

## CHAPTER 23 – IRRIGATION CONTRACTORS' LICENSING BOARD

### SECTION .0100 – LICENSING

#### 21 NCAC 23 .0101 DEFINITIONS

As used in this Chapter:

- (1) "Direct supervision" means an individual licensed contractor having personal responsibility for and control over all aspects of irrigation work done at each job site.
- (2) "Irrigation plan" means a drawing of the irrigation system to be installed, the physical features on the land, and the bounding area.
- (3) "Irrigation record drawing" means a drawing of the irrigation system that was installed, the physical features on the land, and the bounding area.
- (4) "Large community water system" is defined in G.S. 143-350.
- (5) "Local Government" shall have the same meaning as "Unit of local government" as defined in G.S. 143-350.
- (6) Microirrigation system means a system that uses either drip emitters or microsprays as application devices.
- (7) "Product information" means the manufacturer's specifications, model, and size.

*History Note: Authority G.S. 89G-2; 89G-5; 143-350;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.*

#### 21 NCAC 23 .0102 SURETY BONDS AND LEGAL STATUS

- (a) For purposes of this Section a corporate entity is a person as defined in G.S. 89G-1(5) who engages in irrigation contracting, other than natural persons. A natural person licensed by the Board shall post a surety bond or irrevocable letter of credit for his or her individual license listing his or her name and the name of any corporation, partnership, limited liability corporation, limited liability partnership, or assumed or registered business name under which he or she does business.
- (b) If any licensed individual employed by a corporate entity does irrigation contracting on his or her own behalf, outside the scope of his or her employment, agency, or other relationship with the corporate entity named on the surety bond or irrevocable letter of credit submitted to the Board, that individual licensee must obtain and post a separate surety bond or irrevocable letter of credit with the Board, naming himself or herself as principal.
- (c) When a licensed individual terminates his or her relationship (e.g. employment, partnership, or agency) with a corporate entity that lists the individual on a surety bond or irrevocable letter of credit, the licensed individual shall purchase and post his or her own surety bond or irrevocable letter of credit with the Board. The licensed individual shall report the termination to the Board within five business days of its effective date.
- (d) If a licensed individual uses a corporate entity to engage in irrigation contracting and is required to file any corporate documents with the North Carolina Secretary of State pursuant to North Carolina law or rules, the individual licensee who qualifies said corporate entity to engage in irrigation contracting shall notify the Board of having filed corporate documents by providing the Board with copies of the same within five business days of the filing date. In lieu of submitting paper copies of such filings, the individual licensee may submit an e-mail to the Board's administrator including a link to the filed corporate documents on the North Carolina Secretary of State's website within 24 hours of those documents being available on said website.
- (e) If a corporate entity's ownership changes or the right to control the corporate entity passes from one person or group to another person, group, or receiver, the individual licensee who qualifies that corporate entity to engage in irrigation contracting shall notify the Board within five business days of the date when the change in the right of control becomes effective. Such changes include the addition of or termination of partnerships, changes in corporate form such as from corporation to limited liability company, sale or transfer of a controlling interest in the corporate entity, merger of the corporate entity with another person, or dissolution of the person's corporate or other legal status.
- (f) An individual licensee who qualifies a corporate entity to engage in irrigation contracting shall notify the Board in a timely fashion of the beginning of any of the following legal actions in which the corporate entity, as the petitioner or respondent:

- (1) has been named a respondent under an action for legal dissolution by the North Carolina Department of Justice or by a partner, shareholder, or such other person that may have the right or authority to bring such action;
- (2) has been notified of its administrative dissolution by the North Carolina Secretary of State; or
- (3) has been notified of the initiation of any legal proceeding that may affect its corporate form, ownership, right of control, or otherwise affect its status or ability to comply with G.S. 89G and the Board's rules.

Notice to the Board shall be timely if the Board receives written notice or e-mail of such action within 10 business days of the receipt of notice or service of legal process by the individual licensee or the registered agent of the corporate entity.

(g) Any individual licensee whose license has been suspended solely due to cancellation of his or her surety bond or irrevocable letter of credit may apply for reinstatement upon providing the following to the Board:

- (1) a valid surety bond or irrevocable letter of credit naming him or her as principal;
- (2) an affidavit affirming that the suspended licensee has otherwise complied with all obligations of a licensee under G.S. 89G and has refrained from practicing irrigation construction or contracting except as may be subject to a statutory exemption;
- (3) proof of compliance with the licensee's continuing education requirements for each calendar year in which the suspension has been in force; and
- (4) a reinstatement fee.

*History Note:* Authority G.S. 89G-5; 89G-6; 89G-10;  
 Eff. August 1, 2011;  
 Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
 Amended Eff. November 1, 2016.

## **21 NCAC 23 .0103 LICENSING**

- (a) Individual applicants for an irrigation contractor's license who can document to the Board's satisfaction that, during the entirety of the period from January 1 to June 29, 2009, the applicant was serving on active duty in the Armed Forces of the United States and, for that reason, could not prepare and submit an application for licensure until after being released from active duty are excused from taking the Board's licensing examination and shall be granted a license upon fulfilling all other licensing requirements.
- (b) The Board shall deem an individual to have been unable to prepare and submit an application for licensure due to being on active duty upon receiving a letter or e-mail from the officer or senior non-commissioned officer commanding the unit in which the applicant served during the above-referenced period, certifying this to be the case.
- (c) The Board shall also accept and consider other documentation in determining whether active military service made it impossible for the applicant to submit that application during that period of time.
- (d) All licensees shall notify the Board of any change in their mailing address or location of their office within five days.

*History Note:* Authority G.S. 89G-5; 89G-6; 105-249.2; S.L. 2008-177, s. 2; S.L. 2009-458; Section 7508 of the Internal Revenue Code; 10 U.S.C. 101;  
 Eff. July 1, 2011;  
 Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014.

## **21 NCAC 23 .0104 CONTINUING EDUCATION**

- (a) Continuing Education (CEU) credit shall not be obtained for the same course more frequently than once every three years.
- (b) Each individual licensee must earn ten hours of approved continuing education each calendar year. The 10 hours shall include four hours of business education. The remaining six hours of continuing education shall consist of training in landscape and turf irrigation technology.
- (c) A licensed contractor shall provide proof of attendance for all continuing education upon request by the Board.
- (d) Only continuing education classes or activities that have been approved by the Board as providing adequate education regarding the requirements of this Chapter shall satisfy the licensee's continuing education requirement.

*History Note:* Authority G.S. 89G-5; 89G-9;  
Eff. July 1, 2011;  
Readopted Eff. January 1, 2016;  
Amended Eff. November 1, 2016.

## **SECTION .0200 - HEARING RULES OF THE NORTH CAROLINA IRRIGATION CONTRACTORS LICENSING BOARD**

### **21 NCAC 23 .0201 NOTICE OF HEARING: ANSWER**

- (a) The contents and manner of service of notice of hearing in a contested case shall be as prescribed in G.S. 150B-38(b) and (c).
- (b) Any party who has been served with notice of hearing may file a written response as prescribed in G.S. 150B-38(d).

*History Note:* Authority G.S. 89G-5; 150B-38;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014.

### **21 NCAC 23 .0202 RIGHT TO HEARING**

- (a) Contested Cases. Disciplinary proceedings to enforce the provisions of G.S. 89G and 21 NCAC 23 are deemed to be "contested cases" within the meaning of G.S. 150B-2, and any person subject to such proceedings shall be given notice and the opportunity to be heard.
- (b) Summary Suspension. Nothing within Paragraph (a) of this Rule shall abridge the right of the Board to summarily suspend a license or certification prior to hearing pursuant to G.S. 150B-3(c).

*History Note:* Authority G.S. 89G-5; 150B-38;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014.

### **21 NCAC 23 .0203 LOCATION OF HEARING**

The location of the hearing in a contested case shall be as prescribed in G.S. 150B-38(e).

*History Note:* Authority G.S. 89G-5; 150B-38;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014.

### **21 NCAC 23 .0204 INTERVENTION; DISCOVERY**

- (a) The intervention of persons not initially parties to a contested case is governed by G.S. 150B-38(f). Petitions or motions to intervene must be in writing. The Board shall determine whether to grant or deny intervention and shall so notify the petitioner and all parties in writing.
- (b) Parties in a contested case may engage in discovery pursuant to the provisions of the Rules of Civil Procedure, G.S. 1A-1.

*History Note:* Authority G.S. 89G-5; 150B-38; 150B-39;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014.

### **21 NCAC 23 .0205 SUBPOENAS**

The authority of the Board to issue or revoke subpoenas in preparation for, or in the conduct of, contested cases is governed by G.S. 150B-39. If a subpoena is issued at the request of a party and not on the Board's own motion, that party shall bear the cost of service.

*History Note: Authority G.S. 89G-5; 150B-38;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014.*

#### **21 NCAC 23 .0206 CONDUCT OF HEARING**

- (a) Hearings in contested cases shall be conducted by a majority of the Board or referred to the Office of Administrative Hearings pursuant to G.S. 150B-40(e).
- (b) Disqualification. An affidavit seeking disqualification of any Board member, if timely filed in good faith, shall be ruled on by the remaining members of the Board. An affidavit is considered timely if it is filed:
- (1) Prior to the hearing; or
  - (2) As soon after the commencement of the hearing as the affiant becomes aware of facts which give rise to his or her belief that a Board member should be disqualified.
- (c) Evidence. The admission of evidence in a hearing in a contested case shall be as prescribed in G.S. 150B-41.

*History Note: Authority G.S. 89G-5; 150B-38; 150B-40; 150B-41;  
Eff. July 1, 2011;  
Amended Eff. April 1, 2015;  
Readopted Eff. January 1, 2016.*

#### **21 NCAC 23 .0207 DECISION OF BOARD**

- (a) The form and content of the Board's decision in a contested case shall be as prescribed by G.S. 150B-42(a), and its decision shall be served upon the parties in a manner consistent with that statute.
- (b) At the conclusion of the hearing and deliberations, the Board shall announce its findings of fact and conclusions of law. If the Board concludes that the hearing respondent has violated a provision of the rules in this Chapter or of G.S. 89G, it shall announce the nature and extent of any sanction it orders be imposed upon the hearing respondent. The Board shall then direct its legal counsel, the respondent's counsel, if represented, or such independent legal counsel as may be provided by the North Carolina Department of Justice for the purpose of advising the Board in the course of that hearing, to draft a proposed order consistent with its announcement. The order shall be drafted in accordance with G.S. 150B-42.
- (c) The official record of the hearing in a contested case shall contain those items specified in G.S. 150B-42(b).

*History Note: Authority G.S. 89G-5; 150B-38; 150B-42;  
Eff. July 1, 2011;  
Amended Eff. April 1, 2015;  
Readopted Eff. January 1, 2016.*

#### **21 NCAC 23 .0208 COMPLAINT PROCESS**

- (a) An individual who wishes to make a complaint alleging violation of G.S. 89G or the Board's rules shall submit a complaint form online through the Board's website (<http://www.nciclb.org>) or by printing the form from the Board's website and mailing it to the Board office at P.O. Box 41421 Raleigh, N.C. 27629. The following information shall be included in the complaint form:
- (1) date of complaint;
  - (2) complainant name;
  - (3) complainant mailing address;
  - (4) complainant contact number;
  - (5) alleged violator name;
  - (6) location of violation site, including city;
  - (7) date alleged violation was noted;
  - (8) how complainant became aware of alleged violation;
  - (9) description of the work being performed; and
  - (10) statement that the information provided by the complainant is true and accurate to the best of his or her knowledge.
- (b) The Board shall not respond to or investigate anonymous complaints or inquiries.
- (c) The Board office shall administratively close any complaint that:
- (1) is anonymously submitted;

- (2) is withdrawn by the complainant at any stage of the investigation; or
  - (3) is submitted more than two years after the irrigation system was completed by a licensee of the Board.
- (d) If the complaint is not administratively closed pursuant to Paragraph (c) of this Rule, the Board's Investigative Committee shall determine whether further investigation is necessary to resolve the complaint based on the type and nature of the complaint. If further investigation is necessary, the Investigative Committee shall refer the matter to the Board's investigator.
- (e) Upon completion of the investigation into the complaint, the Investigative Committee shall:
- (1) find that there is probable cause to believe a violation occurred and send the respondent a notice of violation; or
  - (2) find that there is no probable cause to believe a violation occurred and send the respondent and complainant notification of the same.
- (f) If the Investigative Committee finds that there is probable cause to believe a violation occurred, then the complaint shall be resolved in the following manner:
- (1) settlement agreement; or
  - (2) hearing in accordance with the rules of this Section and as required by G.S. 150B, Article 3A.

*History Note: Authority G.S. 89G-2; 89G-5; 89G-11; 89G-12; 150B; Eff. November 1, 2016; Amended Eff. July 1, 2018.*

## **SECTION .0300 - IRRIGATION RECORD DRAWING MINIMUM STANDARDS**

### **21 NCAC 23 .0301 IRRIGATION RECORD DRAWING**

- (a) All irrigation record drawings shall:
- (1) be drawn to portray the site;
  - (2) be legible and reproducible;
  - (3) include the surrounding development (e.g. building edges, walks, walls, roads), irrigated areas, turf areas, and planted areas; and
  - (4) show the sprinkler system, microirrigation system, or both as installed and include the location of:
    - (a) emergency shut-off valve(s);
    - (b) water source(s);
    - (c) backflow devices;
    - (d) all types of valves;
    - (e) all wire splices;
    - (f) all wire paths;
    - (g) controllers;
    - (h) all sensors;
    - (i) all grounding location(s) and type(s);
    - (j) all pumps;
    - (k) all filters;
    - (l) all quick couplers or any other water connection points; and
    - (m) all main line piping.
- (b) All manual and automatic valve locations shall be shown with distances to permanent reference points so that they may be located in the field. Permanent reference points are buildings, drainage inlets, sidewalks, curbs, light poles, and other permanent, immovable objects.
- (c) The irrigation record drawings shall be labeled "Record Drawings".

*History Note: Authority G.S. 89G-5(15); Eff. July 1, 2011; Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014; Amended Eff. November 1, 2016.*

## **SECTION .0400 - IRRIGATION DESIGN MINIMUM STANDARDS**

## **21 NCAC 23 .0401            SYSTEM DESIGN OBJECTIVES AND REQUIREMENTS**

- (a) An irrigation contractor shall design an irrigation system so that it uniformly distributes water.
- (b) When designing an irrigation system, an irrigation contractor shall consider the following criteria:
  - (1) the soil type;
  - (2) the slope;
  - (3) the plant root depth;
  - (4) the water requirements of different plants;
  - (5) microclimates;
  - (6) weather conditions;
  - (7) the quantity, quality, and delivery pressure of the water source; and
  - (8) the long-term management of the system and the landscape it serves.
- (c) When designing an irrigation system, an irrigation contractor shall select equipment components and installation techniques that meet state and local code requirements and site requirements.
- (d) When designing an irrigation system, an irrigation contractor shall to ensure that the irrigation system is designed to uniformly distribute the water, conserve and protect water resources, and function well as a component of the overall landscape by doing the following:
  - (1) obtaining direct knowledge of site conditions by visiting it. Viewing and relying solely on plot plans to generate a design is not adequate preparation for designing an irrigation system.
  - (2) producing a design that meets all applicable state and local codes, including plumbing and electrical codes.
  - (3) when allowable by law, specifying in the plan the manufacturer, model, type, and size of all components to eliminate ambiguity during construction and to facilitate management of the system.
  - (4) selecting pipe, electrical wire, and other materials based on design parameters, environmental conditions, code requirements, and long-term management requirements of the system.
  - (5) designing the irrigation system to minimize installation and maintenance difficulties.
  - (6) selecting and placing shrubs, trees, and groundcover sprinkler and microirrigation components according to the expected size of larger specimen plants through a minimum three-year establishment period for shrubs and 10-year establishment period for trees.

*History Note:*     *Authority G.S. 89G-5;*  
                          *Eff. August 1, 2011;*  
                          *Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22,*  
                          *2014;*  
                          *Amended Eff. November 1, 2016.*

## **21 NCAC 23 .0402            PIPING**

- (a) The following rules of maximum safe flow rate apply to irrigation systems connected to municipal and community water suppliers, with the lowest safe flow rate prevailing as the design minimum standard:
  - (1) The maximum allowable pressure loss through the meter shall be less than 10 percent of the static pressure at the meter.
  - (2) The maximum flow rate through the meter shall not exceed 75 percent of the maximum safe flow rate through the meter.
  - (3) Piping in irrigation systems shall be designed and installed so that the flow of water in the pipe will not exceed a velocity of five feet per second for polyvinyl chloride (PVC), polyethylene (PE), and high density polyethylene (HDPE) pipe and seven feet per second for metal pipe.
- (b) When designing an irrigation system, an irrigation contractor shall use the following criteria for piping:
  - (1) The manufacturer's recommendations for the intended application.
  - (2) The minimum PVC pipe thickness shall be PR200 — (SDR21) with sch40 fittings.
  - (3) PVC piping from the above-grade backflow to below grade shall be a minimum of sch80.
  - (4) All PVC risers shall be a minimum thickness of sch80.
  - (5) Thrust blocking details and locations shall be included when bell and gasket pipe is used.
  - (6) Exposed PVC piping shall be protected from UV degradation per the manufacturer's recommendations.

*History Note:*     *Authority G.S. 89G-5;*

*Eff. July 1, 2011;*  
*Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;*  
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**21 NCAC 23 .0403 WATER SOURCE**

- (a) A water source shall meet peak demands for landscape water with an irrigation duration that is within the site's operational tolerances when the site is functioning at its most intense use.
- (b) An irrigation duration shall meet the user needs of the site. The user's needs shall be considered in determining the correct size of the supply meter, cistern, lake, or lake pump intake and pump size. A contractor shall also comply with local statutes and ordinances that dictate time of day and day of week watering, anticipated irrigation intervals, or site uses that may dictate different irrigation durations.

*History Note: Authority G.S. 89G-5;*  
*Eff. July 1, 2011;*  
*Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014.*

**21 NCAC 23 .0404 WATER PRESSURE**

- (a) For systems on a municipal or community water supply, an irrigation contractor shall provide allowances in the design for a reduction in static pressure of up to 10 pounds per square inch (psi) to accommodate possible loss of pressure in the supply network.
- (b) Where variable or excessive static pressure exists, an irrigation contractor shall specify pressure regulation.
- (c) An irrigation contractor shall specify the recommended minimum operational pressure for the irrigation system at the maximum design flow rate.

*History Note: Authority G.S. 89G-5;*  
*Eff. August 1, 2011;*  
*Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;*  
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**21 NCAC 23 .0405 MICROIRRIGATION**

For zones with microirrigation, when designing an irrigation system, an irrigation contractor shall:

- (1) provide a means of filtration at the master valve to remove particulate matter;
- (2) use separate microirrigation zones where differing plant water requirements and root zone depths make such zones practical;
- (3) specify pressure-compensating devices to improve overall uniformity;
- (4) specify pressure regulation upstream from the drip/microirrigation components to anticipate periodic increases in the pressure of municipal or community water sources when there is flushing or other maintenance on the water supply system. Pressure regulating devices may be omitted only when the maximum possible pressure is known to be lower than the maximum allowable pressure for all drip/microirrigation components; and
- (5) use air release valves to minimize ingestion of soil and other contaminants into the emitters.

*History Note: Authority G.S. 89G-5;*  
*Eff. July 1, 2011;*  
*Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;*  
*Amended Eff. November 1, 2016.*

**21 NCAC 23 .0406 COMPONENTS AND ZONE DESIGN**

When designing an irrigation system, an irrigation contractor shall:

- (1) Design the layout of heads and other emission devices to reduce evaporation loss, reduce surface runoff, and limit overspray across or onto a street, public driveway or sidewalk, parking area, building, fence, or adjoining property.
- (2) Design sprinkler head spacing with an approximate "head-to-head" coverage.
- (3) Use separate stations or zones for areas with dissimilar environmental conditions or dissimilar water or scheduling requirements (hydrozones). These conditions or requirements include sun exposure, plant type, soil type, varying wind conditions, grades, and dimensional issues. When not practicable due to accessibility, dimensional issues, or other constraints, practical modifications to this standard may be acceptable.
- (4) When selecting system components:
  - (a) select components to avoid surface runoff;
  - (b) select components to keep the sprinkler precipitation rate below the infiltration rate of the soil;
  - (c) specify the use of repeat cycles to allow the water to soak into the root zone; and
  - (d) specify stations or zones for sprinklers at the top and toe of sloped areas.
- (5) Place sprinkler heads based on an evaluation of physical, environmental, and hydraulic site conditions, including typical wind conditions during the normal irrigation period.
- (6) Select sprinkler heads and nozzles to achieve an approximate matched precipitation rate within each zone.
- (7) Plan to use the following water conserving equipment:
  - (a) check valves to minimize low-head drainage when grades exceed five percent;
  - (b) pressure regulators or pressure compensating devices when pressures exceed manufacturer's recommendations;
  - (c) rain sensors to suspend irrigation during rain or other forms of precipitation;
  - (d) a controller that has multi-program capability with at least four start times (for multiple repeat soak cycles) and run time adjustments in one-minute increments;
  - (e) low-trajectory sprinkler nozzles and modified head spacings to mitigate the effects of wind; and
  - (f) components that do not mist when manufacturer's pressure specifications are met.
- (8) Offset turf grass sprinklers a minimum of two inches from pavement edges to allow for edging of the turf.
- (9) Offset sprinklers from vertical walls to limit spray on the walls.
- (10) Ensure that valves are located so as to allow reasonable access for maintenance or service.
- (11) Ensure that the roots of existing trees are protected by:
  - (a) Planning pipe system layout to limit its effect on existing trees and other planting.
  - (b) When necessary to trench into the root zone of an established plant in order to provide irrigation within the root zone:
    - (i) planning to dig the trench so as to minimize the effect on the roots (for example, by digging the trench in a straight line towards the base of the tree or shrub such that, if the line of the trench were extended, it would intersect with the base of the tree or shrub); or
    - (ii) planning to use direct boring or hand-trenching. An irrigation contractor shall use hand-trenching techniques that dig a trench without damaging roots having a diameter of one-half inch or more.
  - (c) In the event of trenching, maintaining a distance of one foot from the tree trunk for every inch of tree diameter at a height of four feet six inches above the ground. For example, piping shall be kept at least 20 feet away from the trunk of a tree having a 20 inch diameter at four feet six inches above the ground.
  - (d) In the event of boring, maintaining a distance of at least one-half foot from the tree trunk for each inch of tree diameter at a height of four feet six inches above the ground and, in any event, maintaining a distance of at least five feet from the tree trunk. When direct boring, an irrigation contractor shall bore to a minimum of 36 inches.
  - (e) Avoiding placing sprinklers in a position to directly spray water on tree trunks of mature trees by placing them no closer to a tree than one-third of the sprinkler spray radius.
- (12) With respect to wiring:



- (a) install control wires in the same trench along the side of the main line piping;
  - (b) allow slack in the wiring;
  - (c) bundle an expansion coil for all wires at each valve location;
  - (d) use the appropriate size American Wire Gauge ("AWG") wire, as noted by the manufacturer, to operate a valve;
  - (e) indicate common wiring (wire that runs through the entire circuit of valves) by using a different colored wire from all other wire connections;
  - (f) provide additional wire along the irrigation wire path for future expansion or replacement of damaged wires;
  - (g) design irrigation systems with control wire splices made with a waterproof wire splice kit that is UL listed for underground applications. For two-wire control systems, the design shall specify the manufacturer's recommended splice kits; and
  - (h) follow the manufacturer's recommendation for all wiring and grounding, including two-wire control systems.
- (13) Use valve boxes that are large enough to provide sufficient space for servicing the valve housed inside. For single valve boxes, valve boxes shall be at least 10 inches in diameter for both manual and automatic valves.

*History Note:* Authority G.S. 89G-5;  
 Eff. August 1, 2011;  
 Readopted Eff. January 1, 2016;  
 Amended Eff. November 1, 2016.

**21 NCAC 23 .0407 IRRIGATION SYSTEM DISCLOSURE CHECKLIST**

The installer shall use a system checklist that includes enough information for the client or end-user to understand the scope of work, including types of equipment, coverage standards and warranty.

*History Note:* Authority G.S. 89G-5;  
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**SECTION .0500 - IRRIGATION SYSTEM INSTALLATION MINIMUM STANDARDS**

**21 NCAC 23 .0501 GENERAL REQUIREMENTS**

- (a) When an irrigation contractor determines that a design provided by others does not meet the minimum standards set forth by the rules of this Chapter or local requirements, the irrigation contractor shall notify the designer in writing of such violations of minimum standards and shall not complete the job until all such minimum standards are met.
- (b) All irrigation system components shall be installed in accordance with manufacturer's specifications, local code requirements, and the requirements of the rules of this Section.

*History Note:* Authority G.S. 89G-5;  
 Eff. July 1, 2011;  
 Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
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**21 NCAC 23 .0502 SITE CONSIDERATIONS**

- (a) An irrigation contractor shall confirm all property corners and lines that will determine the borders of landscaped or irrigated areas, including any right of way (local, state or federal).
- (b) The irrigation contractor shall comply with the terms of any encroachment agreements and other easement requirements.
- (c) Before the irrigation contractor and those working under his or her supervision do any excavation he or she shall call 1-800-632-4949 or 811 or go to www.ncocc.org to have major utilities located on the subject property by the appropriate utility companies. Installation shall not be started until all underground utilities are located and marked.

(d) An irrigation contractor shall review the site where the irrigation system is to be installed with the owner to identify private underground lines or structures and locate those that present a potential problem before digging (e.g. low voltage lighting wires, propane gas tanks and lines, private power lines to out-buildings, and drainage lines, septic field lines, and tanks).

(e) In the case of new landscape construction where a landscape plan is provided, an irrigation contractor shall verify that the landscape plan is the most current plan available and is not subject to change before starting the installation.

(f) If no landscape plan exists or the landscaping is in place, an irrigation contractor shall review the site with the owner or landscape designer to determine the irrigation needs of the site. The irrigation contractor shall address specific issues, including:

- (1) the plant water needs;
- (2) the soil type;
- (3) the root depth;
- (4) microclimates; and
- (5) slopes.

(g) An irrigation contractor shall inform the owner or landscape designer of the importance of designing the irrigation system to meet the needs of the landscape.

(h) An irrigation contractor shall review planting plans prior to installation of the irrigation system to minimize conflicts between larger plants, existing root zones, and irrigation heads and review construction plans for conflicts between hardscape and sprinkler head placement.

(i) An irrigation contractor shall inform the property owner and irrigation designer of unusual or abnormal soil conditions which may affect the design and management of the irrigation system.

(j) Where deviations from the design are required (e.g., routing pipe around a tree or other structure or adding sprinklers to an area larger than the plan shows), an irrigation contractor shall consult with the designer prior to making the change to ensure that the change is within the design performance specifications.

*History Note: Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.*

## **21 NCAC 23 .0503 WATER SUPPLY**

(a) Before commencing installation, an irrigation contractor shall verify that the point of connection, water supply, flow rate, and static and dynamic pressures meet design criteria.

(b) All new irrigation systems that have a pressurized water supply under continuous pressure must include an isolation valve. The isolation valve's location must be in the main line before the first zone valve or quick coupler.

(c) On all new installations, if a master valve is used, it shall be installed on the discharge side of the backflow prevention device.

(d) If the water supply is potable water, an irrigation contractor shall verify that a backflow prevention device is installed upstream of the irrigation system before pressurizing the irrigation mainline.

(e) For local government water systems and large community water systems, an irrigation contractor shall, when required by local code, install a separate meter for new in-ground systems on lots platted and recorded after July 1, 2009, in the office of the register of deeds in the county or counties in which the real property is located. This Rule shall not apply to lots with privately owned septic tanks systems or other types of privately owned innovative on-site wastewater systems if a lockable cutoff valve approved by the water system and a testable backflow prevention device approved by the water system for the appropriate level of risk associated with the irrigation system or other identified risk are installed on the water supply line for the irrigation system. The lockable cutoff valve shall be installed on the water supply line for the irrigation system within 24 inches of the water meter and the testable backflow device shall be installed on the water supply line for the irrigation system

*History Note: Authority G.S. 89G-5; 143-355.4;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. July 1, 2018; November 1, 2016.*

## **21 NCAC 23 .0504            SYSTEM LAYOUT**

- (a) An irrigation contractor shall install the irrigation system's components according to the design specifications and manufacturer's performance standards.
- (b) Microirrigation devices shall be installed at a spacing to meet the maximum irrigation requirements of the plants being irrigated. The flow rate of the microirrigation devices, soil types, and plant types must all be considered in selecting the spacing of the microirrigation devices.
- (c) Sprinklers shall be installed such that the spacing between sprinklers results in approximate "head-to-head" coverage, but in no event shall the spacing exceed the radius listed in the manufacturer's specifications. An irrigation contractor shall determine the radius by referring to the manufacturer's specifications for a sprinkler at a specific operating pressure.
- (d) Irrigation systems shall be installed such that they do not spray water onto or over surfaces made of concrete, asphalt, brick, wood, or any other continuous impervious material, such as walls, fences, sidewalks, and streets. The irrigation system as installed may spray water onto such surfaces due to irregularly-shaped hardscapes, wind drift, or fixed spray patterns of sprinklers.
- (e) Under sloping conditions, an irrigation system shall be installed with check valves to hold water in the piping system.

*History Note:     Authority G.S. 89G-5;  
                         Eff. July 1, 2011;  
                         Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22,  
                         2014;  
                         Amended Eff. November 1, 2016.*

## **21 NCAC 23 .0505            TRENCHING AND PIPING**

- (a) All portions of an irrigation system that do not meet the standards in this Rule shall be noted on the record drawing.
- (b) An irrigation contractor shall install an irrigation system without trenching across the established root systems of existing trees and shrubs.
- (c) Notwithstanding the requirement in Paragraph (b) of this Rule, when the irrigation contractor finds that it is necessary to trench into the root zone of an established plant in order to provide adequate irrigation to the surrounding area, he shall dig the trench in such a way as to minimize the effect on the roots (for example, by digging the trench in a straight line towards the base of the tree or shrub such that, if the line of the trench were extended, it would intersect with the base of the tree or shrub).
- (d) An irrigation contractor shall cut damaged roots cleanly at right angles.
- (e) Piping in irrigation systems shall be selected so that the flow velocity will not exceed five feet per second for polyvinyl chloride (PVC), polyethylene (PE), and high density polyethylene (HDPE) pipe and seven feet per second for metal pipe.
- (f) The main line and lateral line piping shall be installed to provide a minimum of 12 inches between the top of the pipe and the finished grade. However, if a utility, man-made structure, or roots create an obstacle that makes the 12 inch depth coverage requirement impractical, the piping shall be installed at a minimum of 6 inches between the top of the pipe and the finished grade.
- (g) The bottom of the trench shall be smooth and level and provide a flat bed on which to rest the pipe.
- (h) The irrigation contractor shall clean backfill material of any debris that may damage the pipe.
- (i) When swing joints are used, the depth of the pipe shall allow the swing joint to operate as designed.
- (j) All trenches and holes created during installation of an irrigation system shall be backfilled and compacted to the final grade. The trench shall be compacted in lifts no greater than six inches to insure proper compaction.
- (k) All PVC connections installed in irrigation systems shall be prepared according to the manufacturer's recommendations (e.g. priming and glue application).
- (l) The irrigation contractor shall use the manufacturer's approved lubricant when assembling bell and gasket and pipe and fittings.
- (m) The irrigation contractor shall use Teflon tape on all threaded fittings, wrapping the tape around the pipe three times to insure a proper seal.
- (n) When the irrigation system uses reclaimed water, the irrigation contractor shall use purple pipe or mark the pipe with purple tape placed above all piping in the system. Tape shall be within six inches of the top of the pipe. The irrigation contractor shall use purple valve box covers and purple quick coupler flaps and place an eight inch by eight inch sign with purple background stating "RECLAIMED WATER-DO NOT DRINK," and "AGUA DE RECUPERION-NO BEBER."

*History Note:* Authority G.S. 89G-5(15); 89G-5(16);  
Eff. July 1, 2011;  
Amended Eff. April 1, 2015;  
Readopted Eff. January 1, 2016;  
Amended Eff. November 1, 2016.

#### **21 NCAC 23 .0506 ELECTRICAL**

- (a) This Rule applies to irrigation control wiring where the installation, construction, maintenance, or repair of devices is exempt from the requirement of licensure as an electrical contractor pursuant to G.S. 87-43.1 and 21 NCAC 18B .0805.
- (b) Underground electrical wiring used to connect an automatic controller to any electrical component of the irrigation system shall be listed by Underwriters Laboratories (UL) as acceptable for burial underground.
- (c) Electrical wiring that connects any electrical components of an irrigation system shall be sized according to the manufacturer's recommendation.
- (d) Electrical wire splices which are exposed to moisture shall be waterproofed using a UL listed device.
- (e) Underground electrical wiring that connects an automatic controller to any electrical component of the irrigation system shall be buried with a minimum of twelve inches of backfill.
- (f) The wire connections on the two-wire path of two wire control systems shall be made using devices rated for the higher voltage of the control system.
- (g) An irrigation contractor may splice a multi-wire cable in underground applications when the wire is a minimum of 18 AWG and when the splicing device waterproofs the outermost casing of the wire.

*History Note:* Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.

#### **21 NCAC 23 .0507 GROUNDING**

- (a) This Rule applies to irrigation control wiring and components where the installation, construction, maintenance, or repair of devices exempt from the requirement of licensure as an electrical contractor pursuant to G.S. 87-43.1 and 21 NCAC 18B .0805.
- (b) An irrigation contractor shall ground all components of the irrigation system according to manufacturers' recommendations.

*History Note:* Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.

#### **21 NCAC 23 .0508 SPRINKLERS**

- (a) An irrigation contractor shall select sprinklers such that the operating pressure at each sprinkler location is within the range published by the manufacturer of the sprinkler nozzles.
- (b) Sprinklers shall be set perpendicular to the grade. In turf areas sprinklers shall be set at a height recommended by the manufacturer. Sprinklers installed on athletic fields shall be equipped with rubber covers on the sprinkler and the sprinklers shall be installed at or below the grade according to the manufacturer's specifications.

*History Note:* Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.

#### **21 NCAC 23 .0509 CONTROLLER**

All automatically controlled irrigation systems shall include sensor or other technology designed to inhibit or interrupt operation of the irrigation system during periods of either adequate soil moisture or rainfall. Rain or moisture shutoff technology shall be installed according to the manufacturer's published recommendations.

*History Note:* Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.

#### **21 NCAC 23 .0510 INITIAL SYSTEM START UP**

- (a) An irrigation contractor shall perform a post installation inspection to verify that the system operates as designed by:
- (1) flushing the system;
  - (2) checking the static water pressure at the point of connection;
  - (3) checking the operating pressure at the sprinklers;
  - (4) checking and adjusting sprinkler head wetted radius as needed;
  - (5) ensuring that the system does not spray water onto or over surfaces made of concrete, asphalt, brick, wood, or any other continuous impervious material, such as walls, fences, sidewalks, and streets;
  - (6) verifying that all sensors are operational; and
  - (7) checking that there are no leaks in the system.
- (b) An irrigation contractor shall educate the end user of the irrigation system, informing him or her that plant material water needs change during the year and that the watering schedule should change accordingly.

*History Note:* Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.

#### **21 NCAC 23 .0511 OWNER'S MANUAL**

- (a) A permanent sticker that contains the irrigation contractor's name, license number, company name and telephone number, and date of completion of the installation shall be affixed to each automatic controller installed by an irrigation contractor. The information contained on the sticker shall be printed with waterproof ink.
- (b) The irrigation contractor shall, upon completion of any irrigation system or addition to an existing irrigation system, provide an owner's manual to the owner or owner's representative containing each of the following:
- (1) the manufacturer's manual for the automatic controller and all sensors;
  - (2) winterization instructions and precautions on protection of the potable water supply; and
  - (3) the irrigation record drawing.

*History Note:* Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.

### **SECTION .0600 - IRRIGATION SYSTEM MANAGEMENT FOR WATER EFFICIENCY STANDARDS**

#### **21 NCAC 23 .0601 PURPOSE**

The rules in this Section shall apply to irrigation contractors who are hired to maintain an existing irrigation system.

*History Note:* Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.

## **21 NCAC 23 .0602 BASIC SYSTEM MAINTENANCE PRACTICES**

- (a) An irrigation contractor shall establish a systematic maintenance schedule for inspecting, testing, and reporting the performance conditions of the irrigation system to the owner.
- (b) An irrigation contractor shall inform the owner of any violations of minimum standards observed in the irrigation system.
- (c) An irrigation contractor shall:
- (1) verify that the water supply and pressure are adequate for proper operation;
  - (2) adjust valves and flow regulators for proper pressure and flow operation. Valves must shut off tightly to prevent leakage and operate without abruptly opening or closing to prevent damage to the irrigation system caused by water hammer and pressure surges;
  - (3) verify that sprinklers are properly adjusted - check the nozzle, arc, radius, level, and attitude with respect to slope and ensure that water is not spraying on impervious surfaces;
  - (4) verify that sensors are working properly;
  - (5) look for debris (e.g., rocks, sand, and soil) lodged in sprinklers and drip emitters;
  - (6) examine filters and clean filtration elements at least once a year or when the irrigation system fails to operate properly due to clogged filters;
  - (7) verify proper operation of the controller. Confirm correct date and time input and functional back-up battery at least once a year;
  - (8) repair or replace broken hardware and pipelines with originally-specified materials or their equivalent, thereby restoring the system to the original design specifications;
  - (9) check for leaks and complete repairs to support the integrity of the irrigation design and to minimize the waste of water;
  - (10) move, adjust, add, or remove sprinklers or other hardware as required to compensate for blocked spray patterns or changes in the irrigation needs of the landscape; and
  - (11) test all repairs and flush pipes, valves, sprinklers, drip components, and filters as needed.
- (d) In the event an irrigation contractor makes any changes to the irrigation system, he shall amend the irrigation record drawing to reflect those changes.
- (e) An irrigation contractor shall establish a "winterization" protocol in areas where low temperatures will damage an irrigation system. Winterization consists of removing enough water from the irrigation system and equipment so that no damage occurs to any part of the irrigation system during temperatures below 32 degrees Fahrenheit. This is accomplished by turning off the main water supply, opening all drains, and if necessary using compressed air to remove water from the irrigation system.
- (f) An irrigation contractor shall establish an "activation/start-up" protocol. Activation consists of re-pressurization and inspection of the irrigation system.
- (g) An irrigation contractor shall provide the owner with recommendations regarding updating and retrofitting existing irrigation systems with new technology that will reduce overall water use.

*History Note: Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.*

## **21 NCAC 23 .0603 SCHEDULING**

- (a) An irrigation contractor shall recommend to the owner or his representative that:
- (1) the owner adjust the irrigation schedule and automatic controller to respond to the changing water requirements of the landscape;
  - (2) the owner inspect irrigation controllers at least monthly to change irrigation frequencies or run times, as needed; and
  - (3) the owner should avoid irrigation during rain events.
- (b) An irrigation contractor shall:
- (1) identify soil type, microclimates, and root depths of plants in each irrigation zone;

- (2) calculate the run-time of each irrigation zone to supply the needed water based upon precipitation rate of the sprinkler zones, the water-holding capacity of the soil, the changing weather conditions and the plant's water requirements; and
- (3) set initial run times and intervals to minimize runoff.

*History Note:* Authority G.S. 89G-5;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014;  
Amended Eff. November 1, 2016.

## **SECTION .0700 – FEES**

### **21 NCAC 23 .0701 FEE SCHEDULE**

(a) The Board shall charge the following fees:

- (1) Application fee: one hundred dollars (\$100.00);
- (2) Examination fee: two hundred dollars (\$200.00);
- (3) License renewal: one hundred dollars (\$100.00);
- (4) Late renewal fee: fifty dollars (\$50.00);
- (5) License by reciprocity: two hundred fifty dollars (\$250.00);
- (6) Corporate license: one hundred dollars (\$100.00); and
- (7) Duplicate license: twenty-five dollars (\$25.00).

(b) When the Board uses a testing service for the preparation, administration or grading of examinations, the Board shall charge the applicant the actual cost of the examination services.

*History Note:* Authority G.S. 89G-5; 89G-10;  
Eff. July 1, 2011;  
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. September 22, 2014.