RESIDENTIAL PLAN REVIEW GUIDELINES

City of Port Angeles
Building Division
321 E. 5th St.
Port Angeles, WA 98362

PLAN REVIEW
Items described here are only a guide to common questions and missed items during plan review and construction. All codes must be complied with. (Please read and follow each item.) ***SPECIAL NOTE: Check item #59 first to see if engineering will be needed because of lateral design issues.***

GENERAL:

1. Final grading of the property must be done prior to final inspection, even if owner is doing required retaining walls. Occupancy of the home will not be allowed until there are no slopes steeper than 2 units horizontal to 1 unit vertical, or retaining walls are in place, or an accepted soils report is submitted to the City. If a soils report was required initially, all requirements of the soils report must be accomplished prior to final inspection including submittal of all field reports.

2. Acrylic stucco products have special requirements. Verify such with the manufacturer. Requirements may include tongue and groove foam board under finish, control joints, special backing boards (sometimes OSB is NOT allowed), self-furring or furred-out wire or fabric lath, and sometimes installation by a certified installer (certified by the manufacturer). Verify any and all requirements of stucco siding or acrylic stucco products. **NO INSPECTION OF LATH OR STUCCO IS REQUIRED, BUT WRITTEN CERTIFICATION BY A MANUFACTURER'S CERTIFIED INSTALLER MUST BE LEFT AT THE JOB SITE UNTIL FINAL INSPECTION BY THE CITY.**

3. Inspection of shear wall nailing, roof sheathing to blocking nailing, and hold downs must be requested in addition to standard inspections and before such items are covered up. Please specify shear nail, roof nail, or hold-down inspection when you request these; they may be done simultaneously, if ready.

4. This plan is approved for OSB or plywood exterior wall sheathing only unless the approved plans at the time of permit issuance reflect other materials being used. Any change to wall sheathing material after permit issuance must be submitted to the city for review prior to installation. An additional plan review fee will be assessed.

5. "Tyvek" or equal approved weather resistive barrier (15# felt is OK) required on the exterior side of all walls, regardless of the type of siding used. This includes garage walls, gable portion of end walls, and cripple walls (at stepped foundation conditions). Apply over exterior sheathing or over studs in single-wall construction. **T-1-11 or similar panel siding must have "Tyvek" or equal over the studs.**

6. Exterior windows and doors shall be flashed with approved materials and caulking. Caulked trim material over the window or door flange is not an acceptable method.

7. Overall dimensions of house plan must match site plan dimensions. Verify any special requirements for buildings located close to property lines. R302

LIFE-SAFETY & MISC. ITEMS:

8. Sleeping rooms must have an egress window with 5.7 s.f. net clear opening, 24" min. height, 20" min. width, 44" maximum from floor to window sill. **Windows must meet all 4 dimensions**. R310.1

9. Safety or tempered glass shall be used in windows that are (R308.4):

- Adjacent to a door (24" arc of either edge of the door in a closed position)
- That are closer than 18" to floor (AND individual pane is more than 9 s.f., top edge more than 36" a.f.f., and walking surface within 36" horizontally of the window in question)
- Walls enclosing a tub or shower (AND within 60" of the drain or within 60" of walking surface). R308.4
- Adjacent to stairways, landings, and ramps within 36" horizontally of a walking surface (AND less than 60" a.f.f. of the walking surface).
- Adjacent to stairways within 60" of the bottom tread of the stair in any direction (AND less than 60" a.f.f.)

10. Under-stair areas that are enclosed and accessible must be sheetrocked, 1/2" GWB on walls and underside of the stairway. R311.2.2

11. Stairways shall have 10" min. tread and 7 3/4" max. rise. R311.5

12. Provide 36" high guards (with 4" max. spacing on rails) at porches, balconies, and raised floor surfaces more than 30" above adjacent ground or floor. R312.1

13. Smoke detectors required at all bedrooms, hallway or room adjacent to bedrooms, and at any ceilings that are more than 24" above adjacent ceiling. All smoke detectors interconnected and hardwired with battery back-up. R313.1

14. Garage/house separation wall is 1/2" GWB; door must be 20 min. rated or 1 3/8" solid-core. If living space above, use 5/8" GWB Type "X" at the ceiling AND 1/2" GWB at walls that support the floor above. Ducts in garage must be 26-gage sheet steel and have no openings in the garage. R309

15. Exterior stairways must have a light located near the top landing of the stairway switched from inside (or have motion-activation device). R303.6

16. Minimum room areas must be provided (120 s.f. min. in at least one room, 70 s.f. min. all other habitable rooms, 7 foot min. dimension in all habitable rooms). R304.1

17. Minimum ceiling heights must be provided (7 foot min., with some exceptions). R305.1

FOOTINGS, FOUNDATIONS, AND CRAWL SPACES:

18. All footings including exterior isolated pad footings must have a 24" (min.) depth from the bottom of the footing to finished grade. R403.1.4.1

19. All footings shall be supported on undisturbed natural soils or engineered fill. Any placement of fill material that will support a structure will require a geotechnical investigation and report submitted to the City prior to placement of footings. R401.2 & R403.1

20. Lots shall be graded to drain surface water away from foundations. The grade shall fall 6" in the first TEN feet around the perimeter of the structure. R401.3

21. Top surface of footings shall be level. Bottom surface of footings shall not have a slope that exceeds (1) unit vertical in (10) units horizontal. Any necessary stepping of the foundation must be approved during plan review **or** prior to installation of the foundation. R403.1.5

22. Wood sill plates of all exterior walls, interior bearing walls (slab-on-grade), and interior shear walls (slab-on-grade), must be anchored to foundation or slab with ½ " X 10" J-bolts with a 2" X 2" X 3/16" plate washer. Anchor bolts to be placed a maximum of 12" and no closer than 3 ½" from the ends of the sill plate. Each piece of sill plate must have a minimum of (2) anchor bolts. Anchor bolts shall be spaced no further than 6 feet apart. (Special spacing and sizing conditions may apply at alternate braced wall panels). R403.1.6

23. 6" clearance required from finish grade to foundation mudsill plate. R319

24. 3 1/2" (min.) thickness for all concrete slabs-on-grade. R506.1

25. Footing and foundation wall SIZES for two pour system:
(Foundation walls NOT over 5 feet in height)

- Footing supporting single story- 12" wide X 6" thick.
- Foundation wall supporting single story- 6" thick
- Footing supporting two stories- 15" wide X 7" thick.
- Foundation wall supporting two stories- 8" thick.
- Foundations that support more than two stories require an engineered design.

26. Footing and fnd. REINFORCEMENT for two pour system (fnd. walls <u>NOT</u> over 5 feet in height):
(Footings supporting single or two stories)

- One continuous #4 horizontal rebar placed at center of footing with 3" (min.) clearance from dirt.

(Foundation walls not over 5 feet in height)

- One continuous #4 horizontal rebar placed within the top 12" of the wall.
- #4 vertical rebar placed at 48 inches o.c. max (wet set ok), with a 6-inch, 90-degree hook. A minimum of (2) vertical bars to be placed at front garage wall returns.

27. Monolithically poured foundation systems:

- Bottom of footing shall be 12" wide (min.) and extend to 24" below finished grade minimum.
- Footing shall have either one #5 continuous, horizontal rebar placed at center and 8" above bottom of footing, **or** (2) #4 continuous, horizontal rebar placed at center and in the middle third of the footing measuring vertically.
- 3 1/2" minimum slab thickness.
- When a monolithic system is used to support heated spaces, an R-10 insulation board must be installed on the outside of the foundation extending from bottom of footing to top of slab. Exposed foam insulation above grade must be protected from damage and sun with approved materials. The material used must extend a minimum of 12" below grade.

28. Basement Walls (up to 9 feet) or Stem Walls (over 5 feet) or <u>*STEPPED FOUNDATIONS*</u>. There are special restrictions for this type of foundation wall under the new code. In plan view, the length of this type of wall cannot exceed **<u>35 feet</u>**. For stepped foundations, this wall cannot exceed 7 feet high otherwise the floor joists must connect DIRECTLY to the wall (for bracing the foundation wall). WET-SETTING IS NOT allowed for the alternating hooks into the footing. There are special blocking requirements if any of these conditions cannot be met (***<u>note on the plans</u>***!). See R404.1

29. Under-floor pier pads supporting uniform load of wood framed floors shall be 18"x 18" x 8" (min.). Point loads from other than floor girders will require larger footings sized according to the concentrated load. R403.1.1

30. Beams and/or girders in crawl space must meet span requirements for the loads imposed (from floor joists and from any point loads). R501.2

31. Access shall be provided to all under-floor spaces. Access openings through the floor shall be a minimum of 18" x 24". Openings through a perimeter wall shall be a minimum of 16" x 24". R408.3

32. Under-floor spaces shall be ventilated by openings providing one (1) square foot of vent area per 150 square feet of crawl space area. One such ventilating opening shall be within 3 feet of each corner of the building. R408.2

33. A ground cover of 6 mil black polyethylene or approved equal shall be laid over the ground within crawl spaces. The ground cover shall be overlapped 12" and extend to the foundation wall. WSEC 502.1.6.7

34. The under-floor grade shall be cleaned of all vegetation and organic material. All wood forms and construction debris shall be removed prior to final inspection. R408

35. Thickened-slab footings must be 12" min. total depth (top of conc. slab to bottom of footing = 12" total) (Revised from IRC)

36. Foundation cripple walls shall be framed of studs not less in size than the studding above. Cripple walls with a height less than 14 inches shall be sheathed on one side with a wood structural sheathing or shall be of solid blocking. Cripple walls count as an additional "story" for lateral purposes. R602.9

FLOOR FRAMING:

37. 18" (min.) clearance beneath all floor joists and 12" (min.) clearance beneath floor girders (beams) in crawl spaces. R308

38. Span of all joists (including 2nd level joists) must meet minimum live load of 40 psf (general living areas) or 30 psf (sleeping rooms) together with dead load of materials used. R301.5 and Table R301.5

39. Span of beams for 2nd level or other supporting elements must meet minimum live and dead load requirements. R301.5

40. Wood posts in the crawl space shall have a connection to the concrete pier and a moisture barrier between the post and footing (**or** use pressure-treated posts). R319 & R407

41. Solid-sawn floor joists shall be blocked at all bearing points. Engineered floor joists shall be installed per manufacturer's specifications. R502.7

42. Cutting, drilling, and notching of floor joists shall not exceed the limitations in Figure R502.8

43. Cutting, drilling, and notching of engineered I-joists shall be in accordance with the manufacturer's specifications. R502.8.2

44. All concentrated point loads originating from roof or floor load shall be transferred to bearing footings or foundation walls. Continuous support shall be provided by members that are equal in cross-sectional area to the area of the load imposed and shall not be reduced in size at any point.

45. Wood members supported in concrete or masonry pockets shall have a ½ inch air space provided at tops, sides, and ends of the member.

46. All foundation plates, sills, and sleepers bearing on a concrete foundation or slab that is in direct contact with the ground shall be pressure treated. All wood-framing members that rest on concrete foundations and are within 8" of exposed ground shall be pressure treated. R319

47. Sawn lumber floor joists shall have 1½" (min.) bearing and shall lap 3" min. at intermediate girders. Engineered I-joists shall have 1 3/4" (min.) bearing (or per manufacturer's specifications).

48. Floor joists that are parallel to bearing partitions shall be doubled. Some heavier load cases will require girder beams or pony walls. Bearing partitions perpendicular to floor joists shall not be offset from the supporting girder more than the depth of the joists unless the floor joists are of sufficient size to carry the load. R502.4

49. Floor cantilever spans shall not exceed the depth of the nominal floor joists. Floor cantilevers constructed in accordance with Table R502.3.3 (1) shall be permitted when supporting a light framed bearing wall and roof only. R502.3.3

50. Block in between floor joists beneath all interior braced walls (for walls perpendicular to joists) or align floor joist with interior braced wall (see item #63-T).

WALL FRAMING:

51. Wall studs taller than 10 feet shall have a stud height analysis by a professional engineer or architect. Table R602.3.5

52. Non-load bearing stud heights shall be in accordance with Table R602.3 (5).

53. Studs shall be a minimum #3 grade, standard grade, or stud grade lumber. R602.2

54. Where joists, trusses, or rafters are spaced more than 16" o.c. and the bearing studs below are spaced at 24" o.c., such members shall bear within 5" of the studs below unless the top plates are double 2x6, or a third plate is added. R602.3.3

55. Headers over windows and doors must meet minimum requirements for spans and imposed loads, verify point loads over openings (from trusses or other conditions) and size headers accordingly. Headers must be noted with size, type, and grade of lumber being used.
GENERAL NOTE STATING ALL HEADERS SHALL BE: _____ is acceptable.

56. Interior bearing walls must have headers over openings and must be supported to a foundation.

57. Top plate splices shall be offset a minimum of 24 inches. R602.3.2

58. Fire-blocking required at dropped ceilings, soffits, coved-ceiling areas, and every ten feet horizontally and vertically at framed walls. R602.8

59. Port Angeles is in Seismic Zone D1, Wind zone of 100 MPH Category C (within 1500 ft from shore line is Category D) per the 2006 IRC. When a house is considered IRREGULAR by any ONE the definitions below, the code will NOT allow prescriptive bracing for Seismic Zone C, and the entire house must have a lateral analysis and design by a licensed engineer (R301.2.2.2.2). Per that section of the code ***NO MIXING OF PRESCRIPTIVE AND ENGINEERED LATERAL SYSTEMS IS ALLOWED UNDER THIS NEW 2006 IRC.***

The following are items that constitute an ***IRREGULAR BUILDING*** per the 2006 IRC.

A. Exterior braced wall lines must be in one plane vertically from foundation to the uppermost story (basically, the upper floor must match the lower floor footprint). The most common area where problems like this occur is in a garage with a second floor over it. To qualify for prescriptive bracing, the second floor joists must extend to the exterior walls of the garage. If this does NOT occur, then your proposed house is IRREGULAR. If the joists do extend to the exterior walls of the garage, then the setback of the second floor walls cannot be more than four (4) feet setback from the garage walls

(see p. 44 of the 2006 IRC). Rooms created by roof trusses are OK under this provision (such as bonus rooms over garages formed by the trusses/rafters).

B. The perimeter of all floor diaphragms and all roof diaphragms must be supported on WALLS below. If you have beams holding up any part of the perimeter of a floor or a roof, then your proposed house is IRREGULAR. The most common place you will find this problem is at large covered porches and patios, where the roof is supported only by post and beams. Such covered porches and patios also make the building IRREGULAR. Related to this are areas of discontinuous diaphragms, especially changes in plate line heights which also are considered as separate "roofs" and therefore make the building IRREGULAR.

C. In any elevation of the exterior, the braced walls from an upper level wall must NOT occur over a window or door. In general, this means that the windows of the upper story must align with the windows of the lower story. There are some exceptions based on up-sizing the header in the window below (see 2006 IRC, p. 44 for details).

D. When an opening in a floor or roof (such as a balcony-overlook area or a courtyard area) exceeds the lesser of 12 feet or 50% of the least dimension, then your proposed house is IRREGULAR.

E. When portions of a floor level are vertically offset (such as a "sunken" room), then your proposed house is IRREGULAR. This does not apply to a slab-on-grade floor.

F. When braced wall lines do not occur in two perpendicular directions (such as portions of the house or garage at an "angle" to the rest of the building), then your proposed house is IRREGULAR.

G. If you have any portion of the above-grade walls that use masonry or concrete construction, then your proposed house is IRREGULAR. Stepped foundations that create a daylight basement situation are OK under this provision and do not make an irregular structure.

60. THIS APPLIES TO ALL LATERAL BRACING (ITEMS 61 THRU 65). Add up all lengths of braced panels (4 foot braced panels, 2'-8" alt. braced panels, and 24" or 16" portal frames COUNT as 48" of length; each portal frame counts as a total of 48" of bracing length—***not*** 2 times 48") along the wall in question. The total length of braced walls must be at least 16% of the entire wall length AND the panels must occur at least every 25 feet along the wall. For 1st story of 2-story house, 30% of the entire wall length must be braced walls. Check this for all braced wall lines, including INTERIOR WALLS and including the front wall of a garage if it is not part of another braced wall line (i.e., the garage sticks out in front of the house more than 4 feet). See also #65 T below for areas where MORE than 35 feet between wall lines is needed.

61. Garage lateral bracing systems with no 2nd floor above:

H. Portal Frame for Garages (16" side panels @ 8 foot max. high walls, 20" side panels @ 10 foot max. high walls).

I. Alternate Braced Walls—single-story condition (2'-8" min. width X 10 foot max. height), sheathed on one side (interior or exterior OK) with min. 3/8" OSB or plywood and nailed with 8d common or galv. box nails and blocked at all edges. Two (2) anchor bolts in sill plate & two (2) hold-down devices @ furthest studs (1800 pound capacity hold-downs).

J. Alternate Braced Walls—first floor of two-story condition (2'-8" min. width X 10 foot max. height), sheathed on **BOTH** interior and exterior sides of wall with min 3/8" OSB or plywood and nailed with 8d common or galv. box nails and blocked at all edges. Two (2) anchor bolts in sill plate & two (2) hold-down devices @ furthest studs (3000 pound capacity hold-downs). There are some provisions for plate lines up to 12 feet high, see Table R602.10.6 (basically a wider wall, 3'-6" min. length for 12 feet high).

K. Front Garage Panels—no hold-downs required.

L. The exterior braced wall lines in a detached or attached garage cannot be more than 35 feet apart in either direction or interior braced walls must be provided.

62. 1st Floor Conditions - Four (4) foot solid walls at all corners and at every 25 feet along any braced wall line **OR** use one of the methods below.

M. Portal Frame for a House (slab-on-grade floors ONLY) 16" min. width for one-story structures, 24" min. width for first floor of 2-story.

N. Alternate Braced Walls—single-story condition (2'-8" min. width X 10 foot max. height), sheathed on one side (interior or exterior OK) with min. 3/8" OSB or plywood and nailed with 8d common or galv. box nails and blocked at all edges. Two (2) anchor bolts in sill plate & two (2) hold-down devices @ furthest studs (1800 pound capacity hold-downs).

O. Alternate Braced Walls—first floor of two-story condition (2'-8" min. width X 10 foot max. height), sheathed on **BOTH** interior and exterior sides of wall with min 3/8" OSB or plywood and nailed with 8d common or galv. box nails and blocked at all edges. Two (2) anchor bolts in sill plate & two (2) hold-down devices @ furthest studs (3000 pound capacity hold-downs). There are some provisions for plate lines up to 12 feet high, see Table R602.10.6 (basically a wider wall, 3'-6" min. length for 12 feet high).

P. "Simpson" Brand StrongWalls—this method is still available following all the manufacturer's specifications for connections.

Q. Entire House Sheathed with OSB or Plywood—this method allows smaller side panels than 4 feet in accordance with Table R602.10.5. **CHECK THE OPENING HEIGHTS ADJACENT TO THESE PANELS!**

63. 1st Floor Conditions – Braced wall (any of the methods listed above) must start at no more than 12.5 feet away from the corner of the braced wall lines and then at every 25 feet (min.) along the wall line.

64. 2nd Floor Conditions – Braced walls (either of the methods listed below) must be within 12.5 feet of the corner of the wall line in question.

R. Standard four (4) foot panels on 2nd levels can start at no more than 12.5 feet away from the corner.

S. Entire House Sheathed with OSB or Plywood—this method allows smaller side panels than 4 feet in accordance with Table R602.10.5. **CHECK THE OPENING HEIGHTS ADJACENT TO THESE PANELS!**

65. Exterior braced wall lines (or together with some interior wall lines) cannot be more than 35 feet apart.

T. Certain areas can be up to 50 feet apart between wall lines IF there is additional bracing along the exterior wall in question (50/35 = 1.43 more bracing than normally required, or in other words 23% of the total wall in bracing for 1-story wall; 43% of the total wall in bracing for 1st story of a 2-story house). R602.10.1.1, Exception 1 and 2.

U. Interior Braced Walls can be used when exterior walls are more than 25 feet apart. Interior Braced Walls are minimum 1/2" GWB both sides of wall for a minimum length of 48"; use 5d nails or screws at 7" o.c.; Sole plate of wall must be attached to thickened slab footing (see item #22 above) with 1/2" anchor bolt @ 6'-0" o.c. or solid blocking (walls perpendicular to joists) or LINE UP JOIST with braced wall (walls parallel to joists).

66. The roof sheathing MUST nail into SOLID blocking and the block must connect to the double top plate either with clips or toe-nailed (for blocks that are top-beveled) with 8d @ 6" o.c. For ventilation, use not more than two (2), 2" diameter holes. **BLOCKING MUST OCCUR AROUND ENTIRE PERIMETER OF ALL ROOFS.** Table R602.3 (1). This applies to all houses, both engineered AND prescriptive bracing.

ROOF & ATTIC:

67. Truss drawings must show reactions of all girder trusses, point loads onto headers must have headers sized accordingly, point loads over 5000 lbs. onto double-top plates must be checked for bearing capacity. Use "Simpson" brand TBE4 or TBE6 as needed to spread the load.

68. Truss bottom chord live load must be minimum of 10PSF (see Table R301.5). Trusses must be sized for the roof coverings specified on the plans (concrete tile, etc.) and roof structure must be able to hold up the roof (beams, headers, etc., sized for roof loads). R802.10.2

69. Ice Shield is required for roofs up to 6:12 (6:12 and over DO NOT require ice shield). R905.2.7.1

70. Attic ventilation must be provided at 1/150th of the attic area or 1/300th of the attic area if 50% of the venting can be 3 feet above the eave venting (roof jack vents are 49 sq. in./vent, ridge vents at 12 sq. in./foot). R806.1

71. Attic mechanical equipment, need light and switch near opening and electric outlet. Access opening to such mechanical equipment must be no further than 20 feet from equipment with 22" wide (min.) walkway from access opening to the equipment.

72. Attic access required 22" X 30" min. and shall be in hallway or other readily accessible location. R807.1

MECHANICAL:

73. Appliances located in a garage or carport shall be protected from damage from vehicles. M1307.3.1

74. Gas appliances located in a garage shall be raised 18" min. above finish floor. G2408.2 (305.3)

75. Ductwork that extends below grade (such as in the garage floor) shall be encased in 2" min. concrete on all sides and bottom in addition to the R-10 insulation foam board. 603.8 IMC

76. Dryer exhaust ducts shall not exceed 25 feet in length. The maximum length of the duct shall be reduced 2.5 feet for each 45-degree bend and 5 feet for each 90-degree bend. Longer lengths in accordance with the manufacturer's listing will be allowed. Screws shall not be used to connect any dryer duct materials. M1501.3

77. Flex duct connections to sheet metal transition ducts shall have the inner sleeve taped with approved materials prior to securing the flex duct with a zip tie or similar fastener. 304 IMC

78. Flex duct shall be supported every 4 feet and have no sag that exceeds ½ per foot.

79. All exhaust fan ducts shall be connected to the fan housing and termination fittings with a minimum of 3 sheet metal screws and be sealed with approved tape or mastic.

80. Exhaust fans required, 50 cfm in bathrooms, 100 cfm in kitchen, 50 cfm min. in laundry room, and one fan sized for whole-house ventilation. 302.2.2 WSVIAQ

81. Fuel-burning equipment shall not be installed in a closet, bathroom, or a room readily usable as a bedroom.

82. Water heaters must be secured to structure with straps around tank at 1/3 points to resist lateral displacement. M1307.2

PLUMBING:

83. Cleanouts shall be installed on all sinks and at the upper end of all building drains including any horizontal drain branches greater than 5 feet in length from the main line. A cleanout shall also be installed on the exterior of the house within 24 inches of the foundation wall, level with final grade and shall have a threaded type cap installed.

84. 30" min. width for toilet and 24" clear space in front of toilet (UPC)

85. Water heaters pressure relief and the required drain pan shall have a drain that is ¾" ID copper or cpvc material. NO coil material shall be allowed per code and no reduction in the pipe shall reduce the ID of the material less than ¾". Pex type is a coil material and is not allowed for this application.