

# County of Shenandoah



DEPARTMENT OF BUILDING INSPECTIONS  
Shenandoah County Government Center  
600 N. Main Street, Suite 107  
Woodstock, VA 22664  
540-459-6185

## **FINISHED BASEMENT APPLICATION PACKET**



# County of Shenandoah

BUILDING DEPARTMENT  
600 N. Main Street, Ste 107  
WOODSTOCK, VA 22664  
[www.shenandoahcountyva.us](http://www.shenandoahcountyva.us)

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## CONTENTS OF PACKET & DESCRIPTION OF EACH FORM

**Page 1: Finished Basement Permit Application Checklist.** This document is to assist you in providing all the required information and approvals in order for our department to issue a building permit.

**Page 2: Virginia Department of Health (VDH) Request.** The Building Department is required by State Law to engage VDH on all additions or alterations that may affect existing sanitary facilities and water supplies. Along with this form, a site plan showing the location of the house and the addition, existing septic tank, drain-field area, water supply, and the estimated distances between the components and proposed addition. This form, and site plan, is to be signed by the Building Department. The form and site plan is then to be submitted, by you the applicant, to VDH.

**Page 3: Residential Energy Compliance Form.** This form is to be completed showing how the structure will be in compliance with the energy efficiency requirements of the residential code.

**Page 4: Universal Application for Permits.** This document is required to be completed for any permit application. Check each box that pertains to what you are specifically applying for. For the installation of the deck, check "building". Be sure that you fill this application out completely.

**Page 5: Owners Affidavit.** This document is required to be filled out if you, the owner of the property, are conducting any portion of the installation of the deck yourself. If you are hiring a licensed contractor to perform all work, this form is not to be completed.

**Page 6 & 7: Contractor List Form/Permit Authorization Affidavit.** Complete the Contractor List Form to show who will be performing the work. The Affidavit to be completed if the permit applicant is any person other than the licensed contractor performing the work. The contractor whom will be performing the work is required to complete this form. If the contractor is applying for the permits themselves, this form is not to be completed.

**Page 8: Finished Basement Guide.** This document is to assist you with your finished basement plan submittal. This document has the code requirements, span tables, and other important information to refer to prior to submitting your finished basement application submittal.

\*\* Please ask one of our staff members if you have any questions. \*\*



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www.shenandoahcountyva.us

## FINISHED BASEMENT PERMIT APPLICATION CHECKLIST

- Complete the building permit application
  - Please include the job value for each of the building, mechanical, plumbing, electric if applying for all permits at the same time
  - Include a copy of the Virginia State Contractors license and/or the Shenandoah County Contractors license for verification.
  - Include a daytime phone number and email address so that we may contact you for any additional information or questions pertaining to your application.
- Include two complete sets of construction plans that are clearly legible.
  - Plans must include, but not limited to, the following:
    1. Floor Plans – Provide a detailed floor plan of all interior spaces for your scope of work. Floor plans are to include:
      - Room labels, square footage of each room, and description of new framing members used, and mark all door and window sizes.
    2. All drawings must be signed by the individual (not company) responsible for the design, and must show the address and contact information.
- Complete the Energy Code Compliance Sheet.
  - This compliance sheet is to be completed and signed by the permit applicant prior to the issuance of a building permit.
  - The supporting documents (Manual S or Manual J) must be submitted to the Building Code Official (M1401.3).
  - Ducts and air handlers outside the building thermal envelope shall be pressure tested to determine air leakage. The testing results shall be submitted to the Building Code Official (N1103.3.3).
- Approval by the Health Department (VDH) for the onsite sewage disposal systems and wells.
  - This is required to ensure compliance with the setbacks from the well and sanitary facilities. (If hooked to a public utility, this is not required)
  - A walkover request form is to be generated by the Building Department and given to the applicant to be submitted to VDH.

\*\*All agency approvals are to be submitted prior to the issuance of a building permit. \*\*



## Shenandoah County Building Inspection Request for Health Department Review

To Be Completed By Property Owner or Agent:

<b>Owner Name:</b> _____	_____ (Phone)	_____ (e-mail address)
<b>Mailing Address:</b> _____ (Street or PO Box)	_____ (City/Town)	_____ (State) _____ (Zip Code)
<b>Contractor/Agent:</b> _____	_____ (Phone)	_____ (e-mail address)
<b>Mailing Address:</b> _____ (Street or PO Box)	_____ (City/Town)	_____ (State) _____ (Zip Code)
<b>Property Physical Address:</b> _____		
<b>Tax Map #:</b> _____ <b>Current Number of Bedrooms:</b> _____ <b>Number of Bedrooms Added (if applicable):</b> _____		

### **PLEASE READ CAREFULLY:**

This report is only intended to address the above referenced request and does not address evaluation procedures for sewage systems being sold through real estate transfers, or systems and water supplies being re-used as part of a subdivision process. This document specifically addresses VDH's implementation of §32.1-165 of the *Code of Virginia* and is not to be used for any unauthorized use.

The property boundaries and building locations are clearly marked or identified at the property. I give permission to the Virginia Department of Health to enter the property described, if necessary, for the purpose of processing this application. An accurate sketch of the property, existing structures, wells, sewage disposal systems, and proposed structure(s) is attached.

**Owner or Agent Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

The Shenandoah County Building and Code Enforcement Department hereby requests that the Virginia Department of Health evaluate the onsite sewage system and/or water supply on the property prior to the issuance of a building permit.

**Description of Proposed Work:** \_\_\_\_\_  
\_\_\_\_\_

**Related Building Permit #:** \_\_\_\_\_

**Building Inspections Representative:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Please take this completed form to Local Health Department (See reverse for Site Sketch & contact information)**

- Please attach any recent records of system maintenance (Pump-outs or Operation and Maintenance Reports).
- (To prevent potential damage to the system VDH recommends homeowners first contact Miss Utility for marking any underground utilities. The septic tank and distribution box should be carefully uncovered by hand.)

Please indicate proposed addition(s) in relation to existing structure. Also, please show location of **existing septic tank, drainfield area and water supply** and indicate actual or estimated distances between the proposed improvement and the closest septic system component(s). The footprint of proposed addition(s) must be staked or otherwise marked on the property. **Please note:** you may be required to uncover certain sewage components for evaluation.

**Site Sketch (may be attached)**



Shenandoah County Health Department  
494 North Main Street // Suite 100  
Woodstock, VA 22664  
540-459-3733



## 2015 Residential Energy Efficiency Compliance Sheet

Residential Buildings (R-1, R-2, R-3, R-4, and R-5) no more than three stories in height

**All construction requiring insulation (Homes, Additions, Heated Sun rooms or remodel) must be accompanied accompanied by an Energy Efficiency Compliance Sheet upon application for a permit**

VRC N1101.5.1 Thermal envelope depiction: The buildings thermal envelop shall be represented on the construction drawings. *Installed type and R-Value must meet or exceed the minimum requirements.*

<u>Building Assemblies</u>	<u>Minimum R-Value</u>	<u>Insulation Type &amp; R-Value Installed</u> <i>(insulation you are installing)</i>	
		<u>R - Value</u>	<u>Insulation Type</u> <sup>A</sup>
Walls (R-value)	R-15 or R-13 +R-1 <sup>h</sup>		
Floors (R-value)	19		
Ceiling (R-value) <sup>B</sup>	38		
Ceiling (R-value) <sup>G</sup>	30		
Basement Walls (R-value)	10 continuous or 13 cavity fill		
Crawl Space Walls (Conditioned) <sup>C</sup>	10 continuous or 13 cavity fill		
Concrete Slab (less than 24" below grade)	10, 2ft		
Slab (R-Value) - Heated	15, 2ft		
Mass Wall (R-value) <sup>D</sup>	8/13 <sup>F</sup>		
Windows (U-factor) <sup>E</sup>	0.35		
Skylights (U-factor) <sup>E</sup>	0.55 max		
Doors (U-factor) <sup>E</sup>	0.35		
Hinged Vertical attic access doors	R-5		
Pull down attic access stairs	R-5 Rigid 75% of panel area		

A - Types of insulation include sheet foam, fiberglass, blown insulation and open/closed cell foam

B - Ceilings without attic space (sunroom, vaulted ceiling) where the roof/ceiling assembly does not allow sufficient space for R-38 insulation, a minimum of R-30 is allowed but shall be limited to 500 ft2 of ceiling area

C - Crawl space walls need to be insulated only if structure floor above is not insulated. (Conditioned Crawl Space)

D - Mass walls are walls of concrete block, concrete, insulated concrete form, masonry cavity, brick (not veneer), earth (adobe) or solid timber/log

E - All U - factors are per manufactures specifications and the International Energy Conservation Code.

F - Second value required when more than half the insulation is on the interior of the mass wall.

G- Full Height insulation provided, ie Raised Heel Trusses with blocking as required per code

H - First value is cavity insulation, second is the continuous, so R-13 + R-1 means R-13 cavity plus R-1 continuous insulation or insulated siding. Only insulation materials can be summed to determine the component R-value

**Section M1401.3 Virginia Residential Code requires heating and cooling equipment to be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies. Ducts and air handlers outside the building thermal envelope shall be pressure tested to determine air leakage.**

**A written report shall be provided to the Code Official (N1103.3.3)**

X

Signature

X

Print

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 (540) 459-6185

## APPLICATION FOR BUILDING PERMIT

PERMITS APPLIED FOR  Building  Electric  Plumbing  HVAC  Gas  
 Zoning  Alarm  Suppression  Demo  Other \_\_\_\_\_

Owner: \_\_\_\_\_ Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Location of Jobsite: \_\_\_\_\_ Location In:  Town  County

Directions from County Office: \_\_\_\_\_

Purpose of Permit:  New Building  Addition  Alteration  Remodel  Other \_\_\_\_\_

Use of Proposed Structure or Building: \_\_\_\_\_

Size of Proposed Structure or Building (Includes Basement) (Square Feet): \_\_\_\_\_ Ridge Height of Purposed Structure of Building \_\_\_\_\_ Ft.

Description of Work: \_\_\_\_\_

Single Family Dwelling  Mobile Home  Modular  Townhouse  Commercial  Industrial  Multi-Family Dwelling

<u>Cost of Improvement</u>	<u>Type of Construction</u>	<u>Type of Sewage Disposal</u>	<u>Type of Foundation</u>
Building: \$ _____	_____	<input type="checkbox"/> Public Sewer	<input type="checkbox"/> Crawlspace
Electric: \$ _____	_____	<input type="checkbox"/> Private Septic	<input type="checkbox"/> Unfinished Basement
Plumbing: \$ _____	Type of Heat/AC _____ _____	<u>Type of Water Supply</u>	
Heat/AC: \$ _____		<input type="checkbox"/> Public Water	<input type="checkbox"/> Finished Basement
Other: \$ _____		<input type="checkbox"/> Private Well	<input type="checkbox"/> Slab on Grade
Total: \$ _____		<input type="checkbox"/> Other _____	<input type="checkbox"/> Post to Footing

# of Stories: \_\_\_\_\_ # of Bedrooms: \_\_\_\_\_ # of Full Baths: \_\_\_\_\_ # of Half Baths: \_\_\_\_\_ Garage:  Attached  Detached  None

Contractor: \_\_\_\_\_ Phone #: \_\_\_\_\_ Cell #: \_\_\_\_\_

Email: \_\_\_\_\_ VA Contractor License #: \_\_\_\_\_ VA Class:  A  B  C  County License

Mechanic's Lien Agent: \_\_\_\_\_  None Designated

I Certify the Above Information is True and Correct to the best of my knowledge:

Owner Lessee  Contractor  Agent  Architect/Engineer

Applicant Signature: \_\_\_\_\_ Phone #: \_\_\_\_\_ Email: \_\_\_\_\_

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_ Best way to contact you: \_\_\_\_\_



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## OWNER'S AFFIDAVIT

I, \_\_\_\_\_ of (address) \_\_\_\_\_  
\_\_\_\_\_ affirm that I am the legal owner of a certain tract or parcel of the  
land located at: \_\_\_\_\_.

I understand that I am applying for a building permit as owner of the above referenced property and I am acting as my own contractor. I further understand that if I hire or enter into a contractual agreement with any person(s) on this project, they must be licensed with Shenandoah County and the Commonwealth of Virginia. If I decided to use a licensed contractor, I will notify the Shenandoah County Community Development office prior to the contractor starting any work.

\_\_\_\_\_  
Owner's signature

SIGNED AND ACKNOWLEDGED IN SHENANDOAH COUNTY, VIRGINIA ON THE  
\_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_, IN THE PRESENCE OF THE UNDERSIGNED WITNESS.

\_\_\_\_\_  
Witness' signature

**Please note that if you are not the owner of the property, owner must sign and give written permission to perform work, prior to the issuance of any permit.**



DEPARTMENT OF COMMUNITY DEVELOPMENT  
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CONTRACTOR LISTING FORM

Owner's Name: \_\_\_\_\_ Date: \_\_\_\_\_

In accordance with §81-1 License Required of the Code of Shenandoah County, I understand the person, firm, or corporation, providing the following services must be licensed. **A Permit Authorization Affidavit must be filled out by the person performing the Plumbing, Electric, Heating & A/C, Gas Service and Foundation work.** Please indicate who will be doing the following:

GENERAL CONTRACTING: \_\_\_\_\_

EXCAVATION/GRADING: \_\_\_\_\_

FOUNDATION WORK: \_\_\_\_\_

FRAMING: \_\_\_\_\_

ELECTRIC: \_\_\_\_\_

PLUMBING: \_\_\_\_\_

HEATING & A/C: \_\_\_\_\_

GAS SERVICE: \_\_\_\_\_

I CERTIFY THE ABOVE INFORMATION IS TRUE AND CORRECT. I AM AUTHORIZED BY THE CONTRACTORS LISTED ABOVE TO MAKE APPLICATION FOR THIS PROJECT.

Signature (Owner or Agent): \_\_\_\_\_

Date: \_\_\_\_\_



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## PERMIT AUTHORIZATION AFFIDAVIT

**§ 54.1-1111. Prerequisites to obtaining business license; building, etc., permit.**

It shall be unlawful for the building inspector or other authority to issue or allow the issuance of such permits unless the applicant has furnished his license or certificate number issued pursuant to this chapter or evidence of being exempt from the provisions of this chapter.

I, \_\_\_\_\_ do hereby authorize the following person, \_\_\_\_\_ the right to act as my agent to obtain a(n) \_\_\_\_\_ permit in my absence and that I will be performing the work associated with the above permit located at \_\_\_\_\_, Virginia.

**\*Any misrepresentation of submitted data may result in legal prosecution.**

\_\_\_\_\_ (signature) \_\_\_\_\_ (date)

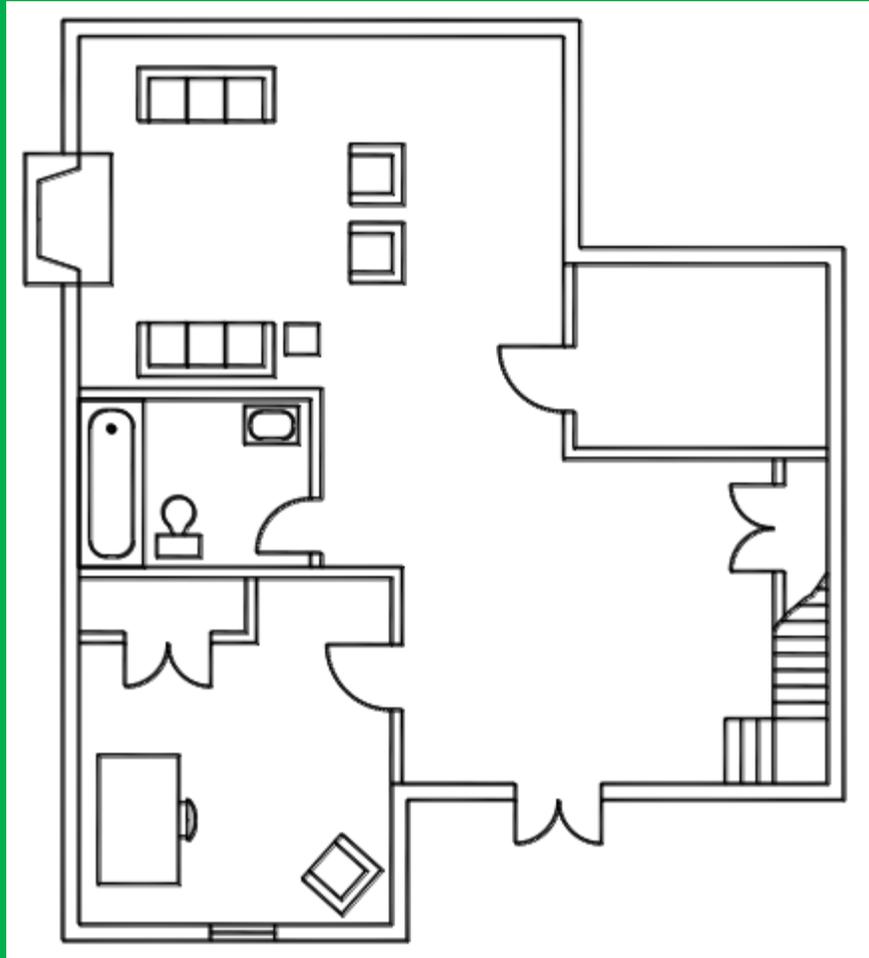
\_\_\_\_\_ (printed name)

\_\_\_\_\_ (DPOR license number)

*Shenandoah County, Virginia*

# Typical Finished Basement Details

Based on the 2015 International Residential Code



Finished basements must be constructed in conformance with these details. For requirements, details and information not contained herein, please consult the 2015 Virginia Residential Code. Code books may be viewed online or purchased from the International Code Council at [iccsafe.org](http://iccsafe.org). A copy of this document must be on the job site and available during each required inspection.



## GENERAL REQUIREMENTS

1. Habitable rooms (excluding closets, hallways, laundry rooms, storage spaces and bathrooms) shall have a area of not less than 70 square feet and shall not be less than 7 feet in any direction.
2. Hallways shall not be less than 36 inches in width.
3. The basement ceiling shall not be less than 7 feet above the finished floor. Structural members may project a maximum of 6 inches below the required ceiling height provided they are spaced at 4 feet or more.
4. Bathrooms shall be equipped with a fan vented directly to the outside. A fan is not required if a bathroom is equipped with a window with an opening of 1.5 square feet or more.
5. Space under stairs shall be protected with 1/2-inch drywall on the underside or with a non-accessible enclosure clad in ½-drywall.
6. A smoke alarm shall be installed in the basement and in each basement bedroom. New smoke alarms shall be interconnected so that when one is activated all will sound. Smoke alarms must be hardwired with a battery backup. Some alarms must be installed at least 3 feet from doorways to bathrooms with tubs or showers, where possible.
7. A carbon monoxide alarm shall be installed in the basement if a bedroom is being constructed and the house is equipped with gas appliances. The carbon monoxide alarm must be hardwired, plug-in or battery type.
8. All basement stairs shall have a light source to illuminate all treads and landings. Lights shall be operated by a switch located at the top and bottom of the stairway.
9. A minimum of R-13 battened insulation (with the vapor barrier on the warm side of the wall) should be installed for the full height and the length of the basement wall.
10. All plumbing flood level rims located below the next upstream manhole cover must have a backwater valve installed in accordance with the plumbing code. It is the owner's responsibility to verify compliance. Documentation must be provided to the inspector to receive a final inspection indicating whether or not a valve must be installed.

## EMERGENCY ESCAPE AND RESCUE OPENINGS (VRC - SECTION R310)

### Where required

An emergency escape and rescue opening (EERO) in the form of a window or door to the outside is required for all finished basements and in all bedrooms regardless of the house's age. However, openings in the bedroom may serve the entire basement.

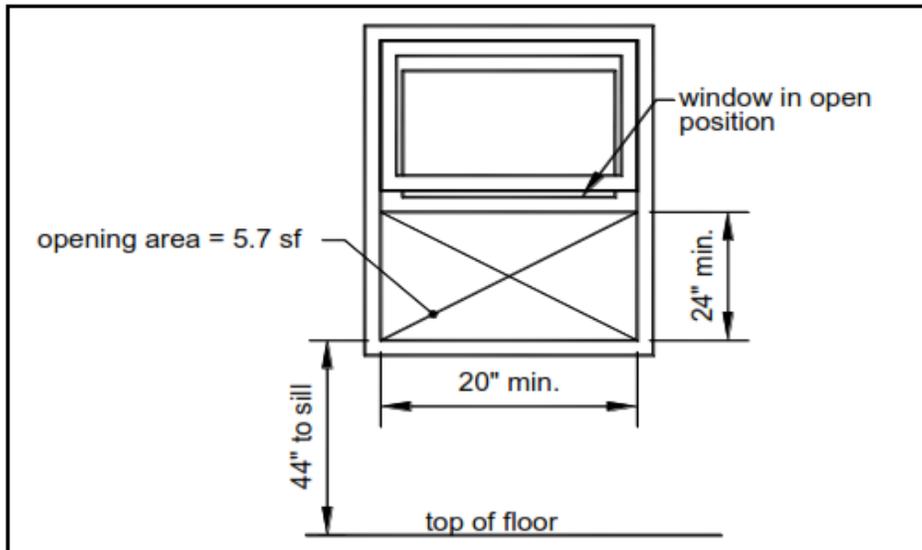
If your basement does not currently have one of the emergency escape and rescue openings below, then you must provide one. **Cutting openings in existing basement walls is outside the scope of these details. Therefore, a plan submission is required for the new openings only.** All other conditions of the finished basement may be taken from these details.

### Emergency Escape and Rescue Options

- Window opening directly to the outside (walk-out basement condition).
- Window opening into a window well or areaway.
- Door directly leads to the outside (walk-out basement condition).
- Door to bulkhead enclosure (Bilco or similar type door).

### Requirements

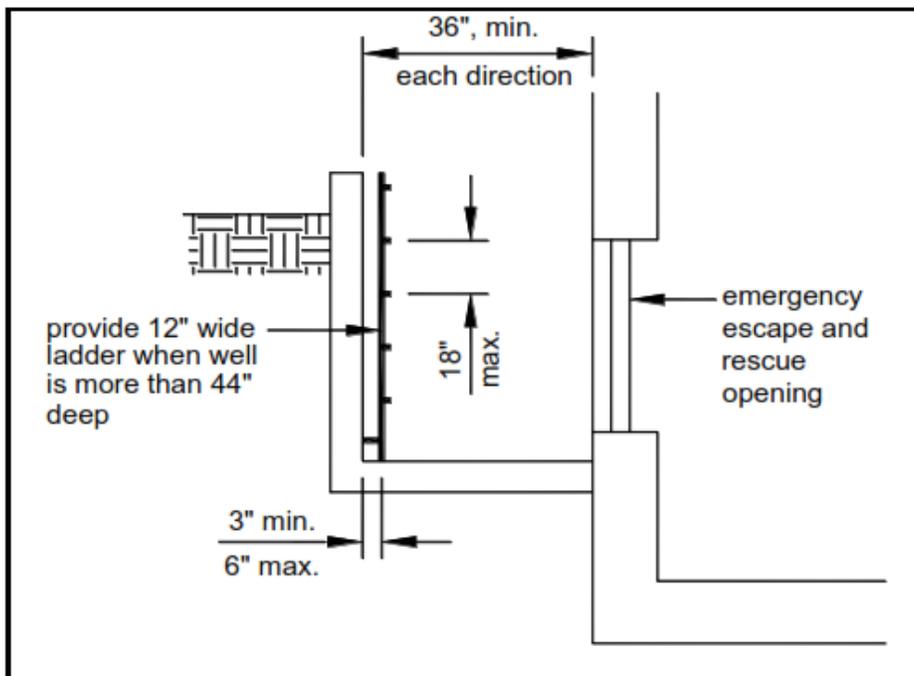
- All doors and windows utilized for emergency escape and rescue must be operable from the inside with the need of a key or tool
- The opening must be a minimum of 5.7 square feet. Windows in a walk out basement wall may have a clear opening of 5 square feet.
- Windows must have a sill of 44 inches or less above the finished floor.
- See FIGURE 1 for more opening requirements.



**FIGURE 1: EMERGENCY ESCAPE AND RESCUE REQUIREMENTS**

### Window Well Requirements

When grade conditions require the sill of the windows to be below the outside grade elevation, then a window well must be constructed. The required horizontal area of a window well is a minimum of 9 square feet which is measured when the window is in the position (this is important when the window is a crank-out type). See FIGURE 2



**FIGURE 2: TYPICAL WINDOW WELL REQUIREMENTS**

Window Well Construction

A plan submission is required for the construction of a new window well. You may use the Shenandoah County Typical Retaining Wall Document for guidance. If you choose to use a prefabricated window well, you must submit the manufacture’s specification during the permit application process.

Ladder Requirements

When a window well is deeper than 44 inches, a permanent, attached ladder or steps must be provided per FIGURE 2. If the ladder projects more than 6 inches into the required area, the size of the window well must be increased to maintain the required area.

**WALL CONSTRUCTION (VRC – SECTION R602)**

Studs

Studs may be utility grade or better. Walls shall have a single pressure treated bottom plate and can have a single or double top plate. Studs shall be placed at 16 inches on center, but may be increased to 24 inches on center when the applied finish material is drywall.

Attachment Requirements

Wall construction shall be fastened in accordance with TABLE 1.

**TABLE 1: FASTENING SCHEDULE**

CONNECTION	NAILING METHOD	FASTENER
Top plate or bottom plate <sup>1</sup> to stud	Toe nail	3-16d box (3½" x 0.135") or 4-8d box (2½" x 0.113")
	or end nail	3-16d box (3½" x 0.135") or 2-16d common (3½" x 0.162")
Bottom plate to floor	Face nail	16d concrete nail (3½" x 0.135") @ 16"o.c.
Header to jack stud (see FIGURE 3)	Toe nail	4-8d (2½" x 0.113") each side of header at each end

<sup>1</sup>Bottom plate fasteners are required to be hot-dipped galvanized.

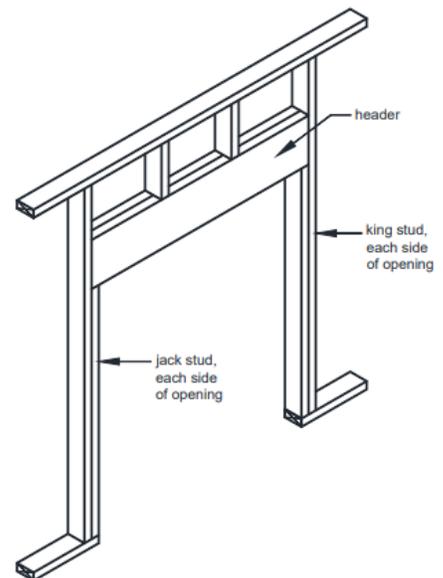
Headers

A single flat 2x4 may be used as a header 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 common (3½" x 0.162") face nails at 16 inches on center, or 16d box (3½" x 0.135") face nails at 12 inches on center, staggered along the top and bottom edges.

**TABLE 2: HEADER SIZE<sup>1</sup>**

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

<sup>1</sup>Non-load bearing walls only.



**FIGURE 3: FRAMING AT HEADERS**

## Fire Blocking

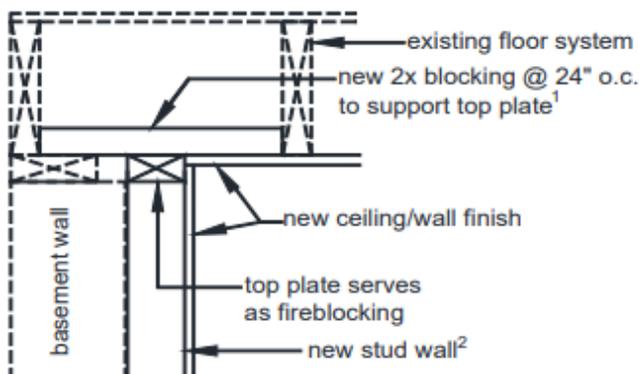
Fire blocking shall be provided to seal of concealed spaces and to form an effective fire barrier between stories. See FIGURE 4 – FIGURE 7. Fire blocking shall be provided in the following locations:

- In concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor level and at 10-foot intervals horizontally.
- At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, bulkheads, drop ceilings, cove ceilings, etc.;
- In concealed spaces between stair stringers at the top and bottom of the run.
- At gaps 1 inch or less and at openings around vents, pipes and ducts at the ceiling and floor level; batts or blankets of mineral wool or fiberglass must be used.

## Fire Blocking Material

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

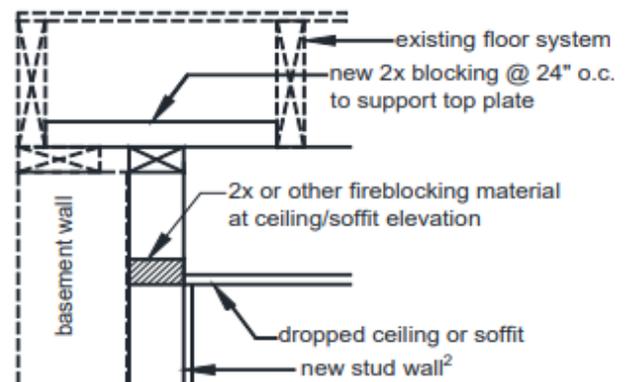
- ½-inch gypsum board
- 2x lumber (2x4, 2x6, etc)
- Two thicknesses of 1x lumber (1x4, 1x6, etc) with staggered joints.
- One thickness of 23/32-inch of plywood or OSB with joints backed a minimum of 6 inches with the same material.
- ¼-inch cement based millboard.
- Batts or blankets of mineral wool or fiberglass.



<sup>1</sup> Attach top plate to underside of joists where floor framing is perpendicular to stud wall.

<sup>2</sup> R-13 insulation should be provided between studs.

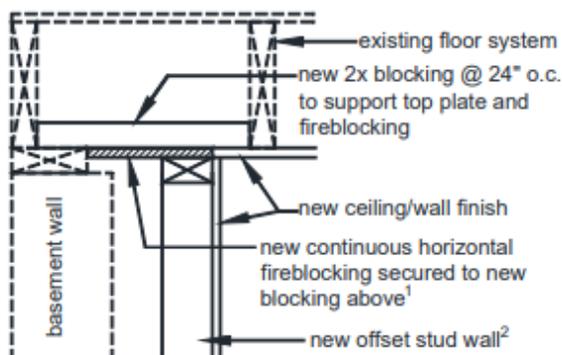
**FIGURE 4: FIREBLOCKING WITH STUD WALL AGAINST BASEMENT WALL**



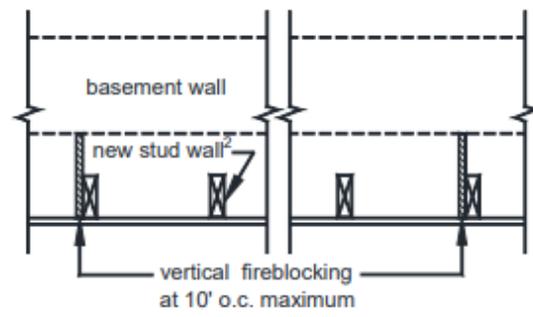
<sup>1</sup> Attach top plate to underside of joists where floor framing is perpendicular to stud wall.

<sup>2</sup> R-13 insulation should be provided between studs.

**FIGURE 5: FIREBLOCKING AT DROP CEILING**



**HORIZONTAL FIREBLOCKING**



**VERTICAL FIREBLOCKING  
(looking down)**

<sup>1</sup> Attach top plate and fireblocking to underside of joists where floor framing is perpendicular to stud wall.

<sup>2</sup> If cavity between basement wall and new stud wall does not contain existing insulation, then R-13 insulation should be installed.

**FIGURE 6: FIREBLOCKING WITH OFFSET STUD WALL**

### Interior Covering

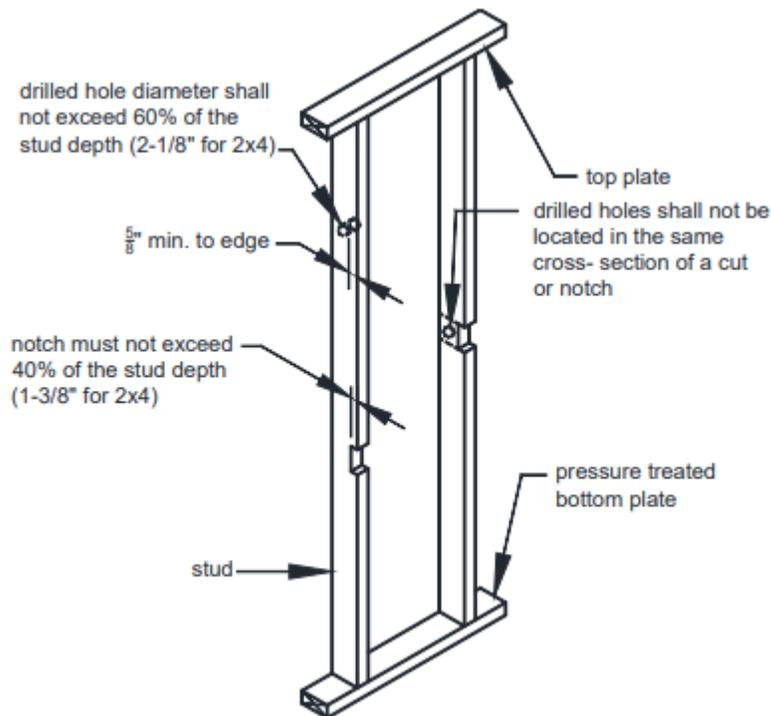
Wall and ceiling material must meet the requirements below.

- 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 trim, molding, handrails and doors.
- 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.
- Wood veneer or hardboard paneling less than ¼-inch shall not be permitted.
- Gypsum board must be ½-inch minimum.

## DRILLING & NOTCHING (VRC – SECTION R502.8 & R602.6 (1))

### Drilling and Notching Studs

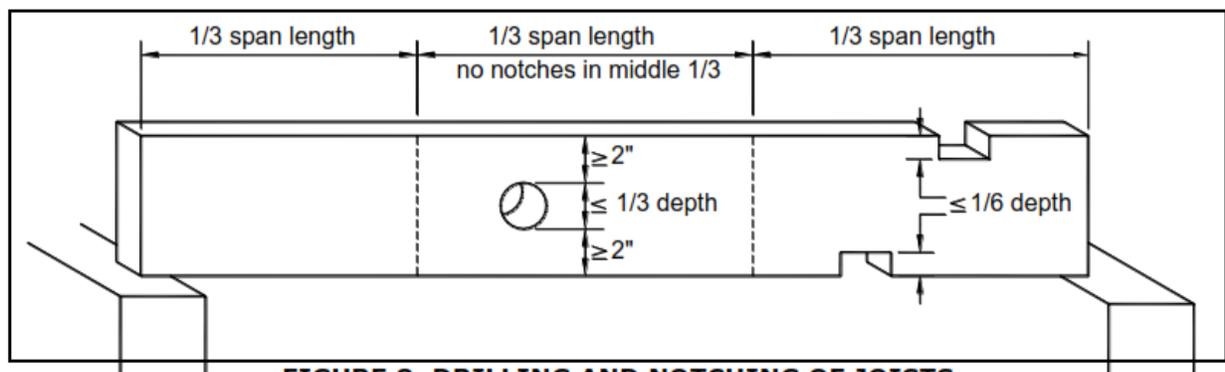
Studs. Studs in interior non-loadbearing walls may be notched or drilled in accordance with FIGURE 7.



**FIGURE 7: DRILLING AND NOTCHING INTERIOR NON-LOADBEARING STUDS**

### drilling and Notching Joists

Drilling and notching dimensional lumber shall be in conformance with FIGURE 8. Cantilevered (overhanging) joists cannot be notched. Drilling and notching of manufactured wood I-joists shall be per manufacturer's instructions.



**FIGURE 8: DRILLING AND NOTCHING OF JOISTS**

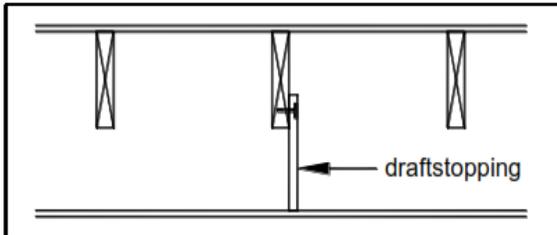
## FLOOR/CEILING DRAFTSTOPPING (VRC – SECTION R302.12)

### Draft-stopping

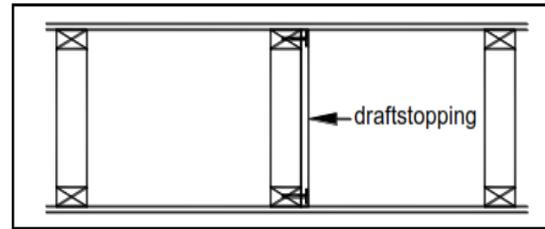
When a ceiling is not directly attached to the underside of the floor joist above or when the floor joists are comprised of open web trusses, draft-stopping be provided. Install draft-stopping to create a equal-sized concealed areas not exceeding 1000 square feet. Draft-stopping shall be installed parallel to the floor framing members. See FIGURE 9 and FIGURE 10.

### Draft-stopping Material

Draft-stopping material shall consist of ½-inch gypsum board, 3/8-inch wood plywood/OSB or 3/8-inch particle board, Type 2-M-W.



**FIGURE 9: DRAFTSTOPPING AT DROP CEILING**



**FIGURE 10: DRAFTINGSTOPPING AT OPEN WEB TRUSSES**

## MECHANICAL (VRC – CHAPTER 13)

### Appliance access

Furnaces, water heaters and other appliances must be accessible without removing permanent construction and shall meet the following minimum criteria.

- 30 inches x 30 inches clear floor space at front/control side.
- Doors to furnace rooms shall be 24 inches minimum and be of sufficient size to remove the largest appliance.

### Combustion Air

Furnace rooms with fuel-burning appliances must be provided with two permanent openings to adjacent spaces: one within 12 inches of the top and one within 12 inches from the bottom of the adjoining wall. Each opening must have a minimum free area equal to 1 square inch per 1,000 Btu per hour input rating of all appliances in the furnace room, but not less than 100 square inches. The openings are not required if a louvered door is provided or the furnace room area is greater than 50 cubic feet per 1,000 Btu per hour input rating of all appliances installed in the room.

## PLUMBING (VRC – CHAPTER 26)

### Showers

Showers and shower compartments must meet the following requirements.

- Shower compartments must have a minimum total area of 900 square inches and a minimum dimension of 30 inches in any direction.
- Shower compartments may have a minimum dimension of 25 inches provided it maintains a cross section area of 1,300 square inches.
- Hinged shower doors must open outward.
- All glass which encloses a shower must be safety glazed.
- Shower control valves must be scald resistant (in accordance with ASSE/ANSI 1016) with a hot water limit of 120 degree F.

### Drain Size

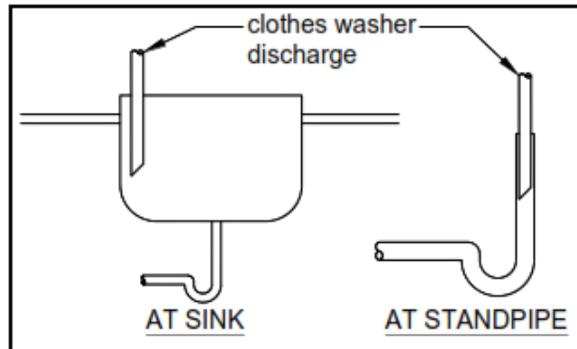
Fixture drain size must meet the dimension below and must be equipped with a strainer and stopper.

**TABLE 4: MINIMUM DRAIN SIZE**

Fixture	Diameter, inches
Bathroom sink	1 1/4
Bathtubs	1 1/2
Sinks (other than bathroom)	1 1/2
Laundry tubs	1 1/2
Shower	1 1/2

### Clothes Washer Discharge

The discharge of a clothes washer must be through and air break as shown in FIGURE 11.



**FIGURE 11: AIRBREAK AT CLOTHES WASHER DISCHARGE**

## FIXTURE CLEARANCES (VRC – SECTION R307.1 & P2705.1)

### Fixture Clearances

Toilets, sinks and showers shall have the minimum clearances listed below.

- 21 inches in front of sinks and toilets.
- 24 inches in front of shower stall opening.
- 4 inches between two adjacent sinks.
- 4 inches between a sink and a toilet.
- 4 inches between a sink and a wall.
- 2 inches between a sink and a bathtub.
- 15 inches clearance from a toilet centerline to an adjacent fixture or wall on each side.

## ELECTRICAL (VRC – CHAPTER 34)

### Panel board (Circuit Breaker Box)

Panel boards must meet the requirements listed below.

- A workspace 30 inches wide and 36 inches deep from floor to the ceiling with a minimum height of 6.5 feet shall be provided in front of the panel boards.
- Panel board workspace must not be used for storage at any time.

- Panel boards must not be located in clothes closets or bathrooms.
- Provide a light for the panel board workspace.
- Pipes or ducts cannot be located above the panel board.

Branch Circuits

Branch circuits must meet the requirements listed below. See TABLE 5 for more information.

- Use a 15- to 20- ampere rated branch circuit for general use purposes such as lighting and outlets.
- One “plugged-in” electrical device shall not exceed 80 percent of the circuit rating.
- Hardwired appliances or equipment may be included in a general use circuit provided its rating does not exceed 50 percent of the circuit rating.
- A dedicated 20- ampere minimum branch circuit must be provided to serve laundry room outlets only.
- A dedicated 20- ampere branch circuit must be provided to serve the bathroom receptacles.
- Branch circuits which serve bedroom outlets must have circuit breakers equipped as combination arc-fault/over current circuit interrupters.

**TABLE 5: BRANCH CIRCUIT REQUIREMENTS**

<b>Circuit Rating</b>	<b>15 amp</b>	<b>20 amp</b>	<b>30 amp</b>
<b>Circuit Element</b>			
Minimum conductor size	14	12	10
Maximum breaker size	15	20	30
Outlets rating	15	15 or 20	30
Maximum load	15	20	30

Lighting Requirements

Lights must meet the requirements listed below.

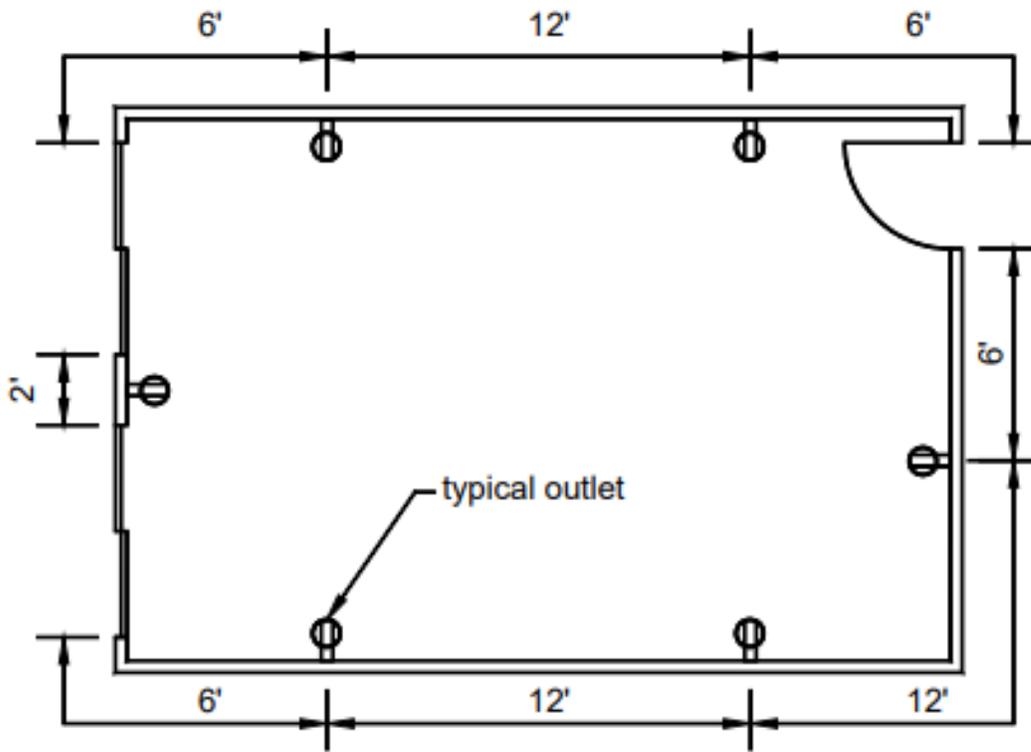
- At least one switched light shall be provided in each room and hallway. A switched outlet may be substituted in all rooms except bathrooms and hallways. A switched outlet cannot count as a required outlet.
- At least one switched or pull chain light must be provided in each storage area and at or near heating and air conditioning appliances and equipment.
- Lighting fixtures must not be installed within 3 feet horizontally and 8 feet vertically of a bathtub rim or shower stall threshold. A light fixture may be installed above a shower area if it is constructed so that water cannot enter or accumulate in wiring areas and the lighting fixture is marked “suitable for wet locations”.

Outlets

Outlets. Outlets must meet the requirements listed below.

- Outlets shall be tamper resistant.
- Outlets shall be placed in accordance with FIGURE 12.
- The minimum wall length which requires an outlet is 2 feet.
- Kneewalls, built-in bars and other fixed room dividers must be included for outlet spacing.
- Hallways more than 10 feet long must have a minimum of one outlet.
- Outlets installed for specific appliances must be within 6 feet of the appliance location.

- Bathrooms must have at least one outlet located on a wall adjacent to each basin and within 36 inches of the bathroom sink. All bathroom outlets must have ground fault circuit interrupter (GFCI) protection.
- At least one outlet must be provided to serve laundry appliances and sinks.
- Each unfinished portion of the basement is required to have at least one outlet that is GFCI protected.
- An outlet must be provided within 25 feet of heating and air conditioning appliances and equipment.



**FIGURE 12: TYPICAL OUTLET DISTRIBUTION**

Light Fixture in Closets

Fixtures install in clothes closets shall be limited to surface mounted or recessed incandescent fixtures with completely enclosed lamps and surface mounted or recessed fluorescent fixtures. See TABLE 6 for clearance requirements.

**TABLE 6: CLOSET LIGHT FIXTURE CLEARANCES** (note 1)

Fixture Type	Fluorescent Bulb note 2	LED Bulb note 2
Surface mounted	6"	12"
Recessed	6"	6"

note 1: Incandescent bulbs are prohibited

note 2: Fluorescent and LED bulbs are permitted in storage areas when indentified for this use.