

YVE JOB# 16-067	
<b>Design Loads</b>	
Roof	80 PSF
Floors	40 PSF
Decks	
Covered	40 PSF
Uncovered	80 PSF
Wind	90 MPH, Exposure C
Seismic design category	B
Maximum soil bearing pressure	6000 PSF
Minimum soil bearing pressure	1000 PSF
Equivalent Fluid Pressure	
At--Rest	65 PCF
Active	50 PCF

On-site soil conditions are assumed for foundation design purposes. An open hole investigation should be conducted by a geotechnical engineer prior to construction. Any deviations in the assumed conditions shall be reported to Yampa Valley Engineering, Inc, which may require substantial design changes. The contractor/owner is proceeding with the assumed on-site conditions at their own risk.

Foundation design is in accordance with the recommendations made in the geotechnical report #16-10477 dated August 20th, 2016 provided by NWCC. This report is referenced herein as the "Geotech" and the contractor/owner shall implement all recommendations with this report. An open hole investigation should be conducted by the geotechnical engineer to verify conditions prior to construction. Any deviations in the reported design conditions shall be reported to Yampa Valley Engineering, Inc, which may require substantial design changes.

The design herein and all construction standards shall utilize the 2009 International Residential Code.

#### Concrete:

- Place footings on firm, undisturbed natural soil. Footings placed on compacted fill shall require the approval of a geotechnical engineer.
- No concrete shall be poured on frozen sub-grade or be subject to freezing conditions until fully cured.
- All concrete form work shall be adequately braced and tied to form true lines, square corners and plumb walls. Trench forming is not allowed.
- All cast-in-place concrete shall be type I/II and develop 3,000 PSI compressive strength in 28 days.
- All concrete work and reinforcement detailing shall be in accordance with ACI Building Code 301 and 318.
- All reinforcing shall be deformed bars conforming to ASTM A615 grade 60. Deformed bars specified to be field bent, stirrups, and ties can be grade 40, UNO.
- Welded wire fabric shall conform to ASTM 185 and shall be lapped 1 full mesh at splices and be tied together.
- Concrete protection for reinforcement shall be:
  - 3" minimum for concrete cast against earth
  - 2" minimum for concrete poured in forms
  - 3/4" in slabs and walls, not exposed to weather
- Reinforcement shall be fabricated and placed per ACI 315. Make all bars continuous around corners. Lap splices shall be a minimum of 50 bar diameters.
- Slabs, footings, and walls shall not have joints in a horizontal plane. Any stop in concrete work (cold joints) must be made at a third point of span with vertical bulkheads and horizontal shear keys. Continue top bar in wall down through corners of openings for 2'-0" & tie with a vertical bar 3' from opening.
- Provide all accessories necessary to support reinforcing at positions shown on the plans and in accordance with ACI 318.
- All concrete walls shall be mechanically vibrated.
- Floor slabs shall be placed with construction joints per the geotechnical report or 10ft max spacing and/or as shown on the plans.

#### Metals:

- All steel shall conform to the following:
  - Beams: A992
  - Angles & miscellaneous: ASTM A36
  - Bolts: ASTM 307
  - Tube Columns: ASTM A500, Grade B 46ksi
- Fitted web stiffeners shall be 3/8" plates welded continuous on each side of steel beam web under point loads above and at points of support.
- Miscellaneous clips, anchors and connectors shall be Simpson strong tie or approved equal, unless otherwise noted. Products shall be installed in accordance with manufacturer's instructions.
- All steel shall be fabricated and erected per AISC Steel Construction Manual.
- Welding shall be done by a qualified welders with E70XX electrodes.
- Anchor bolts installed in contact with pressure treated wood shall meet the manufacturers specifications for corrosion protection.
- All steel beams shall have wood nailer plates with 1/2" carriage bolts at 36" glued, UNO. ALT: 3/32"Ø drive pins at 24".

#### Carpentry:

- All framing not specifically shown, detailed, or drawn on plan shall comply with the non-engineered requirements specified in the IRC.
- Minimum nailing and wood structural panel attachments shall be as specified in TABLE #R602.3(1) of the IRC. Additional nailing or attachment required for connections are per plan.
- All treated lumber shall be treated in accordance with AWPA Standard U1 to the requirements of the intended use.
- All 2"-4" thick dimensional framing lumber shall be visually graded, S-dry with the following minimum design values:
  - Wall framing: SPF Stud grade or better, E=1,200,000 psi, Fb=675 psi, Ft=350 psi, Fv=135 psi, Fc=425 psi, Fc=725 psi

- Joist or Rafter:
  - SPF No.2 or better, E=1,400,000 psi, Fb=875 psi, Ft=450 psi, Fv=135 psi, Fc=425 psi, Fc=1,150 psi
  - DF-L (N) No.1/No.2 or better, E=1,600,000 psi, Fb=850 psi, Ft=500 psi, Fv=180 psi, Fc=625 psi, Fc=1400 psi
- All 2"-4" dimensional lumber in contact with concrete or masonry shall be treated and have the following minimum design values:
  - Hem-Fir No.2 or better, E=1,300,000 psi, Fb=850 psi, Ft=525 psi, Fv=150 psi, Fc=405 psi, Fc=1300 psi
- All 5" thick and greater dimensional timber framing lumber shall be visually graded, S-dry with the following minimum design values:
  - Beams: DF-L (N) No.1 or better, E=1,600,000 psi, Fb=1,300 psi, Ft=675 psi, Fv=170 psi, Fc=625 psi, Fc=925 psi

- Columns: DF-L (N) No.1 or better, E=1,600,000 psi, Fb=1,200 psi, Ft=825 psi, Fv=170 psi, Fc=625 psi, Fc=1,000 psi
- All structural glued laminated beams shall be AITC stressed rated and have the following minimum design values:
  - Single Span: (24F-V4) E=1,800,000 psi, Fbc=2,400 psi, Fbt=1,450 psi, Fc=650 psi, Fv=265 psi, SG=0.50
  - Multiple Span: (24F-V8) E=1,800,000 psi, Fbc=2,400 psi, Fbt=2,400 psi, Fc=650 psi, Fv=265 psi, SG=0.50
  - Glu-lam beams in exterior applications shall be exterior rated.
- All engineered wood shall be Trus Joist or approved equivalent with the following minimum design values:
  - LVL: E=1,900,000 psi, Fb=2,600 psi, Ft=1,555 psi, Fc=750 psi, Fc=2,510 psi, Fv=285 psi, SG=0.50
  - LSL: E=1,300,000 psi, Fb=1,700 psi, Ft=1,075 psi, Fc=680 psi, Fc=1,400 psi, Fv=400 psi, SG=0.50
  - PSL: E=2,000,000 psi, Fb=2,900 psi, Ft=2,025 psi, Fc=750 psi, Fc=2,900 psi, Fv=290 psi, SG=0.50
- All prefabricated wood I-joists shall be Trus Joist or approved equivalent with the following minimum design values:
  - 1 1/2" TJI 210: Mr=3,795 ft-lbs, V=1,655 lbs, EI=315x10^6 sq.in.-lbs
  - Rim Joist: Per Manufacturer
- All Roof sheathing shall be:
  - Per Diaphragm Schedule, MIN. 1/32" APA Rated 40/20 Exp. 1
- All Floor sheathing shall be:
  - Per Diaphragm Schedule, MIN. 23/32" APA Rated 48/24 Exp. 1 T&G, glued and nailed.
- All Wall sheathing shall be:
  - Per Shearwall Schedule, MIN. 7/16" APA Rated 24/16 Exp. 1.
- All prefabricated I-joists, pre-engineered trusses, specified connectors shall be installed per manufacturers specifications.
- ALL EXTERIOR WALLS SHALL BE SHEATHED. Exterior walls shall be a minimum 2 x 6 @ 16" OC, UNO.
- Interior bearing walls shall be 2x6 @ 16", UNO. For bearing walls perpendicular to floor framing provide full height solid blocking between bays. For bearing walls parallel to floor framing provide additional double floor joists under bearing wall or balloon frame bearing wall below to underside of sheathing.
- Interior partitions (non load bearing) shall be 2x4 @ 16". Support partitions with 2x blocking @ 24" between joists, top and bottom.
- All loads, point or distributed, shall have have continuous uninterrupted path to foundation. 2x squash blocks between floor assembly to match column above.
- Provide solid blocking between joists at all supports, beams or bearing walls. Provide 1x4 cross-bridging or 2x blocking at not over 8' on center for all wood joists.
- Minimum header size shall be 2-2x10's, UNO.
- All king and trimmer studs per plan. Minimum 1 king and 1 trimmer stud at wall openings. All headers consisting of two or more LVL's shall have minimum 2 trimmers and 1 king. All headers consisting of a steel beam shall have a minimum of 3 trimmers and 1 king.

#### Erection Requirements:

- Do NOT scale construction documents, if a dimension is necessary and not shown, Yampa Valley Engineering shall be contacted for dimension needed for construction.
- If a discrepancy exists between the architectural and structural drawings, Yampa Valley Engineering shall be contacted immediately to rectify the discrepancy.
- All structural elements are shown in final erected position. The contractor is responsible for all sequence of construction, shoring, bracing, or temporary work associated to achieve the final structure.
- The main level floor shall be installed prior to the backfill of any foundation wall or adequate bracing must be provided by the contractor to ensure foundation wall stability.
- The basement slab shall be installed and cured prior to the backfill of any foundation wall or adequate bracing must be provided by the contractor to ensure foundation wall stability.
- Expansive soils may or may not be present on-site. All concrete slabs on grade shall be separated from all building finishes to allow for slab movement. Slab movement is caused by numerous conditions, the owner/contractor should take the necessary precautions to limit slab heave. Yampa Valley Engineering shall not be held liable for damage caused by slab movement.

