



Project Name: Klinefelter - SFD
Project Location: 8469 East Spring Park
 Eden, UT

Code by: Josh Goodman
Structural by: Mike Molyneux

SQUARE FOOTAGE SUMMARY:

Main Level	Upper Level	Finished Basement	Unfinished Basement	Deck(s)	Covered Patio(s)	Garage	Carport
2,394 ft ²	2,083 ft ²	714 ft ²	-	- ft ²	- ft ²	- ft ²	- ft ²

The following residential plan review comments address non-compliance with governing 2015 IRC, as adopted by the State of Utah and potential errors or omissions in the proposed design.

PLAN REVIEW COMMENTS:

Please provide a written response to each comment listed. Revisions to the plans and structural calculations are required where identified below. Please cloud any revisions made to the construction drawings and provide the date of the latest revision of each revised sheet.

CODE REVIEW

- A1. Sheet C200 shows an “existing building envelope.” Please clarify if there is an existing building and if this will be an addition or if the other building will be demolished.
- A2. Sheet A001: The mechanical and plumbing notes identify the 2012 IRC, as well as the 2012 IMC and IPC, and IECC. The currently adopted code for residential development in the State of Utah is the 2015 IRC. The entire structure is required to meet the requirements of the IRC. Make all necessary corrections to the plans and provide written verification from the design professional indicating the design meets the requirements of the 2015 IRC.
- A3. IRC Chapter 11RE and the Utah State Energy Code requires either a REScheck or a prescriptive worksheet be submitted. Please provide the required information.
- A4. Per R 408.1 and R4082, identify on the plans how the crawl space will be ventilated and show the size and locations of the vents. If the crawl space is to be unvented, please note how this is to be accomplished, per R408.3.
 - A. Per R408.4, please show the size and location of the crawl space access. The access is required to be a minimum of 18 inches by 24 inches.
- A5. Please clarify the type of mechanical equipment to be installed in Room 203 and address the following:
 - A. Please show the access opening to the mechanical/storage space. Such access must be per M1305.1.2.
 - B. Please show any required combustion air ducts, return ducts, gas outlets, etc. for this space.



- C. Per E3901.12, HVAC equipment requires a servicing receptacle on the same level. Please show this on the electrical plans.
- A6. Per N1102.4.4, the mechanical rooms are required to be insulated. This includes providing weather stripping for the door. Please note these requirements and insulation on the plans.
 - A. In lieu of the insulation, a 90% efficient water heater can be installed.
- A7. G2406.2 prohibits appliances to be located in sleeping rooms, bathrooms or toilet rooms, or in a space that opens only into such rooms or spaces. Mechanical Room 003 would only be allowed in its current location if the requirements of G2406.2 #5 were met. Please address.
- A8. Skylights are shown on the plans. Please detail how these will meet the requirements of R308.6, including any required screens, curbs, etc.
- A9. Per G2407, provide combustion air for all gas-fired appliances including size, type, and location of openings.
- A10. Per R311.7.8, please identify the required handrails on the plans. A handrail is required on not less than one side of each continuous run of treads or flight of stairs with four or more risers. Identify the required handrail height at 34-inches minimum and 38-inches maximum measured vertically from the sloped plane adjoining the tread nosing.
- A11. Per 311.7.8, where there are four or more stair risers, at least one handrail continuous the full length of the stairs is required. Identify the required handrail height at 34-inches minimum and 38-inches maximum measured vertically from the sloped plane adjoining the tread nosing. Please detail the required handrail on the plans.
- A12. Per IRC 311.7.3 and Utah State Amendments, please identify on the plans the maximum riser height shall be 8” and minimum tread depth shall be 9”.

STRUCTURAL REVIEW

S1. S0.1:

- A. Concrete, Footings, Note 2: The frost depth is 42” per Geotech report. The note indicates 30 in. Please verify and revise. (Geo report)
Note 2 has been adjusted to show the correct 42” frost depth. Please see sheet S0.1

S2. S0.5:

- A. Steel Column Schedule: SC-2 detail information appears missing. Please verify and provide. (IBC 107)

STEEL COLUMN SCHEDULE				
COLUMN MARK	SIZE	STEEL BASE PLATE	STEEL CAP PLATE	COI
SC-1	HSS 8x8x3/8	1 1/8" (SBP-1)	3/4" (SCP-1)	
SC-2	HSS 8x8x5/16	1" (SBP-2)	PER DETAIL (P/??)	

The column schedule has been updated with the intent to only show base plates, etc. The actual column sizes are shown on the framing plans. All of the steel will be reviewed by shop drawings prior to fabrication. Other applicable details are shown on the plans.

- B. Many of the section call outs are incomplete or illegible. This applies on other sheets as well. Please verify and revise. (IBC 107)



The callouts have been adjusted to increase their legibility as well as text and other callouts not associated with the framing or foundation sheets have been turned off. These changes should make those sheets easier to read. In areas where the notes or callouts were crowded, I moved them to help make them easier to read. Please see sheets S1.1, S2.1, S2.2, S2.3, S3.1 and S3.2.

S3. S2.1:

- A. The structure appears to have horizontal reentrant corner irregularity. Please verify that the increase load requirements of ASCE 7 12.3.3.4 have been satisfied. (ASCE 7 T12.3-1)

Lateral loads were increased to include 20% snow in addition to the dead loads. The seismic forces were then increased for the reentrant corners. For the lateral load resisting system, wind still governed significantly over the increased seismic forces. No changes are required. See additional calculations.

- B. Since the roof snow load is greater than 30 psf, ASCE 7 12.7.2 requires that 20% of the snow load to be included in the seismic weight calculations. Please verify if this has been included. (ASCE 7 12.7.2)

Lateral loads were increased to include 20% snow in addition to the dead loads. For the lateral load resisting system, wind still governed significantly over the increased seismic forces. No changes are required. See additional calculations.

- C. The jogs of the building disrupt the continuity of the top plate chords. Please verify that the chord or sub chord extends far enough into the adjacent diaphragm to develop the axial force through shear transfer. This may require additional blocking and strapping. Diaphragm sheathing to resist direct tension or compression forces is not permitted. (ASCE 7-10 1.4, 12.1.3, 12.1.4, 12.10 and 12.11.2.2.)

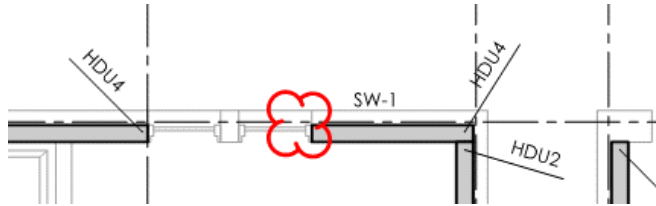
Each wing or section of the house has been designed as independent building with its own diaphragms, shear walls, chords, etc. Wind significantly governed over the increased seismic forces including 20% of the roof snow load and increases for irregularities. Each section or wing is designed for the full effects of the wind as if each section were fully exposed. The design is conservative. The top plates for each section are continuous, and the chords are adequate. Each diaphragm is small, and lateral loads are transferred through an abundance of shear walls that then transfer the loads into the concrete foundations.

S4. S3.1:

- A. The structure appears to have horizontal nonparallel system irregularity. Please verify that the requirements of ASCE 7 T12.3-1 are satisfied.

- B. *Each wing or section of the house has been designed as independent building with its own diaphragms, shear walls, chords, etc. Wind significantly governed over the increased seismic forces including 20% of the roof snow load and increases for irregularities. Each section or wing is designed for the full effects of the wind as if each section were fully exposed. The design is conservative. This mitigates the non-parallel system irregularity. The requirements of ASCE 7 table 12.3-1 as applicable are satisfied.*

- C. GL-12, B: The shear wall has hold down only on one side. Typically, two are required. Please verify if both ends of the shear walls require hold downs. Please verify all locations. (IBC 1609, 1613)



The missing holddown has been added. See the updated plans.

- D. Shear wall schedule shows SW-2 has 4" edge nailing. It shows SW-3 has 3" edge nailing. The sill bolt appears to be smaller at the higher capacity shear walls. Please verify if the anchor bolt should be larger. (IBC 1609, 1613)

SW-2	7/16" APA	8d	4" O.C.	12" O.C.	5/8" x 12" @ 12" O.C.
SW-3	7/16" APA	8d	3" O.C.	12" O.C.	1/2" x 10" LONG @ 24" O.C.

The anchor bolts have been revised to 5/8" dia. X 12" @ 16" o.c. See updated plans.

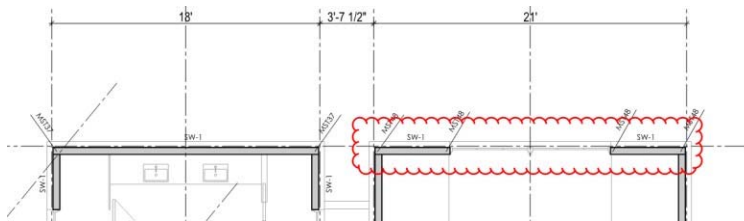
- E. Shear walls on the same line appear to vary. The seismic design story shear is distributed based on relative lateral stiffness for shear walls along the same line. Please verify that this has been considered. (ASCE 7 12.8.4, AWC SDPWS 4.3.3.4)



There is an open-ended diaphragm at the garage. The forces in the shear walls surrounding the garage have been increased as required. The shear wall and holdown callouts are correct.

S5. S3.2:

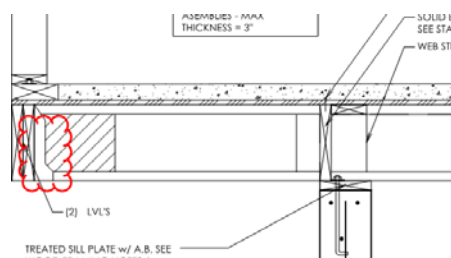
- A. The structure appears to have vertical in-plane discontinuity irregularity. Please verify that the increase load requirements of ASCE 7 12.3.3.3, 12.3.3.4 have been satisfied. (ASCE 7 T12.3-1)



The seismic forces were increased for snow and for the irregularity. The wind loads still govern the design. The supporting steel beam does satisfy the increased load requirements indicated above.

S6. S4.1:

- A. Detail 10: Please verify if hanger is upside down for the cantilever application. (IBC 1604)



The connection is correct. This is not a cantilever. The double rim is supported by the steel beams.

- B. Detail 4, 5, 8, 9:

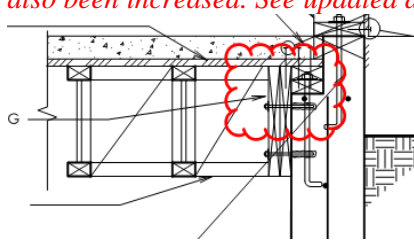
- I. Anchor bolts are shown epoxied into the concrete foundation wall. Information for type, embed depth, spacing, brand of epoxy, edge distance...etc are not obvious on the drawing. Please verify and provide. (IBC 107)



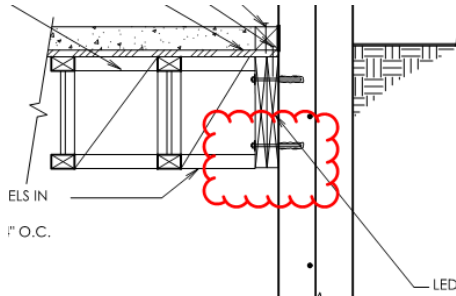
The anchor bolts are intended to be cast-in place, with an option to drill and epoxy them if desired. There are notes for post installed anchor bolts on sheet S02. More information and options have been added to the plans. See additional calculations and updated drawings.

- II. The edge distance appear to be very close to the edge. This may be ineffective. Please verify and provide adequate edge distance. (IBC 1604)

The edge distance for the lower sill plate has been calculated at 2". See additional calculations. Although not taken into account in the calculations, the ledger will also help confine the connection. An option has been added to use Simpson SB or SSTB anchors to make the bolt placement easier. The length of the anchor bolts for the top sill plate has also been increased. See updated details and additional calculations.



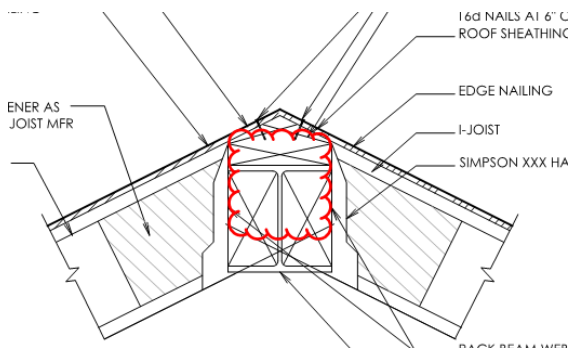
- C. Detail 7, 8, 9, 6: The ledger framing appears to experience cross grain bending. This is not permitted. Please consider providing tension device to the concrete foundation wall. (ASCE 7 12.11.2.2.3)



Straps have been added to eliminate the potential cross grain bending in the ledgers. See updated drawings.

S7. S5.1:

- A. Detail 2: Please clarify wood connection to steel beam. It is unclear from the detail how they are connected. (IBC 1604)

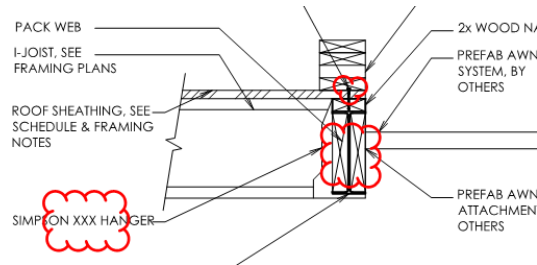


See updated details with additional information.

- B. Detail 4:

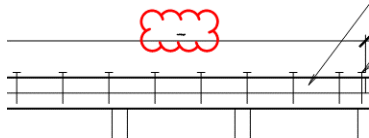


- I. Simpson hanger has not been identified. Please verify and provide hanger information for all details. (IBC 107)
See framing notes, and updated details. STD hangers are adequate.
- II. Please clarify connection of wood to steel beam. Connection information is not obvious on the plans. (IBC 107)



See updated details.

- C. Detail 7: Note is illegible. Please verify and correct. (IBC 107)



The text in this detail has been enlarged and is now legible. Please see revised detail 7/S5.1

S8. Calculations:

- A. Page 74: HSS column indicates fail at GL: e.5, 10.2. Please clarify if a different member is used. (IBC 107)
See updated calculations with correct loads and corrected Fy yield stress. Column size is correct and conservative.
- B. Some of the analysis indicates formulas from 1999, 2001 are used. Please verify that they comply with current code requirements.
The dates shown are dates when the MathCad sheets, etc originated. They have been updated and are correct and applicable.

REDLINE/CONDITIONAL APPROVAL COMMENTS:

The following plan review items are required by the IRC and are not a part of the submitted plans. The code information may be added as part of the required revisions to the plans. Otherwise, the information will be redlined on the plans as part of WC3's final review process.

- R3902: All garage receptacles must be GFCI protected.

If you have any questions regarding the above comments, please contact Mike Molyneux at mikem@wc-3.com or by phone at (801) 547-8133.

[END]