City of Gillette

Guide for Residential Construction

Building Inspection Division

Office (307) 686-5260
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City of Gillette
Building Inspection Division
Guideline to 2018 IRC Residential Construction

This booklet is provided to help answer questions you may have regarding building codes within the City of Gillette. It is **not** intended to answer all questions that may arise on any given project within the community, but to serve as a general guideline. Feel free to contact the Building Inspection Division at (307) 686-5260 if you have any questions.

Licensing: If you hire a contractor for your project, you need to make sure they are licensed with the City of Gillette.

Permits: Permits are required for electrical, plumbing, heating and air conditioning work and to build, alter, repair, move, or demolish any building. Earthwork grading, driveway approaches, decks, patios, and accessory buildings also require permits. Fences and retaining walls always require a zoning permit. When fences are over 7' and retaining walls are over 4', including footing, they also require a building permit.

BUILDING SQUARE FOOTAGE	PERMIT FEES
0 – 500	$30
500 – 1,000	$60
1,000 – 2,000	$100
2,000 – 5,000	$150
Over 5,000	$150 + $.04 per square foot

TYPE OF SPECIFIC CONSTRUCTION	PERMIT FEES
Miscellaneous Residential (includes remodels, damage or repair)	$20
Storage Building/Garage	Fee is calculated according to the Building Square Footage Table listed above
Deck	$20
Fences Over 6'	$10
Retaining Walls (over 4' requires Engineer drawings)	$20
Grading (includes Plan Review and Permit Fee)	$60
Building Demolition	$60
Residential Reroof	$10

PLUMBING	PERMIT FEES
Minimum permit fee	$10
Each plumbing fixture, trap or set of fixtures on one trap (including water, drainage piping, and backflow protection)	$2
Each water heater	$10
Installation, alteration or repair of water line	$10
Each lawn sprinkler system and associated backflow protection devices	$5
Water softeners or treatment systems	$10
Plumbing repair (any type)	$10
Sewer line installation and/or repair	$10
Residential plumbing (new single family construction) – Interior	$30
Demolition of building – cap off plumbing at street	$10
Residential plumbing – basement finish	$10

MECHANICAL	PERMIT FEES
Residential – New HVAC (Includes up to 2 heating units, A/C unit, vents, ducts, bath fans, dryer vents)	$30
Each additional unit	$15
Residential – Replacement HVAC Installation of a furnace, woodstove or heating unit	$15 per unit
Installation of an air conditioning or cooling unit	$15 per unit
Installation of a boiler unit	$15 per unit
Miscellaneous	$15 per unit

GAS	PERMIT FEES
Gas piping system of one (1) to four (4) outlets	$10
Gas piping system of five (5) or more outlets	$15

ELECTRICAL

The fee for an electrical permit shall be computed in accordance with the following schedule. Fees are payable at the time of the electrical permit issuance. The minimum fee for the issuance of an electrical permit is $10.

Electrical repair, temporary construction electrical service, MH and RV hook-up (not on a privately owned lot), services, change in services, basement finish,

additions, alterations, or repairs, on either primary or secondary services, are computed separately.

	PERMIT FEES
0 – 60 amp capacity	$10
61 – 100 amp capacity	$12
101 – 200 amp capacity	$13
Each additional 100 amp capacity or fraction	$4
Each sub-panel	$5

The maximum fee for single family residences on a privately owned lot, as outlined by the International Residential Code, including EMHs, townhouses, and patio houses is:

	PERMIT FEES
0 – 100 amp capacity	$40
101 – 200 amp capacity	$50

In addition to the permit fees, there is also a Capital Contribution Fee for new or upgrading services.

	PERMIT FEES
100 Amp (or upgrade from 100 to 200 amp)	$175
200 Amp	$350
400 Amp	$700
600 Amp	$1,050

REQUIRED INSPECTIONS

The following are required inspections and the order in which they need to be completed for new construction, alterations and additions. This list does not include any special inspections that may be required. All inspections may not apply to every project.

Open Hole Letter	Open Hole Letter shall be sent to Building Inspection before footing inspection.
Footing	For all new construction and residential additions, written verification from the soils engineer indicating the type of footing/foundation required shall be in place, all rebar shall be tied in place before any concrete is poured.
Foundation Wall	After all forms are in place, all vertical and horizontal rebar is tied and in place and before concrete is poured.
Damp-Proofing	Before backfill is placed around foundation or crawl space walls.
Drain Tile	Before backfill is placed around foundation or crawl space walls
Underground Plumbing	After all underground plumbing (waste, vent and water) has been installed and under test before dirt and concrete are placed.
Interior Footings	After forms and rebar are in place.
Sill Plate	When sill plate and sill seal are bolted in place and before floor system is put in place.

Note: A Foundation Location Certificate prepared and signed by a licensed Wyoming surveyor must be submitted to the Building Division before any further inspections are completed.

The following shall be inspected and approved prior to the installation of insulation or sheetrock.

Rough Plumbing	After all waste, vent and water piping is installed and under test.
Rough Electric	After all wiring and boxes are installed.
Rough Mechanical	After all venting and duct work is installed.
Gas	After gas piping is installed, supported and under air test. **Details on page 29.**
Exterior Vapor Barrier/ Building Wrap	Usually done at the same time as window and door flashing and can be done before framing.
Windows & Doors Flashing/Seal	Usually done at the same time as exterior vapor barrier/building wrap and can be done before framing.
Rough Framing	After the rough electrical, plumbing, mechanical and gas inspections are completed, approved and after the roofing, all framing, and fire blocking are complete, all interior penetrations are caulked or foamed, and the structure is weather tight.
Insulation	After framing but before drywall on walls. Sprayed ceiling insulation will be done at final.
Sewer and Water	After the sewer and water lines have been installed and before backfill.
Certificate of Occupancy	Prior to moving furnishings into the building.
Tap Fees	Tap fees must be paid when permit is issued.
Temporary Electric Service	After the temporary post and meter base, with an approved means of grounding, has been installed by a licensed electrical contractor or the owner.

INSPECTION REQUESTS

Please call (307) 686-5256 and leave a message on the Inspection Line. You will need to have your permit application number or address and the type of inspection you are scheduling. Please include your name and telephone number for the inspector. **To receive an inspection in the same day, you need to call before 7:00 a.m.** Field inspectors are generally in the office between 8:00 – 9:00 a.m. and 1:00 – 2:00 p.m. if you need to contact them. When a specific time is requested, it will be noted on the request, however all times are approximate. While the Building Inspection Division will attempt to make the inspection at the requested time, conditions in the field may not make this possible all of the time. We would request your understanding and patience if this occurs on your project.

Plans: Plans are required for all dwellings and additions. A set of plans includes a plot plan, foundation plan, floor and roof plans, elevations, and construction section details. The plans should indicate what the scope of work includes. Plans need to be drawn to scale and specify all dimensions, size and spacing of building materials along with any other information that is required to show how the structure will be constructed. All grading requires plans or approval and shall not affect the overlot grading for the subdivision or adjacent lots. More detailed requirements for a set of plans can be obtained from the City Building Inspection Division. **See Residential Plan Checklist on page 37.** Relocated buildings shall meet all requirements for a new building.

Plot Plans/Location on property: A plot plan is required for all new buildings, additions, detached buildings, decks, patios, fences and retaining walls. A plot plan is a drawing that shows the shape and size (dimensions) of the property. It also shows the location of all new and existing buildings and their distance from the property lines and each other. **NOTE**: For new buildings, a survey plot plan prepared by a Wyoming licensed surveyor is required. **See page 38.**

Setback Zoning: Setbacks from property lines vary throughout the City, due to the different land-use zoning areas. To obtain specific setback requirements, please contact the City Planning Division at 686-5281. Please be aware the setbacks from the property line are often different between those required by the Zoning Ordinance and the Building Code. The Building Code setbacks are for completely different reasons than the Zoning Code setbacks.

Parking and Garages: A minimum of two 9 foot x 18 foot paved (not including easement), off-street parking spaces shall be provided for each dwelling unit. The parking spaces shall have a paved access to them. Detached garages shall have a paved access from the street or alley to the structure.

Geo-Technical Evaluations: A geo-technical evaluation and soils report for the foundation system prepared, sealed and signed by a Wyoming Licensed Engineer shall be provided for all new construction.

Foundation Drain Tile: Drains shall be provided around all concrete or masonry foundations that retain earth and enclose interior spaces located below grade. Drainage tiles, gravel or crushed stone drains, perforated pipe or other approved systems or materials shall be installed at or below the area to be protected and shall discharge by gravity or mechanical means into an approved drainage system. Gravel or crushed stone drains shall extend at least 1 foot beyond the outside

edge of the footing, 6 inches above the top of the footing, and be covered with an approved filter membrane material.

Window Wells: Window wells shall be designed for proper drainage by connecting to the building's foundation drainage system required by Section R405.1 or by an approved alternative method.

Foundations/Footings: Shall be designed, signed and sealed by an Engineer with a Wyoming Stamp

Garages: Garage floors shall be of concrete or asphalt. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches thick, or 20-minute fire-rated doors.

- **From the residence and attics** - Not less than 1/2-inch gypsum board or equivalent applied to the garage side.
- **From all habitable rooms above the garage -** Not less than 5/8-inch type X gypsum board or equivalent applied to garage ceiling.
- **Garages located less than 3 feet from a dwelling unit on the same lot -** Not less than 1/2-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area.

Room Sizes: Habitable rooms shall have not less than 70 square feet of gross floor area with the exception of kitchens. Habitable rooms shall not be less than 7 feet in any horizontal dimension, with the exception of kitchens.

Ceiling Height: Portions of a room with a sloping ceiling measuring less than 5 feet, or a furred ceiling measuring less than 7 feet from the finished floor to the finished ceiling, shall not be considered as contributing to the minimum required habitable area for that room.

Windows: All habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural ventilation shall be through windows, doors, louvers or other approved openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily

controllable by the building occupants. The minimum openable area to the outdoors shall be 4 percent of the floor area being ventilated.

Exceptions: The glazed areas need not be openable where the opening is not required when an approved mechanical ventilation system capable of producing .35 air change per hour in the room is installed or a whole-house mechanical ventilation system is installed capable of supplying outdoor ventilation air of 15 cubic feet per minute (cfm) (78 L/s) per occupant computed on the basis of two occupants for the first bedroom and one occupant for each additional bedroom.

The glazed areas need not be installed in rooms where Exception 1 above is satisfied and artificial light is provided capable of producing an average illumination of 6 foot-candles (65 lux) over the area of the room at a height of 30 inches above the floor level.

Basement Framing Detail: With floating wall and fire blocking details – **See page 36.**

Egress Windows: Basements, habitable attics and every sleeping room shall have at least one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Where emergency escape and rescue openings are provided, they shall have a sill height of not more than 44 inches above the floor. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well and the following will apply. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet. To calculate square footage, take height in inches, multiplied by width in inches of opened window and divide by 144. **See page 36.**

Exception: Basements used only to house mechanical equipment and not exceeding total floor area of 200 square feet.

Window Wells: The minimum horizontal area of the window well shall be 9 square feet, with a minimum horizontal projection and width of 36 inches. The area of the window well shall allow the emergency escape and rescue opening to be fully opened. **Detail on page 36.**

Exception: The ladder or steps required shall be permitted to encroach a maximum of 6 inches into the required dimensions of the window well. Window wells with a vertical depth greater than 44 inches shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or rungs shall have an inside width of at least 12 inches, shall project at least 3 inches from the wall and shall be spaced not more than 18 inches on center vertically for the full height of the window well.

Attic Access: Buildings with combustible ceiling or roof construction shall have an attic access opening to attic areas that exceed 30 square feet and have a vertical height of 30 inches or greater. The vertical height shall be measured from the top of the ceiling framing members to the underside of the roof framing members. The rough-framed opening shall not be less than 22 inches by 30 inches and shall be located in a hallway or other readily accessible location. When located in a wall, the opening shall be a minimum of 22 inches wide by 30 inches high. When the access is located in a ceiling, minimum unobstructed headroom in the attic space shall be 30 inches at some point above the access measured vertically from the bottom of ceiling framing members. Attics and crawl spaces containing appliances shall be provided with an opening and a clear and unobstructed passageway large enough to allow removal of the largest appliance, but not less than 30 inches high and 22 inches wide, and not more than 20 feet long measured along the centerline of the passageway from the opening to the appliance. The passageway shall have continuous solid flooring in accordance with Chapter 5 not less than 24 inches wide. A level service space at least 30 inches deep and 30 inches wide shall be present along all sides of the appliance where access is required. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches, and large enough to allow removal of the largest appliance.

Smoke Alarms: Smoke alarms shall be installed in each sleeping room, outside each separate sleeping area in the immediate vicinity of the bedrooms and on each additional story of the dwelling, including basements and habitable attics but not including crawl spaces. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level. When more than one smoke alarm is required to be installed within an individual dwelling unit, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. Smoke alarms shall

receive their primary power from the building wiring when such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for over current protection.

Carbon Monoxide Alarm:

R315.2 Where required. Carbon monoxide alarms shall be provided in accordance with Sections R315.2.1 and R315.2.2.

R315.2.1 New construction. For new construction, carbon monoxide alarms shall be provided in dwelling units where either or both of the following conditions exist.
1. The *dwelling unit* contains a fuel-fired *appliance.*
2. The *dwelling unit* has an attached garage with an opening that communicates with the dwelling unit.

R315.2.2 Alterations, repairs and additions. Where *alterations*, *repairs* or *additions* requiring a permit occur, the individual *dwelling unit* shall be equipped with carbon monoxide alarms located as required for new *dwellings*.
Exceptions:
1. Work involving the exterior surfaces of *dwellings*, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck.
2. Installation, alteration or repairs of plumbing or mechanical systems.

WOOD FRAME CONSTRUCTION

Under-Floor Ventilation: The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement) shall have ventilation openings through foundation walls or exterior walls. The minimum net area of ventilation openings shall not be less than 1 square foot for each 150 square feet of under-floor space area, unless the ground surface is covered by a Class 1 vapor retarder material. When a Class 1 vapor retarder material is used, the minimum net area of ventilation openings shall not be less than 1 square foot for each 1,500 square feet of under-floor space area. One such ventilating opening shall be within 3 feet of each corner of the building. The

minimum net area of ventilation openings shall not be less than 1 square foot for each 150 square feet of under-floor area. One ventilation opening shall be within 3 feet of each corner of the building. Ventilation openings shall be covered for their height and width with any of the following materials provided that the least dimension of the covering shall not exceed 1/4 inch:

- Perforated sheet metal plates not less than 0.070 inch thick
- Expanded sheet metal plates not less than 0.047 inch thick
- Cast-iron grill or grating
- Extruded load-bearing brick vents
- Hardware cloth of 0.035 inch wire or heavier
- Corrosion-resistant wire mesh, with the least dimension being 1/8 inch thick

Exception: The total area of ventilation openings shall be permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is covered with an approved Class 1 vapor retarder material and the required openings are placed to provide cross ventilation of the space. The installation of operable louvers shall be allowed.

Unvented Crawl Space: Ventilation openings in under-floor spaces specified in Sections R408.1 and R408.2 shall not be required where exposed earth is covered with a continuous Class 1 vapor retarder. Joints of the vapor retarder shall overlap by 6 inches and shall be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached and sealed to the stem wall and one of the following is provided for the under-floor space:

Continuously operated mechanical exhaust ventilation at a rate equal to 1 cubic foot per minute for each 50 square feet of crawl space floor area, including an air pathway to the common area (such as a duct or transfer grille), and perimeter walls insulated as required on **page 18.** Conditioned air supply sized to deliver at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m2) of under-floor area, including a return air pathway to the common area (such as a duct or transfer grille), and perimeter walls insulated as required on **pages 18.** Plenum in existing structures complying with Section M1601.5, if under-floor space is used as a plenum.

Under-Floor Access: Access shall be provided to all under-floor spaces. Access openings through the floor shall be a minimum of 18 inches by 24 inches.

Openings through a perimeter wall shall be not less than 16 inches by 24 inches. When any portion of the through-wall access is below grade, an areaway not less than 16 inches by 24 inches shall be provided. The bottom of the areaway shall be below the threshold of the access opening. Through wall access openings shall not be located under a door to the residence. Under floor spaces containing appliances shall be provided with an unobstructed passageway large enough to remove the largest appliance, but not less than 30 inches high and 22 inches wide, nor more than 20 feet long measured along the centerline of the passageway from the opening to the appliance. A level service space at least 30 inches deep and 30 inches wide shall be present at the front or service side of the appliance. If the depth of the passageway or the service space exceeds 12 inches below the adjoining grade, the walls of the passageway shall be lined with concrete or masonry extending 4 inches above the adjoining grade in accordance with Chapter 4. The rough-framed access opening dimensions shall be a minimum of 22 inches by 30 inches and large enough to remove the largest appliance.

Sill plate/Foundation Anchorage: Wood sill plates and wood walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section.

Cold-formed steel framing shall be anchored directly to the foundation or fastened to wood sill plates anchored to the foundation. Anchorage of cold-formed steel framing and sill plates supporting cold-formed steel framing shall be in accordance with this section and Section R505.3.1 or R603.3.1.

Wood sole plates at all exterior walls on monolithic slabs, wood sole plates of *braced wall panels* at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with minimum 1/2-inch diameter anchor bolts spaced a maximum of 6 feet on center or *approved* anchors or anchor straps spaced as required to provide equivalent anchorage to 1/2-inch diameter anchor bolts. Bolts shall extend a minimum of 7 inches into concrete or grouted cells of concrete masonry units. The bolts shall be located in the middle third of the width of the plate. A nut and washer shall be tightened on each anchor bolt. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches or less than seven bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundation that are not part of a *braced wall panel* shall be positively anchored with *approved*

fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Sections R317 and R318.

Exceptions:

1.) Walls 24 inches total length or shorter connecting offset braced wall panels shall be anchored to the foundation with a minimum of one anchor bolt located in the center third of the plate section and shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).

2.) Connection of walls 12 inches total length or shorter connecting offset *braced wall panels* to the foundation without anchor bolts shall be permitted. The wall shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).

Girders: The ends of each joist, beam or girder shall have not less than 1.5 inches of bearing on wood or metal and not less than 3 inches on masonry or concrete except where supported on a 1-inch-by-4-inch ribbon strip and nailed to the adjacent stud or by the use of approved joist hangers.

Floor Joist: The ends of each joist, beam or girder shall have not less than 1.5 inches of bearing on wood or metal and not less than 3 inches on masonry or concrete except where supported on a 1-inch-by-4-inch ribbon strip and nailed to the adjacent stud or by the use of approved joist hangers. Joists framing from opposite sides over a bearing support shall lap a minimum of 3 inches and shall be nailed together with a minimum three 10d face nails. A wood or metal splice with strength equal to or greater than that provided by the nailed lap is permitted. Notches in solid lumber joists, rafters and beams shall not exceed one-sixth of the depth of the member, shall not be longer than one-third of the depth of the member and shall not be located in the middle one-third of the span. Notches at the ends of the member shall not exceed one-fourth the depth of the member. The tension side of members 4 inches or greater in nominal thickness shall not be notched except at the ends of the members. The diameter of holes bored or cut into members shall not exceed one-third the depth of the member. Holes shall not be closer than 2 inches to the top or bottom of the member, or to any other hole located in the member. Where the member is also notched, the hole shall not be closer than 2 inches to the notch. **Example for solid lumber shown on page 32.** Engineered wood products (I-Joist), cuts, notches and holes bored in

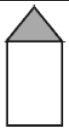
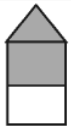
trusses, structural composite lumber, structural glue-laminated members or I-joists are prohibited except where permitted by the manufacturer's recommendations or where the effects of such alterations are specifically considered in the design of the member by a registered design professional.

Protection of Wood and Wood-based Products against Decay: Protection of wood and wood-based products from decay shall be provided in the following locations by the use of naturally durable wood or wood that is preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use. Preservatives shall be listed in Section 4 of AWPA U1.

1.) Wood joists or the bottom of a wood structural floor when closer than 18 inches or wood girders when closer than 12 inches to the exposed ground in crawl spaces or unexcavated area located within the periphery the building foundation.
2.) Wood framing members that rest on concrete or masonry exterior foundation walls and are less than 8 inches from the exposed ground.
3.) Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated from such slab by an impervious moisture barrier.
4.) The ends of wood girders entering exterior masonry or concrete walls having clearances of less than ½ inch on tops, sides and ends.
5.) Wood siding, sheathing and wall framing on the exterior of a building having a clearance of less than 6 inches from the ground or less than 2 inches measured vertically from concrete steps, porch slabs, patio slabs and similar horizontal surfaces exposed to the weather.
6.) Wood structural members supporting moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier.
7.) Wood furring strips or other wood framing members attached directly to the interior of exterior masonry walls or concrete walls below grade except where an *approved* vapor retarder is applied between the wall and the furring strips or framing members.

WALLS & PARTITIONS:

TABLE R602.3(5)
SIZE, HEIGHT AND SPACING OF WOOD STUDS[a]

STUD SIZE (inches)	BEARING WALLS					NONBEARING WALLS	
	Laterally unsupported stud height[a] (feet)	Maximum spacing where supporting a roof-ceiling assembly or a habitable attic assembly, only (inches)	Maximum spacing where supporting one floor, plus a roof-ceiling assembly or a habitable attic assembly (inches)	Maximum spacing where supporting two floors, plus a roof-ceiling assembly or a habitable attic assembly (inches)	Maximum spacing where supporting one floor height[a] (inches)	Laterally unsupported stud height[a] (feet)	Maximum spacing (inches)
							
2 × 3[b]	—	—	—	—	—	10	16
2 × 4	10	24[c]	16[c]	—	24	14	24
3 × 4	10	24	24	16	24	14	24
2 × 5	10	24	24	—	24	16	24
2 × 6	10	24	24	16	24	20	24

a. Listed heights are distances between points of lateral support placed perpendicular to the plane of the wall. Bearing walls shall be sheathed on not less than one side or bridging shall be installed not greater than 4 feet apart measured vertically from either end of the stud. Increases in unsupported height are permitted where in compliance with Exception 2 of Section R602.3.1 or designed in accordance with accepted engineering practice.

b. Shall not be used in exterior walls.

c. A habitable attic assembly supported by 2 × 4 studs is limited to a roof span of 32 feet. Where the roof span exceeds 32 feet, the wall studs shall be increased to 2 × 6 or the studs shall be designed in accordance with accepted engineering practice.

Fire Block and Draft Stops: In combustible construction, fire blocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. **See page 36.**

Fire blocking shall be provided in wood-frame construction in concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs, as follows:

- Vertically at the ceiling and floor levels
- Horizontally at intervals not exceeding 10 feet

- At all interconnections between concealed vertical and horizontal spaces that occur at soffits, drop ceilings and cove ceilings
- In concealed spaces between stair stringers at the top and bottom of the run
- Enclosed spaces under stairs
- At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion
- For the fire blocking of chimneys and fireplaces. Fire blocking of cornices of a two-family dwelling is required at the line of dwelling unit separation

Fire blocking materials:

- Two-inch nominal lumber
- Two thicknesses of 1-inch nominal lumber with broken lap joints
- One thickness of 23/32-inch wood structural panels with joints backed by 23/32-inch wood structural panels
- One thickness of 3/4-inch particleboard with joints backed by 3/4-inch particleboard
- One-half-inch gypsum board
- One-quarter-inch cement-based millboard
- Batts or blankets of mineral wool or glass fiber or other approved materials installed to be securely retained in place

INSULATION REQUIREMENTS:	
Window Max U Factor	.32
Skylight Max U Factor	.60
Door Max U Factor	.32
Ceiling R-Value	R-49
Framed Wall R-Value	R-19 or R-13 Cavity + R-5 Continuous
Floor R-Value	R-30 (if on vented crawl)
Foundation Wall	R-13 Cavity or R-10 Continuous
Crawl Space Wall	R-13 Cavity or R-10 Continuous (if conditioned)
Air Conditioner	13 SEER Minimum
Furnace	78.0 AFUE Minimum
Heat Pump	7.7 HSPF / 13 SEER Minimum
or Rescheck Option	

Roof Construction: Many roofs are constructed of engineered pre-built trusses. All trusses have installation requirements which the manufacturer provides. The trusses shall be installed to these specifications. A truss certification stamped and signed by a Wyoming Licensed Engineer for the specific trusses used shall be submitted to the Building Inspection Division prior to or at the time of framing inspection. A truss layout sheet shall be provided at the time of framing inspection.

Sheetrock Installation: Gypsum board shall be applied at right angles or parallel to framing members. All edges and ends of gypsum board shall occur on the framing members, except those edges and ends that are perpendicular to the framing members. Interior gypsum board shall not be installed where it is directly exposed to the weather or to water.

Roof Coverings: Fasteners for asphalt shingles shall be galvanized steel, stainless steel, aluminum or copper roofing nails, minimum 12 gage shank with a minimum 3/8-inch diameter head, ASTM F 1667, of a length to penetrate through the roofing materials and a minimum of 3/4 inch into the roof sheathing. Where the roof sheathing is less than 3/4 inch thick, the fasteners shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer, but not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal, shingles shall be installed as required by the manufacturer.

Underlayment application: For roof slopes from two units vertical in 12 units horizontal (17-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a 19-inch strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide sheets of underlayment, overlapping successive sheets 19 inches and fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be offset by 6 feet.

Ice barrier: An ice barrier that consists of a least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches inside the exterior wall line of the building. **See page 40.**

Exception: Detached accessory structures that contain no conditioned floor area.

Reroofs: New roof coverings shall not be installed without first removing all existing layers of roof coverings where any of the following conditions exist:

- Where the existing roof or roof covering is water-soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing
- Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile
- Where the existing roof has two or more applications of any type of roof covering

ELECTRICAL

General Electrical Requirements: Service conductor and grounding electrode conductor sizing - **Table on page 33.**

Overhead Services: The service utility company will not normally make a service drop and attach to other than 2” rigid steel conduit or larger.

Service Drop: Service drop conductors shall have the following minimum clearances from final grade:

- For service drop cables supported on and cabled together with a grounded bare messenger wire, the minimum vertical clearance shall be 10 feet at the electric service entrance to buildings, at the lowest point of the drip loop of the building electric entrance, and above areas or sidewalks accessed by pedestrians only. Such clearance shall be measured from final grade or other accessible surfaces.
- Twelve feet over residential property and driveways
- Eighteen feet over public streets, alleys, roads or parking areas subject to truck traffic

Extend the Service Conductors: Extend the service conductors at least 24" beyond the weather head and identify the neutral conductor and provide attachment device.

Mount the Service: Mount so the center of the meter socket is between 4 and 6 foot above finished grade.

Grounding Electrode System (Ufer): An electrode encased by at least 2 inches of concrete, located horizontally near the bottom or vertically and within that portion of a concrete foundation or footing that is in direct contact with the earth. An electrode consisting of at least 20 feet of one or more bare or zinc-galvanized or other electrically conductive coated steel reinforcing bars or rods of not less than 1/2 inch diameter, or consisting of at least 20 feet of bare copper conductor not smaller than 4 AWG shall be considered as a grounding electrode. Reinforcing bars shall be permitted to be bonded together by the usual steel tie wires or other effective means. Where multiple concrete-encased electrodes are present at a building or structure, only one shall be required to be bonded into the grounding electrode system.

Gas Line Bonding: The piping is permanently and directly connected to the electrical service equipment enclosure. The grounded conductor at the electrical service, the grounding electrode conductor (where of sufficient size) or to one or more of the grounding electrodes used. For single and multi-family structures, a single bond connection shall be made downstream of the individual gas meter for each housing unit and upstream of any CSST connection. The bonding conductor shall be no smaller than a 6 AWG copper wire or equivalent. The bonding jumper shall be attached in an approved manner in accordance with NEC Article 250.70 and 250.104(3)(B) and the point of attachment for the bonding jumper shall be accessible. Bonding/grounding clamps shall be installed in accordance with its listing per UL 467 and shall make metal-to-metal contact with the piping. This bond is in addition to any other bonding requirements as specified by local codes.

Sufficient Access and Work Space for Electrical Equipment: Detail on page 34.

Interior Electrical Panel: Panel boards and over current protection devices shall not be located in clothes closets, in bathrooms, or over the steps of a stairway.

Non-Metallic Sheathed Cable (Romex): Bored holes in framing members for wiring shall be located not less than 1-1/4 inches from the edge of the framing

member or shall be protected with a minimum 0.0625-inch steel plate or sleeve, a listed steel plate or other physical protection.

Neutral Conductor: No. 6 and smaller must have white or natural gray insulation. Conductors larger than No. 6 may be identified where terminating in enclosures with a white color conductor or tape.

Outlet, Junction Box, Switch: Install properly sized outlet or junction box at each outlet, switch or junction point. A junction box may be installed in an attic where there is at least 30 inches of headroom with access and not covered with insulation.

Number of Conductors in Outlet, Device and Junction Boxes: Each conductor that originates outside the box and terminates or is spliced within the box shall be counted once, and each conductor that passes through the box without splice or termination shall be counted once. Each loop or coil of unbroken conductor having a length equal to or greater than twice that required for free conductors shall be counted twice. The conductor fill, in cubic inches, shall be computed using figures below, no part of which leaves the box, shall not be counted.

Exception: An equipment grounding conductor or not more than four fixture wires smaller than No. 14, or both, shall be permitted to be omitted from the calculations where such conductors enter a box from a domed fixture or similar canopy and terminate within that box.

VOLUME ALLOWANCE REQUIRED PER CONDUCTOR (CUBIC INCHES):

SIZE OF CONDUCTOR	FREE SPACE IN BOX FOR CONDUCTOR
18 AWG	1.50
16 AWG	1.75
14 AWG	2.00
12 AWG	2.25
10 AWG	2.50
8 AWG	3.00
6 AWG	5.00

Non-Metallic Sheathed Cable (Romex): Maximum allowable on center support spacing for the wiring is 4 feet 6 inches. Maximum support distance in inches from box or other terminations is 12 inches.

Make-Up Wire: At least 6 inches of free conductor, measured from the point in the box where it emerges from its raceway or cable sheath, shall be left at each

outlet, junction and switch point for splices or the connection of luminaries or devices. Each conductor needs to be long enough to extend at least 3 inches outside the opening.

Outlet Requirements: Receptacles shall be installed such that no point measured horizontally along the floor line, on any wall space, is more than 6 feet from a receptacle outlet. Receptacles shall be installed in any space 2 feet or more in width (including space measured around corners) and unbroken along the floor line by doorways, fireplaces, and similar openings. A receptacle outlet shall be installed at each wall countertop space that is 12 inches or wider. Kitchen receptacle outlets shall be installed so that no point along the wall line is more than 24 inches measured horizontally from a receptacle outlet in that space. At least one receptacle outlet shall be installed in bathrooms within 3 feet of the outside edge of each basin. The receptacle outlet shall be located on a wall or partition that is adjacent to the basin or basin countertop, or installed on the side or face of the basin cabinet, not more than 12 inches below the countertop.

Kitchen Small Appliance Circuits: Every kitchen shall have at least two 20 amp circuits.

Bathrooms (Bathroom Branch Circuits): In addition to the number of branch circuits required by other parts, at least one 20 amp branch circuit shall be provided to supply bathroom receptacle outlet(s). Such circuits shall have no other outlets.
Exception: Where the 20 amp circuit supplies a single bathroom, outlets for other equipment or lighting within the same bathroom shall be permitted to be supplied by one circuit.

GFCI Outlets: All 125-volt, single-phase, 15 and 20 amp receptacles installed in the locations, specified below, shall have ground-fault circuit-interrupter protection for personnel.

- Bathrooms and laundry equipment if located in a bathroom.
- Garages, and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use
- Outdoors
- Crawl spaces — at or below grade level

- Unfinished basements — for purposes of this section, unfinished basements are defined as portions or areas of the basement not intended as habitable rooms and limited to storage areas, work areas, and the like
- Kitchens — where the receptacles are installed to serve the countertop surfaces
- Sink receptacles – 125-volt, single-phase, 15- and 20'-ampere receptacles that are located within 6 feet of the outside edge of a sink shall have ground-fault circuit-interrupter protection for personnel. Receptacle outlets shall not be installed in a face-up position in the work surfaces or countertops
- Bathtub or shower stall receptacles – 125-volt, single phase, 15- and 20-ampere receptacles that are located within 6 feet of the outside edge of a bathtub or shower stall shall have ground-fault circuit interrupter protection for personnel
- Laundry areas – 125-volt, single-phase, 15- and 20-ampere receptacles installed in laundry areas shall have ground-fault circuit interrupter protection for personnel
- Kitchen dishwasher branch circuit – ground-fault circuit-interrupter protection shall be provided for outlets that supply dishwashers in dwelling unit locations.
- Receptacles cannot be installed face up in any countertop installation.

Arc-fault circuit-interrupter protection. Branch circuits that supply 120-volt, single-phase, 15- and 20- ampere outlets installed in kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, laundry areas and similar rooms or areas shall be protected by AFCI Outlet, Breaker or AFCI-GFCI combo breaker.

Tamper-resistant receptacles. All outlets shall be listed Tamper resistant type.
Exception: Receptacles in the following locations shall not be required to be tamper resistant:
1. Receptacles located more than 5.5 feet (1676 mm) above the floor.
2. Receptacles that are part of a luminaire or appliance.
3. A single receptacle for a single appliance or a duplex receptacle for two appliances where such receptacles are located in spaces dedicated for the appliances served and, under conditions of normal use, the appliances are not easily moved from one place to another.

Receptacles in countertops. Receptacle assemblies for installation in countertop surfaces shall be listed for countertop applications. Receptacle assemblies and GFCI receptacle assemblies installed in work surfaces shall be listed for work surface or countertop applications.

Receptacle position. Receptacles shall not be installed in a face-up position in or on countertops surfaces or work surfaces except where the receptacles are listed for countertop or work surface applications.

Laundry Equipment: In addition to the number of branch circuits required, at least one additional 20 amp branch circuit shall be provided to supply the laundry receptacle outlet(s). This circuit shall have no other outlets.

Provide lighting as follows: At least one wall switch-controlled lighting outlet shall be installed in every habitable room and bathroom.

Exceptions: In other than kitchens and bathrooms, one or more receptacles controlled by a wall switch shall be considered equivalent to the required lighting outlet. Lighting outlets shall be permitted to be controlled by occupancy sensors that are in addition to wall switches, or that are located at a customary wall switch location and equipped with a manual override that will allow the sensor to function as a wall switch. At least one wall-switch-controlled lighting outlet shall be installed in hallways, stairways, attached garages, and detached garages with electric power. At least one wall-switch-controlled lighting outlet shall be installed to provide illumination on the exterior side of each outdoor egress door having grade level access, including outdoor egress doors for attached garages and detached garages with electric power. A vehicle door in a garage shall not be considered as an outdoor egress door. Where one or more lighting outlets are installed for interior stairways, there shall be a wall switch at each floor level and landing level that includes an entryway to control the lighting outlets where the stairway between floor levels has six or more risers. In attics, under-floor spaces, utility rooms and basements, at least one lighting outlet shall be installed where these spaces are used for storage or contain equipment requiring servicing. Such lighting outlet shall be controlled by a wall switch or shall have an integral switch. At least one point of control shall be at the usual point of entry to these spaces. The lighting outlet shall be provided at or near the equipment requiring servicing.

Grounding Conductors: In boxes with more than one, grounding conductor must be connected with an approved connector and pigtailed when attaching to the device.

Clothes Closet Lighting: The types of luminaries installed in clothes closets shall be limited to surface-mounted or recessed incandescent luminaries with completely enclosed lamps, surface-mounted or recessed fluorescent luminaries, and surface-mounted fluorescent or LED luminaries identified as suitable for installation within the storage area. Incandescent luminaries with open or partially enclosed lamps and pendant luminaries or lamp-holders shall be prohibited. The minimum clearance between luminaries installed in clothes closets and the nearest point of a storage area shall be as follows:

- Surface-mounted incandescent or LED luminaries with a completely enclosed light source shall be installed on the wall above the door or on the ceiling, provided that there is a minimum clearance of 12 inches (305 mm) between the fixture and the nearest point of a storage space
- Surface-mounted fluorescent luminaries shall be installed on the wall above the door or on the ceiling provided that there is a minimum clearance of 6 inches
- Recessed incandescent luminaries or LED luminaries with a completely enclosed light source shall be installed in the wall or the ceiling provided that there is a minimum clearance of 6 inches
- Recessed fluorescent luminaries shall be installed in the wall or on the ceiling provided that there is a minimum clearance of 6 inches between the fixture and the nearest point of a storage space
- Surface-mounted fluorescent or LED luminaries shall be permitted to be installed within the storage space where identified for this use

HEATING AND AIR CONDITIONING

Water Heaters: Hot water heaters shall be provided with expansion tanks. Fuel-fired water heaters shall not be installed in a room used as a storage closet. Water heaters located in a bedroom or bathroom shall be installed in a sealed enclosure so that combustion air will not be taken from the living space. When installed in garages, appliances having an ignition source shall be elevated such that the source of ignition is not less than 18 inches above the floor in garage. Water heating venting requires a 1” clearance for double wall pipe and a 6”

clearance for single wall pipe or connectors. High efficient water heaters shall be installed and vented according to manufacturer specifications.

Combustion Air: The minimum required volume shall be 50 cubic feet per 1,000 BTU.

Furnaces: Furnaces and air handlers within compartments or alcoves shall have a minimum working space clearance of 3 inches along the sides, back and top with a total width of the enclosing space being at least 12 inches wider than the furnace or air handler. Furnaces having a firebox open to the atmosphere shall have at least a 6 inch working space along the front combustion chamber side. Furnace venting requires a 1" clearance for double wall pipe and a 6" clearance for single wall pipe or connectors. High efficient furnaces shall be installed and vented according to manufacturer specifications. When installed in garages appliances having an ignition source shall be elevated such that the source of ignition is not less than 18 inches above the floor in garage.

Make-Up Air: Make-up air shall be provided for installations exhausting more than 200 cfm shall be provided with make-up air.

Return Air: Return air shall be taken from inside the dwelling. Dilution of return air with outdoor air shall be permitted. Outdoor and return air for a forced-air heating or cooling system shall not be taken from the following locations:

- Closer than 10 feet to an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet above the outside air inlet
- Where flammable vapors are present; or where located less than 10 feet above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway
- A room or space, the volume of which is less than 25 percent of the entire volume served by the system
- A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, furnace room, unconditioned attic or other dwelling unit
- A room or space containing a fuel-burning appliance where such room or space serves as the sole source of return air

Exceptions: The fuel-burning appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section M1801.1 or Chapter 24.

The room or space complies with the following requirements:

- The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h of combined input rating of all fuel-burning appliances therein
- The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space
- Return-air inlets shall not be located within 10 feet of any appliance firebox or draft hood in the same room or space
- Rooms or spaces containing solid-fuel burning appliances, if return-air inlets are located not less than 10 feet from the firebox of those appliances
- An unconditioned crawl space by means of direct connection to the return side of a forced air system. Transfer openings in the crawl space enclosure shall not be prohibited

Clothes Dryers: Exhaust ducts shall be supported at 4 foot 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. Ducts shall not be deformed.

Transition ducts used to connect the dryer to the exhaust duct system shall be a single length that is listed and labeled in accordance with UL 2158A. Transition ducts shall be a maximum of 8 feet in length and shall not be concealed within construction. The maximum length of the exhaust duct shall be 35 feet from the connection to the transition duct from the dryer to the outlet terminal. Where fittings are used, the maximum length of the exhaust duct shall be reduced in accordance with Table below and where the exhaust duct is concealed within the building construction, the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet of the exhaust duct connection. Protective shield plates shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Shield plates shall be placed on the finished face of all framing members where there is less than 1 1/4 inches between the duct and the finished face of the framing member. Protective shield plates shall be constructed of steel and shall have a minimum thickness of 0.062 inches and shall extend a minimum of 2 inches above sole plates and below top plates.

DRYER EXHAUST DUCT FITTING TYPE	EQUIVALENT LENGTH DEDUCTIONS
4 inch radius mitered 45 degree elbow	2 feet 6 inches
4 inch radius mitered 90 degree elbow	5 feet
6 inch radius smooth 45 degree elbow	1 foot
6 inch radius smooth 90 degree elbow	1 foot 9 inches
8 inch radius smooth 45 degree elbow	1 foot
8 inch radius smooth 90 degree elbow	1 foot 7 inches
10 inch radius smooth 45 degree elbow	9 inches
10 inch radius smooth 90 degree elbow	1 foot 6 inches

Kitchen Ranges: Freestanding or built-in ranges shall have a vertical clearance above the cooking top of not less than 30 inches to unprotected combustible material. Reduced clearances are permitted in accordance with the listing and labeling of the range hoods or appliances.

Prefabricated Fireplaces and Stoves: Factory-built fireplaces shall be listed and labeled and shall be installed in accordance with the conditions of the listing. Factory-built chimneys shall be listed and labeled and shall be installed and terminated in accordance with the manufacturer's installation instructions.

GAS PIPING, INSTALLATION AND TESTING

Gas Pipe and Fittings: Cast iron pipe shall not be used. Steel and wrought iron pipe shall be at least of standard weight (Schedule 40) and shall comply with one of the following: ASME B 36.10, 10M; ASTM A 53/A 53M; or ASTM A 106. Seamless copper, aluminum alloy or steel tubing shall be permitted to be used with gases not corrosive to such material. Steel tubing shall comply with ASTM A 254. Copper tubing shall comply with standard Type K or L of ASTM B 88 or ASTM B 280. Copper and brass tubing shall not be used if the gas contains more than an average of 0.3 grains of hydrogen sulfide per 100 standard cubic feet of gas (0.7 milligrams per 100 liters). Corrugated stainless steel tubing shall be listed in accordance with ANSI LC 1/CSA 6.26. Plastic pipe, tubing and fittings used to supply fuel gas shall conform to ASTM D 2513. Pipe shall be marked “Gas” and “ASTM D 2513.”

Gas Line Test: The test pressure to be used shall be not less than one and one-half times the proposed maximum working pressure, but not less than 3 psig (20 kPa gauge), irrespective of design pressure. Preferred test is 15psi with a 15 psi test gauge. Where the test pressure exceeds 125 psig (862 kPa gauge), the test pressure shall not exceed a value that produces a hoop stress in the piping greater than 50 percent of the specified minimum yield strength of the pipe.

Gas Appliance Connectors: Connectors shall not exceed 6 feet in overall length. Measurement shall be made along the centerline of the connector. Only one connector shall be used for each appliance. Connector shall not be concealed in ant floor, wall or ceiling.

PLUMBING

Materials: All materials used shall be installed in strict accordance with the standards under which the materials are accepted and approved. In the absence of such installation procedures, the manufacturer's installation instructions shall be followed. Where the requirements of referenced standards or manufacturer's installation instructions do not conform to the minimum provisions of this Code, the provisions of this Code shall apply.

Soil and Waste Lines: Includes drain, waste and vent (DWV) piping in buildings. Galvanized wrought-iron or galvanized steel pipe shall not be used underground and shall be maintained not less than 6 inches above ground. Allowance shall be made for the thermal expansion and contraction of plastic piping.

Water Service Pipe: Water piping from the curb stop or meter pit to inside of a building meter or shut-off value location shall be type K copper or PE 200 Psi clear core or PE # 3408 160 psi. All joints or connections in PE piping shall be brass with minimum 2 stainless steel clamps at each side of the joint or connection. Stainless steel clamps shall be installed so that they are opposing each other or other approved connection. All ductile iron water pipe shall be cement mortar lined in accordance with AWWA C104. Interior water meters 1 inch or less in size shall have a clear space of 2 feet wide from the center of the meter and 3 feet in front of the meter housing on new construction. The measurement from the center of the meter shall be equal on both sides of the meter.

Plumbing Vents Through Roof: All vents through the roof shall be a minimum of 3” PVC starting a minimum of 12” underneath roof sheathing. All open vent pipes which extend through a roof shall be terminated at least 12 inches above the roof or 12 inches above the anticipated snow accumulation, except that where a roof is to be used for any purpose other than weather protection, the vent extensions shall be run at least 7 feet above the roof.

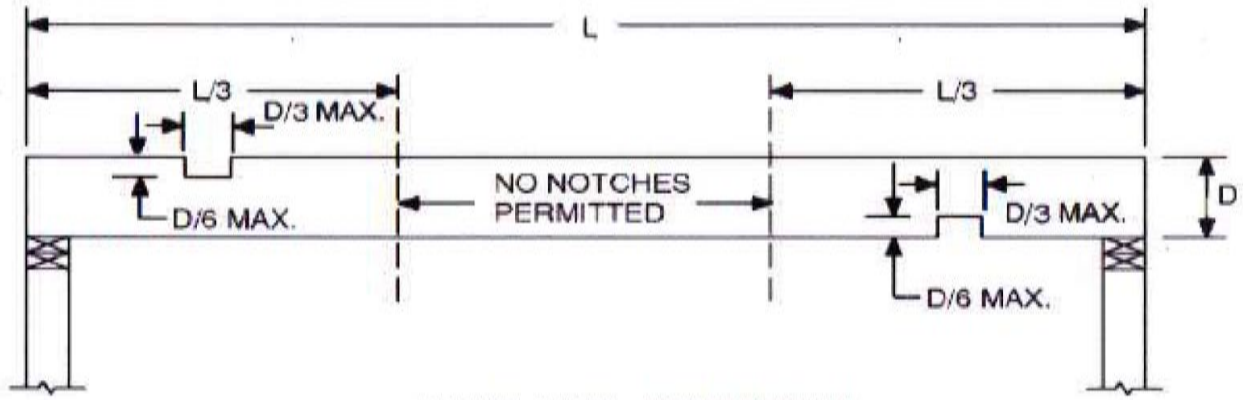
Pressure Relief Valves: Pressure relief valves shall have a relief rating adequate to meet the pressure conditions for the appliances or equipment protected. In tanks, they shall be installed directly into a tank tapping or in a water line close to

the tank. They shall be set to open at least 25 psi above the system pressure but not over 150 psi. The relief valve setting shall not exceed the tanks rated working pressure.

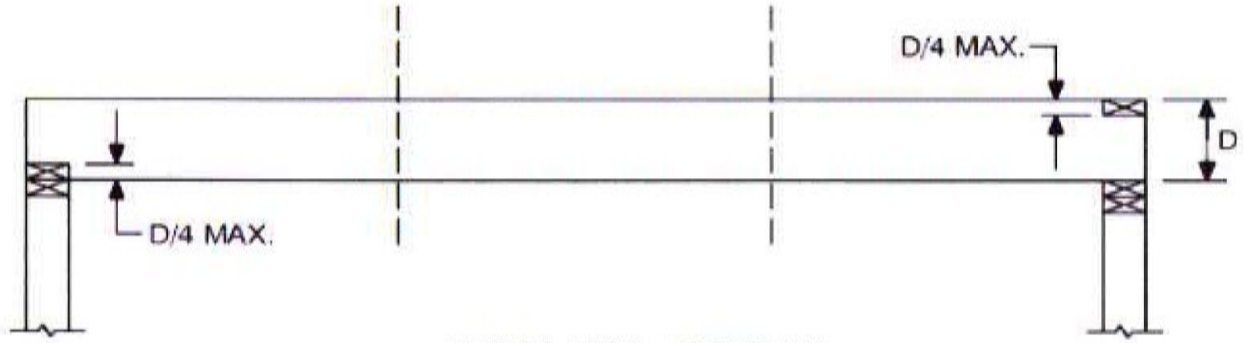
The discharge piping serving a pressure relief valve shall:

- Not be directly connected to the drainage system, discharge through an air gap located in the same room as the water heater
- Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap
- Serve a single relief device and shall not connect to piping serving any other relief device or equipment
- Discharge to the floor, to the pan serving the water heater or storage tank, to a waste receptor or to the outdoors
- Discharge in a manner that does not cause personal injury or structural damage
- Discharge to a termination point that is readily observable by the building occupants
- Not be trapped
- Be installed to flow by gravity
- Not terminate more than 6 inches (152 mm) above the floor or waste receptor
- Not have a threaded connection at the end of the piping
- Not have valves or tee fittings

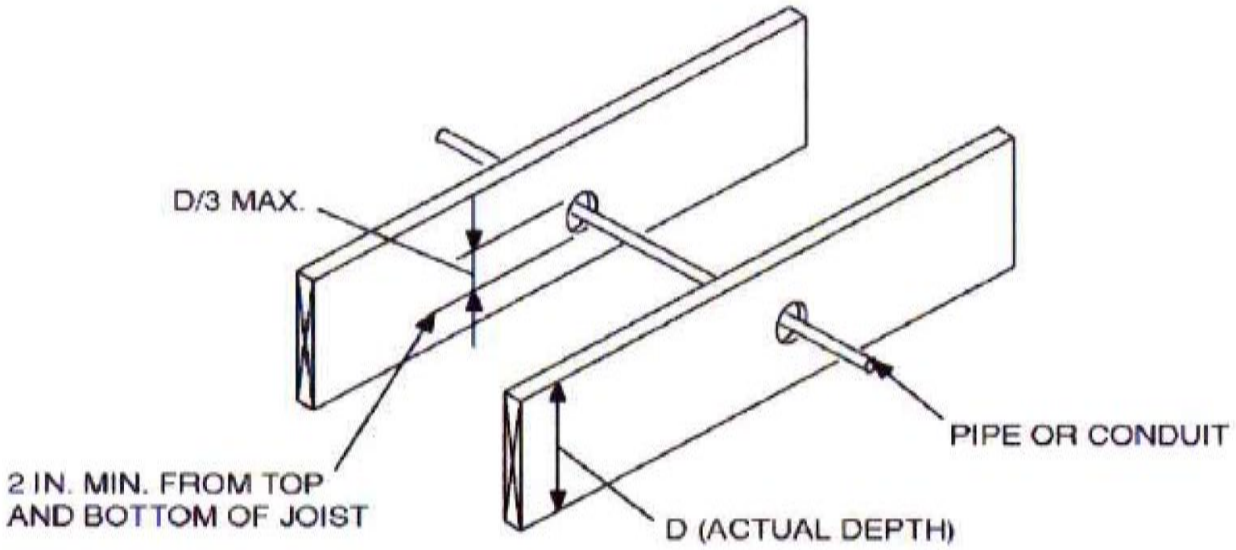
Lawn Sprinkler Systems: Lawn sprinkler systems shall have a pressure vacuum breaker, reduced pressure assembly or double check assembly installed.



FLOOR JOIST—CENTER CUTS



FLOOR JOIST—END CUTS

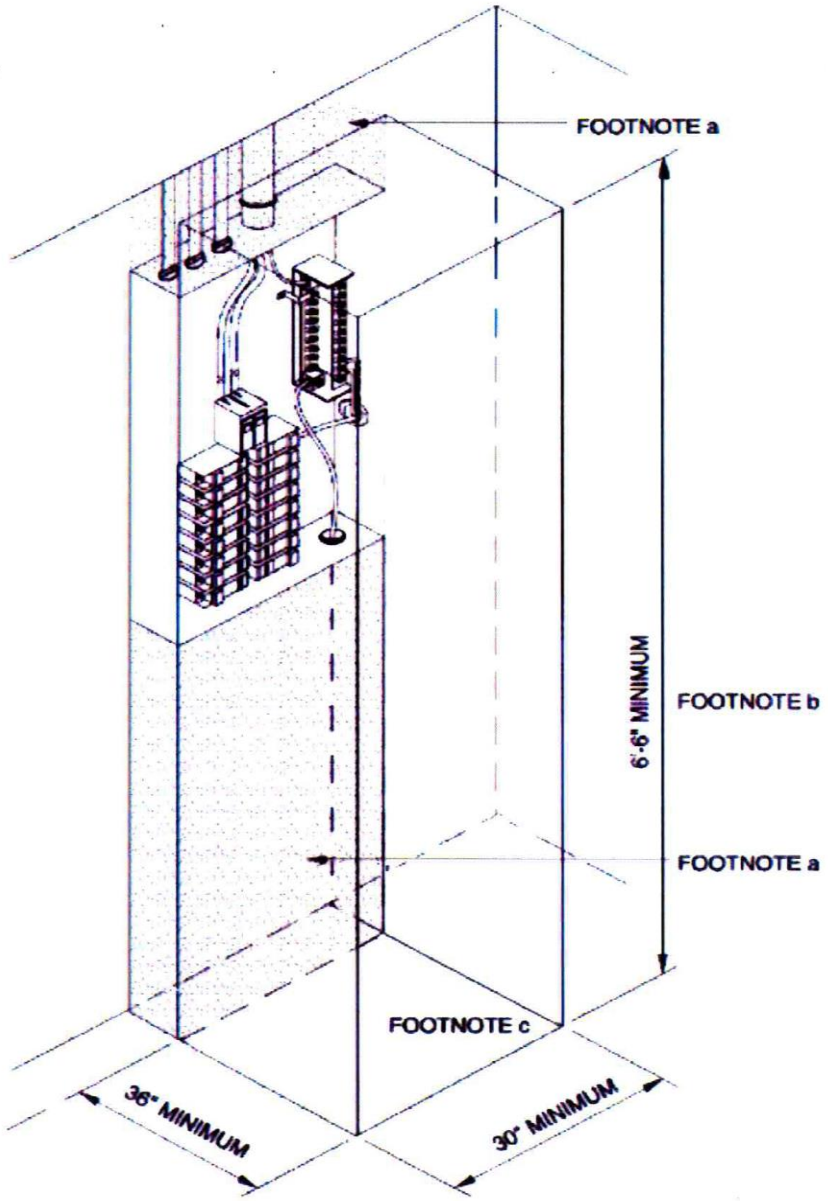


SERVICE CONDUCTOR AND GROUNDING ELECTRODE CONDUCTOR SIZING

CONDUCTOR TYPES AND SIZES-THHN, THHW, THW, THWN, USE, RHH, RHW, XHHW, RHW-2, THW-2, THWN-2, XHHW-2, SE, USE-2 (Parallel sets of 1/0 and larger conductors are permitted in either a single raceway or in separate raceways)		SERVICE OR FEEDER RATING (AMPERES)	MINIMUM GROUNDING ELECTRODE CONDUCTOR SIZE[a]	
Copper (AWG)	Aluminum and copper-clad aluminum (AWG)	Maximum load (amps)	Copper (AWG)	Aluminum (AWG)
4	2	100	8[b]	6[c]
3	1	110	8[b]	6[c]
2	1/0	125	8[b]	6[c]
1	2/0	150	6[c]	4
1/0	3/0	175	6[c]	4
2/0	4/0 or two sets of 1/0	200	4[d]	2[d]
3/0	250 kcmil or two sets of 2/0	225	4[d]	2[d]
4/0 or two sets of 1/0	300 kcmil or two sets of 3/0	250	2[d]	1/0[d]
250 kcmil or two sets of 2/0	350 kcmil or two sets of 4/0	300	2[d]	1/0[d]
350 kcmil or two sets of 3/0	500 kcmil or two sets of 250 kcmil	350	2[d]	1/0[d]
400 kcmil or two sets of 4/0	600 kcmil or two sets of 300 kcmil	400	1/0[d]	3/0[d]

- Where protected by a ferrous metal raceway, grounding electrode conductors shall be electrically bonded to the ferrous metal raceway at both ends
- An 8 AWG grounding electrode conductor shall be protected with metal conduit, nonmetallic conduit, and electrical metallic tubing or cable armor
- Where not protected, 6 AWG grounding electrode conductor shall closely follow a structural surface for physical protection. The supports shall be spaced not more than 24 inches on center and shall be within 12 inches of any enclosure or termination
- Where the sole grounding electrode system is a ground rod or pipe as covered in Section E3608.2, the grounding electrode conductor shall not be required to be larger than 6 AWG copper or 4 AWG aluminum. Where the sole grounding electrode system is the footing steel, the grounding electrode conductor shall not be required to be larger than 4 AWG copper conductor

Sufficient access and working space shall be provided and maintained around all electrical equipment to permit ready and safe operation and maintenance of such equipment

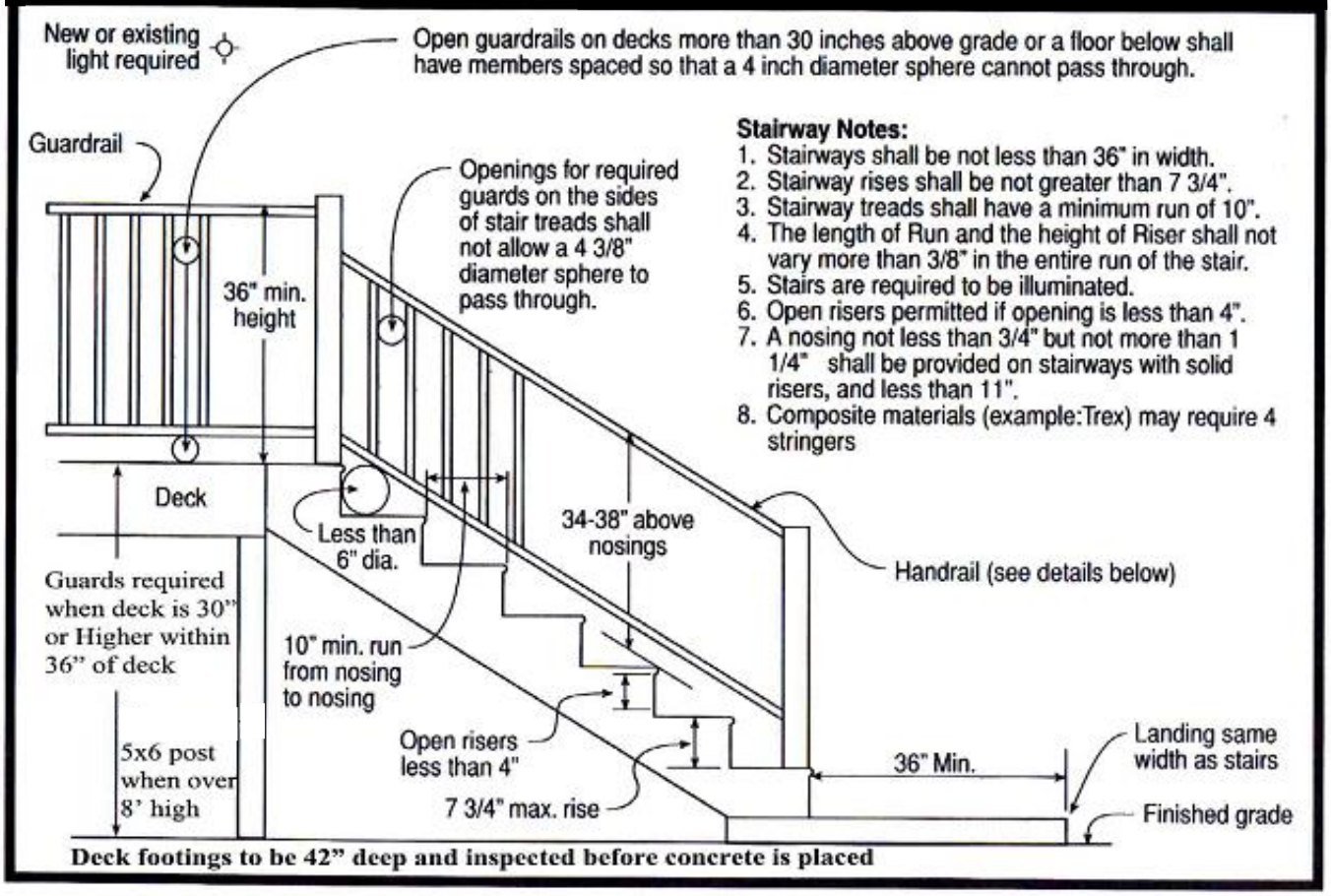


WORKING SPACE AND CLEARANCES

a. Equipment, piping and ducts foreign to the electrical installation shall not be placed in the shaded areas extending from the floor to a height of 6 feet above the panelboard enclosure, or to the structural ceiling, whichever is lower.
b. The working space shall be clear and unobstructed from the floor to a height of 6.5 feet.
c. The working space shall not be designated for storage.
d. Panelboards, service equipment and similar enclosures shall not be located in bathrooms, toilet rooms, clothes closets or over the steps of a stairway.
e. Such work spaces shall be provided with artificial lighting where located indoors.

Residential Handrail, Guardrail & Stairway Detail

Stair & Handrail Specifications



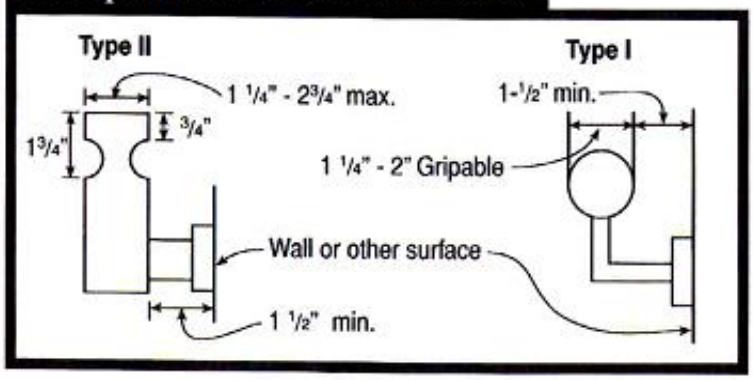
Stairway Notes:

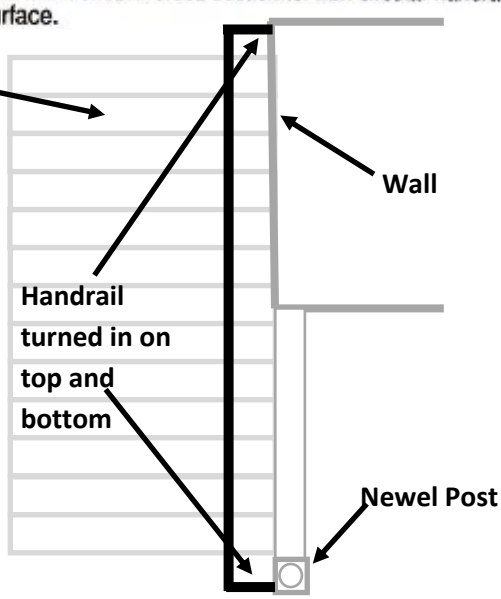
1. Stairways shall be not less than 36" in width.
2. Stairway rises shall be not greater than 7 3/4".
3. Stairway treads shall have a minimum run of 10".
4. The length of Run and the height of Riser shall not vary more than 3/8" in the entire run of the stair.
5. Stairs are required to be illuminated.
6. Open risers permitted if opening is less than 4".
7. A nosing not less than 3/4" but not more than 1 1/4" shall be provided on stairways with solid risers, and less than 11".
8. Composite materials (example:Trex) may require 4 stringers

Handrail Notes:

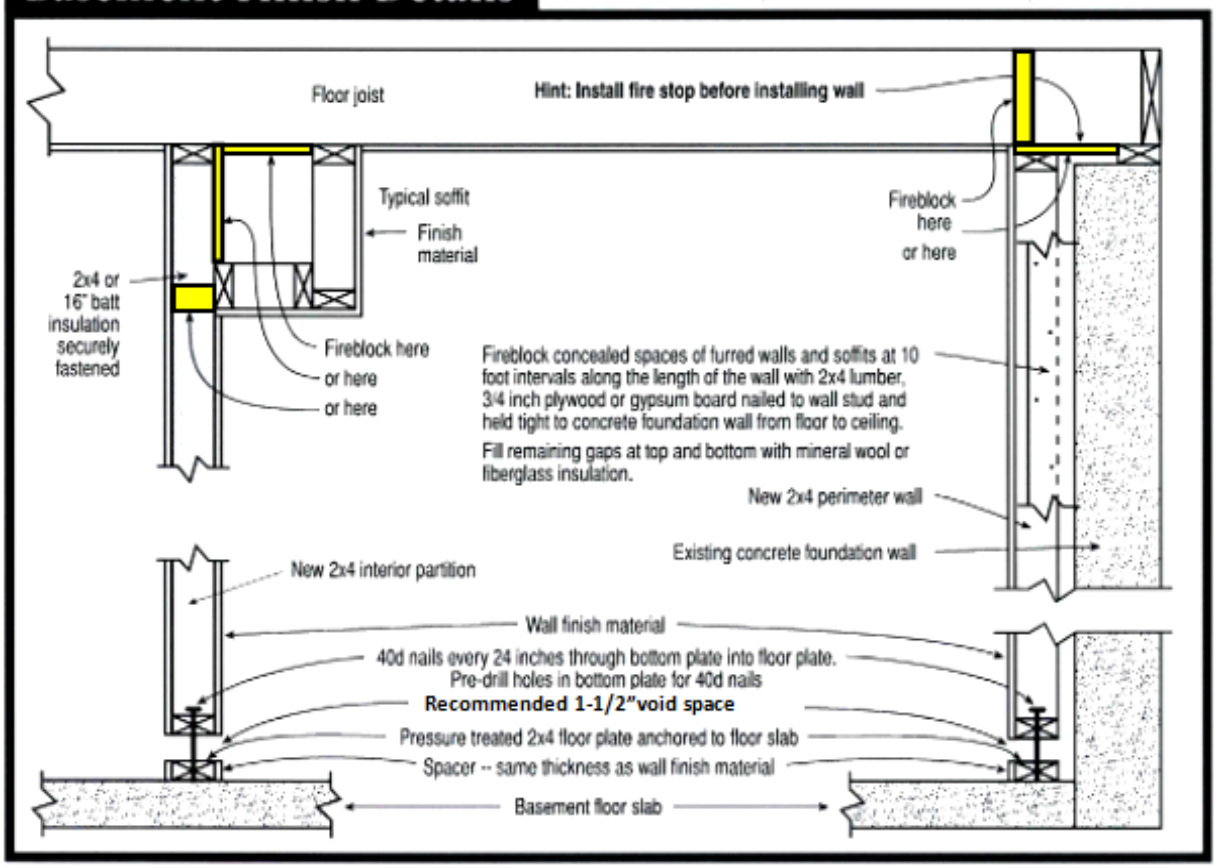
1. Handrails shall be continuous on at least one side of stairs with 4 or more risers.
2. Top of the handrails shall be placed not less than 34 inches nor more than 38 inches above stair nosings.
3. The handgrip portion of handrails shall be not less than 1-1/4 inches nor more than 2 1/4 inches in cross section for non circular handrails
4. Handrails shall be placed not less than 1-1/2 inches from any wall or other surface.
5. Handrails to be returned to wall, post or safety terminal

Acceptable Handrail Details



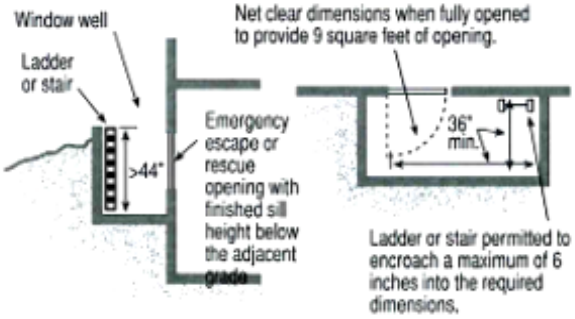


Basement Finish Details



Emergency Escape & Rescue Window Well

Emergency Escape And Rescue window wells must provide a minimum area of 9 square feet with a minimum dimension of 36 inches and shall enable the window to open fully. If the depth of the window well exceeds 44 inches, a permanently affixed ladder must be provided. The ladder must not interfere with the operation of the window.

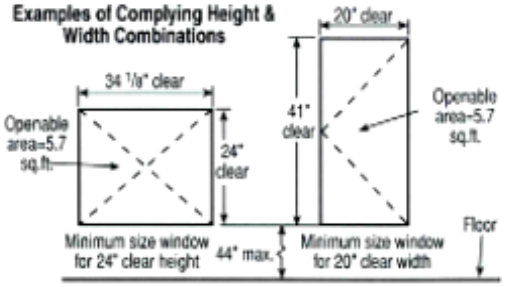


Emergency Escape & Rescue Window

Emergency Escape And Rescue Windows must meet the following criteria:

- A minimum total openable area of not less than 5.7 square feet
- A minimum clear openable height of not less than 24 inches
- A minimum clear openable width of not less than 20 inches.
- A finished sill height of not more than 44 inches above the floor and the window should be openable from the inside with normal operation and without the use of tools, keys or effort.

Examples of Complying Height & Width Combinations



Example of acceptable window openings for heights and widths

Width	20	20.5	21	21.5	22	22.5	23	23.5	24	24.5	25	25.5	26	26.5	27
Height	41	40	39.1	38.2	37.3	36.5	35.7	34.9	34.2	33.5	32.8	32.2	31.6	31	30.4

Width	27.5	28	28.5	29	29.5	30	30.5	31	31.5	32	32.5	33	33.5	34	34.2
Height	29.8	29.3	28.8	28.3	27.8	27.4	26.9	26.5	26.1	25.7	25.3	24.9	24.5	24.1	24

CITY OF GILLETTE

BUILDING INSPECTION DIVISION, 201 E. 5th St., PO Box 3003, Gillette, WY 82717-3003 * 307-686-5260 * http://www.gillettewy.gov

Residential Plan Checklist

Plans and specifications shall be in compliance with the 2018 International Residential Code. Plans must be drawn to scale and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed. Plans shall display, in detail, conformity to the provisions of the applicable code. Plans are submitted digitally through ePlan. www.eplan@gillettewy.gov

Plot Plan Requirements (see page 25 for example)

- ☐ Legal descriptions (lot, block, subdivision) and street address (number, direction, street, suffix).
- ☐ Show proposed porches, decks, patios, garages, exterior stairways, etc.
- ☐ Property lines & all utility easements must indicate dimensions, north arrow and must be drawn to scale; show setbacks (distance to the building from all property lines).
- ☐ Direction of drainage flow should be indicated with arrows. Drainage shall not impact adjacent properties. Show sidewalks (proposed & existing) and location of water, sewer & electrical services to house.
- ☐ Plot plan should show top of curb elevation at the highest point of property & proposed top of foundation elevation; show two all weather surface, off street, parking spaces, and driveway slope percentage.

Geo-Technical Evaluations

- ☐ The soils evaluation shall be prepared by a Wyoming licensed engineer and shall include the address of the property, location of any test boring and or excavation and a complete record of the soil samples, soil profile and water table elevation, if encountered.
- ☐ The soils report must include the bearing capacity of natural or compacted soil, provisions to mitigate the effects of expansive soils, mitigation of the effect liquefaction, differential settlement and varying soil strength and the effect of adjacent loads.
- ☐ Reports of perimeter drain tile required.
- ☐ NOTE: Open hole inspection from designing foundation engineer required at building footings inspection.

Foundation Plan

- ☐ The foundation plan shall indicate the size, location and type of material to be used as a foundation. Foundation is lot specific and must contain address on plans.
- ☐ The foundation shall be designed in accordance with any requirements as may be described in the geo-technical report and any specific load requirements as needed by the individual structure.
- ☐ Drawings shall be prepared, stamped and signed by a licensed engineer, detailing the location and size of all exterior and interior footings and any & all footings for decks, porches, retaining walls or other footings.
- ☐ Drains shall be provided around all concrete or masonry foundations that retain earth and enclose habitable or usable spaces located below grade (including crawl spaces).

Floor Plan

- ☐ The floor plan shall indicate the size and dimensions of every floor, including the basement for the complete structure.
- ☐ Show use of all rooms, halls, stairways, etc.
- ☐ Show locations & sizes of windows, doors safety glazing, mechanical equipment and location and type of energy to be used.
- ☐ Show location and detail of brace walls and panels.

Floor Framing Plan

- ☐ Provide a complete floor framing plan for all floors, specify the size and spacing of floor joist, beams, girders, columns or posts. (Layout plan must include a legend.)
- ☐ Indicate under floor access location and size (if applicable).
- ☐ Provide location and size of vent for ventilation.

Roof Plan

- ☐ Roof plans shall specify the size and spacing of all structural roof components for all roofs. (Truss layout or joist plan.)

Sectional Drawings

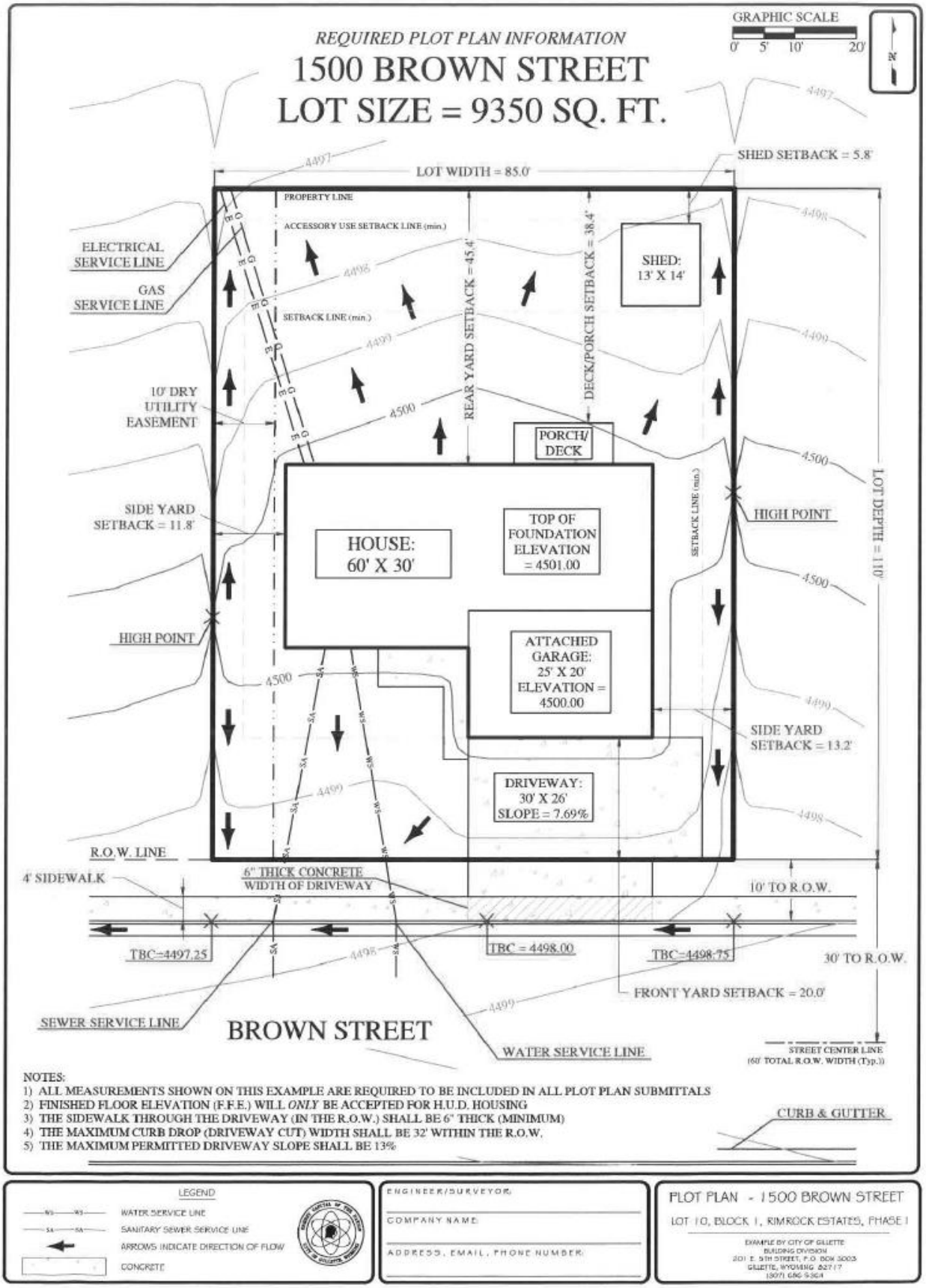
- ☐ The cross-sectional drawing, provides a cut-away view of the structure at one or more places; this view extends from the foundation through to the top of the roof.
- ☐ Show basements, crawl spaces, floors and any attic space.
- ☐ Cross-sectional drawings shall provide information regarding the size, spacing, insulation R-values and type of materials to be used in the structure and any required bracing.
- ☐ The pitch of the roof and the type of roof sheathing and roof covering are included in a typical sectional drawing.

Details

- ☐ Provide details of the specific components such as stairs, columns, grade beams, decks and their connections.

Elevations

- ☐ Elevation drawings shall be labeled as front, rear and side.



NOTES:
1) ALL MEASUREMENTS SHOWN ON THIS EXAMPLE ARE REQUIRED TO BE INCLUDED IN ALL PLOT PLAN SUBMITTALS
2) FINISHED FLOOR ELEVATION (F.F.E.) WILL *ONLY* BE ACCEPTED FOR H.U.D. HOUSING
3) THE SIDEWALK THROUGH THE DRIVEWAY (IN THE R.O.W.) SHALL BE 6" THICK (MINIMUM)
4) THE MAXIMUM CURB DROP (DRIVEWAY CUT) WIDTH SHALL BE 32' WITHIN THE R.O.W.
5) THE MAXIMUM PERMITTED DRIVEWAY SLOPE SHALL BE 13%

LEGEND
WS WATER SERVICE LINE
SA SANITARY SEWER SERVICE LINE
ARROWS INDICATE DIRECTION OF FLOW
CONCRETE

ENGINEER/SURVEYOR:
COMPANY NAME:
ADDRESS, EMAIL, PHONE NUMBER:

PLOT PLAN - 1500 BROWN STREET
LOT 10, BLOCK 1, RIMROCK ESTATES, PHASE I
EXAMPLE BY CITY OF GILLETTE
BUILDING DIVISION
201 E. 5TH STREET, P.O. BOX 3003
GILLETTE, WYOMING 82717
(307) 686-5364

Minimum Standards for City Acceptance of Residential Plot Plans

Plot Plan Size: 8 ½" X 11" Minimum, 11" X 17" Maximum

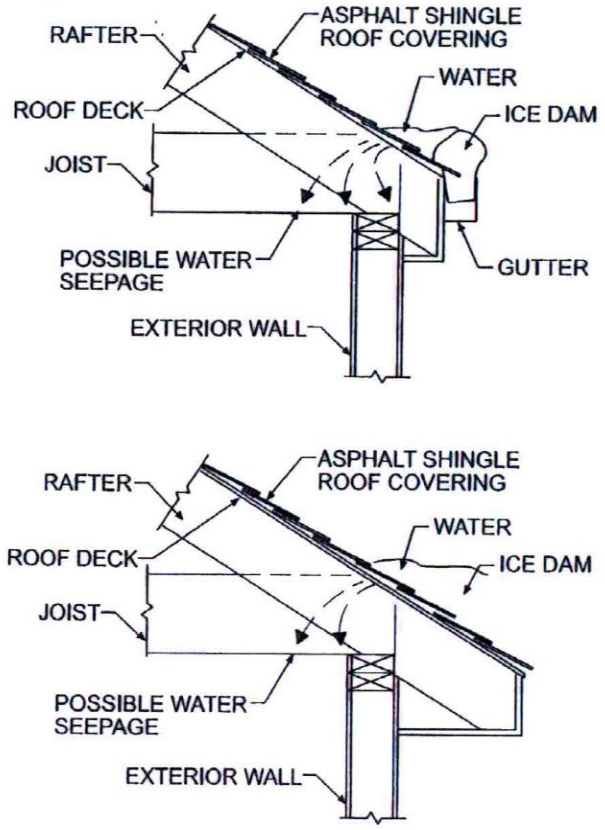
- **Required Bold Lines:**
  - Property Lines
  - Lot & Block Number
  - Top of Foundation (T.O.F.) (*i.e. top of Concrete, CMU, ICF, etc.*)
  - Top of Garage Floor (*usually at least 6" or more below the T.O.F.*)
  - Curb & Gutter Linework with Top Back of Curb Elevation (T.B.C.) (*this elevation shall be surveyed to ensure accuracy in determining proper T.O.F. elevations and correct driveway slope calculations*)
  - Building Outline (*Including Cantilevers & Garages*) to Include Attached Structures, i.e. Decks, Porches, Retaining Walls, Breezeways, etc
  - Show any accessory structures such as a shed or a garage
  - Scale Bar. Standard Engineering Scale Only. Architectural / Fractional Scale will not be accepted.
  - Scale: 1"=20', 1"=30', 1"=40', 1"=50', or 1"=60', or 1"=100'(*max*)
  - Proposed Water & Sewer Line Locations from the Structure to the City Mains
  - Show all easements on the property, and Label Size and Type of Easement
  - Drainage Flow Arrows (*sufficient amount to allow reviewer to adequately understand flow patterns*)
  - If known, show the locations of the electrical, gas, and telecommunications lines & easements

- **Gray Scale Lines:**
  - Building Setback Distance → Front, Side & Rear Yards – From Building (*Including Cantilevers & Garages*) to Property Line
  - Finished Grade Contour Lines. Extend 20' (*minimum*) Beyond the Property Lines. (*the overall existing subdivision contours shall be modified to more adequately show the intra-lot drainage*)
  - One (1) foot or two (2) foot contour intervals (*1 foot preferred*)
  - Adjacent Streets (*Provide Street Name(s)*)
  - Driveway Location & Slope – Show Width and Depth dimensions (*indicate if a 4' shelf around the front of the garage door will be installed, as this will drastically affect the driveway slope*)
  - Sidewalks, walkways, patios, and/or other flatwork

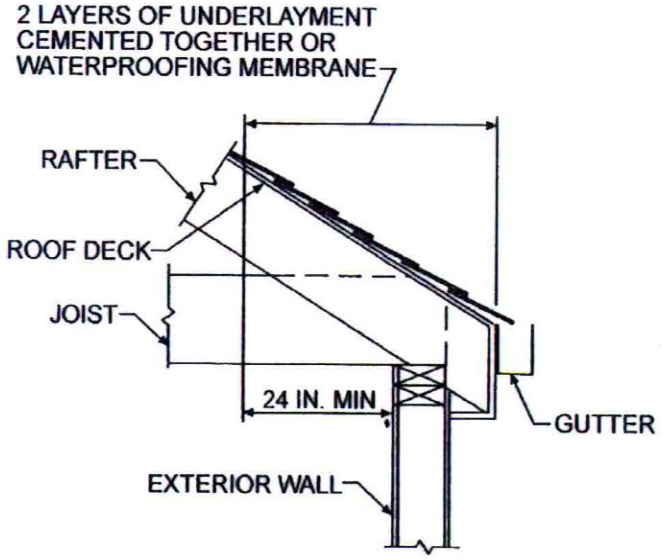
- **Bottom Right Corner:**
  - Property Address
  - Property Legal Description: Lot, Block, and Subdivision

- **Bottom Center:**
  - Surveyor/Engineer/Architect
  - Company Name
  - Company Address, Phone Number, and E-mail

Note: *A foundation location certification is requested at, or prior to, the sill plate inspection. Vertical construction without the foundation location certification is at the builder's risk. The location certification shall be signed and sealed by a Wyoming Registered Surveyor.*



POSSIBLE WATER DAMAGE FROM AN ICE DAM



Protective Ice Barrier