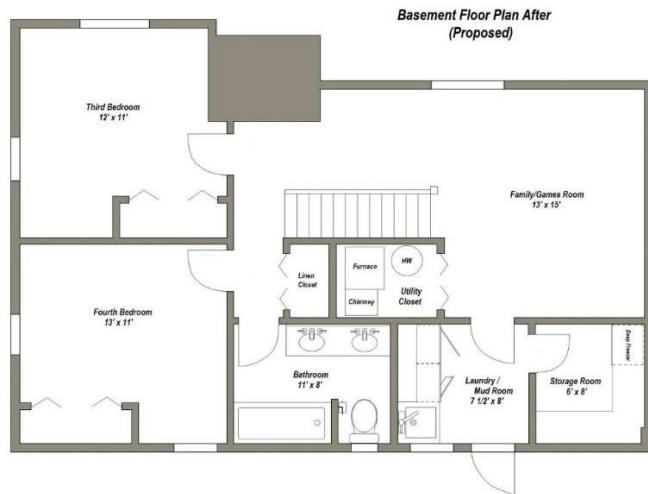


Town of Christiansburg, Virginia
Basement Finish Details
Christiansburg Building Department
2021 VIRGINIA RESIDENTIAL CODE



The information in this document contains details in regard to converting an unfinished basement into a finished basement. For any structural alterations, repairs, additions, or other work outside the scope of this document see the Town of Christiansburg's Residential Plan Review Requirements. This document is based on the 2021 Virginia Residential Code but is not inclusive of all code requirements, but rather a guideline meant to assist you with your basement finish project. This document should not be considered a comprehensive set of instructions or code requirements. The permit applicant should review the appropriate code sections for complete information.



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When applying for a permit to finish your basement be prepared to answer the following questions:

- 1) Does the basement currently have a door opening directly to the outside?
- 2) If not, is there a window that can be used as the emergency escape opening?
- 3) If you do not have doors, does the window(s) meet the requirements for emergency escape window openings?
- 4) Will there be a bedroom?
- 5) Does the room designated as a bedroom have an emergency escape window opening?
- 6) Does the bedroom window meet the requirements of an emergency escape opening?
- 7) What is the square footage of the area to be finished?
- 8) What is the approximate dollar value of the project?
- 9) Will a contractor be hired to perform the work?

1. Plans: *Floor plan with room dimensions, square footage and intended use.*

- 1) You may use this guideline in lieu of a complete building plan. Details of the rooms and spaces for the proposed work must be sketched on the provided sheet. Exact scale is not required but each space shown shall have an accurate square footage and be labeled as to the exact use of the space. The layout shall distinguish existing rooms not covered under this scope of work.
- 2) If structural modifications will be performed two copies of the structural components must be provided for review and details provided as to what the modifications will be.
- 3) If you choose not to follow these guidelines two sets of complete plans must be provided on 11"x17" paper.
- 4) Deviations from this guideline shall have prior approval from town staff.

2. Permit(s), Contractor's License, Business License, and Affidavit

- 1) The permit fee is based on the square footage of the area to be finished. The fee is calculated at .28/per square foot.
- 2) A property owner may obtain his/her own permit(s) if performing the work themselves.
- 3) A property owner must complete the owner affidavit as acknowledgement of exemption from licensure.
- 4) If a property owner is performing the work, one building permit for all trades will be issued. The permit will cover all work performed as noted on the permit in the description of work.
- 5) If contractors will perform the work each contractor shall obtain their individual permit. Generally that will consist of electrical, mechanical, plumbing, building and insulation.
- 6) Contractors shall possess a valid Virginia State Contractors License.
- 7) Contractors shall also possess a Christiansburg Business License.
- 8) Business licenses from other Virginia localities are honored up to \$25,000 of gross receipts from the previous year.
- 9) A homeowner may obtain permits on behalf of the contractor as the agent for the contractor without the contractor being present. The owner shall present copies of the contractor's state license, business license and if applicable, tradesman license. **See our website for tips on hiring a contractor or contact the building department directly for specific tips and information.**

3. Complying With the Code

- 1) All construction shall comply with the 2021 Virginia Residential Code.
- 2) Copies of the code may be viewed at the Christiansburg Town Hall at the permit counter.
- 3) The Virginia Residential Code is available online at the Department of Housing and Community Development.
- 4) The Virginia Residential Code may be purchased at www.iccsafe.org.

4. Scheduling and Inspections

- 1) Building inspections are performed between 9:00 a.m. and 4:00 p.m. Monday through Friday.
- 2) The permit shall be affixed to a window or other area visible to the inspector. Reasonable and safe access shall be provided to the work.
- 3) To schedule an inspection contact the permit technician by submitting a request to inspectionrequest@christiansburg.org or calling the permit desk at 540-382-6120 x1122.
- 4) Inspections are generally either a.m. or p.m. Special arrangements may be considered for property owners who specifically request a set time.
- 5) For residential work all trade inspections are performed at the same time: Framing, electrical, mechanical and plumbing.
- 6) The inspection sequence is.
 - a. Underslab plumbing or electrical.
 - b. Rough inspections, framing, electrical, mechanical and plumbing prior to concealment.
 - c. Insulation
 - d. Final
- 7) Once a final inspection has been performed and approved a copy of the final permit will be sent to you via email indicating the work is complete and approved.

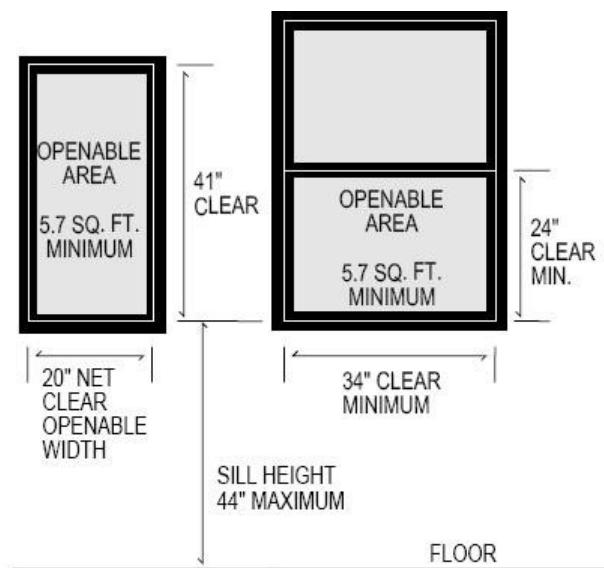
5. General Building Information:

1. Habitable rooms shall have an area not less than 70 square feet. (Closets, hallways, laundry rooms, storage rooms, storage spaces and bathrooms are not considered habitable rooms and are excluded).
2. Hallways shall not be less than 36 inches in width.
3. Basement ceiling height shall not be less than 7 feet above the finished floor. Structural members spaced apart not less than 36 inches in clear finished width apart may project up to 6 inches below the required ceiling height.
4. Bathrooms shall be equipped with a fan vented directly to the outside. A fan is not required if the bathroom contains a window with an opening of 1.5 square feet or more.
5. Accessible under stair spaces shall be protected with $\frac{1}{2}$ inch drywall on the underside.
6. Smoke alarms shall be installed in the basement and in each sleeping room. Smoke alarms shall be hardwired wired so that activation of one all will sound. Smoke alarms must be equipped with battery backup.
7. If the house is equipped with gas-fired appliances a carbon monoxide alarm shall be installed in the basement.
8. Stairways must be provided with a light source to illuminate the treads and landings. The switch shall be located at the top and bottom of the stairs.
9. Insulation shall be R10 for continuous foam board attached to basement wall or R13 for fiberglass batts installed between studs. Walk out framed walls must be insulated with R15.
10. Cutting openings in existing walls is outside the scope of this document and would necessitate a plan being submitted for such work.

6. Emergency Escape and Rescue

1. An emergency escape and rescue opening in the form of a window or door to the outside is required in basements of houses constructed after October 1, 2003 and all basement bedrooms regardless of when they are constructed.
2. A bedroom emergency escape and rescue opening may serve as the required opening for the entire basement.
3. Basements in dwellings constructed prior to October 1, 2003 are permitted to be finished without an emergency escape and rescue opening; however the building department highly recommends you provide one.
4. An emergency escape and rescue opening may be in the form of :
 - a. Window in a walk-out basement.
 - b. Window to a window well.
 - c. Door in a walk-out basement.
 - d. Door to a bulkhead enclosure (Bilco door or similar).
5. Opening requirements for emergency and escape openings: **See FIGURE 1**
 - a. All doors and windows shall be operable from the inside without the use of a key or tool.
 - b. The opening shall be 5.7 square feet.
 - c. Grade level windows may be 5.0 square feet.
 - d. Window sill height is 44 inches or less above the finished floor.
 - e. Opening height 24 inches.
 - f. Opening width 20 inches.
 - g. The opening dimensions are for the lower sash of the window.

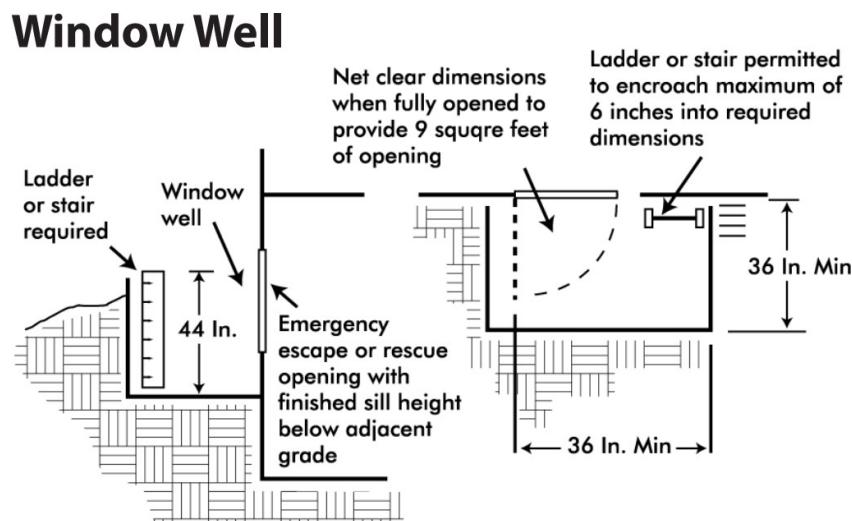
FIGURE 1: Opening Requirements



6. Window wells used for windows below outside grade shall be constructed as follows. See FIGURE 2

- Horizontal area of a window well is 9 square feet minimum measured when the window is in the open position.
- A plan is required to be submitted anytime a window well is being installed.
- If the window well is of the prefabricated type, the manufacturer's installation instructions must be submitted.
- Window wells deeper than 44 inches shall have a ladder or steps. If the ladder projects more than 6 inches into the required horizontal area, the size of the window well shall be enlarged to compensate.

FIGURE 2: Window Well Requirements



****Net-clear opening refers to the cross-sectional area available to a person trying to escape or to rescue personnel trying to enter. The 5.7 sq. ft. (5 sq. ft. for the ground floor) is derived from the space needed for a firefighter with breathing apparatus to enter.* ***

7. Framing and Wall Construction

- Studs may be utility grade or better.
- Walls shall have a single pressure treated bottom plate.
- The top plate may be single (non-bearing) or a double top plate.
- Stud spacing shall be 16 inches on center. They may be spaced 24 inches when the applied finish material is drywall.
- Attachment requirements for wall construction shall be fastened in accordance with **TABLE 1**.

Table 1: Fastening Schedule

CONNECTION	NAILING METHOD	FASTENER
Top plate to stud	End nail	2-16d (3 1/2 " x 0.135")
Stud to bottom plate	Toe nail or	2-16d (3 1/2 x 0.135")1 or 3-8d (2 1/2 x 0.113") 1
	End nail	2-16d (3 1/2" x 0.135") 1
Bottom plate to floor	Face nail	16d concrete nail (3 1/2 x 0.135") @ 16" o.c.
Header to jack stud	Toe nail	4-8d (2 1/2" x 0.113") Each side of header at each end

¹ Fasteners are required to be hot-dipped galvanized

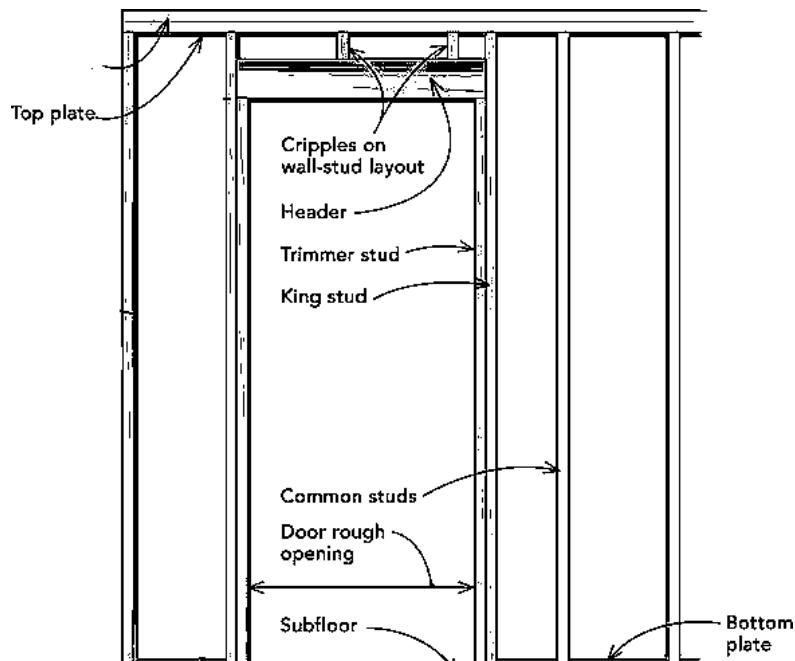
6. Headers may be a single flat 2x4 in interior nonbearing walls for openings up to 8 feet in width if the portion of the wall above the opening is not more than 24 inches in height. If the opening does not meet these conditions, the header shall be framed per **FIGURE 3** and sized per **TABLE 2**. Two-ply headers shall be fastened together using 16d (3 1/2 "x 0.135") face nails at 16 inches on center staggered along the top and bottom edges.

TABLE 2: HEADER SIZE¹

HEADER SIZE	SPAN LENGTH
(2) 2x4	4'
(2) 2x6	6'
(2) 2x8	10'
(2) 2x10	12'
(2) 2x12	16'

¹ Non-load bearing walls only

FIGURE 3: Header Framing



7. Fire blocking shall be provided to seal off concealed spaces and to form an effective fire barrier betweenstories. Fire blocking shall be provided in the following locations.

- In concealed spaces of stud walls offset from the basement exterior wall. See FIGURE 4.
- In concealed spaces of stud walls and partitions, including furred spaces at the ceiling and floor level where the top plate is attached to the underside of the floor joists. See FIGURE 5
- At all interconnections between concealed vertical and horizontal spaces such as occurs at soffits, bulkheads and drop ceilings. See FIGURE 6 & 7
- In concealed spaces between stair stringers at the top and bottom of the stair run.
- At gaps and openings around vents, pipes and ducts at the ceiling and floor level.

8. Fire blocking material shall consist of one of the materials listed below.

- ½ inch gypsum board.
- 2x lumber.
- Two thicknesses of 1x lumber with staggered joints.
- ¾ inch plywood, OSB or particleboard with joints backed by 6 inches of the same material.
- ¼ inch cement, cement/fiber board (e.g., Durock).
- At gaps 1 inch or less, batts or blankets of mineral wool or fiberglass packed tightly or approved fire blocking caulk.

FIGURE 4: Fire blocking stud wall offset from basement wall

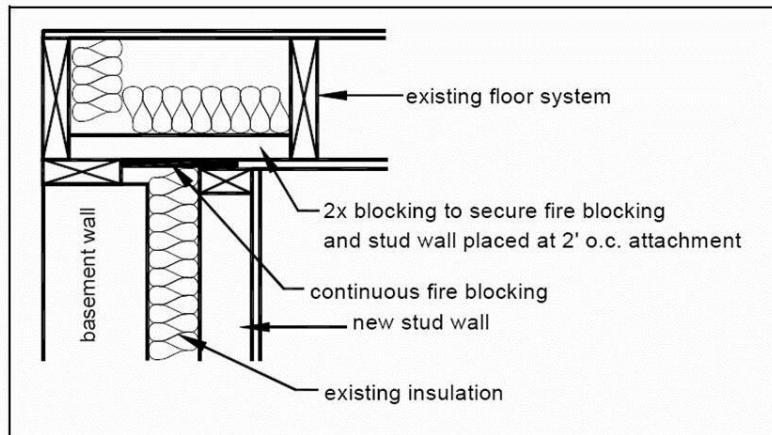


Figure 5 and 6: Stud wall against basement wall & drop ceiling

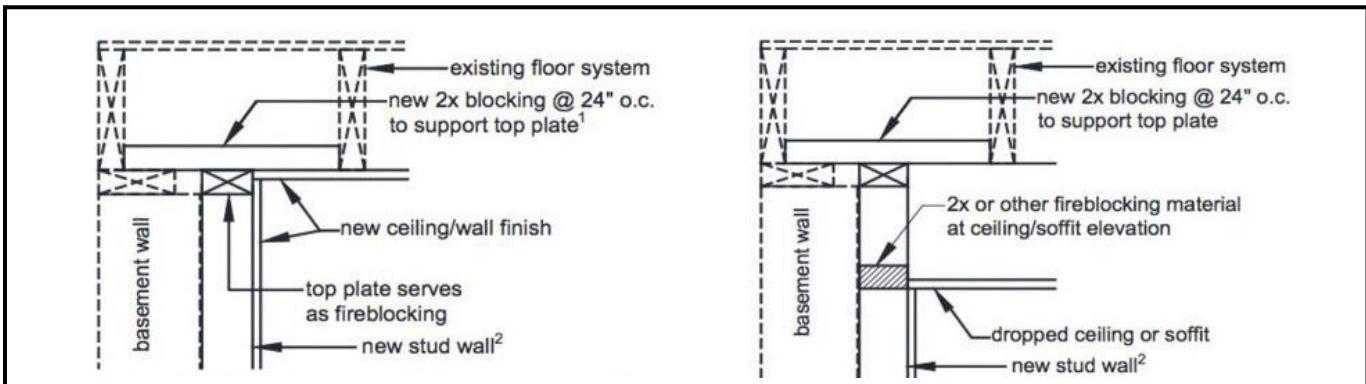
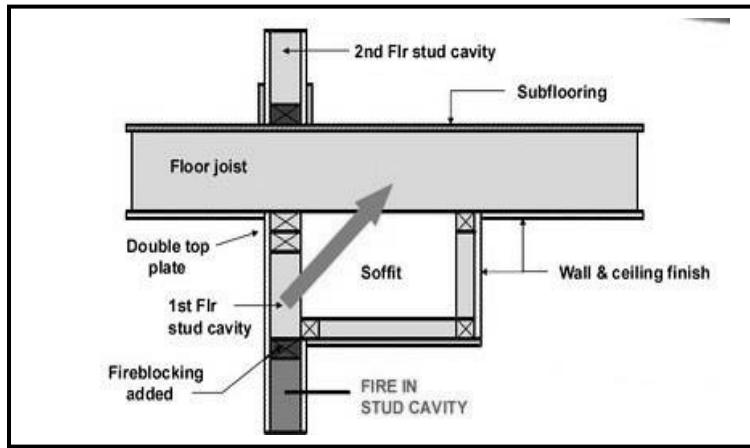


Figure 7: Fire Blocking at Soffit

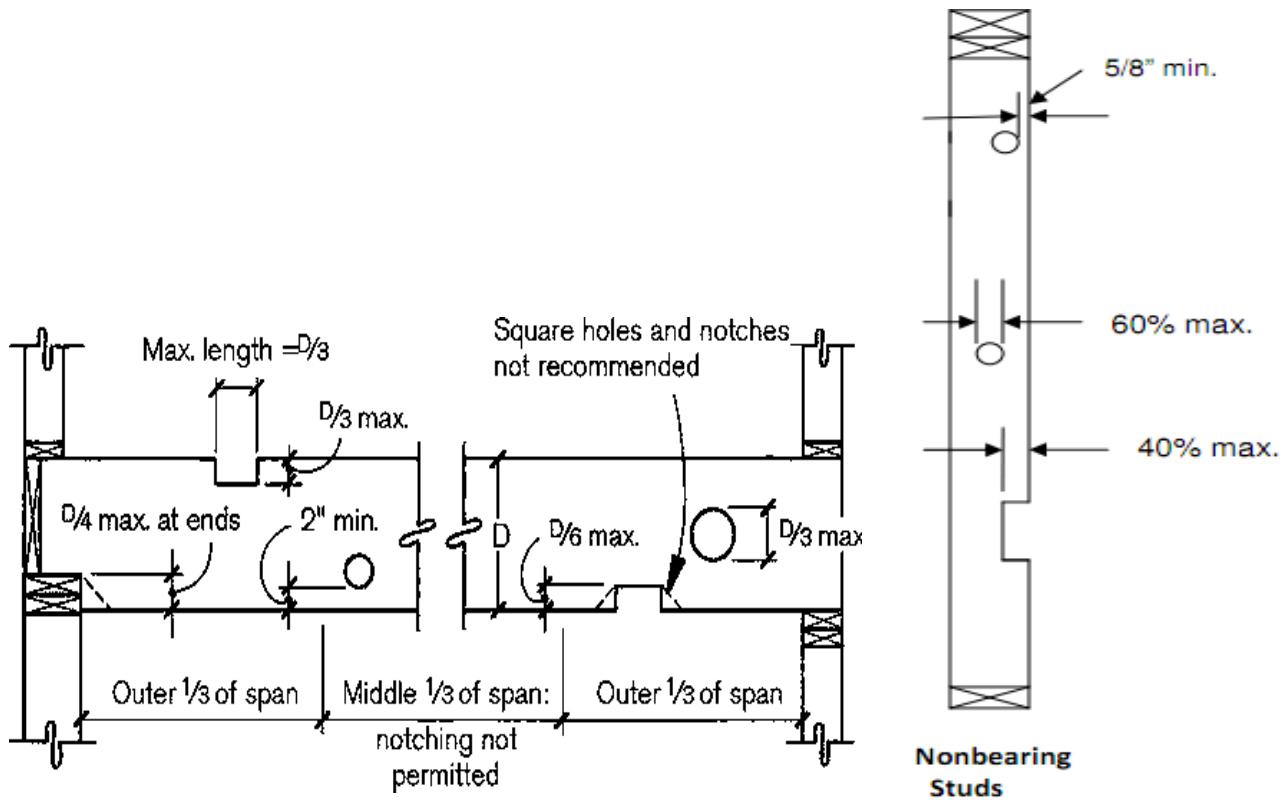


9. Wall and ceiling finish materials must meet the requirements listed below.
 - a. Gypsum board must be $\frac{1}{2}$ inch minimum.
 - b. Wood veneer or hardboard paneling less than a $\frac{1}{4}$ inch shall not be permitted.
 - c. Materials must have a flame spread classification no greater than 200 and a smoke density classification no greater than 450. This does not apply to items such as trim work, molding, handrails and doors.
 - d. Cement or fiber-cement board (e.g., Durock) must be installed on walls of bathtubs and shower spaces and finished with a non-absorbent surface.

8. DRILLING AND NOTCHING

1. Studs in non-load bearing walls may be notched or drilled in Accordance with [see FIGURE 7](#)
2. Joists and beams shall meet the requirements listed below.
 - a. Drilling and notching of 2x lumber shall be in conformance with [see FIGURE 7](#) cantilevered joists cannot be notched.
 - b. Drilling and notching of manufactured wood I-joists, LVL or other engineered wood products shall be per the manufactures design instructions.
 - c. Drilling and notching of open web floor trusses is prohibited without submitting calculations performed by a registered design professional licensed in Virginia.

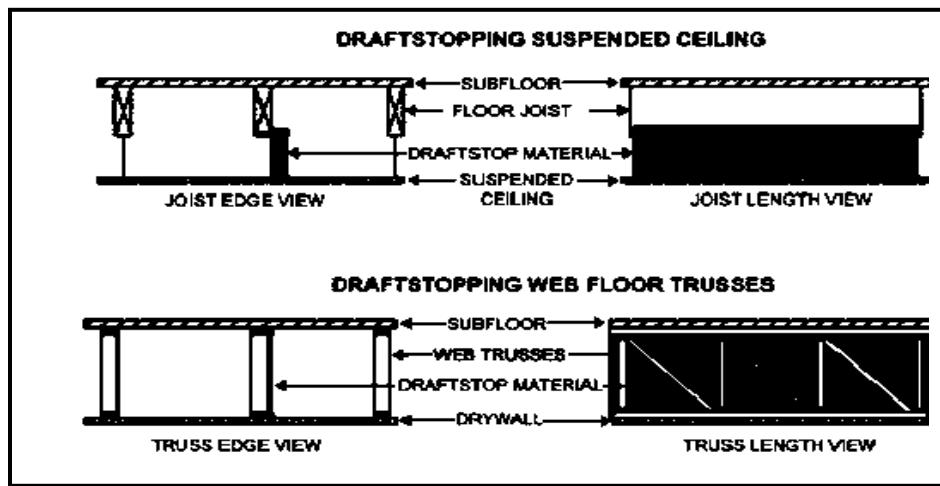
Figure 7: Drilling and Notching Studs and Joist



9. FLOOR / CEILING CONSTRUCTION

1. Draft stopping when a ceiling is not directly attached to the underside of the floor joists above or when the floor joists are comprised of open web trusses, Draft stopping shall be provided. Draft stopping shall create equal-sized concealed areas not exceeding 1,000 square feet. Draft stopping shall be installed parallel to the floor framing members. See FIGURE: 8
2. Draft stopping material shall consist of $\frac{1}{2}$ inch minimum gypsum board, $\frac{3}{8}$ -inch minimum wood plywood/OSB or $\frac{3}{8}$ inch minimum particle board, Type 2-M-W.

Figure 8: Draft Stopping



10. MECHANICAL

1. Access shall be provided to all furnaces, water heaters and other appliances without removing permanent construction and shall meet the following criteria.
 - a. 30 inches x 30 inches clear floor space at the front/control side.
 - b. Doors to furnace rooms shall be 24 inches minimum and be of sufficient size to remove the largest appliance.
2. Combustion air shall be provided to rooms containing fuel-fired appliances. Refer to the manufacturer's installation instructions of your fuel-fired appliance for specific details regarding the amount and methods of providing combustion air to your appliance.

11. PLUMBING

1. Showers and shower compartments shall meet the following requirements.
 - a. Shower compartments must have a minimum area of 900 square inches and a minimum dimension of 30 inches in any direction.
 - b. Shower compartments may have a minimum dimension of 25 inches provided it maintains a cross sectional area of 1,300 square inches.
 - c. Hinged doors shall open outward.
 - d. All glass which encloses a shower shall be safety glazed.
 - e. Shower control valves must be scald resistant (ASSE/ANSI 1016) with a hot water limit of 120 degrees F.
2. Fixture clearances shall comply with the following for toilets, sinks and showers.
 - a. 21 inches from the front of sinks and toilets.
 - b. 24 inches in front of shower stall opening.
 - c. 4 inches between two adjacent sinks.
 - d. 4 inches between a sink and a toilet.
 - e. 4 inches between a sink and a wall.
 - f. 2 inches between a sink and a bathtub.
 - g. 15 inch clearance from a toilet centerline to an adjacent fixture or wall on each side.
3. Drain sizes for fixture drains shall meet the dimensions below and shall be equipped with a strainer and stopper. See TABLE 3

TABLE 3: MINIMUM DRAIN SIZE

Fixture	Diameter
Bathroom sink	1 1/4"
Bathtubs	1 1/2"
Sinks (other than bathrooms)	1 1/2"
Laundry tubs	1 1/2"
Shower	1 1/2"

12. ELECTRICAL

1. Panelboards (breaker box) shall meet the requirements listed below.
 - a. A workspace of 30 inches wide and 36 inches deep from floor to ceiling with a minimum height of 6.5 feet shall be provided in front of the panel boards.
 - b. Panelboard workspace shall not be used for storage at any time.
 - c. Panelboards shall not be located in bathrooms or clothes closets.
 - d. A light shall be provided for the panel board workspace.
 - e. Pipes or ducts cannot be located above the panelboard.
2. Branch circuits shall meet the requirements listed below. See TABLE 4
 - a. Lighting and receptacles shall be on a 15- or 20-amp general purpose branch circuit with combination arc fault/over current protection.
 - b. One electrical device (plugged in) shall not exceed 80 percent of the circuit rating.
 - c. Appliances that are hardwired may be connected to a general use branch circuit provided the appliance does not exceed 50 percent of the circuit rating.
 - d. Bathroom receptacles require a dedicated 20-amp circuit.
 - e. Bedroom receptacles shall be provided with combination arc-fault/over current protection.

TABLE 4: BRANCH CIRCUIT REQUIREMENTS

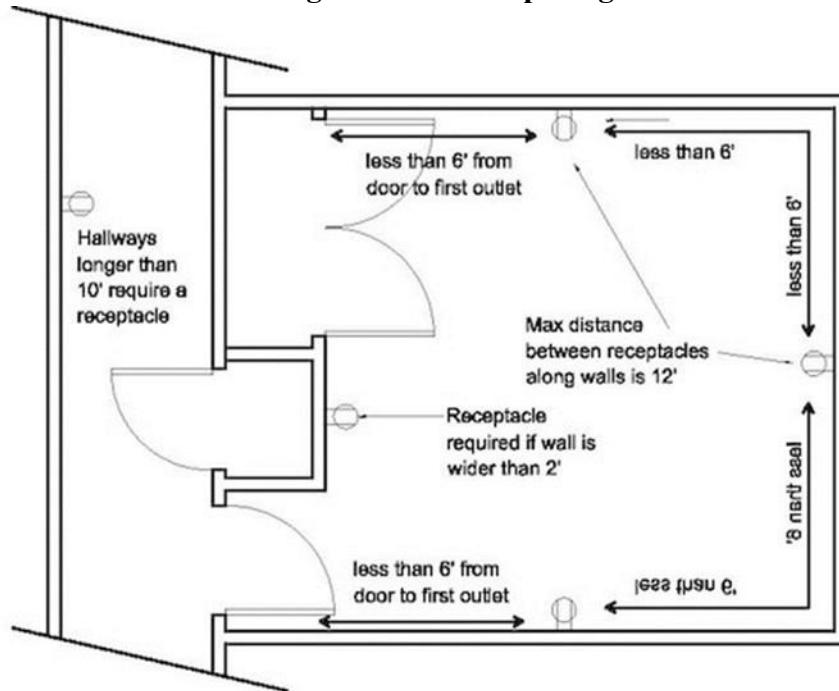
Circuit Details	Circuit Rating		
	15 amp	20 amp	30 amp
Minimum Conductor Size	14	12	10
Maximum Breaker Size	15	20	30
Outlet Rating	15	15 or 20	30
Maximum Load	15	20	30

3. Lighting shall meet the requirements listed below.
 - a. At least one switched or pull chain light shall be provided in each storage area and at or near heating and air conditioning appliances and equipment.
 - b. Lighting fixtures shall not be installed within 3 feet horizontally and 8 feet vertically of a bathtub rim or shower stall threshold. Light fixtures may be installed above a shower if the fixture is labeled as “suitable for wet locations”.
 - c. At least one switched light shall be provided in each room and hallway. A switched receptacle may be used in all rooms other than bathrooms and hallways. Switched receptacles do not count towards a required outlet.
 - d. Permanently installed light fixtures shall be controlled with a dimmer, an occupant sensor control or another control that is installed or built into the fixture. Lighting controls not required in bathrooms, hallways, exterior light fixtures or lighting designed for safety or security.
 - e. All permanently installed light fixtures shall contain only high-efficacy lighting except for kitchen appliance light fixtures.

4. Outlets (receptacles) shall meet the requirements listed below.

- a. Outlets shall be tamper resistant.
- b. All receptacles shall be GFCI protected in finished and unfinished spaces.
- c. Outlets shall be placed in accordance with see FIGURE 9
- d. Walls 2 feet or greater in length shall have an outlet.
- e. Knee walls, fixed room dividers and built-in bars shall be included in outlet spacing.
- f. Hallways more than 10 feet long shall have at least one outlet.
- g. Outlets provided for a specific appliance shall be within 6 feet of the appliance.
- h. Bathroom sinks shall have a least one outlet installed at each sink and within 36 inches of each sink.
- i. GFCI protection shall be provided for bathroom outlets.
- j. Laundry appliances and sinks shall have at least one outlet.
- k. Unfinished portions of basements shall have at least one outlet GFCI protected.
- l. HVAC equipment shall have an outlet within 25 feet.

Figure 9: Outlet Spacing



5. Light fixtures located in closets shall be limited to surface mounted or recessed incandescent fixtures with completely enclosed lamps and surface mounted or recessed fluorescent fixtures. See TABLE 5

TABLE 5: CLOSET LIGHT FIXTURE CLEARANCES¹

Fixture Type	Fluorescent Bulb ²	LED Bulb ²
Surface Mount	6"	12"
Recessed	6"	6"

¹ Incandescent bulbs are prohibited.

² Fluorescent and LED bulbs are permitted in storage areas when identified for this use.

Statement of Compliance

1. Any deviations to this guideline must have prior consent from the Building Department in writing.
2. All work shall comply with the Virginia Residential Code. (USBC) Uniform Statewide Building Code.
3. This guideline is not inclusive of all code provisions.

I hereby waive Town of Christiansburg plans review.

I acknowledge responsibility for construction in full compliance with the Virginia Residential Code (Uniform Statewide Building Code).

I acknowledge responsibility for corrections of any and all code violations discovered during the course of the inspection process.

Signature of Owner/Agent: _____ Date: _____

Name as it appears on the Permit Application _____



Show the floor plan and label all spaces.

Permit # _____

Approved By: _____