

# Plan Review Narrative

The following is a description or narrative of the various submittals and plan elements required for single family dwelling plan submissions as listed on the back of the “[Residential Construction Application](#)”. It is intended to assist those who are submitting house plans, better understand what is needed to demonstrate compliance with the [Uniform Statewide Building Code \(USBC\)](#) which consists in part of the International Residential Code (IRC).

To better understand these requirements, it is helpful to know some general terms;

**Plan View:** Plan views are drawings that show the layout of a particular part of the overall plans as if you were looking down from overhead. Plan views are most often used to show the layout of the footings, foundations (including vents & access hatches), floor framing & girder / beam orientation as well as general room or floor plans. A property survey is a good example of a plan view.

**Section View:** Section views are drawings similar to a profile (as if you were cutting through a section of the building) that depicts a particular portion of the structure, such as porches and walls. A [typical wall section](#) will show a side view or profile of the footer, foundation wall, foundation sill plate with anchors, piers & girders, band-board & floor joists, sub-floor, bottom plate of the stud-wall, wall studs, double top plate of the stud-wall, ceiling joists, roof rafters with collar-ties or roof trusses, roof sheathing, insulation (floor, wall & ceiling), soffit venting and ridge venting.

**Scale:** A scaled plan is a proportionate representation of the proposed work. Typical plan scales are  $3/16" = 1'$ ;  $1/4" = 1'$ ;  $3/8" = 1'$ , etc. Plan views are often drawn in  $1/8"$  to  $1/4"$  per foot; while specific plan details might be drawn in  $3/8"$  to  $1/2"$  per foot.

**Footing:** This is most often a mass or pad of concrete placed in the ground (at least 18" below grade) in a trench excavation, that supports the masonry block &/or brick work foundation. Wood columns &/or post can also be supported and attached to a footing.

**Foundation:** This is generally the masonry block &/or brick work which includes the parameter foundation wall as well as interior piers that support the first floor wood framing. Most foundations are vented which means that there are a series of openings (foundation vents – minimum 1-square-foot per 150-square-feet of crawl space area) that allow air flow through the crawl space to reduce the potential of damage due to excessive humidity & moisture which can result in mold & mildew.

**Sill Anchor:** This is generally a ½" X 10" L-Bolt that is embedded (grouted) in the foundation to provide a solid connection between the masonry & the wood framing above. Bolts are required within 12" of corners & splices in the sill & no more than 6' on-center.

**Sill Plate:** This is a piece of treated 2X lumber laid flat on top of & bolted to the foundation wall, which provides a solid means of connecting the floor joist to the foundation; it also helps spread out the load of the individual framing members over a larger area of the foundation, which might otherwise crack or break under the point load of a single joist.

**Band Board:** This is generally the same size (usually treated) lumber as the floor joist and sets vertically on top of the sill plate along the building's parameter & provides lateral support for the floor joist which are face-nailed through the band-board. The band-board and floor joists are also toe-nailed to the sill plate which provides a solid connection between the foundation & the floor framing system.

**Girder:** A girder is a beam that spans between and is supported by the interior foundation masonry / block piers or posts. Generally made up of triple 2X lumber or Laminated-Veneer-Lumber (LVL's – requires manufacturer's specification sheet or beam calculation) and provides support for the floor joists or concentrated point loads. The floor joists are toe-nailed to the girder.

**Floor Joist:** Floor joists are generally 2X6 (or larger) lumber or engineered wood products often referred to as TGI's (requires manufacturer's specification sheet and/or span calculation), that make up the floor structure system to which the sub-floor (plywood) is nailed. They are stood on end & normally spaced 16" on-center, although spacing on 19.2" & 24" centers are also fairly common.

**Stud-Wall:** A stud wall is generally made up of #2 2X4 lumber, consisting of a bottom-plate (laid flat on the floor system), the vertical studs & a double top-plate. The exterior stud wall gets "sheathed" with ½" plywood or wood structural panels which provide lateral support for the walls (see wall bracing) as well as a nailing substrate for siding and exterior trim. The interior stud walls normally get covered with gypsum wall board. The stud walls will also support the roof structure, ceiling joist or second floor framing.

**Ceiling Joist:** Similar to the floor joist, ceiling joist are generally 2X6 (or larger) lumber to which the interior ceiling (normally gypsum wall board) is affixed. They are usually supported by the stud walls.

**Roof Rafter:** Rafters are the sloped framing members to which the roof sheathing & shingles are attached. Rafters are usually 2X6 (or larger) lumber configured as an "A-frame" or gable. They are nailed to & span from the exterior

stud wall top-plate to the ridge board or ridge pole. The top of the roof slope is called the ridge and the bottom of the roof is called the eave. There are **Valley-Rafters** which is where two intersecting roofing planes meet, forming a “V” (the two intersecting rooflines form a chute where the rain collects and is funneled down). There are also **Hip-Rafters** which is where two roofing planes meet, forming an outside corner. A hip is essentially the opposite of a valley (much like the ridge of a mountain where the two intersecting rooflines shed the rain away from the peak). Engineered **roof trusses** are also commonly used. Truss specifications and layout (Plan view) must be submitted and bear the seal of a Professional Engineer (P. E.).

**Header:** A header is a double or better - 2X6 (or larger) “beam” that is used to span the top of a door or window rough framing opening in a stud wall. Headers are installed to carry the load of the ceiling, floor &/or roof structure above. The load of a header is supported by a vertical stud(s) called a “jack(s)”.

**Beam:** A beam is usually a steel or multilayer (double or better) wood member used to carry a uniform or concentrated (point) load over a long span.

**Live Load:** This is the load or weight of the occupants & furnishings. Generally expressed in pounds-per-square-foot (psf); bedroom floors are required to be capable of supporting 30psf – all other floor areas are required to be capable of supporting 40psf.

**Dead Load:** This is the load or weight of the structure itself; usually expressed in pounds-per-square-foot (psf).

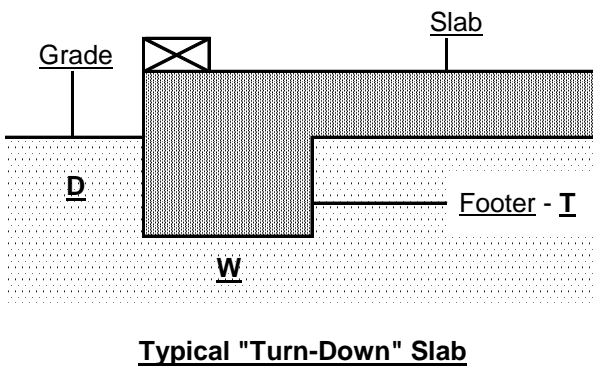
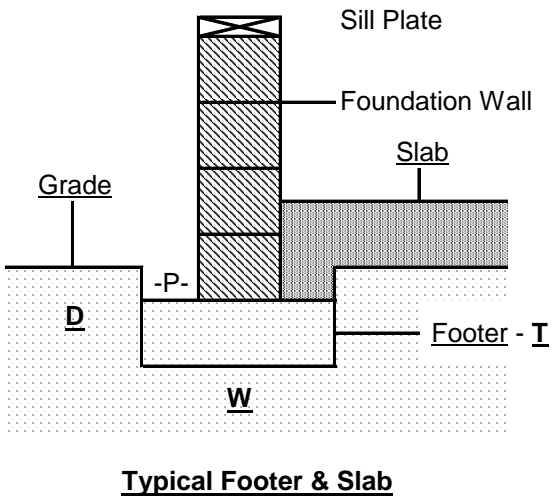
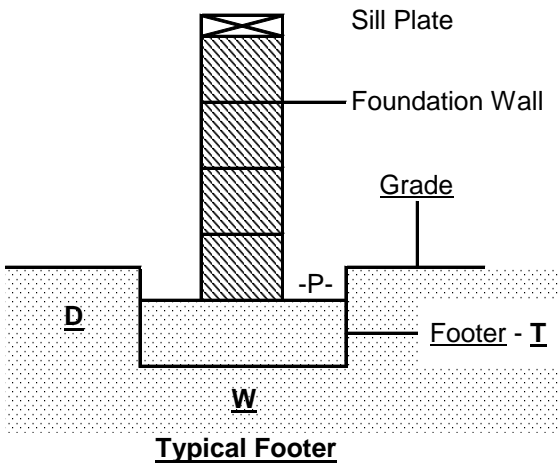
**Point Load:** This is the concentration of either or both dead & live loads in a single location and supported on columns, posts or a series of studs; often called “jacks”. All loads are required to be transferred through the structure and onto the foundation / footing. Because a point load concentrates the load of a large area onto a specific place in the structure, we require that point loads be designated on the footing / foundation, floor-plan, floor & ceiling framing plans & roof-framing plan.

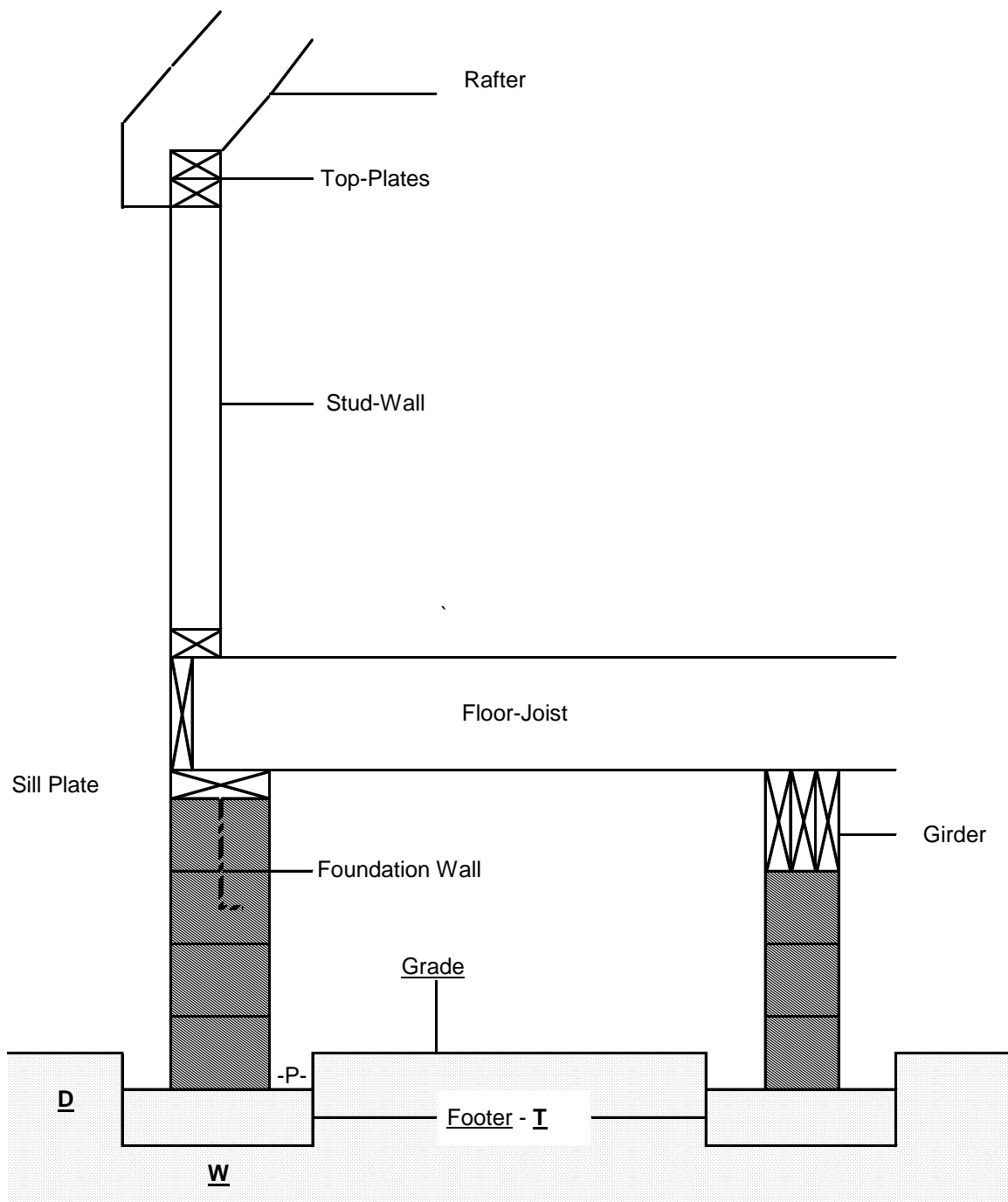
**Braced-Wall-Lines & Braced-Wall-Segments or Panels / Narrow-Wall-Bracing:** Wall bracing is required by the building code and is intended to enable the proposed structure to withstand the impacts of design high wind loads and the effects of any potential seismic activity. The requirements are difficult to convey in a simple definition. For more information, please call our office to speak with someone or you can see [USBC](#) Section 602.12.

The check-list on page 2 of the Residential application consists in part of the following items that will be needed to perform a plan review. Some items on the checklist have been combined as they are similar;

- 1) **Private Sewage Disposal System Permit** – This is a copy of your permit and associated paperwork for the installation of a residential septic system & well, which is issued by the [Sussex County office of the Virginia Department of Health](#). If the proposed work site is served by a public or community well &/or sanitary sewer system, then you would place a check in the N/A (Not Applicable) column. See “Water & Sewer Tap Fees” below.
- 2) **Zoning Permit or Waiver** – Depending on where the proposed work is located a zoning permit or waiver must be issued by either the [Sussex County Planning Office](#) or by the Zoning Administrator of the [Towns of Waverly, Wakefield, Stony Creek or Jarratt](#). **All applications for any type of construction must have a zoning permit or waiver.** Essentially a zoning permit or waiver tells us that the proposed work is allowed or permitted in accordance with local land use regulation or zoning ordinances. A site plan or survey would usually accompany the zoning permit.
- 3) **Water & Sewer Tap Fees** – These are copies of your tap fee receipts that demonstrate that you have applied for and have been approved to connect or “tap” onto either the Sussex Service Authority, Greenville County Water and Sewer Authority, the Town of Waverly, or Town of Wakefield’s water & sewer systems. If the proposed work site is served by a private well and/or sanitary sewer system, then you would place a check in the N/A (Not Applicable) column. See “Private Sewage Disposal System Permit” above.
- 4) **Footing & Foundation Plan** – This is a scaled & dimensioned “plan view” drawing that depicts that layout of the parameter & interior pier footings as well as the foundation wall including the location & size of the crawlspace access & foundation vents as well as any point loads. Generally the footings are denoted by dashed lines; the foundation (brick &/or block work) is denoted by solid lines with hash-marks or shading inside; point loads are denoted as a black square or dot. Dimensions should denote the outside measurements the parameter walls as well as the distance between interior footings & pier rows (girder / beam) lines.
- 5) **Footing & Foundation Details** – This is a scaled & dimensioned “section view” drawing that depicts the configuration of the footing, foundation / piers, sill anchors, sill, band-board, floor joist, girders, sub-floor & at least a portion of the bottom of the stud wall. This can be included in a full wall section view which is often called a “[Typical Wall Section](#)”. This view must include dimensions and notations for each of the items previously mentioned.

- 6) [Floor Plan \(1<sup>st</sup>, 2<sup>nd</sup>, etc.\)](#) – This is a scaled & dimensioned “plan view” layout of the various rooms & the room uses or identification (i.e. bedroom, kitchen, den, etc.). The floor plan should show walls, doors, windows, stairs, locations of smoke detectors, porches, decks, point loads and other similar features. Engineered wood products used require manufacturer’s specifications, specification sheets or beam / span calculations.
- 7) [Floor Framing Plan \(1<sup>st</sup>, 2<sup>nd</sup>, etc.\)](#) – This is a scaled & dimensioned “plan view” drawing that depicts the layout &/or orientation of the floor framing members (i.e. footing / pier locations, size, on-center spacing, spans & orientation of girders, floor joists & band-boards). Often the floor framing plan is incorporated with the footing & foundation plan; in the case of 2<sup>nd</sup> or 3<sup>rd</sup> floor framing plans, these are generally a stand-alone plan. Point loads should also be denoted. Engineered wood products used require manufacturer’s specifications, specification sheets or beam / span calculations.
- 8) [Ceiling Framing Plan](#)– Essentially, this is very similar to a floor framing plan in that it is a scaled & dimensioned “plan view” drawing that depicts the layout &/or orientation, size, on-center spacing and spans for the ceiling joists as well as any point loads.
- 9) [Roof Framing Plan](#)– Again, this is similar to the floor & ceiling framing plans providing a scaled & dimensioned drawing that depicts the layout &/or orientation, size, on-center spacing and spans for the roof rafter framing system, which includes the bearing walls, point load locations, rafters, ridge & valley rafters. Truss specifications and layout (Plan view) must be submitted and bear the seal of a Professional Engineer (P. E.).
- 10) [Deck Framing Plans & Details](#) – Please see our “[Typical Deck Details](#)” packet. Note, this packet is provided as a guide to good construction practices and as an option for applicants to use in lieu of site specific plan details for their deck construction.
- 11) [Sections & Details](#) – There may be additional building elements that may require other section views or details not otherwise covered by the specific plan mentioned above.
  - a.) A specific example is “[Wall Bracing](#)”. We now require that house plans designate the method of bracing (continuous sheathing is the most common method), braced-wall-lines as well as the location & length of the braced-wall-segments or panels. Also provide any “narrow wall” bracing details that may apply. Narrow wall conditions are commonly found adjacent to a large garage door opening or where there are a lot of windows, such as sunroom.
- 12) [Two \(2\) sets of complete construction documents and plans](#) – Two sets of everything related to the construction of the proposed dwelling are required. This includes manufacturer’s specification sheets and/or beam calculations for all engineered wood products (LVL’s, TGI’s, etc.) as well as any steel members.





**Typical Construction Cross-Section**