113 Byrnwood Drive
Jamestown, NC 27282
February 23, 2023

State Board of Examiners of Plumbing, Heating, and Fire Sprinkler Contractors
1109 Dresser Court
Raleigh, North Carolina 27609

Re: RULE-MAKING PETITION
to Amend 21 NCAC 50.0505
General Supervision and Standard of Competence
Sections (e) and (f)

Board Members,

This is a petition to hold a rule-making hearing to amend **Sections (e) and (f) in Rule 21 NCAC 50.0505 GENERAL SUPERVISION AND STANDARD OF COMPETENCE**. We are requesting this code be amended to require HVAC contractors to provide copies of load calculations to "homeowners, owners, and general contractors" without request and prior to the replacement and prior to the installation of HVAC systems and equipment, and maintain a record of load calculations in the licensee's job file for a minimum of twelve years; as well as specify prior to the replacement as the time load calculations are to be performed when replacing "heating systems, air conditioning systems, or both." This request involves the following changes in the current code:

1. **Delete "upon request" in Sections (e) and (f);**
2. **Insert "prior to installation" in Section (e)**
3. **Insert "prior to replacement" in two sentences in Section (f)**
4. **Delete "six" in Sections (e) and (f);** and
5. **Insert "twelve" in Sections (e) and (f).**

21 NCAC 50.0505 (copied from https://nclicensing.org/wp-content/uploads/2022/07/21-ncac-50-.0505.pdf.) appears on pages 6 and 7 of this petition, with the words to be deleted struck through and words to be inserted in bold font and underlined. Please note "load calculations" in this petition refers to ACCA Manual J, ACCA Manual D, and ACCA Manual S calculations, as mentioned in 2018 NCMC 312.1, as well as, when applicable, ACCA Manual Zr, which was released in 2018, but not mentioned in 2018 NCMC 312.1.

Rationales for each amendment are as follows:

Amendment 1: Delete "Upon Request"

We HVAC contractors have a fiduciary duty to provide load calculations to homeowners, owners, and general contractors without request; and the ability of homeowners, owners, and general contractors to understand these load calculations is irrelevant in this provision. In addition, we believe homeowners are entitled to ALL information about HVAC systems and equipment replaced or installed in their homes.

We believe deleting "upon request" has the potential to abate some of the problems in the HVAC industry today. The following table lists a few of the problems we have observed and the impact this amendment may have on each.

HVAC INDUSTRY PROBLEM	IMPACT OF DELETING "UPON REQUEST"
Failure to Perform Load Calculations	HVAC contractors may be more likely to perform load calculations, if they are required to provide copies to "homeowners, owners, and general contractors."
Failure to Perform Proper Load Calculations	HVAC contractors may put more effort into performing code-compliant, accurate load calculations, since this amendment would make their load calculations more open to scrutiny.
Failure to Maintain Load Calculations in the Job File of the Licensee for a Minimum of Six Years	It will no longer be necessary for citizens to ask their HVAC contractors for load calculations.
	(Many citizens have told us they have had to pay for load calculations to be performed, after their HVAC contractors were unable to locate them within the six-year minimum time frame.)
No Means to Verify Load Calculations Have Been Performed or are Code-Compliant and Accurate	This amendment embodies a small "verification" component. Homeowners and general contractors can "verify" load calculations have been performed; and the more knowledgeable and experienced general contractors may be able to, at least to some degree, "verify" these calculations are code-compliant and accurate.
	[There is no county official (e.g. mechanical inspector, code enforcement officer) designated to "verify" load calculations have been performed, or they are code-complaint and accurate.]
Lack of Trust in the HVAC Industry	The act of providing copies of load calculations to homeowners and owners has the potential to promote trust in HVAC contractors; and, thereby, promote greater understanding of errors in these calculations, when load calculation problems arise.
Complaints Filed and Legal Actions Taken Against HVAC Contractors for Not Performing and Not Performing Proper Load Calculations	Deleting "upon request" has the potential to reduce the number of complaints and legal actions against HVAC contractors. Having copies of load calculations will show homeowners not only that load calculations were performed, but their contractors made "good faith" efforts to perform code-compliant, accurate calculations. This in turn may create a more civil environment in which load calculation problems can be resolved without Board or lawyer intervention. This amendment will provide "homeowners, owners, and general contractors" opportunities to challenge load calculations prior to installation and replacement. This has the potential to increase the accuracy of the calculations as well as give homeowners and owners more '"ownership" of, and, thereby, more responsible for, the proper sizing of their own HVAC systems and equipment.

Continued

HVAC INDUSTRY PROBLEM	IMPACT OF DELETING "UPON REQUEST"
Number of Complaints Against Heating Contractors with Alleged Violations Related to Load Calculations, Duct design and Equipment Sizing, Received by the Board of Examiners of Plumbing, Heating, and Fire Sprinkler Contractors (Board)	By homeowners and owners being able to scrutinize load calculations prior to the replacement and installation of their HVAC systems, problems that may arise related to these calculations may be more easily resolved without filing complaints and the Board's intervention. This amendment has the potential to reduce the work load of Board complaint investigators by providing several sources from whom to secure load calculations needed to resolve a complaint.
HVAC and General Contractors Often Share the Liability for Load Calculation Violations	Several sets of eyes on load calculations may prevent problems that could lead to future litigation.
Homeowners Are Often Left to Shoulder the Burden of Financial and Personal Losses, as well as Suffer the Emotional Trauma, and Long Term Health Issues ALONE, When HVAC Contractors Install or Replace HVAC Systems for Which No Load Calculations Were Performed or Load Calculations Were Not Code-Compliant or Accurate	This amendment can play a part in protecting all North Carolinians from the catastrophic impact of improperly sized HVAC systems and equipment, by providing increased scrutiny and opportunities to challenge the accuracy of load calculations.
Making a Profit	This amendment may lead to the loss of time for HVAC and general contractors, which equates to loss of profit. In addition, homeowners may experience longer periods of discomfort and frustration, due to extended wait time for installations and replacements. However, we believe this amendment may actually save HVAC contractors time and money. This belief is based upon a review of (1) Board judgements of heating contractors for alleged violations related to load calculations (e.g. probation; education; suspension and revocation of licenses; fines; having to return to a home, perform calculations, and install properly sized equipment, at the heating contractor's expense); (2) monetary, equipment, and labor settlements HVAC contractors have made with homeowners impacted by improperly sized HVAC systems and equipment (e.g. $250,000 settlement to Michael and Christine Mache, Ocean Isle Beach, NC); and (3) large amounts of money awarded by the Court to homeowners with damages related to load calculation violations (e.g. $450,000 awarded to a couple in Raleigh due to black mold in their HVAC systems).

Amendments 2 and 3:
Insert "Prior to Installation" and "Prior to Replacement"

In Sections (e) and (f)

These amendments specify the time when load calculations are to be provided to "homeowners, owners, and general contractors." We believe it is necessary to explicitly state the time when load calculations are to be provided; and, therefore, we are requesting these calculations be provided to the designated people "**prior to installation"** [Section (e)] **and "prior to replacement"** [Section (f)]**.** Common sense tells us providing these calculations "after the fact" will serve no constructive purpose, since the cost of replacing improperly sized HVAC systems and equipment after they have been installed is very time consuming and expensive for HVAC contractors (and often general contractors), as well as inconvenient and frustrating for homeowners and owners.

In Section (f)

We believe Section (f) should specify the time load calculations are to be performed when replacing HVAC systems and/or equipment, in the same manner Section (e) specifies the time load calculations are to be performed when installing HVAC systems and equipment; therefore, we are requesting the time **"prior to replacement"** be inserted into Section (f) to specify load calculations shall be performed before replacing an HVAC systems and/or equipment.

In our opinion, performing load calculations after the replacement of an HVAC system and/or equipment may, again, serve no useful purpose. In fact, performing these calculations after a replacement may be interpreted as an attempt to "rewrite history," or appear to be a "coverup," especially when a load calculation violation is suspected.

Amendments 4 and 5:
Delete "Six" and Insert "Twelve"

We believe HVAC contractors should maintain load calculations of all HVAC systems they replace and install for a minimum of 12 years, not six years, since 12 years is closer to the minimum in the average life span of an HVAC system. In addition, we believe it often takes more than six years after HVAC systems are replaced or installed for many homeowners to realize their problems (i.e. high humidity) are related to the sizing of their HVAC systems or equipment, and they need a copy of the load calculations. In our experience, it takes a lot of time for unknowing, trusting homeowners to work through the back and forth with their HVAC contractors and press them to "do something!" A great deal of time (years, for some) often passes before homeowners with financial means reach the limit of their frustration and exasperation and hire experts (e.g. professional engineers) to diagnose and resolve their HVAC problems. Other homeowners, like us, study, research, and consult individuals who are knowledgeable about HVAC systems and the HVAC industry, in an effort to figure out the cause of the problems themselves. Informed citizens often file complaints with the Board, which can take months to resolve. Finally, some citizens, many with really serious issues resulting from load calculation violations (e.g. health issues, having to move out of their homes) bypass filing a complaint and hire lawyers; this also takes time. In our situation, it took 8 years before we realized we needed copies of the load calculations performed on our two HVAC systems; after 12 years, we still do not have copies. In our opinion, the current requirement for HVAC contractors to maintain load calculations for a minimum of six years is biased against homeowners.
We are aware some HVAC contractors cannot "locate" load calculations for homeowners during the six-year period during which they are required to maintain them; and believe some

contractors may see the absence of load calculations as benefits when a sizing problem arises. We realize replacing the six-year minimum with a twelve-year minimum will have little to no effect upon some of these contractors. However, non-compliance of this minimum time period will become moot if HVAC contractors are required to provide “homeowners, owners, and general contractors” with load calculations. Nevertheless, if this amendment is accepted, it may be prudent for HVAC contractors to maintain load calculation for a minimum of 12 years, given the almost certain uptick in load calculation violations due to the complexity of sizing HVAC systems and equipment for increasingly more energy efficient homes. It seems to us, this new reality of energy conservation demands HVAC contractors take load calculations extremely seriously and maintain load calculation records longer, in order to protect themselves. However, some HVAC contractors may have little to no fear of load calculation violations being discovered after six years, due to the six-year repose, after which, as we understand it, they cannot be held liable for these violations.

Cost

These amendments will not add any financial burden to HVAC contractors and should not cost homeowners, owners, or general contractors anything. Load calculations can be digitally transmitted and stored very efficiently at no cost.

We ask you to make your decision regarding this petition based solely only what will better “protect the public health, safety and welfare” of all North Carolinians, and ignore any voice that attempts to have you do otherwise. Thank you for all the time and thought you give to our requested amendments.

Sincerely,

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21 NCAC 50 .0505 GENERAL SUPERVISION AND STANDARD OF COMPETENCE

(a) The general supervision required by G.S. 87-26 is that degree of supervision which is necessary and sufficient to ensure that the contract is performed in a workmanlike manner and with the requisite skill and that the installation is made properly, safely and in accordance with applicable codes and rules. General supervision requires that review of the work done pursuant to the license be performed by a licensee of the firm while the work is in progress. If a Plumbing, Heating or Fuel Piping Contractor licensed by this Board employs a properly licensed Plumbing, Heating or Fuel Piping Technician, whose Technician license is listed under the name of that licensed contractor, then the licensed technician may review and supervise work in lieu of the licensed contractor as a means to assure that the contract is performed in a workmanlike manner and with the requisite skill and that the installation is made properly, safely and in accordance with applicable codes and rules.

(b) The provisions of the North Carolina Building Code, including the provisions of codes and standards incorporated by reference, and adopted by the Building Code Council of North Carolina are the minimum standard of competence applicable to contractors licensed by the Board. Licensees shall design and install systems which meet or exceed the minimum standards of the North Carolina State Building Code, manufacturer's specifications and installation instructions and standards prevailing in the industry.

(c) Work performed under Rule .0513, Rule .0514, and Rule .0515 shall be performed by the licensed technician pursuant to the license held by that person.

(d) Every newly installed residential heating system, air conditioning system or both shall be designed and installed to maintain a maximum temperature differential of four degrees Fahrenheit room-to-room and floor-to-floor. On multilevel structures, contractors shall either provide a separate HVAC system for each floor or to install automatically controlled zoning equipment for each level with individual thermostats on each level to control the temperature for that level. The seasonal adjustment needed to maintain the four degrees Fahrenheit room-to-room and floor-to-floor maximum temperature differential shall not be accomplished through the use of manual dampers.

(e) All licensed HVAC contractors or licensed technicians shall perform a room-by-room load calculation for all newly installed residential structures prior, which calculations shall be specific to the location and orientation where the HVAC system or equipment is to be installed. A written record of the system and equipment sizing information shall be provided to the homeowner, owner or general contractor ~~upon request~~ **prior to installation**, and a copy shall be maintained in the job file of the licensee for a minimum of ~~six~~ **twelve** years. Load calculations shall be performed by a licensee who holds the appropriate license from this Board, or a licensee may utilize a load calculation carried out for this particular structure and location by a North Carolina Licensed Professional Engineer.

(f) When either a furnace, condenser, package unit or air handler in an existing residential heating or air conditioning system is replaced, the licensed HVAC contractor or licensed technician is required to perform a minimum of a whole house block load calculation **prior to replacement**. When a furnace, condenser, package unit or air

handler in a residential heating or air conditioning system is replaced, the licensee shall ensure that all systems and equipment are properly sized. The licensee may utilize industry standards, reference materials, evaluation of the structure, and load calculations. A written record of the system and equipment sizing information shall be provided to the homeowner, owner or general contractor ~~upon request~~ **prior to replacement,** and a copy shall be maintained in the job file of the licensee for a minimum of ~~six~~ **twelve** years. If a load calculation was not performed or if a load calculation was performed and it is later determined by the Board that the unit installed was undersized or oversized, the installation will be considered as evidence of incompetence. Load calculations shall be performed by a licensee who holds the appropriate license from this Board, or a licensee may utilize load calculations carried out for this particular structure and location by a North Carolina Licensed Professional Engineer.

(g) A licensed plumbing contractor involved in installation or replacement of a well pump or pumping equipment which includes installation or reinstallation of a well seal shall be present on site until the well is disinfected and sealed.

(h) At the time of completion of initial installation and upon any subsequent alteration, licensees who install multipurpose residential fire sprinkler systems shall assure that the two most remote fire sprinkler heads, as identified by the design professional who designed the system, undergo a water flow test at the water supply delivery volume and delivery pressure and assure that the system flows the required amount of water through each of the tested fire sprinkler heads. Failure to carry out the flow test or failure of a system to provide the required volume or water when placed in operation due to fire or otherwise shall be considered evidence of misconduct and incompetence on the part of the installing licensee.

History Note: Authority G.S. 87-18; 87-23; 87-26;
Eff. February 1, 1976;
Readopted Eff. September 29, 1977;
Amended Eff. July 3, 2012; January 1, 2010; March 1, 2005; January 1, 2004; July 1, 2003; July 1, 1991; October 1, 1989; May 1, 1989;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. August 22, 2015.”