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Plan Review Report

Plan analysis is based on the Boise City Code and International 2015 Codes as adopted.

Building Permit #	BLD19-00363 **Date:** March 19, 2019 / **May 22, 2019** / **May 29, 2019**
Project Name	AceCo Precision Manufacturing Company, Inc. – New Office, Manufacturing, and Storage Building
Project Address	924 W. McGregor Court
Primary Applicant	Marcellus Clark (arch rep)
Architect	Andrew Davis
Engineer	Alice Jensen Brown (building) and Greg Lieshman (building foundation, shear walls, bike rack canopy, and retaining wall)
Occupancy	A-3 / B / S-1 / F-1
Construction	II-B (the fire sprinkler system is used for fire area, building area increase, and for fire flow)
Occupant Load	126 / 207 / 23 / 244
Seismic Category	C (Risk Category II)
Plan Reviewer	**Carl Westfall**
Reviewer's Phone	208-608-7106

Note: The code items listed in this report are not intended to be a complete listing of all possible code requirements in the Boise City Code and International 2015 Codes. It is a guide to selected sections of referenced codes.

Scope of Work

(ACE CO PRECISION MANUFACTURING COMPANY, INC. – NEW OFFICE, MANUFACTURING, AND STORAGE BUILDING) (DRH18-00313) The fire sprinkler system is used for fire area, building area increase, and for fire flow. To construct a new 94,031 square foot building (about 78,475 square feet lower level and about 15,556 square feet upper level) for a new office, manufacturing, and storage facility. Work is to include concrete footings, concrete stem walls, concrete pedestals, concrete slab on grade, concrete vibration isolation slabs, concrete elevator pit and masonry elevator shaft, an exterior recessed concrete loading dock, steel columns, steel beams, steel column and beam moment frames, steel roof and wall purlins, steel rod cross braces, standing seam metal roof panes, metal wall panels, steel stud exterior walls, steel stud exterior shear walls with fire-retardant-treated wood structural panels, masonry tile exterior wall finish, porcelain stone exterior wall tile, stucco, exterior windows, exterior doors, exterior overhead doors, metal awning, concrete upper level floor on steel pan deck, a gypsum board ceiling with metal studs joists not designed as a floor above toilet rooms and other rooms, interior steel stairways with concrete filled metal pan treads and landings, interior nonbearing walls, a 1-hr fire sprinkler riser room (unless the post valve indicator is installed on the exterior of

the building), a 2-hr hazardous materials storage room, spill control curbs, a flammable liquids interceptor, a crane with crane beams and lateral bracing, 6 toilet rooms accessible to the disabled, one shower room accessible to the disabled with an accessible alternate roll-in shower, interior windows, interior doors, suspended acoustical ceilings, suspended gypsum board ceilings, millwork, and finishes. Concrete retaining walls will be constructed near the canal. A stand-alone 98 square foot bike rack canopy will be constructed. A masonry trash enclosure with steel gates where the masonry walls also function as retaining walls will be constructed. Special inspection is required for soils, concrete, masonry, steel (including welding and high strength bolting), and anchors post-installed in hardened concrete. A separate permit is required for storage racks that are over 8 feet tall. The work is required to comply with the approved drawings, with the structural design, with the plan review report, and with all applicable codes and ordinances. The fire sprinkler system is required to comply with NFPA 13 and the fire alarm system is required to comply with NFPA 72 as regulated by the Fire Department. Separate fire sprinkler permits and fire alarm permits shall be obtained prior to beginning any modification or installation work on such systems. **CJW**

Project Information

A response is not required for items listed under this heading.

Building history. The past aerial views of this site show that there has never been a structure on this site. There may have been some excavation, though, and there are multiple stockpiles of fill materials. It does not appear to have ever been a dumping ground for trash. See the soils report. New work includes structural fill. Rough site grading was done under permit GRD18-00078. Additional grading and some soil compaction was done under permit GRD18-00095.

Building data. This building has 2 floor levels and is about 32 feet tall. The floor area of the lower level is about 78,475 square feet and the floor area of the upper level is about 15,556 square feet (about 94,031 square feet total). The projected roof area is about 79,307 square feet. This building is classified as Type II-B construction. The fire sprinkler system is used for fire area, area increase, and for fire flow.

The “non-separated uses” option of the 2015 IBC was first used to evaluate this building with the F-1 Occupancy being the most restrictive. Occupancies include F-1, A-3, B, and S-1. The A-3 occupancy is an accessory use area. The allowable floor area per story is 69,285 square feet (46,500 base allowable for multi-story with fire sprinklers + 22,785 increase for yards between 30 and 60 feet wide = 69,285). This building is about 9,190 square feet over area unless it can be considered to be an unlimited area building or some other analysis mechanism is considered.

For example, using the “separated uses” option of the 2015 IBC is another method of analysis. Suppose the B Occupancy floor area on the 1st story is 9,379 square feet, the F-1 Occupancy floor area on the 1st story is 59,326 square feet, and the S-1 Occupancy floor area on the 1st story is 9,490 square feet and the allowed yard increase is included (1.47 times the allowable non-fire sprinklered area per 2015 IBC Section 506.3.2 Exception), then the building is within the allowable building area considering the upper level to be a mezzanine instead of a 2nd story and using the values in 2015 IBC Table 506.2 for a 1 story building with a fire sprinkler system installed throughout the building (9,379 / 125,810 + 59,326 / 84,785 + 9,490 / 95,725 = .8734). The mezzanine area exceeds 1/3 the area of the room below but does not exceed 1/2 the area of the room below. Based on 2015 IBC Section 505.2.1 Exception 2, in addition to the fire sprinkler system, an emergency voice/alarm communication system is required. Note that there is no occupancy separation required between B, F-1, and S-1 Occupancies even though the “separated uses” option is used. For this method of analysis, the floor

area of mezzanine level is not required to be included in the total floor area.

Using the "separated uses" option of the 2015 IBC and considering this building to be a 2 story building, and using a yard increase of 1.47 times the allowable non-fire sprinklered area per 2015 IBC Section 506.3.2, this building is about 5,328 square feet over area (9,379 / 102,810 + 59,326 / 69,285 + 9,490 / 78,225 = 1.069)

Energy code review. New work is required to comply with the 2015 International Energy Conservation Code (IECC). The COMcheck analysis suggests R-35 roof insulation, R-20 wall insulation, R-21 insulated metal siding, R-19 wall insulation, windows and glass doors having a U-factor of .30 and a SHGC of .40, opaque doors having a U-factor of .09 (R-value of 11), overhead doors have a U-factor of .057 (R-value of 17.5), and no slab edge insulation. ~~The only acceptable method in the 2015 IECC for insulating the roof of a metal building is a liner system. When a liner system is used in a metal building, the roof ventilation provisions of the 2015 IBC do not apply.~~ Vestibules were not required at exterior doors that are not intended to be used by the public and are intended solely for employee use. The public entrance door in the Northeast corner of the building will be provided with a vestibule.

(5-22-19) The applicant consulted with Carl Madsen, Assistant Building Official, and Carl had the following response that was from Email correspondence:

"Andrew, after some extensive research on the current codes, including the 2015 IBC and the 2015 IECC we have concluded that section 1203.2 of the 2015 IBC is not applicable when the insulation is installed per the normative method of appendix section A2.3 of the ASHRAE Standard 90.1-2013 for metal building roof structures. The proposed long tab system is considered to be in compliance with the current codes."

Carl Westfall's question to Carl Madsen:

"The only system in ASHRAE Standard 90.1-2013 that required a membrane is a liner system. There are other systems that do not required a membrane. Are you saying that a membrane is not required?

I was hoping that a policy would be developed for metal buildings that would allow a vapor barrier on the warm in winter side of air permeable insulation (i.e. unfaced fiberglass insulation) in lieu of the roof ventilation required by 2015 IBC Section 1203.2. I was hoping that there would be some language in the policy that would address the perm rating of the vapor barrier, the joint sealing of the vapor barrier, the sealing of penetrations through the vapor barrier, and the humidity inside the building."

Carl Madsen's answer:

"No, based on the research and some other response the addition of the moisture/air barrier does not make this a concealed rafter space or an attic space. I also reached out to Steve Thomas who agreed that this is not a concealed attic or rafter space."

Conclusion by Carl Westfall based on management's interpretation:

Providing a void space between the insulation and the roof deck and venting that void space to the outside was not required by Building Division Management. A liner system as defined by ASHRAE was also not required by them. A "filled cavity system" was approved instead (also called a "long tab with banding" system). No information was provided to specifically address the control of moisture condensation in the building's roof system. A "Lamtec" facing will be provided on the warm in winter

side of the insulation and is intended to act as a vapor barrier but no information about its perm rating was provided (in an Email from the Architect it was noted that a perm rating of .09 or better was available). At longitudinal facing joints, the facings overlap on top of the purlin flange addressing in part the continuity of the vapor retarder. Transverse joints at perpendicular structural members and penetrations of pipes and vents were not addressed. None of this information was required for approval.

Service water heating work includes two electric water heaters, two re-circulation pumps, and pipes to serve plumbing fixtures. HVAC work included exhaust fans, make-up air units, roof top HVAC units, ducts, diffusers, and grilles.

Electrical lighting work includes new light fixtures, occupant sensors with manual switches, time-switch controls with manual switches, and daylight-responsive controls. The total power used for lighting is about 44,990 watts or an average of about .4785 watts per square foot. Dual-level manual switching is not required in conjunction with the time-switch controls. Skylights were not required within the warehouse / manufacturing area because the power used for lighting in that area is about .5 watts per square foot (26,989 / 53,468 = .5048). The lighting on the upper level storage area within the warehouse / manufacturing area was not included in this calculation because the ceiling height of that upper level is less than 15 feet.

Roof ventilation for metal buildings. The 2015 IBC requires insulation to be held down at least 1 inch below the roof deck and for the void space to be vented to the outside. If this is not done, moisture could condense on the underside of the roof deck which could saturate the insulation. Roof ventilation will not be provided. ~~To prevent insulation saturation, a liner system with thermal blocks as recognized by the 2015 IECC is required.~~ A vapor barrier on the warm-in-winter side of the insulation will all joints and penetrations property sealed is critical to minimize the amount of warm moisture laden vapor that will reach the underside of the metal roof deck. ~~A liner system with thermal blocks is the only acceptable method of insulating a steel roof where roof ventilation required by the 2015 IBC is not provided and air permeable insulation is used. Since this method is specifically required by the 2015 IECC without providing for attic ventilation, it is understood that the specific provisions of the energy code supersede the general provisions of the building code.~~

(5-22-19) Providing a void space between the insulation and the roof deck and venting that void space to the outside was not required when the purlins and the roof deck are metal. A liner system as defined by ASHRAE was also not required. A "filled cavity system" was approved instead (also called a "long tab with banding" system). No information was provided to specifically address the control of moisture condensation in the building's roof system. A "Lamtec" facing will be provided on the warm in winter side of the insulation and is intended to act as a vapor barrier but no information about its perm rating was provided (in an Email from the Architect it was noted that a perm rating of .09 or better was available). At longitudinal facing joints, the facings overlap on top of the purlin flange addressing in part the continuity of the vapor retarder. Transverse joints at perpendicular structural members and penetrations of pipes and vents were not addressed.

Mechanical systems and service water-heating systems commissioning and completion requirements. Prior to the final mechanical and plumbing inspections, the registered design professional or approved agency shall provide evidence of mechanical systems commissioning and completion in accordance with the provisions of 2015 IECC Section C408. (2015 IBC Section C408.2)

Functional testing. Prior to passing final inspection, the registered design professional shall provide evidence that the lighting control systems have been tested to ensure that control hardware and software are calibrated, adjusted, programmed, and in proper working condition in accordance with the construction documents and manufacturer's instructions. Functional testing shall be in accordance with 2015 IECC Sections C408.3.1.1

(occupant sensor controls), C408.3.1.2 (time-switch controls), and C408.3.1.3 (daylight responsive controls) for the applicable control type. (2015 IBC Section C408.3.1)

Economizers. Each cooling system shall include either an air or water economizer except where individual fan cooling units have a capacity of less than 54,000 Btu/h (i.e. 4.5 tons).

Tenant use and occupant load. The total floor area of the lower level is about 78,476 square feet (about 68,816 square feet manufacturing and storage and about 9,660 breakroom, office, and restrooms). The total occupant load of the 1st story is about 455 (244 manufacturing and storage, 126 breakroom, 85 office). Three exits are required from the manufacturing and storage area to limit the travel distance to less than 250 feet long. The office area and the breakroom are required to have 2 means of egress because the occupant load of these areas exceed 49. Exit signs and emergency lighting are required. Panic hardware is required along the egress path serving the breakroom.

The upper level has a total floor area of about 15,556 square feet (about 8,681 square feet office and about 6,875 square feet storage). The total occupant load of the upper level is about 145 (122 office and 23 storage). Two means of egress serve the office area. The storage area also has access to two means of egress, one through the office area. Exit signs and emergency lighting are required.

Toilet capacity. Based on a breakroom occupant load of 126, an office occupant load of 207, a factory occupant load of 244, and a storage occupant load of 23, at least 6 toilet fixtures for Men and at least 6 toilet fixtures for Women are required (63 /75 + 50 / 25 + 53.5 / 50 + 122 / 100 + 11.5 / 100 = 5.245). The drawings show sufficient restroom capacity (i.e. 16 for Men and 13 for Women). When 6 or more toilets and/or urinals are provided within a toilet room, at least one toilet stall is required to comply as an ambulatory accessible toilet stall.

Drinking fountains. The drawings show a “high” and a “low” drinking fountain within the manufacturing area, in the break room, within the lower level office area, and within the upper level office area (i.e. a “high” and a “low” drinking fountain are provided in 4 separate locations – 8 total). These fixtures have the capacity to serve, for example, 1,000 break room occupants, 300 office occupants, 800 factory occupants, and 1,000 storage occupants. The actual occupant load is 126 break room occupants, 207 office occupants, 244 factory occupants, and 23 storage occupants. The drawings show sufficient drinking fountain capacity.

Service sink. The drawings show a service sink located within a closet on the lower level.

Ventilation. The 39,847 square foot storage / manufacturing area will be serve by 20,000 CFM exhaust fans and 20,000 CFM make-up air units. Four de-stratification fans will also serve that area. Two other areas will also be served by exhaust fans and make-up air units.

The office areas, including the breakroom and conference rooms, appear to have outside air available to serve them in compliance with the 2012 IMC. The toilet rooms will have a timer switch. The exhaust fans serving the toilet rooms are required to operate continuously while the building is occupied.

Canal Company. Verify with the canal company that the proposed work is acceptable to them. All work shall be done without impacting the integrity of the existing canal and in accordance with all canal company recommendations. The structural integrity of the canal is required to be maintained.

Break room and coffee area sinks. The breakroom sink is required to be accessible to the disabled. A side approach to the break room sink was allowed because there is no cooktop or conventional range located within

the room. Knee and toe clearance for a front approach to the break room sink was not required. Because there is no cooktop or conventional range located within the room, a work surface having knee and toe clearance for a front approach was also not required. This also applies to the sinks located within the coffee area on the lower level and the coffee area on the upper level.

Electrical equipment. All electrical equipment is required to be listed and labeled per the 2017 National Electrical Code (NEC) and also requires approval from the PDS Electrical Inspection Team.

Accessible route. A route accessible to the disabled is required from the accessible parking spaces and from the public way into this building at the main entrance door. All portions of this building are required to be served by a route accessible to the disabled including the upper floor levels. An elevator will provide the vertical accessible route to the upper level office area. A ramp will provide an accessible route between the upper floor level office area and storage area. All accessible routes are required to be accessible to the disabled in both directions.

Accessible means of egress. An accessible means of egress is required from every portion of this building. The elevator is not required to comply as an accessible means of egress because this building is not a 5 story building (i.e. standby power is not required for the elevator). Areas of refuge are not required at the top of the stairways because this building has a fire sprinkler system. Two-way communication is required at the elevator landings.

Overhead doors. Glass in overhead doors was required to be laminated glass. When in the open position, the glass panels will be horizontal, like skylights. Although not exposed to the environmental loads from rain and snow, the glass will still be located above occupied areas. To mitigate the hazard of falling glass to the occupants below, laminated glass was required. Tempered laminated glass offers even greater safety.

ACHD Impact Fees. Highway impact fees are required by the Ada County Highway District (ACHD). Please contact ACHD to discuss impact fees. Provide a copy of the receipt showing that impact fees have been paid. Documentation is required before the permit can be issued.

ACHD inspections. The drawings show work being done within the public way. The work is subject to inspections by ACHD.

Roof top access. A roof hatch and an interior ladder will provide access to the roof for mechanical equipment maintenance.

Guards for mechanical equipment, systems, and devices. Guards shall be provided where various components that require service are located within 10 feet of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches above the floor, roof or grade below. The guard shall extend not less than 30 inches beyond each end of such components. The guard shall be constructed so as to prevent the passage of a sphere 21 inches in diameter. (2015 IBC Section 1015.6)

Corridors. The fire sprinkler system substitutes for enclosed fire-resistance-rated corridors. Corridor dead ends serving assembly occupancies are limited to 20 feet maximum in length.

Exit discharge. The public way is available only on the East side of this building through a 60 foot wide and a 40 foot wide bottleneck. The path of egress travel from several of the exit doors to the public way is around or next to the building. This condition isn’t considered to be unsafe because there are safe dispersal areas located more than 50 feet from the building.

Ventilation for motor vehicle operation. In areas where motor vehicles operate, mechanical ventilation shall be provided in accordance with 2015 IMC Section 403. Additionally, areas in which stationary motor vehicles are operated shall be provided with a source capture system that connects directly to the motor vehicle exhaust systems. Such system shall be engineered by a registered design professional or shall be factory-built equipment designed and sized for the purpose. (2015 IMC Section 502.14)

This section shall not apply to motor vehicle service areas where engines are operated inside the building only for the duration necessary to move the motor vehicles in and out of the building. (2015 IMC Section 502.14 Exception 3)

Accessory use area. There will be a 1,895 square foot breakroom on the lower level story. This assembly room is about 2.5% of the area of the lower level story (1,895 / 78,476 = .024). The breakroom is an accessory use area.

Accessible parking spaces. The site plan shows a total of 151 parking spaces. At least 6 parking spaces are required to be accessible to the disabled. At least one of those 6 parking spaces are required to be van accessible to the disabled.

Floor live load. The upper level storage area was designed for a 125 psf live load. The upper level office area was designed for an 80 psf live load. The area above the restrooms that serve the manufacturing and storage area is not approved for occupancy. The area above “Compressor 142”, “H. M. Storage 141”, “Shop 140”, etc. is also not approved for occupancy. The ceilings of these areas have not been structurally designed for occupancy and these areas are not served by stairways or provided with guards.

Referenced Code Sections

In addition to the approved drawings, compliance with the following code sections is required.

Sheet AS001 – Site plan

1) Address identification. New and existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be a minimum of 4 inches high with a minimum stroke width of 1/2 inch. Address identification shall be maintained. (2015 IBC Section 501.2)

2) Walking surfaces that are part of an accessible route. Walking surfaces that are a part of an accessible route shall comply with ICC A117.1-2009 Section 403. (ICC A117.1-2009 Section 403.1) Floor surfaces shall comply with ICC A117.1-2009 Section 302 (i.e. stable, firm, slip resistant, openings do not permit a 1/2 inch sphere to pass through, elongated openings placed perpendicular to the direction of travel, etc.). (ICC A117.1-2009 Section 403.2) The running slope of walking surfaces shall not be steeper than 1:20. The cross slope of a walking surface shall not be steeper than 1:48. (ICC A117.1-2009 Section 403.3) Changes in level shall comply with ICC A117.1-2009 Section 303 (i.e. changes in level of 1/4 inch maximum is allowed to be vertical, changes in level greater than 1/4 inch and not more than 1/2 inch shall be beveled with a slope not steeper than 1 unit vertical to 2 units horizontal, changes in level greater than 1/2 inch shall be ramped, etc.). (ICC A117.1-

2009 Section 403.4) The clear width of an accessible route shall be 36 inches minimum. (ICC A117.1-2009 Section 403.5)

3) Curb ramps. Ramp runs shall have a running slope not steeper than 1:12. (ICC A117.1-2009 Section 405.2) Cross slope of ramp runs shall not be steeper than 1:48. (ICC A117.1-2009 Section 405.3) Counter slopes of adjoining gutters and road surfaces immediately adjacent to the curb ramp shall not be steeper than 1:20. The adjacent surfaces at transitions at curb ramps to walks, gutters and streets shall be at the same level. (ICC A117.1-2009 Section 406.2) Where provided, curb ramp flares shall not be steeper than 1:10. (ICC A117.1-2009 Section 406.3.1) If curbs adjacent to the ramp flares are painted, the painted surface shall extend along the flared portion of the curb. (ICC A117.1-2009 Section 406.3.2) Curb ramps shall be 36 inches minimum in width, exclusive of flared sides. (ICC A117.1-2009 Section 406.4) Floor surfaces shall be stable, firm, and slip resistant, and shall comply with ICC A117.1-2009 Section 302. Changes in level in floor surfaces shall comply with ICC A117.1-2009 Section 303. Changes in level of 1/4 inch maximum in height shall be permitted to be vertical. Changes in level greater than 1/4 inch in height and not more than 1/2 inch maximum in height shall be beveled with a slope not steeper than 1:2. (ICC A117.1-2009 Section 406.5) Curb ramps and the flared sides of curb ramps shall be located so they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides. (ICC A117.1-2009 Section 406.6) Landings shall be provided at the tops of curb ramps. The clear length of the landing shall be 36 inches minimum. The clear width of the landing shall be at least as wide as the curb ramp, excluding flared sides, leading to the landing. (ICC A117.1-2009 Section 406.7) Curb ramps shall be located or protected to prevent their obstruction by parked vehicles. (ICC A117.1-2009 Section 406.8)

4) Accessible parking spaces. Car parking spaces shall be 96 inches (i.e. 8 feet) minimum in width. Van parking spaces shall be 132 inches (i.e. 11 feet) minimum in width. (ICC A117.1-2009 Section 502.2) As an exception, van parking spaces shall be permitted to be 96 inches minimum in width where the adjacent access aisle is 96 inches minimum in width. (ICC A117.1-2009 Section 502.2 Exception) Car and van parking spaces shall be marked to define the width. Where parking spaces are marked with lines, the width measurements of parking spaces and adjacent access aisles shall be made from the centerline of the markings. (ICC A117.1-2009 Section 502.3) Car and van parking spaces shall have an adjacent access aisle. (ICC A117.1-2009 Section 502.4) Access aisles shall adjoin an accessible route. Two parking spaces shall be permitted to share a common access aisle. Access aisles shall not overlap with the vehicular way. Parking spaces shall be permitted to have access aisles placed on either side of the car or van parking space. Van parking spaces that are angled shall have access aisles located on the passenger side of the parking space. (ICC A117.1-2009 Section 502.4.1) Access aisles serving car and van parking spaces shall be 60 inches minimum in width. (ICC A117.1-2009 Section 502.4.2) As an exception, where van parking spaces are permitted to be 96 inches minimum in width, the adjacent access aisle is required to be 96 inches minimum in width. (ICC A117.1-2009 Section 502.2 Exception) Access aisles shall extend the full length of the parking spaces they serve. (ICC A117.1-2009 Section 502.4.3) Access aisles shall be marked so as to discourage parking in them. Where access aisles are marked with lines, the width measurements of access aisles and adjacent parking spaces shall be made from the centerline of the markings. (ICC A117.1-2009 Section 502.4.4) Floor surfaces of parking spaces and access aisles shall be stable, firm, and slip resistant and shall have surface slopes not steeper than 1:48. Access aisles shall be at the same level as the parking spaces they serve. (ICC A117.1-2009 Section 502.5) A vertical clearance of 98 inches minimum shall be provided for parking spaces for vans, the access aisles serving parking spaces for vans, and the vehicular routes serving parking spaces for vans. (ICC A117.1-2009 Section 502.6) Accessible parking spaces are required to be identified by signs. The signs shall include the International Symbol of Accessibility complying with ICC A117.1-2009 Section 703.6.3.1. Signs identifying van parking spaces shall contain the designation “van accessible.” Such signs shall be 60 inches minimum above the floor of the parking space, measured to the bottom of the sign. (ICC A117.1-2009 Section 502.7) Parking spaces and access aisles shall be designed so that cars and vans, when parked, cannot obstruct the required clear width of

adjacent accessible routes. (ICC A117.1-2009 Section 502.8) Curb ramps and the flared sides of curb ramps shall be located so they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. (ICC A117.1-2009 Section 406.6)

Sheet A101 – Total lower level floor plan
Sheet A101A – Office area on the lower level
Sheet A102 – Total upper level floor plan
Sheet A102A – Office area on the upper level

1) Live loads posted. In commercial or industrial buildings, for each floor or portion thereof designed for live loads exceeding 50 psf, such design live loads shall be conspicuously posted by the owner or the owner's authorized agent in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices. (2015 IBC Section 106.1) **This applies to the upper level storage room floor which was designed for a 125 psf live load.**

2) Restrictions on loading. It shall be unlawful to place, or cause or permit to be placed, on any floor or roof of a building, structure or portion thereof, a load greater than is permitted by the 2015 IBC. (2015 IBC Section 106.3)

3) Application of flammable finishes. The provisions of 2015 IBC Section 416 shall apply to the construction, installation, and use of buildings and structures, or parts thereof, for the application of flammable finishes. Such construction and equipment shall comply with the 2015 International Fire Code. (2015 IBC Section 416.1)

4) Type II construction. This building is classified as Type II-B construction. Combustible building materials shall not be used unless specifically allowed by 2015 IBC Section 603.1. Fire-retardant-treated wood is allowed where specified in 2015 IBC Section 603.1.

Fire-retardant-treated wood is defined as wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced surface-burning characteristics and resist propagation of fire. (2015 IBC Section 202)

Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84-2013A or UL 723-2008, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. Additionally, the flame front shall not progress more than 10-1/2 feet beyond the centerline of the burners at any time during the test. (2015 IBC Section 2303.2)

5) Penetrating items of nonfire-resistance-rated horizontal assemblies. Penetrating items that connect not more than two stories are permitted, provided that the annular space is filled with an approved material to resist the free passage of flame and the products of combustion. (2015 IBC Section 714.5.2)

6) Ducts penetrating nonfire-resistance-rated floor assemblies. Duct systems constructed of approved materials in accordance with the 2015 International Mechanical Code that penetrate nonfire-resistance-rated floor assemblies shall be protected by any of the following methods: (1) A shaft enclosure in accordance with 2015 IBC Section 713. (2) The duct connects not more than two stories, and the annular space around the penetrating duct is protected with an approved noncombustible material that resists the free passage of flame and the products of combustion. (3) In floor assemblies composed of noncombustible materials, a shaft shall not

be required where the duct connects not more than three stories, the annular space around the penetrating duct is protected with an approved noncombustible material that resists the free passage of flame and the products of combustion, and a fire damper is installed at each floor line. (2015 IBC Section 717.6.3)

7) Interior finish requirements based on group. Interior wall and ceiling finish of rooms shall have a Class C flame spread index (flame spread index not greater than 200 and a smoke-developed index not greater than 450) when tested in accordance with ASTM E 84-2013A or UL 723-2008. (2015 IBC Section 803.11 and 803.1.1)

Interior wall and ceiling finish of corridors serving A-3 Occupancies shall have a Class B flame spread index (flame spread index not greater than 75 and a smoke-developed index not greater than 450) when tested in accordance with ASTM E 84-2013A or UL 7232008. (2015 IBC Section 803.11 and 803.1.1)

Textile wall and ceiling coverings and expanded vinyl wall and ceiling coverings shall have a Class A flame spread index (flame spread index not greater than 25 and a smoke-developed index not greater than 450) in accordance with ASTM E84-2013A or UL 723-2008 and be protected by an automatic sprinkler system installed in accordance with 2015 IBC Section 903.3.1.1. Test specimen preparation and mounting shall be in accordance with ASTM E 2404-2013EI. (2015 IBC Section 803.1.4)

8) Set-out construction. Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than 1-3/4 inches, Class A finish materials (i.e. flame spread index not greater than 25 and a smoke-developed index not greater than 450 when tested in accordance with ASTM E 84-2013A or UL 723-2008) shall be used. (2015 IBC Section 803.13.2) **The decking above the ceilings of the restrooms that serve the manufacturing and storage area (and other rooms also) was allowed to be fire-retardant-treated wood because (1) the decking is not a floor and (2) it is more than 1-3/4 inches below the noncombustible roof above.**

9) Combustible decorative materials. Curtains, draperies, fabric hangings, and similar combustible decorative materials suspended from walls or ceilings shall comply with 2015 IBC Section 806.4 (NFPA 701-10 or NFPA 289-13) and shall not exceed 10 percent of the specific wall or ceiling area to which such materials are attached. (2015 IBC Section 806.3) **Such materials shall be considered interior finish if they cover more than 10 percent of the wall area or more than 10 percent of the ceiling area, and shall not be considered decorative materials or furnishings.**

10) Posting of occupant load. Every room or space that is an assembly occupancy shall have the occupant load of the room or space posted in a conspicuous place, near the main exit or exit access doorway from the room or space. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or the owner's authorized agent. (2015 IBC Section 1004.3) **The approved maximum occupant load for the breakroom is 99 chairs, 126 occupants total.**

11) Two-way communication at elevators. A two-way communication system complying with 2015 IBC Sections 1009.8.1 and 1009.8.2 shall be provided at the landing serving each elevator or bank of elevators on each accessible floor that is one or more stories above or below the level of exit discharge. (2015 IBC Section 1009.8)

12) Two-way communication system requirements. Two-way communication systems shall provide communication between each required location and the fire command center or a central control point location approved by the fire department. Where the central control point is not a constantly attended location, a two-way communication system shall have a timed automatic telephone dial-out capability to a monitoring location or 9-1-1. The two-way communication system shall include both audible and visible signals. (2015 IBC Section

1009.8.1)

13) Two-way communication system directions. Directions for the use of the two-way communication system, instructions for summoning assistance via the two-way communication system, and written identification of the location shall be posted adjacent to the two-way communication system. Signage shall comply with the ICC A117.1-2009 requirements for visual characters. (2015 IBC Section 1009.8.2)

14) Door opening force. The force for pushing or pulling open interior swinging egress doors, other than fire doors, shall not exceed 5 pounds. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. For other swinging doors (e.g. fire doors and exterior doors), as well as sliding and folding doors, the door latch shall release when subjected to a 15-pound force. The door shall be set in motion when subjected to a 30-pound force. The door shall swing to a full-open position when subjected to a 15-pound force. (2015 IBC Section 1010.1.3)

15) Doors in series. Space between two doors in a series shall be 48 inches minimum plus the width of a door swinging into the space. Doors in a series shall swing either in the same direction or away from the space between the doors. (2015 IBC Section 1010.1.8)

16) Door operations. Egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort. (2015 IBC Section 1010.1.9) Manually operated flush bolts or surface bolts are not permitted. (2015 IBC Section 1010.1.9.4) The unlatching of any door or leaf shall not require more than one operation. (2015 IBC Section 1010.1.9.5)

As an exception, where a pair of doors serves a storage or equipment room, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf. (2015 IBC Section 1010.1.9.4 Exception 2)

As an exception, the main door or doors are permitted to be equipped with key-operated locking devices from the egress side provided: (1) the locking device is readily distinguishable as locked and (2) a readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch high on a contrasting background. (2015 IBC Section 1010.1.9.3 Exception 2)

The “main door” is that door that must be unlocked for this tenant to conduct business. It is the customer entrance door. No other door is allowed to be considered to be a “main door”. The “main door” is required to be maintained unlocked when this space is occupied. If for security reasons the “main door” will not be maintained unlocked when this space is occupied, this exception should not be used.

17) Panic and fire exit hardware. Doors serving rooms or spaces with an occupant load of 50 or more in a Group A occupancy shall not be provided with a latch or lock unless it is panic hardware or fire exit hardware. (2015 IBC Section 1010.1.10) **All doors along the egress path from the breakroom are required to have panic hardware if a lock or latch is provided on the door.**

18) Panic hardware installation. Where panic or fire exit hardware is installed, it shall comply with the following: (1) panic hardware shall be listed in accordance with UL 305; (2) fire exit hardware shall be listed in accordance with UL 10C and UL 305; (3) the actuating portion of the releasing device shall extend at least one-half of the door leaf width; and (4) the maximum unlatching force shall not exceed 15 pounds. (2015 IBC Section 1010.1.10.1)

19) Where guards are required. Guards shall be located along open-sided walking surfaces, including

mezzanines, equipment platforms, aisles, stairs, ramps, and landings that are located more than 30 inches measured vertically to the floor or grade below at any point within 36 inches horizontally to the edge of the open side. Guards shall be adequate in strength and attachment in accordance with 2015 IBC Section 1607.8. (2015 IBC Section 1015.2)

Guards are not required on the loading side of loading docks or piers. (2015 IBC Section 1015.2 Exception 1)

20) Guard strength. Guards shall be adequate in strength and attachment in accordance with 2015 IBC Section 1607.8. (2015 IBC Section 1015.2)

Guards shall be designed to resist a linear load of 50 pounds per linear foot (plf) in accordance with Section 4.5.1 of ASCE 7-10 (i.e. applied in any direction along the top rail. This load need not be assumed to act concurrently with the 200 pound point load). (2015 IBC Section 1607.8.1)

Guards shall also be designed to resist a concentrated load of 200 pounds in accordance with Section 4.5.1 of ASCE 7-10 (i.e. applied in any direction at any point on the top rail to produce the maximum load effect on the element being considered and to transfer this load through the supports to the structure. This point load need not be assumed to act concurrently with the 50 plf uniform load.) (2015 IBC Section 1607.8.1.1)

Intermediate rails (all those except the handrail), balusters, and panel fillers shall be designed to resist a concentrated load of 50 pounds in accordance with Section 4.5.1 of ASCE 7-10 (i.e. a horizontally applied normal load of 50 pounds on an area not to exceed 12 inches by 12 inches including openings and space between rails and located so as to produce the maximum load effects. Reactions due to this loading are not required to be superimposed with the 200 pound concentrated load or the 50 pounds per lineal foot uniform load). (2015 IBC Section 1607.8.1.2)

21) Guard height. Required guards shall not be less than 42 inches high, measured vertically as follows: (1) From the adjacent walking surfaces; (2) On stairways and stepped aisles, from the line connecting the leading edges of the tread nosings; and (3) On ramps and ramped aisles, from the ramp surface at the guard. (2015 IBC Section 1015.3)

22) Opening limitations for guards. Required guards shall not have openings which allow passage of a sphere 4 inches in diameter from the walking surface to the required guard height. (2015 IBC Section 1015.4)

As an exception, from a height of 36 inches to 42 inches, guards shall not have openings which allow passage of a sphere 4-3/8 inches in diameter. (2015 IBC Section 1015.4 Exception 1)

23) Aisles. Aisles or aisle accessways shall be provided from all occupied portions of the exit access that contain seats, tables, furnishings, displays, and similar fixtures or equipment. The minimum width or required capacity of aisles shall be unobstructed. (2015 IBC Section 1018.1)

24) Aisles width. For other than assembly occupancies, the minimum clear aisle width shall be not less than that required for corridors by 2015 IBC Section 1020.2 (e.g. 36 inches minimum when the occupant load is less than 50 and 44 inches minimum when the occupant load is 50 or more). (2015 IBC Sections 1018.3 and 1018.5)

25) Assembly aisles are required. Every occupied portion of any building, room, or space used for assembly purposes that contains seats, tables, displays, similar fixtures, or equipment shall be provided with aisles leading to exits or exit access doorways in accordance with 2015 IBC Section 1029.9. (2015 IBC Section 1029.9) **A minimum 42 inch wide aisle is required to pass through the breakroom and to have an exit door at each**

end. Every chair is required to be located within 30 feet of that aisle.

26) Assembly aisle obstructions. There shall not be obstructions in the minimum width or required capacity of aisles. (2015 IBC Section 1029.9.6.1)

27) Seating at tables. Where seating is located at a table or counter and is adjacent to an aisle or aisle accessway, the measurement of required clear width of the aisle or aisle accessway shall be made to a line 19 inches away from and parallel to the edge of the table or counter. The 19-inch distance shall be measured perpendicular to the side of the table or counter. In the case of other side boundaries for aisles or aisle accessways, the clear width shall be measured to walls, edges of seating and tread edges. (2015 IBC Section 1029.12.1) **Where accessible dining or drinking surfaces are located next to an aisle, at least 31 inches (instead of 19") is required to accommodate a wheelchair so that the wheelchair at the space does not obstruct the required aisle width.**

28) Dining and drinking surfaces. Where dining and drinking surfaces for the consumption of food or drink are provided, at least 5 percent, but not less than one, of the dining surfaces for the seating and standing spaces shall be accessible and be distributed throughout the facility and located on a level accessed by an accessible route. (2015 IBC Section 1108.2.9.1) **Based on 99 chairs, at least 5 dining surfaces are required to be accessible to the disabled.**

29) Clear floor space at accessible dining surfaces. Clear floor space complying with ICC A117.1-2009 Section 305 (i.e. 30" wide x 48" long), positioned for a forward approach, shall be provided. Knee and toe clearance complying with ICC A117.1-2009 Section 306 shall be provided. (ICC A117.1-2009 Section 902.2)

30) Height of accessible dining surfaces. The tops of dining surfaces and work surfaces shall be 28 inches minimum and 34 inches maximum in height above the floor. (ICC A117.1-2009 Section 902.4)

31) Minimum number of drinking fountains. No fewer than two drinking fountains shall be provided. One drinking fountain shall comply with the requirements for people who use a wheelchair and one drinking fountain shall comply with the requirements for standing persons. (2015 IBC Section 1109.5.1)

32) Drinking fountains. Drinking fountains with leading edges more than 27 inches and not more than 80 inches above the floor shall protrude 4 inches maximum horizontally into the circulation path. (ICC A117.1-2009 Section 602.1 and 307.2) A clear floor space complying with ICC A117.1-2009 Section 305 (i.e. 30" x 48"), positioned for a forward approach to the wheelchair accessible drinking fountain, shall be provided. Knee and toe space complying with ICC A117.1-2009 Section 306 shall be provided at the wheelchair accessible drinking fountain. The clear floor space shall be centered on the wheelchair accessible drinking fountain. (ICC A117.1-2009 Section 602.2) Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5.0 pounds maximum. (ICC A117.1-2009 Section 602.3 and 309.4) Spout outlets of wheelchair accessible drinking fountains shall be 36 inches maximum above the floor. Spout outlets of drinking fountains for standing persons shall be 38 inches minimum and 43 inches maximum above the floor. (ICC A117.1-2009 Section 602.4) The spout shall be located 15 inches minimum from the vertical support and 5 inches maximum from the front edge of the drinking fountain, including bumpers. Where only a parallel approach is provided, the spout shall be located 3-1/2 inches maximum from the front edge of the drinking fountain, including bumpers. (ICC A117.1-2009 Section 602.5) The spout shall provide a flow of water 4 inches minimum in height. The angle of the water stream from spouts within 3 inches of the front of the drinking fountain shall be 30 degrees maximum, and from spouts between 3 inches and 5 inches from the front of the drinking fountain shall be 15 degrees maximum, measured horizontally relative to the front face of the drinking fountain. (ICC A117.1-2009 Section 602.6)

33) Carpet on accessible routes. Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. The pile shall be 1/2 inch maximum in height. Exposed edges of carpet shall be fastened to the floor and shall have trim along the entire length of the exposed edge. Carpet edge trim shall comply with ICC A117.1-2009 Section 303. (ICC A117.1-2009 Section 302.2)

34) Openings in floor surfaces. Openings in floor surfaces shall be of a size that does not permit the passage of a 1/2 inch diameter sphere, except as allowed in Sections 407.4.3 (gap at passenger elevator car), 408.4.3 (gap at LULA elevator car), 409.4.3 (gap at residential elevator car), 410.4 (gap at platform lifts), and 805.10 (gap at track crossings). Elongated openings shall be placed so that the long dimension is perpendicular to the predominant direction of travel. (ICC A117.1-2009 Section 302.3) **This provision applies to the grates at all doors.**

35) Changes in level on accessible routes. Changes in level of 1/4 inch maximum in height shall be permitted to be vertical. (ICC A117.1-2009 Section 303.2) Changes in level greater than 1/4 inch in height and not more than 1/2 inch maximum in height shall be beveled with a slope not steeper than 1:2. (ICC A117.1-2009 Section 303.3) Changes in level greater than 1/2 inch in height shall be ramped and shall comply with ICC A117.1-2009 Section 405 or 406. (ICC A117.1-2009 Section 303.4)

36) Door hardware on accessible doors. Handles, pulls, latches, locks, and other operable parts on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, pinching, or twisting of the wrist to operate. Operable parts of such hardware shall be 34 inches minimum and 48 inches maximum above the floor. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides. (ICC A117.1-2009 Section 404.2.6)

37) Ramps. Ramp runs shall have a running slope not steeper than 1:12. (ICC A117.1-2009 Section 405.2) Cross slope of ramp runs shall not be steeper than 1:48. (ICC A117.1-2009 Section 405.3) Floor surfaces shall be stable, firm, and slip resistant. (ICC A117.1-2003 Section 405.4) The clear width of a ramp run shall be 36 inches minimum. Handrails and handrail supports that are provided on the ramp run shall not project into the required clear width of the ramp run. (ICC A117.1-2009 Section 405.5) The rise for any ramp run shall be 30 inches maximum. (ICC A117.1-2009 Section 405.6) Ramps shall have landings at bottom and top of each ramp run. (ICC A117.1-2009 Section 405.7) Landings shall have a slope not steeper than 1:48 and the floor surfaces shall be stable, firm, and slip resistant. (ICC A117.1-2009 Section 405.7.1) Clear width of landings shall be at least as wide as the widest ramp run leading to the landing. (ICC A117.1-2009 Section 405.7.2) Landings shall have a clear length of 60 inches minimum. (ICC A117.1-2009 Section 405.7.3) Ramps that change direction at ramp landings shall be sized to provide a 5 foot diameter circular turning space or a 5 foot by 5 foot T-shaped turning space. (ICC A117.1-2009 Section 405.7.4) Where doorways are adjacent to a ramp landing, the maneuvering clearances required at doors shall be permitted to overlap the landing area. Where doors that are subject to locking are adjacent to a ramp landing, landings shall be sized to provide a 5 foot diameter circular turning space or a 5 foot by 5 foot T-shaped turning space. (ICC A117.1-2009 Section 405.7.5) Ramp runs with a rise greater than 6 inches shall have handrails on each side. (ICC A117.1-2009 Section 405.8) Edge protection shall be provided on each side of ramp runs and at each side of ramp landings. (ICC A117.1-2009 Section 405.9) Edge protection shall not be required on ramps not required to have handrails and that have flared sides complying with ICC A117.1-2009 Section 406.3. (ICC A117.1-2009 Section 405.9 Exception 1) Edge protection is not required at sides of ramp landings serving an adjoining ramp run or stairway. (ICC A117.1-2009 Section 405.9 Exception 2) Edge protection shall not be required on the sides of ramp landings having a vertical drop-off of 1/2 inch maximum within 10 inches horizontally of the minimum landing area ICC A117.1-2009 Section 405.7. (ICC A117.1-2009 Section 405.9 Exception 3) For edge protection, the floor surface of the

ramp run or ramp landing shall extend 12 inches minimum beyond the inside face of the handrails, (ICC A117.1-2009 Section 405.9.1) OR a curb having a minimum height of 4 inches shall be provided (ICC A117.1-2009 Section 405.9.2.1) OR a barrier shall be constructed that prevents the passage of a 4-inch diameter sphere where any portion of the sphere is within 4 inches of the floor. (ICC A117.1-2009 Section 405.9.2.2) Landings subject to wet conditions shall be designed to prevent the accumulation of water. (ICC A117.1-2009 Section 405.10)

38) Elevators. Elevators shall comply with ICC A117.1-2009 Section 407 and ASME A17.1-2007/CSA B44-07 (i.e. Safety Code for Elevators and Escalators) listed in ICC A117.1-2009 Section 105.2.5. Elevators shall be passenger elevators as classified by ASME A17.1-2007/CSA B44-07. Elevator operation shall be automatic. (ICC A117.1-2009 Section 407.1)

39) Parallel approach to reception and/or service counters. A portion of the counter surface 36 inches minimum in length and 36 inches maximum in height above the floor shall be provided. Where the counter surface is less than 36 inches in length, the entire counter surface shall be 36 inches maximum in height above the floor. A clear floor space complying with ICC A117.1-2009 Section 305 (i.e. 30” x 48”), positioned for a parallel approach adjacent to the accessible counter, shall be provided. (ICC A117.1-2009 Section 904.3.1) The accessible portion of the countertop shall extend the same depth as the sales and service countertop. (ICC A117.1-2009 Section 904.3)

40) Glass in overhead doors. When an overhead door is open, the glass in the overhead door is in the horizontal position. All glass in overhead doors is required to comply with skylight provisions. To avoid screens below horizontal glass, the glazing material for a single light or layer glazing system shall be laminated glass with a minimum 30-mil polyvinyl butyral (or equivalent) interlayer. For multiple-layer glazing systems, each light or layer shall be laminated glass with a minimum 30-mil polyvinyl butyral (or equivalent) interlayer. Glass installed in overhead doors shall comply. (2015 IBC Section 2405.2 and 2405.3)

41) Emergency signs at elevator doors. An approved pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. The sign shall read: IN CASE OF FIRE, ELEVATORS ARE OUT OF SERVICE. USE EXIT STAIRS. (2015 IBC Section 3002.3)

42) Specific building thermal envelope insulation requirements. Insulation in building thermal envelope opaque assemblies shall comply with 2015 IECC Sections C402.2.1 through C402.2.6 and 2015 IECC Table C402.1.3. (2015 IECC C402.2)

For roofs of metal buildings and the walls of metal buildings, assembly descriptions can be found in ANSI/ASHRAE/IESNA 90.1-2013 Appendix A. (2015 IECC Table C402.1.3 footnote a)

A liner system is required by 2015 IECC Table C402.1.3 for the roof of a metal building. For a liner system, a continuous membrane is installed below the purlins and uninterrupted by framing members. Uncompressed, unfaced insulation rests on top of the membrane between the purlins (R-19). For multilayer installations, the last rated R-Value (i.e. R-11) of insulation is for unfaced insulation draped over purlins and then compressed when the metal roof panels are attached. A minimum R-3 thermal spacer block between the purlins and the metal roof panels is required unless compliance is shown by the overall assembly U-factor. (ASHRAE 90.1-2013 Appendix Section A2.3.2.4)

43) Loading dock weatherseals. Cargo doors and loading dock doors shall be equipped with weatherseals to restrict infiltration when vehicles are parked in the doorway. (2015 IECC Section C402.5.6)

Sheet A111 – Ceiling plan
Sheet A111A – Ceiling plan
Sheet A112 – Ceiling plan
Sheet A112A – Ceiling plan

1) Suspended acoustical ceilings. Acoustical tile or lay-in panel ceilings in structures assigned to Seismic Design Category C where the average weight over the entire ceiling is 2.5 pounds per square foot or less shall be designed and installed in accordance with ASTM C 635-13, ASTM C 636-08, and ASTM E 580-09a, Section 4 Seismic Design Category C (i.e. free-floating). (2015 IBC Section 808.1.1.1, 2015 IBC Section 2506.2.1, and ASCE 7-10 Section 13.5.6.2)

Ceilings where an average weight over the entire ceiling is greater than 2.5 pounds per square foot shall be installed as specified in ASTM E580-09a, Section 5 Seismic Design Category D, E, & F (i.e. restrained).

Within Seismic Design Category C where the average weight over the entire ceiling is 2.5 pounds per square foot or less, either ASTM E580-09a, Section 4 Seismic Design Category C (i.e. free-floating) or ASTM E580-09a, Section 5 Seismic Design Category D, E, & F (i.e. restrained) may be used.

2) Suspended gypsum board ceilings. Suspended gypsum board ceilings shall comply with ASTM C754-11. Main runners, cross furring, hangers, attachments, etc. shall all comply with that standard. In this building, all materials are required to be noncombustible. (2015 IBC 2508.1) In lieu of complying with ASTM C754-11, suspended gypsum board ceilings are required to comply with a current ICC Evaluation Report. If the ICC Evaluation Report option is selected, provide a copy of the specific evaluation report for the selected suspended gypsum board ceiling system to the Structural Inspector.

3) Gypsum board ceilings and soffits. Gypsum board ceilings and soffits are required to be capable of supporting a live load of at least 10 pounds per square foot and a dead load of at least 10 pounds per square foot. Without a specific design, metal studs (20 Gauge, 6" metal studs, at 16" on center) are allowed to span 8 feet maximum. A load path is required, with adequate connections, to support ceiling joists and to transfer the loads to the supporting structure.

Sheet A121 – Roof plan

1) Roof coverings. Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of 2015 IBC Chapter 15. Roof coverings shall be designed and installed in accordance with the 2015 IBC and the approved manufacturer's instructions such that the roof covering shall serve to protect the building or structure. (2015 IBC Section 1503.1)

2) Roof flashing. Flashing shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane. (2015 IBC Section 1503.2)

3) Locations of roof flashing. Flashing shall be installed at wall and roof intersections, at gutters, wherever there is a change in roof slope or direction, and around roof openings. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than 0.019 inch (No. 26 galvanized sheet). (2015 IBC Section 1503.2.1)

Sheet A201 – Exterior elevations
Sheet A202 – Exterior elevations
Sheet A203 – Exterior elevations

1) Weather protection provided by exterior walls. Exterior walls shall provide the building with a weather-resistant exterior wall envelope in compliance with 2015 IBC Chapter 14. The exterior wall envelope shall include flashing, as described in 2015 IBC Section 1405.4. The exterior wall envelope shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a water-resistive barrier behind the exterior veneer, as described in 2015 IBC Section 1404.2, and a means for draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with 2015 IBC Section 1405.3. (2015 IBC Section 1403.2)

2) Vapor retarders. Class I or II vapor retarders shall be provided on the interior side of frame walls. (2015 IBC Section 1405.3.1)

3) Material vapor retarder class. The vapor retarder class shall be based on the manufacturer's certified testing or a tested assembly. The following shall be deemed to meet the class specified:
Class I: Sheet polyethylene, nonperforated aluminum foil with a perm rating of less than or equal to 0.1.
Class II: Kraft-faced fiberglass batts or paint with a perm rating greater than 0.1 and less than or equal to 1.0. (2015 IBC Section 1405.3.3)

4) Flashing of exterior walls. Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior. Flashing shall be installed at the perimeters of exterior door and window assemblies, penetrations and terminations of exterior wall assemblies, exterior wall intersections with roofs, chimneys, porches, decks, balconies and similar projections and at built-in gutters and similar locations where moisture could enter the wall. Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim. (2015 IBC Section 1405.4)

5) Adhered masonry veneer. Adhered masonry veneer shall comply with the applicable requirements in 2015 IBC Section 1405.10 and Sections 6.1 and 6.3 of TMS 402-2013/ACI 530-13/ASCE 5-13 and in accordance with the manufacturer’s instructions. (2015 IBC Section 1405.10)

6) Exterior plaster. Plastering with cement plaster shall be not less than three coats when applied over metal lath or wire fabric lath or gypsum board backing as specified in 2015 IBC Section 2510.5 and shall be not less than two coats when applied over masonry or concrete. If the plaster surface is to be completely covered by veneer or other facing material, or is completely concealed by another wall, plaster application need only be two coats, provided the total thickness is as set forth in ASTM C 926-13. (2015 IBC Section 2512.1) **The installation of exterior plaster is required to comply with 2015 IBC Sections 2507, 2510, and 2512.**

Sheet A401 – Restroom floor plans
Sheet A411 – Restroom elevations
Sheet A412 – Restroom elevations

1) Toilet and bathing facilities. Each toilet room and bathing room shall be accessible. At least one of each type of fixture, element, control, or dispenser in each accessible toilet room and bathing room shall be accessible. (2015 IBC Section 1109.2)

2) Water closet compartment. Where water closet compartments are provided in a toilet room or bathing room, at least 5 percent of the total number of compartments shall be wheelchair accessible. Where the combined total water closet compartments and urinals provided in a toilet room or bathing room is six or more, at least 5 percent of the total number of compartments shall be ambulatory accessible, provided in addition to the wheelchair-accessible compartment. (2015 IBC Section 1109.2.2)

3) Toilet flush controls at accessible toilets. Toilet flush controls shall be hand operated or automatic. Hand operated flush controls shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5.0 pounds maximum. Flush controls shall be located on the open side of the water closet. (ICC A117.1-2009 Section 604.6)

4) Accessible toilet stall doors. Toilet compartment doors, including door hardware, shall comply with ICC A117.1-2009 Section 404 (i.e. maneuvering clearances on both sides; 32" clear width; easy to grasp with one hand and operable without tight grasping, pinching, or twisting of the wrist; closing speed; opening force). The door shall be self-closing. A door pull complying with ICC A117.1-2009 Section 404.2.6 shall be placed on both sides of the door near the latch. Toilet compartment doors shall not swing into the required minimum area of the compartment. (ICC A117.1-2009 Section 604.9.3)

5) Toe clearance at accessible toilet compartments. The front partition and at least one side partition shall provide a toe clearance of 9 inches minimum above the floor and extending 6 inches beyond the compartment side face of the partition, exclusive of partition support members. (ICC A117.1-2009 Section 604.9.5.1)

As an exception, toe clearance at the front partition is not required in a compartment greater than 62 inches in depth with a wall-hung water closet, or greater than 65 inches in depth with a floor-mounted water closet. (ICC A117.1-2009 Section 604.9.5.1 Exception 1)

As an exception, toe clearance at the side partition is not required in a compartment greater than 66 inches in width. (ICC A117.1-2009 Section 604.9.5.1 Exception 2)

6) Height and depth of accessible urinals. Urinals shall be of the stall type or shall be of the wall hung type with the rim at 17 inches maximum above the floor. Wall hung urinals shall be 13-1/2 inches minimum in depth measured from the outer face of the urinal rim to the wall. (ICC A117.1-2009 Section 605.2) **At least one urinal in each restroom is required to be accessible to the disabled.**

7) Flush controls for accessible urinals. Flush controls shall be hand operated or automatic. Hand operated flush controls shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5.0 pounds maximum. (ICC A117.1-2009 Section 605.4)

8) Faucets serving accessible sinks. Sink faucets shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5.0 pounds maximum. Hand-operated metering faucets shall remain open for 10 seconds minimum. (ICC A117.1-2009 Section 606.4)

9) Grab bars for alternate roll-in-type showers. In alternate roll-in type showers, grab bars shall be provided on the back wall and the end wall adjacent to the seat. Grab bars shall not be provided above the seat. Grab bars shall be 6 inches maximum from the adjacent wall. (ICC A117.1-2009 Section 608.3.3)

10) Controls for alternate roll-in showers. In alternate roll-in showers, the controls and hand shower shall be located 38 inches minimum and 48 inches maximum above the shower floor. In alternate roll-in showers with controls and hand shower located on the end wall adjacent to the seat, the controls and hand shower shall be 27 inches maximum from the seat wall. In alternate roll-in showers with the controls and hand shower located on the back wall opposite the seat, the controls and hand shower shall be located within 15 inches, left or right, of the centerline of the seat. (ICC A117.1-2009 Section 608.4.3)

11) Hand showers in accessible showers. A hand shower with a hose 59 inches minimum in length, that can be used both as a fixed shower head and as a hand shower, shall be provided. The hand shower shall have a control with a nonpositive shut-off feature. Where provided, an adjustable-height hand shower mounted on a vertical bar shall be installed so as to not obstruct the use of grab bars. (ICC A117.1-2009 Section 608.5)

12) Thresholds for accessible showers. Thresholds in roll-in-type shower compartment shall be 1/2 inch maximum in height in accordance with ICC A117.1-2009 Section 303 (i.e. 1/4 inch maximum allowed to be vertical and between 1/4 inch and 1/2 inch required to be beveled with a slope not steeper than 1 unit vertical to 2 units horizontal (ICC A117.1-2009 Section 608.6)

13) Enclosures for accessible showers. Shower compartment enclosures for shower compartments shall not obstruct controls or obstruct transfer from wheelchairs onto shower seats. (ICC A117.1-2009 Section 608.7)

14) Water temperature for accessible showers. Showers shall deliver water that is 120 degrees F maximum. (ICC A117.1-2009 Section 608.8)

15) Grab bar cross section. Grab bars with a circular cross section shall have an outside diameter of 1-1/4 inch minimum and 2 inches maximum. (ICC A117.1-2009 Section 609.2.1) Grab bars with a noncircular cross section shall have a cross section dimension of 2 inches maximum, and a perimeter dimension of 4 inches minimum and 4.8 inches maximum. (ICC A117.1-2009 Section 609.2.2)

16) Grab bar spacing. The space between the wall and the grab bar shall be 1-1/2 inches. The space between the grab bar and projecting objects below and at the ends of the grab bar shall be 1-1/2 inches minimum. The space between the grab bar and projecting objects above the grab bar shall be 12 inches minimum. (ICC/ANSI A117.1-2003 Section 609.3) As an exception, the space between the grab bars and shower controls, shower fittings, and other grab bars above the grab bar shall be permitted to be 1-1/2 inches minimum. (ICC A117.1-2009 Section 609.3 Exception 1)

17) Grab bar structural strength. Allowable stresses shall not be exceeded for materials used where a vertical or horizontal force of 250 pounds is applied at any point on the grab bar, fastener mounting device, or supporting structure. (ICC A117.1-2009 Section 609.8)

18) Seats in accessible shower compartments. The height of shower compartment seats shall be 17 inches minimum and 19 inches maximum above the bathroom floor, measured to the top of the seat. In alternate roll-in-type showers, the seat shall extend along the seat wall to a point within 3 inches of the compartment entry. Seats shall comply with ICC A117.1-2009 Section 610.3.1 or 610.3.2. (ICC A117.1-2009 Section 610.3)

19) Rectangular seats in accessible shower compartments. The rear edge of a rectangular seat shall be 2-1/2 inches maximum and the front edge 15 inches minimum to 16 inches maximum from the seat wall. The side edge of the seat shall be 1-1/2 inches maximum from the back wall of a transfer-type shower and 1-1/2 inches maximum from the control wall of a roll-in-type shower. (ICC A117.1-2009 Section 610.3.1)

20) Structural strength of accessible shower seats. Allowable stresses shall not be exceeded for materials used where a vertical or horizontal force of 250 pounds is applied at any point on the seat, fastener mounting device, or supporting structure. (ICC A117.1-2009 Section 610.4)

21) Floors and wall base finish materials in toilet rooms. Toilet, bathing, and shower room floor finish materials shall have a smooth, hard, nonabsorbent surface. The intersections of such floors with walls shall have a smooth, hard, nonabsorbent vertical base that extends upward onto the walls at least 4 inches. (2015 IBC Section 1210.2.1)

22) Walls and partitions in toilet rooms. Walls and partitions within 2 feet of urinals and water closets shall have a smooth, hard, nonabsorbent surface, to a height of 4 feet above the floor, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture. (2015 IBC Section 1210.2.2)

23) Shower wall finish. Shower compartments and walls above bathtubs with installed shower heads shall be finished with a smooth, nonabsorbent surface to a height not less than 72 inches above the drain inlet. (2015 IBC Section 1210.2.3)

24) Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The walls or partitions shall begin at a height not more than 12 inches from and extend not less than 60 inches above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches or to a point not less than 6 inches beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater. (2015 IBC Section 1210.3.2)

25) Gypsum board as a base for tile. Materials used as a base for wall tile in tub and shower areas and wall and ceiling panels in shower areas shall be of materials listed in 2015 IBC Table 2509.2 (glass mat gypsum backing panel, fiber-cement backer board, fiber-mat reinforced cementitious backer unit) and installed in accordance with the manufacturer's recommendations. Water-resistant gypsum backing board shall be used as a base for tile in water closet compartment walls when installed in accordance with GA-216-13 or ASTM C 840-11 and the manufacturer's recommendations. Regular gypsum wallboard is permitted under tile or wall panels in other wall and ceiling areas when installed in accordance with GA-216-13 or ASTM C 840-11.

Sheet A501 – Stairways and guards
Sheet A502 – Stairways
Sheet A503 – Stairways

1) Stairway dimensional uniformity. Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed 3/8 inch in any flight of stairs. (2015 IBC Section 1011.5.4)

2) Stair nosing and riser profile. Nosings shall have a curvature or bevel of not less than 1/16 inch but not more than 9/16 inch from the foremost projection of the tread. Risers shall be solid and vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees (0.52 rad) from the vertical. (2015 IBC Section 1011.5.5) The leading edge (nosings) of treads shall project not more than 1-1/4 inches beyond the tread below. (2015 IBC Section 1011.5.5.1) Nosing projections of the leading edges shall be of uniform size, including the projections of the nosing's leading edge of the floor at the top of a flight. (2015 IBC Section 1011.5.5.2) Risers shall be solid. (2015 IBC Section 1011.5.5.3)

3) Stairway walking surface. The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal in any direction. Stairway treads and landings shall have a solid surface. Finish floor surfaces shall be securely attached. (2015 IBC Section 1011.7.1)

4) Outdoor conditions. Outdoor stairways and outdoor approaches to stairways shall be designed so that water will not accumulate on walking surfaces. (2015 IBC Section 1011.7.2)

5) Enclosures under interior stairways. The walls and soffits within enclosed usable spaces under stairways shall be protected by 1-hour fire-resistance-rated construction. (2015 IBC Section 1011.7.3)

6) Stairway handrails on each side. Stairways shall have handrails on each side and shall comply with 2015 IBC Section 1014. (2015 IBC Section 1011.11)

7) Handrail strength. Handrails for stairways and ramps shall be adequate in strength and attachment in accordance with 2015 IBC Section 1607.8. (2015 IBC Section 1014.1)

Handrails shall be designed to resist a linear load of 50 pounds per linear foot (plf) in accordance with Section 4.5.1 of ASCE 7-10 (i.e. applied in any direction along the top rail. This load need not be assumed to act concurrently with the 200 pound point load). (2015 IBC Section 1607.8.1)

Handrails shall also be designed to resist a concentrated load of 200 pounds in accordance with Section 4.5.1 of ASCE 7-10 (i.e. applied in any direction at any point on the top rail to produce the maximum load effect on the element being considered and to transfer this load through the supports to the structure. This point load need not be assumed to act concurrently with the 50 plf uniform load.). (2015 IBC Section 1607.8.1.1)

8) Handrail height. Handrail height, measured vertically above stair tread nosings, or finish surface of ramp slope, shall be uniform, not less than 34 inches and not more than 38 inches. (2015 IBC Section 1014.2)

9) Handrail graspability. Handrails with a circular cross section shall have an outside diameter of at least 1-1/4 inches-and not greater than 2 inches. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches and not greater than 6-1/4 inches with a maximum cross-section dimension of 2-1/4 inches and minimum cross-sectional dimension of 1 inch. Edges shall have a minimum radius of 0.01 inch. (2015 IBC Section 1014.3.1)

10) Handrail continuity. Handrail gripping surfaces shall be continuous the full length of the flight of stairs and ramps, including required handrail extensions, without interruption by newel posts or other obstructions. (2015 IBC Section 1014.4) Handrail brackets or balusters attached to the bottom surface of the handrail that do not project horizontally beyond the sides of the handrail within 1-1/2 inches of the bottom of the handrail shall not be considered obstructions. (2015 IBC Section 1014.4 Exception 3)

11) Handrail extensions. Handrails shall return to a wall, guard, or the walking surface or shall be continuous to the handrail of an adjacent stair flight or ramp run. Where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At ramps where handrails are not continuous between runs, the handrails shall extend horizontally above the landing 12 inches minimum beyond the top and bottom of ramp runs. The extensions of handrails shall be in the same direction of the stair flights at stairways and the ramp runs at ramps. (2015 IBC Section 1014.6)

12) Handrail clearance. Clear space between a handrail and a wall or other surface shall be a minimum of 1-1/2 inches. A handrail and a wall or other surface adjacent to the handrail shall be free of any sharp or abrasive elements. (2015 IBC Section 1014.7)

Sheet E2.1 – Lighting plan
Sheet E2.2 – Lighting plan
Sheet E2.3 – Lighting plan

1) Egress illumination required. The means of egress serving a room or space shall be illuminated at all times that the room or space is occupied. (2015 Section 1008.2) The means of egress illumination level shall be not less than 1 footcandle at the walking surface. (2015 Section 1008.2.1)

As an alternate to the code, full automatic-on occupant sensors are allowed to control the lighting within intervening rooms, corridors, and stairways if they are the type that, if they fail to function, they fail in the "lights on" mode. In other words, if the occupant sensors malfunction the lights will be on. The minimum required level of egress lighting is not allowed to be controlled by a time-switch control.

It is a building code violation for an occupant sensor to shut off lighting within a room that is occupied. This is especially a risk to life-safety if the occupant sensors are of a manual-on type. The occupant sensors are required to be located so that they will detect occupants anywhere in the room.

2) Emergency power for egress illumination. The power supply for means of egress illumination shall normally be provided by the premises' electrical supply. (2015 IBC Section 1008.3)

In the event of power supply failure in rooms, spaces, and buildings that require two or more means of egress, an emergency electrical system shall automatically illuminate all of the following areas: (1) Aisles. (2) Corridors. (3) Interior stairways, (4) Exterior landings at exit doorways that lead directly to the exit discharge. (2015 IBC Section 1008.3.1 and 1008.3.2)

In addition, in the event of power supply failure, an emergency electrical system shall automatically illuminate all of the following areas: (1) Electrical equipment rooms. (2) Fire pump rooms. (3) Public restrooms with an area greater than 300 square feet. (2015 IBC Section 1008.3.3)

The emergency power system shall provide power for a duration of not less than 90 minutes and shall consist of storage batteries, unit equipment, or an on-site generator. (2015 IBC Section 1008.3.4) **This lighting is not allowed to be controlled an occupant sensor, photocell, or by a time-switch control.**

3) Internally illuminated exit signs. Exit signs shall be listed and labeled in accordance with UL 924-06 and shall be installed in accordance with the manufacturer's instructions and 2015 IBC Chapter 27. Exit signs shall be illuminated at all times. (2015 IBC Section 1013.5)

4) Occupant sensor controls. Occupant sensor controls shall be installed to control lights in the following space types: (1) Classrooms/lecture/training rooms. (2) Conference/meeting/multipurpose rooms. (3) Copy/print rooms. (4) Lounges. (5) Employee lunch and break rooms. (6) Private offices. (7) Restrooms. (8) Storage rooms. (9) Janitorial closets. (10) Locker rooms. (11) Other spaces 300 square feet or less that are enclosed by floor-to-ceiling height partitions. (2015 IECC Section C405.2.1)

5) Occupant sensor control function. Occupant sensor controls in spaces shall comply with the following: (1)

Automatically turn off lights within 30 minutes of all occupants leaving the space. (2) Be manual on or controlled to automatically turn the lighting on to not more than 50 percent power. As an exception, full automatic-on controls shall be permitted to control lighting in public corridors, stairways, restrooms, primary building entrance areas, and lobbies, and areas where manual-on operation would endanger the safety or security of the room or building occupants. (3) Shall incorporate a manual control to allow occupants to turn lights off. (2015 IECC Section C405.2.1.1) **Full automatic-on controls are required in intervening rooms or areas.**

It is a violation of the 2015 International Building Code (IBC) for the required minimum level of egress lighting to shut off when a room is occupied. Occupant sensors are required to be located so that a person anywhere within the room will be detected by the occupant sensor so that the lights will not shut off when the room is occupied.

6) Time-switch controls. Each area of the building that is not provided with occupant sensor controls complying with 2015 IECC Section C405.2.1.1 shall be provided with time switch controls complying with 2015 IECC C405.2.2.1.

7) Time-switch control function. Each space provided with time-switch controls shall also be provided with a manual control. Time-switch controls shall include an override switching device that complies with the following: (1) Have a minimum 7-day clock. (2) Be capable of being set for seven different day types per week. (3) Incorporate an automatic holiday “shutoff” feature, which turns off all controlled lighting loads for at least 24 hours and then resumes normally scheduled operations. (4) Have program backup capabilities, which prevent the loss of program and time settings for at least 10 hours, if power is interrupted. (5) Include an override switch that complies with the following: (5.1) The override switch shall be a manual control. (5.2) The override switch, when initiated, shall permit the controlled lighting to remain on for not more than 2 hours. (5.3) Any individual override switch shall control the lighting for an area not larger than 5,000 square feet. (2015 IECC Section C405.2.2.1)

8) Daylight-responsive control function. Where required, daylight-responsive controls shall be provided within each space for control of lights in that space and shall comply with all of the following: (1) Lights in toplight daylight zones in accordance with 2015 IECC Section C405.2.3.3 shall be controlled independently of lights in sidelight daylight zones in accordance with 2015 IECC Section C405.2.3.2. (2) Daylight responsive controls within each space shall be configured so that they can be calibrated from within that space by authorized personnel. (3) Calibration mechanisms shall be readily accessible. (4) Where located in offices, classrooms, laboratories, and library reading rooms, daylight responsive controls shall dim lights continuously from full light output to 15 percent of full light output or lower. (5) Daylight responsive controls shall be capable of a complete shutoff of all controlled lights. (6) Lights in sidelight daylight zones in accordance with 2015 IECC Section C405.2.3.2 facing different cardinal orientations [i.e., within 45 degrees of due North, East, South, West] shall be controlled independently of each other. (2015 IECC Section C405.2.3.1)

9) Exterior lighting controls. Lighting for exterior applications other than emergency lighting that is intended to be automatically off during building operation, lighting specifically required to meet health and life safety requirements, or decorative gas lighting systems shall: (1) Be provided with a control that automatically turns off the lighting as a function of available daylight. (2) Where lighting the building façade or landscape, the lighting shall have controls that automatically shut off the lighting as a function of dawn/dusk and a set opening and closing time. (3) Where not covered in Item 2, the lighting shall have controls configured to automatically reduce the connected lighting power by not less than 30 percent from not later than midnight to 6 a.m., from one hour after business closing to one hour before business opening, or during any period when activity has not been detected for a time of longer than 15 minutes. All time switches shall be able to retain programming and

the time setting during loss of power for a period of at least 10 hours. (2015 IECC Section C405.2.5)

Plan Corrections – Revised Drawings

Please respond to each of the following items with revised drawings or more information as requested.

IBC 2015 International Building Code

1) Consultant Structural Engineer.
The structural drawings and calculations have been reviewed by one of Boise City's Consultant Structural Engineers. Concerns are found as changemarks added to the drawings in ePlanReview and/or concerns are listed in a Plan Review Report in the Agency Comments Folder in ePlanReview.

Note: This building is located within seismic design category C because the site class is D per the soils report. The engineering notes on page 2 of the building design state seismic design category B. The structural design is required to be evaluated for the correct seismic design category. Provide the structural analysis.

Resubmit: Please address each item noted by Boise City's Consultant Structural Engineer with resubmitted drawings, calculations, or a written explanation as appropriate.

(5-22-19) The drawings were routed to the Consultant Structural Engineer for the 2nd plan review.

(5-28-19) The drawings were approved by the Consultant Structural Engineer.

2) 414.1.3 Information about hazardous materials required.
A report shall be submitted to the building official identifying the maximum expected quantities of hazardous materials to be stored, used in a closed system, and used in an open system, and subdivided to separately address hazardous material classification categories based on 2015 IBC Tables 307.1(1) and 307.1(2). The methods of protection from such hazards, including but not limited to control areas, fire protection systems, and Group H occupancies shall be indicated in the report and on the construction documents. The opinion and report shall be prepared by a qualified person, firm, or corporation approved by the building official and provided without charge to the enforcing agency. (2015 IBC Section 414.1.3)

Resubmit: Upload the required report into the Drawings Folder in ePlanReview. A 2-hr fire-resistance-rated separation is required to entirely separate an H-3 or H-4 Occupancy from the rest of the building.

(5-22-19) According to the Architect, Isopropyl Alcohol is the only hazardous material that will be stored in the building. The total amount they store is about 180 gallons. According to the Architect, the 2-hr hazardous material room was designed for potential future use if some process changes in their manufacturing which requires another chemical. Such chemical would be stored on secondary containment pallets. An application to store and/or use any additional hazardous material is required to be submitted to the Fire Department for their review. Storage of any additional hazardous material is not allowed until approved by the Fire Department.

3) 506.2 Allowable area determination.
The allowable area of a building shall be determined in accordance with the applicable provisions of 2015 IBC Sections 506.2.1 through 506.2.4 and 2015 IBC Section 506.3. (2015 IBC Section 506.2)

The allowable area of a single-occupancy building with no more than one story above grade plane shall be determined in accordance with Equation 5-1:

Aa= At+ (NS× If) (Equation 5-1)

NS = Tabular allowable area factor in accordance with 2015 IBC Table 506.2 for nonsprinklered building (regardless of whether the building is sprinklered). (2015 IBC Section 506.2.1)

The allowable area of a mixed-occupancy building with no more than one story above grade plane shall be determined in accordance with the applicable provisions of 2015 IBC Section 508.1 based on Equation 5-1 for each applicable occupancy. (2015 IBC Section 506.2.2)

The aggregate area of mezzanines in buildings and structures of Type I or II construction shall be not greater than one-half of the floor area of the room in buildings and structures equipped throughout with an approved automatic sprinkler system in accordance with 2015 IBC Section 903.3.1.1 and an approved emergency voice/alarm communication system in accordance with 2015 IBC Section 907.5.2.2. (2015 IBC Section 505.2.1 Exception 2)

Resubmit: (Sheets G002 and AS001) This building is too big for the type of construction if considered to be a 2 story building. A mistake was made in the allowable building area calculation. The yard increase is required to be based on the non-sprinklered value in 2015 IBC Table 506.2 and not on the sprinklered value. This building needs to be re-classified as an unlimited area building with 60 foot yards all around it (this doesn't work unless the East property line is moved or the building is moved), or it needs a fire wall (this is likely impractical), or the type of construction needs to be 1-hr (this is likely impractical), or this building needs to be made smaller, or the upper level needs to be classified as a mezzanine and an emergency voice/alarm communication system installed throughout the building. Revise the drawings to show compliance based on one of the options listed.

> **(5-22-19) The upper level was classified as a mezzanine and a voice/alarm communication system will be installed per 2015 IBC Section 505.2.1 Exception 2.**
>
> **The "separated uses" option of the 2015 IBC was used to evaluate this building. The B Occupancy floor area on the 1st story is about 9,379 square feet, the F-1 Occupancy floor area on the 1st story is about 59,326 square feet, and the S-1 Occupancy floor area on the 1st story is about 9,490 square feet and the allowed yard increase is about 1.47 times the allowable non-fire sprinklered area per 2015 IBC Section 506.3.2 Exception. The allowable values in 2015 IBC Table 506.2 for a 1 story building with a fire sprinkler system installed throughout the building were used with the actual area divided by the allowable area for each occupancy added together (9,379 / 125,810 + 59,326 / 84,785 + 9,490 / 95,725 = .8734). The mezzanine area exceeds 1/3 the area of the room below but does not exceed 1/2 the area of the room below. Based on 2015 IBC Section 505.2.1 Exception 2, in addition to the fire sprinkler system, an emergency voice/alarm communication system is required. There are no occupancy separations required between B, F-1, and S-1 Occupancies even though the "separated uses" option is used. For this method of analysis, the floor area of the mezzanine level is not required to be included in the total floor area of the building. See the note added to Sheet G001 and the revised "Allowable Height & Area" analysis on Sheet G002.**

4) 603.1 Type II construction.
This building is classified as Type II-B construction. Combustible building materials shall not be used unless

specifically allowed by 2015 IBC Section 603.1. Fire-retardant-treated wood is allowed where specified in 2015 IBC Section 603.1.

Fire-retardant-treated wood is defined as wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced surface-burning characteristics and resist propagation of fire. (2015 IBC Section 202)

Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84-2013A or UL 723-2008, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. Additionally, the flame front shall not progress more than 10-1/2 feet beyond the centerline of the burners at any time during the test. (2015 IBC Section 2303.2)

Resubmit: (All applicable Sheets) This building is classified as Type II-B construction. All wood is required to be fire-retardant-treated. Revise all drawings, structural and otherwise, to show fire-retardant-treated OSB or plywood that is treated for fire exposure from each side.

> **(5-22-19) According to the Architect, glass matt and cement board will be used instead of plywood. Many of the details on the drawings were revised. Where plywood was still shown on the drawings in nonbearing exterior walls or in roof construction, red lines were added to require fire-retardant-treated wood.**

5) 1010.1.7 Thresholds at doors.
Thresholds at doorways shall not exceed 1/2 inch in height. Raised thresholds and floor level changes greater than 1/4 inch at doorways shall be beveled with a slope not greater than one unit vertical in two units horizontal (50-percent slope). (2015 IBC Section 1010.1.7)

Resubmit: (Sheet A101 – Pumps 149 - Keynote 8 and all other applicable drawings) A level landing is required on both sides of a door. The threshold height is limited to 1/2 inch maximum. Curbs are not allowed at doors. A compliant landing is required on both sides of the door. The landing should be at least as wide as the doors and have a length of at least 44 inches long. Revise the drawings to show compliance. Since equipment rooms are not required to be accessible to the disabled, ramps are not required.

> **(5-22-19) A landing was provided on the inside of both doors serving "Pumps 149" at the containment curb. A single step is allowed on the exterior side of an exterior door serving an F or an S Occupancy. A level landing is required on both sides, though, of an interior door. See revised Sheet A101 and the added red line notes.**

6) 1020.4 Corridor dead ends.
Where more than one exit or exit access doorway is required, the exit access shall be arranged such that there are no dead ends in corridors more than 20 feet in length. (2015 IBC Section 1020.4)

As an exception, in occupancies in Groups B, E, F, I-1, M, R-1, R-2, R-4, S and U, where the building is equipped throughout with an automatic sprinkler system in accordance with 2015 IBC Section 903.3.1.1, the length of the dead-end corridors shall not exceed 50 feet. (2015 IBC Section 1020.4 Exception 2)

Resubmit: (Sheet A101A) Hallway 106 has an excessively long dead end. The exception that allows a 50

foot dead end does not apply to A-3 Occupancies. Only a 20 foot dead end is allowed. Revise the drawings to limit the dead end corridor to 20 feet in length. Door 105B could be moved to be no more than 20 feet from Door 106C. Egress up the stairway is not considered to be available because the door swing at the top of the stairway does not swing in the direction of egress travel.

(5-22-19) The drawings were revised to shift the interior egress door serving the break room which shortened the dead end corridor to less than 20 feet in length. See revised Sheets G002, A101, and A101A.

7) 1010.1.9 Door operations.
Egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort. (2015 IBC Section 1010.1.9) Manually operated flush bolts or surface bolts are not permitted. (2015 IBC Section 1010.1.9.4) The unlatching of any door or leaf shall not require more than one operation. (2015 IBC Section 1010.1.9.5)

Resubmit: (Sheet A102A) Door 216A is required to comply as an exit door in both directions. Revise the door schedule to remove the lockset and to show an exit sign on each side.

(5-22-19) The drawings were revised to show double acting hinges for Door 216A. The door will have a closer and push bars but no latch or lock. See revised Sheet A102A and the door schedule on Sheet A601.

IBC 2015 International Building Code and ICC A117.1-2009 Standard

8) 404.2.3.2 Swinging Doors.
Swinging doors shall have maneuvering clearances complying with ICC A117.1-2009 Table 404.2.3.2. (ICC A117.1-2009 Section 404.2.3.2)

A side-hinged swinging door approached from the latch edge, where the door swings toward the approach, is required to have a maneuvering clearance of 48 inches measured perpendicular to the door when the door is in the closed position (54 inches if the door has a closer), and a maneuvering clearance of 24 inches plus the width of the door measured parallel to the door from the hinged edge when the door is in the closed position.

Resubmit: (Sheet A504 – Door 226A) Insufficient maneuvering clearance is provided on the pull side of the door at the top of the ramp. Revise the drawings to show compliance.

(5-22-19) The drawings were revised to show a larger landing. See revised Sheet A504.

9) 604.9.3.1 Toilet stall door opening location.
The farthest edge of toilet compartment door opening shall be located in the front wall or partition or in the side wall or partition as required by ICC A117.1-2009 Table 604.9.3.1. (ICC A117.1-2009)

When located in the front partition, the farthest edge of the toilet stall door is required to be located 56 inches minimum from the side wall closest to the toilet and 4 inches maximum from the side wall located farthest from the toilet. In other words, the stall door is required to open on the wide side of the toilet stall, not in front of the toilet.

Resubmit: (Sheet A101A and Sheet A401 – 118 and 224 Women's toilet room) Accessible toilet stall doors

are required to open on the wide side of the toilet stall not directly in front of the toilet. Revise the drawings to show compliance.

(5-22-19) The drawings were revised to show the accessible toilet stall within the Women's toilet rooms located on the wide side of the toilet. See revised Sheet A101, A102A, and A401.

10) 604.10.3 Ambulatory stall doors.
Toilet compartment doors, including door hardware, shall comply with ICC A117.1-2009 Section 404 (i.e. 32" clear width; easy to grasp with one hand and operable without tight grasping, pinching, or twisting of the wrist; closing speed; opening force), except if the approach is to the latch side of the compartment door the clearance between the door side of the compartment and any obstruction shall be 42 inches minimum. The door shall be self-closing. A door pull complying with ICC A117.1-2009 Section 404.2.6 shall be placed on both sides of the door near the latch. Compartment doors shall not swing into the required minimum area of the compartment. (ICC A117.1-2009 Section 604.10.3)

Grab bars shall comply with ICC A117.1-2009 Section 609. Side wall grab bars complying with ICC A117.1-2009 Section 604.5.1 shall be provided on both sides of the compartment. (ICC A117.1-2009 Section 604.10.4)

Resubmit: (Sheet A401 – Toilet rooms 103 and 104) Ambulatory accessible toilet stalls are not allowed to have the door swing into the stall. Vertical grab bars are required on both sides for ambulatory accessible toilet stalls. Revise the drawings to show compliance.

(5-22-19) The drawings were revised to show the doors serving the ambulatory accessible toilet stalls swinging out of the stall. See revised Sheets A101A and A401.