Handout R.02
Structural Review Items for Plan Review of Residential Permits

SHORT LIST

1. Check of foundation systems.
   a. Check for required spread footings under interior hold downs and point loads.
   b. Check for engineered foundation requirements per plat note or as delineated by the Geotechnical Hazard Assessment Map Hazard Zones 4 & 5. If required, review and approve or comment on it.
   c. Check for concentrated loads from girders and beams.
   d. Check for full grout required in masonry.
   e. Check poured wall thickness as required for number of floors and anchor size embedded in it.
   f. Check design of anchors for hold downs.
   g. Check tall basement wall design and anchor bolts in it.
   h. Verify that damp proofing, waterproofing and insulation is sufficient.
   i. Verify that connection at the top of basement wall is sufficient to transfer soil pressure forces back into the diaphragm and to resisting elements on the other side.
   j. Verify that all elements from the design are on the plans including size and spacing of galvanized anchor bolts.

2. Check gravity framing.
   a. Check manufactured joists or dimensional lumber for joist span.
   b. Is framing around openings sufficient? Provide design.
   c. Are there any cantilevered areas? Are they adequately supported or supporting above load adequately? Provide design
   d. Check any beams used as drag struts for combined forces and connections
   e. Check connections shown at top and bottom of columns and at beam connections.
   f. Do bearing walls stack continuously to foundation? Verify all load paths.
   g. Check beams, bearing walls, footings headers, joists, rafters, and trusses. Provide justification for review to confirm all load paths

3. Check roof system.
   a. Check for girder location and design. Confirm adequate support load path.
   b. Check for uplift (design and resistance. Reflect connection on plan)
   c. Review truss shop drawings for input, reactions, and girder design.

4. Check lateral analysis.
   a. Is it provided?
   b. Are the engineering items on the plans?
c. Are the wind and earthquake profiles correct?
d. Are forces checked both directions and all floors for controlling force?
e. Check that all walls meet minimum aspect ratio of 3.5 to 1 and that no openings are located in a shear panel.
f. Are the shear wall schedules correct and on the plans?
g. Are unused options removed from the plans?
h. Are drag struts located where required by code, designed, and connected with straps?

5. Check diaphragms.
   a. Check design of openings. Provide reinforcement when needed.
   b. Check forces for blocking requirement and verify that elements are shown on the plans.
   c. Check chord forces and lap splices.

6. Check lateral force connections from roof to foundation.
   a. Some connections are standard and do not need to be designed; however, all the details should be on the plans and more complex transfer systems should be designed and detailed by the designer of record.

Robert Doehl, Building Official
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