

**Florida Board of Professional Engineers
Mechanical Rules Committee Minutes
August 26, 2020 @ 2 p.m.
FBPE Office via video conference
Tallahassee, FL**

1. Call to Order, Roll Call, Determination of Quorum, and Address Absences

Mr. Drury called the meeting to order. Ms. Sammons called roll.

Board Members Present:

Scott Drury, P.E., Committee chair
Kevin Fleming, P.E.
Babu Varghese, P.E., S.I.

Attorney General's Office:

Lawrence Harris, Senior Assistant Attorney General, Counsel to the Board

Staff Members Present:

Rebecca Sammons, Assistant Executive Director

Public Advisors:

Joe Limpert, P.E.
Warren Hahn, P.E.

FBPE

FLORIDA BOARD OF
PROFESSIONAL ENGINEERS

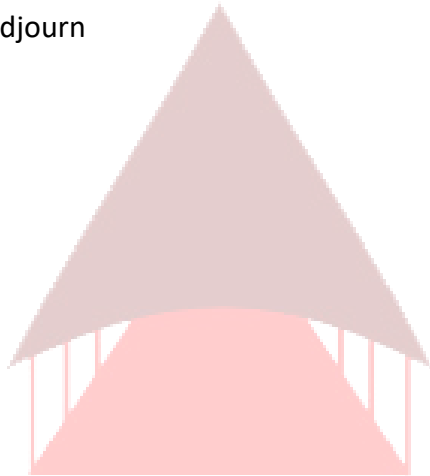
2. Introductions of Guests and Announcements
3. Review/Discussion on General Items.
4. Review/Discussion Proposed Modifications to 61G15-34.002.
5. Review/Discussion on Proposed New Rule 61G15-34.010.
6. Review/Discussion on Proposed Modifications to Rule 61G15-34.004.
7. Review/Discussion on Proposed Modifications to Rule 61G15-34.005.
8. Review/Discussion on Proposed Modifications to Rule 61G15-34.006.
9. Review/Discussion on Proposed Modifications to Rule 61G15-34.008.
10. Review Final Proposed Language for Previous Discussed Items

- a. Rule 61G15-34.003.
- b. Rule 61G15-34.007.
- c. Rule 61G15-34.009.

Mr. Drury went over the proposed rule changes in the meeting packet. Discussion followed.

Upon motion by Mr. Fleming, seconded by Mr. Varghese, to incorporate all the proposed rule changes as discussed and present them to the full board as the committee's recommendation, the motion passed. (Full proposed rule changes are attached to the minutes).

- 11. Old Business
- 12. New Business
- 13. Adjourn
- 14.



CHAPTER 61G15-34

RESPONSIBILITY RULES OF PROFESSIONAL ENGINEERS CONCERNING THE DESIGN OF MECHANICAL SYSTEMS

61G15-34.001	General Responsibility
61G15-34.002	Definitions
61G15-34.003	Design of Heating Ventilation and Air Conditioning <u>and Refrigeration</u> Systems
61G15-34.004	Design of Process and Fluid Flow Systems
61G15-34.005	Design of Heat and Energy Transfer Systems
61G15-34.006	Design of Material and Human -Transfer Systems
61G15-34.007	Design of Plumbing Systems
61G15-34.008	Design of Mechanical Machines and Motion Systems
61G15-34.009	Design of Instrumentation and Control Systems
<u>61G15-34.010</u>	<u>Design of Fuel Gas Systems</u>

61G15-34.001 General Responsibility.

Mechanical Engineering Documents shall be prepared in accordance with the applicable technology and with the requirements of the authority having jurisdiction. The documents shall identify the Engineer of Record for the mechanical systems project. Mechanical Engineering documents shall demonstrate compliance with the requirements of the applicable codes and standards as defined herein. The Engineer of Record is responsible for determining the applicability of appropriate codes and standards for a given project. In the event the codes and standards fail to cover or address a specific requirement or situation, alternative research, test results, engineering data, and engineering calculations shall be utilized. New technology may be utilized when said technology has been demonstrated to provide equivalent or improved performance. Construction documents shall indicate the nature and character of mechanical work and shall describe, label and define the required mechanical systems components, processes, equipment and material and its structural utility support systems. Both the Engineer of Record for the Mechanical System and the Delegated Engineer if utilized, shall comply with the requirements of the general responsibility rules, Chapter 61G15-30, F.A.C., and with the requirements of the specific rules contained herein. The Engineer of Record for the Mechanical System(s) shall provide design requirements in writing to the delegated engineer if one is used and shall review the design documents of the delegated engineer for conformance to his written instructions in accordance with Rule 61G15-30.005, F.A.C. Any Mechanical Delegated Engineering Documents must be included in the final set of documents filed for permit.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 11-16-94, Amended 11-13-08.

61G15-34.002 Definitions.

(1) Appliance. A device or apparatus that is manufactured and designed to utilize energy and specifically regulated by codes and standards.

~~(27)~~ Codes and Standards. Those nationally recognized Codes and Standards adopted directly or by reference in Florida Building Code (including Florida Energy Efficiency Code, Chapter 13) and Florida Fire Prevention Code set forth in Chapter 69A-60, F.A.C.

~~(32)~~ ~~Mechanical~~-Component. Any individual device to be part of a mechanical system.

~~(41)~~ Engineer of Record for the Mechanical Systems. The Florida Professional Engineer who is in responsible charge for the preparation, signing, dating, sealing and issuing of any engineering document(s) for mechanical systems design criteria or performs the analysis and is responsible for the preparation of the mechanical documents for the project.

(5) Equipment. All piping, ducts, vents, control devices, and other components of systems other than appliances which are permanently installed and integrated to perform its intended function.

(6) Fuel Gas. A natural gas, manufactured gas, liquefied petroleum gas or mixtures of these gases, intended to be used as a source for thermal energy and not for motor fuel.

~~(73)~~ Mechanical. Any device or mechanism that operates due to the action of the material forces in nature acting on bodies or masses.

(8) Mechanical Delegated Engineering Documents. Mechanical Engineering Documents prepared by a delegated engineer to whom the Engineer of Record for the Mechanical System has delegated responsibility for the design of a mechanical component or system and which are signed, sealed and dated by the delegated engineer.

(95) Mechanical Engineering Documents. All mechanical drawings, specifications, reports, calculations, data and other documents utilized to establish the overall design and requirements for the construction, alteration, modernization, repair, demolition, arrangement, and/or use of the mechanical system(s) or analysis or recommendations, as prepared by the Engineer of Record for the mechanical system. Mechanical Engineering Documents shall additionally meet the requirements of Rule 61G15-30.003, F.A.C., Engineering Documents.

(10) Point of Delivery. For natural gas systems, the point of delivery is the outlet of the service meter assembly or the outlet of the service pressure regulator or service shutoff valve where a meter is not provided. Where a valve is provided at the outlet of the service meter assembly, such valve shall be considered to be downstream of the point of delivery. For undiluted liquefied petroleum gas systems, the point of delivery shall be considered to be the outlet of the service pressure regulator, exclusive of line gas regulators, in the system.

(11) Service Pressure Regulator. For natural gas systems, a device installed by the serving gas supplier to reduce and limit the service line pressure to delivery pressure. For undiluted liquefied petroleum gas systems, the regulator located upstream from all line gas pressure regulators, where installed, and downstream from any first stage or a high pressure regulator in the system.

(126) Mechanical-Shop Drawings. Submittals, catalog information on standard products, or drawings prepared solely to serve as a guide for fabrication and installation and requiring no engineering input. These submittals do not require the seal of a Florida professional-Professional engineerEngineer.

(134) Mechanical-System. Any assembly of mechanical-components, materials, appliances, equipment, work systems, machines, products or devices which require design in accordance with mechanical engineering standards in order to perform its intended function.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History–New 11-16-94, Amended 2-5-96, 11-13-08.

61G15-34.003 Design of Heating, Ventilation, ~~and~~ Air Conditioning, ~~and~~ Refrigeration Systems.

(1) Heating, Ventilating and Air Conditioning (HVAC) Systems include those systems that control the temperature, humidity, or indoor air quality mechanical-ventilation of a particular space, ~~or building-, or network of buildings.~~ Items to be considered in the design and analysis of HVAC systems are, as applicable to the particular project: peak and block load characteristics and capacities; minimum ventilation; filtration; heat or energy transfer; movement of air, water, or other fluids associated with HVAC processes; pressure drop; instrumentation and control; performance requirements; and installation requirements-.

~~(2) All HVAC systems shall be designed in accordance with the Florida Codes, and reference standards as adopted by the authority having jurisdiction. The HVAC System(s) shall be based on and shall reference the Florida Building Code, the Florida Fire Prevention Code, any other applicable standards (such as ASHRAE, NFPA, ASME, ANSI, etc.); or if no other such standards are available on alternative engineering sources and good engineering practice.~~

~~(3) For Mechanical Engineering Documents pertaining to HVAC systems exempted by the threshold requirements for mandatory use of professional engineering services, the~~ Engineer of Record shall determine the level of detail shown on plans for an HVAC system ~~for mechanical engineering plans pertaining to HVAC systems exempted by the threshold requirements for mandatory use of professional engineering services.~~ All such plans shall include a disclaimer stating the HVAC systems are exempt from professional engineering services and shall provide a clear understanding of the minimum system requirements expected to be installed by the contractor and permitted by the authority having jurisdiction (AHJ). In the event the Engineer of Record provides more information and direction than is minimally required, he or she shall be held responsible for the technical accuracy of the work in accordance with applicable codes, standards, and sound engineering principles.

~~(4) For~~ Mechanical Engineering Documents pertaining to HVAC systems that exceed the threshold requirements for mandatory use of professional engineering services, the plans ~~shall indicate the following must include the following information, if applicable to the particular project:~~

(a) Demonstrate and provide adequate information for the AHJ to determine compliance with codes and ordinances. These may include test methods and results; or data and tabulations ~~for Energy Conservation~~ that are results of the design.

(b) Equipment selection schedule for each piece of mechanical equipment. All equipment must include the following information, if applicable to the particular equipment:~~shall have capacities listed including efficiencies, electrical or fuel requirements, static pressure and fan air quantities as applicable to the system, fluid flow and pressure head quantities as applicable to the system, and heat transfer capacities.~~

1. Equipment efficiencies.

2. Electrical requirements based on voltage and phase.

3. Fuel requirements.

4. Static pressure and fan air quantities.

5. Fluid flow and pressure head quantities.

6. Heat transfer capacities.

7. Cooling coil requirements based on sensible heat, latent heat, and total heat gains.

8. Filtration requirements.

9. Motor sizes and quantities to demonstrate compliance with the Florida Building Code, Energy Conservation.

(c) Floor plans; site plans; and building and mechanical system sections or elevations as appropriate to provide the minimum system requirements expected to be installed by the contractor.

~~(d) Outside (fresh) air make-up conditions. Ventilation requirements based on natural or mechanical means, as necessary for demonstrating compliance with the Florida Building Code, Mechanical.~~

~~(e) Cooling coil requirements based on sensible heat, latent heat and total heat gains.~~

~~(f) Heating equipment requirements.~~

~~(e) Energy recovery requirements.~~

~~(fg) Outside and inside design dry and wet bulb conditions. Outside and inside design conditions for cooling, heating, dehumidification, evaporation, and humidification processes, as applicable.~~

1. Processes affecting sensible heat only may specify outside dry bulb temperature only.

2. Processes affecting latent heat only may specify outside humidity ratio only.

3. Processes affecting total heat must specify outside dry bulb temperature and at least one other coincidental psychrometric state point.

4. Inside design conditions must include dry bulb temperature and either wet bulb temperature or relative humidity for cooling and heating conditions, as applicable. Where inside design conditions are setback based on occupancy, both occupied and unoccupied design conditions must be listed.

~~(gh) Exhaust Duct riser diagrams on buildings more than three stories when ductwork travels vertically more than three stories.~~

~~(i) Outside air riser diagrams on buildings more than three stories when ductwork travels vertically.~~

~~(hj) Process schematic flow diagrams with pipe sizes and fluid flow quantities.~~

~~(ik) Condensate discharge piping layout with pipe sizes.~~

~~(jl) Instrumentation and Control System requirements, unless included on either Electrical or on Instrumentation and Control plans to ensure intentional operation of the system ~~diagrams and sequence of operation.~~~~

(k) Unless included on plumbing system plans, design for fuel gas system, including piping layout and sizes; isometric or riser diagram with pipe sizes; and fuel gas capacity and pressure for each pipe section.

~~(l)~~ Ductwork layout and sizing; insulation requirements; supply, return, and exhaust inlet and outlet sizes; and outside air intake sizes. Air quantities shall be specified for inlets and outlets.

(m) Piping layout and sizing; and insulation requirements.

(n) Materials for all HVAC systems shall be specified.

~~(o)~~ All data needed to complete the ~~Florida Energy Code~~ calculations for compliance with Florida Building Code, Energy Conservation as applicable.

~~(p)~~ ~~A list of referenced NFPA Standards and layouts of all~~ Identify and locate required fire protection devices, such as fire dampers, smoke dampers, and smoke detectors ~~and systems.~~

(q) A list, description, or details of through-penetration firestop systems as applicable.

~~(r)~~ Building pressurization criteria as applicable.

1. Overall building net pressurization consisting of an air balance summary of outside (fresh) ventilation air quantities versus exhaust air quantities. For existing facilities where only a portion of the building is being renovated, the air balance summary must include all affected areas, which may not require an air balance summary for the entire building.

2. In spaces with critical pressurization requirements, such as in health care facilities, pharmaceutical facilities, and laboratories, a pressurization summary or diagram depicting pressure relationship with adjacent spaces. Supply, return, exhaust, and make-up air quantities; overall room pressurization; and make-up (transfer) air pathways shall be specified. For spaces with varying conditions, the pressurization summary shall include scenarios at both maximum and minimum design conditions.

(s) System commissioning requirements for demonstrating compliance with the Florida Building Code, Energy Conservation.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 11-16-94, Amended 11-13-08.

61G15-34.004 Design of Process and Fluid Flow Systems.

(1) Process and Fluid Flow Systems ~~are include~~ those systems that ~~are designed to~~ move fluids either by pumps, fans, or gravity as part of an industrial, commercial, or cogeneration process. Items to be included in the design and analysis of these systems are, as applicable to the particular project: load characteristics and capacities; process type; fluid type and characteristics; distribution of fluids; pressure drop; instrumentation and control; performance requirements; and installation requirements ~~fluid type and characteristics, fluid flow quantities, fluid pressure head, pump type, fan type, piping specifications, ductwork, specifications and process type.~~

(2) The Process and Fluid Flow System(s) shall be based on and shall reference the Florida Fire Prevention Code, any other applicable standards (such as ASHRAE, NFPA, ASME, ASSE, ANSI, etc.), the Florida Building Code (where applicable); or if no other such standards are available on alternative engineering sources and good engineering practice.

~~(3)~~ Mechanical Engineering Documents ~~pertaining to Process and Fluid Flow Systems~~ applicable to fluid flow systems shall at a minimum must include the following information, if applicable to the particular project:

(a) Demonstrate and provide adequate information for the AHJ to determine compliance with codes and ordinances. These may include test methods and results or data and tabulations that are results of the design.

~~(b)~~ Equipment schedule for each piece of mechanical equipment, including but not limited to, pumps, fans, apparatuses, or tanks. All equipment must include the following information, if applicable to the particular equipment: fluid type and characteristics, system pressure head and flow requirements, and electrical or fuel requirements.

1. Equipment efficiencies.

2. Electrical requirements based on voltage and phase.

3. Fuel requirements.

4. Motor sizes and quantities.

5. Fluid flow and pressure head quantities.

6. Tank capacities for storage.

~~(c)~~ Floor plans; site plans; and building and mechanical system sections or elevations as appropriate to provide the minimum system requirements expected to be installed by the contractor. Floor plans, site plans, and building and system elevations.

~~(d)~~ Process schematic flow diagrams with pipe sizes and fluid flow quantities with pipe or ductwork layout.

~~(e)~~ System piping or ductwork layout, sizing, and insulation requirements.

~~(f)~~ Specific system design requirements to allow for independent project review.

~~(f)~~ List of NFPA, ASHRAE, ASME, ANSI or other applicable design standards and requirements.

~~(g)~~ Instrumentation and Control System requirements, unless included on either Electrical or on Instrumentation and Control plans to ensure intentional operation of the system. Instrumentation and Control Diagrams and sequence of operation.

(h) Required fire protection systems and devices.

(i) Materials for all Process and Fluid Flow Systems shall be specified.

(j) All data needed to complete the calculations for compliance with Florida Building Code, Energy Conservation as applicable, unless the process or environment justifies an exemption by engineering design.

(k) A list, description, or details of through-penetration firestop systems as applicable.

(l) System commissioning requirements for demonstrating compliance with the Florida Building Code, Energy Conservation.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 11-16-94.

61G15-34.005 Design of Heat and Energy Transfer Systems.

(1) Heat and Energy Transfer Systems ~~are include~~ those systems that ~~are designed to~~ transfer heat or energy from one fluid to another, as part of an industrial, commercial, or cogeneration process. Items to be included in the design and analysis of these systems are, as applicable to the particular project: load characteristics and capacities; process type; fluid type and characteristics; distribution of fluids; pressure drop; instrumentation and control; performance requirements; and installation requirements fluid type and characteristics, fluid flow quantities, fluid pressure head, pump type, fan type, heat exchanger type, piping specification, ductwork specification, and process type.

(2) The Heat and Energy Transfer System(s) shall be based on and shall reference the Florida Fire Prevention Code, any other applicable standards (such as ASHRAE, NFPA, ASME, ASSE, ANSI, etc.), the Florida Building Code (where applicable); or if no other such standards are available on alternative engineering sources and good engineering practice.

~~(3)~~ Mechanical Engineering Documents pertaining to Heat and Energy Transfer Systems applicable to heat and energy transfer systems shall at a minimum must include the following information, if applicable to the particular project:

(a) Demonstrate and provide adequate information for the AHJ to determine compliance with codes and ordinances. These may include test methods and results or data and tabulations that are results of the design.

~~(ba)~~ Equipment schedule for each piece of mechanical equipment, including not limited to, pumps, fans, apparatuses, heat exchangers, or tanks. All equipment must include the following information, if applicable to the particular equipment: fluid type and characteristics, system pressure head and flow requirements, and electrical or fuel requirements.

1. Equipment efficiencies.
2. Electrical requirements based on voltage and phase.
3. Fuel requirements.
4. Heat transfer capacities.
5. Motor sizes and quantities.
6. Fluid flow and pressure head quantities.
7. Tank capacities for storage.

~~(cb)~~ Floor plans; site plans; and building and mechanical system sections or elevations as appropriate to provide the minimum system requirements expected to be installed by the contractor. Floor plans, site plans, and building and systems elevations.

~~(de)~~ Process schematic flow diagrams with pipe sizes and fluid flow quantities ~~pipe or ductwork sizes.~~

~~(ed)~~ System piping or ductwork layout, sizing, and insulation requirements.

~~(fe)~~ Specific system design requirements to allow independent project review.

~~(f)~~ List of NFPA, ASHRAE, ASME, ANSI or other applicable design standards and requirements.

~~(g)~~ Instrumentation and Control System requirements, unless included on either Electrical or on Instrumentation and Control plans to ensure intentional operation of the system. ~~Instrumentation and Control Diagrams and sequence of operation.~~

~~(h)~~ Required fire protection systems and devices.

~~(i)~~ Materials for all Heat and Energy Transfer Systems shall be specified.

~~(j)~~ All data needed to complete the calculations for compliance with Florida Building Code, Energy Conservation as applicable.

~~(k)~~ A list, description, or details of through-penetration firestop systems as applicable.

~~(l)~~ System commissioning requirements for demonstrating compliance with the Florida Building Code, Energy Conservation.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 11-16-94.

61G15-34.006 Design of Material ~~and Human~~-Transfer Systems.

(1) Material ~~and Human~~-Transfer Systems are those systems that are designed to move materials or humans from one place to another as a part of an industrial or commercial process. Items to be included in the design and analysis of these systems are, as applicable to the particular project: load characteristics and capacities; material type and characteristics; elevator and conveyor types; ventilation requirements; instrumentation and control; performance requirements; and installation requirements.

(2) The Material Transfer System(s) shall be based on and shall reference the Florida Fire Prevention Code, any other applicable standards (such as ASHRAE, NFPA, ASME, ASSE, ANSI, etc.), the Florida Building Code (where applicable); or if no other such standards are available on alternative engineering sources and good engineering practice.

~~(32)~~ Mechanical Engineering dDocuments pertaining to Material Transfer Systems ~~applicable to material and human transfer systems shall at a minimum~~ must include the following information, if applicable to the particular project:

(a) Demonstrate and provide adequate information for the AHJ to determine compliance with codes and ordinances. These may include test methods and results or data and tabulations that are results of the design.

(ba) Equipment selection schedule for each piece of mechanical equipment. All equipment must include the following information, if applicable to the particular equipment: Equipment schedule items to be included in the design of these systems are material type and characteristics, material flow quantities, material or human weight, conveyor types, elevator types, electrical and hydraulic requirements, and ventilation requirements.

1. Elevator, ,conveyor, or vacuum type of conveyance system.

2. Electrical requirements based on voltage and phase.

3. Hydraulic requirements.

4. Motor sizes and quantities.

5. Material type, weight, and flow quantities.

(cb) Floor plans; site plans; and building and mechanical system sections or elevations as appropriate to provide the minimum system requirements expected to be installed by the contractor. Floor plans, site plans, and building and system elevations.

(de) Process schematic flow diagrams with pipe sizes and fluid flow quantities appropriate system sizing information.

(ed) System conveyor and/or elevator layout.

(f) System piping or ductwork layout, sizing, and insulation requirements.

(ge) Specific system design requirements to allow for independent project review.

(f) List of NFPA, ASHRAE, ASME or other applicable design codes, standards, and requirements.

(hg) Instrumentation and Control System requirements, unless included on either Electrical or on Instrumentation and Control plans to ensure intentional operation of the system. Instrumentation and Control Diagrams and sequence of operation.

(ih) Required fire protection systems and devices.

(j) Materials for all Material Transfer Systems shall be specified.

(k) A list, description, or details of through-penetration firestop systems as applicable.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 11-16-94.

61G15-34.007 Design of Plumbing Systems.

(1) Plumbing ~~s~~Systems are those systems within or adjacent to a building that convey fluids and gases ~~generally as required by building codes in connection with sanitary drainage, storm drainage, specialty drainage, venting, water supply, water heating, vacuum, and compressed gases for medical and non-medical applications.~~ Items to be considered in the design and analysis of plumbing systems are, as applicable to the particular project: load characteristics and capacities; distribution of fluids; pressure drop; instrumentation and control; performance requirements; and installation requirements.

(2) The Plumbing System(s) shall be based on and shall reference the Florida Building Code, the Florida Fire Prevention Code, applicable standards (such as ASHRAE, ASME, ASPE, ASSE, ANSI, NFPA, etc.) ; or on if no other such standards are available alternative engineering sources and good engineering practice.

(3) For Mechanical Engineering Documents pertaining to Plumbing systems exempted by the threshold requirements for mandatory use of professional engineering services, the Engineer of Record shall determine the level of detail shown on plans for a plumbing system. All such plans shall include a disclaimer stating the Plumbing systems are exempt from professional engineering services and shall provide a clear understanding of the minimum system requirements expected to be installed by the contractor and permitted by the authority having jurisdiction (AHJ). In the event the Engineer of Record provides more information and direction than is minimally required, he or she shall be held responsible for the technical accuracy of the work in accordance with applicable codes, standards, and sound engineering principles.

(32) Mechanical Engineering Documents ~~pertaining applicable to Plumbing Systems that exceed the threshold requirements for mandatory use of professional engineering services, shall when applicable, include but are not limited to the following~~ must include the following information, if applicable to the particular project:

(a) Demonstrate and provide adequate information for the AHJ to determine compliance with codes and ordinances. These may include test methods and results or data and tabulations that are results of the design.

(ba) Equipment selection schedules for ~~all each piece of plumbing equipment, including but not limited to, plumbing fixtures, apparatuses, tanks, or drains~~ water heaters, boilers, pumps, grease traps, septic tanks, storage tanks, expansion tanks, compression tanks and roof and floor drains. All equipment must include the following information, if applicable to the particular equipment:

1. Equipment efficiencies.
2. Electrical requirements based on voltage and phase.
3. Fuel requirements.
4. Fixture flow or flushing rates.
5. Fluid flow and pressure head quantities.
6. Heat transfer capacities.
7. Motor sizes and quantities.
8. Tank capacities for storage, expansion, or compression.
9. Interceptor and separator capacities.

(cb) Floor plans, site plans, and building and plumbing system sections or elevations ~~are as~~ appropriate to provide the minimum system requirements expected to be installed by the contractor.

(d) Isometric or riser diagrams with pipe sizes as follows:

1. Potable water.
2. Sanitary and vent.
3. Storm water.
4. Other fluids and gases.

(e) Piping layouts and sizing; and insulation requirements.

(f) Total or cumulative plumbing capacities as follows, either listed on the isometric or riser diagrams or in table form on the plans.

1. Total water supply fixture units and coincidental flow rate in gallons per minute.
2. Total drainage fixture units.
3. Cumulative area in square feet and coincidental flow rate in gallons per minute for each roof drain or storm drain. Total flow rate in gallons per minute for each storm water conductor discharging from the building.

(c) Potable Water isometric diagrams with pipe sizes and total water fixture units.

- ~~(d) Sanitary riser diagrams with pipe sizes and total sanitary waste fixture units.~~
- ~~(e) Storm riser diagrams with pipe sizes and cumulative drain area square footages.~~
- ~~(f) Cold water, hot water, sanitary, and storm drainage piping layouts.~~
- ~~(g) System isometrics and flow diagrams of other fluids and gases.~~
- ~~(gh) Design data for septic tank, grease trap(s), and drain field sizing, when applicable.~~
- ~~(i) List of ASHRAE, ASME, ASPE, ANSI and other applicable codes, design standards and requirements.~~
- ~~(h) Potable water system design for minimizing bacteria growth (Legionella), based on heat, chemicals, or other means.~~
- ~~(i) Domestic hot water system design to prevent scalding, when applicable. Design shall include, but not be limited to:

 1. Design temperatures.
 2. Temperature monitoring points necessary to confirm temperatures throughout the system.
 3. Mixing valves or temperature-limiting devices.~~
- ~~(j) Design shall be in accordance with handicap requirements for accessibility by individuals with disabilities adopted by the authority having jurisdiction.~~
- ~~(k) Unless included on HVAC system plans, design for fuel gas system, including piping layout and sizes; isometric or riser diagram with pipe sizes; and fuel gas capacity and pressure for each pipe section.~~
- ~~(lk) Instrumentation and Control requirements, unless included on either Electrical or on Instrumentation and Control Diagrams and sequence of operation.~~
- ~~(m) Identify and locate All plumbing fixtures, valves, pumps, tanks, accessories, specialties, enclosures, and such equipment shall be described and located on the drawings.~~
- ~~(nm) Materials for all plumbing systems shall be specified.~~
- ~~(o) All data needed to complete the calculations for compliance with Florida Building Code, Energy Conservation as applicable.~~
- ~~(p) A list, description, or details of through-penetration firestop systems as applicable.~~
- ~~(q) System commissioning requirements for demonstrating compliance with the Florida Building Code, Energy Conservation.~~

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 11-16-94, Amended 11-13-08.

61G15-34.008 Design of Mechanical Machines and Motion Systems.

(1) Mechanical Machines and Motion Systems include any and all mechanical systems, devices, machines and equipment used by the public for conveyance, amusement, transportation, or facilitation of any process. These systems ~~would~~ include elevators, escalators, moveable walkways, amusement park rides, etc. Items to be included in the design and analysis of these systems are, as applicable to the particular project: load characteristics and capacities; accessibility requirements for persons with disabilities; system type and characteristics; instrumentation and control; operating dynamics requirements; structural requirements; and installation requirements include Building Code and permitting requirements, electrical requirements, hydraulic requirements, gear and drive sizes and materials, instrumentation and controls, handicap requirements, structural requirements, operating dynamics requirements.

(2) The Mechanical Machines and Motion System(s) shall be based on and shall reference the Florida Building Code, the Florida Fire Prevention Code, any other applicable standards (such as ASHRAE, NFPA, ASME, ANSI, etc; or if no other such standards are available on alternative engineering sources and good engineering practice.

~~(3) Mechanical Engineering Documents pertaining to Mechanical Machines and Motion Systems applicable to mechanical machines and motion systems shall at a minimum must include the following information, if applicable to the particular project:~~

(a) Demonstrate and provide adequate information for the AHJ to determine compliance with codes and ordinances. These may include test methods and results or data and tabulations that are results of the design.

(ba) Equipment schedule for each piece of mechanical equipment. All equipment must include the following information, if applicable to the particular equipment including material type and characteristics, systems weight loading requirements and electrical and hydraulic requirements.

1. Elevator or conveyor type.
2. Electrical requirements based on voltage and phase.
3. Hydraulic requirements.
4. Motor sizes and quantities.
5. Gear and drive sizes.
6. System weight loading requirements.

(cb) Floor plans; site plans; and building and mechanical system sections or elevations as appropriate to provide the minimum system requirements expected to be installed by the contractor. Floor plans, site plans, and building and system elevations.

(de) System schematic diagrams with sizes and fluid flow quantities and schematics with appropriate system sizing information.

(ed) System piping or ductwork layout, sizing, and insulation and design requirements.

(fe) Specific system design requirements to allow for independent project review.

(f) List of NFPA, ASHRAE, ASME, ANSI or other applicable design codes, standards, and requirements.

(g) Instrumentation and Control System requirements, unless included on either Electrical or on Instrumentation and Control plans to ensure intentional operation of the system. Instrumentation and Control Diagrams and sequence of operation.

(h) Required fire protection systems and devices.

(i) Materials for all Mechanical Machines and Motion Systems shall be specified.

(j) A list, description, or details of through-penetration firestop systems as applicable.

(k) Coordination with life safety means of egress requirements in NFPA 101.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 11-16-94.

61G15-34.009 Design of Instrumentation and Control Systems.

(1) Instrumentation and Control Systems are used to automate processes; control and monitor HVAC, plumbing, or electrical systems; and monitor fire protection systems where applicable. Items to be included in the design of control systems are reliability of control ~~of for~~ critical processes; design parameters of systems being controlled; safety of personnel; suitability of instruments and control devices in the environment in which they are to be installed; performance requirements; and installation requirements. Building Code requirements, NFPA requirements, ASHRAE design standards for HVAC systems.

(2) The Instrumentation and Control System(s) shall be based on and shall reference the Florida Building Code, the Florida Fire Prevention Code, any other applicable standards (such as ASHRAE, NFPA, ASME, ASPE, ANSI, etc.); or if no other such standards are available on alternative engineering sources and good engineering practice.

(2) Mechanical Engineering ~~Documents for pertaining to~~ instrumentation and ~~controls~~ Systems must include the following information, if applicable to the particular project shall indicate, at a minimum, the following:

(a) Demonstrate and provide adequate information for the AHJ to determine compliance with codes and ordinances. These may include test methods and results or data and tabulations that are results of the design.

~~(ba)~~ A description of the control systems functions, sequence of operation, or a functional diagram for each system to be controlled in order to provide the minimum functional requirements and as necessary for demonstrating compliance with the Florida Building Code, Energy Conservation.

~~(cb)~~ Materials for all instrumentation and control systems shall be specified. Specification of control instruments and their location.

~~(de)~~ Floor plans, site plans, and building sections or elevations as appropriate showing the location of major control components.

~~(e)~~ Location of all instrumentation and control components shall be identified.

~~(f)~~ System network architecture riser diagram for instrumentation and control systems.

~~(gd)~~ Control and Process System Diagrams.

~~(he)~~ Electrical requirements including conductors and cables (may be on electrical drawings).

~~(f)~~ Sequence of operation for each system.

~~(i)~~ All data needed to complete the calculations for compliance with Florida Building Code, Energy Conservation as applicable.

~~(j)~~ A list, description, or details of through-penetration firestop systems as applicable.

~~(k)~~ System commissioning requirements for demonstrating compliance with the Florida Building Code, Energy Conservation.

Specific Authority 471.008, 471.033(2) FS. Law Implemented 471.033 FS. History—New 11-16-94.

61G15-34.010 Design of Fuel Gas Systems.

~~(1)~~ Fuel Gas Systems include those systems that convey or utilize gaseous fuels as a source of potential energy as part of an energy transfer process, applying from the point of delivery up to and including the appliances and related accessories. Items to be considered in the design and analysis of fuel gas systems are, as applicable to the particular project: load characteristics and capacities; distribution of gases; pressure drop; instrumentation and control; performance requirements; and installation requirements.

~~(2)~~ The Fuel Gas System(s) shall be based on and shall reference the Florida Building Code, the Florida Fire Prevention Code, any other applicable standards (such as NFPA, ASME, ANSI, etc.); or if no other such standards are available on alternative engineering sources and good engineering practice.

~~(3)~~ Mechanical Engineering Documents pertaining to Fuel Gas Systems must include the following information, if applicable to the particular project:

~~(a)~~ Demonstrate and provide adequate information for the AHJ to determine compliance with codes and ordinances. These may include test methods and results or data and tabulations that are results of the design.

~~(b)~~ Equipment selection schedule for each piece of fuel gas equipment, including but not limited to, pumps, apparatuses, or tanks. All equipment must include the following information, if applicable to the particular equipment:

1. Equipment efficiencies.

2. Electrical requirements based on voltage and phase.

3. Fuel requirements.

4. Motor sizes and quantities.

5. Fluid flow and pressure head quantities.

6. Tank capacities for storage.

(c) Floor plans; site plans; and building and mechanical system sections or elevations as appropriate to provide the minimum system requirements expected to be installed by the contractor.

(d) The Point of Delivery for the fuel gas system.

(e) Isometric or riser diagrams with sizes as follows:

1. Fuel gas piping.

2. Venting systems.

(f) Piping layouts and sizing.

(g) Total or cumulative fuel gas capacities and pressure for each pipe section either listed on the isometric or riser diagrams or in table form on the plans.

(h) Venting layout and sizing, based on natural, induced, or mechanical means, as necessary for demonstrating compliance with the Florida Building Code, Fuel Gas.

(i) Design data for fuel tank sizing, when applicable.

(j) Instrumentation and Control requirements, unless included on either Electrical or on Instrumentation and Control plans.

(k) Identify and locate all fuel gas valves, pumps, tanks, accessories, specialties, enclosures, and such equipment.

(l) Materials for all fuel gas systems shall be specified.

(m) A list, description, or details of through-penetration firestop systems as applicable.