



908 WEST GORDON AVE. SUITE #3
LAYTON, UT 84041
(801) 547-8133

August 3, 2018

FIRST REVIEW
WC³ Project #: 218-525-075
Weber County Project#: HSR 2018-03

Weber County
Building Inspection Department
2380 Washington Boulevard, Suite 240
Ogden, Utah 84401
Phone: (801) 399-8374

Attention: Craig Browne Building Official

Subject: Passage Land - SFD – Plan Review Comments 1st Review

Mr. Browne:

West Coast Code Consultants, Inc. (WC³) has completed the first review of the proposed Passage Land - SFD project located in Eden, UT. This review was based upon the following:

1. Architectural drawings by MacKay-Lyons Sweetapple, sealed and signed by Brian MacKay-Lyons, Licensed Architect.
2. Civil drawings dated 5/18/2018 by Talisman Civil Engineers, sealed and signed by Ryan W. Cathey, Professional Engineer.
3. Structural drawings by Blackwell, sealed and signed by Michael F Sullaway, Professional Structural Engineer.
4. Mechanical drawings by Harris-Dudley Co.
5. Electrical drawings by BMA Consulting, sealed and signed by Brian Hicks, Professional Engineer.
6. Geotechnical investigation report (#02693-001) dated 3/8/2018 by IGES, sealed and signed by David A. Glass, Professional Engineer.

The 2015 International Codes and 2017 NEC, as adopted by the State of Utah, were used as the basis of our review. Specific comments regarding this project are enclosed with this cover letter. If you have any questions regarding this review, please contact me.

Sincerely,

Formatted Name Letters
Position

Attachment: Comments



Plan Review Comments

Project Name: Passage Land - SFD

Code Review by: DeAnn Wilde

Location(s): 7719 East Horizon Run, Eden, UT

Structural by: Joe Bingham

Checked By: Mike Molyneux

SQUARE FOOTAGE SUMMARY:

Main Level	Ground Level	Finished Basement	Upper Level	Deck(s)	Covered Deck	Garage	Carport
2,645 ft ²	730 ft ²	730 ft ²	275 ft ²	n/a	280 ft ²	440 ft ²	n/a

GENERAL INFORMATION:

The submitted documents for the above-mentioned project, as outlined in the cover letter, have been reviewed. The following comments address areas of concern, non-compliance with the governing code, potential errors, or omissions in the proposed design. The appropriate design professional must address each comment below and submit a written response in addition to revised plans and calculations if necessary. **Please cloud any revisions made to the construction drawings and provide the date of the latest revision on each revised sheet.**

CODE REVIEW COMMENTS:

- A1. The plans must identify which codes were used for design of the structure. The currently adopted governing code is the 2015 IRC and the 2015 IECC with state amendments. All construction shall conform to the all current codes, standards, ordinances, and laws adopted by the State of Utah and the Authority Having Jurisdiction.
- A2. The design is required to meet the requirements of the 2015 IRC and the 2015 IECC with State amendments. Please clarify in writing and on the plans the codes used for the design.
- A3. Sheet C201: Please address the following:
 - A. Please note elevations at lot corners and building corners.
 - B. Based on the requirements of IRC R403.7, please identify the elevation of the top of the hillside and bottom of the hillside to determine whether the requirements for footings on or adjacent to slopes are being met.
 - C. Detail on the site plan the locations *and sizes* of utilities:
 - I. Electric meters/service/Ufer
 - II. Water meter/service
 - III. Sewer line or septic system (septic tank, leach field, etc.)
- A4. Sheet A002: Please address the following:
 - A. Floor Type FA4 identifies R-10 slab insulation. However, the REScheck identifies R-8. The plans and the report need to provide the same information.



- A5. A201: Please address the following: *This comment also applies to Sheets A202-A204.*
- A. Identify the square footage of each room/space.
- A6. Sheet A203: Please address the following:
- A. Reference is made to Sheets A600, A601, A602 and A603. The referenced sheets are not a part of the plans.
 - B. A wood burning fireplace insert is identified. Is a factory-built chimney to be used? If a factory-built chimney is being used and if the chimney will have an offset, please note on the plans the chimney must be at an angle not more than 30 degrees from the vertical and the assembly will not contain more than 4 elbows, per R1005.7.
- A7. Sheet A400: Please address the following:
- A. Per R1003.9, fuel-fired chimneys (wood burning), shall extend not less than 2 feet higher than any portion of the building within 10 feet, but shall not be less than 3 feet above the highest point where the chimney passes through the roof. Please detail these requirements on the plans.
- A8. Sheet A403: Please address the following:
- A. Per R312.1, the minimum height of guards located more than 30 inches above the floor shall be not less than 36 inches, except at the sides of stairs where the minimum height is 34 inches. Openings in guards shall have intermediate rails or ornamental closures which do not allow passage of a 4-inch sphere. Please detail the required guard on the plans.
- A9. Per R404.1.7, provide a note on the drawings which indicates that backfill is not to be placed adjacent to basement walls until bracing is in place.
- A10. At the front elevation, identify how the building address will be listed on the structure, per R319.1.

MECHANICAL REVIEW COMMENTS:

- M1. Per R106.1.1, please provide appropriate general mechanical sheet notes and construction details. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail it will conform to the provisions of the currently adopted code
- M2. Sheet M200: Please address the following:
- A. The duct layout information is based on Park City, Utah.
 - B. Per M1307.3.1, please note on the plans that appliances located in a garage or carport shall be protected from impact by automobiles by a curb 4" high and 3' deep, a minimum 3" steel pipe bollard installed a minimum of 18" below and a minimum of 44" above the finished floor in front of the equipment or a wall.
- M3. Please indicate on the plans the length of the clothes dryer vent. Verify that it will meet the requirements of M1502.4.4.1 as amended by the State of Utah.
- M4. Per M1502.4.6 and G2439.7.5, the clothes dryer exhaust duct shall be at least the diameter of the appliance outlet and shall terminate on the outside of the building. It shall not exceed 35 feet in length with reductions for bends. A label is required if the duct length is greater than 35 feet. Please identify on the plans how these requirements shall be met.
- M5. G2407 requires that combustion air be provided for the furnace. Please clarify how this will be provided, whether it is outdoor, indoor, or a combination.



- M6. Per G2407, provide combustion air for all gas-fired appliances including size, type, and location of openings.
- M7. Per G2407.6.2, please show or specify combustion air for all fuel-burning appliances. If a single duct will be used for combustion air, please specify a minimum duct size of 1 square inch per 3000 Btu/hour input. The one opening must be in the top 12 inches of the room.
- M8. Per R303.3 and M1506, identify on the plans the required exhaust fans vented to the outside from bathrooms, water closet compartments, and similar rooms if not supplied with natural ventilation.

PLUMBING REVIEW COMMENTS:

- P1. Provide complete plumbing plans.
- P2. Per R106.1.1, please provide appropriate general plumbing sheet notes and construction details. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail it will conform to the provisions of the currently adopted code.
- P3. Per P2903.2, indicate on the plans the maximum flow rates for the shower heads, lavatory and sink faucets, and water closets.
- P4. Per P2902.4.3, please note on the plans that hose bibs shall be provided with an atmospheric or pressure type vacuum breaker.
- P5. Per P2903.5, please note on the plans that water hammer arrestors are required at quick-closing valves, i.e., dishwashers & clothes washers.
- P6. Per P2708.3 and P2713.1, please note on the plans the required temperature limiting devices for bathtubs and showers shall be set at 120°F.
- P7. Per P2801.8, please identify on the plans the seismic bracing requirements for the water heater.
- P8. Per P3008.1, please note on plans that a backwater valve is required to protect plumbing fixtures that are located below the elevation level of the nearest upstream man hole cover. Fixtures that are above the elevation level of the manhole cover shall not discharge through the backwater valve.

ELECTRICAL REVIEW COMMENTS:

- E1. Sheet E000: Please address the following:
 - A. Light Fixture General Note 9 references various specifications. A specifications manual for the project was not provided.
 - B. General Note 6 also references specifications.
- E2. Per E3901 receptacle outlets are required at the following locations. It does not appear the requirements have been met in all locations throughout the structure. Please address. Please be aware floor receptacles do not count toward the required location spacing of receptacles, per E3901.2.3.
 - A. No point measured horizontally along “wall space” is more than 6 feet from receptacle. “Wall space” includes any space 2 feet or more in width.
 - B. At each wall counter space 12” or wider so that no point along the wall is more than 24” from a receptacle outlet.



- C. At least one receptacle outlet at each island or peninsular counter space with a long dimension of 24" or greater and a short dimension of 12".
 - D. Within 6 feet of intended appliance locations (i.e. oven, laundry, etc.). No less than one receptacle is required in laundry areas.
 - E. At least one receptacle outlet on the wall within 36" of the outside edge of each lavatory basin in bathrooms.
 - F. Outdoor outlets at the front and back of each dwelling unit within 6.5 feet from grade.
 - G. Basements, garages, and accessory buildings shall have at least one receptacle outlet, in addition to any provided for specific equipment.
 - H. Provide a receptacle outlet in hallways 10 feet or more in length. Foyers > 65 ft² shall have receptacles on all wall spaces > 3 feet.
- E3. Per E3902 GFCI protected receptacles are required at the following locations. It does not appear the requirements have been met in all locations throughout the structure. Please address.
- A. Bathrooms receptacles
 - B. Garage receptacles
 - C. Outdoor receptacles (These are also required to be weatherproof.)
 - D. Kitchen receptacles
 - E. All receptacles located within 6 feet of sinks, bath tubs or showers
 - F. Laundry areas
 - G. Dishwasher receptacles
- E4. Per E4002.14, please provide a note on the plans indicating that all outlets will be tamper resistant.
- E5. Per E3705.4.4, please note on the plans that where two or more non-metallic sheathed cables (romex) are installed together in the same space without maintaining space between them and where the opening they are installed in is filled with caulking, foam insulation, or other types of insulation, the conductors must be derated.
- E6. Per E4003.9, please specify that all lighting over tubs or showers must be suitable for wet or damp locations.
- E7. Per E3703.3, please note that a dedicated 20-amp branch circuit for the laundry receptacle outlets.
- E8. Per E3703.4, please note that a dedicated 20-amp branch circuit for the bathroom receptacle outlets is required. This circuit cannot supply any other receptacles, lights, fans, etc.
- E9. Per R315 and Utah State Amendments, provide a minimum of one carbon monoxide alarm on each habitable level, outside each separate sleeping area in the vicinity of bedrooms, and within bedrooms where fuel-burning appliances exist. Alarms shall receive their primary power from the building wiring and shall have battery backup.

ENERGY REVIEW COMMENTS:

- N1. Per IECC R401.3, please note that a permanent certificate shall be completed and located in an approved location that lists the predominant R-values of the insulation installed in the ceiling/roof, walls, foundation and ducts outside conditioned spaces, and U-factors for fenestration.



- N2. Per IECC R402.4.5, please indicate that recessed luminaires (can lights) will be sealed to limit air leakage per ASTM E 283.
- N3. Per N1102.4.5, recessed lighting installed in the building thermal envelope shall be IC rated and sealed to the interior finish. Please note these requirements on the plans.
- N4. Per N1104.1, please indicate on the plans that no less than 75% of the lamps permanently installed in lighting fixtures shall be high efficacy lamps or not less than 75 percent of the permanently light fixtures shall contain only high efficacy lamps.

STRUCTURAL COMMENTS:

Structural Drawings:

S1. Sheet S001:

- A. 010001 Design Notes: References are made to AISC 360-16 and AISC 341-16. These are not valid codes. IBC 2015 requirements are AISC 360-10 and AISC 341-10. Please verify and confirm that the design complies with current code requirements. (IBC Chapter 35)
- B. 010001 Design Notes: Frost depth shows 40". Page 20 of Geotech's report indicates minimum 42". Please verify and revise the drawing. (IBC 107)
- C. Lateral Load Resisting Systems note M: The steel ordinary concentric braced frames parameters appear to be different than ASCE 7 T12.2-1. For Building Frame Systems 3, $R=3.25$, $\Omega=2$, $C_d=3.25$. Please verify that the design complies with code requirements. (ASCE 7 T12.2-1)

RESPONSE MOD. COEFFICIENT(R):
OVERSTRENGTH FACTOR(Ω):
DEFLECTION MODIFICATION FACTOR(C_d):

3.5
2
3.5

III) LATERAL SYSTEM:

ORDINARY CONCRETE SHEAR WALLS
BELOW L3

- D. 053100 Steel Decking: Reference is made to AISI North American Specification for the Design of Cold Formed Steel Structural Members (2016). The current code may be 2012. Please verify that the design complies with current code requirements. (IBC Chapter 35)
- #### S2. Sheet S002:
- A. Reinforcement Development Lengths: The concrete strength provided in the table appears unusual. Please verify and consider revising to standard values compatible with ones shown on Sheet S001 Concrete Notes. It also references "Reinforcing Steel Manual of Standard Practice" which is a Canadian code reference. (IBC 107)

TABLE 1 - TENSION DEVELOPMENT LENGTH (in)

BAR SIZE	f _c				
	2900psi	3626psi	4352psi	5077psi	5802psi
4	12.6	11.8	11.6	11.6	11.8
5	18.9	16.9	15.4	14.6	13.4
6	25.2	22.8	20.9	19.3	18.1
8	39.8	35.4	32.3	29.9	28.0
9	47.6	42.5	39.0	35.8	33.5
11	55.5	49.6	45.3	41.7	39.4
14	71.7	63.8	58.3	53.9	50.8
18	87.4	78.0	71.3	66.1	61.8

TABLE 2 - TENSION LAP SPLICE (CLASS B) LENGTH (in)

BAR SIZE	f _c				
	2900psi	3626psi	4352psi	5077psi	5802psi
4	16.5	16.0	15.4	12.4	11.8
5	24.8	22.0	20.1	19.1	17.5
6	33.1	29.7	27.2	25.2	23.6
8	51.8	46.1	42.1	39.0	36.4
9	54.1	55.3	50.8	48.5	43.5
11	72.4	64.6	58.9	55.3	51.2
14					
18	LAP SPLICES NOT PERMITTED				

TABLE 3 - DEVELOPMENT LENGTH (in) FOR STANDARD HOOKS.

BAR SIZE	f _c				
	2900psi	3626psi	4352psi	5077psi	5802psi
4	6.1	5.9	5.9	5.9	5.9
5	9.4	8.3	7.5	6.9	6.7
6	12.4	11.0	10.2	9.4	8.9
8	15.4	13.8	12.6	11.6	11.0
9	18.5	16.5	15.2	14.2	13.0
11	21.7	16.9	17.7	16.3	15.2
14	38.5	34.4	31.4	29.1	27.2
18	49.6	44.4	40.6	37.5	35.1

TABLE 4 - COMPRESSION DEVELOPMENT LENGTH (in)

BAR SIZE	f _c		
	f _c =2900psi	f _c =3626psi	f _c =4352psi
4	8.3	7.9	7.9
5	12.6	11.4	10.2
6	16.9	15.0	13.8
8	21.3	18.9	17.3
9	25.2	22.8	20.9
11	29.5	26.4	24.4
14	38.2	33.9	31.1
18	46.5	41.7	38.2

TABLE 5 - COMPRESSION LAP SPLICE LENGTH (in)

BAR SIZE	USUAL CONFINEMENT	
	4	11.8
5	17.3	
6	22.8	
8	28.7	
9	34.6	
11	40.2	

NOTE: #14 AND #18 BARS SHALL BE SPLICED WITH MECHANICAL CONNECTORS

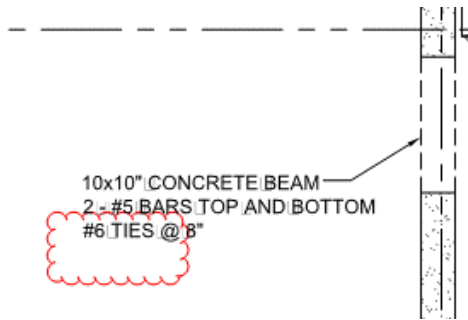
TABLE 6 - STANDARD HOOK DIMENSION FOR BLACK REINFORCING.

BAR SIZE	400R OR 500R		400W OR 500W	
	90° HOOK (in)	180° HOOK (in)	90° HOOK (in)	180° HOOK (in)
4	7.1	5.5	7.1	5.1
5	10.2	7.1	9.8	6.7
6	12.2	8.7	11.8	7.9
8	15.7	11.0	15.7	11.0
9	20.1	15.7	19.3	13.8
11	24.0	18.9	23.2	16.9
14	31.1	26.8	30.3	24.4
18	40.6	35.4	38.8	32.7

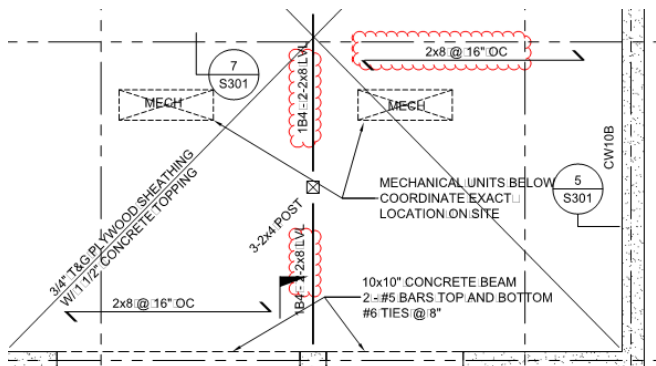
REFER TO REINFORCING STEEL MANUAL OF STANDARD PRACTICE FOR MORE INFORMATION.

S3. Sheet S101:

- A. Concrete beam 10"x10" shows #6 ties @ 8". This appears large for the beam size. Calculations were not found. Please verify constructability and shear analysis. (ACI 318 9.6.3)

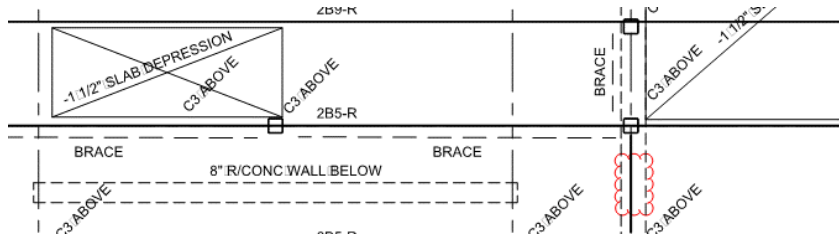


- B. Floor joists and beams show 2x8@16" o.c. and 2-2x8 LVL. A rough estimate for DL=45 psf, LL=40 psf suggests members are inadequate. Analysis does not appear to be available. Please verify design includes the concrete topping and mechanical units. (IBC 1604)



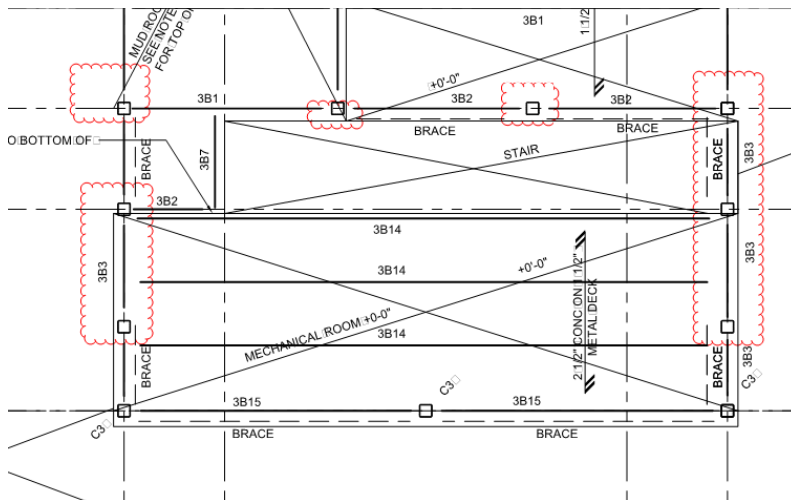
S4. Sheet S102:

- A. GL-G, 10: Beam information appears to be missing. Please verify and provide on the drawing. (IBC 107)



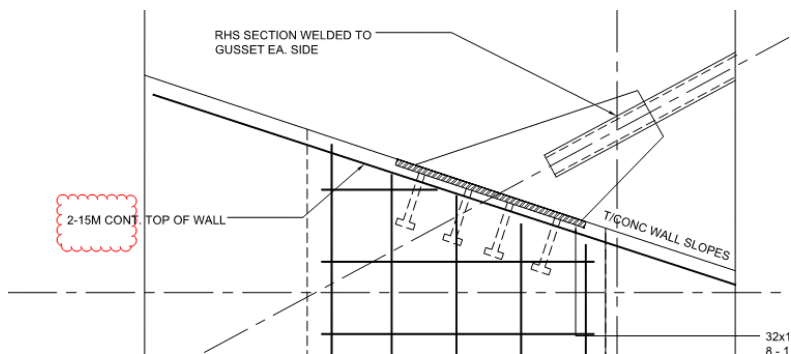
S5. Sheet S103:

- A. Some columns appear to be missing information. Please verify and provide identification for columns. (IBC 107)

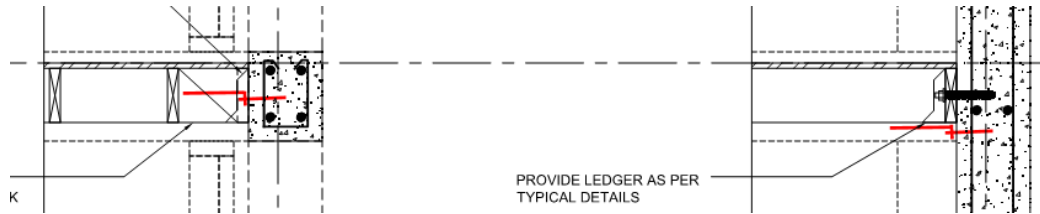


S6. Sheet S301:

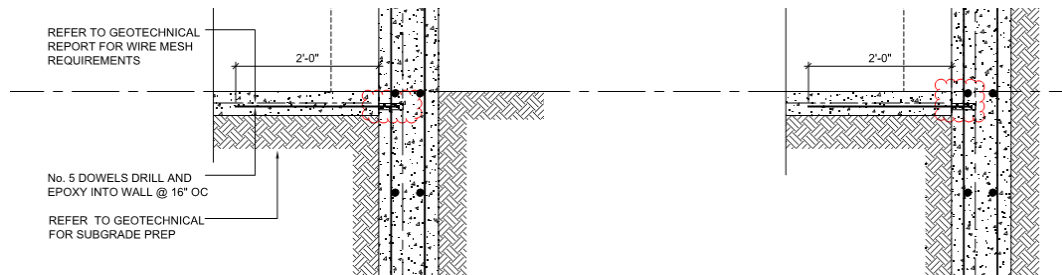
- A. Detail 2: Non-standard reference to rebar is indicated as 2-15M cont. Please verify and revise all references to standard notations. (IBC 107)



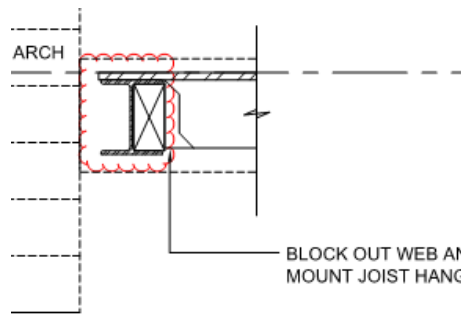
- B. Detail 4, 5, 7: Please verify that diaphragm is tied to the wall. Please consider providing tension device and blocking at suitable spacing. (ASCE 7 12.11)



C. Detail 4, 5, 6, 7: Please verify and provide bar embed information. (IBC 107)

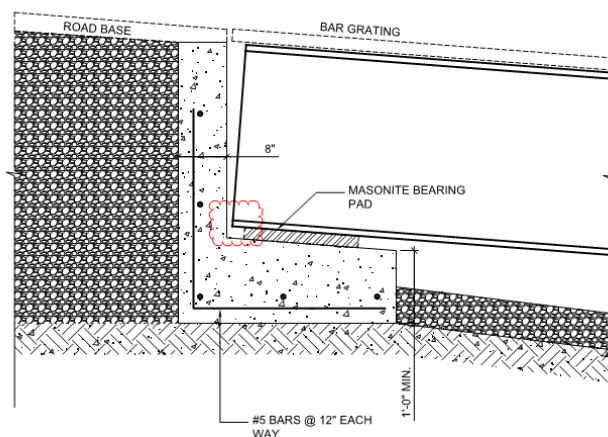


D. Detail 6: Please verify and provide block connection to steel beam. It does not appear to be provided. (IBC 107)



E. Detail 8:

- I. Please verify and consider providing distance between steel and concrete. Please verify that steel expansion and seismic structural separation have been considered. (IBC 107, ASCE 7 12.12.3)
- II. Please verify frost depth is met for the concrete foundation. The geotech's report indicate 2" minimum below grade. (IBC 1809.5)





- F. Please verify that the structural design drawing requirements on AISC 341 A4 are included on the drawing. (AISC 341 A4)
- S7. Sheet S501:
- A. For Special Concentrically Braced Frames, please verify that AISC 341 F2 is followed. Some items appear to be missing i.e. protected zones, demand critical welds, fold lines...etc. (AISC 341 F2)

Structural Calculations:

- S8. Calculation appears to included samples of analysis. Please verify and provide analysis for all members. (IBC 107)
- S9. 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)

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]