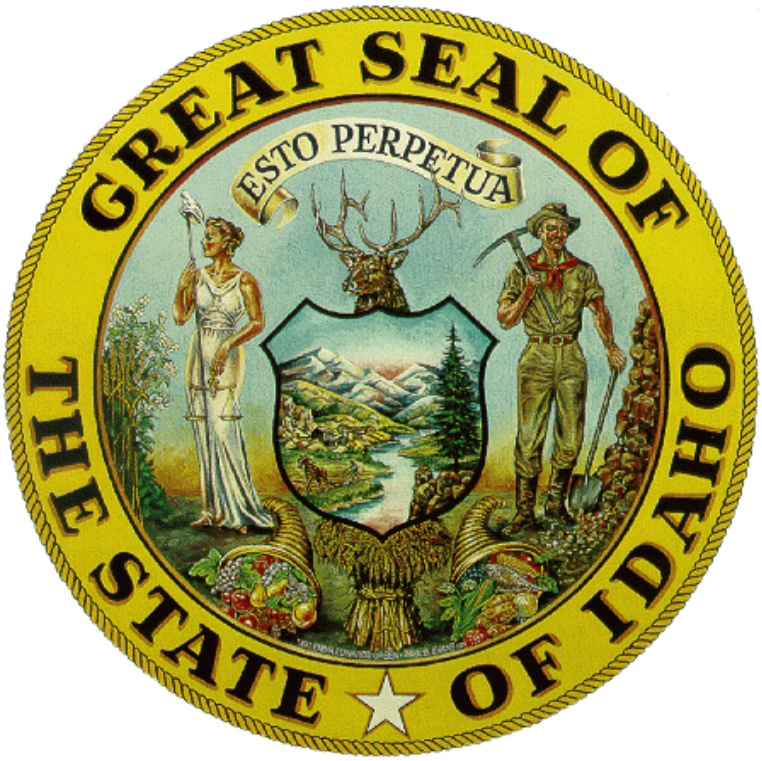
DIVISION OF BUILDING SAFETY

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD VIDEOCONFERENCE MEETING

MARCH 12, 2019



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 01 **Agenda and Minutes**

PRESENTER: Ted Sermon, Chairman

OBJECTIVE: Approve Idaho HVAC Board's March 12, 2019 Agenda and January 8, 2019 Meeting Minutes.

ACTION: Consent

BACKGROUND:

PROCEDURAL HISTORY:

ATTACHMENTS: Tentative Agenda and Draft Minutes

TENTATIVE AGENDA

NOTICE OF PUBLIC MEETING

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD MEETING

Division of Building Safety
1090 East Watertower Street, Suite 150, Meridian
1250 Ironwood Drive, Suite 220, Coeur d'Alene
2055 Garrett Way, Building 1, Suite 4, Pocatello

Teleconference – 877-820-7831--529619
dbs.idaho.gov – (208) 332-7137

Tuesday, March 12, 2019

9:30 a.m.–12:30 p.m. (MDT)
8:30 a.m. –11:30 a.m. (PDT)

9:30 a.m. **CALL TO ORDER** – Ted Sermon, Chairman

- Roll Call & Introductions
- Open Forum

CONSENT AGENDA

1. Approval of the March 12, 2019 Agenda and January 8, 2019 Board Meeting Minutes – Ted Sermon

ACTION AGENDA

2. Administrative Appeals Hearing – Amy Kohler, Compliance Program Specialist
   a. Quality Stoves – HVC1812-0006

INFORMATIONAL AGENDA

3. Licensing Requirements for the Apprentice/Journeyman Program – John Nielsen, HVAC Program Manager

4. Apprenticeship--2000 Hour Requirement – Ted Sermon

5. Governor's Executive Orders – Patrick J. Grace, Regional Manager

6. Code Updates – John Nielsen

7. Permit Fees – John Nielsen

8. Program Manager Report – John Nielsen

9. Compliance Program Report – Amy Kohler

10. Administrator Report – Chris L. Jensen, Administrator
    a. Financial Report

12:30 p.m. ADJOURN

For additional agenda information, refer to the packet, available one week prior to this meeting, at the DBS's central and regional offices and https://dbs.idaho.gov/boards/hvacboard/hvacmeetings.html.

All times, other than beginning, are approximate and scheduled according to Mountain Daylight Time (MDT), unless otherwise noted. Agenda items may shift depending on the Idaho HVAC Board's preference. 02/27/2019rb

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD VIDEOCONFERENCE MEETING

Tuesday – January 8, 2019 – 9:30 a.m. (MST)

Division of Building Safety
1090 East Watertower Street, Suite 150, Meridian
1250 Ironwood Drive, Suite 220, Coeur d'Alene
2055 Garrett Way, Building 1, Suite 4, Pocatello

DRAFT MINUTES OF THE JANUARY 8, 2019 HVAC BOARD MEETING

NOTE: The following report is not a verbatim transcript of the discussions at the meeting; however, is intended to record the significant features of those discussions.

Chairman Ted Sermon called the meeting to order at 9:32 a.m. (MST)

Board Members Present:
Ted Sermon, Chairman
Mark Ferm
Judy Van Cleave
Bill Hatch
Garret Christoffersen

DBS Staff Members Present:
Chris L. Jensen, Administrator
Ron Whitney, Deputy Administrator
John Nielsen, HVAC Program Manager
Spencer Holm, Deputy Attorney General
Larry Jeffres, Regional Manager, Region 1
Patrick J. Grace, Regional Manager, Region 2
Chuck Knapp, Regional Supervisor, Region 1
Adam Bowcutt, Regional Supervisor, Region 3
Amy Kohler, Compliance Program Specialist
Renee Bryant, Administrative Assistant 2

- **Open Forum**
  Permit Fees--Square Footage vs. Per Appliance
  Passionate about this topic, John Rubert, Comfy Fire, stated it is unfair for HVAC specialty contractors, who only install fireplaces, to be charged the same fee as HVAC contractors installing the whole HVAC system in new residential construction. The Board nor DBS has the authority to internally change the fee schedule. When asked about an emergency change, Chairman Sermon explained it must go through the negotiated rulemaking process and the earliest a proposal could go before the legislature is 2020. HVAC Program Manager John Nielsen stated this issue would be further discussed under the topic *Permit Fees*.

- **Approval of the January 8, 2019 Agenda and November 14, 2018 Meeting Minutes**
  MOTION: Judy Van Cleave made a motion to approve the agenda and minutes as presented. Mark Ferm seconded. All in favor, motion carried.

- **Election of Officers**
  Idaho Code § 54-5004 (4) "Idaho heating, ventilation and air conditioning board" states in part, "…At the board's first meeting, and every two (2) years thereafter, the members shall

elect one (1) of their number to be chairman and one (1) of their number to be vice-chairman."

Chairman
NOMINATION: Mark Ferm nominated Ted Sermon for chairman. Bill Hatch seconded. All in favor, motion carried.

Vice-Chairman
NOMINATION: Ted Sermon nominated Bill Carter for vice-chairman. Mark Ferm seconded. All in favor, motion carried.

- **Licensing Requirements for the Apprentice/Journeyman Program**

At the November 2018 Board meeting, Chairman Sermon asked, and Jeff Cox of Right Now Heating & Air agreed, to bring to the Board a possible solution to better fit everyone's licensing needs. Mr. Cox nor representatives for Right Now Heating & Air were at the meeting.

Provided was a handout of an excerpt from Governor Brad Little's State of the State Address where his first executive order is to have sunrise/sunset processes for future occupational licensing laws. With the Governor wanting barriers to come down for licensure, the following options for rule changes were provided: 1) Stay as is, 2) License only contractors and register everyone else, 3) Two-year residential journeyman, 4) Endorsements, 5) Reciprocity, and 6) Out-of-state individuals take placement test(s).

Currently in rule, there is no way for an out-of-state person to become an HVAC contractor in Idaho without first holding an Idaho HVAC journeyman license for two years. HVAC Program Manager Nielsen explained the requirements for individuals from out-of-state to be an HVAC journeyman, as well as plumbing requirements to be an Idaho plumbing contractor.

This year, the Electrical Board is proposing apprentices go back to a one-year rather than five-year registration. This would include "life time" apprentices as well. The HVAC/Plumbing Program Manager will propose the same for the HVAC/Plumbing Boards. To renew yearly, apprentices will need to show completion certifications from school or continuing education units (CEU).

Board Member Garret Christoffersen suggested creating a subcommittee. J.R. Finley, Sheet Metal Workers Local Union 55, volunteered to be on any subcommittee. It was determined a simple rule change was all that was needed for an out-of-state HVAC contractor to become an Idaho HVAC contractor; therefore, a subcommittee was not necessary.

HVAC Program Manager Nielsen offered, and the Chairman agreed, to draft proposed language on the requirements for out-of-state contractors to be Idaho HVAC contractors, as well as a yearly apprentice registration based on verification of schooling or CEUs.

ACTION: The HVAC Program Manager will draft proposed language for out-of-state contractors, and one-year apprentice registration.

ACTION: The topic *Licensing Requirements for the Apprentice/Journeyman Program* will be placed on the March 2019 Board meeting agenda as an informational item.

- **Code Updates**

  There were several minor changes between the 2015 and 2018 codes; however, nothing major; therefore, the HVAC Program Manager suggested to begin the negotiated rulemaking process to adopt the 2018 codes with no amendments. Board members Garret Christofferson and Mark Ferm agreed. Draft language will be provided at the March 2019 Board meeting as an informational item and an action item at the May 2019 meeting. If approved by the Board, and the 2020 legislative session, enforcement would begin January 1, 2021.

  Kenny Calkins, Treasure Valley Master Plumbers Association and Cloverdale Plumbing, recommended everyone send a letter to their legislators explaining that new codes need adopted every few years to keep up with the new technology and changes in the construction industry.

  ACTION: The HVAC Program Manager will post a notice to begin negotiated rulemaking in the Administrative Bulletin, as well as provide a draft proposal at the March 2019 meeting.

  ACTION: The topic *Code Update* will be placed on the March 2019 Board meeting agenda as an informational item, and then an action item at the May 2019 meeting.

- **Permit Fees**

  As of January 1, 2019, the Division no longer provides mechanical inspections for the city of Meridian. If the HVAC program continues to operate as it currently does, it will only have enough funds for approximately 64 months. Upon consulting with the Division's financial manager, if the Board only looked at funding from permits, the Division would need to charge $128 per inspection. The following options were provided by the HVAC Program Manager: 1) Leave as is, 2) Base fee, 3) Count fixtures, 4) $65 inspection fee per fireplace, and 5) Industry get rid of county options.

  Chris Miller, College of Western Idaho, suggested sending a survey to the industry to see who would support increasing penalty fees, the amount to charge, and would they attend legislative hearings in support of proposed legislation. John Rubert, Comfy Fire, advocated charging a separate fee of $65.00 for a fireplace and a $10.00 fee for each additional fireplace. Kenny Calkins offered to work with legislators on any changes needed to keep the HVAC program operational. The Chairman requested, and the Program Manager offered, to provide additional information on a new fee schedule based on a base fee and fixture count.

  ACTION: The HVAC Program Manager will post a notice to begin negotiated rulemaking in the Administrative Bulletin, as well as provide draft language at the March 2019 meeting.

  ACTION: The topic *Permit Fees* will be placed on the March 2019 Board meeting agenda as an informational item.

DRAFT

- **Program Manager Report**
  Legislation – One statute change, to replace "an HVAC specialty contractor" with "a representative of the HVAC industry" on the Board, will be presented at the 2019 legislative session.

- **Compliance Program Report**
  Compliance Program – Compliance Program Specialist Amy Kohler had nothing to report.

  Penalty Fees – Questioned were the penalty fees. Without a rule change, an alleged violator can be charged up to $200 for a first offense and $1,000 for a second offense. The Chairman suggested the Compliance Program Specialist increase the fines up to the legal maximum amount on all violations. Deputy Attorney General Spencer Holm clarified there is one exception, acting as a contractor without a license. That violation is $500 for the first offense and $1,000 for the second and each offense thereafter.

  ACTION: The Compliance Program Specialist will increase future fines on all violations.

- **Administrator Report**
  Legislative Session – The 2019 Legislature convened on Monday, January 7, 2019. DBS is scheduled to appear before the Joint Finance-Appropriations Committee on January 18, 2019, to address the Division's proposed budget. Governor Little wants to consolidate the states IT staff; specifically, by having IT employees within several agencies work under the Department of Administration. There will be 48 state employees affected by this change, with only 36 being rehired.

- **Adjournment**
  MOTION: Mark Ferm made a motion to adjourn the meeting. Judy Van Cleave seconded. All in favor, motion carried.

  The meeting adjourned at 12:35 p.m. (MST).

TED SERMON, CHAIRMAN HEATING, VENTILATION AND AIR CONDITIONING BOARD	CHRIS L. JENSEN, ADMINISTRATOR DIVISION OF BUILDING SAFETY
DATE	DATE

These DRAFT minutes are subject to possible correction and final approval by the Idaho HVAC Board. 02/21/2019rb

DRAFT

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 02a **Quality Stoves – HVC1812-0006**

PRESENTER: Amy Kohler, Compliance Program Specialist

OBJECTIVE: Administer a ruling on Quality Stoves' appeal – HVC1812-0006

ACTION: Affirm or reject the imposed penalty.

BACKGROUND: The Notice of Violation was based upon a proposed violation to IDAPA IDAPA 07.07.01.070.06 "Fees and Permits".

PROCEDURAL HISTORY:

ATTACHMENTS: Documentation from Quality Stoves and DBS

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 03 Licensing Requirement for the Apprentice and Journeyman Program

PRESENTER: John Nielsen, HVAC Program Manager

OBJECTIVE: Discuss licensing for out-of-state contractors and apprentice registration.

ACTION: Informational

BACKGROUND: Currently in rule, there is no way for an out-of-state person to become an HVAC contractor in Idaho without first holding an Idaho HVAC journeyman license for two years. HVAC Program Manager Nielsen explained the requirements for individuals from out-of-state to be an HVAC journeyman, as well as plumbing requirements to be an Idaho plumbing contractor.

This year, the Electrical Board is proposing apprentices go back to a one-year rather than five-year registration. This would include "life time" apprentices as well. The HVAC/Plumbing Program Manager will propose the same for the HVAC/Plumbing Boards. To renew yearly, apprentices will need to show completion certifications from school or continuing education.

HVAC Program Manager Nielsen offered, and the Chairman agreed, to draft proposed language on the requirements for out-of-state contractors to be Idaho HVAC contractors, as well as a yearly apprentice registration based on verification of schooling or CEUs.

ATTACHMENTS: Supporting Documentation

STEP 1: Change statute

§ 54-5012. Fees for application for examination, certificates of competency and registration of apprentices

(1) Application for examination.

(a) HVAC contractor or specialty contractor $ 35.00

(b) HVAC journeyman or specialty journeyman $ 35.00

(2) Certificate of competency, initial issue, valid for one (1) year; or may be is-sued at the annual rate for up to three (3) years.

(a) HVAC contractor or specialty contractor $ 75.00

(b) HVAC journeyman or specialty journeyman $ 50.00

(3) Renewal of certificate of competency, valid for one (1) year; or may be
issued at the annual rate for up to three (3) years.

(a) HVAC contractor or specialty contractor $ 50.00

(b) HVAC journeyman or specialty journeyman $ 25.00

(4) Each apprentice and specialty apprentice is required to register with the division of building safety and maintain such registration during the entire period in which work experience is accrued. An apprentice registration shall be valid for ~~five (5) years~~ one (1) year and shall expire on the last day of the month in which it is set to expire unless renewed. A specialty apprentice registration shall be valid for two (2) years and shall expire on the last day of the month in which it is set to expire unless renewed. The registration fee for an apprentice shall be ~~fifty~~ ten dollars ~~($50.00)~~ ($10.00), and the registration fee for a specialty apprentice shall be twenty dollars ($20.00).

STEP 2: Create new rule (example)

A person wishing to become a HVAC apprentice shall register with the Division of Building Safety prior to going to work. All apprentices shall pay the registration fee as prescribed by Section 54-5012, Idaho Code. The minimum age for any apprentice shall be eighteen (18) years of age unless registered in a Bureau of Apprenticeship Training (BAT) certified HVAC training program. No examination is required for such registration. In order to maintain registration, the apprentice shall show proof of completing a year of schooling or eight (8) hours of board approved continuing education. Renew of registration shall be in accordance with Sections 54-5012 and 54-5013, Idaho Code.

021.HVAC CONTRACTOR CERTIFICATE OF COMPETENCY - REQUIREMENTS.

01. Bond. Applicants shall provide a compliance bond in the amount of two thousand dollars ($2,000). Any such bond is required to be effective for the duration of the contractor licensing period. (3-29-12)

02. Qualification. Applicants shall provide proof, satisfactory to the board, of having legally acted as an HVAC journeyman for a period of not less than twenty-four (24) months. (3-16-04)

03. Examination. Applicants for certification as HVAC contractors must successfully complete the examination designated by the board.

(3-16-04)

04. Out of State Contractor Applications. (X-XX-XX)

a. An applicant for a contractor certificate of competency **who has previously been licensed** as a journeyman in another jurisdiction recognized by the Idaho HVAC Board shall first obtain an Idaho journeyman certificate of competency in accordance with Section 023 of these rules. Such applicants may provide proof of twenty-four (24) months of experience as a HVAC journeyman by providing satisfactory evidence to the Division of such work history in another recognized jurisdiction. Such applicants shall also pay all applicable application and examination fees to the Division, and successfully complete the contractor examination administered by the Division.

The compliance bond required by Section 54-5007, Idaho Code, shall be required to be on file with the Division upon successful completion of the examination. (X-XX-XX)

b. An applicant for a contractor certificate of competency **who has never been previously licensed** as a journeyman in a jurisdiction recognized by the Idaho HVAC Board shall first obtain an Idaho journeyman certificate of competency in accordance with Section 023 of these rules. Such applicants shall also provide proof of four (4) years of experience performing HVAC work of a nature equivalent to what a journeyman in Idaho must demonstrate to qualify for a contractor certificate of competency. Proof of such work experience may be provided by the submission of three (3) sworn affidavits from individuals attesting to the fact that the applicant has had at least four (4) years' experience performing such work. Alternatively, such an applicant must provide proof of twenty-four (24) months of experience as an HVAC journeyman in the state of Idaho. Such applicants shall also pay all applicable application and examination fees to the Division, and successfully complete the contractor examination administered by the Division. The compliance bond required by Section 54-5007, Idaho Code, shall be required to be on file with the Division upon successful completion of the examination. Applications that are incomplete in any detail will be returned as unacceptable or denied. (X-XX-XX)

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 04 Apprenticeship--2000 Hour Requirement

PRESENTER: Ted Sermon, Chairman

OBJECTIVE: Determine whether full-time HVAC college programs, up to 18 months, qualify to receive up to one (1) year of on-the-job experience.

ACTION: Informational

BACKGROUND: **February 2018** – The Board cannot override a rule; however, needs to go through the negotiated rulemaking process to meet the requirements from 2006. The College of Southern Idaho and Northwest HVAC/R Association and Training Center have had one-year apprenticeship courses since 2006. It was suggested the rule be changed to 2,000 hours for one year; creating a path for individuals to enter the trade. DBS will begin the negotiated rulemaking process to allow apprentices in a full-time one-year program with lab to earn one year of on-the-job training.

March 2018 – With approximately 30 students ready to test, Mike LaPray, HVAC Assistant Professor, College of Southern Idaho, asked there be a temporary rule until the proposed rule becomes effective.

May 2018 – The Board approved the following draft proposal for submission as a temporary and proposed rule: "Notwithstanding the requirement that an apprentice demonstrate four (4) years of on-the-job experience, an apprentice who successfully completes a board-approved, one-year full-time HVAC training course may receive up to one (1) year of on-the-job experience."

February 2019 – There has been concern from Lewis-Clark State College that their 18-month HVACR Technology program will be the only full time HVAC training program in Idaho NOT eligible for the 2000 hours of on the job training.

CWI HVAC Apprenticeship Curriculum
FY 2020

HVAC Year One
Total Hours: 168

- Basic math – Module 1
  30 Hours
  - Whole numbers
  - Addition and subtraction
  - Fractions
  - Decimals
  - Measurement of
    - Lines
    - Area
    - Volume
    - Weights
    - Angles
    - Pressure
    - Vacuum
    - Temperature
  - Trade related math using a calculator

  Objectives:
  Perform addition, subtraction, multiplication, and division calculations of whole numbers, common fractions and decimal fractions
  Perform ratio and proportion calculations
  Perform percent and percentage calculations
  Perform angular, length, and converted temperature measure calculations
  Perform area and volume calculations

- Basic Safety Hand and Power Tools – Module 2
  18 hours
  - OSHA 10 hour construction training
  - Tools
    - Basic hand and power tools
    - Soldering and brazing

  Objectives:
  Describe potential excavation site hazards (1hr)
  Explain proper personal protective equipment use (1hr)
  Describe proper material handling, storage, use, and disposal
  Describe ladder, stairway and scaffold hazards and proper use
  Describe jobsite electrical hazards and proper lockout/tagout use
  Describe proper refrigerant and pressure vessel usage and storage
  Identify MSDS properties for refrigerants (1hr)
  Describe proper hand and power tool use
  Describes soldering and brazing methods

- Fuel gas piping and venting – Module 3
  60 hours
  - Installation of fuel piping according to code and industry standards
  - Installation of venting according to code and industry standards

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

- Installation of combustion air according to code and industry standards
- Installation of make- up air according to code and industry standards
- IFGC requirements

Objectives:

Identify International Code administrative and enforcement rules
Define key terms as applied to the IFGC
Describe the building structural safety requirements for fuel gas equipment installation
Examine fuel gas equipment combustion, ventilation and dilution air requirements
Identify fuel gas equipment location, access and service space requirements
Describe proper appliance condensate disposal and clearance reduction methods
Perform gas pipe sizing exercises
Identify proper gas pipe installation methods
Describe proper gas pipe inspection, testing and purging procedures
Describe chimney and vent types and construction
Examine chimney installation requirements
Examine gas vent installation requirements
Describe gas appliance category I, II, III and IV characteristics
Identify proper gas vent connector installation requirements
Describe category I venting principals
Perform single appliance category I vent sizing exercises
Perform multiple appliance category I vent sizing exercises
Determine capacity penalties for offsets in common vent and vent connectors
Examine specific fuel gas appliance installation requirements
Describe mechanical equipment location, access and service space requirements

- Energy sources – Module 4

12 hours

- Principles of different fuel sources
- Fuel Oil
- Electric
- Gas / LP
- Hydro / geothermal*
- Wind / solar*

Objectives:

Explain natural, LP gas, and fuel oil combustion characteristics
Describe the development and application of geothermal heat pump systems
Describe the development and application of renewable energy systems

- Basic systems overview – Module 5

12 hours

- Warm air furnaces
- Split system air conditioners
- Commercial air conditioning systems
- Forced air duct systems

Objectives:

Describe mid-efficiency and high efficiency furnace operation
Describe the typical configuration of residential split air conditioning systems
List the various types of commercial air conditioning systems and their application
Describe the configuration and installation methods of four common duct systems

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

- Intro to applied science – Module 6
  30 hours
  - History of HVAC/R
  - Temperature measurement and conversion
  - Thermodynamics
  - Pressure / vacuum
  - Refrigeration cycle and components
  - Basic elements of matter
  - *Applied math* – 6 hours

  Objectives:
  Describe a brief modern history of HVAC
  Describe energy types and their properties
  Perform energy conversion calculations
  Perform sensible, latent and total heat calculations
  Differentiate between saturated, superheated, and subcooled refrigerant
  Explain atmospheric, absolute, and gauge pressure relationship
  Convert gauge pressure, absolute pressure and vacuum
  Diagram a basic refrigeration cycle identifying pressure, temperature and state of refrigerant
  List the type and function of the four major refrigeration components

- Customer Service – Module 7
  6 hours
  - Cleanliness
    - Site
    - Personal
  - Professional appearance
  - Timeliness
  - Work ethic
  - Communication skills

  Objectives:
  Describe good customer communication procedures

HVAC Year Two
Total Hours: 168

- Appliance installation – Module 1
  24 hours
  - Oil and fuel gas appliance installation
  - Split and packaged air conditioning system installation
  - Forced-air system installation
  - NEC – electrical code as applied to HVAC installation
  - IFGC, IMC, IRC code requirements for HVAC installation

  Objectives:
  Explain HVAC electrical branch circuit sizing and installation factors
  Interpret HVAC manufacturer electrical name plate data
  Explain combustion air and venting requirements for Category I, III and IV appliances
  Describe gas appliance installation, start-up and checkout procedures
  Describe oil appliance installation, start-up and checkout procedures
  Describe sheet metal, fiberglass and flex duct installation procedures
  Identify split and packaged air conditioning unit components
  Explain split and packaged air conditioning unit installation guidelines

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

- Introduction to blueprints and specifications – Module 2
  24 hours
  - Site plans, floor plans and elevation drawings
  - Mechanical, plumbing and electrical drawings
  - Specifications
  - Shop drawings and submittals
  - Takeoff procedures
  - As-built drawings

  Objectives:

  Read blueprints and architect plans
  Interpret mechanical, plumbing and electrical drawings
  Interpret specification documents and apply to plans
  Interpret shop drawings and apply to plans and specifications
  Describe a submittal and its derivation, routing and makeup
  Develop cut lists for duct runs from shop drawings
  Interpret as-built modifications on HVAC mechanical plans
  Perform an HVAC equipment and material takeoff

- Basic electricity – Module 3
  60 hours
  - Basic electrical theory
  - Electrical safety
  - Series and parallel circuits
  - AC and DC theory
  - HVAC electrical control devices
  - HVAC electrical load devices
  - HVAC electrical schematic diagrams
  - Power generation and distribution
  - HVAC branch circuits
  - Applied math – 9 hours integrated
    - Ohm's Law
    - Engineering notation
  - Single-phase, three-phase and ECM Motors
  - Single-phase motor starting components

  Objectives:

  Examine basic electrical theory
  Explain series circuit characteristics
  Explain parallel circuit characteristics
  Calculate electrical circuit values
  Analyze series/parallel circuits
  Describe electrical meter operation
  Measure electrical circuit values
  Identify electrical symbols
  Draw basic HVAC electrical circuit diagrams
  Interpret basic HVAC schematic diagrams
  Interpret advanced HVAC schematic diagrams
  Explain AC circuit characteristics
  Describe power distribution transformer systems
  Calculate HVAC branch circuit conductor, breaker and disconnect sizes
  Examine basic motor theory
  Draw single phase motor diagrams

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

Explain single-phase motor starting relay operation
Calculate motor capacitor replacement values
Explain three-phase motor operation
Explain ECM motor operation

- Indoor air quality – Module 4
  15 hours
  - Pollutants and pollutant pathways
  - Prevention, control and remediation strategy
  - Tools and testing
  - Energy recovery ventilation systems*
  - Filters and humidifiers*
  - IAQ checklists
  - Home energy/IAQ evaluation*

  Objectives:
  Describe indoor air quality factors as related to HVAC
  Identify various indoor air quality pollutant and pollutant pathways
  Describe indoor air quality evaluation and measurement tools
  Explain appropriate prevention, control and resolution strategies for IAQ issues
  Determine guidelines for involving professionals in IAQ issues

- Residential load calculation – Module 5
  33 hours
  - Calculations to determine residential heat gain / loss* (Manual J)

  Objectives:
  Examine importance of heat load calculation in building design
  Differentiate sensible, latent and total heat gain/loss
  Determine U values and R values for various building construction components
  Calculate Btu gain/loss values using HTM and temperature difference factors
  Determine heating and cooling load temperature difference and daily range values
  Explain the relationship between house orientation and solar heat gain
  Perform building component area and volume calculations from blueprints
  Perform winter/summer infiltration calculations using Manual J procedures
  Perform heat gain calculations using Manual J procedures
  Perform heat loss calculations using Manual J procedures
  Determine sensible, latent and total heat house block and room values

HVAC Year Three
Total Hours: 168

- Basic controls – Module 1
  39 hours
  - Basic electro-mechanical control devices
  - Gas, oil, electric and hydronic heating controls
  - Manufacturer wiring diagram analysis
  - Troubleshooting electric control devices
  - Residential air conditioning control systems
  - Commercial and industrial air conditioning control systems
  - Electronic control devices
  - Electronic control module troubleshooting procedures

  Objectives:
  Explain contactor, relay and overload operation

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

Explain thermostat, pressure switch and transformer operation
Describe standing pilot gas burner control systems
Describe intermittent and direct ignition gas burner control systems
Examine gas furnace manufacturer wiring diagrams
Explain oil furnace primary control operation
Describe electric furnace operating sequence
Describe hydronic heating system controls
Perform gas, oil and electric heating control system troubleshooting procedures
Describe motor circuit troubleshooting procedures
Examine packaged and split air conditioning systems wiring diagrams
Identify commercial and industrial air conditioning system control methods
Describe basic electronic control system troubleshooting procedures

- System air flow and duct sizing – Module 2
  30 hours
  - Basic principles of air flow
  - Air distribution system components
  - Air distribution system application and configuration
  - Air flow calculation
  - Basic airflow testing and balancing procedures*
  - Primary equipment selection using Manual J and Manual S*
  - Secondary equipment selection using manufacturer tables
  - Basic duct system layout from floor plans
  - Duct system sizing using Manual D*

  Objectives:
  Describe basic air flow characteristics
  Explain duct system pressures
  Calculate duct system air flow
  Determine proper air flow requirements
  Describe air distribution system configurations
  Select primary heating/cooling equipment using Manual J and Manual S data
  Determine air-side component pressure drops from manufacturer tables
  Sketch a residential duct system layout using a home floor plan and Manual D tables
  Complete Manual D effective length, friction rate and duct sizing worksheets
  Perform Manual D duct sizing exercises

- Basic air conditioning and refrigeration – Module 3
  33 hours
  - Thermodynamics and heat transfer principals
  - Refrigeration cycle operating principals
  - Pressure / temperature relationship
  - Refrigeration system components and operation
  - Refrigerant properties and characteristics
  - Refrigerant oils – types and application
  - Refrigeration system access tools and procedures
  - Refrigerant management- EPA Section 608*
  - Refrigeration system recovery, evacuation and charging procedures

  Objectives:
  Explain latent, sensible and total heat differences
  Diagram refrigeration cycle conditions and components
  Explain pressure-enthalpy diagrams
  Examine compressor design and efficiency

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

Explain water/air-cooled condenser operation and performance
Examine metering device design and operation
Describe evaporator types
Identify proper refrigerant line sizing and installation practices
Explain various refrigerant physical and chemical properties
Explain refrigerant oil properties and application
Describe proper refrigeration system access procedures
Differentiate between recovered, recycled and reclaimed refrigerant
Explain proper refrigerant recovery, evacuation and charging procedures

- Introduction to Hydronics – Module 4
  9 hours
  - Operating principles
  - Piping systems
  - Preventative maintenance
  - Components
  - System overview

  Objectives:
  Identify hydronic piping system types
  Describe hydronic heating system components
  Explain hydronic heating systems drain and fill procedures
  Diagram basic hydronic heating system control circuits

- Basic sheet metal – Module 5
  33 hours (If performing actual sheet metal layout & fabrication in a shop setting, it will take 39 hours to complete these objectives. If using construction paper to layout and fabricate in a classroom setting, less time is required to complete the objectives.)
  - Sheet metal layout and processes
  - Parallel line development and fabrication
  - Radial line development and fabrication
  - Triangulation development and fabrication
  - Layout and fabricate various duct fittings

  Objectives:
  Define basic sheet metal layout terms
  Explain three methods of sheet metal layout development
  Explain parallel line development procedures
  Layout and fabricate the following sheet metal fittings: Pittsburgh seam and square elbow
  Layout and fabricate the following sheet metal fitting: 90 degree elbow and transition
  Explain radial line development procedures
  Layout and fabricate the following sheet metal fitting: symmetrical tapered duct
  Layout and fabricate the following sheet metal fitting: square to square tapered duct
  Explain triangulation development procedures
  Layout and fabricate the following sheet metal fitting: two-way offset transition
  Layout and fabricate the following sheet metal fitting: tapered duct section

- Introduction to service – Module 6
  12 hours
  - Air conditioning mechanical, electrical and refrigeration system analysis
  - Gas heating system mechanical, electrical and combustion analysis
  - Oil heating system mechanical, electrical and combustion analysis
  - Electric heating system mechanical and electrical analysis
  - Heating and cooling equipment maintenance procedures*

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

Objectives:
Describe air conditioning system problems and prescribe corrections
Describe gas heating system problems and prescribe corrections
Describe oil heating system problems and prescribe corrections
Describe electric heating system problems and prescribe corrections
List gas, oil and electric heating and air conditioning maintenance procedures

HVAC Year Four
Total Hours: 168

- Introduction to Psychrometrics – Module 1
  12 hours
  - Psychrometrics – Fundamentals of the Properties of Air
  - Psychrometrics – Calculating the Performance of HVAC Equipment

Objectives:
Explain psychrometric properties
Plot psychrometric conditions
Calculate airflow and air conditioning equipment capacities
Calculate mixed, exhaust, and makeup air conditions in commercial buildings

- Introduction to HVAC Control Strategies – Module 2
  9 hours
  - HVAC Systems & Control Basics
  - Electric Control Systems
  - Pneumatic & DDC Control Systems

Objectives:
Describe basic HVAC control principals
Interpret basic HVAC pneumatic control diagrams
Explain DDC control system basic operation

- Advanced Air Conditioning and Heat Pump Systems – Module 3
  48 hours
  - Commercial Air Conditioning Systems
  - Packaged Unit Air Handling Systems
  - Water Chillers
  - Cooling Towers
  - Basic Heat Pump Theory
  - Heat Pump Components
  - Heat Pump Charging Procedures
  - Heat Pump Electrical Systems
  - Heat Pump Defrost Systems
  - Heat Pump Service Procedures
  - Heat Pump Troubleshooting Procedures
  - Water Source Heat Pump Design*
  - Water Source Heat Pump Components
  - Water Source Heat Pump Troubleshooting Procedures

Objectives:
Explain commercial fan coil unit operation
Examine package unit building system configurations
Describe building chilled water system operation
Describe induced and forced draft cooling tower operation

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

Explain heat pump heating and cooling cycles
Describe the purpose and operation of various heat pump components
Prescribe heat pump charging procedures
Examine heat pump manufacturer electrical wiring diagrams
Differentiate heat pump time/temperature and demand defrost control systems
Explain heat pump service checklist readings
Interpret air source heat pump diagnostics
Explain geothermal heat pump system applications
Describe water-to-air and water-to-water heat pump operation
Interpret water source heat pump diagnostics

- Advanced Service – Module 4
  36 hours
  - Air Conditioning Air Side Troubleshooting Procedures
  - Air Conditioning Refrigeration Side Troubleshooting Procedures
  - Air Conditioning Service Diagnostics
  - Air Conditioning Electrical Schematics & Troubleshooting Procedures
  - Gas Furnace Electrical Schematics & Troubleshooting Procedures
  - Gas Furnace Service Diagnostics
  - Electric Furnace Service Diagnostics
  - Oil Furnace Service Diagnostics

  Objectives:
  Prescribe air flow troubleshooting procedures
  Explain standard and high efficiency air conditioner operation
  Explain service checklist readings
  Determine variable load air conditioning operating conditions
  Prescribe refrigeration side troubleshooting procedures
  Troubleshoot residential and commercial control systems
  Interpret air conditioning manufacturer electrical wiring diagrams
  Perform interactive air conditioning technician service calls
  Prescribe gas furnace troubleshooting procedures
  Perform interactive gas furnace technician service calls
  Prescribe electric furnace troubleshooting procedures
  Prescribe oil furnace troubleshooting procedures

- System Integration and Design (Project format) – Module 5
  12 hours
  - Residential Comfort and Design Standards*
  - Primary Equipment Selection and Sizing*
  - Primary Equipment Installation and Operation*
  - System Replacement and Retrofit*

  Objectives:
  Describe residential comfort and design standards
  Examine residential equipment selection and sizing requirements
  List residential equipment installation and startup procedures
  Prescribe residential equipment retrofit procedures

  Code review – Module 6
  51 hours
  - Review of International Fuel Gas Code (30 hrs)
  - Review of International Mechanical Code* (15 hrs)
  - Review of National Electrical Code (6 hrs)

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

Objectives:

- Identify International Code administrative and enforcement rules
- Describe the building structural safety requirements for fuel gas equipment installation
- Examine fuel gas equipment combustion, ventilation and dilution air requirements
- Identify fuel gas equipment location, access and service space requirements
- Perform gas pipe sizing exercises
- Identify proper gas pipe installation methods
- Examine chimney and gas vent installation requirements
- Perform single and multiple category I vent sizing exercises
- Examine specific fuel gas appliance installation requirements
- Describe mechanical equipment location, access and service space requirements
- Identify proper supply, return and exhaust air system installation methods
- Examine specific mechanical equipment installation requirements
- Identify proper HVAC equipment branch circuit installation methods
- Perform HVAC equipment branch circuit sizing exercises

* Denotes curriculum areas that cover energy efficiency, environmental impact and green construction.

Copyright © 2019 – 2020
College of Western Idaho. All rights reserved.

Idaho State University HVAC Apprenticeship Summary

The ISU HVAC Apprenticeship program is a four year program. Classes are held from September to April and students meet 2 nights a week.

Year 1	Hours	Course Summary
	156	Introdution to HVAC, Trad Mathatics, Basic Electricity, Introduction to heating, Introduction to cooling, Introduction to Air Distribution Systems, Basic Copper and Plastic Piping Practices, Soldering and Brazing, Basic Carbon Stel Piping Practices, International Gas Code, International Mechanical Code

Year 2	Hours	Course Summary
	156	Alternting Current, Compressors, Refrigerants and Oils, Leak Detection, Evacuation, Recovery and Charging, Metering Devices, Heat Pumps, Basic Maintenance, Chimney, Vents and Flues, Sheet Metal Duct Systems, Fiberglass and Fabric Duct Systems, Commercial Airside Systems, Air Quality Equipment, International Gas Code, International Mechanical Code

Year 3	Hours	Cours Summary
	156	Fasteners, Hardware, and Wiring Terminations, Control Circuits and Motor Troubleshooting, Troubleshooting Cooling, Troubleshooti9ng Heat Pumps, Troubleshooting Gas Heating, Troubleshooting Oil Heating, Troubleshooting Accessories, Zoning, Ductless, and Variable-Refrigerants Flow Systems, Commercial Hydronic Systems, Steam Systems, Retail Refrigerant Systems, International Gas Code, International Mechanical Code.

Year 4	Hours	Course Summary
	156	Water Treatment, Indoor Air Quality,

Energy Conservation Equipment, Building Management Systems, System Air Balancing, System Startup and Shutdown, Construction Drawings and Specifications, Heating and Cooling System Design, Commercial/Industrial Refrigeration, Alternative and Specialized Heating and Cooling Systems, Intternational Gas Code, International Mechancial Code.

From: Peggy Schnell <MMSchnell@NIC.EDU>
Sent: Tuesday, March 5, 2019 10:36 AM
To: John Nielsen <John.Nielsen@dbs.idaho.gov>; Ted Sermon <Serm09@msn.com>
Subject: RE: Schooling Information

Hello,

I am responding to your questions for North Idaho College's 4-year, non-credit HVAC program. I have forwarded this email message on to representatives of NIC's 9-month, for credit HVAC program.

NIC's non-credit program is offered at the Workforce Training Center in Post Falls.
It is a 4-year program, with classes offered evenings or Saturdays so students can be employed full-time while completing the program. Classes run September-May.
At this time, all classes use a hybrid (part classroom, part online) format and offer the equivalent of 144 hours of instruction per school year. We are basing our instruction on the outlines provided by Idaho PTE (now CTE) in 2011.

At the completion of the four years, students receive a certificate that they submit to DBS when they have the required number of on-the-job hours to apply to take the journeyman exam. There are no on-the-job hours associated with the program.

If students complete all four years of the program, they have the option to have 56 NIC credits added to a transcript. There is a cost of $10/credit to have this done. If the students complete an additional 15 general education credits, they can receive an AAS degree from NIC. Very few students choose this option.

I plan to attend the March 12 board meeting at DBS' Coeur d'Alene office.
Please let me know if more information is needed.
Best regards,
Peggy

Peggy Schnell
Coordinator for Apprenticeship
NORTH IDAHO COLLEGE
(208) 769-7735
peggy.schnell@nic.edu
www.nic.edu/wtc

Workforce Training Center | 525 S Clearwater Loop | Post Falls, ID | 83854

TECHNICAL CORE		
HVACR 115	Basic Electricity	5
HVACR 120	HVAC Principles	5
HVACR 130	Trade Skills	5
HVACR 140	Mechanical Systems Maintenance	5
HVACR 225	Refrigeration Theory	5
HVACR 230	Advanced HVACR Controls	5
HVACR 235	System Design and Installation	6
HVACR 240	Duct Fabrication	2
HVACR 250	Gas Code Review	2
HVACR 255	Heating Systems	6
HVACR 260	Mechanical and Electrical Code Review	2
HVACR 265	Hydronic Systems	2
HVACR 294	Internship	2
	TOTAL	52
ELECTIVES		
HVACR 290	Directed Study	v
HVACR 292	Special Topic	v
	TOTAL	v

MTHP-103

LEWIS-CLARK STATE COLLEGE

HVACR Technology Program:

Contact Hours for an Advanced Technical Certificate (ATC)

TECHNICAL CORE:

1st year students: 8 AM- 1:45 PM with ½ hr lunch= 5.25 hours a day (first year)

2nd year students: 8 AM- Noon= 4 hours a day (second year)

4 days a week

15 weeks a term

---

21 hours a week in the first year X 30 weeks (15 wks fall + 15 wks spring)= **630 hours** of contact time in the first year.

16 hours a week in the second year X 30 weeks (15 wks fall + 15 wks spring)= **480 hours** of contact time in the second year.

Total contact time to complete= 1,110 hours

Note: If students do not meet minimum scores for math (ALEKS score of 14) or writing (placement exam score of 2), then additional courses may be required.

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: HVACR Principles (HVACR-120)/ 5 credit hours

Course Description: This is a foundation course that will introduce the principles of heat transfer and how heat transfer is applied in the HVACR industry. Subjects will include HVACR system components, heat transfer, refrigerant handling, system charging, soldering and brazing.

Required Materials:

- *Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2017). Refrigeration and Air Conditioning Technology 8th ed. (ISBN# 978-1-305-57829-6)*
- *Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2017). Refrigeration and Air Conditioning Technology 8th ed. Lab Manual (978-1-305-57870-8)*

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: Students will have the opportunity to test for the EPA 608 credential which is required to handle refrigerants

Tentative Schedule:

- Week 1 - Unit 1
  - Heat transfer
  - Sensible and latent heat
  - Absolute vs gauge pressure
- Week 2- Unit 2
  - Matter
  - Mass, weight and density
  - Gas laws
  - Energy
  - Power
- Week 3 and 4- Unit 3
  - Intro to refrigeration
  - The refrigeration process

    - Temperature/ pressure relationship
    - Basic refrigeration system components
    - Enthalpy
- Week 5 and 6- Units 4, 5 and 11
    - HVACR specific Safety
    - HVACR specific tools and test equipment
    - Instrument calibration
- Week 7 and 8- Unit 7
    - Tubing and piping types
    - Tubing and piping preparation
    - Soldering and Brazing
    - Flare, swedge, and compression fittings
    - Steel and iron pipe
    - Plastic pipe
    - Other pipe types
- Week 9- Unit 8
    - Refrigerant leak types
    - Leak detection
    - Pressure testing
    - Leak repairs
    - System evacuation
    - System cleanup
- Week 10 and 11- Unit 9 and EPA 608 Test Prep
    - Refrigerant types and their environmental impacts
    - Refrigerant blends
    - Refrigerant oils
    - EPA regulations
    - Recover, recycle and reclaim
    - EPA 608 test (student fee)
- Week 12 and 13- Unit 10
    - System charging
    - Charging devices
    - Charging charts
    - Subcooling and superheat
- Week 14
    - Idaho HVAC code and administrative rules
- Week 15
    - Finals week

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Refrigeration Theory (HVACR-225)/ 5 credit hours

Course Description: This is an intermediate course that will support subjects learned in HVACR Principles. This course will focus on the 4 primary refrigeration components: evaporators, condensers, compressors and expansion devices. The student will relate these components (and others) to refrigeration systems used in commercial and domestic settings.

Required Materials:

- *Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2017). Refrigeration and Air Conditioning Technology 8th ed. (ISBN# 978-1-305-57829-6)*
- *Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2017). Refrigeration and Air Conditioning Technology 8th ed. Lab Manual (978-1-305-57870-8)*

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information:

Tentative Schedule:

- Week 1- Evaporators (Unit 21)
  - Absorbing heat
  - Removing moisture
  - Types
  - Low temp applications
- Week 2- Condensers (Unit 22)
  - Rejecting heat
  - Types
  - Low ambient conditions
- Week 3- Compressors (Unit 23)
  - Function
  - Types
  - Components

- Week 4- Expansion Devices (Unit 24)
    - Thermostatic Expansion Valves
    - Step-motor Expansion Valves
    - Automatic Expansion Valves
    - Capillary and fixed bore expansion devices
- Week 5- Special Refrigeration Components (Unit 25.1 through 25.29)
    - Evaporator pressure controls
    - Multiple evaporator control
    - Crankcase pressure regulator
    - Relief valves
    - Low ambient controls
    - Solenoid Valves
    - Pressure switches
    - Defrost controls
- Week 6- Refrigeration Accessories (Unit 25.30 through 25.48)
    - Receivers
    - Filter-Driers
    - Check valves
    - Distributers
    - Heat exchangers
    - Accumulators
    - Service valves
    - Oil separators
    - Vibration isolators
- Week 7- Domestic Refrigeration (Unit 45 and 46)
- Week 8- Reach-in Coolers (from Unit 26)
- Week 9- Walk-in Coolers (from Unit 26)
- Week 10- Vending, air driers, water coolers (from Unit 26)
- Week 11 and 12- Ice Machines (Unit 27)
- Week 11- Variable Refrigerant Flow and Variable Air Volume (Unit 50)
- Week 12 and 13- Chiller Systems and Cooling Towers (Units 47-49)
    - Centrifugal
    - Rotary
    - Reciprocating
    - Absorption
- Week 14 and 15- Troubleshooting Commercial Refrigeration Systems (Unit 29)

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Advanced HVACR Controls (HVACR-230)/ 5 credit hours

Course Description: This is an intermediate course that will enforce the concepts learned in basic electricity. Understanding a sequence of operations and enhancing skills to troubleshoot electrical circuits will be the primary goal of this class. Secondary goals include an introduction to programmable logic controllers and building automation systems used in the HVACR industry, plus pneumatic systems and integration strategies.

Required Materials:

- *Mazur, G. & Zurlis, P. (2013). Electrical Principles and Practices 4th ed. (978-0-8269-1811-6)*

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information:

Task Listing:

- Basic Electricity Review (Module 1)
    - Reading wiring diagrams
    - Electrical symbols
    - ANSI and other specialty wiring diagrams
    - Converting pictorial diagrams to ladder diagrams
- Sequence of Operations (Module 2)
    - Developing a sequence of operations
    - Converting a sequence of operations to a ladder diagram
    - Wiring from a sequence of operations

- Introduction to Programmable Logic Controllers (Module 3)
    - Binary/ digital inputs and outputs
    - Analog inputs and outputs
    - End devices- Actuators, thermistors, transducers, relays
    - Direct Digital Control (DDC)
    - Building Automation Systems (BAS)
    - Reasons for integration- energy management, labor
    - Network hierarchy- User level, building management level, equipment level
    - Common communication methods and protocols (BACnet, Modbus, FLN, MSTP)
- The Graphical User Interface (Module 4)
    - Area Control
    - Schedules
    - Reports and Trends
    - Trane, Honeywell, and Siemens GUI operations (possibly more brands)
- Introduction to Programming (Module 5)
    - Conditional statements, ladder logic and graphical programming
    - How sequence of operations and ladder diagrams relate to ladder logic
    - Writing ladder logic for PLC's using a sequence of operations
- Introduction to Pneumatic Control (Module 6)
    - The air supply
    - Proportional control
    - Direct vs reverse acting devices
    - Pneumatic/ DDC control integration

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: AC System Design and Installation (HVACR-235)/ 5 credit hours

Course Description: This is an intermediate course that will support subjects learned in HVACR Principles. Subjects will include load calculations, psychrometrics, equipment selection, refrigerant pipe sizing, test & balance, and indoor air quality.

Required Materials:

- *Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2017). Refrigeration and Air Conditioning Technology 8th ed. (ISBN# 978-1-305-57829-6)*
- *Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2017). Refrigeration and Air Conditioning Technology 8th ed. Lab Manual (978-1-305-57870-8)*
- *Manual J 8th edition abridged*
- *J1AE forms (available online for free)*

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: Recommended guest speaker: Equipment rep. form local supply house.
*RSES IAQ Study Course used for additional reference.

Tentative Schedule:

- Week 1-2: Manual J (sections 1-5)
  - Review heat transfer
  - Measuring heat transfer
  - Types of heating and cooling loads
  - Performing a survey (appendix 5)
  - Other useful information in Manual J (tag your book!)
- Week 3-5: Manual J (sections 6-9)
  - Form J1AE
  - Block load
  - Room load

- Week 6- Equipment Sizing
    - What is Manual S?
    - Utilizing manufacturer's performance tables and proprietary sizing tools
    - The effects of oversizing or under sizing equipment
- Week 7 and 8- Psychrometrics (unit 35- *Ref & AC Tech*)
    - The properties of air
    - The psychrometric chart
    - Comfort
    - Ventilation
    - Reheat
- Week 9 and 10- Indoor Air Quality (unit 34- *Ref & AC Tech*)*
    - IAQ Problems
    - Problem sources
    - Measuring and diagnosing problems
    - Managing IAQ (best practices, remediation strategies)
    - IAQ legalities and limitations
- Week 11 and 12- Refrigerant Piping Design
    - Best practices for oil return, refrigerant velocity and capacity
    - Suction line, liquid line and hot-gas line sizing
    - Multiple compressor systems
- Week 13- Condensate and Accessory Design
    - Condensate removal and installation best practices
    - Humidifiers/ dehumidifiers
    - Filtration
- Week 14 and 15- Test and Balance
    - Envelope tightness testing
    - Duct tightness testing
    - Airflow balancing (unit 37- *Ref & AC Tech*)

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Duct Fabrication (HVACR-240)/ 2 credit hours

Course Description: This is an intermediate course that will support subjects learned in AC System Design and Installation. Subjects will include duct design and sizing. Students will learn to select and fabricate a variety of duct types.

Required Materials:

- *Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2017). Refrigeration and Air Conditioning Technology 8th ed. (ISBN# 978-1-305-57829-6)*
- *Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2017). Refrigeration and Air Conditioning Technology 8th ed. Lab Manual (978-1-305-57870-8)*
- Ductulator

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: This course is intended to be taught along with AC System Design and Installation (HVACR-235). Begin in 3rd week of HVACR 235 so Manual J is already in progress.
Recommended field trip: Duct fabrication shop.
*Manual D
+SMACNA and NFPA Duct design standards

Task Listing:

- Intro to Air Distribution: Unit 37- *Ref & AC Tech* (1 week)
    - System Pressures
    - Fan types and limitations
    - Duct configurations
    - Material types
    - Dampers and Zoning
    - *Note: Airflow measuring and balancing is taught week 14 and 15 in HVACR 235*
- Duct Sizing Principles*(1 week)
    - What is Manual D?
    - Blower Performance

    - Pressure drop
    - Friction rate
    - Effective length
    - Velocity and CFM
- Duct Sizing Calculations* (2 weeks)
    - Utilizing Manual J room loads, blower data, pressure drops and effective length to size duct.
    - Intro to the Ductulator (or other duct sizing charts)
- Intro to Duct Installation: Unit 38- *Ref & AC Tech* (1 week)
    - Routing and supporting
    - Fitting types
    - Insulation
    - *Note: Unit 38 contains additional information covered in HVACR 235*
- Duct Installation Standards+ (2 weeks)
    - Manufactures Recommendations
    - SMACNA
    - NFPA 90a, 90b, 91, and 96
    - Accessories: vibration isolation, screens, access doors, fire dampers, balance dampers…
- Duct Fabrication (5 weeks)
    - Basic duct board assembly
    - Sheet metal layout
        - Seams, locks, and connectors
        - Straight duct
        - Elbows
        - Transitions
        - Offsets
    - Sealing
- Grills and Register Selection (1 week)

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Gas Code Review (HVACR-2xx)/ 2 credit hours

Course Description: This is a capstone course. In order to test for the Idaho HVAC Journeyman License you will need to be able to consult the International Fuel Gas Code. This course will familiarize the student with the code book and relate the information to the subject matter taught in HVACR-255 Heating Systems and HVACR-12x HVACR Principles.

Required Materials:

- *International Fuel Gas Code Book*

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: This class is taught in conjunction with HVACR-265 Hydronic Systems, and HVACR-255 Heating Systems.

Tentative Task Listing:

Code Administration

- Scope of code
- Intent of code
- Application of code
- Inspections
- Permits
- Testing
- Violations and appeals

Definitions

General Regulations

- Listing and labelling of equipment
- Structural safety
- Appliance location and installation
- Combustion, ventilation and dilution air

- Access and service space
- Condensate disposal
- Electrical considerations

Gas Piping Installations

- Tables and equations
- Longest length method
- Branch length method
- Allowable pressure drop
- Piping materials
- Installation
- Inspection, testing and purging
- Piping support

Venting

- Category I, II, III, and IV appliances
- Mechanical draft systems
- Plastic piping
- Masonry chimneys
- Factory built and metal chimneys
- Chimney and flue terminations

Specific Gas Appliances

- Clothes dryers
- Sauna, pool and spa heaters
- Cooking appliances
- Water heaters
- Infrared radiant heaters

Code Appendix

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Heating Systems (HVACR-255)/ 6 credit hours

Course Description: This is an intermediate course that will build upon the principles of heat transfer, sharpen troubleshooting skills and introduce combustion. Subjects will include instruction on heating systems using electric, gas, oil and alternative heating sources.

Required Materials:

- *Refrigeration and Air Conditioning Technology 8th ed. (ISBN# 978-1-3055-7829-6)*
- *Refrigeration and Air Conditioning Technology 8th ed.* Lab Manual *(ISBN# 978-1-3055-7870-8)*

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: This class is taught in conjunction with HVACR-265: Hydronic Systems, and HVAC 250: Gas Code Review.

Tentative Schedule:

- Week 1 and 2- Electric Heating Systems (Unit 30)
    - Resistance heating
    - Specific controls and components
    - Electrical measurements
    - Sensible heat formula
    - System troubleshooting
- Week 3 and 4- Gas Heating Systems (Unit 31)
    - Combustion
    - Fuels
    - Specific controls and components
    - Venting, piping and combustion air
    - System troubleshooting

- Week 5- Gas Appliance Start-up Procedures
    - Gas pressure adjustments
    - Gas meter clocking
    - Combustion analysis
    - Temperature rise/ airflow measurements
- Week 6 and 7- Oil Heating Systems (unit 32)
    - Fuel oils and storage
    - Specific controls and components
    - Venting, piping and combustion air
    - System troubleshooting
- Week 8- Oil Appliance Start-up Procedures
    - Combustion efficiency testing
- Week 9, 10 and 11- Alternative Heating (unit 33)
    - Passive and active solar
    - Geo Thermal Systems
- Week 12, 13 and 14- Steam Heat
    - Production
    - Delivery
    - Make up and blow down
    - System devices and components
- Week 15- Finals Week

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Mechanical and Electrical Code Review (HVACR-260)/ 2 credit hours

Course Description: This is a capstone course. In order to test for the Idaho HVAC Journeyman License you will need to be able to consult the International Mechanical Code book. This course will familiarize the student with the code book and relate the information to the subject matter taught in HVACR-120: HVACR Principles. In addition, the state of Washington requires the 060a certification to work on low voltage electrical systems. We will review the material needed to pass this exam and relate it to the material covered in HVACR-115: Basic Electricity.

Required Materials:

- *2012 International Mechanical Code*

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: Local codes will be discussed as they relate to international codes.

Tentative Task Listing:

Code Administration
- Scope of code
- Intent of code
- Application of code
- Inspections
- Permits
- Testing
- Violations and appeals

Definitions

General Regulations
- Listing and labelling of equipment
- Structural safety
- Appliance location and installation

- Combustion, ventilation and dilution air
- Access and service space
- Condensate disposal
- Electrical considerations

Ventilation and Exhaust

- Locations and requirements for outdoor air
- Exhausting air for health and safety
- Commercial and domestic kitchen exhaust
- Kitchen makeup air
- Dust, stock and refuse conveying systems
- Smoke control systems
- Energy recovery systems

Duct systems

- Plenums
- Construction and installation
- Insulating duct
- Filtration
- Smoke detectors
- Transfer openings

Pressurized Vessels

- Water Heaters
- Boilers
- Expansion tanks
- Testing

Refrigeration

- Requirements
- Classifications
- Detection
- Ventilation
- Ammonia and flammable refrigerant systems
- Piping
- Testing

Hydronic Piping

- Materials
- Joints and connections
- Pipe insulation
- Valves
- Penetrations
- Clearances

Fuel Oil Piping and Storage

- Materials
- Joints and connections
- Pipe supports
- Valves
- Gauging

Solar Systems

- Installation
- Materials

National Electric Code: NFPA 70

- Introduction
- Definitions
- Working space
- Branch Circuits
- GFCI protection
- Feeders
- Calculations
- Overcurrent protection
- Grounding and bonding
- Wiring Methods
- Conductors and ampacity
- Conduits
- Industrial control panels
- Appliances
    - Space Heating
    - Motors
    - Refrigeration and A/C equipment
- Hazardous locations

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Hydronic Systems (HVACR-265)/ 2 credit hours

Course Description: This is an intermediate course that will build upon the principles of heat transfer and how water can be used as the transfer medium. Subjects will include heating and cooling applications, piping configurations, water sources and water treatment.

Required Materials:

- *Refrigeration and Air Conditioning Technology 8th ed.*
- *Refrigeration and Air Conditioning Technology 8th ed.* Lab Manual

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: This class is taught in conjunction with HVACR 250: Gas Code Review, and HVACR-255 Heating Systems.

Tentative Task Listing:

- Heating Applications (Unit 33.1 and 33.2)
  - Boilers
  - Heat pumps
- Cooling Applications
  - Chillers
  - Cooling towers
- Circulation (Unit 33.3 and 33.4)
  - Pumps
  - Expansion tanks
- Hydronic Devices and Components (Unit 33.5)
  - Safety devices
  - Flow controls
  - Air separation
  - Air removal

DRAFT

- Hydronic Loop Configurations (Unit 33.6 and 33.7)
    - High temperature systems
    - Low temperature radiant systems
- Water Sources
    - Open loop
    - Closed loop
- Water Treatment
    - Chemical
    - Sand Filters
    - Water Softeners
    - Reverse Osmosis
- Thermal Energy Storage (TES)

DRAFT

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Basic Electricity (HVACR-115 and IMMTI-115)/ 5 credit hours

Course Description: This is a foundation course that will introduce the principles of electricity and how to work safely with electrical devices. Subjects will include atomic theory, electrical safety, circuit types, power distribution, electrical measurements, test equipment, basic electrical control devices, basic electrical motors, electrical symbols and how to read wiring diagrams.

Required Materials:

- *Mazur, G. & Zurlis, P. (2013). Electrical Principles and Practices 4th ed. (978-0-8269-1811-6)*

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: Students will obtain a certificate in CPR/ First Aid training (student fee)

Tentative Schedule:

- Week 1- Chapter 1 and 2
  - Atomic theory
  - Law of Electric Charges
  - Electron Flow
  - Electricity Production
  - AC/DC voltage
  - Current Flow
  - Resistance
  - Conductors and insulators
- Week 2- Chapter 3
  - Ohms Law
  - Power Formula

- Week 3- Chapter 4
    - Electrical Shock Safety
    - PPE
    - Lock Out/ Tag Out
    - **Test #1**
- Weeks 4 and 5- Chapters 5-9, 11
    - Math Applications(review only/ content delivered in MTHP 103)
    - Electric Meter Types
    - Taking Electrical Measurements
        - Volts, Ohms, Amps, Continuity, Open/ Short, Switches/ Loads, M ohms, Temp, Capacitors, NVC, Windings
    - Intro to NEC/ Codes and Standards
    - Conductor types
    - Grounding
    - Basic wire sizing
    - **Test #2**
- Weeks 6 and 7- Chapter 10
    - Loads and Switches
    - Electrical Symbols
    - Schematic Diagrams
    - Pictorial Diagrams
    - Installation Diagrams
    - ANSI
    - **Test #3**
- Week 8 and 9- Chapters 12-14
    - Series Circuits
    - Parallel Circuits
    - Combination Series/ Parallel Circuits
    - **Test #4**
- Weeks 10 and 11- Chapters 15 and 16
    - Transformers
    - Motor Types and applications
    - Motor speed, torque and horsepower
    - Reading motor nameplates
    - **Test #5**
- Week 12 and 13- Chapters 17 and 18
    - Resistance, Inductance, Capacitance
    - Circuit Characteristics (unbalance, voltage spikes/ sags, noise, interference, loss of phase)
    - **Test #6**
- Weeks 14 and 15- Troubleshooting
- Finals week

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Trade Skills (IMMTI/HVACR-130)/ 5 credit hours

Course Description: This is a foundation course that will introduce skills needed in the construction/ manufacturing/ industrial trades. Subjects will include blueprint reading, construction documents, hand tools, fasteners/ anchors, construction equipment, safety, resume building, teamwork, leadership and trade accounting.

Required Materials:

- Architects Ruler

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information: Student has opportunity to test for an OSHA 30 hr. certification.

Task Listing:

- Blueprint Reading and Construction Documents
    - Title/ revision block
    - Legends and schedules
    - Lines of Construction
    - Plan organization
    - Scaling
    - Job Specifications
    - Requests for Information
    - Addenda and change orders
    - As-Builts
    - Takeoffs
    - Submittals
- Hand and Power Tools
    - Proper selection and use
    - Maintaining tools

- Construction Equipment
  - Man lifts
  - Fork lifts
  - Skid Steers
  - Material lifts
  - Cranes and hoists
  - Excavators/ Ditch Witch/ Augers
- Safety: OSHA 30 Hr Card
  - Rigging and cranes
  - Hearing protection
  - Eye protection
  - Fall protection
  - PPE
  - Environmental issues- heat, cold
  - Confined spaces
  - Excavation
  - Blood borne pathogen
  - Respiratory protection- SCBA, APR, PAPR
  - Lifting
  - Fire extinguishers
  - Globally Harmonized System/ Right to Know/ SDS's
  - Lock out/ tag out
  - Ladders and scaffolding
- Soft Skills
  - Communication
  - Customer relations
  - Resumes and interviews
  - Neatness and appearance
  - Teamwork
  - Leadership
  - Managing Stress
- Job-site Accounting
  - Tracking labor costs
  - Inventory control
  - Estimating
  - Return on investment
  - Life cycle cost analysis

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Mechanical Systems Maintenance (IMMTI/HVACR-140)/ 5 credit hours

Course Description: This is an intermediate course that will support mechanical maintenance in the construction/ manufacturing/ industrial trades. Students will learn about a variety of mechanical systems. These will include bearings, couplings, motors, pumps, heat exchangers, compressors and methods for the transmission of power.

Required Materials: None

Methods of Evaluation: Students will be assessed using multiple methods. Notebook/ lab book- You will collect notes, lab assignments and handouts throughout the course. This will be 20% of your final grade. Attendance- You cannot be engaged in active learning without attending classes. 20% of your final grade will be based on attendance as outlined in the program rules. Job Skills- As preparation for a career in a technical field you will be assessed for job skills including punctuality, safety, people skills and job preparation. 20% of your final grade will come from job skills (see program rules for details). Tests- 40% of your final grade will come from tests.

Additional Information:

Task Listing:

- Mechanical Power Transmission
  - Belts and sheaves
  - Chains and sprockets
  - Gears and gearboxes
  - Speed calculations
- Bearings
  - Bearing loads
  - Bearing types
  - Bearing construction
  - Removal and installation
- Coupled Shaft Alignment
  - Purpose and types
  - Dial indicator method
  - Feeler gauge method
  - Laser alignment
- Seals and Packing
  - Mechanical Seals
  - Radial Lip Seals

- Pumps and Compressors
    - Hydraulic pumps
    - Pump specifications
    - Air compression
    - Compressor types
- Principles of Hydraulics and Pneumatics
    - Valves
    - Actuators
- Heat Exchangers
- Lighting
    - Types of lamps
    - Ballasts
- Motor Control
    - Solid state controls
        - Multiple start/ stop
        - Forward/ rev
        - Speed control
        - Jog control
    - Variable Frequency Drives
        - Types
        - Purpose and function
        - Inputs (feedback)
        - Outputs (control)
- Preventative Maintenance
    - Organizing and tracking
    - Safety considerations
    - Mechanical
        - Lubrication
        - Belts
        - Cleaning
        - Vibration analysis
    - Electrical
        - Cleaning
        - Inspecting
        - Tightening
- Energy Management

Lewis-Clark State College
Heating, Ventilation, Air Conditioning and Refrigeration Technology
Syllabus

Instructor: J.R. Kok
Phone: 208-792-2356
E-Mail: jrkok@.lcsc.edu

Course Information: Internship (IMMTI/HVACR-294)/ 2 credit hours

Course Description: This is a capstone course. The student will relate on the job experience to the material covered in IMMTI/HVACR 130: Trade Skills. This will include safety, communication, customer relations, critical thinking, team building, and leadership.

Required Materials:

No text is required. You will need to choose a book from a list to read but these books can be borrowed from a library such as the one at LCSC.

Methods of Evaluation:

- 40%- (2) Workplace Reflection Projects
- 5%- Book Discussion
- 5%- Regulatory Organization Assignment
- 10%- Book Outline- 1000-1500 words
- 20%- Reflection Paper- 1200-2000 words
- 20%- Workplace Readiness Assessment

Workplace Reflection Projects:

Two workplace reflection projects will be assigned. These projects will include some form of job shadowing which may be accomplished by performing two of the following: ride-alongs, interviews, or on the job training. These projects are designed to help you focus your thoughts about your work environment and interactions with peers and leadership. You should be able to utilize these projects for your Reflection Paper.

Book Discussion:

You will need to read one of the following:

- *The 7 Habits of Highly Effective People* by Stephen R. Covey
- *Originals: How Non-Conformists Move the World* by Adam Grant
- *Leadership BS: Fixing Workplaces and Careers One Truth at a Time* by Jeffery Pfeffer
- *Shine: Using Brain Science to Get the Best from Your People* by Edward M. Hallowell

To help you with your book outline, we will meet once to discuss some key elements of these books.

Regulatory Organization Assignment:

You will attend a regulatory organization meeting. You will take minutes from the meeting and submit those to your instructor. For HVACR students, this will be an IDBS HVAC Board meeting. For IMMTI students, this will be a union meeting. Pre-approval from your instructor is required for alternatives.

Book Outline:

Whichever book you choose, you will not need to provide a full book report. Instead you will provide an outline of the chapters, describe the theme or themes of each chapter, and describe how those themes relate to your job situation. You do not need to include prefaces, intros or acknowledgements. Include a heading with your name, date, assignment title, book title, and author. It should be typed in Times New Roman, Font 12. Single spacing is fine. Do not plagiarize.

The following example should help you get started:

John Kok
January 10, 2018
Book Outline

***Powerful Techniques for Teaching Adults* by Stephen D. Brookfield**

Chapter 1- The Essence of Powerful Teaching

- Major theme or themes:
    - Powerful teaching is about empowering students. At the same time, and often in conflict with the previous statement, is the fact that instructors often hold power over students.
    - The dynamics of student empowerment, and an instructors power over students, is different for adult learners than childhood learners.
        - Adult learners typically have more life experience. In addition, they are often in the learning environment voluntarily, for a specific purpose. In other words, they do not need to be there.
- Relation to My Job Setting:
    - For me, passing on my experience in the industry is a way to give back something to society. By teaching student's new skills, I am empowering them to be successful in their own careers.
    - However, since these are adult learners, I must find ways to motivate them that may not work with children. For instance, my adult learners want to know that what they are learning will be applicable to their career.

Chapter 2- Teaching for Critical Thinking

Note: The example above is about 192 words for one chapter. If my book was 8 chapters long, I would have about 1,500 words.

Reflection Paper:

You will combine the Workplace Reflection Projects and Book Outline into one reflective paper. You may structure this paper anyway you feel fit. However, I will be grading on the following elements:

- Name, date and assignment title included at the top of the page (3 pts)
- Proper sentence structure, grammar and font used. (6 pts)
- Reflection includes four topics from the Workplace Reflection Projects (8 pts)
- Reflection includes two themes from the Book Outline (4 pts)
- Student ties topics and themes to personal experience in the workplace. (4 pts)

25 total points possible.

Workplace Readiness Assessment:

You will take a third-party student assessment test designed to assess your technical knowledge in your chosen field.

Task Listing:

Week 1
- Introduction

Week 2
- Book selection due

Week 3
- Workplace Reflection Project #1 plan submitted.
- Read book

Week 4
- Read book

Week 5
- Read book

Week 6
- Workplace Reflection Project #1 is due.
- Read book

Week 7
- Book Discussion
- Read book

Week 8
- Book Outline Due

Week 9
- Workplace Reflection Project #2 plan submitted.

Week 10

- Work on Reflection Paper

Week 11

- Work on Reflection Paper

Week 12

- Workplace Reflection Project #2 is due.
- Work on Reflection Paper

Week 13

- Work on Reflection Paper

Week 14

- Regulatory Organization Minutes Due
- Work on Reflection Paper

Week 15

- Reflection Paper Due
- Workplace Readiness Assessment

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 05 **Governor's Executive Orders**

PRESENTER: Patrick J. Grace, Regional Manager

OBJECTIVE: To make the Board aware of Executive Orders 2019-01 and 2019-02 related to professional licensing and excessive regulation. Discuss with the Board how to fulfill our agency responsibilities under these executive orders.

ACTION: Informational

BACKGROUND: Following the Licensing Freedom executive order of 2017 (EO 2017-06), and the reports DBS/Board and other agencies prepared in response to that executive order, Governor Little has issued two new executive orders in 2019 intended to implement the intent of the EO 2017-06, as well as implement recommendations from the report that was published in October of 2018 by the Governor's Office summarizing its findings from agency responses it received from EO 2017-06. These two new executive orders require DBS and the Board to review its licensing requirements and any of its regulation, and impacts on businesses, as well as consider certain factors when proposing any new regulation on an occupation it governs. Additionally, the Governor's Office will be reviewing all licensing programs across the State to determine whether to continue or "sunset" them in the best interest of the public.

ATTACHMENTS: Executive Orders 2019-01 and 2019-02

Executive Department
State of Idaho

State Capitol
Boise

EXECUTIVE DEPARTMENT
STATE OF IDAHO
BOISE

EXECUTIVE ORDER NO. 2019-01

LICENSING FREEDOM ACT OF 2019

WHEREAS, then acting Governor Brad Little issued Executive Order No. 2017-06, the Licensing Freedom Act, on May 19, 2017("Licensing Freedom Act of 2017"); and

WHEREAS, the Licensing Freedom Act of 2017 initiated an unprecedented effort by executive branch agencies to systematically review applicable professional and occupational licensing laws and solicit feedback from the public. The Licensing Freedom Act was the first comprehensive review of occupational licensure in the state in more than 40 years; and

WHEREAS, under the Licensing Freedom Act of 2017, each executive department of the state of Idaho as set forth in section 67-2402, Idaho Code, including each division, bureau or self-governing agency with statutory or regulatory authority to issue a license to an individual, authorizing such person to engage in a profession, vocation or occupation, was required to submit certain information to then Lieutenant Governor Little, no later than July 1, 2018, which included the following information: The timeframe in which a license is either granted or denied; Prerequisites for a license; Renewal requirements; Requirements for accepting or denying an application and license renewal; Qualifications for suspension, revocation, or other disciplinary action; The cost to apply for an application or renewal of a license; The cost for administering the licensing and renewal process; and

WHEREAS, then Lt. Governor Brad Little issued a report compiling the reports from each executive department of the state of Idaho as set forth in section 67-2402, Idaho Code, including each division, bureau or self-governing agency with statutory or regulatory authority to issue a license to an individual, authorizing such person to engage in a profession, vocation or occupation, summarizing the findings, and providing a comprehensive snapshot of the scope of occupational licensure in Idaho; and

WHEREAS, the Licensing Freedom Act of 2017 report found at least 442 different occupational license types, with at least 204,000 licensees in Idaho, administered by 13 executive branch agencies and 47 boards and commissions; and

WHEREAS, in reporting back to the Lt. Governor Little, agencies made 241 total recommendations for improvement, modification, or elimination of licensing requirements or other regulatory burdens; and

WHEREAS, the Licensing Freedom Act of 2017 report identified 20 universal recommendations, aimed at identifying recommendations for improvement, modification, and/or elimination of licensing requirements or other regulatory burdens, while still ensuring public protection; and

WHERAS, the top two recommendations from the Licensing Freedom Act Report concerned establishing a sunrise review process for new proposed licenses and a sunset review process for existing licenses.

NOW, THEREFORE, I, Brad Little, Governor of the State of Idaho, by virtue of the authority vested in me by the Constitution and laws of this state, do hereby order that:

1. *Sunset of professional regulations. Each year, no later than March 31, the Administrator of the Division of Financial Management shall recommend to the Governor the review of no fewer than five (5) professions, vocations or occupations that are licensed by any executive department of the state of Idaho as set forth in section 67-2402, Idaho Code, including any division, bureau or self-governing agency, for the purpose of determining whether the continuation of those regulatory programs is in the public interest. Upon approval by the Governor of the requested reviews, the Division of Financial Management shall conduct such reviews as are determined by the Administrator to be appropriate. The Administrator shall report the findings of the Division of Financial Management's review to the Governor on or before September 30 of each year. This process shall result in the review of the licensure of each profession, occupation, or vocation at least once every four (4) years.*

2. *Sunrise restrictions on professional regulations. In evaluating proposals to regulate a business, profession or occupation, or to modify the regulation of a business, profession or occupation, the Governor and each executive department of the state of Idaho as set forth in section 67-2402, Idaho Code, including each division, bureau or self-governing agency, shall work with the Legislature to consider the following factors:*

    a. *Whether the unregulated business or practice of the profession or occupation will substantially harm or endanger the public health, safety or welfare and whether the potential for harm is recognizable, quantifiable and not remote; and*

b. Whether the practice of the profession or occupation requires specialized skill or training and whether that skill or training is readily available and measurable or quantifiable so that examination or training requirements would reasonably assure initial and continuing professional or occupational ability; and

c. Whether the regulation will have an unreasonable effect on job creation or job retention in the state or will place unreasonable restrictions on the ability of individuals who seek to practice or who are practicing a given profession or occupation to continue to practice or to find employment; and

d. Whether the public is or can be effectively protected by other less restrictive means; and

e. Whether and how the occupation or profession is licensed in other states and the compatibility of the proposed regulation in Idaho with the reciprocity rules of other states; and

f. Whether the proposed regulation considers and addresses the unique needs of military personnel, spouses, and veterans who are members of the occupation or profession addressed; and

g. Whether the overall cost-effectiveness and economic impact of the proposed regulation, including the direct and indirect costs to consumers, will be outweighed by the benefits of regulation; and

h. Whether the proposed regulation is the least restrictive effective regulatory framework capable of adequately protecting the public.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Idaho at the Capitol in Boise on this 31st day of January, in the year of our Lord two thousand and nineteen.

BRAD LITTLE
GOVERNOR

LAWERENCE DENNEY
SECRETARY OF STATE

Executive Department
State of Idaho

State Capitol
Boise

EXECUTIVE DEPARTMENT
STATE OF IDAHO
BOISE

EXECUTIVE ORDER NO. 2019-02

RED TAPE REDUCTION ACT

WHEREAS, Idaho's strong economic growth is vital to ensuring our citizens and our children are able to find great jobs and raise their families in Idaho; and

WHEREAS, excessive regulation at all levels of government can impose high costs on businesses, inhibit job growth, and impede private sector investment; and

WHEREAS, burdensome regulations continue to be a hardship for many small business owners; and

WHEREAS, Idaho's Administrative Code has grown to 736 chapters, totaling more than 8,200 pages, and containing more than 72,000 restrictions.

NOW, THEREFORE, I, Brad Little, Governor of the State of Idaho, by virtue of the authority vested in me by the Constitution and laws of this state, do hereby order that:

1. *Each executive department of the state of Idaho as set forth in section 67-2402, Idaho Code, including each division, bureau or self-governing agency that has the authority to issue administrative rules shall designate an existing employee of the agency as its Rules Review Officer (RRO) to undertake a critical and comprehensive review of the agency's administrative rules to identify costly, ineffective, or outdated regulations.*
    a. *Agencies must submit the name and contact information of the RRO to the Division of Financial Management no later than March 1, 2019.*

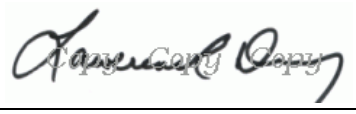
2. *Through the end of fiscal year 2021, prior to proposing a new rule for publication in the Idaho Administrative Bulletin, each executive department of the state of Idaho as set forth in section 67-2402, Idaho Code, including each division, bureau or self-governing agency, shall submit to the Division of Financial Management:*
    a. *A business/competitiveness impact statement that identifies the impact the proposed rule will have on individuals and small businesses; and*

b. *At least two existing rules to be repealed or significantly simplified, or a statement clearly and thoroughly stating why existing rules cannot be simplified or eliminated.*

3. *The Division of Financial Management shall produce an annual report to the Governor's office outlining the progress made in eliminating burdensome regulations and streamlining state government.*

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Idaho at the Capitol in Boise on this 21st day of January, in the year of our Lord two thousand and nineteen.

BRAD LITTLE
GOVERNOR



LAWERENCE DENNEY
SECRETARY OF STATE

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 06 **Code Updates**

PRESENTER: John Nielsen, HVAC Program Manager

OBJECTIVE: Adopt newer versions of the IRC, IFGC and IMC.

ACTION: Informational

BACKGROUND: **November 2018** – The HVAC trade currently uses the 2012 codes. Documentation on significant changes between the 2012 and 2018 IRC, 2012 and 2018 International Fuel Gas Code (IFGC), and 2012 and 2018 IMC were provided. The Board agreed to move forward with reviewing the 2018 codes for possible future adoption.

January 2019 – There were several minor changes between the 2015 and 2018 codes; however, nothing major; therefore, the HVAC Program Manager suggested beginning the negotiated rulemaking process to adopt the 2018 codes with no amendments. Board members Garret Christofferson and Mark Ferm agreed. Draft language will be provided at the March 2019 Board meeting as an informational item and an action item at the May 2019 meeting. If approved by the Board, and the 2020 legislative session, the Division would begin enforcement in January 2021.

ATTACHMENTS: 2018 IDAPA 07 Title 07 Chapter 01 and 2018 IRC Significant Code Changes

IDAPA 07 TITLE 07 CHAPTER 01

07.07.01 – RULES GOVERNING INSTALLATION OF HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS, DIVISION OF BUILDING SAFETY

000.LEGAL AUTHORITY.

This chapter is adopted in accordance with Sections 54-5001 and 54-5005(2), Idaho Code. (4-11-06)

001.TITLE AND SCOPE.

01. Title. These rules shall be cited in full as IDAPA 07.07.01, "Rules Governing Installation of Heating, Ventilation, and Air Conditioning Systems, Division of Building Safety" (HVAC Rules). (3-16-04)

02. Scope. These rules establish the minimum standards for heating, ventilation, and air conditioning (HVAC) installation practice, certification, registration, and educational programs. (3-16-04)

002.WRITTEN INTERPRETATIONS.

In accordance with Section 67-5201, Idaho Code, this agency may have written statements that pertain to the interpretations of the rules of this chapter, or to compliance with the rules of this chapter. Any such documents are available for public inspection and copying at the Idaho Division of Building Safety offices. (3-29-17)

003.ADMINISTRATIVE APPEALS.

IDAPA 04.11.01, "Idaho Rules of Administrative Procedure of the Attorney General," Section 100, et seq., shall apply to contested cases, in addition to IDAPA 07.07.01, "Rules Governing Installation of Heating, Ventilation, and Air Conditioning Systems, Division of Building Safety" and the provisions of Title 54, Chapter 50, Idaho Code. (3-16-04)

004.ADOPTION AND INCORPORATION BY REFERENCE OF THE INTERNATIONAL MECHANICAL CODE, ~~2012~~ 2018 EDITION.

01. International Mechanical Code. The ~~2012~~ 2018 Edition, including appendix "A," (herein IMC) is adopted and incorporated by reference with the following amendments: (X-XX-XX)

a. Where differences occur between the IMC and Title 54, Chapter 50, Idaho Code and IDAPA 07, Title 07, the provisions in Idaho Code and IDAPA rules shall apply. (4-11-06)

b. All references to the International Plumbing Code (IPC) shall be construed as referring to the Idaho State Plumbing Code (ISPC) as adopted and amended by the Idaho State Plumbing Board. (3-20-14)

c. All references to the International Code Council Electrical Code (ICC EC) shall be construed as referring to the National Electrical Code (NEC) as adopted and amended by the Idaho State Electrical Board. (4-11-06)

d. Section 109. Delete. (7-1-10)

e. Section 202 Definitions. Delete the definitions provided in the code for the terms identified herein this paragraph and replace with the following: (3-29-17)

i. Light-Duty Cooking Appliance. Light-duty cooking appliances include gas and electric ovens (including standard, bake, roasting, revolving, retherm, convection, combination convection/steamer, countertop conveyorized baking/finishing, deck, pastry, and electric and gas conveyor pizza ovens), electric and gas steam jacketed kettles, electric and gas pasta cookers, electric and gas compartment steamers (both pressure and atmospheric) and electric and gas cheesemelters. (3-29-17)

ii. Medium-Duty Cooking Appliance. Medium-duty cooking appliances include electric discrete element ranges (with or without oven), electric and gas hot-top ranges, electric and gas griddles, electric and gas double sided griddles, electric and gas fryers (including open deep fat fryers, donut fryers, kettle fryers and pressure fryers), electric and gas tilting skillets (braising pans) and electric and gas rotisseries. (3-29-17)

f. Section 401.1 Scope. Add the following: Exception: The principles specified in ASHREA 62-2010 may be used as an alternative to this chapter to demonstrate compliance with required ventilation air for occupants. (4-7-11)

g. Section 504.~~6~~ 8.1 Material and size. Add the following exception: Dryer duct may be constructed of 0.013 (30 gauge) or equivalent if prefabricated 0.016 (28 gauge) ducts and fittings are not available. (X-XX-XX)

h. Table 603.4 Duct Construction Minimum Sheet Metal Thickness for Single Dwelling Units. Add the following exception to the Table: Round duct, enclosed rectangular ducts and fittings less than fourteen (14) inches may be constructed of 0.013 (30 gauge) or equivalent if prefabricated 0.016 (28 gauge) ducts and fittings are not available. (3-20-14)

3 02. Availability of the International Mechanical Code. The ~~2012~~ 2018 Edition is available at the Division of Building Safety offices located at 1090 E. Watertower St., Suite 150, Meridian, Idaho 83642, 1250 Ironwood Dr., Ste. 220, Coeur d'Alene, Idaho 83814, and 2055 Garrett Way, Building 1, Suite 4, Pocatello, Idaho 83201. (3-20-14)

005.ADOPTION AND INCORPORATION BY REFERENCE OF THE INTERNATIONAL FUEL GAS CODE, ~~2012~~ 2018 EDITION.

01. International Fuel Gas Code. The ~~2012~~ 2018 Edition, including appendixes "A, B, C, and D," (herein IFGC) is adopted and incorporated by reference with the following amendments: (X-XX-XX)

a. Where differences occur between the IFGC and Title 54, Chapter 50, Idaho Code and IDAPA 07, Title 07, the provisions in Idaho Code and IDAPA rules shall apply. (4-11-06)

b. All references to the International Plumbing Code (IPC) shall be construed as referring to the Idaho State Plumbing Code (ISPC) as adopted and amended by the Idaho State Plumbing Board. (3-20-14)

c. All references to the International Code Council Electrical Code (ICC EC) shall be construed as referring to the National Electrical Code (NEC) as adopted and amended by the Idaho State Electrical Board. (4-11-06)

d. Section 109. Delete. (7-1-10)

e. Section 406.4. Change the last sentence to: Mechanical gauges used to measure test pressure shall have a range such that the highest end of the scale is not greater than two (2) times the test pressure nor lower than one and one-half (1.5) times the test pressure. (4-11-06)

f. Section 406.4.1. Test Pressure. Not less than twenty (20) psig (140kPa gauge) test pressure shall be required for systems with a maximum working pressure up to ten (10) inches water column. For systems with a maximum working pressure between ten (10) inches water column and ten (10) psig (70kPa gauge); not less than sixty (60) psig (420kPa gauge) test pressure shall be required. For systems over ten (10) psig (70kPa gauge) working pressure, minimum test pressure shall be no less than six (6) times working pressure. (4-11-06)

g. Section 406.4.2. The test duration shall not be less than twenty (20) minutes. (4-11-06)

~~**h.** Section 408.4. Sediment Trap. Delete the last sentence and replace it with the following: Illuminating appliances, ranges, clothes dryers, outdoor grills, decorative vented appliances for installation in vented fireplaces, and gas fireplaces need not be so equipped. (4-7-11)~~

~~**i**~~ **h.** Add a new section 503.4.1.2 as follows: Testing. All plastic pipe within a dwelling used for venting flue gases shall be tested at five (5) psi for fifteen (15) minutes. (4-4-13)

~~**j**~~ **i.** Section 505.1.1. Addition. An interlock between the cooking appliance and the exhaust hood system shall not be required for appliances that are of the manually operated type and are factory equipped with standing pilot burner ignition systems. (4-11-06)

02. Availability of the International Fuel Gas Code. The ~~2012~~ 2018 Edition is available at the Division of Building Safety offices located at 1090 E. Watertower St., Suite 150 Meridian, Idaho 83642, 1250 Ironwood Dr., Ste. 220, Coeur d'Alene, Idaho 83814, and 2055 Garrett Way, Building 1, Suite 4, Pocatello, Idaho 83201. (3-20-14)

006.ADOPTION AND INCORPORATION BY REFERENCE OF PART V (MECHANICAL) AND PART VI (FUEL GAS) OF THE INTERNATIONAL RESIDENTIAL CODE FOR ONE (1)- AND TWO (2)-FAMILY DWELLINGS, ~~2012~~ 2018 EDITION.

01. Part V (Mechanical) and Part VI (Fuel Gas) of the International Residential Code for One (1)- and Two (2)-Family Dwellings. The ~~2012~~ 2018 Edition, including appendixes "A, B, C, and D," (herein IRC) is adopted and incorporated by reference with the following amendments: (X-XX-XX)

a. Where differences occur between the IRC and Title 54, Chapter 50, Idaho Code, and IDAPA 07, Title 07, Chapter 01, the provisions in Idaho Code and IDAPA rules shall apply. (4-7-11)

b. All references to the International Plumbing Code (IPC) shall be construed as referring to the Idaho State Plumbing Code (ISPC) as adopted and amended by the Idaho State Plumbing Board. (3-20-14)

c. All references to the International Code Council Electrical Code (ICC EC) shall be construed as referring to the National Electrical Code (NEC) as adopted and amended by the Idaho State Electrical Board. (4-7-11)

d. Add the following as section M1201.3 and section G2402.4 (201.4): Alternative materials, design and methods of construction equipment. The provisions of this part of the code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the authority having jurisdiction finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code. Compliance with the specific performance-based provisions of this part of the code in lieu of specific requirements of this code shall also be permitted as an alternate. (4-4-13)

e. Add the following as section M1201.3.1 and section G2402.4.1 (201.4.1): Tests. Whenever there is insufficient evidence of compliance with the provisions of this part of the code, or evidence that a material or method does not conform to the requirements of this part of the code, or in order to substantiate claims for alternative materials or methods, the authority having jurisdiction shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the authority having jurisdiction shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the authority having jurisdiction for the period required for retention of public records. (4-4-13)

f. Add the following as section M1203.1: Carbon monoxide alarms. For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in

the immediate vicinity of the bedrooms in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages. (4-4-13)

g. Add the following as section M1203.2: Where required in existing dwellings. Where work requiring a permit occurs in existing dwellings that have attached garages or in existing dwellings within which fuel-fired appliances exist, carbon monoxide alarms shall be provided in accordance with Subsection 006.01.f. of these rules. (4-4-13)

h. Add the following as section M1203.3: Alarm requirements. Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions. (4-4-13)

i. Section M1502.4.1 Material and size. Add the following exception: Dryer duct may be constructed of 0.013 (30 gauge) or equivalent if prefabricated 0.016 (28 gauge) ducts and fittings are not available. (3-20-14)

j. Delete Section M1502.4.2 Duct Installation and replace with the following: Exhaust ducts shall be supported at four (4) foot (1,219 mm) intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct. (3-20-14)

k. Table M1601.1.1 (2) Gauges of Metal Ducts and Plenums Used for Heating or Cooling. Add the following exception: Round duct, enclosed rectangular ducts and fittings less than fourteen (14) inches may be constructed of 0.013 (30 gauge) or equivalent if prefabricated 0.016 (28 gauge) ducts and fittings are not available. (3-20-14)

l. Section G2417.4 (406.4). Change the last sentence to: Mechanical gauges used to measure test pressure shall have a range such that the highest end of the scale is not greater than two (2) times the test pressure nor lower than one and one-half (1.5) times the test pressure. (4-7-11)

m. Section G2417.4.1 (406.4.1). Test Pressure. Not less than twenty (20) psig (one hundred forty (140) kPa gauge) test pressure shall be required for systems with a maximum working pressure up to ten (10) inches water column. For systems with a maximum working pressure between ten (10) inches water column and ten (10) psig (seventy (70) kPa gauge), not less than sixty (60) psig (four hundred twenty (420) kPa gauge) test pressure shall be required. For systems over ten (10) psig (seventy (70) kPa gauge) working pressure, minimum test pressure shall be no less than six (6) times working pressure. (4-7-11)

n. Section G2417.4.2 (406.4.2). The test duration shall not be less than twenty (20) minutes. (4-7-11)

o. Add a new section G2427.4.1.2 as follows: Testing. All plastic pipe within a dwelling used for venting flue gases shall be tested at five (5) psi for fifteen (15) minutes. (4-4-13)

02. Availability of the International Residential Code for One (1)- and Two (2)-Family Dwellings. The ~~2012~~ 2018 Edition is available at the Division of Building Safety offices located at 1090 E. Watertower St., Suite 150 Meridian, Idaho 83642, 1250 Ironwood Dr., Ste. 220, Coeur d'Alene, Idaho 83814, and 2055 Garrett Way, Building 1, Suite 4, Pocatello, Idaho 83201. (3-20-14)

Legend:

- **Blue Text = Recommended action with little impact to the current 2012 IRC. Code.**
- **Red Text = Greater impact to the 2012 IRC as adopted by Idaho. Action item for further discussion and coordination with IDAPA Rules and/or other codes.**

Chapters 1 and 2:

IRC Section R101.2. Scope:

2018 IRC Modifications: Clarified scope of code application, clarified the exceptions, added 3 exceptions for a total of 5 exceptions. –

2015 IRC Modifications: Increased maximum structure height from 2 to 3 stories, removed area and height restrictions on accessory structures.

Comments:

- **Recommended, a positive change for accessory structures.**
- **This will need to go through the amendment process if we want to change it to be consistent with 2012 IDAPA.**
- **Do we want to exempt from sprinklers?**

IRC Section R104.11 Alternative Materials and Methods of Construction:

2018 IRC Modification: Clarified alternative methods section and criteria for approval by Building Official.

2015 IRC Modifications: Added text "Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved." – Recommended

Comments:

- **Recommended: Positive in that it requires a formal request and action of approval if equivalent.**

- **Requires an application and criteria for equivalency by requestor. Building Official must approve if equivalent.**

IRC Section R105.1, R110.1, R202 Change of occupancy:

2018 IRC Modifications: Section R105.1 Change of wording for issuance of certificate of occupancy, Section R110.1 changes to wording for use and occupancy; and R202 Modification of Definition of Occupancy. No Modifications in 2015.

Comments:

- **Recommended: Positive clarifies change of use.**

Section R105.3.1.1 Determination of Substantially Improved or Substantially Damaged Existing Buildings in Flood Hazard Areas:

2015 IRC Modification: Revised text to better define determination of Substantially Improved or Substantially Damaged Existing Buildings in Flood Hazard Areas.

Comments:

- **Recommended: Positive clarifies definitions and code section.**

Section R106.1.4 Information for Construction in Flood Hazard Areas:

2015 IRC Modification: Clarification of requirements for elevation requirements for Costal A Zones.

Comments:

- **Recommended: Positive clarifies code section.**

Section R202: Definitions:

2018 IRC Modifications: Definitions changed from Accessible to Access (To), from Accessible, Readily to Ready Access (To), and revision to Clean out to match the above term changes.

- Changes made to definitions of Carbon Monoxide Alarm and Carbon Monoxide Detector clarifying the differences to the two.
- Changes made to definition of Fenestration.
- New definitions were added to related solar energy systems.

Comments:

- **Recommended: Clarifies definitions for all items above.**

Chapter 3

IRC Table R301.2 (1) Climatic and Geographic Design Criteria:

2018 IRC Table R301.2 (1) Climatic and Geographic Design Criteria. Modification added Manual J design criteria to include variables for Manual J assessments with other climatic and geographic design criteria.

2015 IRC Modification: Ultimate design wind speed values replace basic wind speed values for 3-sec gust wind speeds in Section R301.2.1. A wind speed conversion table has been added for conversion from ultimate design to nominal design wind speeds.

Comments:

- **Recommended: Clarifies all items above.**

Section R301.2.2.1 Seismic Design Category:

2018 IRC Section R301.2.2.1 Seismic Design Category. Modification of a new alternative seismic map allows potentially a lower seismic design category based on determination of soil type. No code Modifications in 2015.

Comments:

- **Recommended: Very Positive. Many jurisdictions are in a D - category that this could benefit from lower design standards for this category.**

Section R301.2.1.2 Protection of Openings:

2015 Modification: This change replaces 2-story limit on use of wood structural panels for wind-borne debris protection with limit based on 33-foot mean roof height. (RB41) –

Comments:

- **Not Applicable to our geographical area.**

Section R301.2.1.4 Wind Exposure Category:

2015 Modifications: Wind Exposure Category A is deleted. In the 2012 IRC, Wind Exposure Category D applied to regions adjacent to open water in non-hurricane prone regions. Wind Exposure Category D now applies to open water, mud and salt flats, and unbroken ice fields. Exposure Category D also applies in hurricane-prone regions to residences on or near the ocean shore.

Comments:

- **Positive change in our geographical area.**

Section R301.2.2.6 Irregular Buildings:

2018 IRC Section R301.2.2.6 Irregular Buildings. Modification. Has been rearranged to avoid confusing language in 2015 IRC. No code modification between 2012 – 2015.

Comments:

- **Recommended: Positive change clarifies confusing language.**

Section R301.3 Story Height:

2015 Modifications: Story height of wood and steel wall framing, insulated concrete, and SIP walls may not exceed 11 feet, 7 inches. Masonry wall height is limited to 13 feet, 7 inches.

Comments:

- **Recommended: Positive Change.**

Section R302.1 Exterior Walls:

2018 IRC Section R302.1 Exterior Walls. Modification. References to the IBC offer additional options and provide flexibility in determining the fire-resistance rating of exterior wall assemblies.

2015 Modification: Unprotected eave ≥ 2 ft. FSD with fire-blocking ß Unprotected penetrations ≥3 ft. FSD .

Comments:

- **Recommended: Positive change adds more clarification and options for fire resistive rating.**
- **Requires coordination with current IDAPA building separation table.**

IRC Section R302.2 Townhouse Separation:

2018 IRC Section R302.2 Townhouse Separation. Modification. Two pathways for achieving the fire-resistance separation between Townhouse dwelling units.

Code Modification 2012 – 2015: Removes reference to R302.1. Mandates a common wall for separating townhouses. Allows 2-hour rated common wall without sprinklers and 1-hour rated wall with sprinklers. Structural independence does not apply

Comments:

- **Recommended: Positive change but requires coordination with current IDAPA building separation table.**

IRC Section R302.3 Modification to Two-Family Dwelling Separation:

2018 IRC Section R302.3 Modification to Two-Family Dwelling Separation. New reference to section 703.3 of the IBC provides alternatives for determining the fire-resistance rating of wall and floor/ceiling assemblies for separation of dwelling units. No code Modification between 2012 – 2015.

Comments:

- **Recommended: Positive change with more options for rated wall assembly.**

IRC Section R302.4.2 Membrane Penetrations:

2018 IRC Section R302.4.2 Membrane Penetrations. Modification. Exception for UL listed luminaires that have been test for the application are specifically permitted for fire-resistant-rated ceiling membrane penetrations. No code modifications in 2015 IRC.

Comments:

- **Recommended: Positive change with more options for rated lighting fixtures.**

Section R302.5 Dwelling-Garage Opening Protection:
2018 Modification. An automatic-closing device is now permitted as an alternate to a self-closing device for the door between the garage and dwelling. No code modifications in 2015 IRC.

Comments:

- **Recommended: Positive change with additional option for door closer.**

Section R302.10 Insulation Flame Spread:

- 2018 Code Modification: The testing of insulating materials for flame spread and smoke-developed ratings applies to facings including vapor retarders and other coverings. This clarifies the old language. No code modification in 2015 IRC.

Comments:

- **Recommended: Positive change gives clarification on placement of the vapor retarder and allows it to be intact with insulation and still meet ratings.**

Section R302.13 Fire Protection of Floors above Crawl Spaces:

2018 Modification: Fire resistant membrane protection is now required for the applicable floor framing materials above crawl spaces containing fuel-fired or electric-powered heating appliances. Includes use of 5/8" Gyp Bd. or structural panel.

2015 Clarification: Relocated section from Chapter 5. Clarifies that penetrations or openings that are not regulated.

Comments:

- **May need to discuss with State Fire Marshall. Even though it is a positive change; it does add cost.**

Sections R303.7, R303.8 Stairway Illumination Clarification:
2015 Clarification: Interior and exterior in separate sections. Interior to illuminate treads and landings. Exterior light source at top landing. Bottom landing accessing basement.

Comments:

- **Recommended: Positive change.**

R304.1 Minimum Habitable Room Area:
2015 Deletion: Deletes 120 square feet minimum room area.

Comments:

- **Recommended: Positive change by removing minimum standard.**

R305 Ceiling Height:

2015 Modifications: 6 feet 8 inches minimum ceiling height for Bathrooms, Toilet rooms, and Laundry rooms. 6 feet 4 inch minimum ceiling height in all basements at Beams, Girders, Ducts, and Other obstructions.

Comments:

- **Recommended: Positive change by reducing required ceiling height.**

Section R308.4.2 Glazing Adjacent to Doors:

2018 Modifications: Glazing within 24 inches of the hinge side of an in-swinging door now requires safety glazing where the glazing is at an angle less than 180 degrees from the plane of the door.

2015 Modifications: Glazing installed perpendicular to a door, < 24 inches from door, safety glazing if on hinge side of an in-swinging door.

Comments:

- **Recommended: Positive change adds clarification.**

IRC Section R308.4.4 Glazing in Guards and Railings:

2018 IRC Modification: Glazing in Guards and Railings. Unless laminated glass is used, structural glass baluster panels in guards now require an attached top rail or handrail. No code Modification between 2012 – 2015.

Comments:

- **Recommended: Positive change adds factor of safety for use on non-laminated glass.**

R308.4.5 Glazing and Wet Surfaces:

2015 modification: No safety glazing required when located ≥ 60 in. from edge of Shower, Sauna, Steam room, Bathtub, Hot tub, Spa, Whirlpool, Swimming pool.

Comments:

- **Recommended: Positive change.**

IRC Section R308.4.7 Glazing Adjacent to the Bottom Stair Landing:

2018 Landing Clarification: Figure R308.4.7 has been replaced with a new figure and modified caption to more accurately reflect the related code provisions.

2015 IRC Clarification: This change limits the requirement for glazing at the bottom of a landing by excluding windows greater than 180 degrees from the bottom face of the landing. (RB115)

Comments:

- **Recommended: Positive change.**

IRC Section R310.1 Emergence Escape and Rescue Openings:

2018 IRC Modification: Emergency escape and rescue openings are no longer required for bedrooms in basement when the dwelling unit is protected with an automatic fire sprinkler system and other conditions are met.

2015 Section R310 Clarification. Reorganization and separate section for windows and doors.

Comments:

- **Recommended: Positive change, more flexibility if fire sprinklered.**

IRC Section R310.3 Area Wells for Emergency Escape and Rescue Doors:

2018 IRC Modification: A change in terminology. No code change between in 2015 IRC.

Comments:

- **Recommended: Positive change, clarifies terminology.**

Sections R310.5, R310.6 Emergency Escape and Rescue Openings for Additions, Alterations and Repairs:

2015 IRC Modifications: No additional emergency escape and rescue openings required in a Basement addition with access to an emergency escape and rescue opening or remodeling of an existing basement unless new bedroom.

Comments:

- **Recommended: Positive change, clarifies requirements during remodel.**

IRC Section R311.7.1, R311.7.8 Handrail Projection:

2018 IRC Modification: A new exception to the handrail projection limitation provides for adequate clearance behind the handrail when it passes a projection of a floor, landing or tread return. 2015 No code modifications in 2015 IRC.

Comments:

- **Recommended: Positive change, clarifies handrail requirements.**

IRC Section R311.7.3 Maximum Stair Rise between Landings:

2018 IRC Modification: The maximum rise of a flight of stairs has increased by 4 inches, from 147 to 151 inches. 2015 Code Modification: Increase from 144 inches to 147 inches.

Comments:

- **Recommended: Positive change.**

IRC Section R311.7.5.3 Stair Nosing:
2018 IRC Modification: The revised text clarifies that stair nosings must be consistent throughout the stairway. No code modifications in 2015 IRC.

Comments:

- **Problematic due to possible use of a different floor finish at top of stairs.**
- **Since a landing includes a nosing; revise to address change of flooring material at top or bottom of stairs.**

IRC Section R311.7.11, R311.7.12 Alternating Tread Devices and Ships Ladders:
2018 Code Modification: Alternating tread devices and ships ladders are now permitted as a means of egress for serving lofts and mezzanines that do not exceed 200 square feet in area.

2015 Code Modifications: Alternating tread devices and ship ladders have been added to the stair provisions. Neither device is approved for use as a means of egress.

Comments:

- **Recommended: Positive change for tiny houses and bonus rooms.**

IRC Section R311.7.8.2

2018 IRC: Handrail Projection Change. Clarifies the projection of handrails into stairway to 4.5 inches, with a 6.5 inch projection width at landings, floors, and passing flights of stairs.

Comments:

- **Recommended**

IRC Section R311.7.8.3

2018 IRC change: Handrail clearance between handrail and wall set at 1.5 inces.

Comments:

- **Recommended**

IRC Section R311.7.8.4

2018 IRC change: Handrail continuity wording change to clarify the requirement.

Comments:

- **Recommended**

R311.8 Ramps:

2015 IRC Modification: Max. 1:8 slope for ramps that do not serve required egress door. Max. 1:12 for ramps serving required egress door.

Comments:

- **Recommended**

Section R312.1 Guards:

2018 Code Clarification. The guard requirements only apply to the specific portion of a walking surface that exceeds 30 inches above grade. No Code Modifications in 2015 IRC.

Comments:

- **Recommended, clarification, no change of standard.**

Section R314 Smoke Alarms:

2018 Code Modification: The exemptions for hard wired interconnection of alarms during alterations based on feasibility has been removed from the code and replaced with wireless option for interconnection.

2015 Code Modification: Battery-operated permitted for alterations, repairs, and additions. Addresses alarms installed near bathrooms and cooking appliances. Household fire alarm systems no longer require monitoring by an approved supervising station.

Comments:

- **Recommended.**
- Coordinate 2015 and 2018 revisions with earlier IDAPA amendments and with Fire and Electrical Codes.

IRC Section R315 Carbon Monoxide Alarms:

2018 Code Modification: Interconnection is now required where multiple carbon monoxide alarms are required in a dwelling unit

2015 Code Modification: Connection to house wiring with battery backup. Exterior work no longer triggers CO alarm provisions for existing buildings. Attached garage only considered if communicating with dwelling. CO alarm in bedroom with fuel-fired appliance in the bedroom or adjoining bathroom. CO detection systems only require detectors in locations prescribed by the code (not NFPA 720). Carbon Monoxide alarms now required connection to the house wiring system with battery backup.

Comments:

- **Recommended.**
- There is an exemption in section 315.2.2 for wireless devices that sound all alarms.
- Coordinate section 315.3 to add IDAPA exemptions with Electrical Permit.

IRC Section R316.4 Thermal Barrier:

2015 IRC Modification: This change adds 23/32 wood structural panels as an acceptable alternative for thermal barrier protection. (RB172)

Comments:

- **Recommended.**

Section R317.3 Fasteners in Treated Wood:

2018 Code Modification: Staples in preservative-treated wood and fire retardant-treated wood are now required to be made of stainless steel. OK, a good requirement. May increase costs however.

2015 No Code Modifications.

Comments:

- **Recommended.**
- **Now that staples are allowed the stainless finish type of staple will be more costly.**

Section R322.3 Coastal High-Hazard Flood Zones:
2018 Code Modification: In high-hazard areas the IRC now provides specific guidance for the design and construction of concrete slabs, stairs, guards, decks and porches to reduce damage to the dwelling in a flood event.

2015 Code Modification: Coastal A Zones are defined and an exception for foundation types in Coastal A Zones is added.

Comments:

- **Not Applicable.**

Section R324.4 Rooftop-Mounted Photovoltaic Systems: PS to talk to Structural Engineer
2018 Code Modification. Structural requirements for rooftop-mounted Photovoltaic panel systems have been revised and consolidated in Section R324.4. No code modifications in 2015 IRC.

Comments:

- **Recommended to ensure that the dead load of the panels will not reduce the safety factor of an existing or new truss system.**
- **Structural calculations required for existing hand stacked rafters.**

Section R324.6 Roof Access for Photovoltaic Solar Energy Systems:

- 2018 Code Addition: Requirements for roof access and pathways for firefighters have been introduced into the IRC provisions for rooftop-mounted photovoltaic solar energy systems. 2015 No Code Modifications.

Comments:

- **Recommended. This brings in the requirement from the International Fire Code which already applied to residential construction.**

Section R324.6.2.2 Solar Panels near Emergency Escape and Rescue Openings:
2018 Code Modification: Panels are not permitted to be installed directly below emergency escape and rescue openings. 2015 No Code Modifications.

Comments:

- **Recommended. This brings in the requirement from the International Fire Code which already applied to residential construction.**

Section R325.3 Mezzanine Area Limitation:

2018 Code Modification: Increase from one-third to one-half of the area of the room containing the mezzanine under certain conditions. 2015 No Code Modifications.

Comments:

- **Recommended. More flexibility, allows larger mezzanine areas.**

Sections R325.6, R202 Habitable Attics:

2018 Code Addition: The definition of habitable attic has been revised and the technical requirements have been placed in a new section R325.6. 2015 No Code Modifications.

Comments:

- **Recommended. Clarifies the requirements of a habitable attic.**

Chapter 4 and 5:

R403.1.1 Minimum Footing Size:

2015 Code Modifications: Expanded tables. Includes Type of structure, Light frame, Veneer, Concrete, Slab on grade, Crawl space, and Basement.

Comments:

- **The table adds more choices for building situations.**
- **Could result in larger footing sizes; however this may be ok if larger footings are necessary on larger buildings.**
- **Do we need to keep the 2012 IRC Table?**

R403.1.6 Foundation Anchorage

2015 Code Modification: Anchor bolts are now required to be placed in the middle third of the sill plate.

Comments:

- **Recommended. Clarifies the requirements, a good change.**

Table 403.3 (1) Frost Protected Footings:

2018 IRC Modification. Clarified the insulation requirements for shallow foundations. 2015 No Code Modifications.

Comments:

- **Rarely used in Idaho.**

Table 403.4. Crushed Stone footings:

2018 Code Modification: Added Note b and c and Clarified the requirements to compact crushed stone footings, and defined soil classification per Table 404.5.1.

2015 Code Modification: Note added allowing linear interpolation of stone depth for calculating stone footing depth.

Comments:

- **Rarely used.**

Section 408.3. Unvented Crawl Spaces:

2018 Code Modification: Ventilation of the under-floorspace is not required when and adequately sized dehumidifier is provided. 2015, No Code Modifications.

Comments:

- **Recommended. Gives an alternate means of removing humidity and moisture from unvented crawl space.**

Tables R502.3.1(1), R502.3.1(2) Floor Joist Spans for Common Lumber Species:

2015 Code Modifications: Span lengths decreased for Southern Pine and Increased for DFL and HF.

Comments:

- **Recommended.**

Table 505.3.2. Steel Joist Spans:

2018 Code Modification: Steel stud joist span length modifications. **Don't ever see these**

2015 Code Modification: Note "e" added, title changed, and table simplified.

Comments:

- **Recommended.**

Section 507 Decks:

2018 Code Modification: Reorganization of this section and additional provisions for prescriptive construction of decks is provided.

2015 Code Modification: New Section in 2012, renamed to Exterior Decks in 2015.

Comments:

- **Recommended. Positive change with more clarification.**

Section 507.2 Deck Material:

2018 Code Modification: Section 507.2 and sub sections reorganized. Added the following sections: 507.2.1. Wood materials; 507.2.1.1 Engineered wood products; 507.2.3 Fasteners and connectors; 507.2.4 Flashing; 507.2.5 Alternated Materials; and Table 507.2.3. The following sections have been designated with new section numbers: 507.2.2 Plastic Composite Deck Stairs Guards Handrails, 507.2.2.1 Labeling, 507.2.2.2 Flame Spread Index, 507.2.2.3 Decay resistant, 507.2.2.4 Termite Resistant, 507.2.2.5 Installation of Plastic Composites.

2015 Code Modification: Section 507.2 Deck Ledger Connection to Band Joist modified. 507.2.1 Placement of Lad screws deleted. 507.2.1 Ledger Details added. 507.2.2 Alternate Deck Ledger Connections deleted. 507.2.2 Band Joist Details Added. 507.2.3 Ledger to Band Joist Fastener Detail added. Table 5-7.2 Modified.

Comments:

- **Recommended. Positive change with more clarification.**
- **Are 3x epoxy coated fasteners for plastic wood products compatible for treated lumber.**

R507.2.4 Alternative Deck Lateral Load Connection:
2015 Code Modification: Optional Connections 1) shown in Figure 507.2.3(1): Include two hold-down devices ≤ 2 ft. of the ends of the deck. 2)Shown in Figure 507.2.3(1): Includes four hold-downs installed below the deck structure.

Comments:

- **Recommended. Positive change with more options.**

Section 507.3 Deck Footings:

2018 Code Addition. This section defines the size and depth of deck footings, with exceptions. This new section also references new Table 507.3.1, Minimum Footing Size for Decks.

2015 Code Modification: New section 507.3 Wood/Plastic Composites found in a new section in 2015.

Comments:

- **Recommended. Positive change with more clarification and information.**

Section 507.4 Deck Posts:

2018 IRC Modification: Section re-designed to add non-engineered prescriptive method. 507.4 Deck Posts.

Comments:

- **Recommended. Positive with more flexibility.**

Section 507.5 Deck Beams:

2018 Code Modification: Section 507.5 Deck Beams has been modified. Section 507.7 was renumbered 507.5.1, modified, and renamed Deck Beam Bearing. Section 507.7.1 re designated 507.5.2, modified and renamed Deck Beam Connection to Supports. Table 507.6 re-designated 507.5 Deck Beam Span Lengths, and modified.

2015 Code Addition: The following are New Sections in the 2015 IRC: 507.5 Deck Joists; 507.1 Lateral Restraints at Supports; 507.6 Deck Beams; 507.7 Deck Joist and Deck Beam Bearing; 507.7.7.1 Deck Post to Deck Beam. The following are New Tables in the 2015 IRC: T507.5 Deck Joist Spans; T507.6 Deck Beam Span Lengths.

Comments:

- **Recommended. Positive change with more clarification and information.**

Section 507.6 Deck Joists:

2018 IRC Modification: 507.5 re-designated 507.6 Deck Joists, and modified. 507.7 re- designated 507.6.1, renamed Deck Joist and modified. Table 507.5 re-designated 507.6 Deck Joist Spans, and reorganized.

Comments:

- **Recommended. Positive change with more clarification and information. Easier to read.**

Section 507.7 Decking:

2018 Modification: Section 507.7 Decking was modified.

2015 IRC Modification: Deck Joist and Deck Beam Bearing new section in the 2015.

Comments:

- **Recommended. Positive change with more clarification and information. Easier to read.**

Section 507.8 Vertical and lateral supports:

2018 IRC Modification. Section 507.1 Decks, renamed 507.8 Vertical and Lateral Supports.

2015 IRC Addition. This code section and its sub sections were new to the 2015 code. Table 507.8 Deck Posts prescribes minimum sizes of wood posts supporting wood decks.

Comments:

- **Recommended. Positive change with more clarification and information. Easier to read.**

Section 507.9 Vertical and Lateral Supports at Band Joist:

2018 IRC New Sections. The following subsections of this section are new: 507.9.1 Vertical Supports; 507.9.1.4 Alternate Ledger Details. The following Sections have been re-designated: 507.2.1 has been re-designated to 507.9.1.1 Ledger Details; 507.2.2 has been re-designated 507.9.1.2 Band Joist Details; 507.2.3 has been re-designated 507.9.1.3 Ledger to Band Joist Details; 507.2.4 has been re-designated 507.9.2 and has been modified and renamed Lateral Connection. 2015 No Code Modifications.

Comments:

- **Recommended. Positive change with more clarification and information.**

IRC Table 507.9.1.3.1:

2018 Table 507.9.1.3.1. Table 507.2 re-designated to this new Table. No change in values.

2015 IRC: Added Table 507.2.; this is a new table to the 2015 Code.

Comments:

- **Recommended. Positive change with more clarification and information.**

IRC Table 507.9.1.3.2:

2018 IRC Table re-designated and Table 507.2.1 incorporated to this new Table.

2015 IRC Code Modification: No Change.

Comments:

- **Recommended. Positive change with more clarification and information.**

Table R602.3(1) Fastening Schedule:

2015 Code Revision: Table R602.3 revised to give nail size options.

Comments:

- **Recommended. Positive change with more options.**

Table R602.3(6) Alternate Stud Height:

2015 Code Modification: Table R602.3 (6) added to provide data for stud heights above 10'. revised to give nail size options.

Comments:

- **Recommended. Positive change with clarification.**

Tables R602.7 (1) and R602.7 (2) Girder and Header Spans:

2018 IRC Modification: Header table has been redesigned to update from No. 1 Southern pine to No. 2 southern Pine; keynotes added; and further reduction in span is taken for 2 x 8 and larger headers. OK, Southern Pine isn't used here.

2015 IRC Modification: Combined tables in Ch. 6 to include Multi-ply and single headers and Rim board headers. New open porch header table. New table for full-height studs at each end of header.

Comments:

- **Recommended. Positive change with clarification.**

Table R602.7 (5) Lateral Support for Headers:

2018 IRC Modification: Revised table to increase king studs in high wind areas and decrease number of king studs in wind areas below 115 mph.

Comments:

- **Recommended. Positive change with clarification.**
- **Positive, this is a major reduction in king studs from 2012 and 2015 IRC.**

Table R602.10.3(4) Seismic Adjustment Factors:

2018 IRC Modification: Revised table to clarify loads and revision of bracing methods.

Comments:

- **Recommended. Positive change with clarification.**
- **Positive change, allows brick veneer in second story with WSP or CS-WSP methods**

R602.10.4.1 Mixed Bracing Methods:

2018 IRC Modification: Allows mixing of bracing methods.

Comments:

- **Recommended. Positive change with more options.**

Table R602.10.5 Contributing Length of Method CS-PF Braced Wall Panels:

2015 Added Table: R602.10.5 Contributing Length of Method CS-PF Braced Wall Panels.

Comments:

- **Recommended. Positive change with more clarification.**

R602.10.6.2 Method PFH Portal Frame with Hold-Downs:

2015 Portal Frame with Hold-Downs added: Per recent testing: Minimum hold-down capacity lowered to 3500 lbs and two sill plates are sufficient (3 were required in 2012 IRC).

Comments:

- **Recommended. Positive change.**

R602.10.6.4 Method CS-PF – Continuously Sheathed Portal Frame:

2018 IRC Modification: Modified sheathing requirements of continuously sheathed portal frame.

Comments:

- **Recommended. Clarifies that you must have additional sheathing beyond post at portal frame.**

R602.10.6.5 Method BV-WSP:

2018 Modification: Clarification of Method BV-WSP bracing method.

Comments:

- **Recommended. Clarifies bracing method.**

R602.12 Simplified Wall Bracing:

2015 Modification: 3-story buildings (previously 2); Wind Exposure B and C. Wind speed (Vult) 130 mph.

Comments:

- **Recommended. Adds design flexibility.**

Tables R603.3.1 and R603.1.1(2) Cold Formed Steel Wall Construction:

2018 IRC Modification: Connections tables are modified for wind speeds less than 140 mph. matching AISI S230.

Comments:

- **Recommended. Adds clarification.**

Section R610 Structural Insulated Panels:

2018 Modification: Section on Structural Insulated Panels has been reorganized.

Comments:

- **Recommended. Adds clarification.**

Section R703.2 Water Resistive Barrier:

2018 IRC Modification: Water resistive barriers other than #15 felt must be installed per manufacturer's installation instructions.

Comments:

- **Recommended. Adds clarification.**

Section R703.3.1 Soffit Installation:

2018 IRC Modification: Requirements for wood structural panel soffits are added and vinyl soffit requirements clarified.

Comments:

- **Recommended. Adds clarification and flexibility.**

Section R703.8.4 Veneer Anchorage Through Insulation:

2018 IRC Modification: Masonry veneer is explicitly allowed to attach through insulation into underlying structural panel. Attachment must follow Table 703.8.4(2)

Comments:

- **Recommended. Adds clarification and flexibility.**

Table R703.8.4 (1) Airspace Requirements:

2018 IRC Modification: New keynote c allows drainage air space to contain some mortar spills.

Comments:

- **Recommended. Adds clarification and flexibility.**

Section R802 Roof Framing:

2018 IRC Modification: Design and construction of roof framing has been clarified and re organized.

Comments:

- **Recommended. Adds clarification.**

Section R802.1.5.4 Labeling:

2018 IRC Modification: Label requirements added for fire retardant treated (FRT) lumber.

Comments:

- **Recommended. Adds clarification.**

Section R806.2 Minimum Vent Area:

2018 IRC Modification: Minimum Vent Area exception is clarified.

Comments:

- **Recommended. Adds clarification.**

Section R806.5 Unvented Attics:

2018 IRC Modification: Minimum Vent Area exception is clarified.

Comments:

- **Recommended. Adds clarification.**

Tables R905.1.1(1) and R905.1.1(2) Underlayment Requirements for Photovoltaic Shingles:

2018 IRC Modification: Underlayment requirements for Photovoltaic Shingles are revised and moved to tables R905.1.1(1) and R905.1.1(2).

Comments:

- **Recommended. Adds clarification.**

Section R905.17 Building Integrated Photovoltaic Panels:

2018 IRC Addition: New section added to address installation and attachment for Building Integrated Photovoltaic Panels.

Comments:

- **Recommended. Adds clarification.**

Section R1005.8 Chimney Insulation Shield:

2018 IRC Addition: Added insulation shield for factory built chimneys.

Comments:

- **Recommended. Added fire protection.**
- **Added cost.**

.

Remove Chapter 11 from discussion:

N1101.14 Permanent Energy Certificate:

- 2015 Code Modification: The code now requires the permanent energy certificate to be placed on a wall in proximity to the furnace, in a utility room, or in another approved location inside the building. Positive

N1102.1.3 R- Value Computation:

- Insulated Siding N1102.1.3 R-Value Computation—Insulated Siding Change Type: Modification: The code now allows insulated siding to be used in the calculation for satisfying the wall insulation R-value. The labeled R-value for the siding must be reduced by R-0.6 for calculation purposes.

N1102.2.4 Access Hatches and Doors:

- Vertical doors that access unconditioned attics and crawl spaces do not require an R-value to match the required wall insulation. Such doors must comply with the fenestration U-factor requirements of Table N1102.1.2. OK

Refer Chapters 12-24 to Mech Board:

M1502.4.4, M1502.4.5 Dryer Exhaust Duct Power Ventilators:

- Code Addition: The code now recognizes the use of dryer exhaust duct power ventilators (DEDPVs) to increase the allowable exhaust duct length for clothes dryers. Positive addition

G2404.11 Condensate Pumps Change Type:

- Code Addition: Condensate pumps located in uninhabitable spaces must be connected to the appliance to shut down the equipment in the event of pump failure. A good change
-

G2426.7.1 Door Clearance to Vent Terminals:

- An appliance vent terminal is not permitted in a location within 12 inches of the arc of a swinging door. A good change

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 07 **Permit Fees**

PRESENTER: John Nielsen, HVAC Program Manager

OBJECTIVE: Change fee structure from square footage to per fixture to install fireplaces.

ACTION: Informational

BACKGROUND: **November 2018 –** John Rupert, Comfy Fire, readdressed the issue of HVAC contractors and HVAC specialty contractors paying the same square footage fee whether installing multiple units or one unit in new residential construction. Mr. Rupert suggested on top of the square footage fee, HVAC contractors be charged an additional $65 per the installation of a fireplace. If not installing, subtract $65 from the square footage fee and charge the HVAC specialty contractor $65 to install a fireplace. The Division provided a draft rule change; modifying the fee schedule to include a single $65 fee for HVAC specialty contractors installing a fireplace in a new home. Another option would be to revert to a base fee with fixture count, liken to plumbing's original fee structure.

ATTACHMENTS: Proposed Fee Schedule and HVAC Financial Projection

Residential single and duplex family dwelling, a hundred-dollar ($100.00) base permit fee plus an inspection fee of:

(i) Thirty-five dollars ($35.00) for the first furnace, furnace-air conditioner combination, heat pump, air conditioner, evaporative cooler, unit heater, space heater, decorative gas-fired appliance, incinerator, boiler, pool heater, and similar fixtures or appliances, plus

(ii) Fifteen dollars ($15.00) for any additional furnace, furnace-air conditioner combination, heat pump, air conditioner, evaporative cooler, unit heater, space heater, decorative gas-fired appliance, incinerator, boiler, pool heater, and similar fixtures or appliances. Fee includes ducts, vents and flues attached thereto.

(iii) Fifteen dollars ($15.00) for the first exhaust or ventilation duct such as dryer vents, range hood vents, cook stove vents, bath fan vents, and similar exhaust and ventilation ducts, plus

(iv) Five dollars ($5.00) for any additional exhaust and ventilation ducts.

(v) Fifteen dollars ($15.00) for the first fixture or appliance outlet of the fuel gas piping system, plus

(vi) Five dollars ($5.00) for any additional outlets of the fuel gas piping system.

Expenditure	Total	% of Total
Personnel	$ 921,849.04	67.97%
Operating Cost	$ 309,500.00	22.82%
Capital Outlay	$ 125,001.00	9.22%
Total Expenditures	$ 1,356,350.04	100.00%

	7.6	Actual Inspectors multiplied by Average Percentage of Inspectors Only
	$ 178,467.11	Weighted Annual Inspector cost
	2080	Annual Hours per Inspector
	60.00%	Efficiency (Actual time inspecting)
	$ 143.00	Average cost per Hour

	7.6	Actual Inspectors multiplied by Average Percentage of Inspectors Only
	1248	Annual Hours per inspector muliplied by efficiency factor
	9484.8	Total hours inspecting
	$ 143.00	Average cost per Hour

Personnel	$ 97.19	Average Personnel Cost cost per Inspection
Operating Cost	$ 32.63	Average Operating Cost per Inspection
Capital Outlay	$ 13.18	Average Capital Outlay cost per Inspection
Total Expenditures	$ 143.00	Average Total cost per Inspection

	$ 143.00	Average Total cost per Inspection
	7.6	Average number of Inspectors dedicated to HVAC
	1248	Average Annual Hours dedicated to inspections per inspector
	$ 1,356,350.04	Projected Revenue required to support Program

REVENUE_SUB_OBJ Description		REVENUE_SUB_OBJ Description	Yearly Average Mixed	% of Grand Total	$ Portion of Avewrage Total Cost per Inspection
	1018	EXAMINATION FEES	(10,767.34)	0.80%	$ 1.15
	1020	REGULATORY LICENSE	(191,337.64)	14.28%	$ 20.42
	1090	INSPECTION FEES	(1,097,536.77)	81.91%	$ 117.14
	1155	FILING FEES	0.00	0.00%	$ -
	1315	FINES	(5,747.33)	0.43%	$ 0.61
	1545	TECHNICAL SERVICES	(6,192.72)	0.46%	$ 0.66
	1555	OTHER SALE OF SERVICES	0.00	0.00%	$ -
	1936	AUTOMOBILES	(4,615.85)	0.34%	$ 0.49
	2155	PROGRAM INCOME	(1,869.71)	0.14%	$ 0.20
	2715	RENT	0.00	0.00%	$ -
	3625	INSURANCE SETTLEMENT	(4,442.21)	0.33%	$ 0.47
	3633	REFUND/REIMB CY EXP	(15,697.33)	1.17%	$ 1.68
	3635	REFUND/REIMB PY EXP	(1,139.72)	0.09%	$ 0.12
	3690	OTHER MISC REVENUE	(520.23)	0.04%	$ 0.06
Grand Total			(1,339,866.83)	0.00%	$ 143.00

	$ 16,483.21	Projected Revenue (over)/under

Note: This projection assumes a 10% overhead allocation rate

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 08 **Program Manager Report**

PRESENTER: John Nielsen, HVAC Program Manager

OBJECTIVE: Report on the recent activities of the HVAC program.

ACTION: Informational

BACKGROUND: This topic is addressed at all regularly scheduled Idaho HVAC Board meetings.

PROCEDURAL HISTORY:

ATTACHMENTS: No Documentation

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 09 **Compliance Program Report**

PRESENTER: Amy Kohler, Compliance Program Specialist

OBJECTIVE: Provide an update on the statewide compliance program.

ACTION: Informational

BACKGROUND: This topic is addressed at all regularly scheduled Idaho HVAC Board meetings.

PROCEDURAL HISTORY:

ATTACHMENTS: NOV Activity Report and Journeyman First Exam Attempts Report

HVC% NOV Activity by Date

ICS\akohler 3/4/2019 8:44:27 AM
From 12/21/2018 to 3/4/2019

10 Cases 12 Violations

CASE NO	STARTED	CLOSED	Case Type	FEES CHARGED	FEES PAID	BALANCE DUE	STATUS	OFFENDER COMPLAINANT
HVC1812-0008 PINEHURST	12/27/2018	1/17/2019	NOV	$1000.00	$1000.00	$0.00	PAID	**BILLS HEATING & APPLIANCE REPAIR**
VIOLATION: HVC Failure to Correct								
HVC1812-0009 WILDER	12/27/2018	1/23/2019	NOV	$0.00	$0.00	$0.00	CANCELLED	**REBECCA WATERS**
VIOLATION: HVC Failure to Permit, Pay Fee, or Request Inspection								
HVC1812-0010 BOISE	12/27/2018		NOV	$600.00	$0.00	$600.00	ACTIVE	**RICK MANSKE TXV MECHANICAL**
VIOLATION: HVC Unlicensed Contractor								
VIOLATION: HVC Unlicensed Individual								
HVC1812-0011 COEUR D ALENE	12/28/2018	1/15/2019	NOV	$0.00	$0.00	$0.00	WARNING	**TWIN HOME EXPERTS IDAHO**
VIOLATION: HVC Unlicensed Contractor								
VIOLATION: HVC Unlicensed Individual								
HVC1901-0001 WALLACE	1/2/2019	1/7/2019	NOV	$100.00	$100.00	$0.00	PAID	**TRADEMARK MECHANICAL INC**
VIOLATION: HVC Failure to Correct								
HVC1901-0002 COEUR D ALENE	1/4/2019		NOV	$100.00	$0.00	$100.00	ACTIVE	**QUALITY STOVES**

VIOLATION: HVC Failure to Permit, Pay Fee, or Request Inspection								
HVC1901-0003	1/31/2019	2/11/2019	NOV	$500.00	$500.00	$0.00	PAID	**PEDRO MEJIA**
VIOLATION: HVC Unlicensed Contractor								
HVC1902-0001 GRANGEVILLE	2/25/2019		NOV	$1000.00	$0.00	$1000.00	PENDING	**KENNETH DOUGHTY**
VIOLATION: HVC Unlicensed Contractor								
HVC1902-0002 MCCALL	2/27/2019		NOV	$0.00	$0.00	$0.00	PENDING	**Josh Anderson**
VIOLATION: HVC Failure to Correct								
HVC1902-0003 GRANGEVILLE	2/25/2019		NOV	$200.00	$0.00	$200.00	PENDING	**KENNETH DOUGHTY**
VIOLATION: HVC Unlicensed Individual								
Total Cases: 10				**$3500.00**	**$1600.00**	**$1900.00**		

HVAC JOURNEYMAN FIRST EXAM ATTEMPTS

		JAN '18	FEB '18	MAR '18	APR '18	MAY '18	JUN '18	JUL '18	AUG '18	SEP '18	OCT '18	NOV '18	DEC '18	TTL	%
CSI	T	0	0	0	1	0	1	0	0	2	1	0	0	5	100%
	P	0	0	0	1	0	1	0	0	2	1	0	0	5	
CWI	T	1	2	1	7	6	4	3	6	6	2	2	1	41	76%
	P	0	2	1	5	5	3	3	3	5	1	2	1	31	
EITC	T	0	0	0	1	0	0	3	0	0	0	1	0	5	60%
	P	0	0	0	1	0	0	1	0	0	0	1	0	3	
HVACR	T	0	0	1	2	0	0	0	0	1	0	0	0	4	100%
	P	0	0	1	2	0	0	0	0	1	0	0	0	4	
ISU	T	1	0	2	1	0	0	0	0	0	1	1	0	6	83%
	P	1	0	1	1	0	0	0	0	0	1	1	0	5	
JATC EAST	T	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
	P	0	0	0	0	0	0	0	0	0	0	0	0	0	
JATC SW	T	0	1	1	0	0	0	1	1	1	1	0	0	6	100%
	P	0	1	1	0	0	0	1	1	1	1	0	0	6	
LCSC	T	0	1	0	1	1	1	0	0	0	0	0	0	4	75%
	P	0	1	0	0	1	1	0	0	0	0	0	0	3	
NIC	T	0	1	1	2	0	1	0	2	0	2	0	0	9	56%
	P	0	1	1	0	0	1	0	2	0	0	0	0	5	
PREV HELD	T	0	2	0	3	4	1	1	1	1	2	1	0	16	38%
	P	0	0	0	2	2	1	0	1	0	0	0	0	6	
OOS	T	2	1	5	3	1	1	0	2	2	1	3	2	23	61%
	P	0	0	4	2	0	0	0	2	1	1	3	1	14	
TOTAL	T	**4**	**8**	**11**	**21**	**12**	**9**	**8**	**12**	**13**	**10**	**8**	**3**	119	69%
	P	**1**	**5**	**9**	**14**	**8**	**7**	**5**	**9**	**10**	**5**	**7**	**2**	82	
%		25%	63%	82%	67%	67%	78%	63%	75%	77%	50%	88%	67%	69%	

HVAC JOURNEYMAN FIRST EXAM ATTEMPTS

		JAN '19	FEB '19	MAR '19	APR '19	MAY '19	JUN '19	JUL '19	AUG '19	SEP '19	OCT '19	NOV '19	DEC '19	TTL	%
CSI	T	1	1											2	0%
	P	1	1												
CWI	T	0	2											2	100%
	P	0	2											2	
CEI	T	0	0											0	#DIV/0!
	P	0	0											0	
HVACR	T	0	1											1	100%
	P	0	1											1	
ISU	T	0	1											1	100%
	P	0	1											1	
JATC EA	T	0	0											0	0%
	P	0	0											0	
JATC SW	T	2	0											2	50%
	P	1	0											1	
LCSC	T	0	0											0	#DIV/0!
	P	0	0											0	
NIC	T	0	0											0	#DIV/0!
	P	0	0											0	
PREV HE	T	2	1											3	67%
	P	1	1											2	
OOS	T	1	1											2	100%
	P	1	1											2	
TOTAL	T	**6**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	13	85%
	P	**4**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	11	
%		67%	100%	#####	####	####	####	####	#####	#####	#####	#####	#####	85%	

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 10 **Administrator Report**

PRESENTER: Chris L. Jensen, Administrator

OBJECTIVE: Provide an overview of the Division's current activities.

ACTION: Informational

BACKGROUND: This topic is addressed at all regularly scheduled Idaho HVAC Board meetings.

PROCEDURAL HISTORY:

ATTACHMENTS: No Documentation

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 10a **Financial Report**

PRESENTER: Chris L. Jensen, Administrator

OBJECTIVE: Review the HVAC Board's financial report.

ACTION: Informational

BACKGROUND: This topic is addressed at all regularly scheduled Idaho HVAC Board meetings.

PROCEDURAL HISTORY:

ATTACHMENTS: Financial Report

Division of Building Safety

IDAHO HVAC BOARD FUND 0229-08
Fiscal Year 2019 Financial Statements
As of 01/31/2019

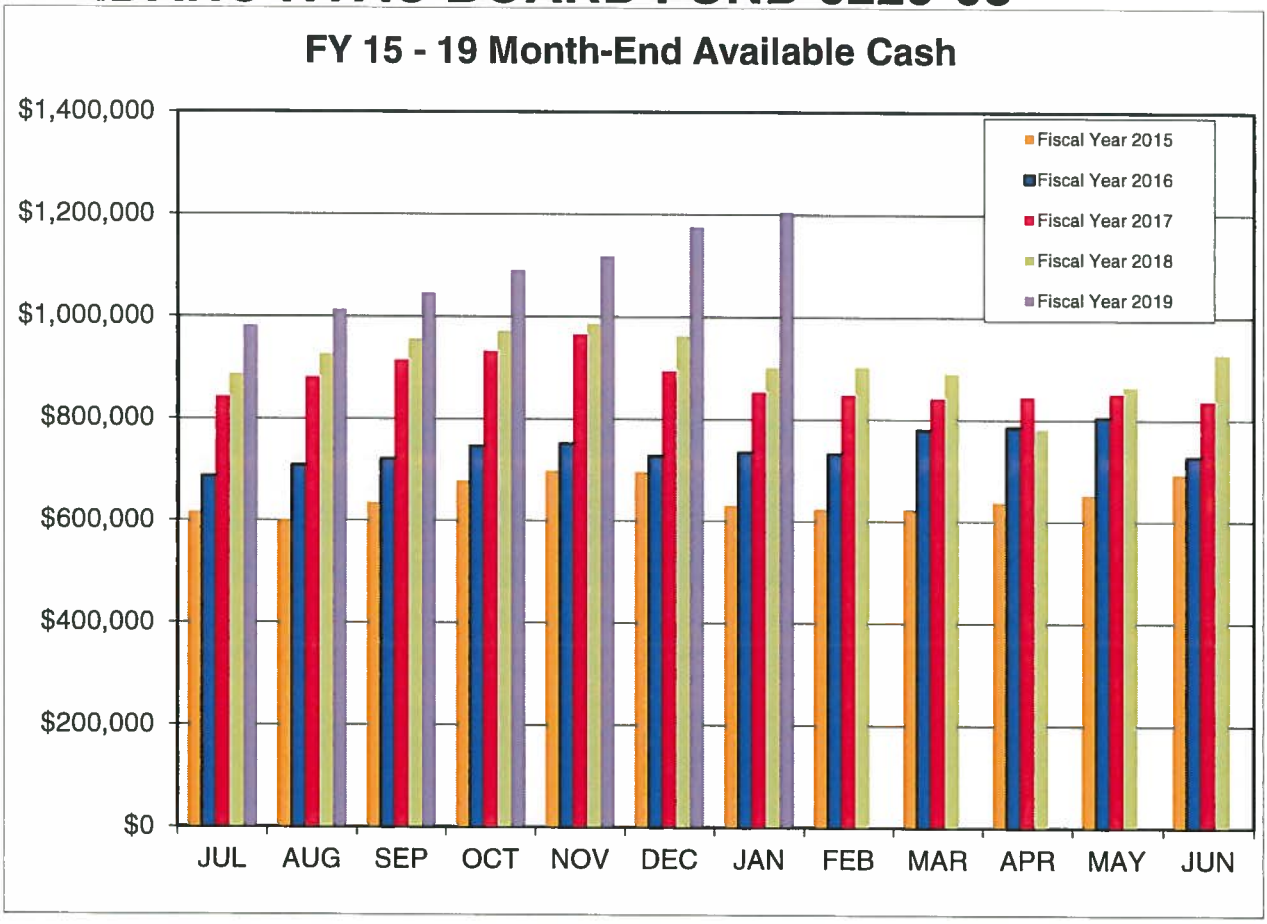
Statement of Revenues and Expenditures

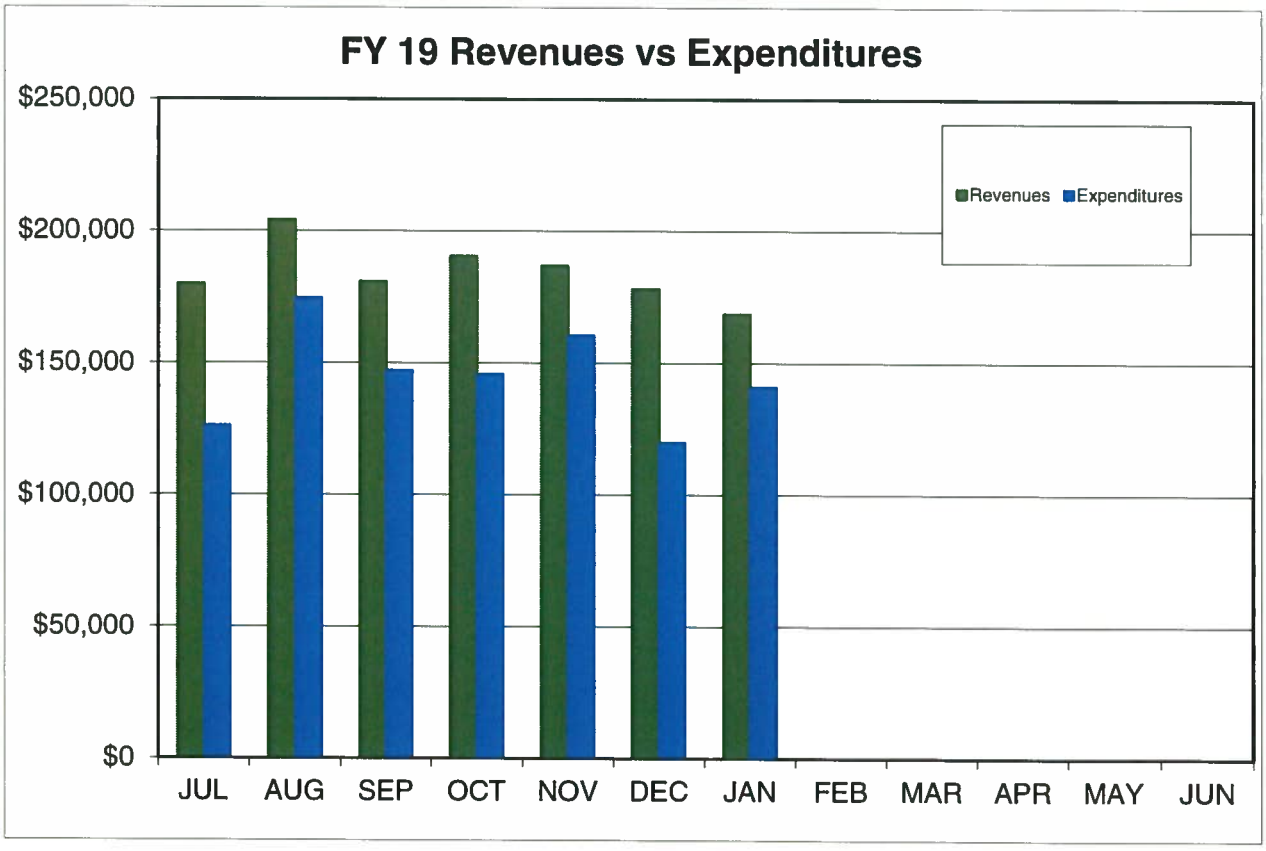
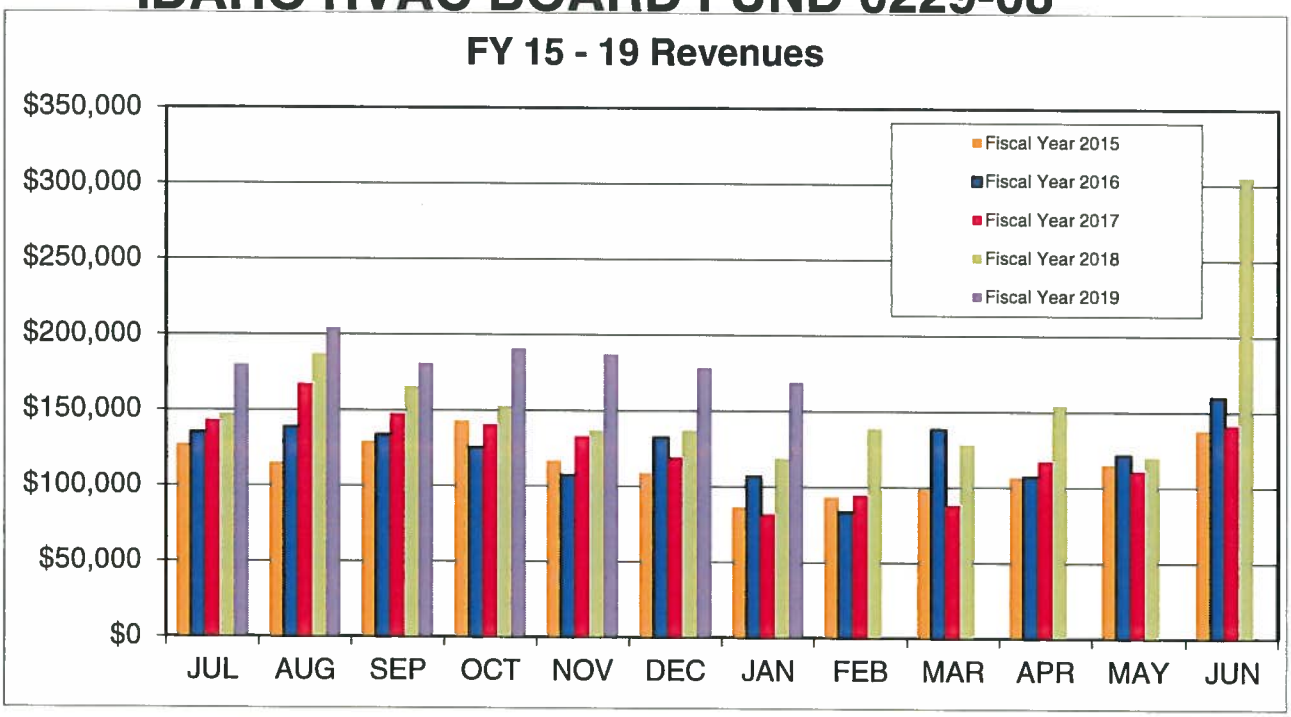
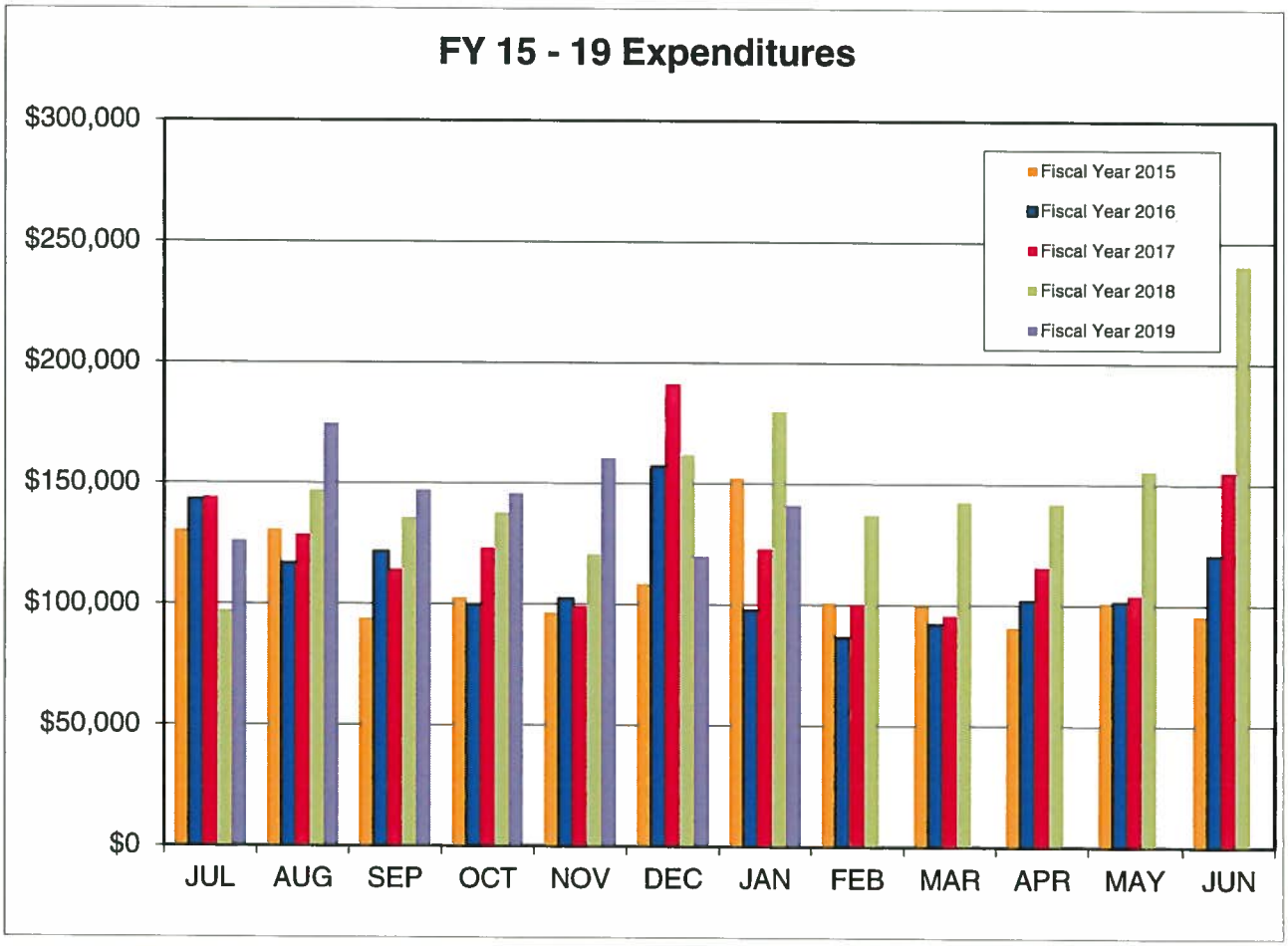
Class	Budget	Fiscal Year To Date	YTD as a % of Budget	Remaining Budget	Projected for Remainder of Year	Projected Year End Totals	Projected Total as a % of Budget
Revenues:	1,949,701	1,288,631	66.1%	661,070	822,203	2,110,834	108.3%
Expenditures							
Personnel:	1,515,200	836,206	55.2%	678,994	613,218	1,449,424	95.7%
Operating:	309,500	166,717	53.9%	142,783	92,781	259,498	83.8%
Capital:	125,001	11,424	9.1%	113,577	113,577	125,001	100.0%
Total Expenditures	1,949,701	1,014,347	52.0%	935,354	819,575	1,833,922	94.1%
Net for FY 2019	-	274,284			2,628	276,912	

Statement of Cash Balance

July 1, 2018 Beginning Cash Available	Fiscal Year to Date Revenues	Fiscal Year to Date Expenditures and Encumbrances	Other Changes in Cash	Available Cash as of January 31, 2019	Projected Change in Cash for Remainder of Year	Projected Year End Available Cash
927,955	1,288,631	(1,014,347)	1,399	1,203,638	2,628	1,206,266

IDAHO HVAC BOARD FUND 0229-08





IDAHO HVAC BOARD FUND 0229-08