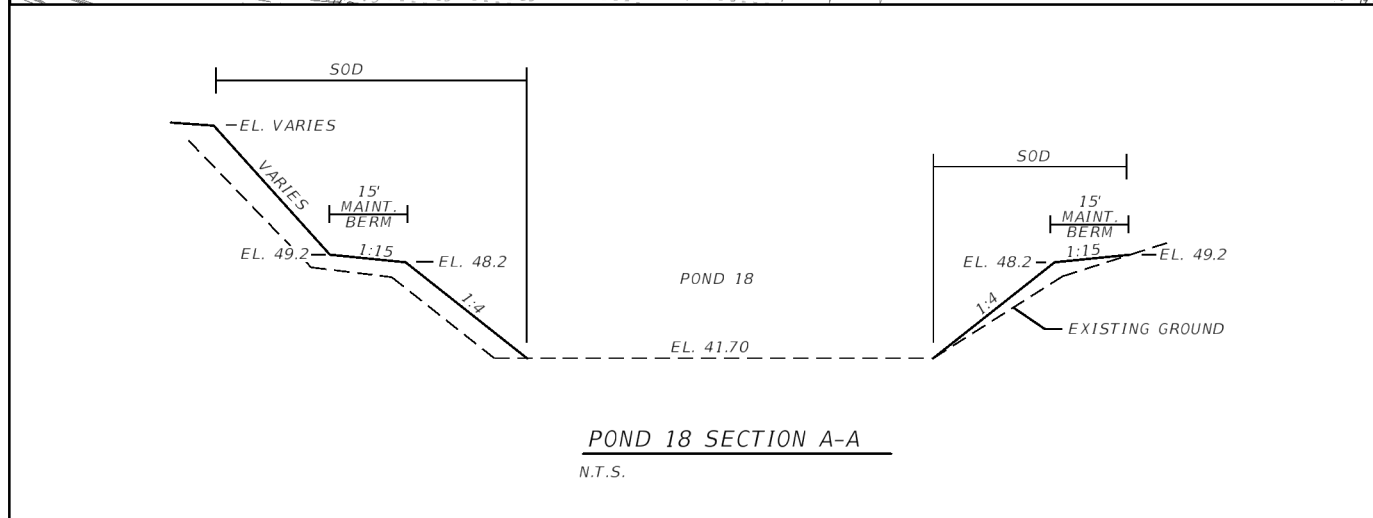
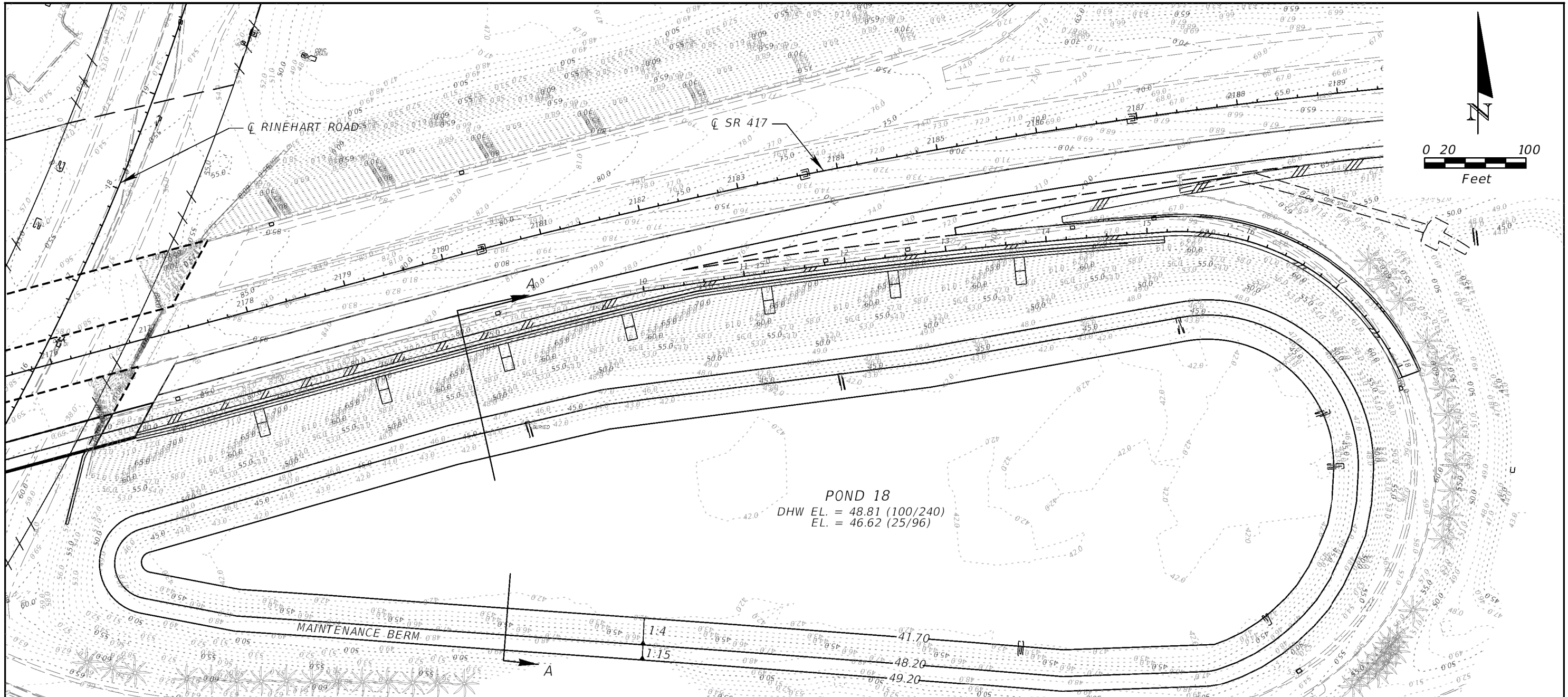
ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
 ORLANDO, FL 32810  
 (407) 647-7275  
 CERTIFICATE OF AUTHORIZATION NO.: 24  
 SCOTT P. WESSON P.E.  
 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

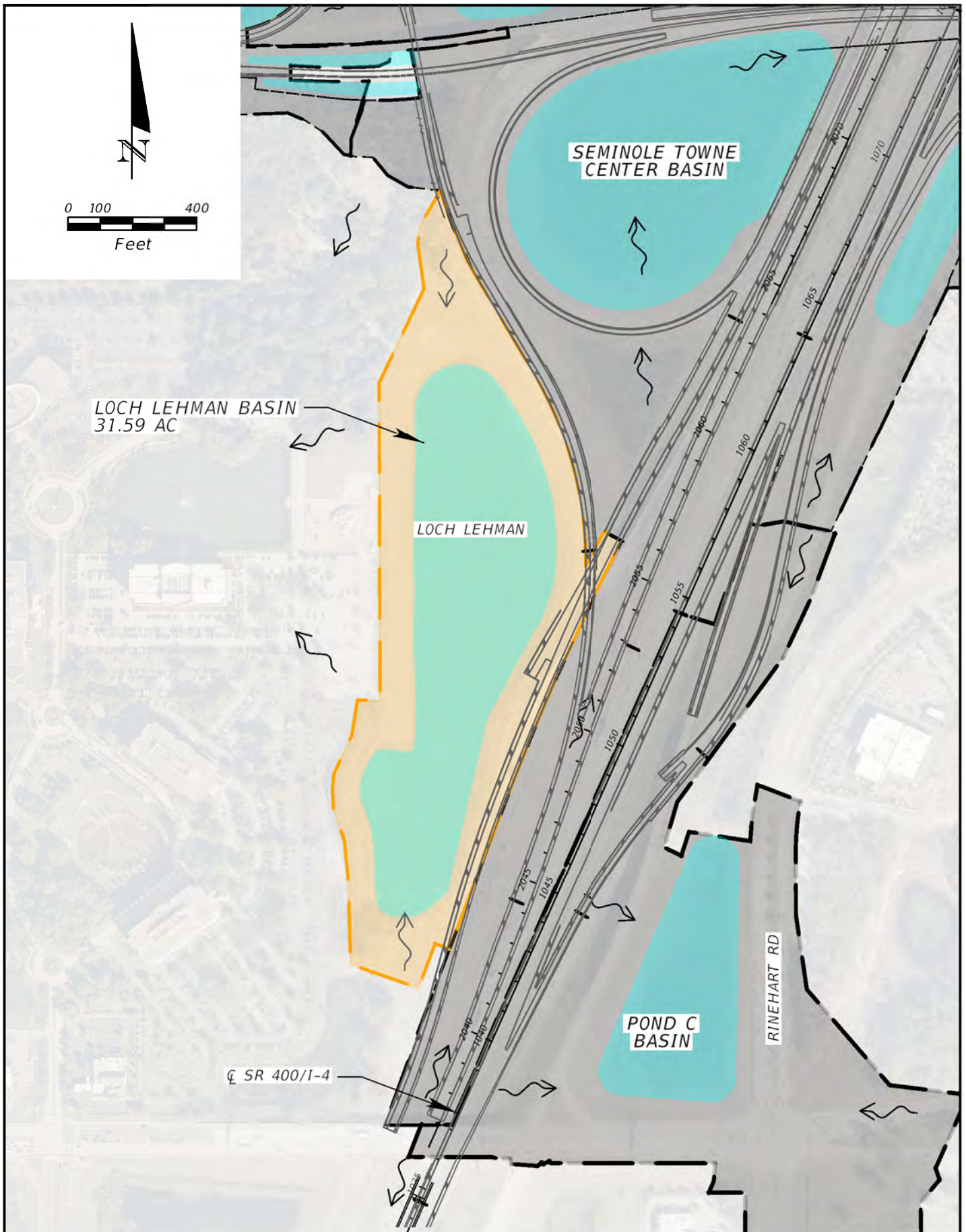
**SR 417 BASIN  
 PROP. DRAINAGE MAP**

EXHIBIT  
 NO.  
 51





REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>SR 417 BASIN          POND 18          DETAILS</b>	EXHIBIT NO.  52
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 429	SEMINOLE	240200-4-52-01		

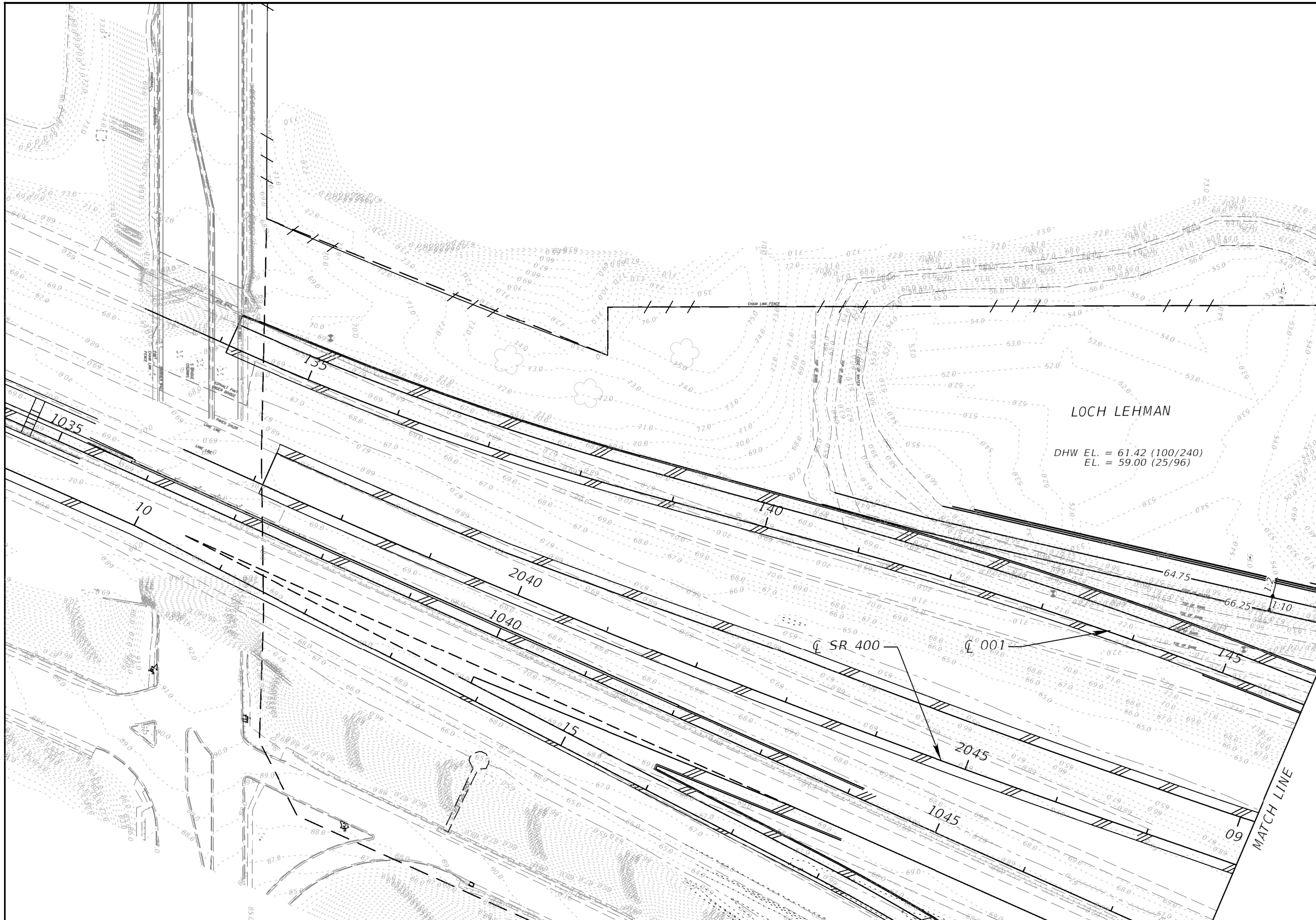
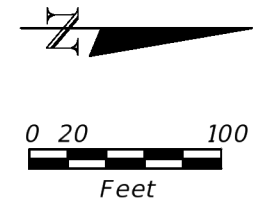


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 P.E. NO.: 52801

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ROAD NO.	COUNTY
SR 429	SEMINOLE

**LOCH LEHMAN BASIN  
 PROP. DRAINAGE MAP**

EXHIBIT  
 NO.  
 53



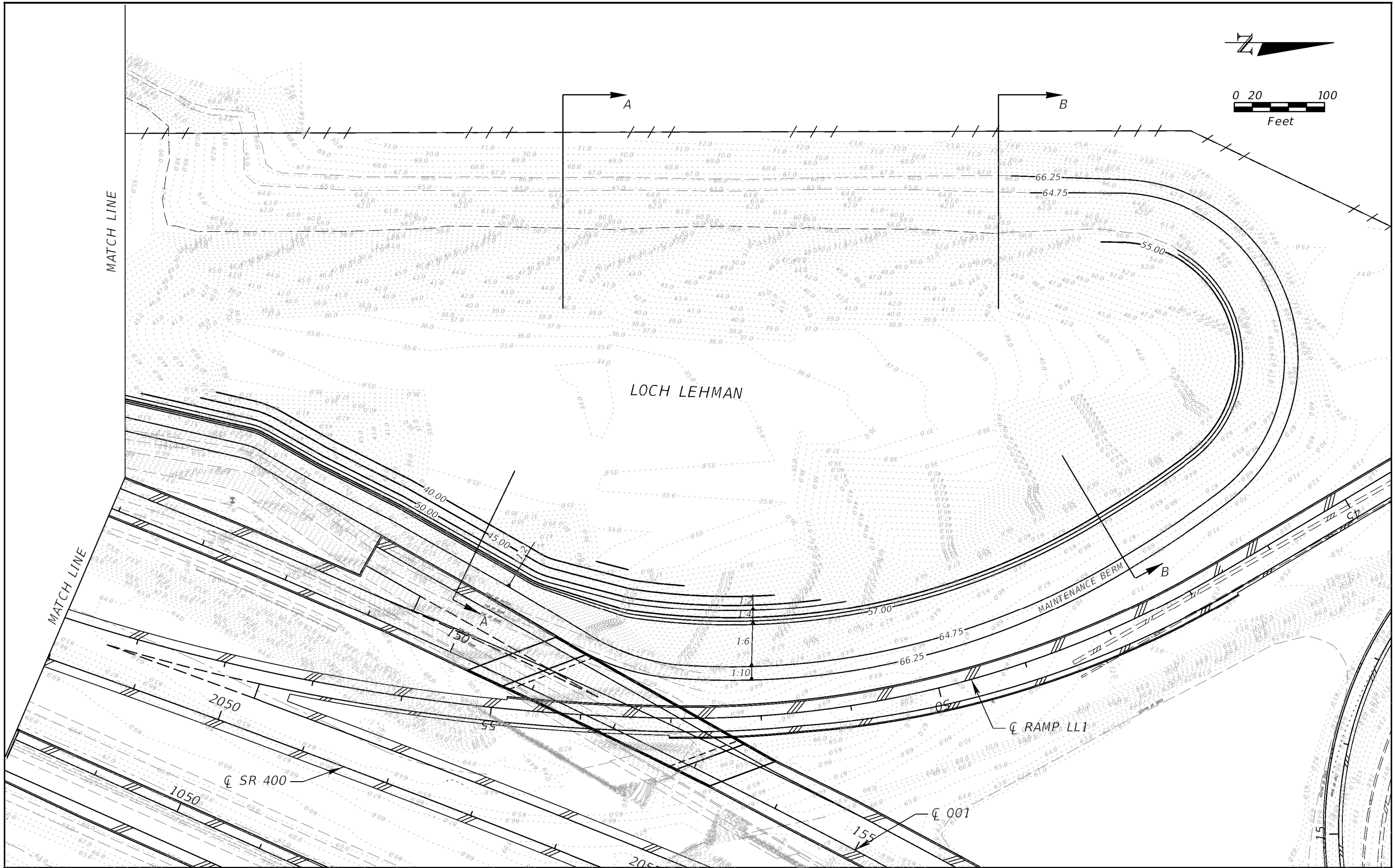
REVISIONS		REVISIONS	
DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**LOCH LEHMAN BASIN**  
**LOCH LEHMAN**  
**DETAILS (1/3)**

EXHIBIT NO.  
54



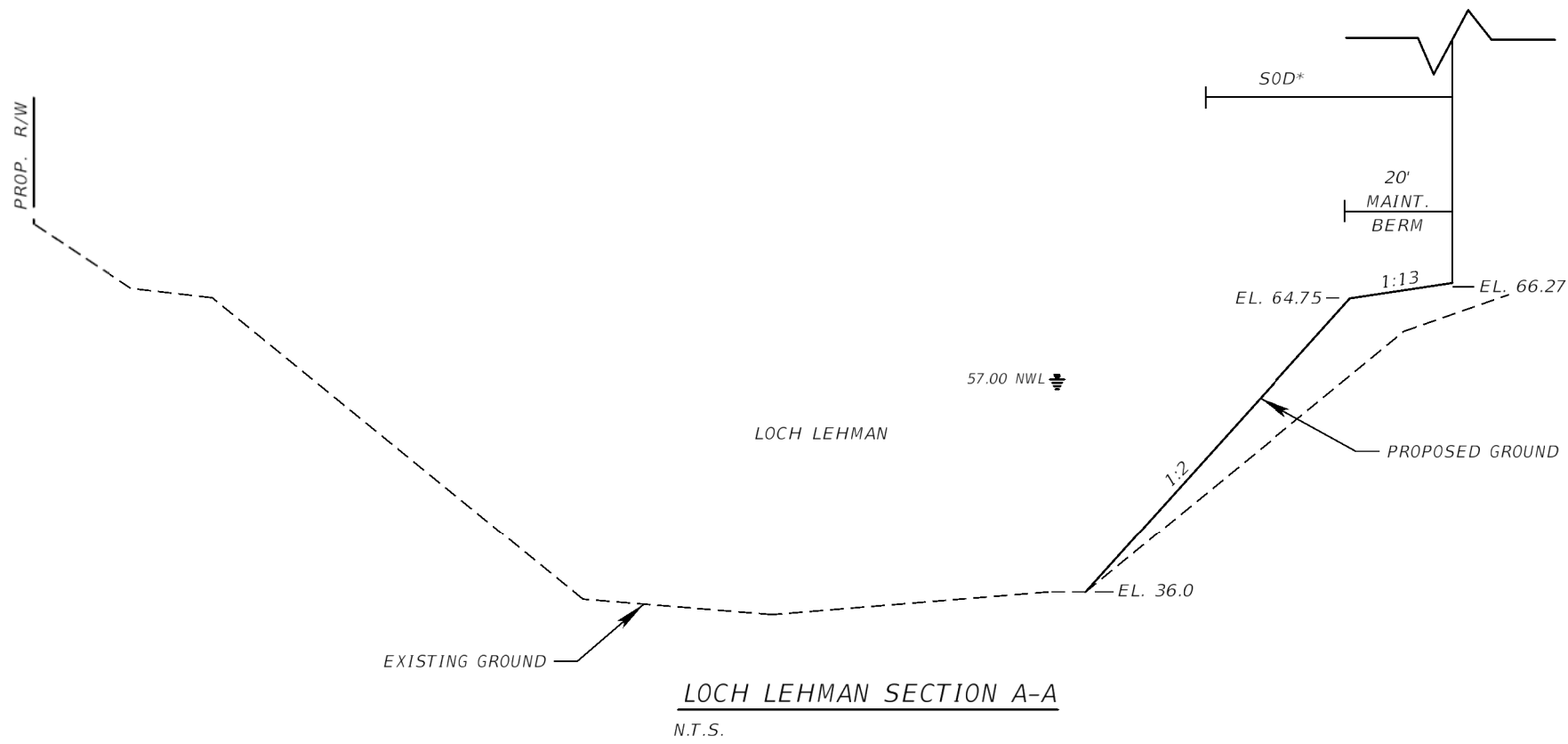
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ATKINS NORTH AMERICA, INC.  
 482 S. KELLER ROAD  
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 (407) 647-7275  
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 P.E. NO.: 52801

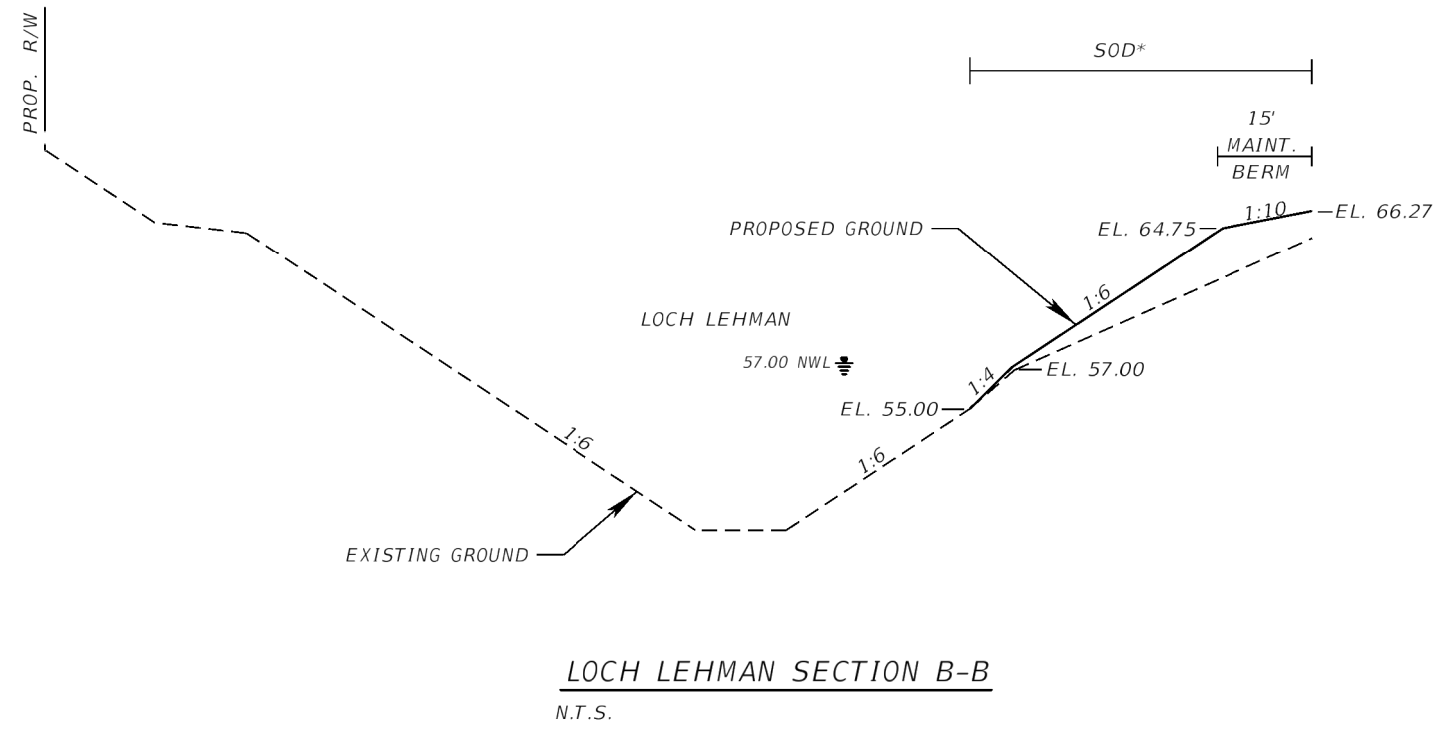
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	SEMINOLE	240200-4-52-01

**LOCH LEHMAN BASIN**  
**LOCH LEHMAN**  
**DETAILS (2/3)**

EXHIBIT NO.  
55

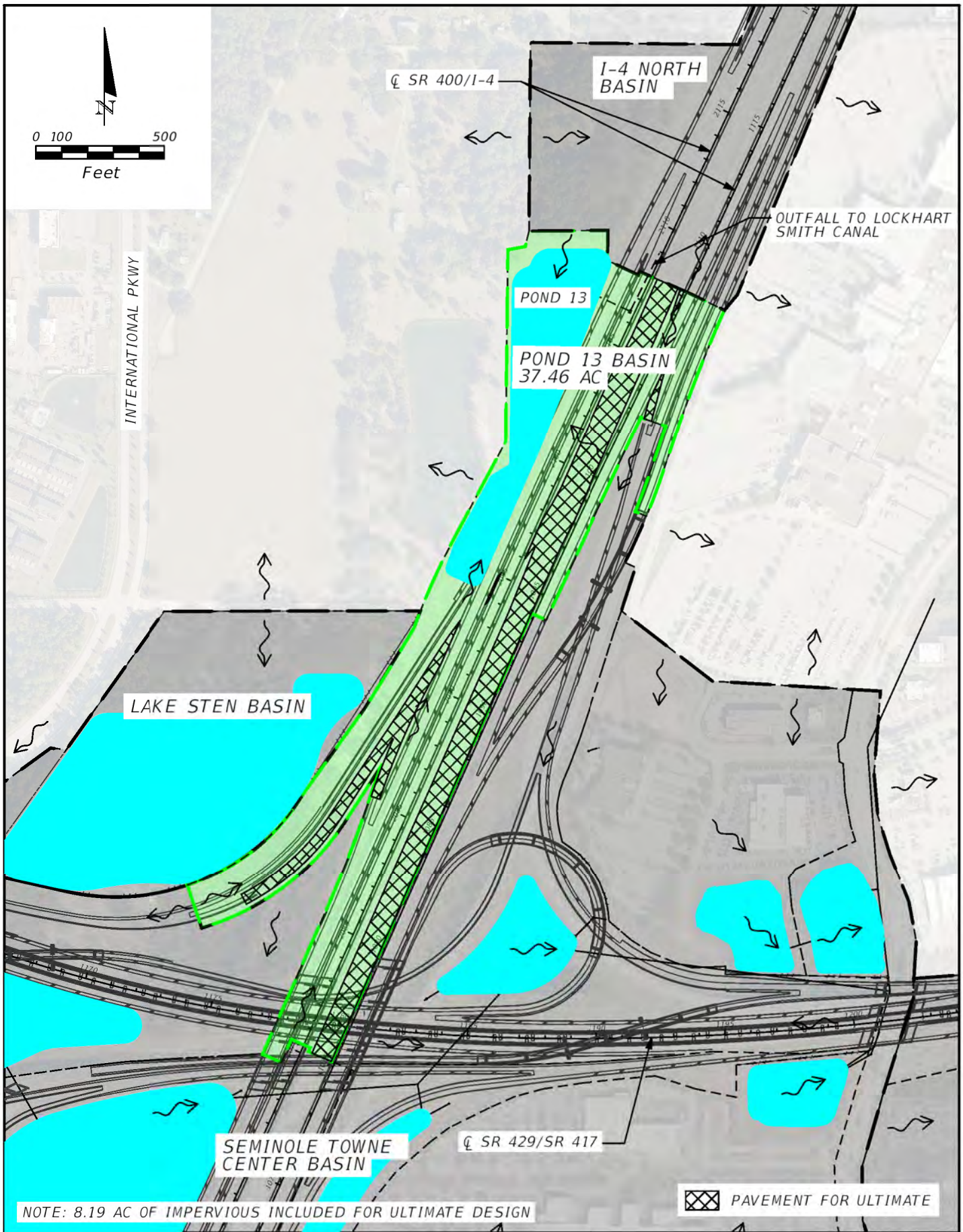


DHW EL. = 61.42 (100/240)  
EL. = 59.00 (25/96)



\*SOD ALL DISTURBED SLOPES TO  
2 FEET BELOW NWL

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		56
					SR 429	SEMINOLE	240200-4-52-01		

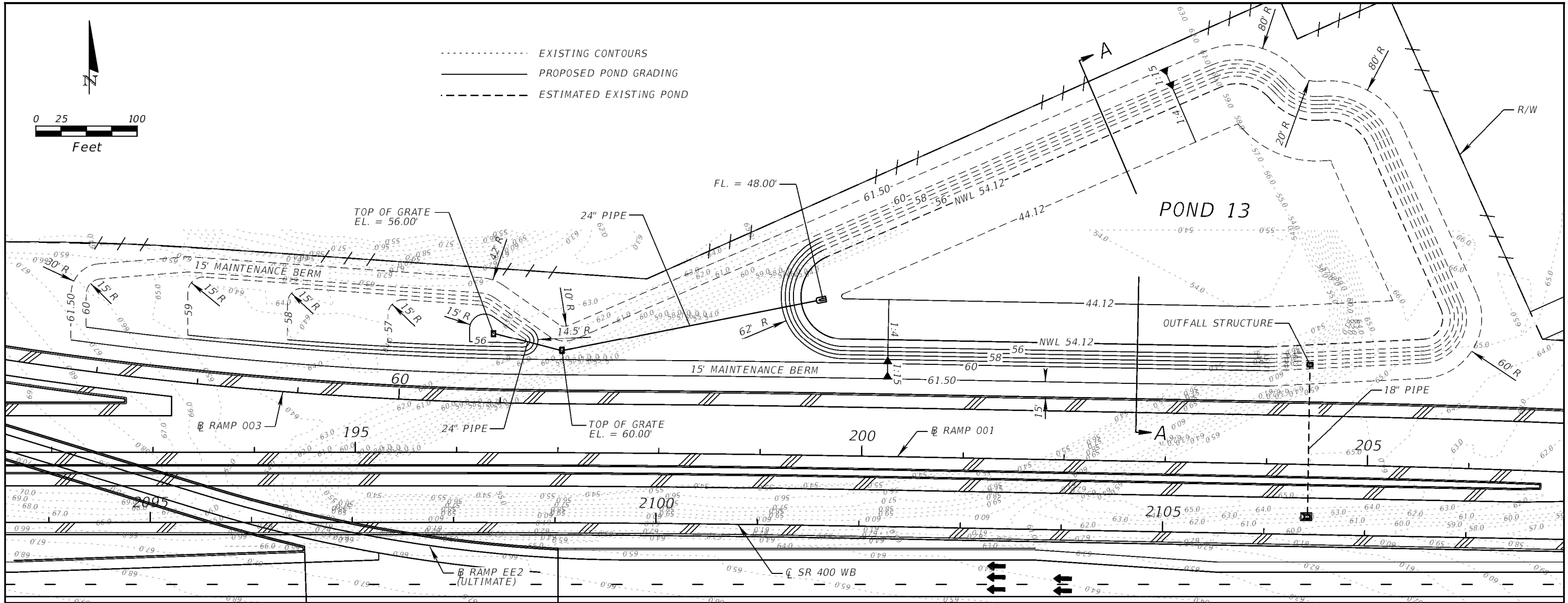


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 P.E. NO.: 52801

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
SR 429	SEMINOLE

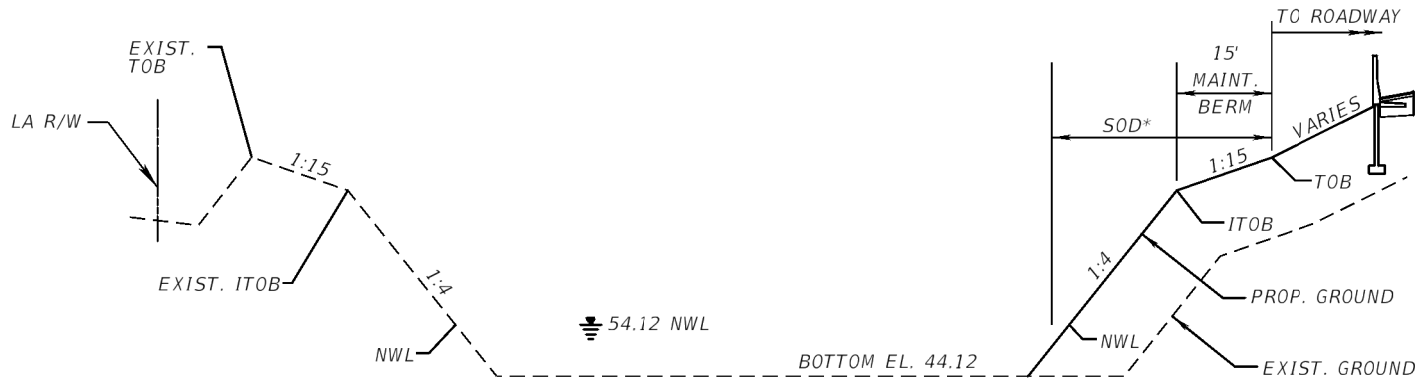
**POND 13 BASIN  
 PROP. DRAINAGE MAP**

EXHIBIT  
 NO.  
 57



**POND DATA (WET POND)**

TOP OF BERM (TOB)	=	61.50
INSIDE TOP OF BERM (ITOB)	=	60.00
DESIGN HIGH WATER 25 YEAR/24 HOUR (DHW25/24)	=	58.39
NORMAL WATER LEVEL (NWL)	=	54.12

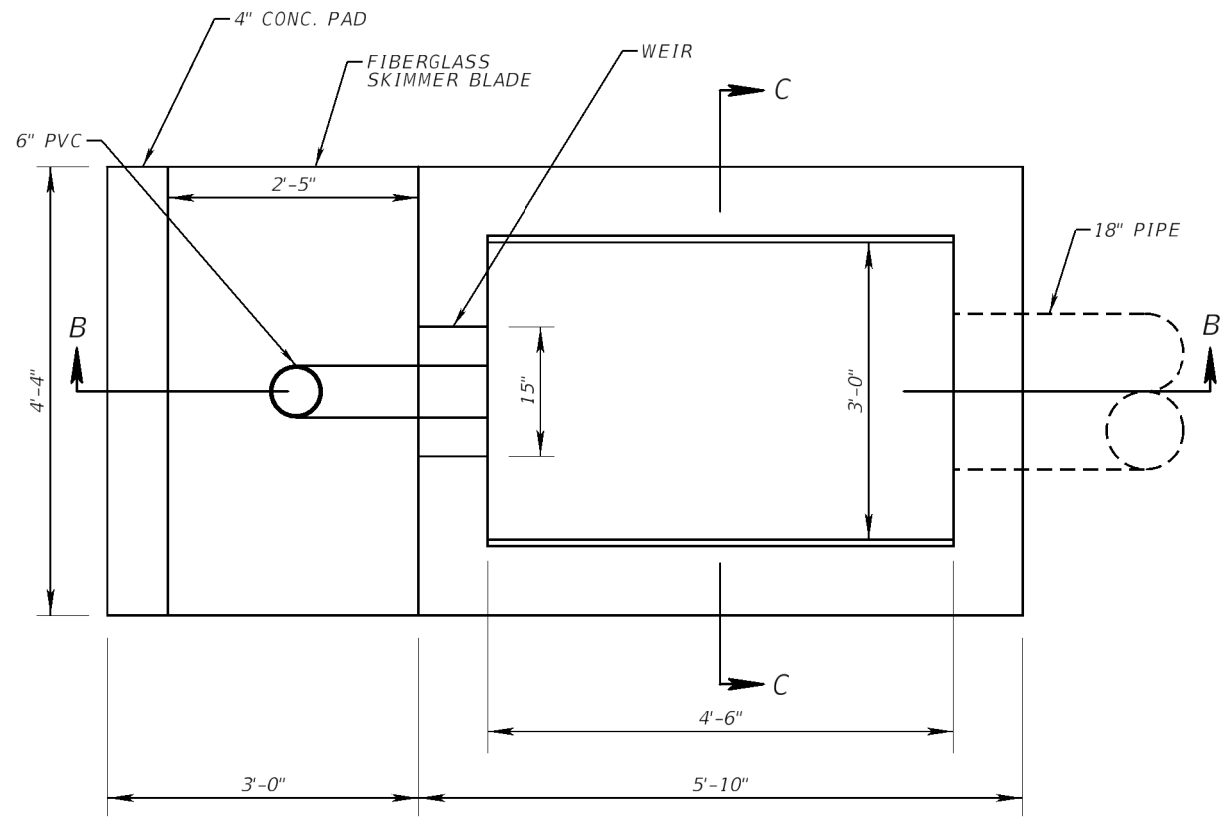


\*SOD TO 2' BELOW NWL

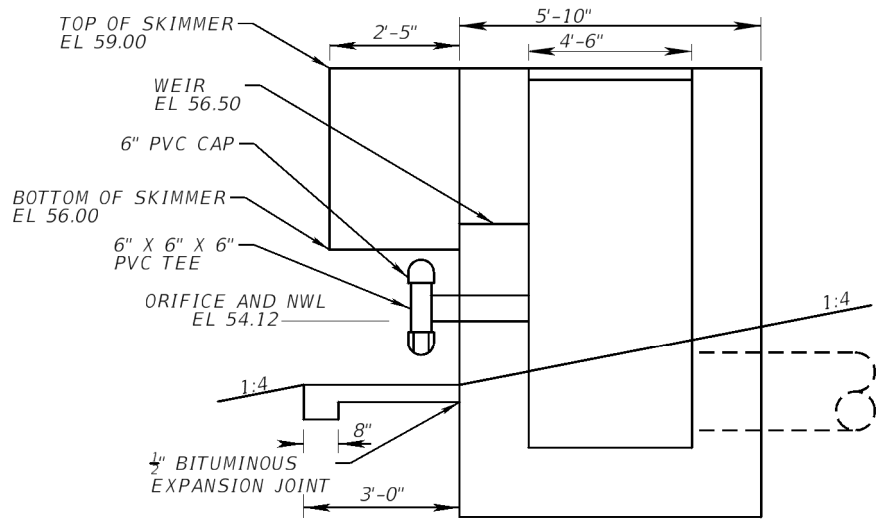
**NOTE:**  
EXISTING SURVEY OUTDATED AT THIS LOCATION.  
UPDATED SURVEY WILL BE PROVIDED AT FINAL SUBMITTAL.

**SECTION "AA"**  
N.T.S.

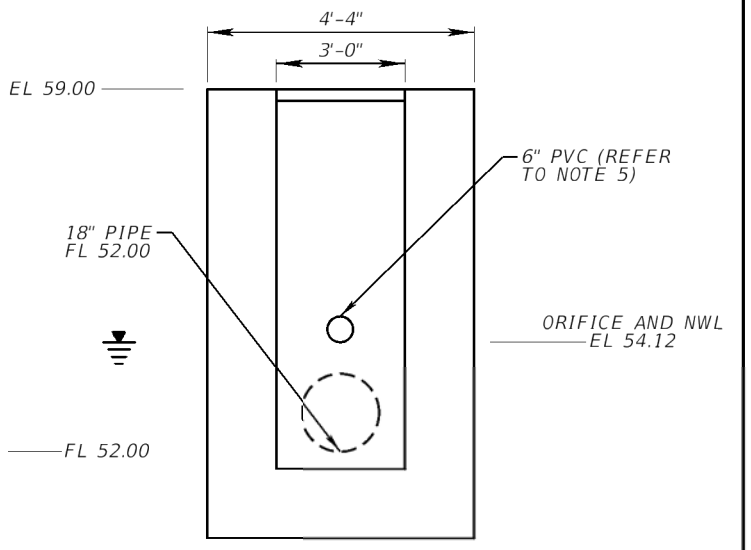
REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			POND 13 BASIN POND 13 DETAILS (1/2)	EXHIBIT NO.  58
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 429	SEMINOLE	240200-4-52-01		



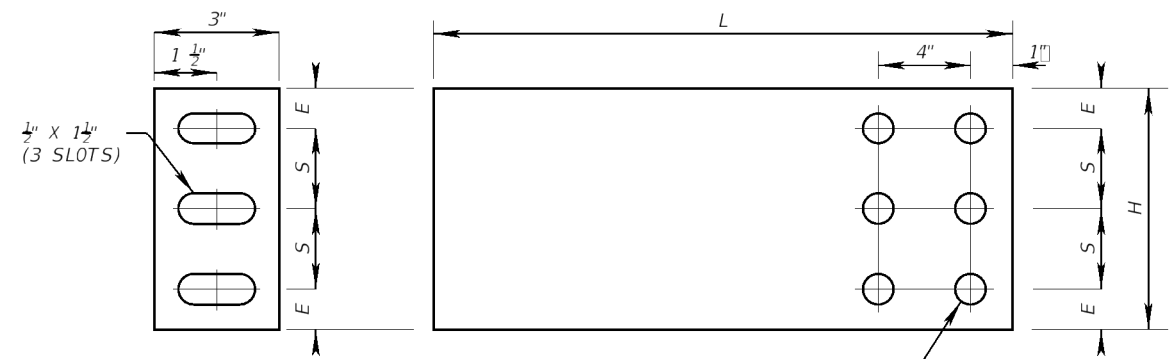
**PLAN VIEW**  
CONTROL STRUCTURE  
D.B.I. TYPE E MODIFIED  
N.T.S.



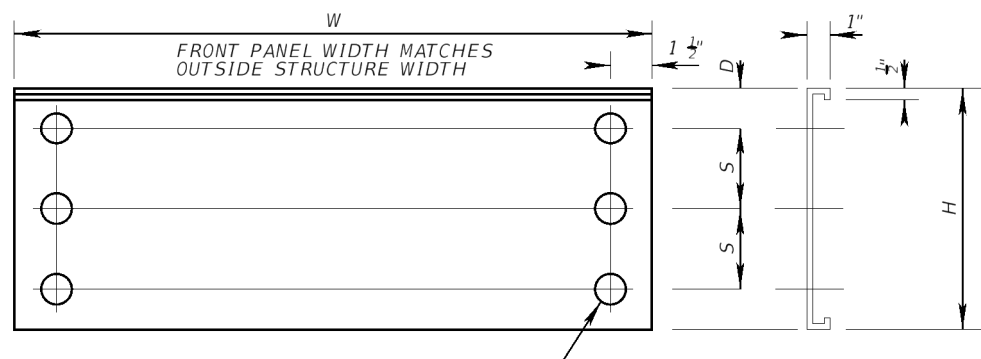
**SECTION B-B**  
N.T.S.



**SECTION C-C**  
N.T.S.



**SIDE PANEL**



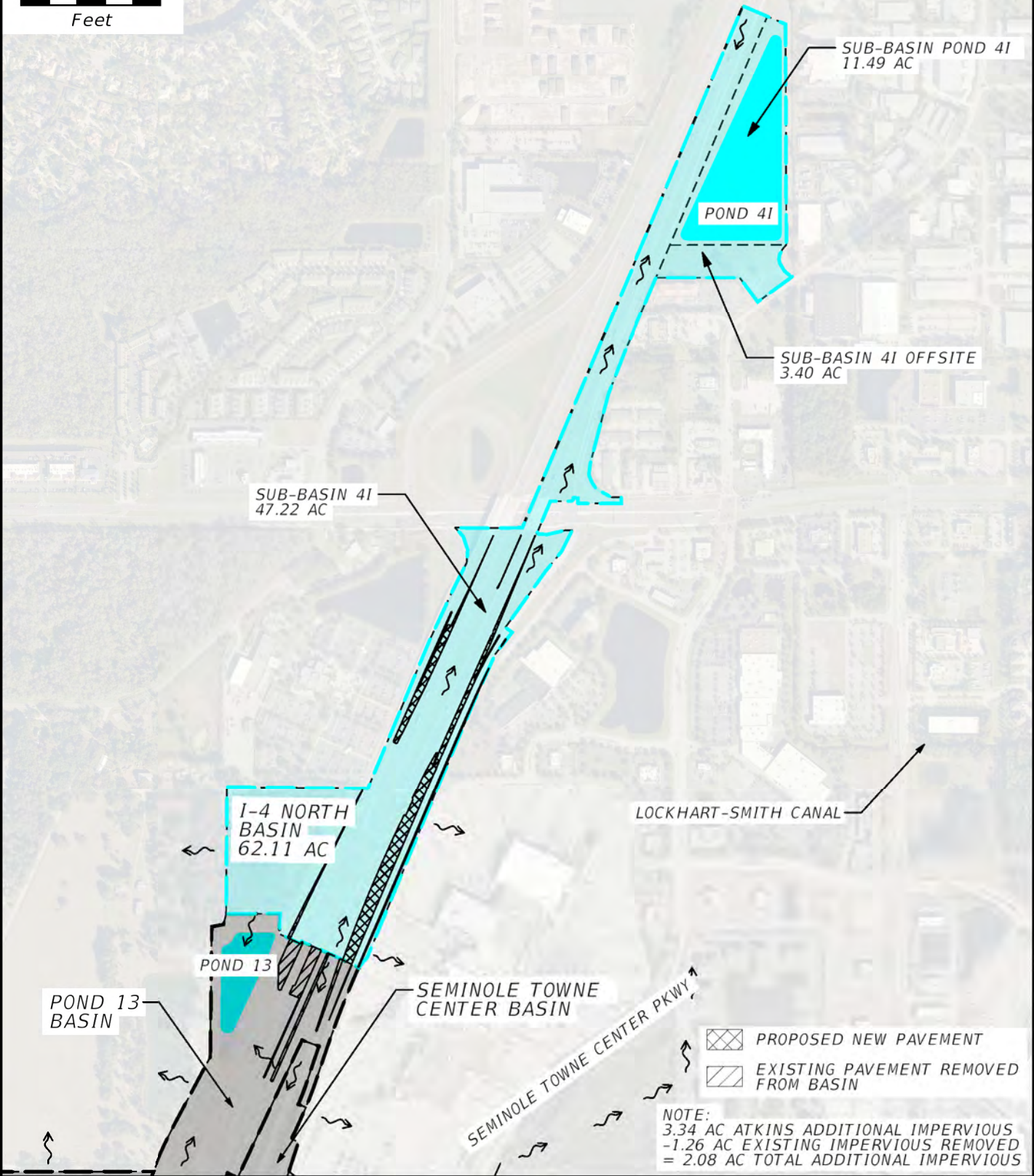
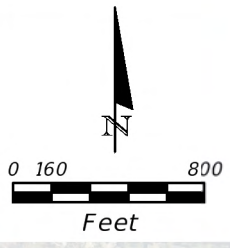
**FRONT PANEL**

DIMENSIONS				
SKIMMER HEIGHT H	D	E	L	BOLT SPACING S
INCHES				
42	6	6 3/8	41 1/2	15

NOTE: REFER TO INDEX 240 FOR ADDITIONAL SKIMMER DETAILS.

REVISIONS				ATKINS NORTH AMERICA, INC. 482 S. KELLER ROAD ORLANDO, FL 32810 (407) 647-7275 CERTIFICATE OF AUTHORIZATION NO.: 24 SCOTT P. WESSON P.E. P.E. NO.: 52801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>POND 13 BASIN</b> <b>POND 13</b> <b>DETAILS (2/2)</b>	EXHIBIT NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						SR 429	SEMINOLE		240200-4-52-01





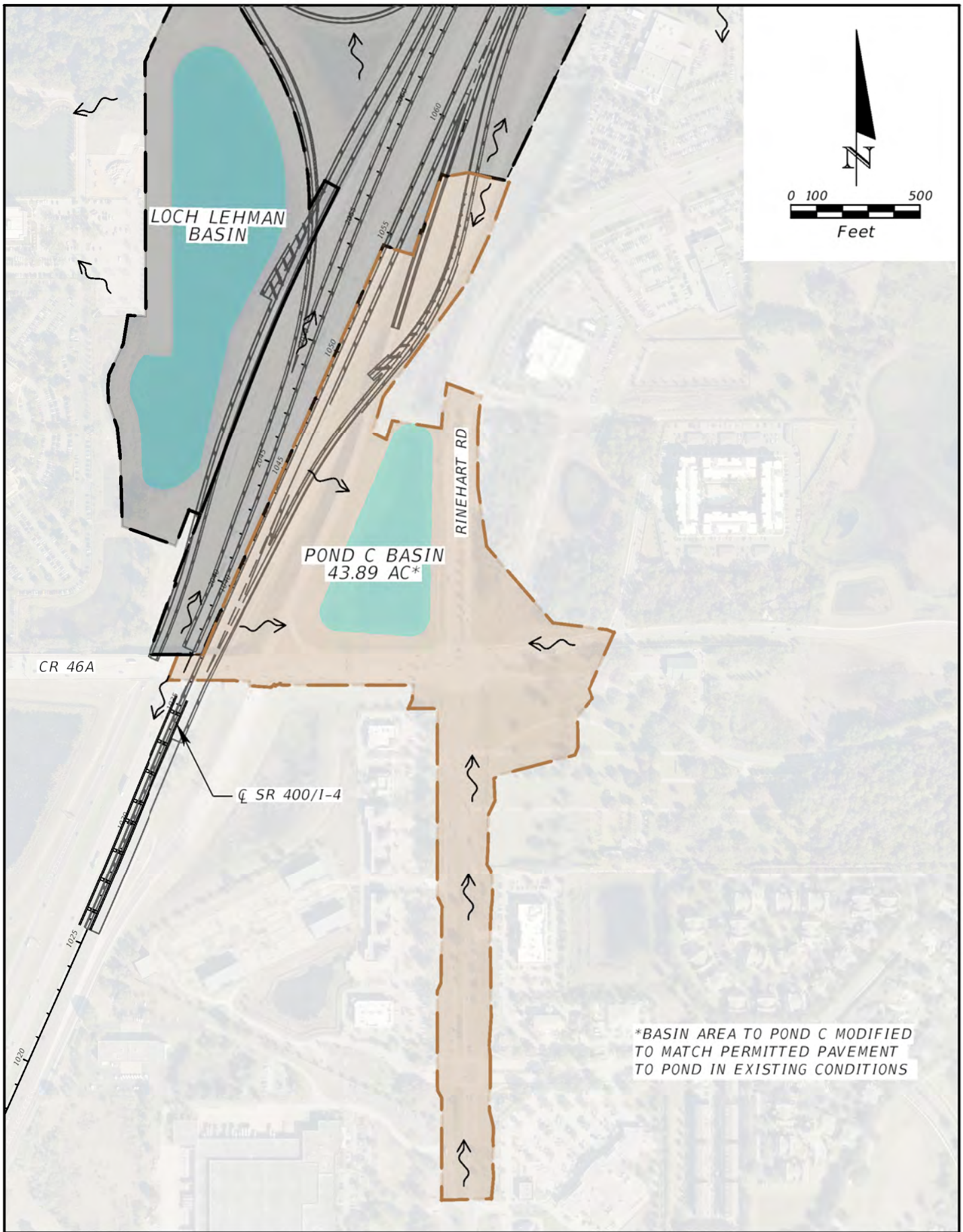
NOTE:  
 3.34 AC ATKINS ADDITIONAL IMPERVIOUS  
 -1.26 AC EXISTING IMPERVIOUS REMOVED  
 = 2.08 AC TOTAL ADDITIONAL IMPERVIOUS

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
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**I-4 NORTH BASIN  
 PROP. DRAINAGE MAP**

EXHIBIT  
 NO.  
 60



\*BASIN AREA TO POND C MODIFIED TO MATCH PERMITTED PAVEMENT TO POND IN EXISTING CONDITIONS

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	ROAD NO.	COUNTY		
	SR 429	SEMINOLE		