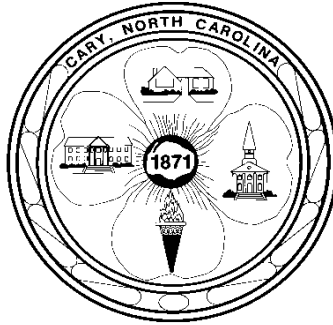


# TOWN of CARY



## Irrigation Submittal Guide

### REQUIREMENTS

**In accordance with the standards set forth by the Town of Cary's Community Appearance Manual, the Town of Cary encourages landscapers to use native and drought tolerant plants wherever possible. Where supplemental irrigation is deemed necessary, systems shall be designed and submitted under the guidelines of the Community Appearance Manual, as detailed in the following pages, and Chapter 23 Rules based on NC Statute Chapter 89G.**

[www.townofcary.org](http://www.townofcary.org)  
(919) 469-4046

# **IRRIGATION SYSTEM DESIGN REQUIREMENTS AND CARY ORDINANCES**

All new irrigation systems must adhere to the following design criteria:

- Sprinkler heads must be spaced to provide head to head coverage, using guidelines suggested by the manufacturer, and wind factors must be considered
- Sprays and rotor irrigation heads cannot be used within the same zone, except on single family properties with a single zone system
- To avoid runoff, irrigation systems should be installed so that the precipitation rate is less than the infiltration rate, or a controller must be used which would limit run times to limit runoff
- Sprinklers located on a steep slope require installation of check valves on all the heads on that irrigation zone
- The zoning of the irrigation system must allow that plants with different water requirements (such as grass and shrubs) be on separate zones.
- In addition, the irrigation design should consider the different microclimates found in most landscapes (such as north facing grass areas vs. south facing grass areas) and separate those microclimates into zones. These zoning practices may add slightly to the installation cost of an irrigation system, but can have a dramatic effect on system efficiency.
- The controller should have multiple programs so these different irrigation schedules can be utilized.
- All sprinkler heads as well as drip irrigation emitters should have pressure regulation to optimize system efficiency. This pressure regulation can be at the point of connection to the water supply, at each zone valve or located in each head/emitter.

Guidelines on pressure at the head/emitter

Spray Heads	20 to 35 psi
Gear Rotors	60 psi or less
Impact Rotors	60 psi or less
Drip emitters	40 psi or less

- In order to comply with the Town's Water Waste Ordinance, Chapter 36 / Article 3, Sec.36-83 sprinklers should be chosen to avoid water being sprayed onto impervious surfaces.
- To achieve compliance with Town's Rain Sensor Ordinance, Chapter 36 / Article 3, Sec 36-84, location of rain or soil sensors should be identified, set to ¼ inch and activated. (Do not locate sensors under structural drip lines or within 3' of HVAC equipment, as this can cause inaccurate readings. The sensor location must be readily accessible, without the use of a ladder.)
- Sprays, rotors or bubblers may be placed a minimum of 4" within a 'devil strip' a minimum of 3 ft wide or, from the back of the curb, sidewalk, driveway, or the like.
- Where no curb or gutter design exists, heads shall be no less than 1.5 ft. from the edge of the asphalt.
- Automated, in-ground irrigation systems must be connected to a separate irrigation meter per Chapter 36/Article 3, Sec. 36-76.
- All potable irrigation systems must install a backflow prevention assembly per Chapter 36/Article 3, Sec. 36-78 and the guidelines outlined in this packet.

The Town of Cary has developed these standards in conjunction with the Irrigation Association to help preserve and protect our limited natural resources. Town staff is available to help ensure plans are designed and submitted correctly. Find a complete copy of the irrigation designs standards in the [Community Appearance Manual](#) on page 63.

## **PERMIT PROCESS**

- Through the [online plan review portal](#), submit your plans, a completed [water & sewer service application](#), and a completed [minor encroachment agreement](#) signed by each property owner.
- **Effective January 1, 2009 an Irrigation Contractor's license is required for installations of irrigation systems per N.C. General Statute Chapter 89G. ([www.nciclb.org](http://www.nciclb.org)), with certain [exemptions](#).**
- System must be shown on a site plan showing house or building and all rights-of-way and easements.
- Drawings submitted must include a copy of an **approved Town of Cary Utility Site or Subdivision Plan** showing **existing meter tap location** and **meter box location**
- Plans shall not exceed a maximum scale of 1" = 30'
- Plans shall include irrigation designer's name, address and phone number
- Designer must be a current CIA/IA "Certified Irrigation Contractor" (CIC) "Certified Irrigation Designer" (CID), or a Professional Engineer or a Landscape Architect (*Exception: All design requirements on page 1 apply to both commercial and single family irrigation systems. The designer requirement listed above only applies to commercial irrigation systems.*)
- Plan must include the following:
  - Location of the water supply (meter, well or on-site pump)
  - Location of all heads and type of head
  - Location of backflow prevention device
  - Location of rain sensor
  - Statement on plans showing precipitation rate is less than infiltration rate, or how you will limit run-off
  - Show check valves on any heads located on steep slopes
  - Show zones for different plant materials that have different water requirements (such as grass & shrubs, north facing vs. south)
  - Label zones by number and identify as grass, shrub or flower bed
  - Show total square footage by zone and for total system
  - Irrigation controller must be shown and capable of multiple programs
  - Show method of pressure regulation
- **Permit issuance is contingent upon application approval and receipt of all applicable fees.**

## WELL IRRIGATION PERMITTING GUIDELINES

If you would like to install a well for irrigation, an additional step is needed. The applicant must comply with the standard Irrigation Submittal Requirements as well as the following procedure:

1. Apply for a Wake County Well Permit at [www.wakegov.com](http://www.wakegov.com).
2. After receiving an approved Wake County Well Permit, submit a completed Irrigation Permit Application including a copy of your well permit through the [online plan review portal](#).

## RAINWATER AND CISTERN IRRIGATION PERMITTING GUIDELINES

If you would like to install a rainwater collection system utilizing a cistern for supplying an irrigation system, the following criteria must be met.

- Standard **Irrigation Submittal Requirements** must be followed
- Irrigation System Design Requirements shall also include the location and size of the cistern tank utilized as well as all system safeguards (pumps, check valves and all automatic system switches)
- A separate potable irrigation water meter with an approved backflow prevention device (RPZ) must be incorporated as a secondary backup water source **or**
- If cistern is to be manually filled, an approved backflow prevention device (RPZ) must be added to the residence existing potable water meter to protect the Town of Cary water supply from potential contamination. (standard sewer fees apply to potable meter usage)
- All electrical work associated with the pump system must be included with the permit application

# **INSPECTION PROCESS**

## **Irrigation Systems Using Potable Water**

- **Final Inspection:** Once the potable irrigation meter has been installed, the contractor / homeowner is required to call the Development Services Department, (919) 469-4046, to schedule a final inspection. The final inspection will ensure compliance with the North Carolina Plumbing Code by.
  - 1) Inspecting the connection at the potable irrigation meter to the water supply
  - 2) Inspecting the underground piping connection from the meter box to the backflow (RPZ) before it is covered
  - 3) Inspecting the installation of the backflow (RPZ).
  - 4) Ensuring all hose bibs are
    - Above ground only
    - Painted yellow
    - Marked Non-Potable Water Only
  - 5) Collecting the backflow (RPZ) certification (Completed by a Town of Cary listed Certified Backflow Prevention Assembly Technician only)

## **Future Reclaimed Water Irrigation Systems Utilizing Existing Potable Water**

**INCLUDES:** Areas as defined in the Town's Reclaimed Water System Master Plan (Policy Statement 132) designated to be served in the future by reclaimed water, but that will be temporarily served by either by a standard potable split tap irrigation service or by a Reclaimed Water Main fed by an existing Potable Main

- **Rough-in inspection:** Once the potable meter has been installed, the contractor / homeowner is required to call the Development Services Department, (919) 469-4046, to schedule an inspection. The rough-in will:
  - 1) Inspect the connection at the reclaimed irrigation meter to the water supply
  - 2) Inspect the complete underground reclaimed irrigation piping system before it is covered to ensure compliance with Town of Cary's Reclaimed Water Standards.
  - 3) Inspect the installation of the backflow (RPZ) (for future reclaimed systems only)
  - 4) Collect the backflow (RPZ) certification (for future reclaimed systems only)  
(Completed by a Town of Cary listed certified Backflow Prevention Assembly Technician only)
  
- **Final Inspection\*:** After the rough-in inspection has been passed and all associated work completed, the contractor / homeowner is required to call the 311 Center (311 inside Cary, (919) 469-4046 outside Cary), or go [online](#) to schedule an inspection. The final inspection will:
  - 1) Inspect the location and color of all valve boxes, heads, type of heads, spacing of heads and throw pattern of each head and correct pressure
  - 2) Test the system to ensure compliance with approved plans, N.C. State Plumbing Code and Town of Cary Ordinance (Note: We cannot accept the Irrigation Final Inspection Certification form in lieu of an inspection for reclaimed or future reclaimed systems)
  - 3) Ensure In the following additional requirements are met
    - A map of the valve and head layout shall be provided to the property owner or a copy placed near or with the irrigation controller
    - All zones shall be clearly delineated in the timer cabinet
    - Responsible entity shall be named on inner door of timer (for emergency contact purposes)

- 4) All hose bibs must be
- Installed below ground in Town of Cary approved reclaimed water hose bib vaults
  - Installed with  $\frac{3}{4}$  brass cam lock hose connection per N.C. State Law
  - Lid must be stenciled with the words **Caution Reclaimed Water – Do Not Drink**  
(See standard reclaimed hose bib and box detail # 06500.03 @ [www.townofcary.org](http://www.townofcary.org))

\*If the contractor or homeowner does not call in for a final inspection within 30 days of the rough-in inspection being passed, the Town of Cary may turn off the reclaimed water meter until the final inspection has been scheduled and completed.

## Irrigation Systems Using Reclaimed Water

**INCLUDES: Areas as defined in the Town's Reclaimed Water System Master Plan that are presently being served by a reclaimed water source**

- **Rough-in inspection:** Before the reclaimed meter can be installed, the contractor or homeowner is required to call the Development Services Department, (919) 469-4046, to schedule an inspection of:
  - 1) The connection of the reclaimed irrigation system to the reclaimed water meter box
  - 2) The complete underground reclaimed irrigation piping system before it is covered to ensure compliance with Town of Cary Reclaimed Water Standards.

**Once the rough-in inspection has been approved, the reclaimed meter will be scheduled for installation. For questions concerning this process please call (919) 469-4090.**

- **Final Inspection\*:** After the rough-in inspection has been passed and all associated work completed, the contractor or homeowner is required to call the Development Services Department, (919) 469-4046, to schedule an inspection of:
  - 1) Location and color of all valve boxes, heads, type of heads, spacing of heads and throw pattern of each head and correct pressure
  - 2) Reclaimed Water Awareness training between the property owner and the Town's Reclaimed Water Supervisor. For specific questions about this training, call the Reclaimed Water Coordinator at (919) 460-4090.
  - 3) In addition, the following requirements must be met
    - A map of the valve and head layout shall be provided to the property owner or a copy placed near or with the irrigation controller
    - All zones shall be clearly delineated in the timer cabinet
    - Responsible entity shall be named on inner door of timer (for emergency contact purposes)
  - 4) All hose bibs must be
    - Installed below ground in Town of Cary approved reclaimed water hose bib vaults
    - Installed with  $\frac{3}{4}$  brass cam lock hose connection per N.C. State Law
    - Lid must be stenciled with the words **Caution Reclaimed Water – Do Not Drink**  
(See standard reclaimed water hose bib and box detail # 06500.03 @ [www.townofcary.org](http://www.townofcary.org))

\*If the contractor or homeowner does not call in for a final inspection within 30 days of the rough-in inspection being passed, the Town of Cary may turn the reclaimed water meter off until the final inspection is scheduled and complete.

## **Rainwater Cistern Irrigation Systems (Supplemented by Potable Water)**

- **Final Inspection:** Once the rainwater collection and irrigation system have been installed along with the separate irrigation meter and the backflow protection (RPZ) or with the installation of the backflow protection (RPZ) on the existing potable water meter, the contractor or homeowner is required to call the Development Services Department, (919) 469-4046, to schedule an inspection for the North Carolina Plumbing Code. The following will be inspected:
  - 1) The connection at the potable irrigation meter to the water supply
  - 2) The underground piping connection from the meter box to the backflow (RPZ) before it is covered
  - 3) The installation of the backflow (RPZ).
  - 4) Collection of the backflow (RPZ) certification (completed by a TOC listed Certified Backflow Prevention Assembly Technician only)
  - 5) The underground piping connection between the potable supply and the irrigation system (downstream of the cistern) including all automated valves
  - 6) Cistern pump set (with check valve) and all associated potentially concealed wiring and circuitry

## **Irrigation Systems Using Well or Pond Water**

- **Final Inspection:** Once all permits have been secured and the well dug (or the pond tapped) the contractor or homeowner is required to call the Development Services Department, (919) 469-4046, to schedule an inspection to ensure compliance with the North Carolina Plumbing Code by inspecting:
  - 1) Well pump set (with double check valve) or pond pump set (with dual check valve) and
  - 2) All potentially concealed underground wiring and associated circuits.



# COMMUNITY APPEARANCE MANUAL

## Landscape Section [LAN-3]

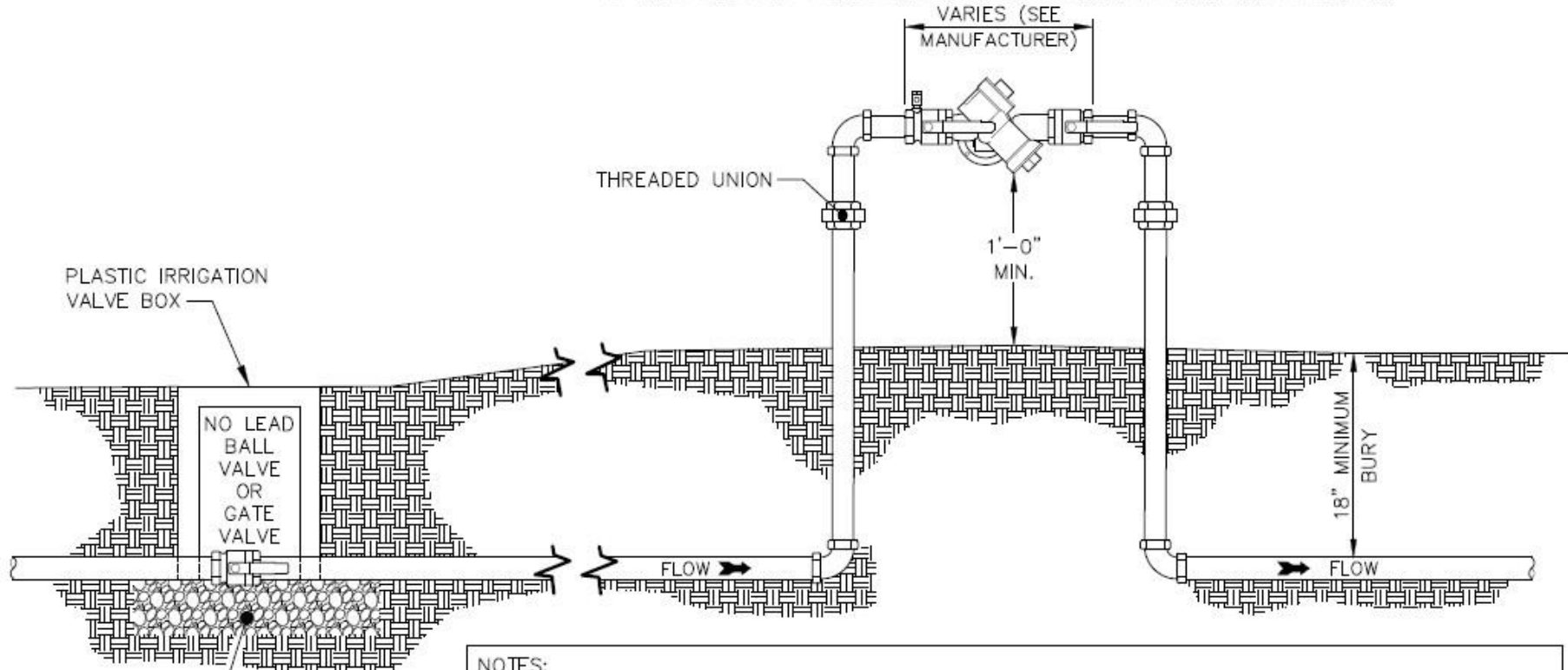
- **Definition:** Irrigation systems are those that provide for the application of water to any outdoor planted material by means of a permanent piping system under pressure and that is either manually, semi automatically or automatically scheduled. A new system is any irrigation system or any addition to an existing system that changes the water consumption of the system by 5% or more (a change up or down in total system consumption).
- **Applicability:** These standards and specifications apply to all irrigation systems used in commercial, multifamily, single family, industrial, municipal, and streetscapes in The Town of Cary. They address the design requirements, materials, installation and inspections of such systems. Commercial Irrigation systems should be designed by a person having a current CIA/IA “Certified Irrigation Contractor” (CIC), Certified Irrigation Designer” (CID) status or a professional Engineer or a Landscape Architect

The design requirements apply to single family residential lots; however there is no requirement that the system be designed and submitted by a professional.

### REQUIRED SUBMISSIONS

- Scaled drawing (maximum scale of 1”=30’), recommend scale (1”=20’).
- Designer’s name, address and phone number on the plan.
- Identify Water Supply Source and location (Potable, Reclaim, Future Reclaim, Private Well, Cistern, Pond) If uncertain of Water Supply Source please contact your Builder / Developer
  - Meter size
  - Static pressure reading before reduction
  - On-site pump location (where applicable).
- Backflow prevention device
  - Location
  - 5 ft of meter / for any other location prior approval required by Bobby Fann, the Town of Cary Water Distribution System Operator, (919) 319-4545
  - Size
  - Winterization techniques to be used
- All irrigation components shall be clearly shown
  - Main cut off, located behind the meter and before the PRV
  - Pipe layout, line size and material
  - Valve location and size and type
  - Sprinkler head location
  - The sprinkler throw pattern of each head (to scale)
  - Irrigation controller (location and model)
  - Include gallons per minute and square feet per zone
- Heads must be spaced to provide head to head coverage.
- Irrigation zones shall be labeled by number and identified as turf, shrub, or flower head.
- Total square footage of irrigated area of each type of zone shall be clearly indicated on the plan and on the water budget form.

NO LEAD REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY



- NOTES:**
1. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1013 & AWWA C511.
  2. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED WITHIN 5 FEET OF THE IRRIGATION METER.
  3. PIPE MATERIAL SHALL BE PVC (SCH. 80 OR BETTER), COPPER (TYPE K), OR 'NO LEAD' BRASS (UNS C89833 PER ASTM B584).
  4. IRRIGATION ASSEMBLIES TO BE DRAINED DURING WINTER MONTHS BY PROPERTY OWNER.
  5. INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE TOWN ORDINANCES AND SPECIFICATIONS IN ADDITION TO THE N.C. PLUMBING CODE.
  6. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW PREVENTION ASSEMBLY AND COMPLIANCE WITH REPORTING AND TESTING REQUIREMENTS. BACKFLOW DEVICE SHALL BE REMOVED AND DRAINED DURING WINTER STORAGE.
  7. ALL BRASS COMPONENTS SHALL BE 'NO LEAD' BRASS MEETING UNS C89833 AS PER ASTM B584.

STANDARD 1" RESIDENTIAL IRRIGATION BACKFLOW ASSEMBLY

DETAIL No.  
06200.02  
SHEET 1 OF 1

EFFECTIVE: 01/05/17

DATE: \_\_\_\_\_

# DOWN O\$ CARY

Cross Connection Control & Backflow Prevention Device Test and Maintenance Report

## PASSO

## FAIL O

\_\_\_\_\_  
CUSTOMER

\_\_\_\_\_  
ADDRESS (street, city, zip)

\_\_\_\_\_  
NAME OF TESTER

\_\_\_\_\_  
COMPANY NAME

\_\_\_\_\_  
TESTER CERTIFICATION NO.

\_\_\_\_\_  
TESTING GAUGE SERIAL NO.

\_\_\_\_\_  
MODEL NO.

\_\_\_\_\_  
CALIBRATION DATE

FOR TESTER USE ONLY

\_\_\_\_\_  
MANUFACTURER

\_\_\_\_\_  
MODEL

\_\_\_\_\_  
SIZE

\_\_\_\_\_  
SERIAL NO.

\_\_\_\_\_  
LOCATION OF ASSEMBLY

\_\_\_\_\_  
WATER METER NO.

TYPE OF BACKFLOW ASSEMBLY:

RP

DC

PSILINE PRESSURE

<input type="checkbox"/> NEW INSTALL	<input type="checkbox"/> EXISTING DEVICE	<input type="checkbox"/> REPLACEMENT	OLD ASSEMBLY SERIAL NO. _____
<input type="checkbox"/> DOMESTIC	<input type="checkbox"/> FIRE	<input type="checkbox"/> LAWN IRRIGATION	<input type="checkbox"/> NEW TEST <input type="checkbox"/> RECERTIFICATION TEST

	RELIEF VALVE	CHECK VALVE #1	CHECK VALVE #2
INITIAL TEST	OPENED AT _____ PSID BUFFER _____ PSID <input type="checkbox"/> DID NOT OPEN	EA LEAKED <input type="checkbox"/> CLOSED TIGHT HELD AT _____ PSID	<input type="checkbox"/> LEAKED & CLOSED TIGHT HELD AT _____ PSID
		SHUT OFF VALVE #1	SHUT OFF VALVE #2
FINAL TEST	<input type="checkbox"/> OPENED AT _____ PSID	<input type="checkbox"/> CLOSED TIGHT HELD AT _____ PSID	<input type="checkbox"/> CLOSED TIGHT HELD AT _____ PSID
REPAIRS	<input type="checkbox"/> CLEANED ONLY <input type="checkbox"/> RV ASSEMBLY	<input type="checkbox"/> REPLACED RUBBERKIT <input type="checkbox"/> RPZ IS REMOVED FROM SERVICE	<input type="checkbox"/> REBUILD

COMMENTS: \_\_\_\_\_

SIG NATURE: \_\_\_\_\_

RETURN TO: TOWN OF CARY  
CROSS CONNECTION CONTROL ORC  
P.O. BOX 005, CARY, NC 27512-8005

PHONE: (919) 469-4090  
FAX: (919) 469M304



# IRRIGATION REMINDERS

The **Alternate Day Watering** schedule is a year-round ordinance.

	M	Tu	W	Th	F	Sa	Su
ODD # Addresses	No	<b>Yes</b>	No	<b>Yes</b>	No	<b>Yes</b>	No
EVEN # Addresses	No	No	<b>Yes</b>	No	<b>Yes</b>	No	<b>Yes</b>
Hand watering and drip irrigation are allowed any day of the week. Customers who irrigate with reclaimed, well or pond water are exempt from the Alternate Day Watering Ordinance.							

A **45-day exception** to the Alternate Day Watering Ordinance is permitted anytime in the year. Experts recommend three weeks of daily watering to establish new seed or sod, but 45 days is permitted to account for inclement weather and delivery delays. Register online by searching “water exemption” at [www.townofcary.org](http://www.townofcary.org) or call (919) 469-4090.

**Irrigation within the devil strip** is possible under some circumstances. No sprays or rotors or bubblers can be placed in the “devil strip” or area that is less than 3 feet across. In “devil strips” 3 ft. or greater, sprays or rotors or bubblers can be placed no less than 4” from the back of the curb, or where no curb or gutter design exists, heads shall be no less than 1.5’ from the edge of the asphalt.