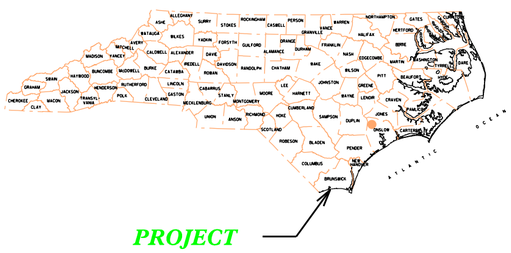
PROJECT: OCEAN ISLE BEACH NC- Landscape Enhancement

HIGHWAY LANDSCAPE DEVELOPMENT PROJECT

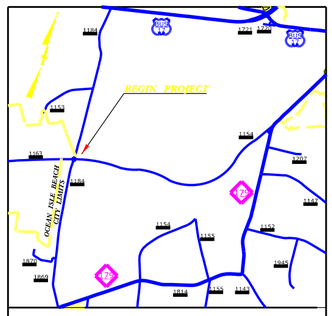
T.I.P. #	STATE PROJECT W.B.S. #	SHEET #	SHEET # TOTAL
-		L 1	7
FED. PROJ. #	DESCRIPTION		DIVISION
-	LANDSCAPE		3



BRUNSWICK COUNTY
LANDSCAPE ENHANCEMENT

LOCATION: OCEAN ISLE BEACH NC

TYPE OF WORK: Roundabout Landscape Enhancement



SUMMARY OF QUANTITIES

Ocean Isle Roundabout

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			

CONVENTIONAL SYMBOLS

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
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
Picnic Shelter
Regeneration
Reforestation

INDEX OF L SHEETS:

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

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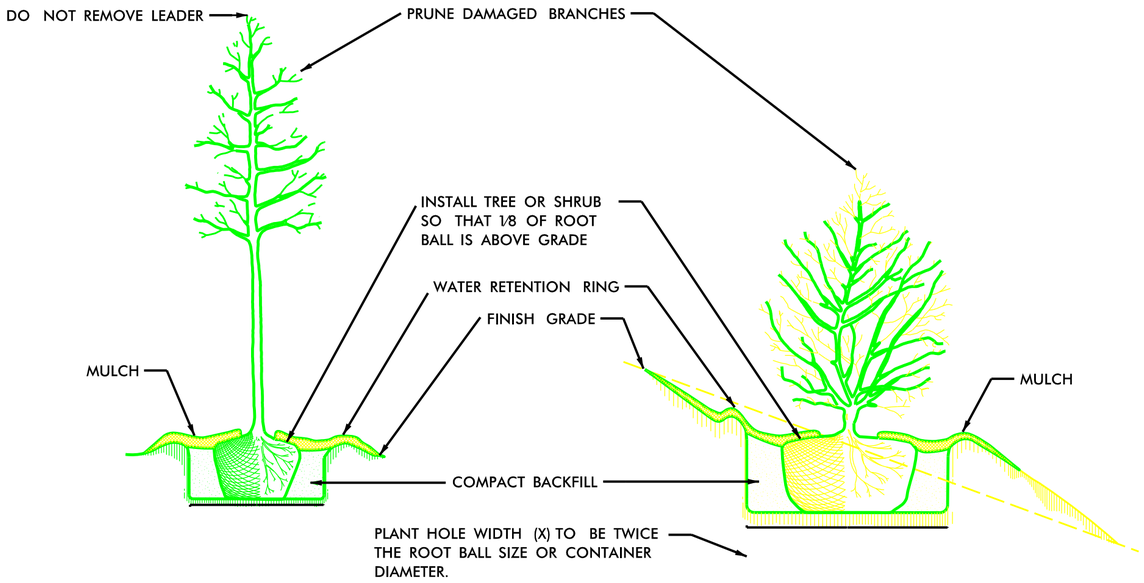
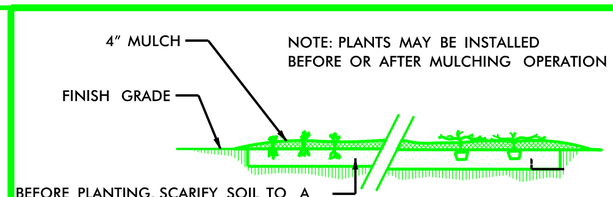
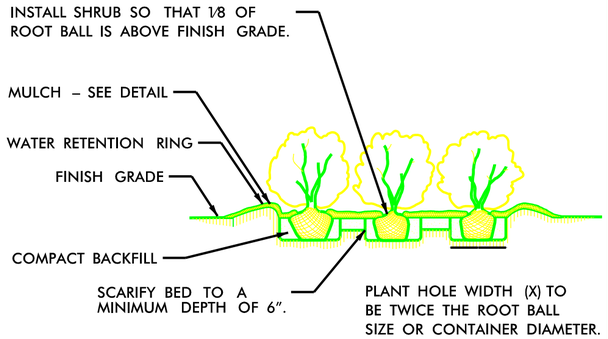


TREE OR SHRUB PLANTING DETAIL
(LEVEL GROUND)

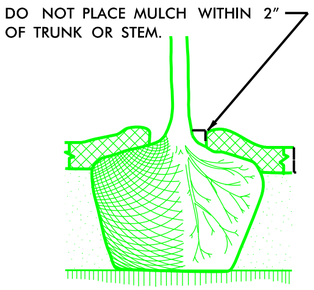
TREE OR SHRUB PLANTING DETAIL
(SLOPING GROUND)



GROUND COVER/BEDDING PLANT DETAIL



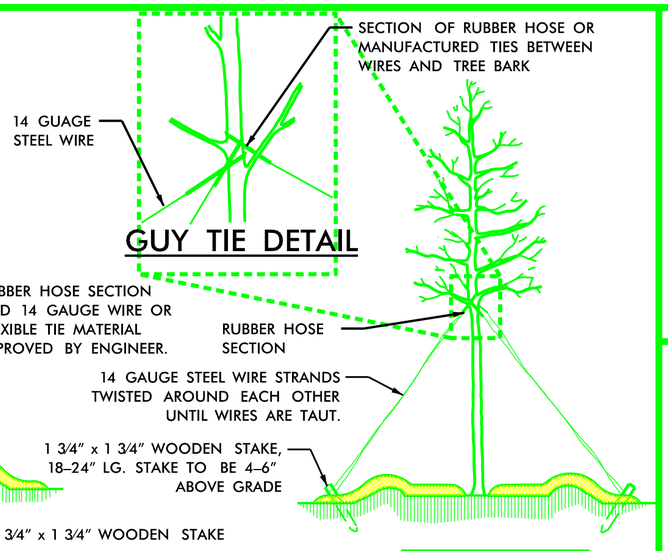
SHRUB BED PLANTING DETAIL



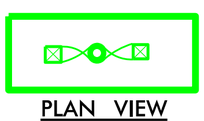
MULCH DETAIL

NOTES:

- SCHEDULE FOR PLANT HOLE SIZE: PLANT HOLE WIDTH (X) TO BE TWICE THE ROOT BALL SIZE OR CONTAINER DIAMETER.
- SEE STANDARD SPECIFICATIONS FOR PLANT BED FUMIGATION AND HERBICIDAL TREATMENT.
- APPLY FERTILIZER AT PLANTING TIME IN THE FORM OF A SLOW RELEASE PELLET OR TABLET. APPLY AT RATE RECOMMENDED BY MANUFACTURER. BOTH RATE AND FORMULATION MUST BE APPROVED BY FIELD ENGINEER PRIOR TO APPLICATION.
- REMOVE WIRE BASKET AND FOLD BURLAP BACK FROM TOP OF ROOT BALL BEFORE BACKFILLING IS COMPLETE.
- ALL PRUNING TO FOLLOW STANDARD ARBORICULTURAL PRACTICES AS SPECIFIED BY INTERNATIONAL SOCIETY OF ARBORICULTURE.
- DO NOT ATTEMPT TO STRAIGHTEN A TREE THAT HAS BEEN PLANTED AT AN ANGLE WITH THE USE OF STAKING OR GUYING. DIG TREE AND REPLANT TO UPRIGHT POSITION.



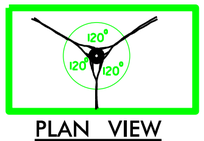
GUY TIE DETAIL



PLAN VIEW

STAKING DETAIL
(TREES 6'–10')

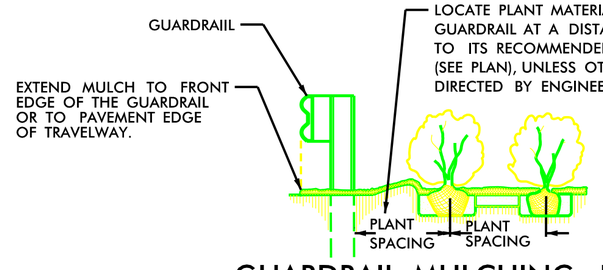
USE AS DIRECTED BY FIELD ENGINEER



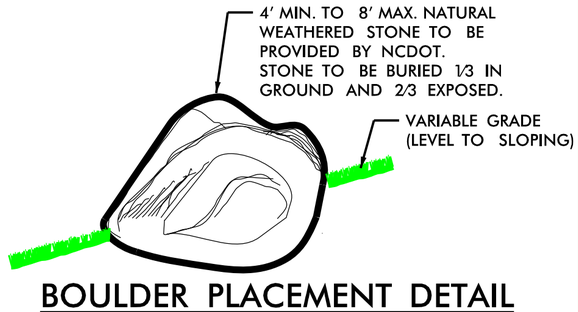
PLAN VIEW

GUYING DETAIL
(TREES 10' OR LARGER)

USE AS DIRECTED BY FIELD ENGINEER



GUARDRAIL MULCHING DETAIL
USE AS DIRECTED BY FIELD ENGINEER



BOULDER PLACEMENT DETAIL TYPICAL

SCALE: NTS

MIN. 12" DEEP CLASS "A" STONE ON FILTER FABRIC LINER IN DITCH. PLACE STONE FLUSH WITH DITCH GRADE FOR MAXIMUM WATER FLOW.

CLASS "A" STONE DITCH LINING DETAIL

North Carolina Department of Transportation
Roadside Environmental Unit
Aesthetic Engineering & Landscape Architectural Design

OCEAN ISLE BEACH NC
Roundabout Landscape Enhancement
Brunswick County

PROJECT TITLE:

Plans Drawn By: JK
Scale
Date 6 / 2017
Sheet Description: Planting Details
WBS #
Sheet # 2 OF 7

Quan	Unit	Common Name	Botanical Name	Size	Notes
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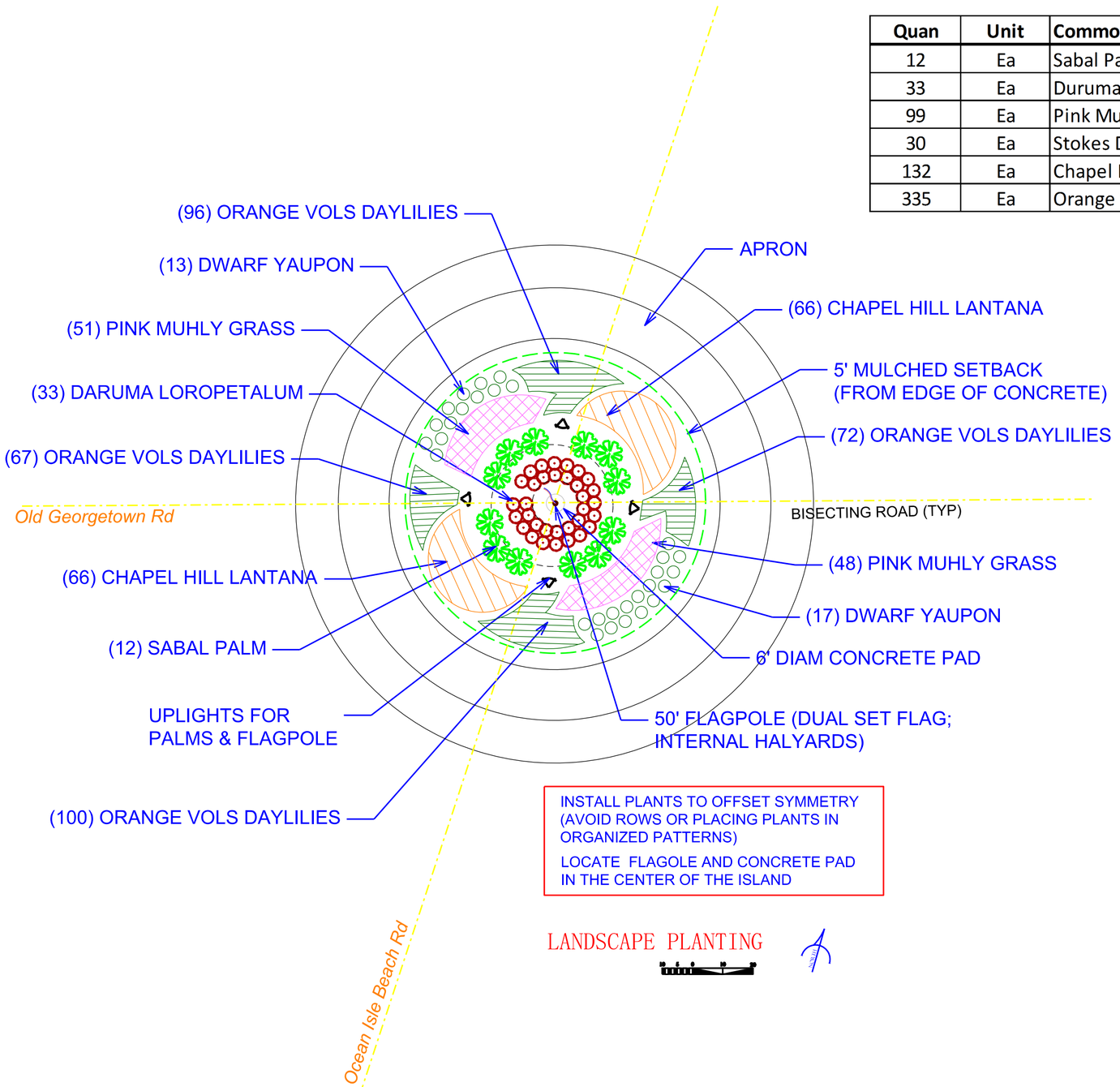
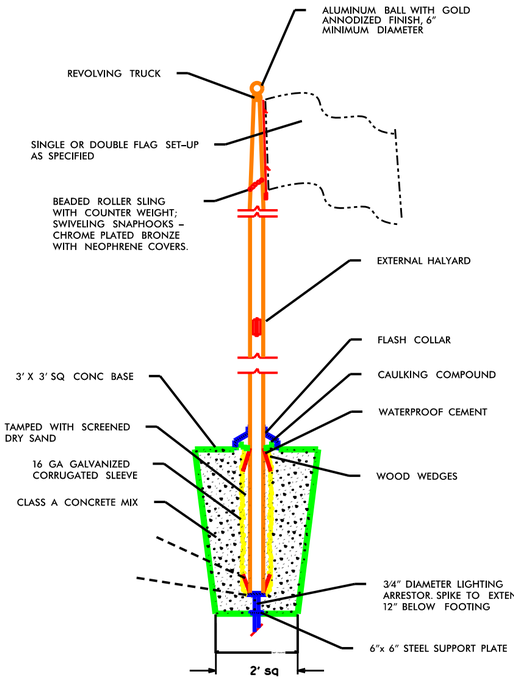
335	Ea	Orange Vols Daylily	Hemerocallis 'Orange Vols'	#1 Cont, healthy/full	2' O.C.



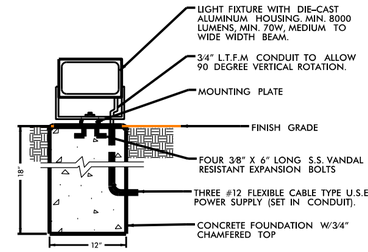
INSTALL PLANTS TO OFFSET SYMMETRY (AVOID ROWS OR PLACING PLANTS IN ORGANIZED PATTERNS)

LOCATE FLAGOLE AND CONCRETE PAD IN THE CENTER OF THE ISLAND

LANDSCAPE PLANTING



FLAG POLE ELEVATION



SPOTLIGHT DETAIL

NOTE:

SPOT LIGHT: ADJUSTABLE TILT, GLARE CONTROL, DIE-CAST ALUMINUM HOUSING WITH TEMPERED GLASS LENS WITH SILICON GASKET SEAL, PROVIDE WITH LED LAMP, MOUNT ON ALUMINUM GASKET JUNCTION BOX AND PHOTO CELL, MEDIUM WIDTH LIGHT DISTRIBUTION WITH SUFFICIENT DIRECTIVE BEAM TO ILLUMINATE 50' FLAGPOLE. SUPPLY CATALOG CUT (3 COPIES) TO ENGINEER FOR APPROVAL. SITE AND ADJUST AS DIRECTED BY ENGINEER.

CONNECT TO EXISTING ELECTRICAL SERVICE WITHIN THE ROUNDABOUT.

FP Flagpole nts

SL LED Spot Light nts

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

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1447 ROBERT N. KOPETSKY

RN Kopetsky

sheet description:			
prel. design date :	June/2017	Roundabout Landscape	T.I.P. #
checked by & date :		Enhancements	WBS #
final design date :			FED I.D. #
			sheet no : 3 / total sheet no : 7

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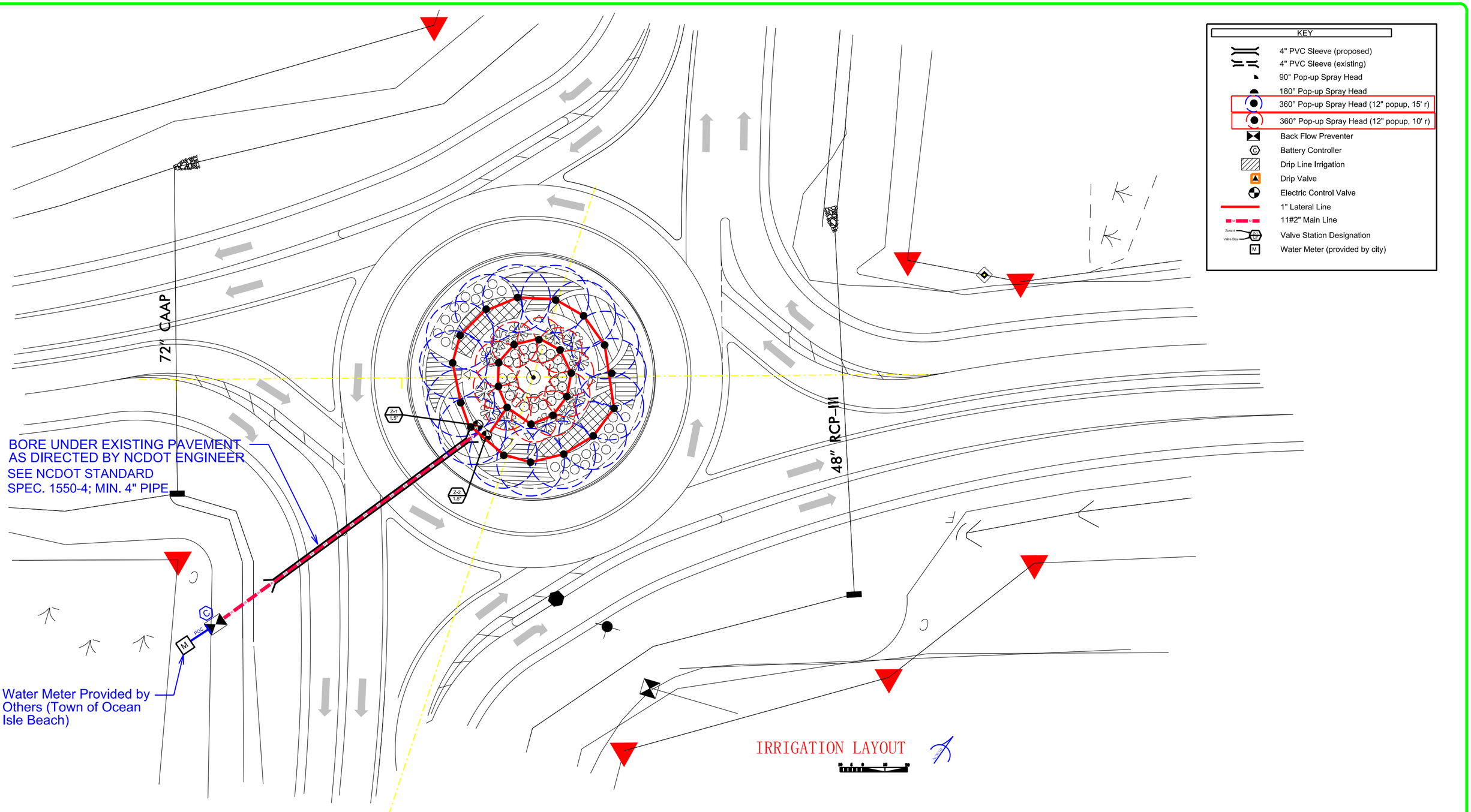

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Landscape Development Plan
Ocean Isle Beach, NC

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1447 ROBERT N. KOPETSKY

RN Kopetsky

sheet description:

prel. design date : June/2017

checked by & date :

final design date :

Roundabout Landscape

Irrigation Plan

T.I.P. #

WBS #

FED I.D. #

sheet no : 4

total sheet no : 7

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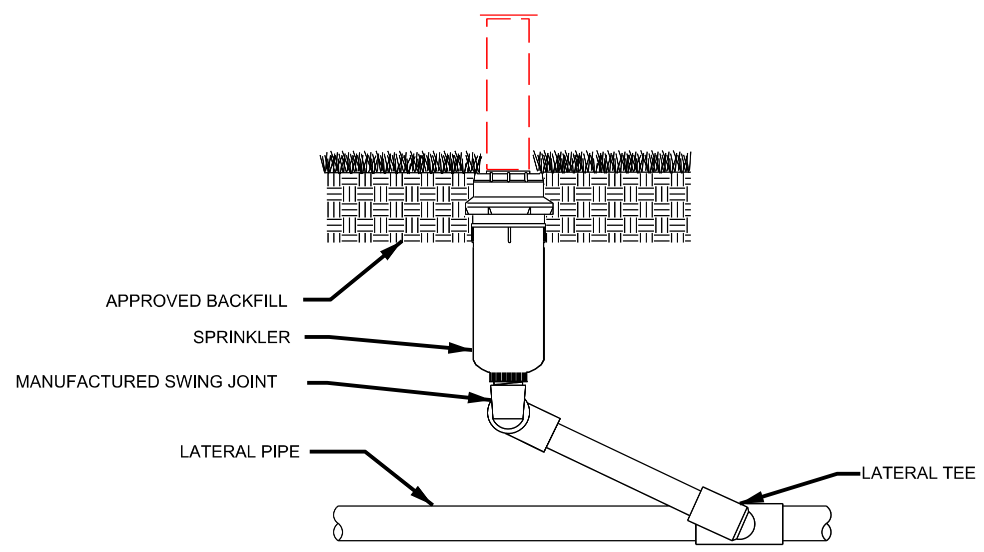
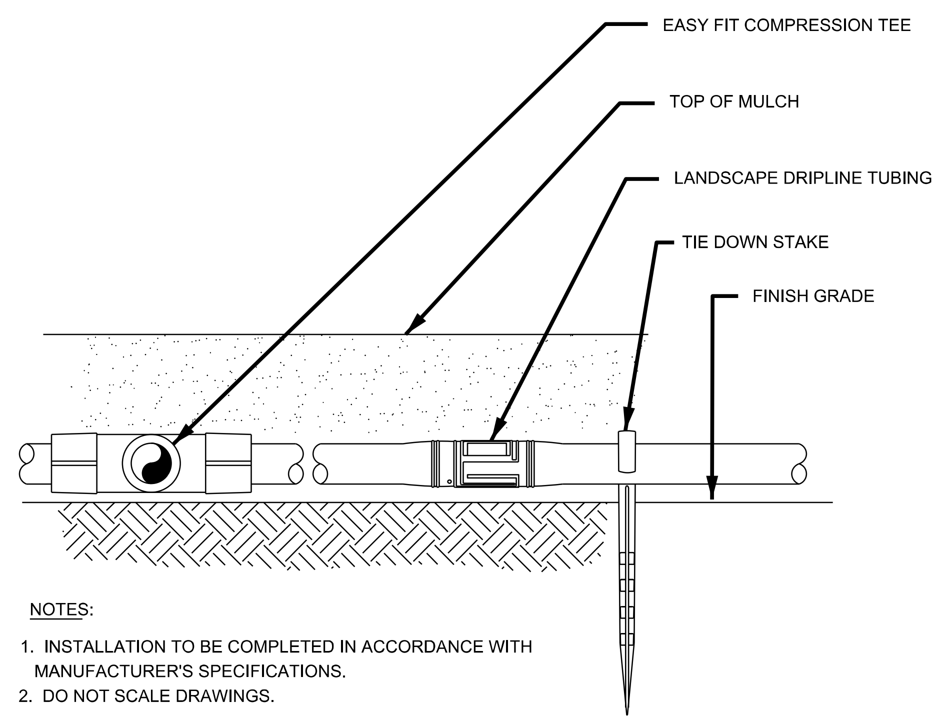


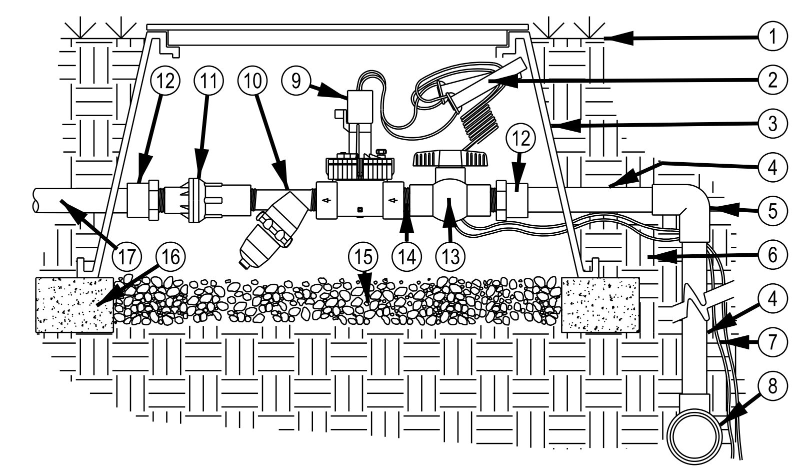
NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. INSTALL SPRINKLER AT FINISHED GRADE.

IR1 POP-UP SPRAY HEADS
SINGLE-STREAM SPRINKLER, SWING JOINT (NOT TO SCALE)



NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.

IR2 LANDSCAPE DRIPLINE ON GRADE
POTABLE SYSTEM (NOT TO SCALE)

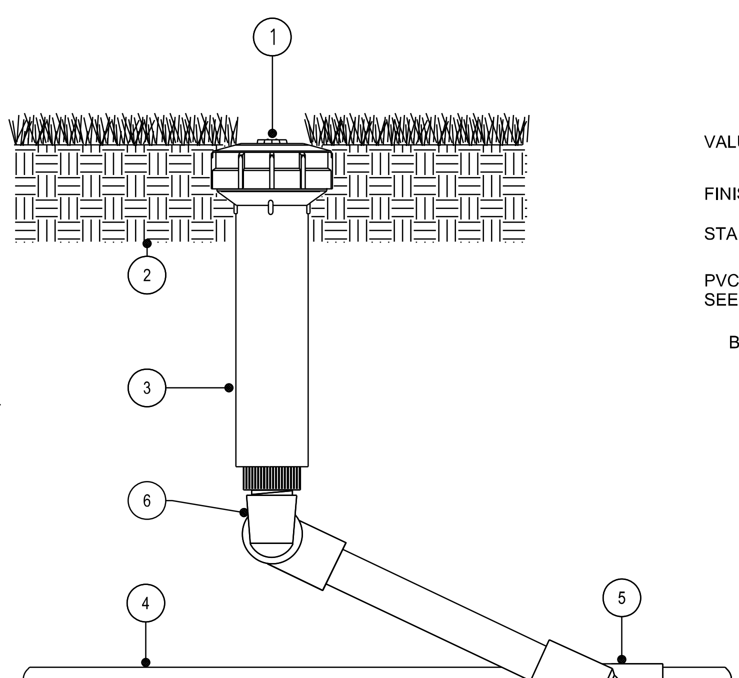


LEGEND

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.

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.

IR3 DRIP ZONE ASSEMBLY
VALVE ASSEMBLY (NOT TO SCALE)

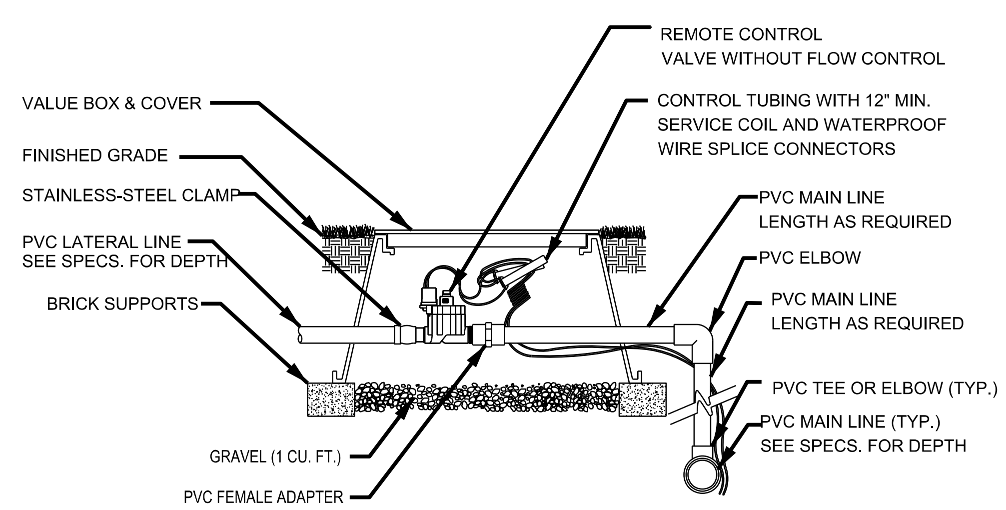


LEGEND

1. NOZZLE
   (SIZE PER PLAN)
2. APPROVED BACKFILL
3. SPRINKLER
4. LATERAL PIPE
5. LATERAL TEE
6. MANUFACTURED
   SWING JOINT

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. INSTALL SPRINKLERHEAD AT FINISHED GRADE

IR4 ROTOR SPRINKLER
4 INCH POP-UP (SWING JOINT) (NOT TO SCALE)



NOTES:
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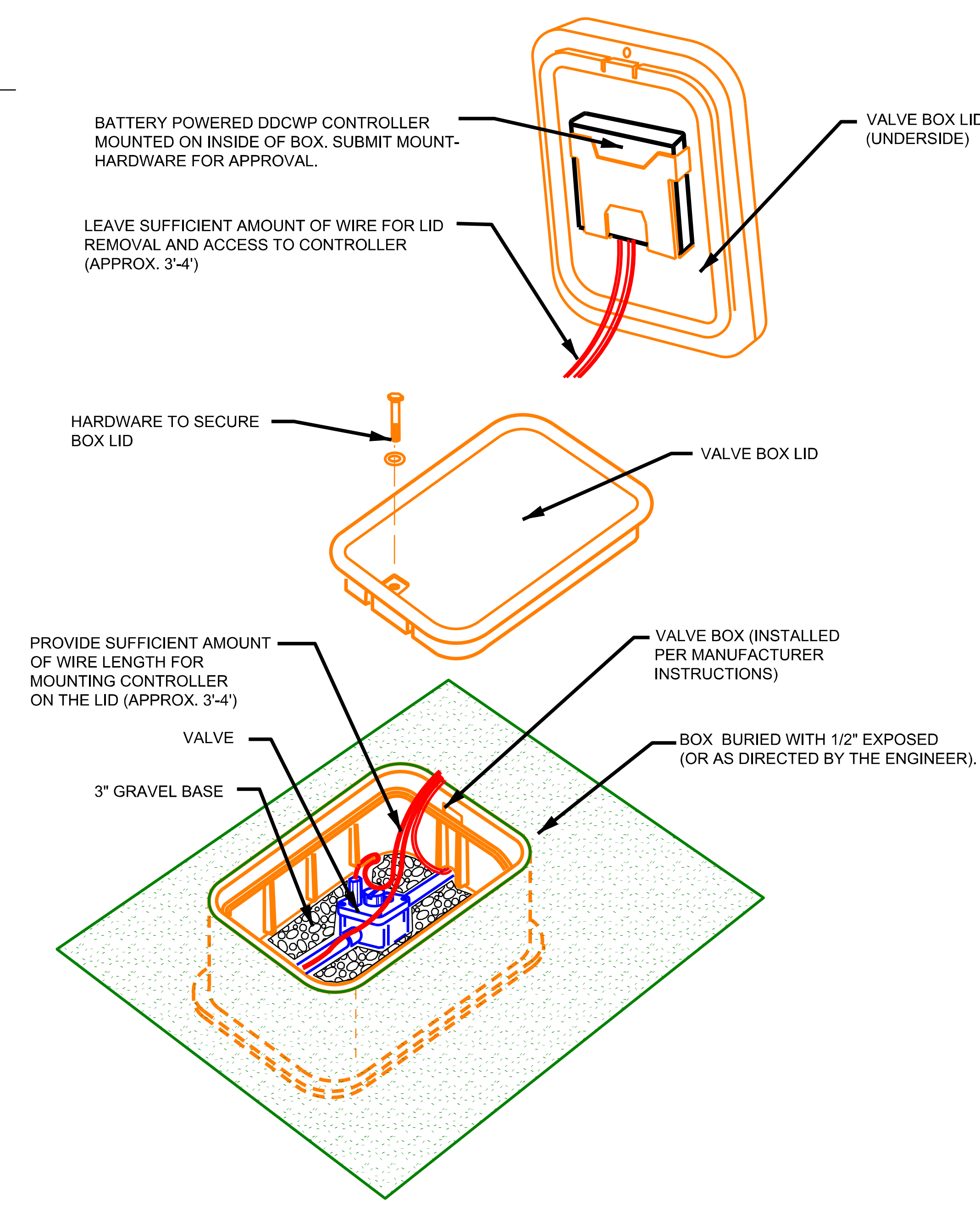
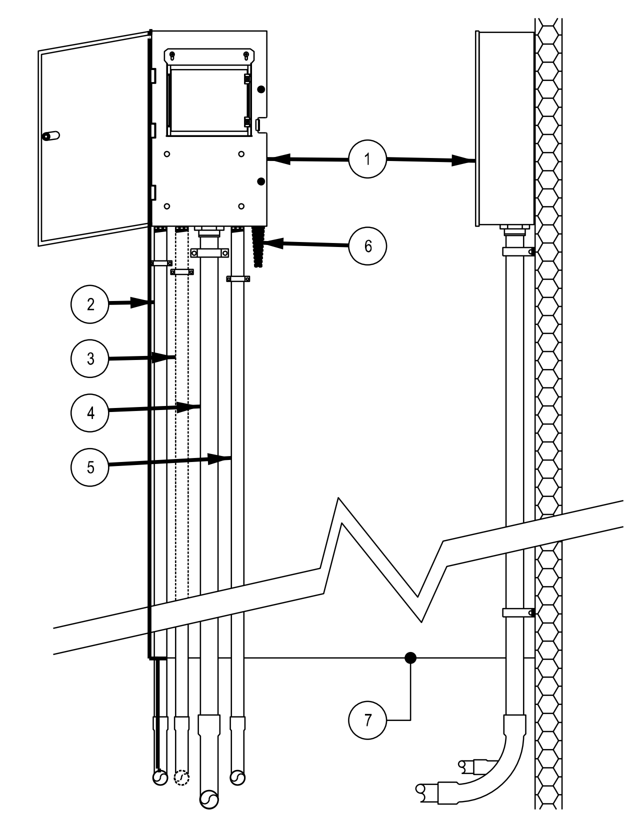
2. DO NOT SCALE DRAWINGS.

IR5 VALVES & BOX
1" PLASTIC VALVE (NOT TO SCALE)



IR6 DDCWP CONTROLLER BOX LID MOUNT
BATTERY POWERED CONTROLLER (NOT TO SCALE)



1. SMALL METAL CABINET WALL MOUNT IRRIGATION CONTROLLER SEE PLAN FOR NUMBER OF STATIONS.
2. 1/2" CONDUIT FOR ELECTRICAL POWER PER LOCAL AND NATIONAL ELECTRICAL CODES. OPTIONAL 3/4" KNOCK-OUT IF LARGER CONDUITS ARE USED.
3. OPTINOAL 1/2" KNOCK-OUT FOR RAIN SENSOR WIRE.
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.
5. 3/4" KNOCKOUT FOR EARTH GROUND WIRES.
6. MOUNTED NARROWBAND ANTENNA
7. FINISHED GRADE

NOTES:
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.

IR7 CONTROLLER WALL MOUNT
WALL-MOUNT CONTROLLER, METAL (NOT TO SCALE)

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Landscape Development Plan
Ocean Isle Beach, NC

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1447 ROBERT N. KOPETSKY

RN Kopetsky

sheet description:

prel. design date : June/2017

checked by & date :

final design date :

Roundabout Landscape

Irrigation Details

T.I.P. #

WBS #

FED I.D. #

sheet no : 5 total sheet no : 7

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IRRIGATION NOTES & LEGEND

***Irrigation contractor must be licensed by the NCICLB under chapter (2008-177, S.1; 2013-383, S.3).**

***All materials may be of comparable manufacture and performance to the brand listed.**

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.

ESTIMATED IRRIGATION QUANTITIES

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.

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

Ⓒ - 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 than1/3 of the sprinkler body exposed above grade, shall be installed 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.

PIPE

- 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.

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 plan.

- 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.

NCDOT - Roadside Environmental Unit
Landscape Design & Development
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Landscape Development Plan
Ocean Isle Beach, NC

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1447 ROBERT N. KOPETSKY

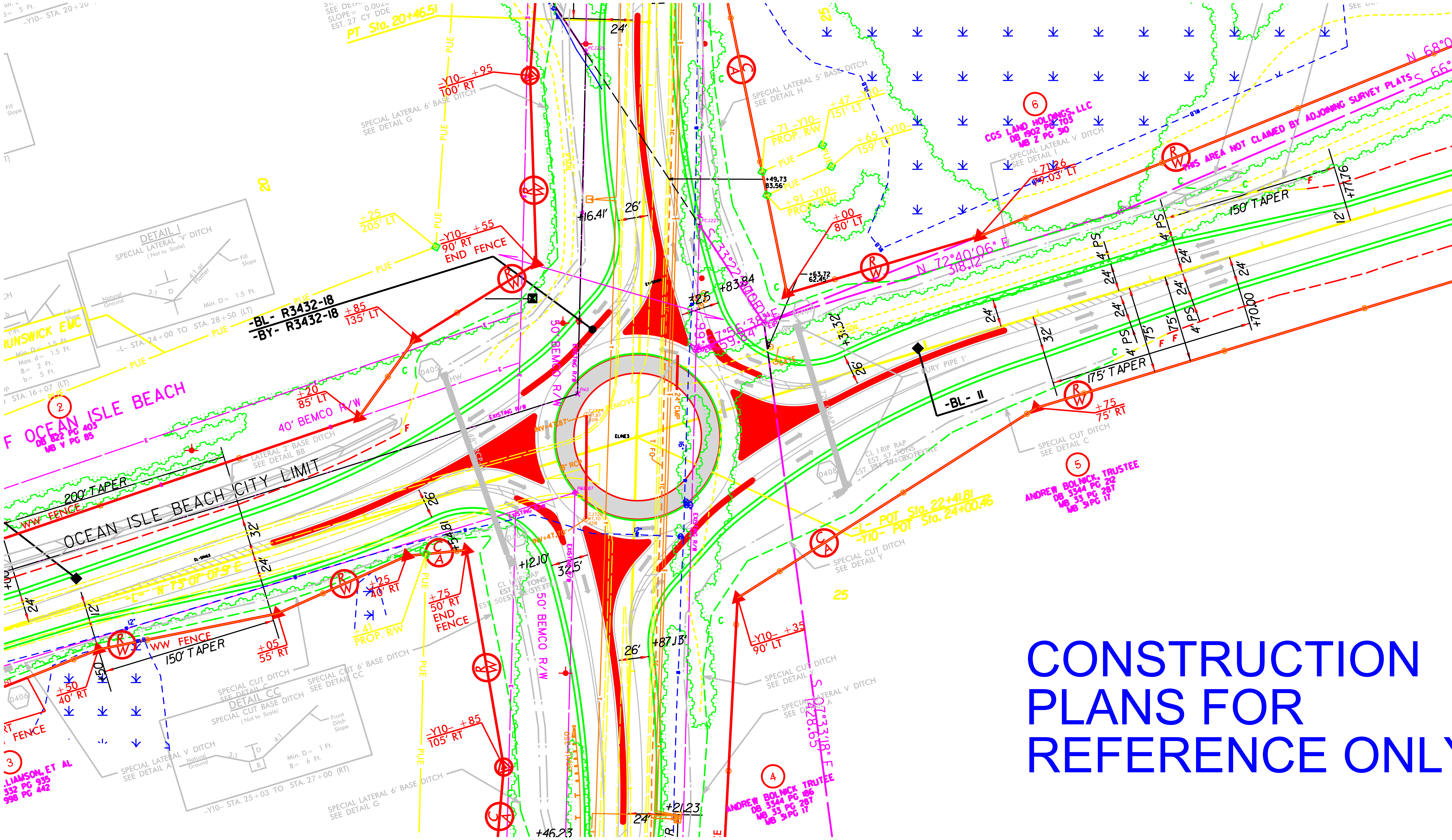
RN Kopetsky

sheet description:

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

Roundabout Landscape
Irrigation Specs

T.I.P. #
WBS #
FED I.D. #
sheet no : 6
total sheet no : 7



CONSTRUCTION PLANS FOR REFERENCE ONLY

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