Development Services

From Concept to Construction

Phone: 503-823-7300 Email: bds@portlandoregon.gov 1900 SW 4th Ave, Portland, OR 97201
More Contact Info (http://www.portlandoregon.gov//bds/article/519984)

APPEAL SUMMARY

Status: Decision Rendered

Appeal ID: 22000	**Project Address:** 151 SW 1st Ave
Hearing Date: 10/16/19	**Appellant Name:** Milena Di Tomaso
Case No.: B-008	**Appellant Phone:** 5038632425
Appeal Type: Building	**Plans Examiner/Inspector:** John Cooley, Corey Stanley
Project Type: commercial	**Stories:** 5 **Occupancy:** B, M, S-1 **Construction Type:** 3-A
Building/Business Name: PAE Living Building	**Fire Sprinklers:** Yes - Throughout
Appeal Involves: Erection of a new structure	**LUR or Permit Application No.:** 19-185198-CO
Plan Submitted Option: pdf [File 1] [File 2] [File 3]	**Proposed use:** Office, Retail

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	2902.1
Requires	Section 2902.1 – Minimum number of fixtures. Plumbing fixtures shall be provided for the type of occupancy or use of space in relation to Table 2902.1 and in the minimum number shown in Table 2902.1. Types of occupancies not shown in Table 2902.1 shall be considered individually by the building official and shall reflect the use of the space being served by the fixtures. The number of occupants shall be determined by this code. Occupancy classification and use of space shall be determined in accordance with Chapter 3.
Proposed Design	The PAE Living Building is a 5-story type IIIA mixed occupancy building. Level 1 has retail and building support spaces with two single user restrooms accessible from the building lobby. Level 2 is a shell office space with four single user restrooms on that floor. Levels 3 through 5 will be occupied by a single tenant with full access between those floors, there are four single user restrooms per floor. There are a total of 18 single user restrooms in the building. The plumbing fixtures for levels 1 and 2 were calculated as a combined occupant load, as the toilet facilities for those two floors will be accessible to all occupants. Per 2902.3.2, toilet facilities shall be located no more than one story above or below the space required to be provided. The occupant load for the business shell space assumes a 10% floor area calculated at 1 to 15 for future assembly conference area. Six toilet fixtures are required, and we are providing six fixtures total on those floors. The plumbing fixtures for levels 3, 4, and 5 were calculated as a combined occupancy, as those floors will be occupied by a single tenant with full access between the floors. There is a significant amount of assembly conference room space on those floors, which will be non-simultaneously occupied by the same population as the office area. The total number of users of the combined floors is 258 occupants per the number of available workstations. Per section 2902.1, the

	plumbing calculations are required to be based on the occupant load as calculated by the use of the space. This totals 575 occupants for the combined floors, more than double the expected number of users. The plumbing calculations are provided on the attached sheet A0.10. Per the code, 12.37 toilet fixtures are required. We are proposing to provide 12 toilet fixtures, due to the non-simultaneous use of the Assembly and Office space on the floor.
Reason for alternative	The code required plumbing fixture calculation is based on full occupancy of all the spaces simultaneously. Levels 3 through 5 are occupied by a single office tenant in a private business. The same population will be using the office areas and the conference room areas, and each space will not be non-simultaneously occupied. If the plumbing calculations were based on the actual 258 occupants in a business use, only 8 toilet fixtures would be required. We are proposing to provide 12 fixtures, which is sufficient quantity for the everyday occupant load and any additional occasional visitors.

Appeal item 2

Code Section	508.2.3
Requires	OSSC Section 508.2.3 – Allowable building area and height – The allowable building area and height of the building shall be based on the allowable building area and height for the main occupancy in accordance with Section 503.1. The height of each accessory occupancy shall not exceed the tabular values in Table 503, without increases in accordance with Section 504 for such accessory occupancies. The building area of the accessory occupancies shall be in accordance with Section 508.2.1.
Proposed Design	The PAE Living Building is a type IIIA, 5 story building. The 5th floor level has a proposed multi-purpose room that occupies less than 10% of the gross floor area. This space is identified as an accessory A3 occupancy to the main B occupancy of the floor, due to the occupant load of 68 occupants being greater than 49. OSSC 2014 section 508.2.3 requires that the height of each accessory occupancy shall not exceed the tabular value set in Table 503. Per type IIIA construction in a sprinklered building, the accessory A3 occupancy is limited to four stories while the main occupancy B is limited to 6 stories. Our proposed design is for the A3 assembly to occur on the 5th floor, which is above the limit set in Table 503. The upcoming OSSC 2019 code allows the accessory occupancy to be based on the main building occupancy, per section 508.2.2, which allows up to 6 stories. The proposed design will meet the code requirements per the 2019 version.
Reason for alternative	OSSC 2019 code section 508.2.2 - Allowable building height states the allowable height and number of stories of the building containing accessory occupancies shall be in accordance with Section 504 for the main occupancy of the building. The main occupancy of the building is B, and the allowable height per Section 504 is 85’ and 6 stories. The accessory A3 multi-purpose room on level 5 is under 10% of the gross floor area and meets the height requirements per section 508.2.2 of the 2019 OSSC.

Appeal item 3

Code Section	2603.5.5
Requires	OSSC Section 2603.5.5 – Vertical and lateral fire propagation – The exterior wall shall be tested in accordance with and comply with the acceptance criteria of NFPA 285
Proposed Design	The proposed building is a 5 story, type IIIA glulam post and beam and CLT deck with concrete topping slab structure. The west elevation exterior wall that is directly adjacent to the neighboring

property wall contains in-place spray applied foam insulation within the wall cavity and is required to meet Section 2603.5.5. This exterior wall assembly occurs from levels 1 to level 3, and from grids A to midway between grids G and H, there are no openings within the exterior wall. The wall assembly detail is provided in the attached documents; it is a fully grouted 6” CMU self-bearing wall, with ~1-3/4” in place spray polyurethane foam insulation on the interior face, 6” metal stud framing with 1 layer of 5/8” type X gypsum board, the stud cavity is fully filled with mineral wool batt insulation. The CMU wall bypasses the CLT floor at levels 2 & 3 and mineral wool firestopping is provided at the gap between the edge of CLT and the back of CMU for the full depth of the floor assembly, preventing vertical propagation of fire between floors. The metal studs will be installed prior to spray foam application, this allows for a tight seal between the spray foam and metal stud flange preventing any air movement. Additionally, mineral wool batt insulation will fully fill the stud cavity preventing lateral propagation of fire within the wall cavity. Any fire barrier assemblies that intersect this wall will interrupt the spray foam and attach directly to the CMU wall.

The spray foam product has yet to be specified, as it will be bid by the general contractor to meet the performance specification in the construction documents. Attached is the specification section that describes the criteria for the spray foam, in which it states under section 2.2 that the product must pass NFPA 285 testing as part of an approved assembly.

Reason for alternative This appeal is in response to a permit review comment that requests the NFPA 285 tested assembly for the use of spray foam. NFPA 285 testing is proprietary per product, and since we do not have a specific product selected at this time, we cannot provide the tested assembly. The specification performance criteria states that any product must meet NFPA 285 as a tested assembly, in which case it would meet the requirements of Section 2603.5.5.

Included is a report for the analysis of foam plastic used on the interior of a CMU exterior wall assembly. This report is based on the Thermax foam plastic insulation installed in the same exterior wall assembly to our proposed design, except we are using spray foam insulation. Additionally, we provide mineral wool batt insulation between the stud cavities. Per the analysis in this report the wall assembly will be compliant with NFPA 285 and meet the requirements of Section 2603.5.5 of the OSSC.

Appeal item 4

Code Section 602.3

Requires OSSC Section 602.3 – Type III - Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less.

Proposed Design The proposed building is a Type IIIA Glulam post and beam structure with CLT floor deck with a concrete topping slab. Where wood columns and beams are located within the exterior wall, it requires fire retardant treatment per Section 602.3. The FRT process cannot be achieved in the heavy timber glulam posts and beams that are located within the exterior wall of the building, and as an alternative we are proposing to enclose the glulam’s that are within the exterior walls with minimum of 5/8” type X gypsum board. The fire rating of the glulams meet the requirement of building official determination 19-02. The structural engineer has submitted char calculations with the permit set documents; in some cases, the column rating is provided by both char calculations combined with gypsum wrap. Per section 602.4.2 in the OSSC 2019 code, cross-laminated timber in exterior walls shall be permitted provided that the exterior surface is protected with not less than ½” thick gypsum board. We have the following conditions on Level 5 that meet that requirement:

1)Column A/1 is a glulam column within the exterior wall of the building. This column is 2 hour rated and will provide the rating via char calculations. This column is completely enclosed with 1 layer of 5/8" Type X gypsum board. The exterior wall is non-rated.

2)Columns A/1.5, A/1.9, B/1, C/1, & D/1 are within the exterior wall of the building. The columns are 1 hour rated and will provide the rating through a combination of char rating and 5/8" gypsum board wrap. The exterior wall is not required to be rated due to fire separation distance, however the walls that directly surround these columns are rated to 2 hours for additional protection of the structure, refer to granted appeal 21954.

3)Beam along grid A between grids 1.9 and 1 is upturned and within the exterior wall of the building. The beam is 1 hour rated and will provide the rating through char calculations. The exterior wall is not required to be rated due to fire separation distance, however the walls and roof sill that directly surround this beam are rated to 2 hours for additional protection of the structure, refer to granted appeal 21954. The beam is enclosed on 3 sides with 5/8" Type X gypsum board, or greater. The bottom of beam is attached to CLT5 floor deck.

Reason for alternative The glulam columns and beams are considered Mass Timber and are naturally fire resistant via the slow charring and self-insulating properties. In conditions where the glulams are considered within the exterior wall, we are proposing to enclose all members with minimum 5/8" Type X gypsum board. This meets the requirements of section 602.4.2 of the OSSC 2019 code.

APPEAL DECISION

1. Reduction in minimum number of required plumbing fixtures: Granted as proposed.

2. Location of accessory A3 occupancy based on the main building occupancy per 2019 OSSC: Granted provided the area of the A3 multipurpose room is verified at the time of building plan review.

3. Foam plastic insulation in exterior wall assembly: Granted provided the wall assembly compliance to NFPA 285 is confirmed during the review of the deferred submittal.

4. Wood framing with in Type III exterior walls: Granted as proposed.

The Administrative Appeal Board finds with the conditions noted, that the information submitted by the appellant demonstrates that the approved modifications or alternate methods are consistent with the intent of the code; do not lessen health, safety, accessibility, life, fire safety or structural requirements; and that special conditions unique to this project make strict application of those code sections impractical.

Pursuant to City Code Chapter 24.10, you may appeal this decision to the Building Code Board of Appeal within 90 calendar days of the date this decision is published. For information on the appeals process, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.

1 PROJECT DESCRIPTION

THE PROJECT IS A FIVE STORY WOOD STRUCTURE OFFICE BUILDING ON THE NORTHWEST CORNER OF SW 1ST AND SW PINE IN THE SKIDMORE - OLD TOWN HISTORIC DISTRICT IN PORTLAND, OREGON. THE GROUND FLOOR WILL HAVE RETAIL AND BUILDING SUPPORT SPACES. LEVELS TWO THROUGH FIVE WILL HAVE OFFICES. THE GROUND FLOOR RETAIL SPACES AND ALL OF LEVEL TWO WILL BE CONSTRUCTED AS SHELL SPACE. THE ROOF WILL BE UNOCCUPIED WITH A PHOTO-VOLTAIC ARRAY. A WATER COLLECTION CISTERN WILL BE LOCATED BELOW GRADE. THERE IS NO BASEMENT. THE PROJECT SEEKS LIVING BUILDING CERTIFICATION.

THE BUILDING WILL INCORPORATE AUTOMATIC FIRE DETECTION AND AN AUTOMATIC SPRINKLER SYSTEM THROUGHOUT THE BUILDING. DURING AN EMERGENCY THE BUILDING WILL HAVE A SEPARATE VOICE/ALARM COMMUNICATION SYSTEM. ALL THE ABOVE LIFE SAFETY SYSTEMS WILL BE PROVIDED WITH BACK-UP POWER FROM THE PROJECT'S EMERGENCY UPS BATTERY SYSTEM.

2 APPLICABLE CODES

FEDERAL REGULATIONS
- OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
- U.S. ENVIRONMENTAL PROTECTION AGENCY REGULATIONS (EPA)
- AMERICANS WITH DISABILITIES ACT (ADA)
- ICC A117.1-2009 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES

OREGON STATE BUILDING CODE
- 2012 INTERNATIONAL BUILDING CODE (IBC) WITH OREGON AMENDMENTS IN THE 2014 OREGON STRUCTURAL SPECIALTY CODE (OSSC)
- 2012 INTERNATIONAL FIRE CODE (IFC) WITH OREGON AMENDMENTS IN THE OREGON FIRE CODE (OFC)
- 2014 INTERNATIONAL MECHANICAL CODE (IMC) WITH OREGON AMENDMENTS IN THE OREGON MECHANICAL SPECIALTY CODE (OMSC)
- 2014 OREGON PLUMBING SPECIALTY CODE (OPSC) BASED ON THE 2006 UNIFORM PLUMBING CODE
- 2014 OREGON ELECTRICAL SPECIALTY CODE (OESC) BASED ON THE 2008 NATIONAL ELECTRICAL CODE (NEC)
- 2011 OREGON ELEVATOR SPECIALTY CODE
- 2014 OREGON ENERGY EFFICIENCY SPECIALTY CODE

PORTLAND CITY CODE AND ADMINISTRATIVE RULES

REFERENCE CODE SECTION FOR NFPA STANDARDS: 2010 IBC (SFM) CHAPTER 35

NFPA 13	AUTOMATIC SPRINKLER SYSTEMS
NFPA 14	STANDPIPE SYSTEMS
NFPA 72	NATIONAL FIRE ALARM CODE

2.1 APPEALS

REFER TO SHEET A0.11

2.2 SEPARATE PERMITS / DEFERRED SUBMITTALS

DEFERRED SUBMITTALS:
- MEP SEISMIC RESTRAINTS
- MEP INSTRUMENTATION
- MEP SEISMIC CALCULATIONS FOR EQUIPMENT
- PHOTO-VOLTAIC SYSTEM AND SUPPORT ANCHORAGE AND BRACING
- INTUMESCENT PAINT
- STOREFRONTS, WINDOWS AND ATTACHMENTS
- PRECAST STAIR TREAD AND RISER

SEPARATE PERMITS TO BE OBTAINED FROM THE BUREAU OF DEVELOPMENT SERVICES:
- MECHANICAL
- PLUMBING
- ELECTRICAL
- TENANT IMPROVEMENTS (FLOOR SLAB, TOILETS, INSULATION, EGRESS LIGHTING PROVIDED IN CURRENT PERMIT)

SEPARATE PERMITS TO BE OBTAINED FROM THE FIRE MARSHAL'S OFFICE:
- UNDERGROUND FIRE LINES
- IN-BUILDING EMERGENCY RESPONDER RADIO ENHANCEMENT SYSTEM
- CLEAN AGENT SYSTEM
- KEY BOX
- FIRE ALARM
- SPRINKLER

SPECIAL INSPECTIONS:
- INTUMESCENT PAINT
- REFER TO S0.04 AND S0.05 FOR STRUCTURAL SPECIAL INSPECTIONS

3 BUILDING AREA AND NUMBER OF STORIES

BUILDING AREA, AS DEFINED IN OSSC 202 IS THE AREA INCLUDED WITHIN SURROUNDING EXTERIOR WALLS EXCLUSIVE OF VENT SHAFTS AND COURTS.

PROJECT CONSISTS OF FIVE STORIES ABOVE GRADE AND NO BASEMENT.

BUILDING AREA SCHEDULE	
BUILDING LEVEL	AREA
LEVEL 1	10513 SF
LEVEL 2	10836 SF
LEVEL 3	10836 SF
LEVEL 4	10836 SF
LEVEL 5	10635 SF
	53656 SF TOTAL BUILDING AREA

4 USE AND OCCUPANCY CLASSIFICATION

OSSC; CHAPTER 3

PROJECT IS A BUSINESS MIXED USE OCCUPANCY CONSISTING OF THE FOLLOWING:

B (BUSINESS, SECTION 304), LEVELS 1-5
M (MERCANTILE, SECTION 309), LEVEL 1
S-1 (STORAGE - MODERATE HAZARD, SECTION 311.2) LEVELS 1-5
A-3 (ASSEMBLY, SECTION 303.4), LEVEL 5
- ASSEMBLY SPACES - MULTI PURPOSE ROOM AND MAIN CONFERENCE ROOM.

5 CONSTRUCTION TYPE

OSSC; CHAPTER 6

CONSTRUCTION TYPE: III-A

6 ALLOWABLE HEIGHTS AND BUILDING AREA

OSSC; TABLE 503

THE PROJECT HAS AN AUTOMATIC WET SPRINKLER SYSTEM THROUGHOUT BUILDING AND IS CONSTRUCTION TYPE 3A WITH OCCUPANCY TYPE B PER OSSC, TABLE 503. THEREFORE WE WILL HAVE AN AREA LIMIT OF 28,500 SF PER STORY AND ARE LIMITED TO 6 STORIES ABOVE GRADE PLANE WITH A MAXIMUM HEIGHT LIMIT OF 85 FEET.

ALLOWABLE BUILDING HEIGHT (TABLE 503)
TYPE 3A HEIGHT: 65'
GROUP B STORIES: 5
28,500 SF/STORY

SPRINKLER INCREASE (SECTION 504.2)
INCREASE HEIGHT +20' HEIGHT: 65' + 20' = 85'
INCREASE STORIES +1 STORIES: 5 + 1 = 6
(NOT TO EXCEED 60' OR 4 STORIES)

FRONTAGE INCREASE (SECTION 506.2): NOT APPLICABLE

AREA SPRINKLER INCREASE (SECTION 506.3): NOT APPLICABLE

ACTUAL BUILDING HEIGHT/AREA:
HEIGHT: 75'
STORIES: 5
AREA PER STORY: < 28,500 SF (SEE AREA SCHEDULE ABOVE)

7 MIXED USE AND OCCUPANCY / INCIDENTAL USES

OSSC; SECTION 508

MIXED USES ARE BEING CALCULATED AS SEPARATED OCCUPANCIES PER OSSC 508.4

B : M - NO SEPARATION REQUIRED
B : S-1 - NO SEPARATION REQUIRED
M : S-1 - NO SEPARATION REQUIRED

8 FIRE RESISTANCE RATINGS

OSSC; TABLE 601 & 602

REQUIRED FIRE RESISTIVITY OF STRUCTURAL ELEMENTS FOR CONSTRUCTION TYPE 3-A, SPRINKLERED BUILDING

PRIMARY STRUCTURAL FRAME:	1 HOUR
BEARING WALLS (EXTERIOR):	2 HOUR
BEARING WALLS (INTERIOR):	1 HOUR
NON-BEARING EXTERIOR WALLS:	SEE #9 EXTERIOR WALL RATINGS BELOW
NON-BEARING INTERIOR WALLS:	NOT RATED EXCEPT AS REQUIRED BY OTHER SECTIONS OF CODE
FLOOR CONSTRUCTION & SECONDARY MEMBERS:	1 HOUR
ROOF CONSTRUCTION & SECONDARY MEMBERS:	1 HOUR
SHAFT ENCLOSURES, CONNECTING 4+ STORIES:	2 HOUR (PER OSSC SECTION 713.4)
INTERIOR EXIT STAIRWAY, CONNECTING 4+ STORIES:	2 HOUR (PER OSSC SECTION 713.4)
EXIT CORRIDOR	1 HOUR AT MULTI-TENANT FLOOR LOBBY
ELECTRICAL ROOM SEPARATION	1 HOUR
FDC ROOM SEPARATION	1 HOUR

FIRE RESISTIVE RATING OF FIRE BARRIER OPENING PROTECTION
DOORS IN 2 HOUR FIRE BARRIER: 1 1/2 HOURS
DOORS IN 1 HOUR FIRE BARRIER: 3/4 HOUR

FIRE WALLS: N/A

OTHER RATED ASSEMBLIES: REFER TO LIFE SAFETY PLANS

SMOKE CONTROL SYSTEM REQUIREMENTS: N/A

9 EXTERIOR WALL RATINGS

OSSC; TABLE 602

CONSTRUCTION TYPE 3A, EXTERIOR WALLS FOR GROUP B REQUIRE THE FOLLOWING

EXTERIOR WALL SEPARATION DISTANCE	FIRE RATING
X < 5'-0"	1 HR, GROUP B 2 HR, GROUP M, S-1
5'-0" ≤ X < 10'-0"	1 HR, GROUP B, M, S-1
10'-0" ≤ X 30'-0"	1 HR, GROUP B, M, S-1
X ≥ 30'-0"	0 HR, GROUP B, M, S-1

10 EXTERIOR WALL OPENINGS

OSSC; TABLE 705.8

EXTERIOR WALL	ALLOWABLE AREA OF OPENINGS PER STORY
NORTH (AGAINST PROPERTY LINE)	25% PERMITTED WITH NO-BUILD EASEMENT (REFER TO APPEAL 20501 ITEM 1)
EAST (SW 1ST FRONTAGE)	NO LIMIT
SOUTH (SW PINE FRONTAGE)	NO LIMIT
WEST (AGAINST PROPERTY LINE)	25% PERMITTED WITH NO-BUILD EASEMENT (REFER TO APPEAL 20501 ITEM 1)

11 VERTICAL AND ROOF EXPOSURE

OSSC; SECTION 705.8.6.2

VERTICAL EXPOSURE FOR BUILDINGS ON SEPARATE LOTS (OSSC 705.8.6.2)
ALL OPENINGS LESS THAN 15 FEET VERTICALLY ABOVE THE ROOF OF AN EXISTING ADJACENT BUILDING TO BE 3/4 HOUR.

REFER TO GRANTED APPEAL # 20501 ITEM 2 FOR PROTECTED WINDOWS ON WEST ELEVATION WITHIN 15' OF ADJACENT ROOF STRUCTURE.

12 FIRE PROTECTION SYSTEMS

A PREFIRE PROTECTION PLAN IS REQUIRED AND SHALL APPLY TO ACTIVITIES OCCURRING DURING ALL PHASES OF CONSTRUCTION.

ANY INSTALLATION DETAILS FOR FIRE PROTECTION SYSTEMS ARE FOR REFERENCE ONLY, WITH FINAL INSTALLATION REQUIREMENTS TO BE DETERMINED DURING THE TRADE PLAN REVIEW PROCESS AT THE FIRE MARSHAL'S OFFICE.

OSSC; CHAPTER 9

THE BUILDING WILL BE PROVIDED THROUGHOUT WITH AN AUTOMATIC WET SPRINKLER SYSTEM PER NFPA-13. MEET OSSC CHAPTER 9 REQUIREMENTS FOR FIRE SPRINKLER AND FIRE ALARM SYSTEMS (BIDDER DESIGNED).

FDC PROVIDED ON LEVEL 1 - SW PINE STREET FRONTAGE.

PROJECT WILL HAVE A CLASS 1 STANDPIPE SYSTEM PER OSSC CHAPTER 905.3 AND NFPA 14. IN BUILDINGS REQUIRED TO HAVE STANDPIPES BY SECTION 905.3.1, NOT LESS THAN ONE STANDPIPE SHALL BE PROVIDED FOR USE DURING CONSTRUCTION. SUCH STANDPIPES SHALL BE INSTALLED WHEN THE PROGRESS OF CONSTRUCTION IS NOT MORE THAN 40 FEET IN HEIGHT ABOVE THE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS. SUCH STANDPIPE SHALL BE PROVIDED WITH FIRE DEPARTMENT HOSE CONNECTIONS AT ACCESSIBLE LOCATIONS ADJACENT TO USEABLE STAIRS. SUCH STANDPIPE SHALL BE EXTENDED AS CONSTRUCTION PROGRESSES TO WITHIN ONE FLOOR OF THE HIGHEST POINT OF CONSTRUCTION HAVING SECURED DECKING OR FLOORING.

FIRE ALARM AND DETECTION SYSTEM PER OSSC 907

FIRE EXTINGUISHERS ARE LOCATED THROUGHOUT BUILDING WITH MAXIMUM TRAVEL DISTANCE OF 75 FEET.

907.2.23 - SMOKE DETECTION IS REQUIRED IN ROOMS CONTAINING BATTERIES OVER 50 GALLONS. SMOKE DETECTION PROVIDED THROUGHOUT BUILDING INCLUDING BATTERY ROOMS.

915.1 - EMERGENCY RESPONDER RADIO COVERAGE IS REQUIRED IN NEW BUILDINGS OVER 50,000 SF. DAS IS LOCATED IN IDF ROOM 507 ON THE 5TH FLOOR. A 2 HR RATED SHAFT IS PROVIDED FROM 5TH FLOOR TO ALL LEVELS OF BUILDING.

13 ELEVATORS AND CONVEYING SYSTEMS

OSSC CHAPTER 30
OSSC 1007.2.1 - ACCESSIBLE ELEVATOR REQUIRED
OSSC 1007.4 - STANDBY POWER FOR ELEVATORS PROVIDED BY UPS BATTERY IN ELECTRIC ROOM 128. NO AREA OF REFUGE IS REQUIRED DUE TO SPRINKLERED BUILDING.
OSSC 1007.8 - A TWO-WAY COMMUNICATIONS SYSTEM IS PROVIDED AT THE ELEVATOR LANDING OF LEVELS 2-5, AND A BASE STATION IS PROVIDED AT THE GROUND FLOOR BUILDING LOBBY.
OSSC 3002.4 - ELEVATOR CAR TO ACCOMMODATE AMBULANCE STRETCHER

14 EXIT AND EXIT ACCESS

OSSC; CHAPTER 10

AREA OF REFUGE NOT REQUIRED BY OSSC, SECTION 1007.3 EXCEPTION 2 IN BUILDINGS EQUIPPED WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH OSSC, SECTION 903.3.1.1 OR 903.3.1.2

PROJECT EXITING CALCULATIONS ARE BASED ON OSSC; SECTION 1004, TABLE 1004.1.2 AND TABLE 1018.2 AND ILLUSTRATED ON THE FOLLOWING LIFE SAFETY DRAWING SHEETS.

OSSC 1008.1.9.11, EXCEPTION 2 - TWO WAY COMMUNICATION DEVICE PROVIDED ON LEVEL 5 LANDING IN STAIR A AND B.

15 PLUMBING FIXTURES

OSSC, CHAPTER 29, TABLE 2902.1

ASSEMBLY (A-3) OCCUPANCY
WATER CLOSETS 1 PER 125 (MALE)
1 PER 65 (FEMALE)
LAVATORIES 1 PER 200

BUSINESS (B) OCCUPANCY
WATER CLOSETS 1 PER 25 FOR THE FIRST 50
1 PER50 FOR THE REMAINDER EXCEEDING 50
LAVATORIES 1 PER 40 FOR THE FIRST 80
1 PER 80 FOR THE REMAINDER EXCEEDING 80

STORAGE (S-1) OCCUPANCY
WATER CLOSETS 1 PER 100
LAVATORIES 1 PER 100

MERCANTILE (M) OCCUPANCY
WATER CLOSETS 1 PER 500
LAVATORIES 1 PER 750

OSSC SECTION 2902.3.2
TOILET FACILITIES SHALL BE LOCATED NOT MORE THAN ONE STORY ABOVE OR BELOW THE SPACE REQUIRED TO BE PROVIDED.

REQUIRED FIXTURES FOR LEVELS 1 & 2 ARE PROVIDED ON BOTH LEVELS 1 & 2. LEVEL 2 IS A FUTURE MULTI-TENANT FLOOR WITH ACCESSIBLE LOBBY. TOILETS ON LEVEL 1 & 2 WILL BE AVAILABLE TO ALL OCCUPANTS ON THOSE LEVELS. CALCULATIONS FOR LEVEL 2 ASSUME 10% AREA FOR FUTURE CONFERENCE ROOMS CALCULATED AT 1 OCCUPANT TO 15 SF.

LEVELS 3, 4, & 5 WILL BE OCCUPIED BY A SINGLE TENANT WITH FULL ACCESS TO ALL OF THEIR FLOORS. THE FIXTURE CALCULATIONS ASSUME OCCUPANTS OF THOSE LEVELS CAN MOVE BETWEEN FLOORS TO ACCESS REQUIRED PLUMBING FIXTURES.

LEVELS 1 & 2 OCCUPANCY TYPE	AREA (SF)	OCCUPANT LOAD FACTOR (SF/OCC)	TOTAL OCCUPANTS	MALE TOILETS		FEMALE TOILETS		MALE LAVS		FEMALE LAVS	
				CODE REQ.	FIXTURES	CODE REQ.	FIXTURES	CODE REQ.	FIXTURES	CODE REQ.	FIXTURES
MERCANTILE (M)	3651	30	122	1/2 OCC / 500	0.12	1/2 OCC / 500	0.12	1/2 OCC / 750	0.08	1/2 OCC / 750	0.08
BUSINESS (B)	11125	100	181	50 OCC / 25	2.00	50 OCC / 25	2.00	80 OCC / 40	2.00	80 OCC / 40	2.00
	1043	15		1/2 OCC-50 / 50	0.81	1/2 OCC-50 / 50	0.81	1/2 OCC-80 / 80	0.13	1/2 OCC-80 / 80	0.13
STORAGE (S-1)	4106	300	14	1/2 OCC / 100	0.07	1/2 OCC / 100	0.07	1/2 OCC / 100	0.07	1/2 OCC / 100	0.07
				REQUIRED	3.00	REQUIRED	3.00	REQUIRED	2.28	REQUIRED	2.28
TOTAL	19925		317	**PROVIDED**	**3**	**PROVIDED**	**3**	**PROVIDED**	**3**	**PROVIDED**	**3**

LEVELS 3,4,&5 OCCUPANCY TYPE	AREA (SF)	OCCUPANT LOAD FACTOR (SF/OCC)	TOTAL OCCUPANTS	MALE TOILETS		FEMALE TOILETS		MALE LAVS		FEMALE LAVS	
				CODE REQ.	FIXTURES	CODE REQ.	FIXTURES	CODE REQ.	FIXTURES	CODE REQ.	FIXTURES
ASSEMBLY (A-3)	2008	15	134	1/2 OCC / 125	0.54	1/2 OCC / 65	1.03	1/2 OCC / 200	0.34	1/2 OCC / 200	0.34
BUSINESS (B)	24091	100	439	50 OCC / 25	2.00	50 OCC / 25	2.00	80 OCC / 40	2.00	80 OCC / 40	2.00
	2964	15		1/2 OCC-50/ 50	3.39	1/2 OCC-50 / 50	3.39	1/2 OCC-80 / 80	1.74	1/2 OCC-80 / 80	1.74
STORAGE (S-1)	370	300	2	1/2 OCC / 100	0.01	1/2 OCC / 100	0.01	1/2 OCC / 100	0.01	1/2 OCC / 100	0.01
				REQUIRED	5.94	REQUIRED	6.43	REQUIRED	4.09	REQUIRED	4.09
TOTAL	29433		575	**PROVIDED**	**6**	**PROVIDED**	**6**	**PROVIDED**	**6**	**PROVIDED**	**6**

INDIVIDUAL ROOM AREA CALCULATIONS ARE PROVIDED ON THE FOLLOWING LIFE SAFETY DRAWINGS

16 ACCESSIBILITY

OSSC CHAPTER 11 & ANSI 117.1

17 FIRESTOPPING PROGRAM

FIRESTOPPING PROGRAM:

THE GENERAL CONTRACTOR SHALL SCHEDULE A FIRESTOPPING MEETING WITH THE BUILDING INSPECTOR AND ALL SUBCONTRACTORS THAT WILL BE INSTALLING FIRESTOPPING MATERIALS. THE CONTRACTOR SHALL PROVIDE A FIRESTOP MATRIX LISTING ALL FIRESTOP MATERIALS/ASSEMBLIES WHICH WILL BE USED, THE TYPE OF PENETRATIONS WHERE EACH MATERIAL/ASSEMBLY WILL BE USED, THE LISTING AND APPROVAL INFORMATION (I.E. UL,ICC OR OTHER APPROVED REPORT/ LISTING NUMBERS); AND THE SUBCONTRACTOR RESPONSIBLE FOR INSTALLATION. THIS INFORMATION MUST BE SUBMITTED TO, AND APPROVED BY, THE ARCHITECT AND BUILDING INSPECTOR PRIOR TO ANY INSTALLATION.

18 AERIAL FIRE APPARATUS

ALTERNATE TO AERIAL FIRE APPARATUS ROADS - BUILDINGS COMPLYING WITH THE FOLLOWING CONDITIONS WILL BE EXEMPT FROM THE REQUIREMENTS OF AERIAL FIRE APPARATUS ACCESS ROADS:

1. BUILDING IS EQUIPPED WITH AN APPROVED AUTOMATIC SPRINKLER SYSTEM,
2. THERE ARE NO COMBUSTIBLE CONCEALED ATTIC SPACES,
3. ALL STAIRWAY EXIT ENCLOSURES SHALL HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 2 HOURS,
4. THE ROOF IS ESSENTIALLY FLAT (33-PERSCENT SLOPE OR LESS) AND,
5. APPROVED ACCESS IS PROVIDED TO THE ROOF FROM ALL STAIRWAYS. IN BUILDINGS WITHOUT AN OCCUPIED ROOF, ACCESS TO THE ROOF FROM THE TOP STORY SHALL BE PERMITTED TO BE BY AN ALTERNATING TREAD DEVICE, A SHIP STAIR OR LADDER THAT PROVIDES A CLEAR WIDTH OF NOT LESS THAN 30 INCHES BETWEEN HANDRAILS THROUGH A ROOF HATCH OR TRAP DOOR NOT LESS THAN 30 INCHES (762 MM) WIDE AND 8 FEET (2438 MM) LONG (OSSC 1009).
6. BUILDING REQUIRING STANDPIPES ARE EQUIPPED WITH AT LEAST ONE STANDPIPE THAT TERMINATES ON THE ROOF.

19 BATTERY STORAGE

STATIONARY BATTERY STORAGE:
LITHIUM-ION BATTERIES EXIST IN ROOMS 126, 127, & 128 AND EXCEED CAPACITY OF PFC SECTION 608
VRLA BATTERIES EXIST IN ROOM 128 AND EXCEED CAPACITY OF PFC SECTION 608

OSSC TABLE 509: 1 HOUR SEPARATION REQUIRED AT ROOMS

LITHIUM-ION BATTERY REQUIREMENTS PER PFC TABLE 608.1
- SAFETY CAPS NOT REQUIRED
- THERMAL RUNAWAY MANAGEMENT NOT REQUIRED
- SPILL CONTROL NOT REQUIRED
- NEUTRALIZATION NOT REQUIRED
- VENTILATION NOT REQUIRED
- SIGNAGE REQUIRED PER 608.7(SEE A0.14)
- SEISMIC PROTECTION REQUIRED PER 608.8
- SMOKE DETECTION REQUIRED PER 608.9

VRLA BATTERY REQUIREMENTS PER PFC TABLE 608.1
- SAFETY CAPS REQUIRED PER 608.2.2
- THERMAL RUNAWAY MANAGEMENT REQUIRED PER 608.3
- SPILL CONTROL NOT REQUIRED
- NEUTRALIZATION REQUIRED 608.5.2
- VENTILATION REQUIRED PER 608.6.1 & 608.6.2
- SIGNAGE REQUIRED PER 608.7 (SEE A0.14)
- SEISMIC PROTECTION REQUIRED PER 608.8
- SMOKE DETECTION REQUIRED PER 608.9

ZGF
ZIMMER GUNSUL FRASCA ARCHITECTS LLC

PORTLAND
SEATTLE
LOS ANGELES
WASHINGTON DC
NEW YORK
VANCOUVER BC

1223 SW Washington Street
Suite 200
Portland, OR 97205
T 503 224 3860
F 503 224 2482
www.zgf.com

Consultants

MEP ENGINEER
PAE ENGINEERS
522 SW 5TH AVENUE
SUITE 1500
T 503-226-2921

CIVIL ENGINEER
KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

STRUCTURAL ENGINEER
KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

Revisions

1	ISSUE FOR PERMIT	07/01/19
2	ISSUE FOR BID	08/09/19
3	PERMIT REVISION 1	10/04/19

PAE
151 SW 1ST AVENUE
PORTLAND, OREGON 97204

Drawing Title

CODE SUMMARY

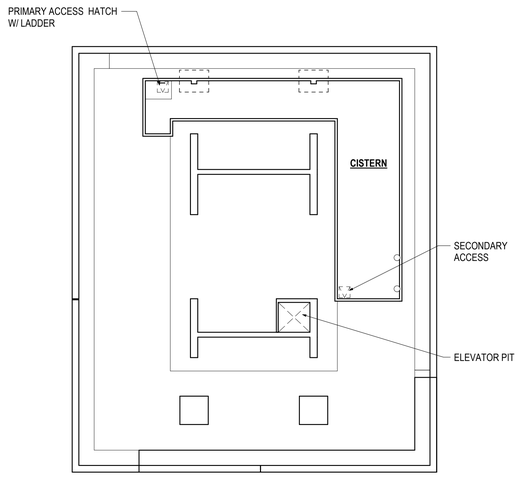
Date: 2019-10-04
Job No: P24130, P24696
Drawn By: Author
Checked By: Checker

Drawing No.

A0.10

PERMIT SET

10/8/2019 6:16:36 PM

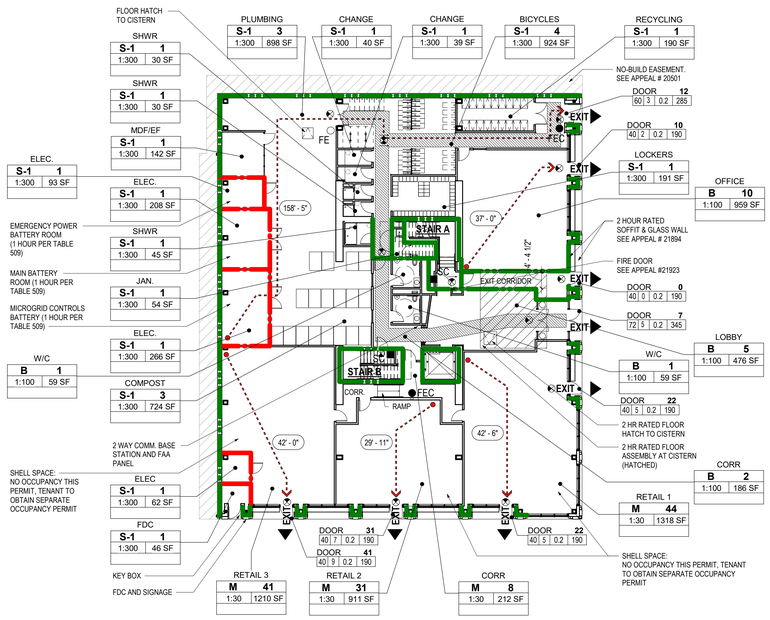


3 A0.12 PLAN, LIFE SAFETY - SUB-GRADE

1/16" = 1'-0"

BELOW GRADE RAINWATER COLLECTION CISTERN

UNOCCUPIED



1 A0.12 PLAN, LIFE SAFETY - LEVEL 01

1/16" = 1'-0"

GROSS FLOOR AREA - 10,513 GSF

OCCUPANCY CLASSIFICATION: BUSINESS WITH M & S-1

OCCUPANT LOAD: REFER TO LEVEL 1 SCHEDULE
TOTAL - 167 PERSONS

TRAVEL DISTANCE:
COMMON PATH - 100' MAX (75' MAX AT RETAIL)
EXIT ACCESS - 300' MAX (250' MAX AT RETAIL)

OCCUPANT LOAD - LEVEL 1				
ROOM NAME	OCCUPANCY GROUP	OCCUPANT LOAD FACTOR	AREA	OCCUPANT LOAD
CORR	B	100	186 SF	2
LOBBY	B	100	476 SF	5
OFFICE	B	100	959 SF	10
W/C	B	100	59 SF	1
W/C	B	100	59 SF	1
CORR	M	30	212 SF	8
RETAIL 1	M	30	1318 SF	44
RETAIL 2	M	30	911 SF	31
RETAIL 3	M	30	1210 SF	41
BICYCLES	S-1	300	924 SF	4
CHANGE	S-1	300	40 SF	1
CHANGE	S-1	300	39 SF	1
COMPOST	S-1	300	724 SF	3
ELEC	S-1	300	62 SF	1
ELEC.	S-1	300	93 SF	1
ELEC.	S-1	300	208 SF	1
ELEC.	S-1	300	266 SF	1
FDC	S-1	300	46 SF	1
JAN.	S-1	300	54 SF	1
LOCKERS	S-1	300	191 SF	1
MDF/EF	S-1	300	142 SF	1
PLUMBING	S-1	300	898 SF	3
RECYCLING	S-1	300	190 SF	1
SHWR	S-1	300	30 SF	1
SHWR	S-1	300	30 SF	1
SHWR	S-1	300	45 SF	1
				167

GENERAL NOTES

1. COMPLY WITH ALL REGULATIONS, CODES, AND AUTHORITIES HAVING JURISDICTION INCLUDING THE ADA, ANSI A117.1, OREGON STRUCTURAL SPECIALTY CODE, NEC, NFPA, AND CITY OF PORTLAND BUREAU OF DEVELOPMENT SERVICES AND CITY OF PORTLAND FIRE AND RESCUE.

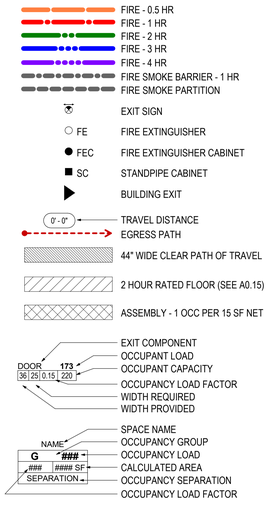
2. PROVIDE AUDIBLE AND VISUAL ALARMS AS INDICATED. CONFIRM REQUIRED LOCATIONS WITH CITY OF PORTLAND BUREAU OF FIRE. SUBMIT LOCATIONS TO ARCHITECT FOR APPROVAL OF DESIGN INTENT PRIOR TO SUBMISSION TO THE AUTHORITIES HAVING JURISDICTION.

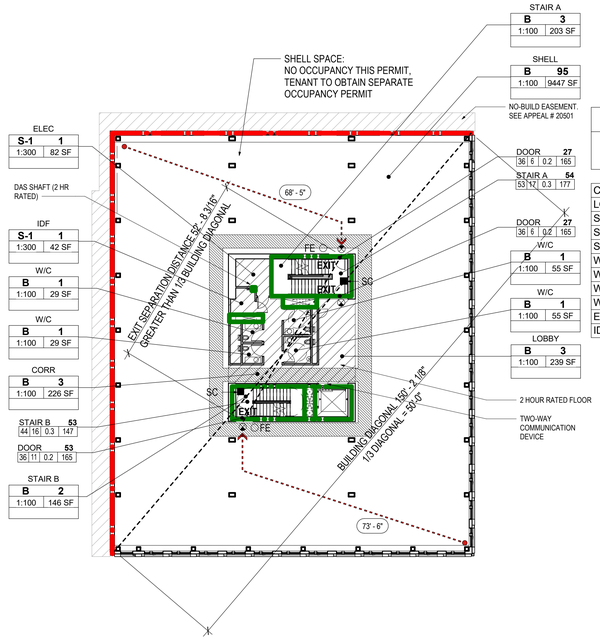
3. ALL EGRESS PATHWAYS SHALL BE A MINIMUM OF 44" WIDE CLEAR; MAINTAIN GREATER WIDTH WHERE SO DIMENSIONED. EACH DOOR OPENING SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 32 INCHES.

4. PROVIDE EMERGENCY LIGHTING DELIVERING A MINIMUM AVERAGE OF 1 FT CANDLE AND AT LEAST .1 FOOTCANDLE ALONG EGRESS PATH. FIELD TEST OF EMERGENCY EGRESS LIGHTING LEVELS REQUIRED.

5. PROVIDE FIRE EXTINGUISHERS PER LOCAL JURISDICTION'S REQUIREMENTS. BUILDING STANDARD FIRE EXTINGUISHERS SHALL BE LOCATED AT A MINIMUM OF 1 FIRE EXTINGUISHER PER EVERY 3000 SF WITH NO MORE THAN 75 FEET OF TRAVEL DISTANCE FROM ANY POINT IN THE BUILDING AREA. CONFIRM LOCATIONS OF NEW FIRE EXTINGUISHERS WITH ARCHITECT PRIOR TO INSTALLATION.

FIRE AND LIFE SAFETY LEGEND





OCCUPANT LOAD - LEVEL 2				
ROOM NAME	OCCUPANCY GROUP	OCCUPANT LOAD FACTOR	AREA	OCCUPANT LOAD
CORR	B	100	226 SF	3
LOBBY	B	100	239 SF	3
SHELL	B	100	9447 SF	95
STAIR A	B	100	203 SF	3
STAIR B	B	100	146 SF	2
W/C	B	100	55 SF	1
W/C	B	100	55 SF	1
W/C	B	100	29 SF	1
W/C	B	100	29 SF	1
ELEC	S-1	300	82 SF	1
IDF	S-1	300	42 SF	1
				112

4 A0.12 PLAN, LIFE SAFETY - LEVEL 02

1/16" = 1'-0"

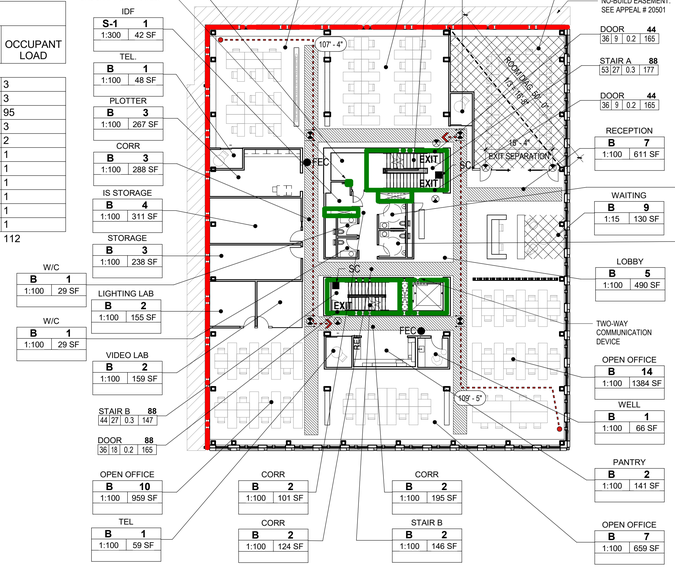
GROSS FLOOR AREA - 10,836 GSF

OCCUPANCY CLASSIFICATION: BUSINESS W/ S-1

EXITS REQUIRED: 2
STAIR A: 53" / .3 = 176 OCCUPANTS
STAIR B: 46" / .3 = 153 OCCUPANTS
TOTAL EXIT CAPACITY = 329 OCCUPANTS

OCCUPANT LOAD: REFER TO LEVEL 2 SCHEDULE
TOTAL - 112 PERSONS

TRAVEL DISTANCE:
COMMON PATH - 100' MAX
EXIT ACCESS - 300' MAX



OCCUPANT LOAD - LEVEL 3				
ROOM NAME	OCCUPANCY GROUP	OCCUPANT LOAD FACTOR	AREA	OCCUPANT LOAD
MAIN CONFERENCE	A-3	15	1002 SF	67
CORR	B	100	124 SF	2
CORR	B	100	195 SF	2
CORR	B	100	288 SF	3
CORR	B	100	101 SF	2
IS STORAGE	B	100	311 SF	4
LIBRARY	B	100	903 SF	10
LIGHTING LAB	B	100	155 SF	2
LOBBY	B	100	490 SF	5
OPEN OFFICE	B	100	1054 SF	11
OPEN OFFICE	B	100	959 SF	10
OPEN OFFICE	B	100	659 SF	7
OPEN OFFICE	B	100	1384 SF	14
PANTRY	B	100	141 SF	2
PLOTTER	B	100	267 SF	3
RECEPTION	B	100	611 SF	7
STAIR A	B	100	204 SF	3
STAIR B	B	100	146 SF	2
STORAGE	B	100	238 SF	3
TEL	B	100	59 SF	1
TEL.	B	100	52 SF	1
TEL.	B	100	48 SF	1
VIDEO LAB	B	100	159 SF	2
W/C	B	100	55 SF	1
W/C	B	100	55 SF	1
W/C	B	100	29 SF	1
W/C	B	100	29 SF	1
WAITING	B	15	130 SF	9
WELL	B	100	66 SF	1
ELEC	S-1	300	82 SF	1
IDF	S-1	300	42 SF	1
				180

2 A0.12 PLAN, LIFE SAFETY - LEVEL 03

1/16" = 1'-0"

GROSS FLOOR AREA - 10,836 GSF

OCCUPANCY CLASSIFICATION: BUSINESS W/ S-1 & A-3

EXITS REQUIRED: 2
STAIR A: 53" / .3 = 176 OCCUPANTS
STAIR B: 46" / .3 = 153 OCCUPANTS
TOTAL EXIT CAPACITY = 329 OCCUPANTS

OCCUPANT LOAD: REFER TO LEVEL 3 SCHEDULE
TOTAL - 180 PERSONS

TRAVEL DISTANCE:
COMMON PATH - 100' MAX
EXIT ACCESS - 300' MAX

ZGF
ZIMMER GUNSUL FRASCA ARCHITECTS LLC

PORTLAND
SEATTLE
LOS ANGELES
WASHINGTON DC
NEW YORK
VANCOUVER BC

1223 SW Washington Street
Suite 200
Portland, OR 97205
T 503 224 3860
F 503 224 2482
www.zgf.com

Consultants

MEP ENGINEER

PAE ENGINEERS
522 SW 5TH AVENUE
SUITE 1500
T 503-226-2921

CIVIL ENGINEER

KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

STRUCTURAL ENGINEER

KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

Revisions

1	ISSUE FOR PERMIT	07/01/19
2	ISSUE FOR BID	08/09/19
3	PERMIT REVISION 1	10/04/19

PAE
151 SW 1ST AVENUE
PORTLAND, OREGON 97204

Drawing Title

PLANS, LIFE SAFETY

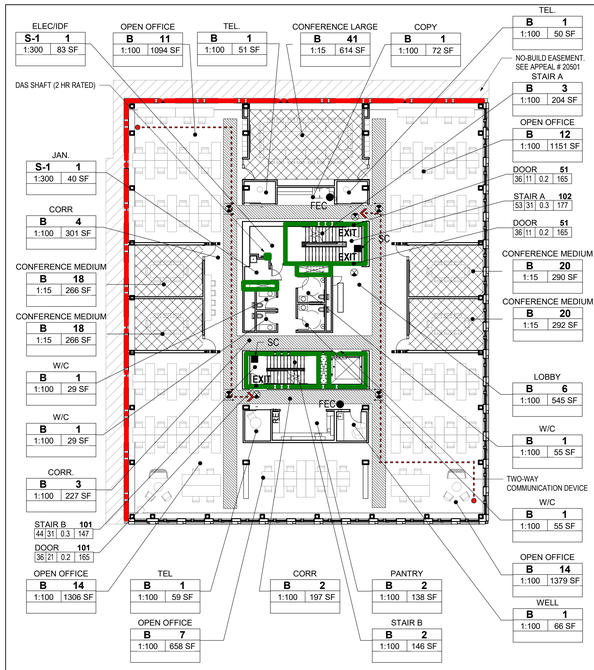
Date: 2019-10-04
Job No: P24130, P24696
Drawn By: Author
Checked By: Checker

Drawing No.

A0.12

PERMIT SET

10/8/2019 6:16:40 PM



OCCUPANT LOAD - LEVEL 4				
ROOM NAME	OCCUPANCY GROUP	OCCUPANT LOAD FACTOR	AREA	OCCUPANT LOAD
CONFERENCE LARGE	B	15	614 SF	41
CONFERENCE MEDIUM	B	15	290 SF	20
CONFERENCE MEDIUM	B	15	292 SF	20
CONFERENCE MEDIUM	B	15	266 SF	18
CONFERENCE MEDIUM	B	15	266 SF	18
COPY	B	100	72 SF	1
CORR	B	100	197 SF	2
CORR	B	100	301 SF	4
CORR.	B	100	227 SF	3
LOBBY	B	100	545 SF	6
OPEN OFFICE	B	100	1151 SF	12
OPEN OFFICE	B	100	658 SF	7
OPEN OFFICE	B	100	1379 SF	14
OPEN OFFICE	B	100	1094 SF	11
OPEN OFFICE	B	100	1306 SF	14
PANTRY	B	100	138 SF	2
STAIR A	B	100	204 SF	3
STAIR B	B	100	146 SF	2
TEL	B	100	59 SF	1
TEL.	B	100	51 SF	1
TEL.	B	100	50 SF	1
W/C	B	100	55 SF	1
W/C	B	100	29 SF	1
W/C	B	100	29 SF	1
W/C	B	100	55 SF	1
WELL	B	100	66 SF	1
ELEC/IDF	S-1	300	83 SF	1
JAN.	S-1	300	40 SF	1
				208

2 A0.13 PLAN, LIFE SAFETY - LEVEL 04

1/16" = 1'-0"

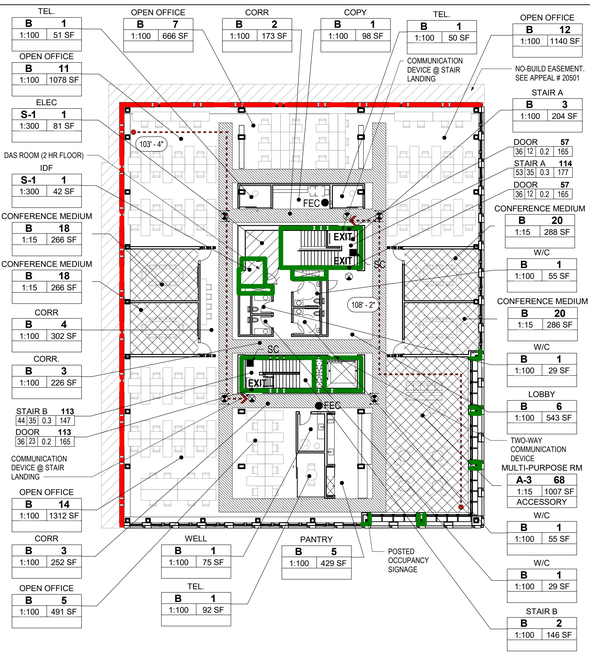
GROSS FLOOR AREA - 10,836 GSF

OCCUPANCY CLASSIFICATION: BUSINESS W/ S-1

EXITS REQUIRED: 2
STAIR A: 53" / .3 = 176 OCCUPANTS
STAIR B: 46" / .3 = 153 OCCUPANTS
TOTAL EXIT CAPACITY = 329 OCCUPANTS

OCCUPANT LOAD: REFER TO LEVEL 4 SCHEDULE
TOTAL - 208 PERSONS

TRAVEL DISTANCE:
COMMON PATH - 100' MAX
EXIT ACCESS - 300' MAX



OCCUPANT LOAD - LEVEL 5				
ROOM NAME	OCCUPANCY GROUP	OCCUPANT LOAD FACTOR	AREA	OCCUPANT LOAD
MULTI-PURPOSE RM	A-3	15	1007 SF	68
CONFERENCE MEDIUM	B	15	288 SF	20
CONFERENCE MEDIUM	B	15	286 SF	20
CONFERENCE MEDIUM	B	15	266 SF	18
CONFERENCE MEDIUM	B	15	266 SF	18
COPY	B	100	98 SF	1
CORR	B	100	302 SF	4
CORR	B	100	252 SF	3
CORR	B	100	173 SF	2
CORR.	B	100	226 SF	3
LOBBY	B	100	543 SF	6
OPEN OFFICE	B	100	1140 SF	12
OPEN OFFICE	B	100	1312 SF	14
OPEN OFFICE	B	100	491 SF	5
OPEN OFFICE	B	100	666 SF	7
OPEN OFFICE	B	100	1078 SF	11
PANTRY	B	100	429 SF	5
STAIR A	B	100	204 SF	3
STAIR B	B	100	146 SF	2
TEL.	B	100	92 SF	1
TEL.	B	100	50 SF	1
TEL.	B	100	51 SF	1
W/C	B	100	55 SF	1
W/C	B	100	55 SF	1
W/C	B	100	29 SF	1
W/C	B	100	29 SF	1
WELL	B	100	75 SF	1
IDF	S-1	300	42 SF	1
				232

1 A0.13 PLAN, LIFE SAFETY - LEVEL 05

1/16" = 1'-0"

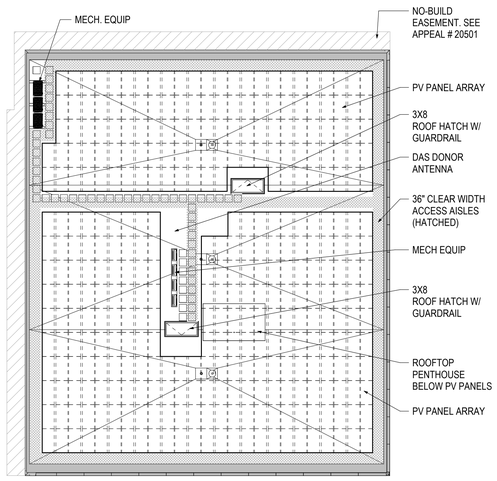
GROSS FLOOR AREA - 10,635 GSF

OCCUPANCY CLASSIFICATION:
B BUSINESS W/ A-3 & S-1

EXITS REQUIRED: 2
STAIR A: 53" / .3 = 176 OCCUPANTS
STAIR B: 46" / .3 = 153 OCCUPANTS
TOTAL EXIT CAPACITY = 329 OCCUPANTS

OCCUPANT LOAD: REFER TO LEVEL 5 SCHEDULE
TOTAL - 232 PERSONS

TRAVEL DISTANCE:
COMMON PATH - 100' MAX @ B BUSINESS
COMMON PATH - 75' MAX @ A-3 ASSEMBLY
EXIT ACCESS - 300' MAX @ B BUSINESS
EXIT ACCESS - 250' MAX @ A-3 ASSEMBLY



3 A0.13 PLAN, LIFE SAFETY - ROOF

1/16" = 1'-0"

UNOCCUPIED

GENERAL NOTES

1. COMPLY WITH ALL REGULATIONS, CODES, AND AUTHORITIES HAVING JURISDICTION INCLUDING THE ADA, ANSI A117.1, OREGON STRUCTURAL SPECIALTY CODE, NEC, NFPA, AND CITY OF PORTLAND BUREAU OF DEVELOPMENT SERVICES AND CITY OF PORTLAND FIRE AND RESCUE.

2. PROVIDE AUDIBLE AND VISUAL ALARMS AS INDICATED. CONFIRM REQUIRED LOCATIONS WITH CITY OF PORTLAND BUREAU OF FIRE. SUBMIT LOCATIONS TO ARCHITECT FOR APPROVAL OF DESIGN INTENT PRIOR TO SUBMISSION TO THE AUTHORITIES HAVING JURISDICTION.

3. ALL EGRESS PATHWAYS SHALL BE A MINIMUM OF 44" WIDE CLEAR; MAINTAIN GREATER WIDTH WHERE SO DIMENSIONED. EACH DOOR OPENING SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 32 INCHES.

4. PROVIDE EMERGENCY LIGHTING DELIVERING A MINIMUM AVERAGE OF 1 FT CANDLE AND AT LEAST .1 FOOTCANDLE ALONG EGRESS PATH. FIELD TEST OF EMERGENCY EGRESS LIGHTING LEVELS REQUIRED.

5. PROVIDE FIRE EXTINGUISHERS PER LOCAL JURISDICTION'S REQUIREMENTS. BUILDING STANDARD FIRE EXTINGUISHERS SHALL BE LOCATED AT A MINIMUM OF 1 FIRE EXTINGUISHER PER EVERY 3000 SF WITH NO MORE THAN 75 FEET OF TRAVEL DISTANCE FROM ANY POINT IN THE BUILDING AREA. CONFIRM LOCATIONS OF NEW FIRE EXTINGUISHERS WITH ARCHITECT PRIOR TO INSTALLATION.

FIRE AND LIFE SAFETY LEGEND

EXHIBIT 1

ZGF
ZIMMER GUNSUL FRASCA ARCHITECTS LLC

PORTLAND
SEATTLE
LOS ANGELES
WASHINGTON DC
NEW YORK
VANCOUVER BC

1223 SW Washington Street
Suite 200
Portland, OR 97205
T 503 224 3860
F 503 224 2482
www.zgf.com

Consultants

MEP ENGINEER
PAE ENGINEERS
522 SW 5TH AVENUE
SUITE 1500
T 503-226-2921

CIVIL ENGINEER
KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

STRUCTURAL ENGINEER
KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

Revisions

1	ISSUE FOR PERMIT	07/01/19
2	ISSUE FOR BID	08/09/19
3	PERMIT REVISION 1	10/04/19

PAE
151 SW 1ST AVENUE
PORTLAND, OREGON 97204

Drawing Title

PLANS, LIFE SAFETY

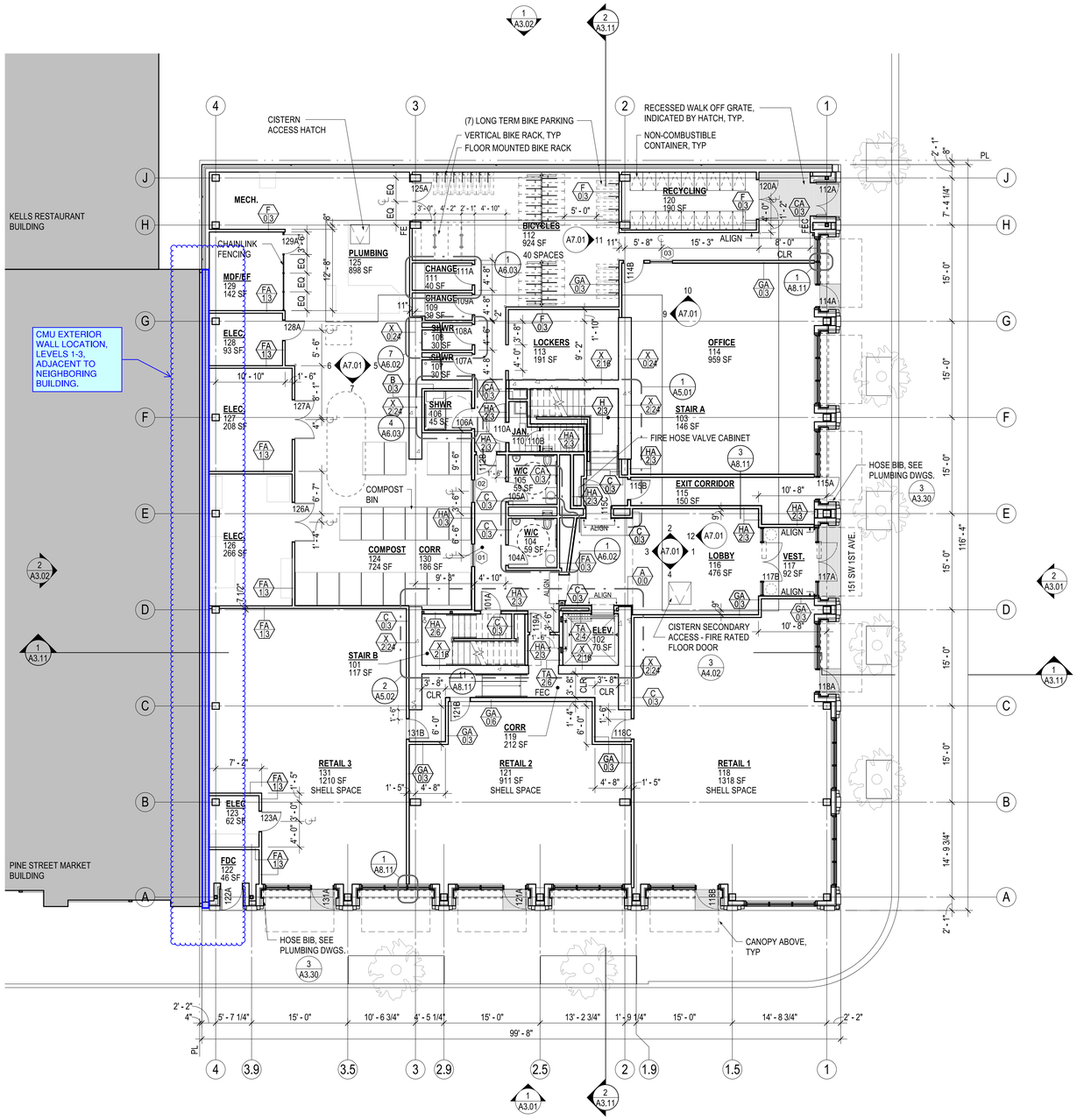
Date: 2019-10-04
Job No: P24130, P24696
Drawn By: Author
Checked By: Checker

Drawing No.

A0.13

PERMIT SET

10/8/2019 6:16:44 PM



1 A2.01 **FLOOR PLAN - LEVEL 01**
1/8" = 1'-0"

FLOOR PLAN GENERAL NOTES

1. REFER TO A0.1X SHEETS FOR CODE ANALYSIS INFORMATION.
2. REFER TO A0.01 FOR ALL ABBREVIATIONS
3. REFER TO SHEET A4.01 FOR BRICK COURSING DATUM DIMENSIONS
4. REFER TO SHEET A2.11 FOR SLAB EDGE DRAWING
5. WALL TYPE IS FA 0.3 UNLESS OTHERWISE NOTED. REFER TO SHEET A8.01 FOR WALL TYPE LEGEND.
6. DIMENSIONS ARE TO FACE OF EXTERIOR FINISH, GRID OR FACE OF INTERIOR PARTITION ASSEMBLY, UNLESS NOTED OTHERWISE.
7. DIMENSIONS NOTED AS "CLEAR" ARE TO FACE OF PARTITION FINISH AND SHALL PROVIDE CLEARANCE BETWEEN FACES OF FINISH.
8. REFER TO A4.00 & WALL SECTION DRAWINGS FOR ADDITIONAL INFORMATION ON EXTERIOR WALL ASSEMBLIES
9. REFER TO SHEETS A8.05 FOR DOOR & FRAME SCHEDULE
10. FOR ROOM FINISH SCHEDULE, SEE SHEET A8.04. REFER TO SPECIFICATION SECTION 090502 FOR LIST OF INTERIOR FINISH MATERIALS.
11. FOR BACKING PLATE, PARTITION BRACING, HEADER & JAMB SCHEDULES, SEE A8.0X SHEETS. PROVIDE REINFORCEMENT IN PARTITIONS FOR ANCHORAGE OF CASEWORK, MILLWORK AND OTHER WALL-SUPPORTED ITEMS.
12. ALL MDF/IDF ROOMS TO GET 3/4" FIRE-TREATED PLYWOOD UP TO 8'0" HIGH ON ALL WALLS. REFER TO T-SERIES DRAWINGS.
13. OPERABLE WINDOW SWING EXTENTS SHOWN DASHED. REFER TO EXTERIOR ELEVATIONS AND DETAILS FOR MORE INFORMATION.
14. ALL PARTITIONS WITHIN TENANT SPACES TO BE FRAMED WITH GYPSUM BOARD & TAPED WITH JOINT COMPOUND. FINISH TO BE PART OF TENANT IMPROVEMENT.
15. WALK OFF GRATES TO BE RECESSED IN SLAB. REFER TO SLAB EDGE PLAN A2.11
16. PROVIDE 8' STAINLESS STEEL CORNER GUARDS AT BICYCLE ROOM & MECHANICAL ROOM AS INDICATED ON A2.01
17. FOR PARTITION DIMENSIONS AT CORE LEVELS 02 - 04 REFER TO A2.02
18. ROOF TIE OFF DESIGN FOR REFERENCE ONLY. CONTRACTOR TO PROVIDE FULL DESIGN AND INSTALLATION
19. LEAK DETECTION TO BE PROVIDED AT ROOF. REFER TO SPEC. SECTION 075400
20. PHOTOVOLTAIC RACKING TO BE DELEGATED DESIGN

EXHIBIT 3

ZGF
ZIMMER GUNSUL FRASCA ARCHITECTS LLC

PORTLAND
SEATTLE
LOS ANGELES
WASHINGTON DC
NEW YORK
VANCOUVER BC

1223 SW Washington Street
Suite 200
Portland, OR 97205
T 503 224 3860
F 503 224 2482
www.zgf.com

Consultants

MEP ENGINEER
PAE ENGINEERS
522 SW 5TH AVENUE
SUITE 1500
T 503-226-2921

CIVIL ENGINEER
KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

STRUCTURAL ENGINEER
KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

Revisions

1	ISSUE FOR PERMIT	07/01/19
2	ISSUE FOR BID	08/09/19
3	PERMIT REVISION 1	10/04/19

PAE
151 SW 1ST AVENUE
PORTLAND, OREGON 97204

Drawing Title

PLAN, FLOOR - LEVEL 01

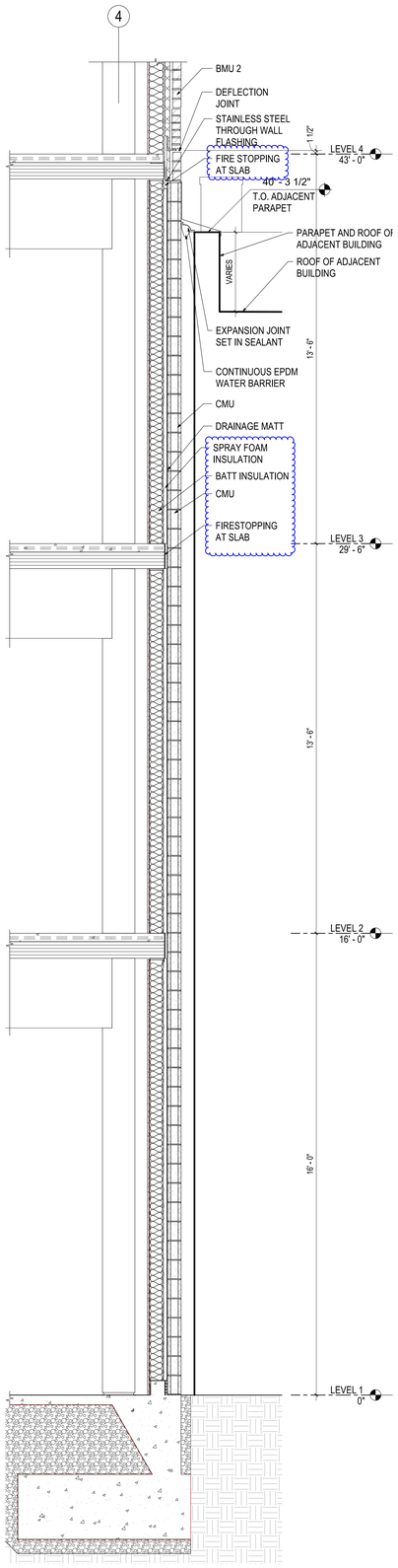
Date:	2019-10-04
Job No:	P24130, P24696
Drawn By:	Author
Checked By:	Checker

Drawing No.

A2.01

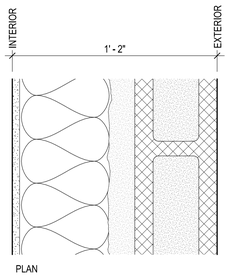
PERMIT SET

10/11/2019 4:07:00 PM

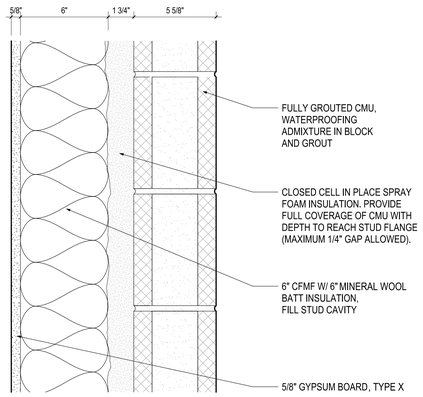


5 A3.40 **SECTION, WALL - BRICK TO CMU**
1/2" = 1'-0"

PROPOSED CMU EXTERIOR WALL ASSEMBLY

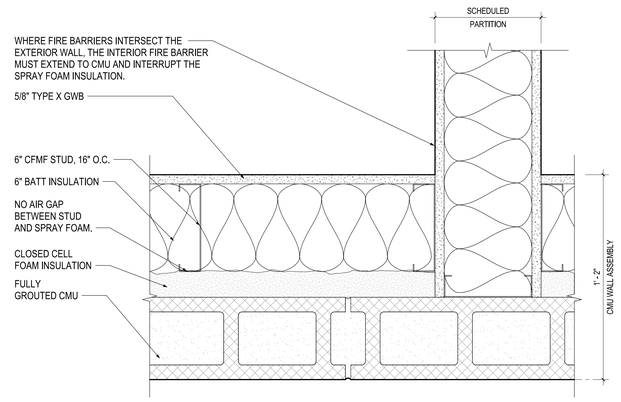


PLAN

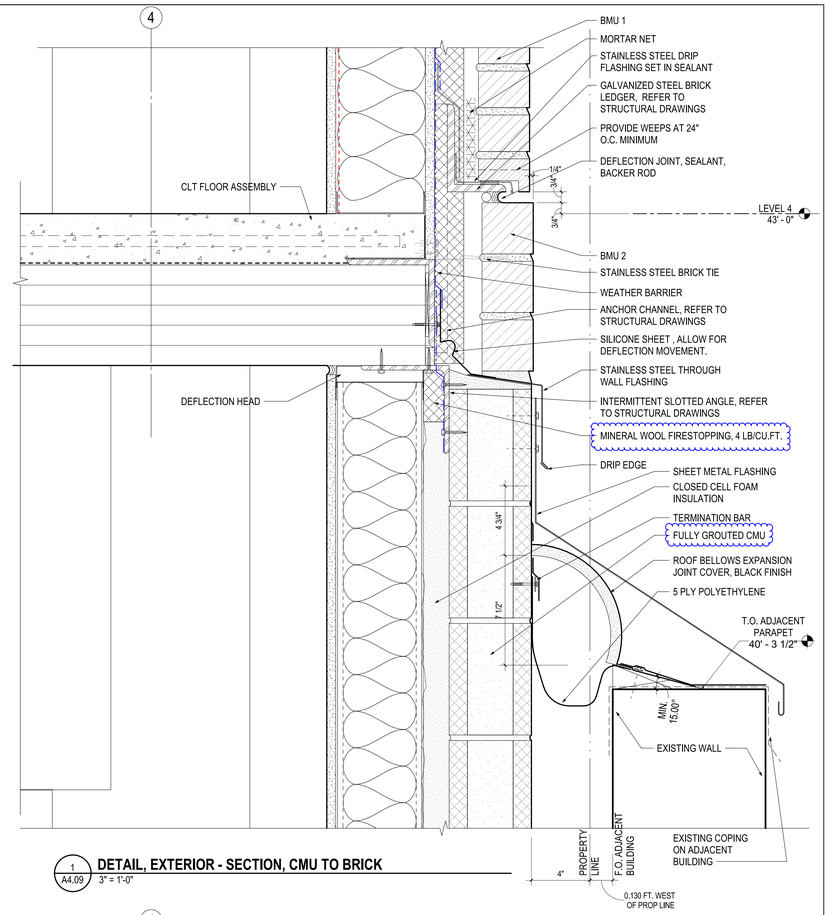


SECTION

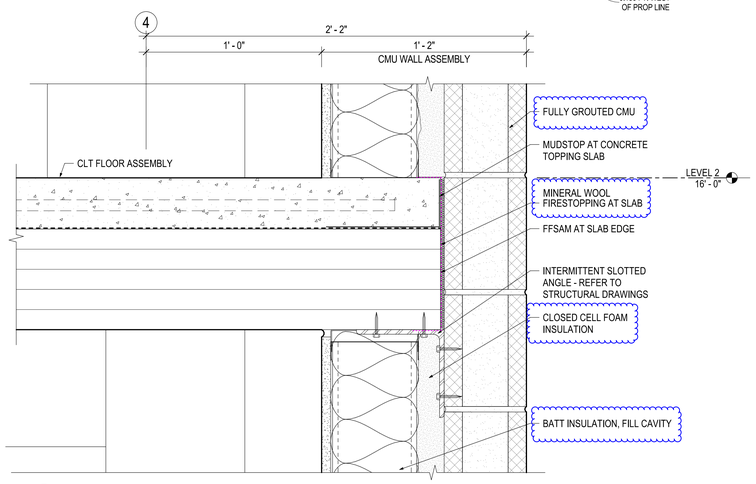
WA3 **CMU WITH CFMF FURRING**
3" = 1'-0"



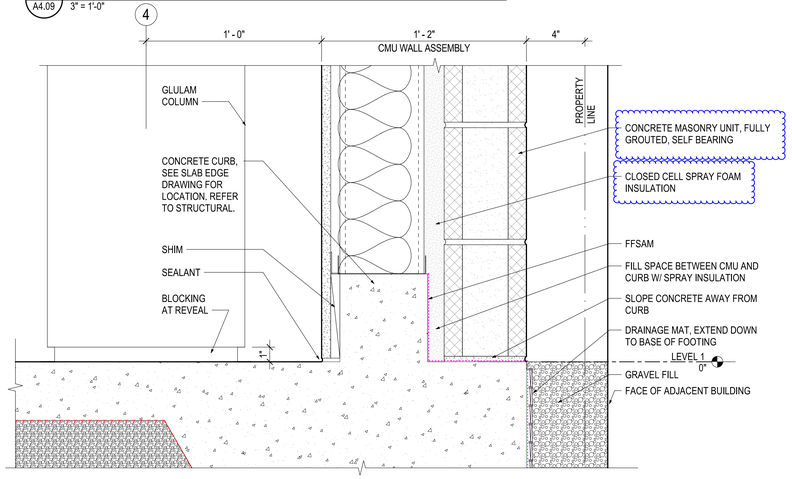
6 A4.09 **DETAIL, EXTERIOR - PLAN CMU TO RATED INTERIOR WALL**
3" = 1'-0"



1 A4.09 **DETAIL, EXTERIOR - SECTION, CMU TO BRICK**
3" = 1'-0"



2 A4.09 **DETAIL, EXTERIOR - CMU AT FLOOR**
3" = 1'-0"



3 A4.09 **DETAIL, EXTERIOR - CMU AT BASE**
3" = 1'-0"

ZGF
ZIMMER GUNSUL FRASCA ARCHITECTS LLC

PORTLAND
SEATTLE
LOS ANGELES
WASHINGTON DC
NEW YORK
VANCOUVER BC

1223 SW Washington Street
Suite 200
Portland, OR 97205
T 503 224 3860
F 503 224 2482
www.zgf.com

Consultants

MEP ENGINEER
PAE ENGINEERS
522 SW 5TH AVENUE
SUITE 1500
T 503-226-2921

CIVIL ENGINEER
KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

STRUCTURAL ENGINEER
KPFF CONSULTING ENGINEERS
111 SW 5TH AVENUE
SUITE 2500
T 503-227-3251

Revisions

1	ISSUE FOR PERMIT	07/01/19
2	ISSUE FOR BID	08/09/19
3	PERMIT REVISION 1	10/04/19

PAE
151 SW 1ST AVENUE
PORTLAND, OREGON 97204

Drawing Title

SECTIONS, WALL AND ENLARGED ELEVATIONS

Date:	2019-10-04
Job No:	P24130, P24696
Drawn By:	Author
Checked By:	Checker

Drawing No.

A3.40

PERMIT SET

10/11/2019 4:05:47 PM

SECTION 072119 - FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Foamed-in-place insulation.
   1. At masonry party wall only.

B. Protective intumescent coating.

1.2 RELATED REQUIREMENTS

A. Section 013229 - Sustainable Design Reporting: Living Building Challenge compliance and procedures.

B. Living Building Challenge Product Data Reporting Form: Building product reporting form to demonstrate compliance with Living Building Challenge materials requirements.

C. Section 016000 - Product Requirements: Fundamental product requirements including definitions of sustainable materials.

D. Section 016116 - Volatile Organic Compound (VOC) Restrictions: Limits on VOC emissions and content.

E. Section 017419 - Construction Waste Management and Disposal.

F. Section 078400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.

1.3 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

B. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

E. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

F. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.

G. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing Work of this Section. Require attendance by all affected trades.

1.5 SUBMITTALS

A. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.

B. Sustainable Design Submittals: Provide documentation defined in Section 013229 - Sustainable Design Reporting to demonstrate compliance with Living Building Challenge product requirements.
   1. A Sustainable Product Data Reporting Form shall be submitted for every product, including accessory materials, to be used on the Project.
   2. Applicable Living Building Challenge Imperatives for the work of this Section include:
      a. Imperative 08 - Healthy Interior Environment.
      b. Imperative 10 - Red List.
      c. Imperative 12 - Responsible Industry.
      d. Imperative 13 - Living Economy Sourcing.

C. Materials Transparency: For each product, provide copies of all available current product disclosures from the following list as defined in Section 016000 - Product Requirements:
   1. Health Product Declaration (HPD).
   2. Declare Label.
   3. Cradle to Cradle product certification.
   4. Cradle to Cradle Material Health certification.
   5. Environmental Product Declaration (EPD).

D. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than five years of documented experience.

B. Applicator Qualifications: Company specializing in performing work of the type specified, with minimum three years of documented experience and approved by the manufacturer

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke limitations.

1.8 MOCK-UP

A. The work of this section will be a portion of other mockups required by the contract documents. See especially 042000 and all other exterior wall material sections in Divisions 7 and 9.

B. Locate where directed.

C. Mock-up may not remain as part of the Work.

1.9 FIELD CONDITIONS

A. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.

B. Do not apply foam when temperature is within 5 degrees F of dew point.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Exterior System Performance, Testing and Mock-up Requirements: As indicated in Section 018316 - Exterior Envelope Performance Requirements.

B. Chemicals of Concern: All materials and equipment must comply with the written requirements of the Living Building Challenge (LBC) v3.1 Red List. Refer to Sections 013229 - Sustainable Design Reporting.
   1. Exceptions to LBC Red List: The International Living Future Institute has recognized the following types of General Exceptions which may apply to the work of this section:
      a. General Red List (Due Diligence)
      b. Proprietary Ingredients
      c. Code-Mandated Requirements

C. Low-Emitting Materials: Products must meet VOC Content Limits and General Emissions Evaluation requirements as specified in Section 016116 - Volatile Organic Compound (VOC) Restrictions.

2.2 MATERIALS

A. Foamed-In-Place Insulation: Medium-density, rigid or semi-rigid, closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
   1. Regulatory Requirements: Conform to applicable code for flame and smoke limitations.
   2. Thermal Resistance: R-value of 5.0, minimum, per 1 inch thickness at 75 degrees F mean temperature when tested in accordance with ASTM C518.
   3. Water Vapor Permeance: Vapor retarder; 2 perms, maximum, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
   4. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
   5. Air Permeance: 0.04 cfm/sq ft, maximum, when tested at intended thickness in accordance with ASTM E2178 or ASTM E283 at 1.57 psf.
   6. Closed Cell Content: At least 90 percent.
   7. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.
   8. **Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.**

2.3 ACCESSORIES

A. Primer: As required by insulation manufacturer.

B. Protective Coating: Intumescent coating of type recommended by insulation manufacturer and as required to comply with applicable codes.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas to receive foamed-in-place insulation, with applicator present, and verify that job conditions are ready to recieve insulation.

B. Verify that other Work within construction spaces or crevices is complete prior to insulation application.

C. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation adhesion.

3.2 PREPARATION

A. Mask and protect adjacent surfaces from over spray or dusting.

B. Apply primer in accordance with manufacturer's written instructions.

3.3 APPLICATION

A. Apply insulation in accordance with manufacturer's written instructions.

B. Apply insulation by spray method, to a uniform monolithic density without voids.

C. Apply overcoat monolithically, without voids to fully cover foam insulation, to achieve fire rating required.

D. Patch damaged areas.

E. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

F. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.4 FIELD QUALITY CONTROL

A. Field inspections and tests will be performed by an independent testing agency under provisions of Section 014000 - Quality Requirements.

B. Inspection will include verification of insulation and overcoat thickness and density.

3.5 PROTECTION

A. Do not permit subsequent construction work to disturb applied insulation.

END OF SECTION

JENSEN HUGHES
Advancing the Science of Safety

December 13, 2017

Dow Building Solutions
The Dow Chemical Company
1605 Joseph Drive
Midland, MI 48642

RE: Analysis for Use of Dow Thermax™ Foam Plastic on the Interior of Concrete or CMU Exterior Wall Assemblies
JESNENHUGHES Project No. 1JJB05306.011

To Whom It May Concern:

JENSEN HUGHES, Inc. is providing this letter to address the installation of Dow Thermax™ foam plastic insulation on the interior side of concrete or CMU exterior wall assemblies. It is assumed that the walls under consideration are constructed of concrete or concrete masonry units (CMU) and that the foam plastic insulation is installed only on the interior face of these walls. Thermax™ foam plastic or other combustibles on the exterior face of the wall assembles is outside the scope of this analysis but these items are addressed in other letters or analyses previously provided to Dow.

Typically, per Section 2603.5.5 of the IBC (2000-2018 editions), all exterior wall assemblies containing a foam plastic insulation material must comply with NFPA 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components,* in order to ensure that excessive vertical and/or lateral flame spread does not occur.

In the specific walls under consideration, the Thermax™ insulation will be installed only on the interior face of the exterior wall. Figure 1 provides a sketch of this condition. When Thermax™ is used in this condition, an NFPA 285 is not required to be performed because the fire performance of the Thermax™ installation can be addressed via an analysis such as the one herein. This analysis is based on the Vertical Fire Separation condition and the Horizontal Fire Separation conditions described below being met.

Vertical Fire Separation

When the Thermax™ is installed, it must be vertically separated from the floor above by a minimum of 4-inch thick mineral wool insulation. The mineral wool insulation must be unfaced and securely friction fit or mechanically installed against the concrete or CMU wall. The mineral wool insulation must extend from the face of the edge of the floor slab to the back face of the concrete or CMU. This installation provides a vertical barrier to the spread of fire either over or through the Thermax™. This installation is shown in Figure 1.

Lateral Fire Separation

1. Interior face of Thermax™ not covered – The interior face of the Thermax™ can be left uncovered since it has been shown based on full-scale fire tests, that a Thermal Barrier is not required. This is reported in ICC-ES Report ESR-1659. However, the Thermax™ insulation cannot horizontally bypass or go around any fire wall or interior fire barrier wall that intersects the exterior wall. As with the vertical separation, the fire wall or the interior fire barrier wall must interrupt the Thermax™ for the thickness of the wall, or if a gap occurs, it must be sealed with mineral wool insulation for the full height and thickness of the interior wall. This determination is based on the premise that an interior fire will potentially involve all of the combustibles within the

O: +1 410-737-8677
F: +1 410-737-8688

3610 Commerce Drive | Suite 817
Baltimore, MD 21227 USA

jensenhughes.com

fire area. However, the fire should not be allowed to move beyond the fire area bounded by fire walls or fire barrier walls.

2. Interior face of Thermax™ is covered – The Thermax™ will be applied to the interior surface of the concrete or CMU veneer and an interior finished wall will be positioned such that light gauge metal wall framing will be installed between the Thermax™ and the interior of the building. The interior building side of the steel studs will be covered with a continuous layer of ⅝-inch thick, Type X gypsum wallboard. This layer of gypsum wallboard is required to be full wall height and finished in accordance with the project specifications. The installation of the finished wall creates a combustible concealed space and this is regulated by IBC Section 718 “Concealed Spaces”. Due to the combustible concealed space, one of two options must be used and they are:

    a. The steel stud wall framing may be positioned up against the surface of the Thermax™ or may be set-back such that there is less than a ¼-inch air gap between the metal studs and the Thermax™. Figure 2 shows a sketch of this arrangement. This configuration is acceptable since the Thermax™ does not readily support the propagation of smoldering combustion and the air gap will be too small to allow significant horizontal flame spread and is considered acceptable.

    b. Should the metal stud/gypsum wallboard finish wall be positioned such that there is an air gap of ¼-inch or greater between the metal studs and interior Thermax™, an approved fireblock material listed in the IBC or approved by a building code official must be installed vertically at 10-ft intervals to inhibit horizontal flame spread. The fireblock material shall be mechanically attached to the web of the steel wall framing and be continuous from the back of the interior gypsum wallboard, through the Thermax™ thickness, to the interior face of the concrete or CMU veneer, as shown in Figure 3. The fireblocking material shall be full wall height and continuous from the floor slab to the underside of the floor above.

In the event of an exterior fire exposure, the Thermax™ is protected by the exterior concrete or the CMU. A concrete or concrete masonry panel will provide a significant amount of protection to the Thermax™ due to its rigidity, high thermal mass, and increased level of fire-resistance performance. Table 1 of the National Concrete Masonry Association (NCMA) TEK Guide 7-1C, *Fire Resistance Rating of Concrete Masonry Assemblies*, provides minimum concrete thicknesses for various hourly fire-resistance ratings for masonry materials subjected to the fire exposure conditions specified in ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*. The fire exposure conditions to the exposed side of a wall assembly tested in accordance with ASTM E119 are significantly more severe than the fire exposure conditions experienced by the exterior wall covering material in an NFPA 285 test. In an ASTM E119 test, the test sample is mounted onto the front of the test furnace and subjected to the fire exposure conditions generated within the furnace over the entire exposed wall surface. In an NFPA 285 test, only the exterior portion of the wall assembly directly over the window opening is subjected to fire exposure conditions from the room burner and the window burner. The temperature and heat flux produced by the burn room and window burner (as indicated in Table 8.1.6 of NFPA 285 for the calibration test) are significantly lower than ASTM E119. Therefore, concrete will provide substantial thermal protection to the underlying Thermax™.

Although the NFPA 285 test provides a direct flame exposure, where the ASTM E119 test does not, concrete panels are known to have good fire performance under flame exposure conditions. Direct flame exposure to concrete construction can cause some spalling but no movement. However, the potential damage is not considered significant enough to lead to fire spread behind the wall where combustible components may be present.

Per NCMA TEK Guide 7-1C, a normal calcareous or siliceous gravel normal-weight concrete wall with a minimum thickness (or equivalent thickness for CMU) of 2-inches will provide a 30-minute fire-resistance rating; a rating equal to the duration of the NFPA 285 test. Any exterior wall assembly will require a concrete wall thickness greater than 2-inches for structural reasons, and concrete block walls typically have an equivalent thickness much greater than 2-inches, again for structural reasons. Based on the

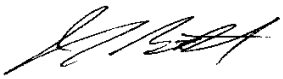
documented fire performance of concrete construction, a base wall incorporating a concrete panel or CMU will provide protection the Thermax™.

Figure 2 and 3 show a maximum of 4.25-inches of Thermax™ applied to the interior face of the exterior precast concrete panel. The actual maximum allowable thickness of Thermax™ that can be applied to the back of the precast panel is dependent on NFPA 285 testing conducted by Dow on a wall assembly with the continuous application of Thermax™ applied to steel stud framing behind a brick exterior. The successful test in accordance with NFPA 285 qualified this 4.25-inch maximum continuous Thermax™ thickness that can be applied continuously to the interior face of the concrete wall or CMU.

When constructed as described above, walls constructed of concrete or concrete masonry units (CMU) that have the Thermax™ installed only on the interior face of these walls will be compliant with NFPA 285 and meet the requirements of Section 2603.5.5 of the IBC.

If you have any questions regarding the above analysis, please feel free to contact me at (410) 737-8677 or jbeitel@jensenhughes.com

Prepared by:



Jesse J. Beitel, FSFPE
Senior Scientist

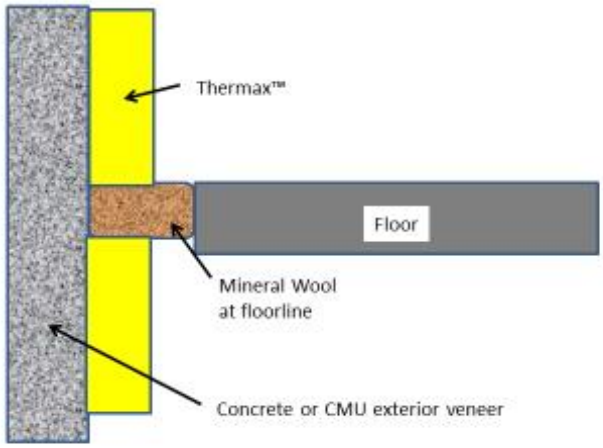


Figure 1 – Representative exterior wall construction

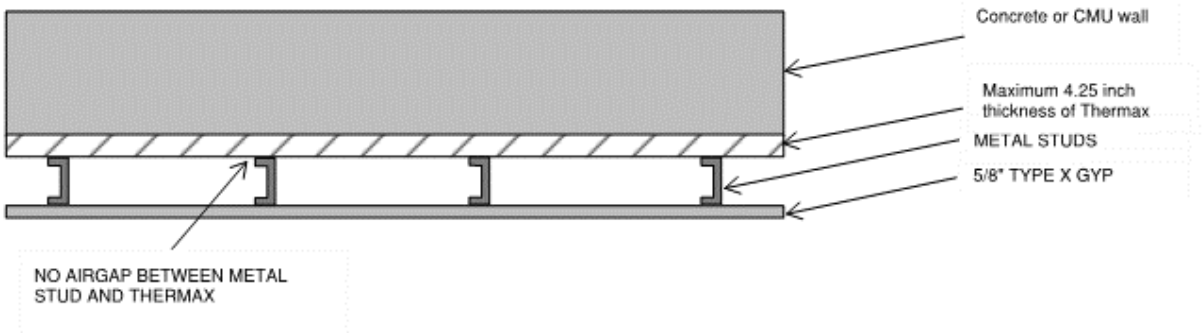


Figure 2

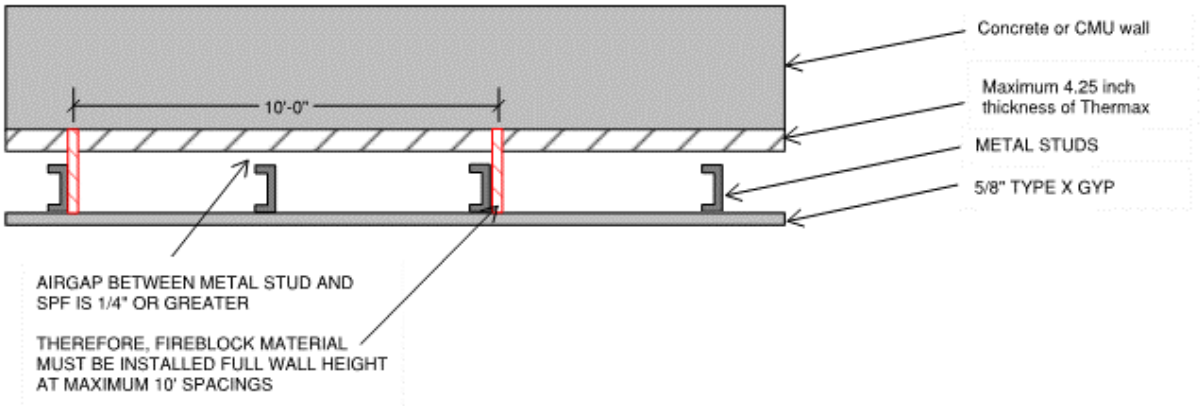


Figure 3

EXTERIOR WALL - 1 HR RATED @ LEVELS 2-5 PER TABLE 602

PL

KELLS
RESTAURANT
ROOF BELOW

EXTERIOR WALL - 1 HR RATED @ LEVELS 2-5 PER TABLE 602

OPEN OFFICE
529

OPEN OFFICE
530

OPEN OFFICE
513

TEL.
531

COPY
532

TEL.
514

CORR
533

ELEC
504

IDF
507

CONFERENCE
MEDIUM
527

CORR
528

W/C
511

STAIR A
503

W/C
508

W/C
509

W/C
512

LOBBY
505

CONFERENCE
MEDIUM
515

CONFERENCE
MEDIUM
526

CONFERENCE
MEDIUM
516

CORR.
506

1
EX4-B
SIM

STAIR B
501

ELEV.
502

1
EX4-B

CORR
523

WELL
522

PANTRY
519

MULTI-PURPOSE
RM
518

1
EX4-B

OPEN OFFICE
525

TEL.
521

1
EX4-B

OPEN OFFICE
524

1
EX4-C

1
EX4-C

2
EX4-B

PINE STREET
MARKET ROOF
BELOW

1
EX4-B
SIM

1
EX4-B

EXTERIOR WALL - NO RATING REQUIRED, FSD > 30' - 0" PER TABLE 602
(ADDITIONAL RATED PROTECTION PROVIDED AS INDICATED)

J H G F E D C B A

PL

4 3.9 3.5 3 2.9 2.5 2 1.9 1.5 1

EXTERIOR WALL - NO RATING REQUIRED, FSD > 30' - 0" PER TABLE 602
(ADDITIONAL RATED PROTECTION PROVIDED AS INDICATED)

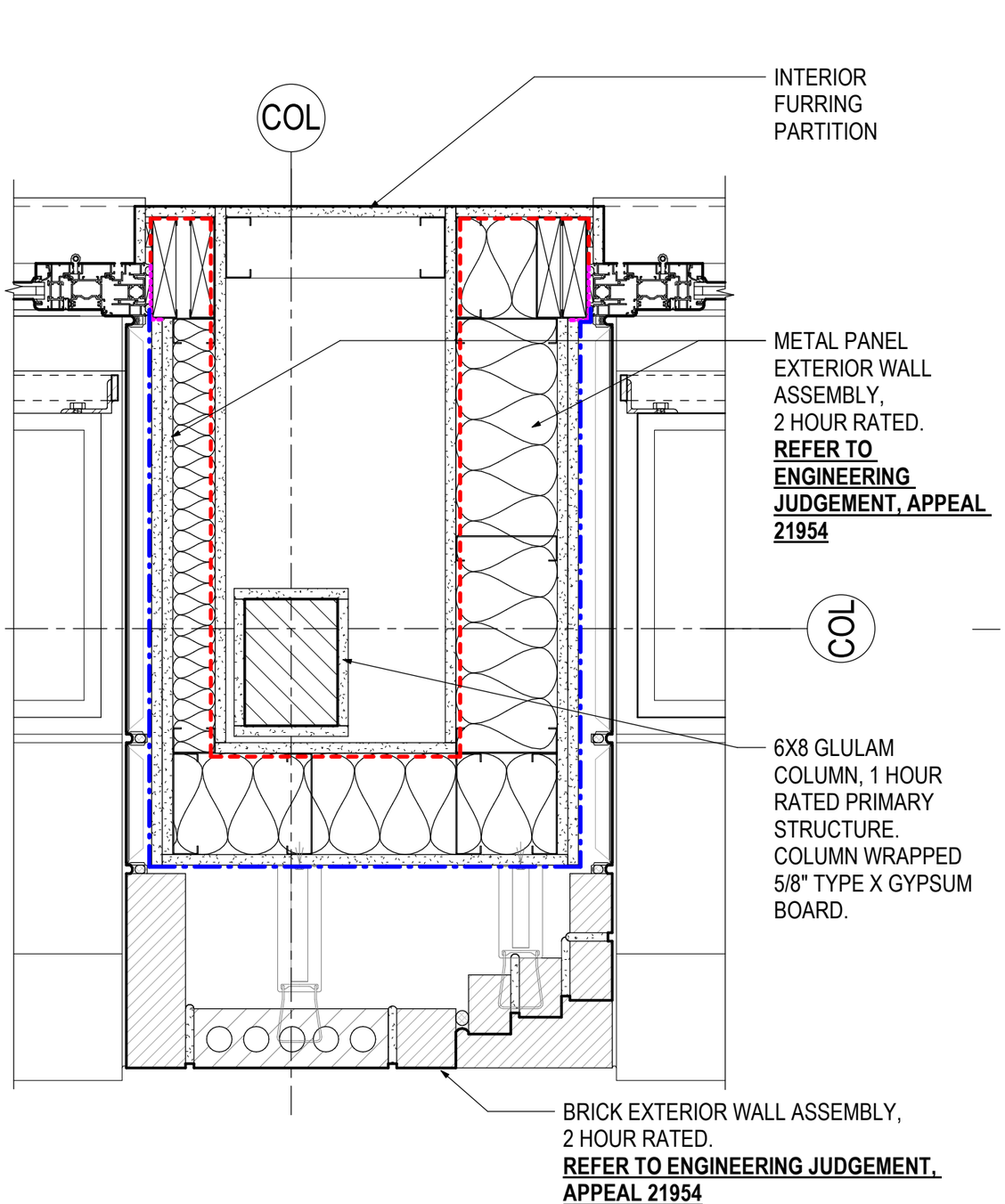
FLOOR PLAN - LEVEL 05

EXTERIOR WALL

1 HOUR RATED PRIMARY STRUCTURE

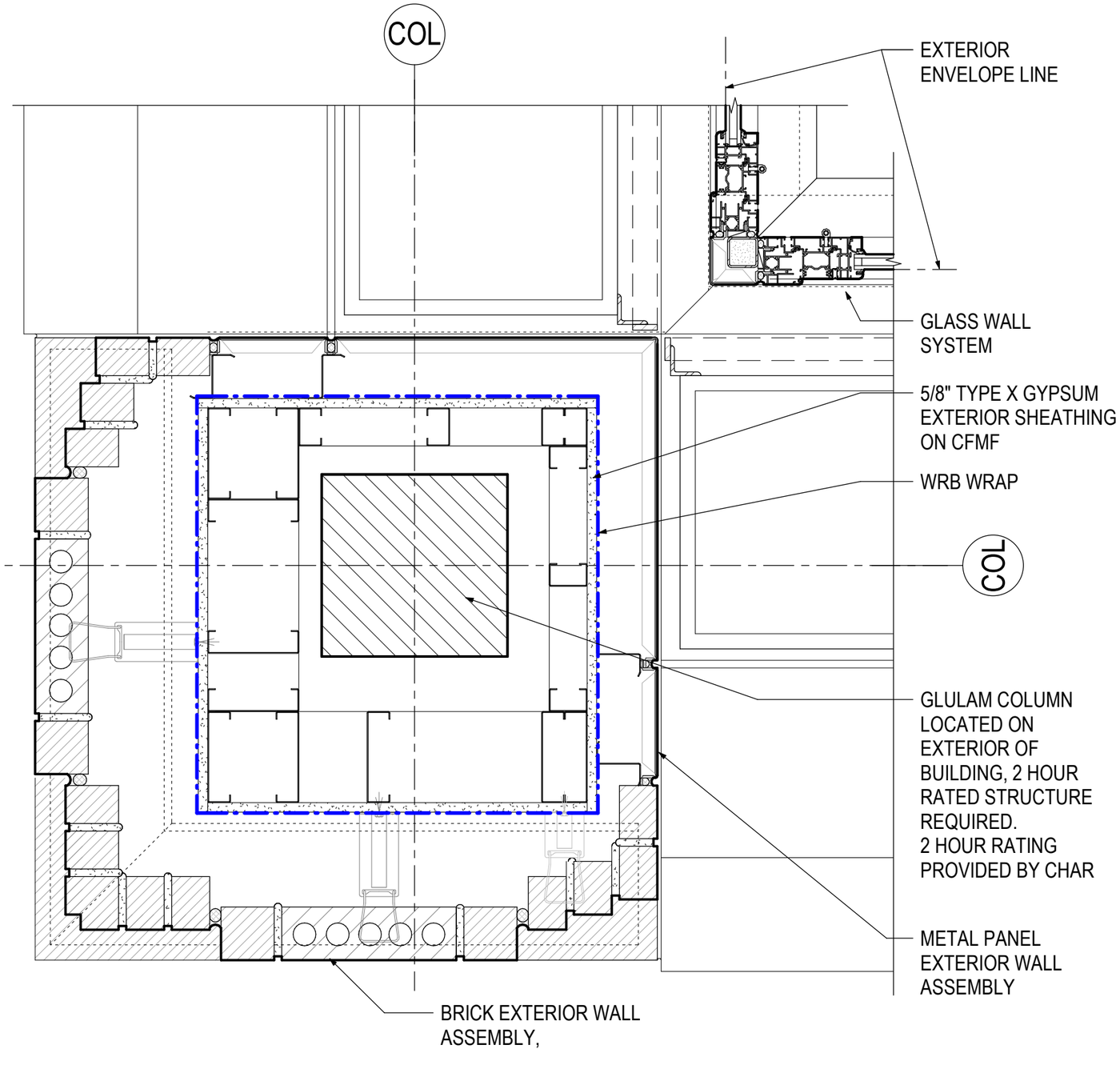
2 HOUR RATED PRIMARY STRUCTURE

PERMIT #19-185198-CO
EXHIBIT 4-A



1 EX4-B PLAN DETAIL - PILASTER AT LEVEL 5 RECESS

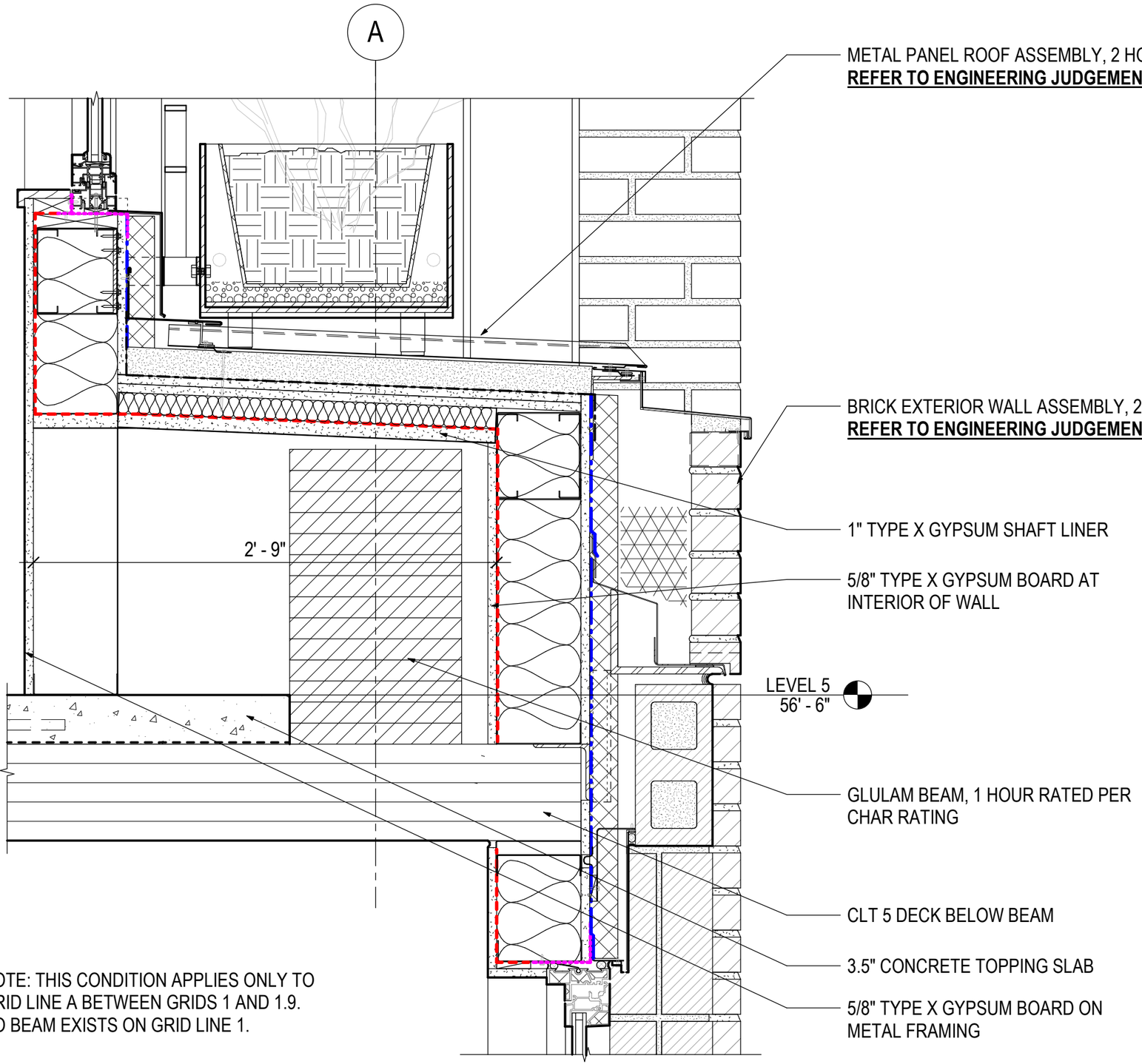
1 1/2" = 1'-0"



2 EX4-B PLAN DETAIL - SOUTHEAST CORNER AT LEVEL 5

1 1/2" = 1'-0"

PERMIT #19-185198-CO
EXHIBIT 4-B



NOTE: THIS CONDITION APPLIES ONLY TO GRID LINE A BETWEEN GRIDS 1 AND 1.9. NO BEAM EXISTS ON GRID LINE 1.

1
EX4-C

SECTION - UPTURNED BEAM AT LEVEL 5 BALCONY

1 1/2" = 1'-0"

PERMIT #19-185198-CO
EXHIBIT 4-C