

*Roanoke County, Virginia*

# Typical Carport Enclosure Details

Based on the 2021 Virginia Residential Code

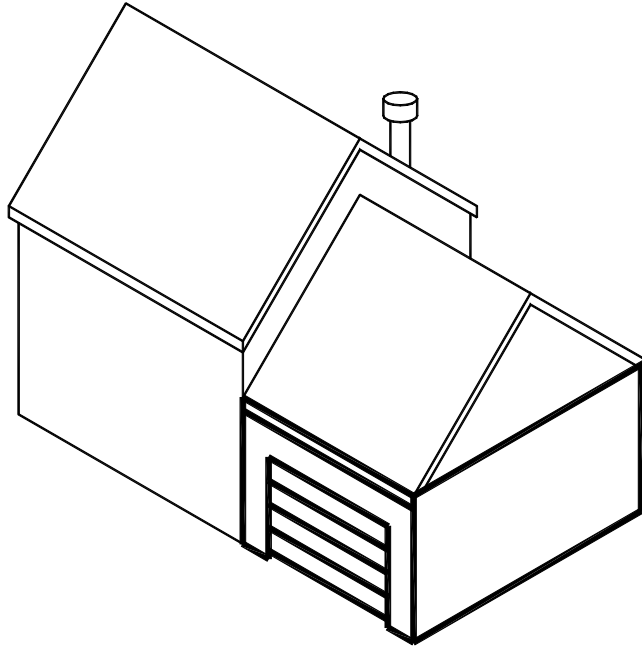


Carports enclosed into one-story garages or living spaces must be constructed in conformance with these details. For requirements, details and information not contained herein, you must consult the Virginia Residential Code. Code books may be viewed [online](https://www.iccsafe.org) or purchased from the International Code Council at [iccsafe.org](https://www.iccsafe.org). A copy of this document is required to be on the job site and available to the inspector during each inspection.



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Roanoke County is committed to a policy of nondiscrimination in all county programs, services and activities. To request this information in an alternative format call **540-772-2065, Ext 1** or write the Building Permit Center at 5204 Bernard Drive, Roanoke, VA 24015. Please allow seven working days for preparation of material.

# 1 - GENERAL NOTES

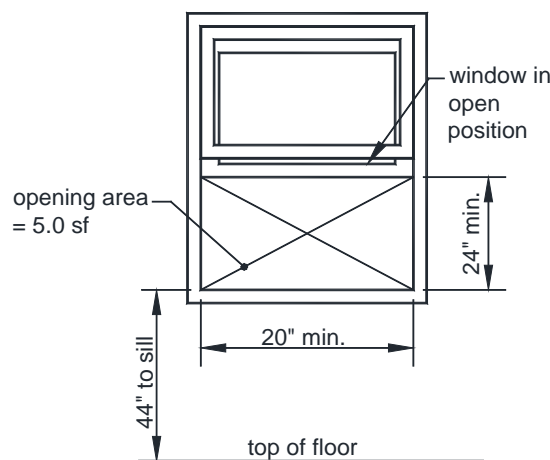
1. Living spaces shall have an area of not less than 70 square feet and shall not be less than 7 feet in any direction.
2. Ceiling height shall not be less than 7 feet above the finished floor. Beams and girders spaced apart not less than 36 inches (914 mm) in clear finished width shall project not more than 6 feet 6 inches from the finished floor.
3. A smoke alarm shall be installed in a new bedroom and within the vicinity of the 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 (if adding a bedroom and the house is equipped with a gas-fired appliance, a carbon monoxide alarm is required to be installed in the vicinity of the bedroom).
4. Doors between an attached garage and adjacent living areas must be a 1⅜-inch solid wood or steel core door or a 20-minute fire-rated door.
5. Walls between attached garage and adjacent living space shall have not less than ½ inch gypsum board or equivalent applied to the garage side. Window openings and combustible siding such as vinyl are not permitted.
6. Living spaces must be capable of maintaining a room temperature of not less than 68°F at a point 3 feet above the floor and 2 feet from the exterior.

## 2 - EMERGENCY ESCAPE AND RESCUE

**Where required.** An emergency escape and rescue opening in the form of a window or door to the outside is required for a new bedroom.

**Opening requirements.** The emergency escape and rescue opening shall meet the requirements below.

- See FIGURE 1 for typical window opening requirements.
- All doors and windows must be operable from the inside without the need of a key, tool, or special knowledge.
- The opening must be a minimum of 5.0 square feet.
- Windows must have the bottom of the clear opening not greater than 44 inches above the floor.



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

# 3 • FOUNDATION AND FLOOR

## FOUNDATION REQUIREMENTS

All exterior walls enclosing a carport must be supported on continuous concrete footings 24 inches deep. See FIGURES 2 through 4. See FIGURE 6 and Page 4 or FIGURE 10 on page 7 for slab insulation requirements when enclosing a carport into a living space. Please note that all existing footings must be exposed for inspection and verified by the inspector.

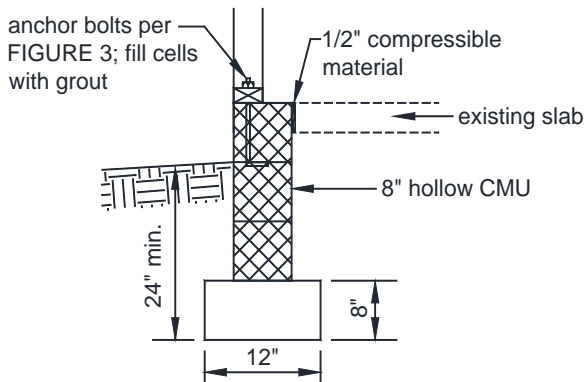


FIGURE 2: CMU FOUNDATION OPTION

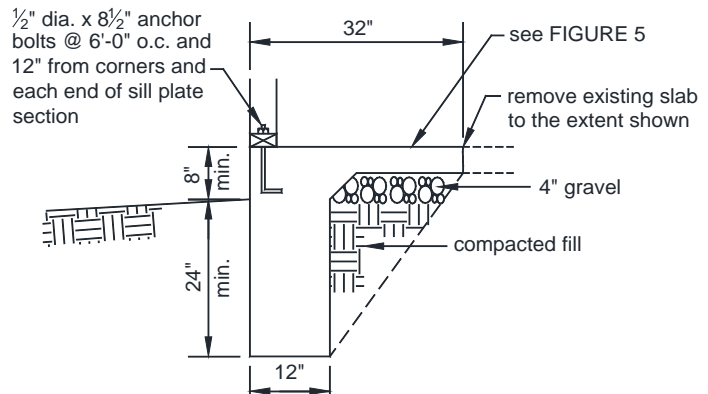


FIGURE 3: TYPICAL FOOTING/SLAB DETAIL

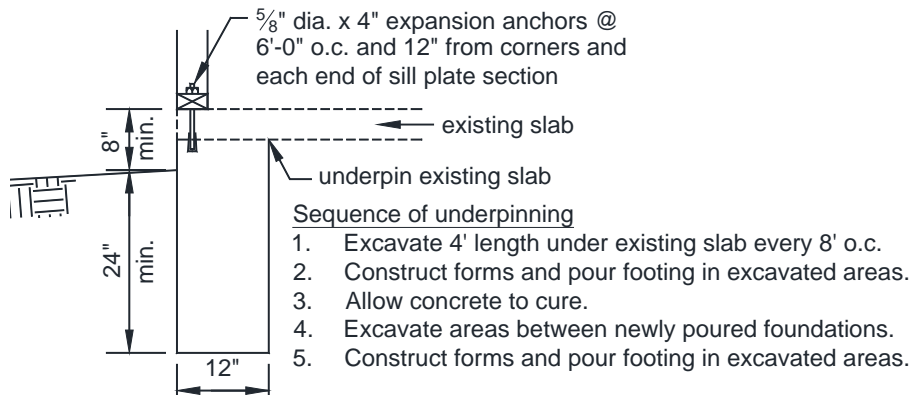


FIGURE 4: TYPICAL UNDERPINNING DETAIL

## FLOORS

When converting a carport to a garage, the floor must slope towards the garage door. All new slabs associated with a carport enclosure must have a concrete compressive strength of 3,500 pounds per square inch. See FIGURE 5 for more information. Built-up floors must meet the requirements shown in FIGURE 6. Apply a waterproofing sealant to the top surface of all slabs in a carport converted to a living space.

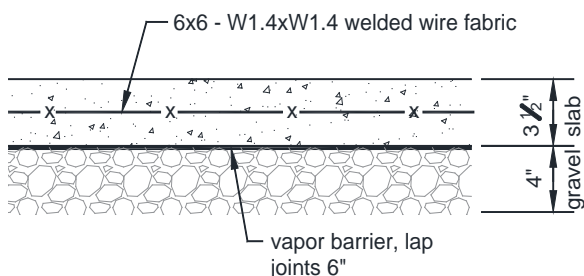


FIGURE 5: TYPICAL NEW SLAB-ON-GRADE

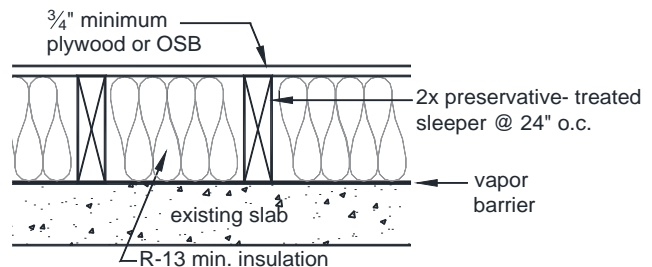


FIGURE 6: TYPICAL BUILT-UP FLOOR

# 4 ■ WALL CONSTRUCTION

## STUDS

Studs may be utility grade or better, spaced at 16 inches on center (a 24-inch spacing is permitted for gypsum board finishes) and fastened per TABLE 1. Walls shall have a single pressure treated bottom plate and a double top plate. Studs in non-load bearing walls may be notched or drilled in accordance with FIGURE 8.

**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 9)	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

Headers shall be framed per FIGURE 9 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.

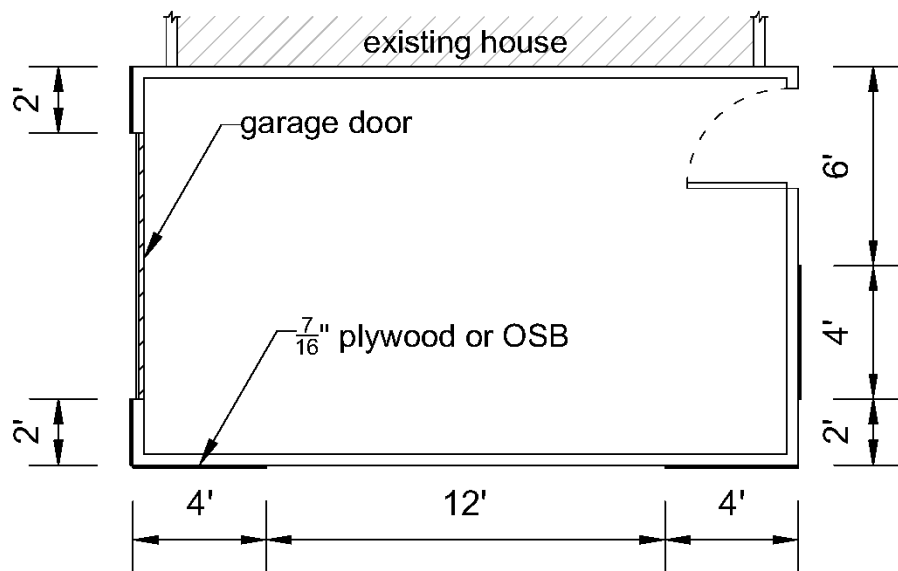
## FINISHES AND SHEATHING

**Interior finishes.** Wall and ceiling finish materials must meet the requirements listed below.

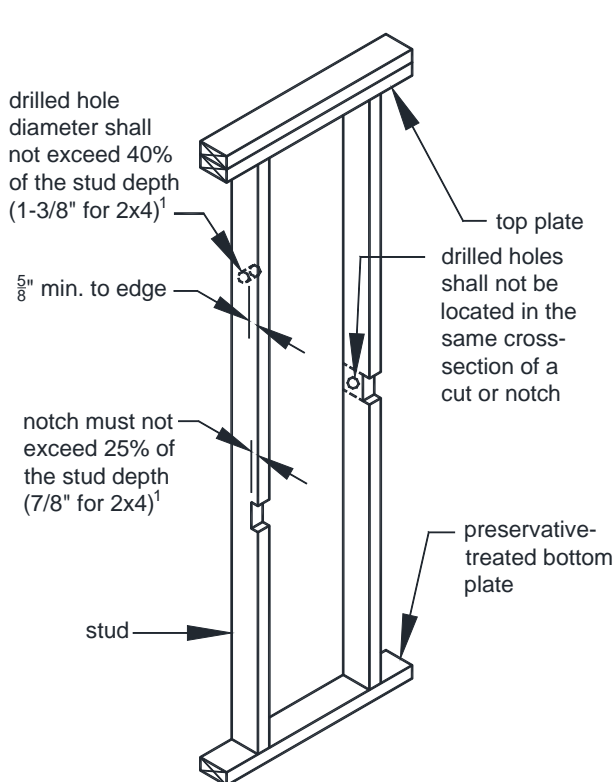
- Materials must have a flame spread classification no greater than 200 and a smoke density classification no greater than 450. This does not apply to trim, molding, handrails and doors.
- Wood veneer or hardboard paneling less than ¼-inch shall not be permitted.
- Gypsum board shall be ½-inch minimum.
- In garages, gypsum board must be applied to the walls adjacent to living areas.



**Exterior sheathing.** Exterior wall sheathing shall be installed with no openings in the locations detailed in FIGURE 7. Exterior walls must be sheathed with  $\frac{7}{16}$ -inch plywood or OSB. Each corner must have 4 feet of solid sheathed panels with no openings for windows or doors. This panel may be offset from the corner a maximum of 10 feet if a door or window is desired near the corners. A single 4-foot panel may serve both corners of a wall as long as the wall is less than 16 feet long. If enclosing a carport into a garage, each side of a garage door must have a minimum 2-foot solid sheathed panel.

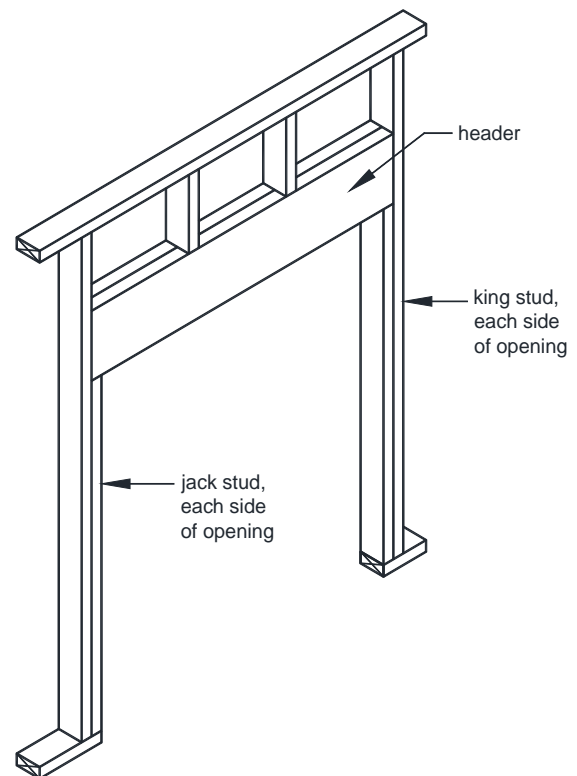


**FIGURE 7: EXTERIOR SHEATHING**



**FIGURE 8: DRILLING AND NOTCHING STUDS**

<sup>1</sup>Interior non-loadbearing studs can have notches up to 40% of the stud depth (1 $\frac{3}{8}$ " for 2x4) and drilled holes up to 60% of the stud depth (2 $\frac{1}{8}$ " for 2x4)



**FIGURE 9: FRAMING AT HEADER**

## 5 • ENERGY COMPLIANCE

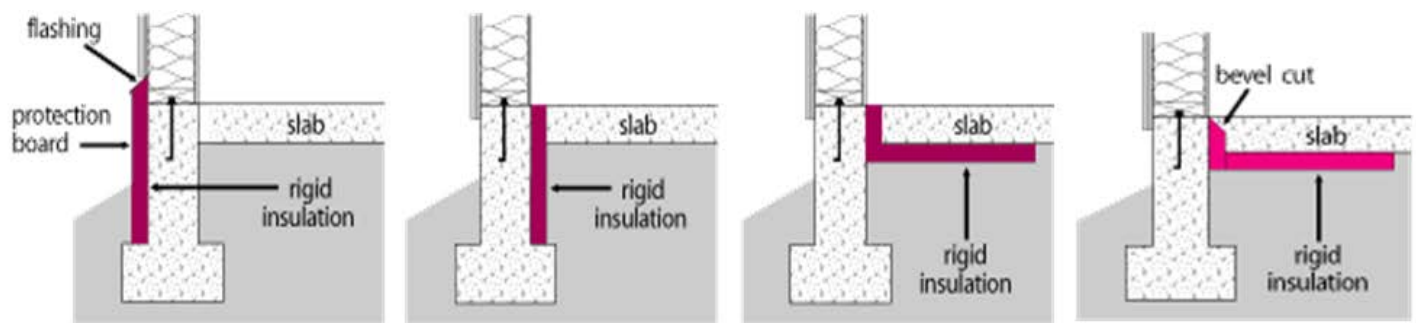
Carports converted to living space must meet the insulation and fenestration requirements shown in TABLE 3.

**TABLE 3: R-VALUES, U-FACTOR AND SOLAR HEAT GAIN COEFFICIENT (SHGC) REQUIREMENTS**

LOCATION	R-VALUE	U-FACTOR	SHGC
Window/door	-	0.30	0.40 (window only)
Skylight	-	0.55	0.40
Ceiling	60	-	-
Wall	15 <sup>2</sup>	-	-
Built-up floor	13	-	-
Slab-on-grade <sup>1</sup>	10	-	-

<sup>1</sup> Insulation must be provided to protect the slab-on-grade from heat loss; see FIGURE .

<sup>2</sup> R-13 wall insulation between the studs plus R-1 continuous insulation on the exterior of the wall may be used in lieu of R-15 wall insulation between the studs.



**FIGURE 10: SLAB-ON-GRADE INSULATION REQUIREMENTS**

(Insulation must extend from the slab edge to a total length of 48 inches vertically and/or horizontally.)

## 6 • PLUMBING

**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 they maintain a cross-section area of 1,300 square inches.
- Hinged shower doors must open outward.
- All glass enclosing a shower must be safety glazed.
- Shower control valves must be scald resistant (in accordance with ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1) with a hot water limit of 120 degrees F.

**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 the 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's centerline to an adjacent fixture or wall on each side.

**Drain Size:** Fixture drain size must be sized per TABLE 4 and must be equipped with a strainer and stopper.

**TABLE 4: MINIMUM DRAIN SIZE**

FIXTURE	DIAMETER, INCHES
Bathroom sink	1¼
Bathtubs	1½
Sinks (other than bathroom)	1½
Laundry tubs	1½
Shower	1½

## 7 ■ ELECTRICAL

**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.
- Not less than one 20-ampere rated branch circuit is required to serve a laundry area.
- One “plugged-in” electrical device shall not exceed 80% of the circuit rating.
- Hardwired appliances or equipment may be included in a general use circuit provided its rating does not exceed 50% of the circuit rating.
- Not less than one ground-fault protected receptacle outlet not more than 5 feet 6 inches off the ground is required in each vehicle bay of a garage.
- Branch circuits which serve kitchens, family rooms, dining rooms, living rooms, dens, sunrooms, bedrooms or similar rooms or areas must have circuit breakers equipped as combination arc-fault/over current circuit interrupters.

**TABLE 5: BRANCH CIRCUIT REQUIREMENTS**

CIRCUIT ELEMENT	CIRCUIT RATING		
	15 amp	20 amp	30 amp
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, except in bathrooms and hallways. A switched outlet cannot count towards a required outlet.
- At least one switched or pull chain light must be provided in each walk-in closet. Fixtures installed in clothes closets shall be limited to surface or recess mounted, incandescent or LED fixtures with completely enclosed lamps, surface mounted or recessed fluorescent fixtures, and surface mounted fluorescent or LED fixtures specifically listed for closet use. See
- TABLE 6 for clearance requirements.



**TABLE 6: CLOSET LIGHT FIXTURE CLEARANCES TO STORAGE AREA<sup>1,2</sup>**

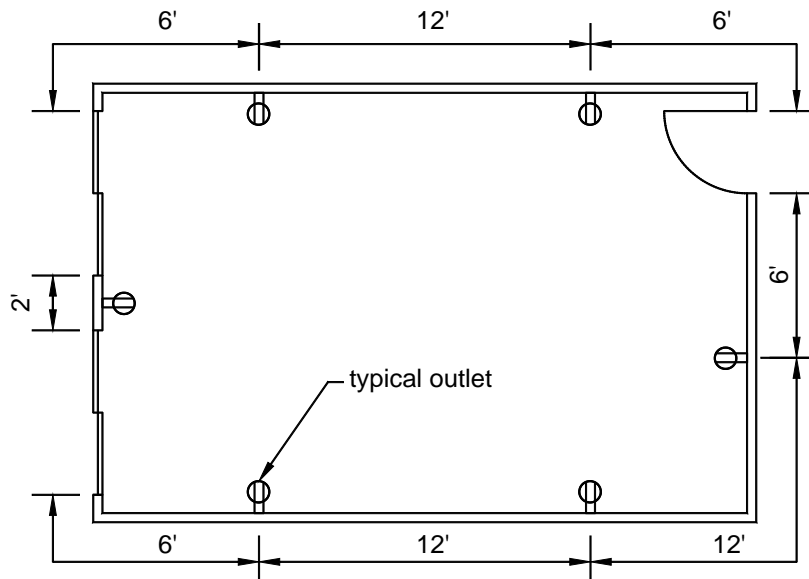
FIXTURE TYPE	LOCATION	FLUORESCENT BULB, INCHES	INCANDESCENT AND LED BULB, INCHES
Surface mounted	Wall above door or ceiling	6	12
Recessed	Any wall or ceiling	6	6

<sup>1</sup> Surface mounted fluorescent and LED bulbs are permitted in storage areas when identified and listed for this use.

<sup>2</sup> Exposed, or partially exposed, incandescent bulbs are prohibited.

**Receptacles.** Receptacles must meet the requirements listed below.

- All receptacles installed in garages must be provided with ground-fault circuit-interrupter (GFCI) protection.
- Receptacles shall be tamper resistant.
- Receptacles shall be placed in accordance with FIGURE 11.
- The minimum wall length which requires a receptacle is 2 feet (excludes garages).
- Kneewalls, built-in bars and other fixed room dividers must be included for receptacle spacing.
- Hallways more than 10 feet long must have a minimum of one receptacle.
- Bathrooms must have at least one receptacle located on a wall adjacent to each basin and within 36 inches horizontally and not less than 12" below the top of the bathroom sink.
- Receptacles shall not be installed within a zone measured 3 feet horizontally and 8 feet vertically from the top of the bathtub rim or shower stall threshold.
- At least one receptacle must be provided to serve laundry appliances and sinks.



**FIGURE 11: TYPICAL OUTLET DISTRIBUTION**