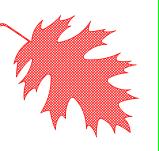
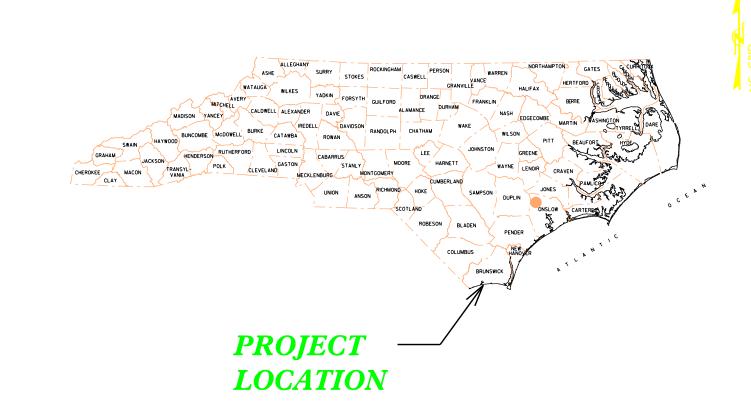


HIGHWAY LANDSCAPE DEVELOPMENT PROJECT



T.I.P. #	STATE PROJECT W.B.S. #	SHEET #	SHEET # TOTAL
R-3432(L) ER-5600	35501.3.2 46305.3.44	L 1	7
FED. ID. #	DESCRIPTION		DIVISION
TAP-CZIP(15)	LANDSCAI	PΕ	3

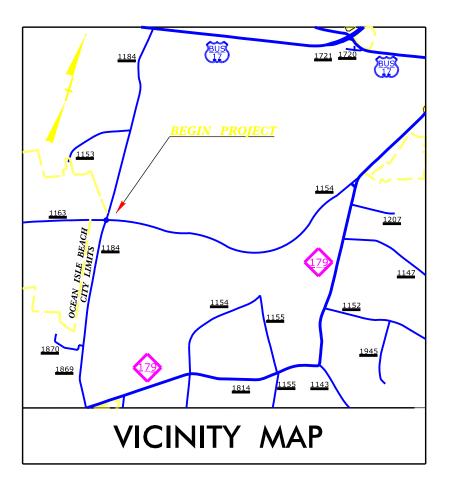
CONVENTIONAL SYMBOLS



BRUNSWICK COUNTY LANDSCAPE ENHANCEMENT

LOCATION: OCEAN ISLE BEACH NC TYPE OF WORK: Roundabout Landscape Enhancement

SUMMARY OF QUANTITIES



Quan	Unit	Common Name	Botanical Name	Size	Notes
12	Ea	Sabal Palms	Sabal palmetto	8'-10' B&B/Cont	min. 1-1/2" cal
33	Ea	Duruma Loropetalum	Loropetalum chinense 'Duruma'	15-18", #3 Cont	as shown
99	Ea	Pink Muhly Grass	Muhlenbergia capillaris	12-15", #3 Cont	3' O.C.
30	Ea	Stokes Dwarf Yaupon Holly	Ilex vomitoria 'Stokes Dwarf'	15-18", #3 Cont	as shown
132	Ea	Chapel Hill Yellow Lantana	Lantana 'Chapel Hill'	#1 Cont, healthy/full	3' O.C.
335	Ea	Orange Vols Daylily	Hemerocallis 'Orange Vols'	#1 Cont, healthy/full	2' O.C.
115	CY	Mulch			
1000	SY	Pre-emergent Herbicide			
1000	SY	Post-emergent Herbicide			
1	CY	Concrete			
1	EA	Flagpole (50')			
1	LS	Irrigation			
1	LS	LED Spotlights			

County Line	_
City or Town Line	_
Exist. Right of Way Line Marker	
Prop. Right of Way Line Marker	
(By Others)	
Prop Right of Way Line Marker	
(By Contract)	
Exist. Control of Access Line	
Prop. Control of Access Line	
Property Line	
Easement Line	
Slope Stake Line	_
Exist. Fence+	
Prop. Woven Wire Fence	
Prop. Chain Link Fence	
Exist. Road = = = = = = = = :	
Prop. Road	
Guardrail <u> </u>	
Survey Line	_
Denotes Line Equality	
Bridge.	
Culvert	
Railroad	
Woods	~
Exist. Telephone Pole	
Prop. Telephone Pole	
Tower Pole and Line	
Exist. Power Pole	
Prop. Power Pole	
Sanitary Sewer Line	
Water Line	
Gas Line GAS O	
Picnic Shelter	
Regeneration	
Reforestation	

INDEX OF L SHEETS:

L 1 ... TITLE, DESCRIPTION, LOCATION

PLANTING DETAILS

IRRIGATION PLAN

IRRIGATION DETAILS

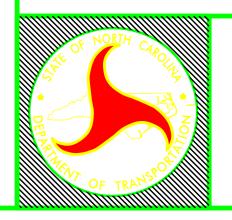
IRRIGATION SPECIFICATIONS

L 6 ... CONSTRUCTION REFERENCE PLANS

PREPARED BY: BK DATE: 6/2017

REVISIONS

DATE	DESCRIPTION



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION LOCATION: OCEAN ISLE BEACH NC

TYPE of WORK: Roundabout Landscape Enhancement

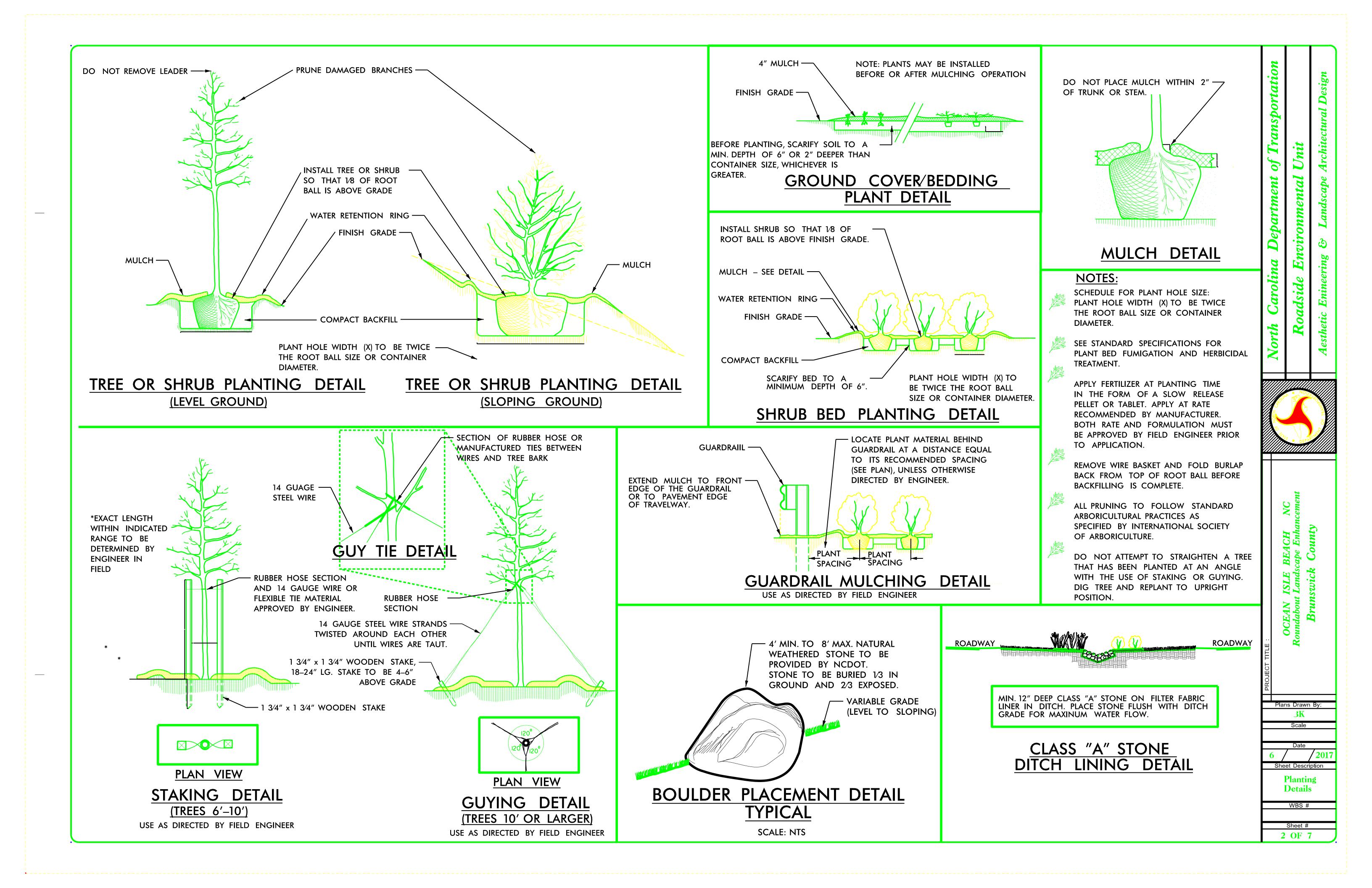
COUNTY: BRUNSWICK COUNTY

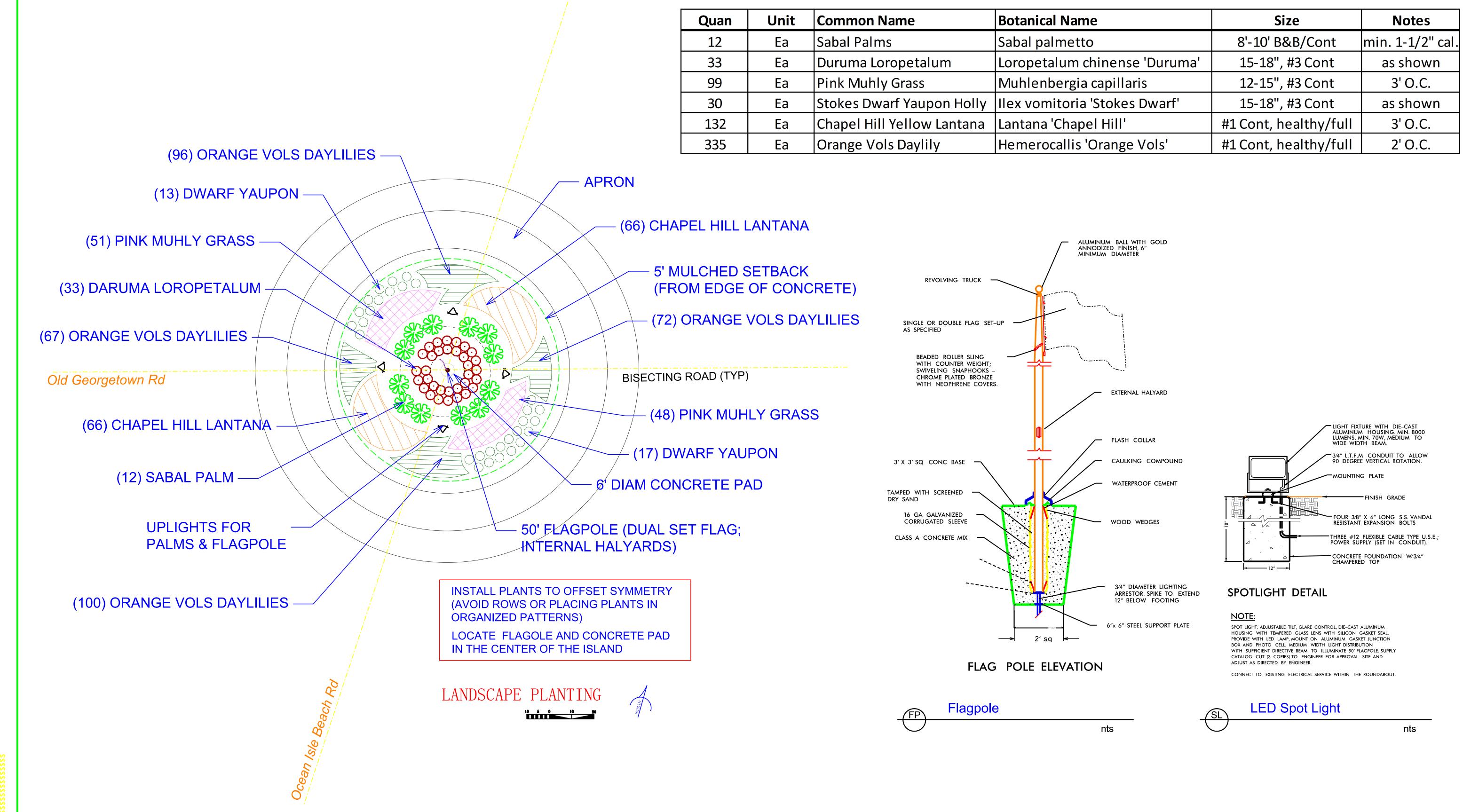


2014 American Standard for Nursery Stock 2018 NCDOT STANDARD SPECIFICATIONS

PREPARED IN THE OFFICE OF: NCDOT- ROADSIDE ENVIRONMENTAL UNIT LANDSCAPE DESIGN & DEVELOPMENT SECTION 1557 MAIL SERVICE CENTER

RALEIGH NC 27699 919-707-2920





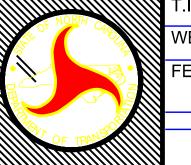
NCDOT - Roadside Environmental Unit Landscape Design & Development 1557 Mail Service Center Raleigh NC 27699-1557 ph: 919-707-2920 fax: 919-715-2554 http://www.ncdot.org/doh/operations/dp_chief_eng/roadside/

Landscape Development Plan Ocean Isle Beach, NC

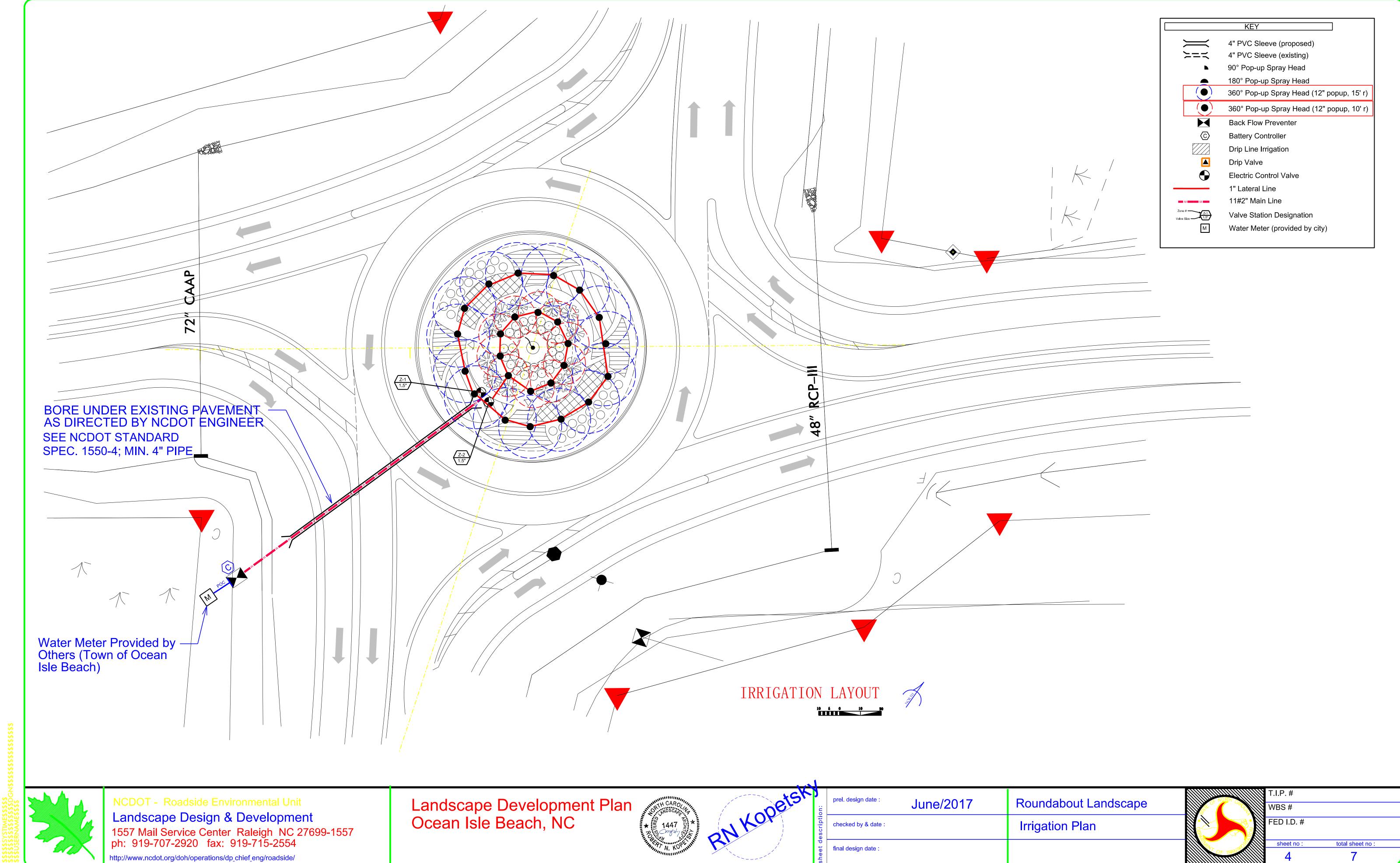


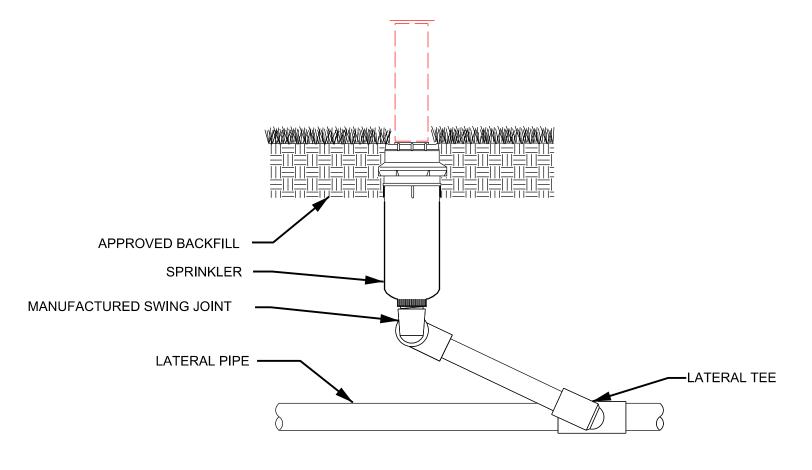


prel. design date: June/2017	Roundabout Landscape
checked by & date :	Enhancements
final design date :	



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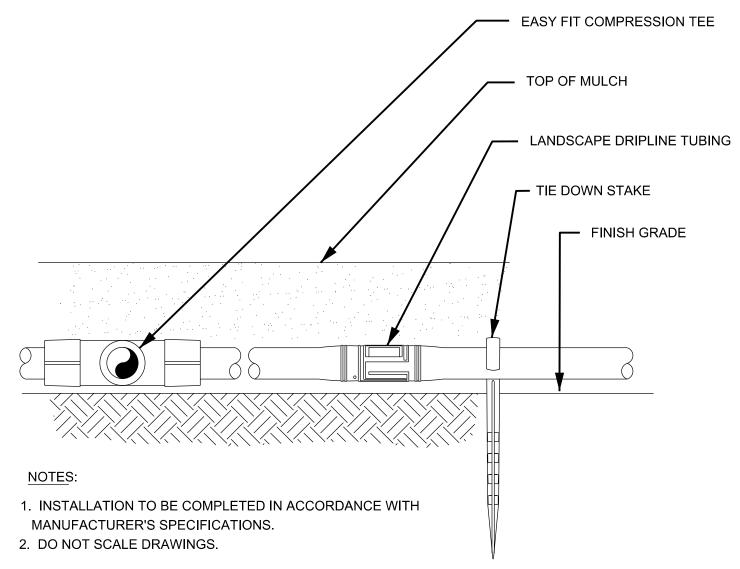


1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

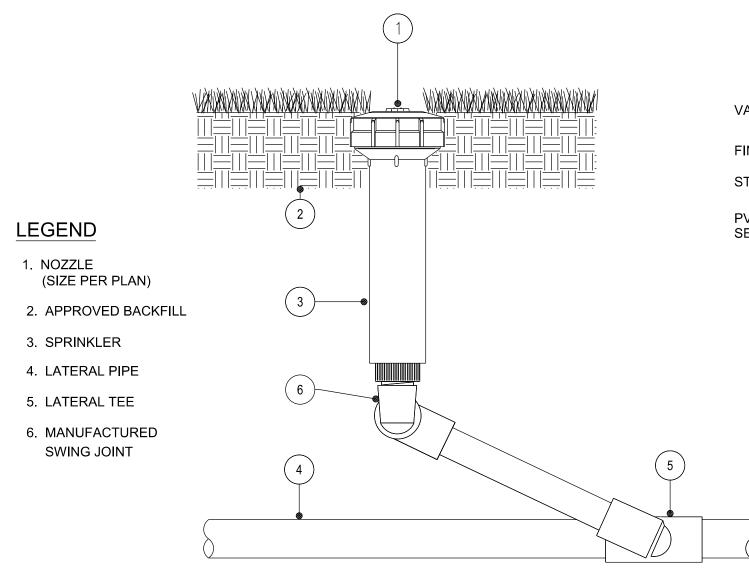
2. DO NOT SCALE DRAWINGS.

3. INSTALL SPRINKLER AT FINISHED GRADE.





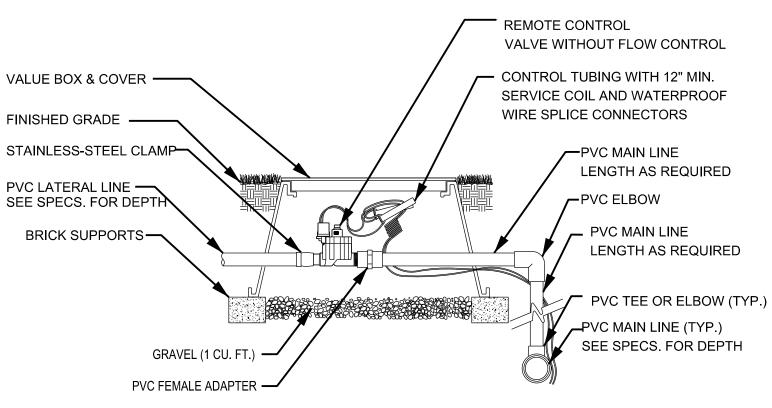
LANDSCAPE DRIPLINE ON GRADE POTABLE SYSTEM (NOT TO SCALE)



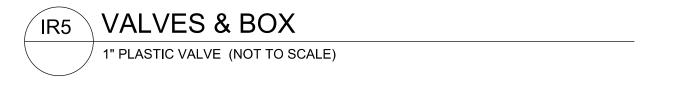
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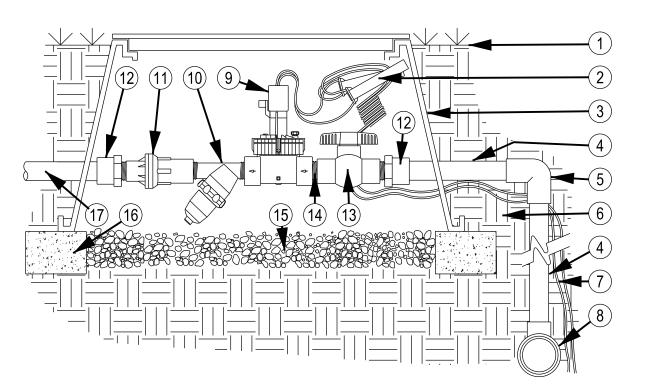
2. DO NOT SCALE DRAWINGS. 3. INSTALL SPRINKLERHEAD AT FINISHED GRADE

ROTOR SPRINKLER 4 INCH POP-UP (SWING JOINT) (NOT TO SCALE)



1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.





<u>LEGEND</u>

1. FINISHED GRADE

2. WATERPROOF DRY SPLICE CONNECTORS

3. 12" VALVE BOX WITH COVER

4. PVC LATERAL LINE

5. SCH 40 PVC 90° ELL JOINT

6. NATIVE SOIL PER SPECIFICATIONS.

7. CONTROL WIRES TO CONTROLLER.

8. PVC MAINLINE FITTING. 9. REMOTE CONTROL VALVE 10.MESH SCREEN FILTER WITH FLUSH CAP

11.ADJUSTABLE PRESSURE REGULATOR

12.PVC SCH 40 FEMALE ADAPTER 13.MANUAL VALVE

14.PVC SCH 40 TRANSITION NIPPLE

15.WASHED GRAVEL SUMP (MIN. 3")

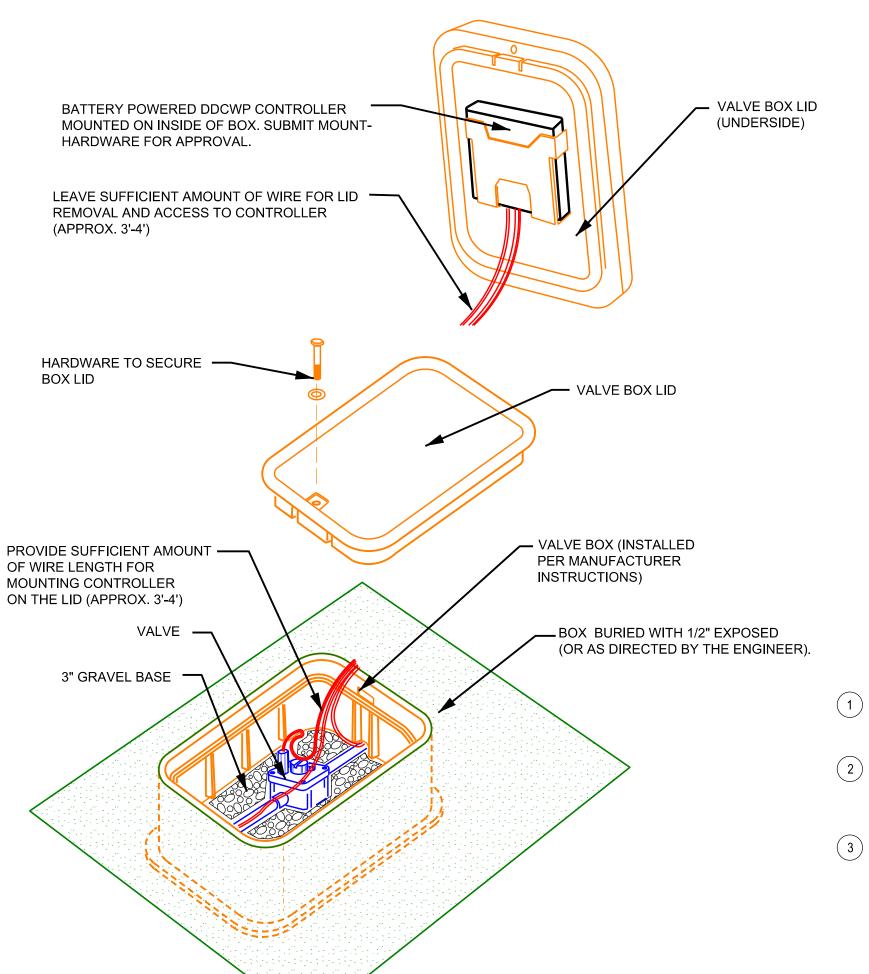
16.BRICK SUPPORTS

17.LATERAL LINE TO DRIP SYSTEM.

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

2. DO NOT SCALE DRAWINGS.

DRIP ZONE ASSEMBLY VALVE ASSEMBLY (NOT TO SCALE)



SMALL METAL CABINET WALL MOUNT IRRIGATION CONTROLLER SEE PLAN FOR NUMBER OF STATIONS.

4 2" CONDUIT FOR REMOTE CONTROL WIRES AND MV OR PUMP START WIRES. OPTIONAL 3" KNOCK-OUT IF LARGER WIRES ARE USED. SECURE TO WALL WITH APPROPRIATE PIPE CLAMPS.

1/2" CONDUIT FOR ELECTRICAL POWER PER LOCAL AND NATIONAL ELECTRICAL CODES. OPTIONAL 3/4" KNOCK-OUT IF LARGER CONDUITS ARE USED.

(5) 3/4" KNOCKOUT FOR EARTH GROUND WIRES.

(6) MOUNTED NARROWBAND ANTENNA

3 OPTINOAL 1/2" KNOCK-OUT FOR RAIN SENSOR WIRE.

7 FINISHED GRADE

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. 2. MOUNT CONTROLLER ON EXISTING POST NEW PRESSURE TREATED POST, OR AS DIRECTED BY THE NCDOT ENGINEER.

3. DRAWING NOT TO SCALE.

CONTROLLER WALL MOUNT

DDCWP CONTROLLER BOX LID MOUNT BATTERY POWERED CONTROLLER (NOT TO SCALE)

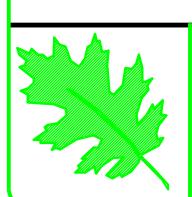
prel. design

checked by

final design date:



WALL-MOUNT CONTROLLER, METAL (NOT TO SCALE)



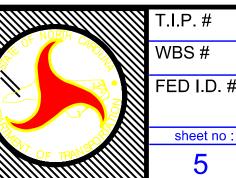
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1557 Mail Service Center Raleigh NC 27699-1557

Landscape Development Plan Ocean Isle Beach, NC



n date :	June/2017	Roundabout Landscape
/ & date :		Irrigation Details



FED I.D. # total sheet no:

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GENERAL NOTES

- The irrigation design provided in the plans is schematic in nature, and the irrigation contractor may be required to make minor adjustments in the field as necessary. These adjustments shall be made at no additional cost to the owner and shall be made only after notification is made to the owner (NCDOT).
- The contractor(s) shall familiarize themselves with the site so that they are aware of any special conditions that may exist that could affect their bid proposal and shall hereafter be responsible for all cost incurred by themselves in relation to the installation.
- Place valves & boxes in plant beds where-ever possible.
- The contractor is to minimize disturbance in sod areas (cut and replace sod when necessary).
- Place pressure reducing valves in discreet locations.
- All irrigation products are to be Hunter or comparable brand (as approved by the Division Roadside Environmental Engineer).
- If there is an existing system in place, be sure to use irrigation heads that are consistent with the existing system.
- The contractor is responsible for providing 'as built' plans to the owner (NCDOT) at the time of project approval. The plans shall be clear, concise, and show all elements of the irrigation system, the location of all equipment, irrigation lines, numbered zones, controller(s), heads and valves.

BACKFLOW PREVENTION

- The reduced pressure backflow preventer assembly shall be the responsibility of the irrigation contractor. The backflow shall be 1.5" in size. The backflow assembly shall be installed downstream of the irrigation meter. The unit must be installed in accordance with all local and state code requirements and shall have an approved cover.

CONTROLLER W/ BATTERY POWERED TIMER

- (C) Controller may be of comparable manufacture and performance to the brand named.
 - -The controller shall be a Hunter i-core Modular unit. The controller shall incorporate a 24 VAC with the approximate location shown on the plans. Location must be approved by the NCDOT Environmental Roadside Engineer.
 - The battery operated controller is to be placed in Carson valve boxes model #910-1 with #910-2 covers.
 - All 120 VAC wiring shall be installed in accordance with all applicable electrical code requirements.
 - The contractor shall install a wired Hunter rain sensor that is compatible with the make and model of the controller.

DRIP IRRIGATION



- Drip irrigation is to be1/2" Netafim Techline DL tubing (or comparable manufacture and performance) with emitters spaced at 18" intervals at 1 gpm. An approved inline emitter drip line is to be installed under mulch in landscape areas as shown on the irrigation plan. (Install drip line before mulch is installed.)



- Drip Valve Assembly, which includes a Hunter pcz-101 remote control valve with flow control feature, an inline emitter Dripline /Techline 200 mesh filter, and an inline emitter Dripline /Techline pressure regulator. The flow control valves shall be noted on boxes with lids mounted at grade level.
- A minimum of 2 emitters per shrub and 3 emitters per tree shall be installed.

HEADS

- Hunter Pro-Spray series Pop-up sprinkler head fitted with adjustable nozzles or 90° and 180° Spray Series spray nozzles with the following radii: 12' - 15'.

- All heads with a 12" pop-up stroke, if installed with less than 1/3 of the sprinkler body exposed above grade, shall be nstalled on polyethylene flex swing joint poly pipe fitted with elbows (3/8" insert by 1/2" M.P.T. and/or 3/8" insert by 3/4" M.P.T.)

- -If greater than 1/3 of the sprinkler body is exposed, then the 6"-12" pop-up head shall be mounted on a schedule 40 PVC pipe riser as described below in relation to mounting shrub head models. In mounting 6"-12" pop-up heads on shrub type risers, care shall be taken to install the head in such a manner that the surrounding plant material (planned or existing) will hide the body of the sprinkler.
- All pop-up irrigation heads designed adjacent to curbs or pavement shall be installed with a clearance of 1 1/2" from the edges of all paved areas to provide for edging and maintenance operations. Heads installed on shrub risers or with the top of the head more than 1 1/2" above the grade shall be installed with a minimum 6" clearance from paved areas.
- All threaded pipe connections shall be assembled using Teflon thread sealing tape.

<u>PIPE</u>

-- PR 200 PVC Lateral Piping

- -Minimum depth of cover over lateral piping to be 12". Lateral pipe sizing schedule and summation of gallonage demand on a particular branch of pipe within a control section shall be determined by using the gpm for a nozzle based on a 50 psi base of head pressure and full radius at that pressure as reported in the Toro irrigation products' catalog. Pipe sizes for the lateral lines shall be as follows:
- For 0 to 15 gpm accumulated flow use 3/4" PR 200 PVC pipe.
- For 15 up to 35 gpm use 1" PVC pipe. - Allow for friction loss.
- PR 200 Main Line Piping.
 - Size of pipe to be a minimum of 1 1/2"
 - Depth of cover of mainline piping to be 18"
 - Piping shall be PR 200 solvent weld PVC pipe with schedule 40 PVC solvent weld fittings unless otherwise noted.
 - The contractor shall take all precautions necessary to avoid damaging existing plantings and their roots during the installation of the irrigation system and shall coordinate their efforts with the landscape contractor to optimize the efficiency and the aesthetic quality of the installation.

SLEEVES

- Sleeves shall be 4" PVC. The irrigation contractor shall coordinate with the landscape contractor to insure proper installation of the irrigation system with the landscape and hardscape.

Electric control valve

- Valves may be of comparable manufacture and performance to the brand named.
- Location of electric 24 VAC remote control valve with flow control feature (Hunter PGV-ASV valves).
- All in-line remote control valves shall be installed in Carson valve boxes with lids mounted at grade level. Single valves may be installed in a Carson model #910-1 valve box with cover, while multiple valves (up to, 2 - 1" valves or 1 - 1 1/2") shall be installed in Carson model #1419-1 box with #1419-2 cover.

M WATER SUPPLY/METER

- The meter shall be the owner's/town's responsibility.
- The meter is 1.5" in size. Since the water supply for the system will be potable water, the contractor will be required to install a backflow prevention device which will be located downstream of the irrigation meter.
- This irrigation system shall be capable of delivering 33 gpm minimum with one control station operating at a time at 60 psi at the base of the head for optimum performance of the irrigation system.

24 VAC CONTROLLER WIRING

- All 24 VAC control wiring shall be single strand copper wire with Polyethylene PE direct burial insulation rated for 300 VAC valve "common" wires shall have white insulation while valve "hot" wires shall have red insulation. Both the "common" and "hot" wires shall be #14 AWG. Valve wiring shall follow mainline piping where feasible and shall be laid in the bottom of the trench line with the mainline piping. Wiring shall be "bundled" and taped at intervals of approximately ten feet. All wiring shall be installed in accordance with local code requirements.
- Wire splices shall be kept to an absolute minimum. Where major concentrations of splices are necessary, they shall be placed in a approved valve box, with #910-2 cover installed at grade level. Splices at valve locations shall be made inside of the valve box. All splice locations shall be noted on the as built
- Wire runs shall be installed with enough slack and/or expansion loops to prevent excessive strain due to thermal contraction.
- All wire splices shall be made using UL approved direct burial connectors and waterproof materials. All electrical work shall be installed according to code.



METER LOCATIONS - 1 BACK FLOW PREVENTERS - 1 BATTERY POWERED CONTROLLERS- 1 ZONE VALVES - 2 MAIN LINE PIPE - 200' LATERIAL PIPE - 400' SPRAY HEADS - 25 BORING - 110'

Quantities are estimated based on design drawings. Refer to plans for any decrepencies. Plans take priority over these estimated quatities. Estimated quantities do not cover all materials necessary for installation. Quantities may be adjusted slightly due to site conditions, specific irrigation equipment and implementation, or as directed by the NCDOT Engineer.

NCDOT - Roadside Environmental Unit

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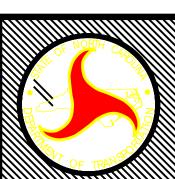


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June/2017 Roundabout Landscape

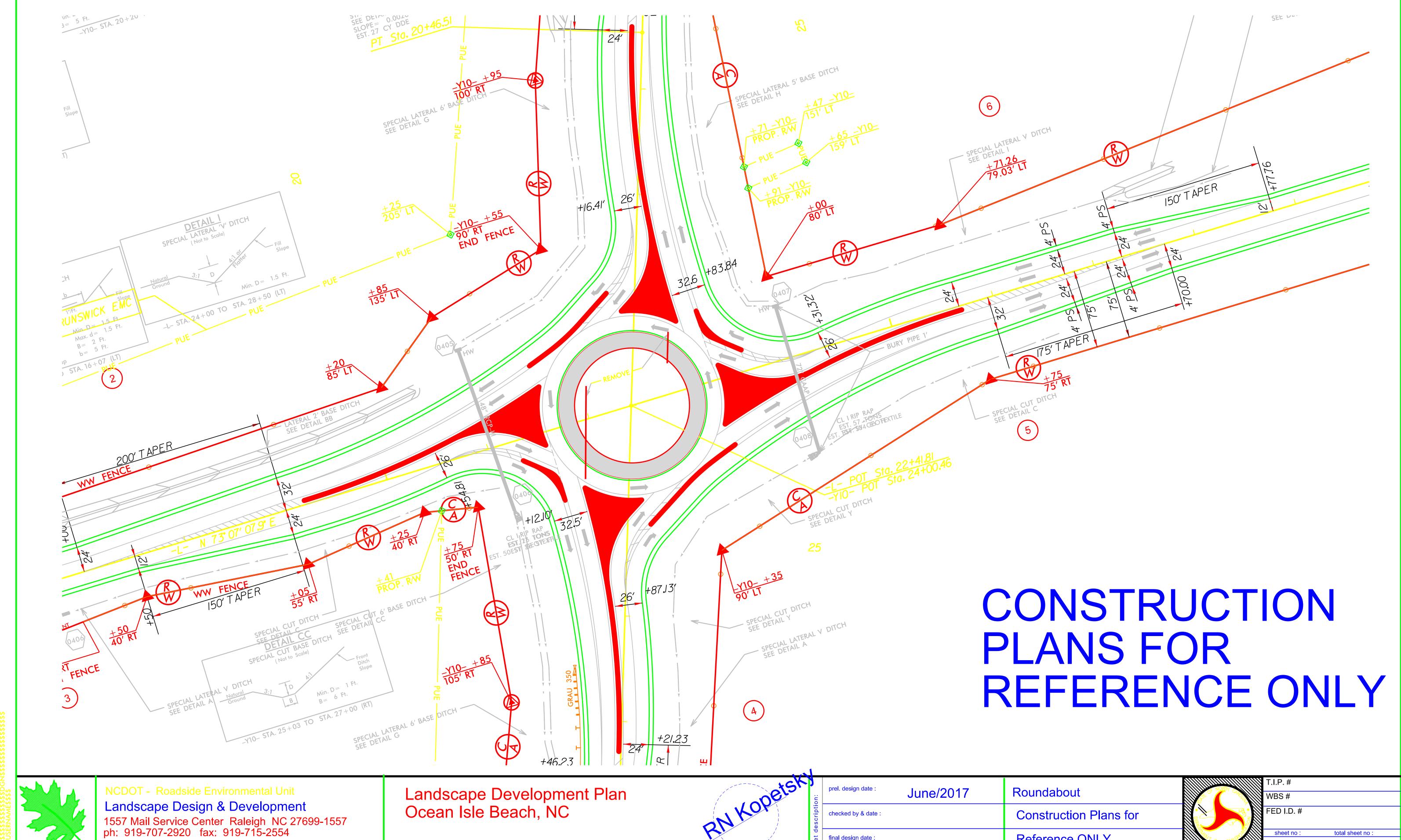
Irrigation Specs



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Reference ONLY