Development Services

From Concept to Construction

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More Contact Info (http://www.portlandoregon.gov//bds/article/519984)

APPEAL SUMMARY

Status: Decision Rendered - Reconsideration of ID 20477

Appeal ID: 20513	**Project Address:** 1313 NW Glisan St
Hearing Date: 6/19/19	**Appellant Name:** Kevin Grant
Case No.: B-001	**Appellant Phone:** 5035029037
Appeal Type: Building	**Plans Examiner/Inspector:** Maureen McCafferty, Corey Stanley
Project Type: commercial	**Stories:** 5 **Occupancy:** B **Construction Type:** III-A
Building/Business Name: Pearl Building	**Fire Sprinklers:** Yes - Throughout
Appeal Involves: Addition to an existing structure,Reconsideration of appeal	**LUR or Permit Application No.:**
Plan Submitted Option: pdf [File 1] [File 2]	**Proposed use:** Office (B Occupancy)

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	Table 601 & Section 704.2
Requires	Table 601 - For the proposed construction type for our project (IIIA) the primary structure needs to be rated for one-hour. Per 704.2 - Column Protection, where columns are required to have protection the column will be required to have protection on all sides...
Proposed Design	Within the existing building, on the 4th and 5th floor the columns are 10x10. There are (10) columns on each level that are directly under the office addition for a total of 20 columns that will receive this treatment. The existing columns throughout the rest of the building on floors (basement thru the 3rd floor) are all larger and pass the char calculations for a one-hour rating. This detail allows for the existing 10x10 columns to achieve the required rating by installing a steel plate that has been painted with intumescent paint (on both sides of the plate) on two sides of the existing wood column that is required to receive the one-hour rating. The plates are attached with a lag screw @ 24 in o.c. minimum. Similar to wood columns of larger sizes, the plates allow the column to act like a column with a larger cross-section. Please review attached Engineering Judgement provided by Code Unlimited
Reason for alternative	The required rating for a primary structure in a Type III A construction type, is one-hour. The existing 10x10 columns on two of the floors do not pass for a one-hour rating based on the char calculations provided by the structural engineer. The existing conditions were not making it feasible to achieve the rating needed on these columns. There are numerous corbels and cast iron column caps along with existing built conditions that don't allow for the traditional wrapping of the

columns or the application of fire proofing to the actual columns without needing additional unconventional means that would be necessary on top of those applications. This solution was sought in order to achieve the required rating and to work within the existing conditions.

Reconsideration Text:
After further discussion with our Fire Protection Engineer and our reviewer (Corey Stanley) additional fire caulking was added between the wood column and the face of the steel plates onto where they are being installed.

APPEAL DECISION

Alternate 1 hour fire rated column assembly with engineering analysis: Granted provided screw spacing attaching steel plates to columns are staggered and provided a special inspection is performed for the intumescent paint and fire caulking.
Appellant may contact John Butler (503 823-7339) with questions.

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 180 calendar days of the date this decision is published. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.

1-Hour Column Assembly

Engineering Judgement Report

Intumescent Paint Protection of Steel Plates

Client Name: C2K Architecture Inc.

Client Address: 1645 NW Hoyt St, Portland, OR 97209

Date: 6/8/2019

Table of Contents

1 PROJECT OVERVIEW

C2K Architecture is designing an additional story to an existing 5-story building located in Northwest Portland, Oregon. The proposed 6-story building is of Type III-A construction with occupancy Groups B (main occupancy), I-4, and M. The additional 6th story will serve a B occupancy. The building is protected by an automatic fire sprinkler and fire alarm system throughout.

Code Unlimited has been asked to provide analysis for the fire protection of a 10x10 wood column covered with 5/16” thick steel plates and intumescent paint on 2 opposite sides to ensure 1-hour fire-resistance will be provided as required per the 2014 Oregon Structural Specialty Code.

2 APPLICABLE CODES, STANDARDS, AND GUIDES

- 2014 Oregon Structural Specialty Code (OSSC), including the recently adopted Appendix N.
- 2015 American Wood Council Technical Report No. 10 (NDS TR-10).

3 DISCUSSION

3.1 Approach

- The proposed column assembly has been analyzed in accordance with 2014 OSSC §703.3 **Alternative Methods for Determining Fire Resistance**.
- The proposed design is compared to the 1-hour fire rated column, UL Design No. Y616.
- The exposed wood is analyzed for structural competency using char rate analysis, as permitted by §722.1 of the OSSC.

4 PROPOSED DESIGN

The proposed design consists of an existing 10x10 wood column covered with new 5/16” steel plates on 2 opposite sides (Figure 1). The steel plates are protected with 0.078” of intumescent paint to provide 1-hour fire-resistance as compared with UL Y616. The plates are attached to the wood column with minimum 3/8 x 5-1/2” screws spaced vertically 24” O.C., centered horizontally on the column (Figure 2). The columns are located on the 4th and 5th floors of the building.

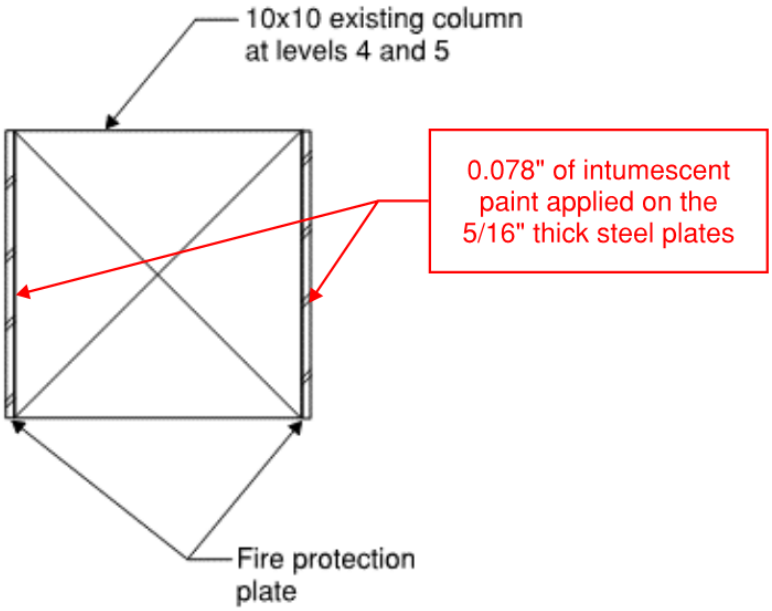


Figure 1: Proposed column assembly.

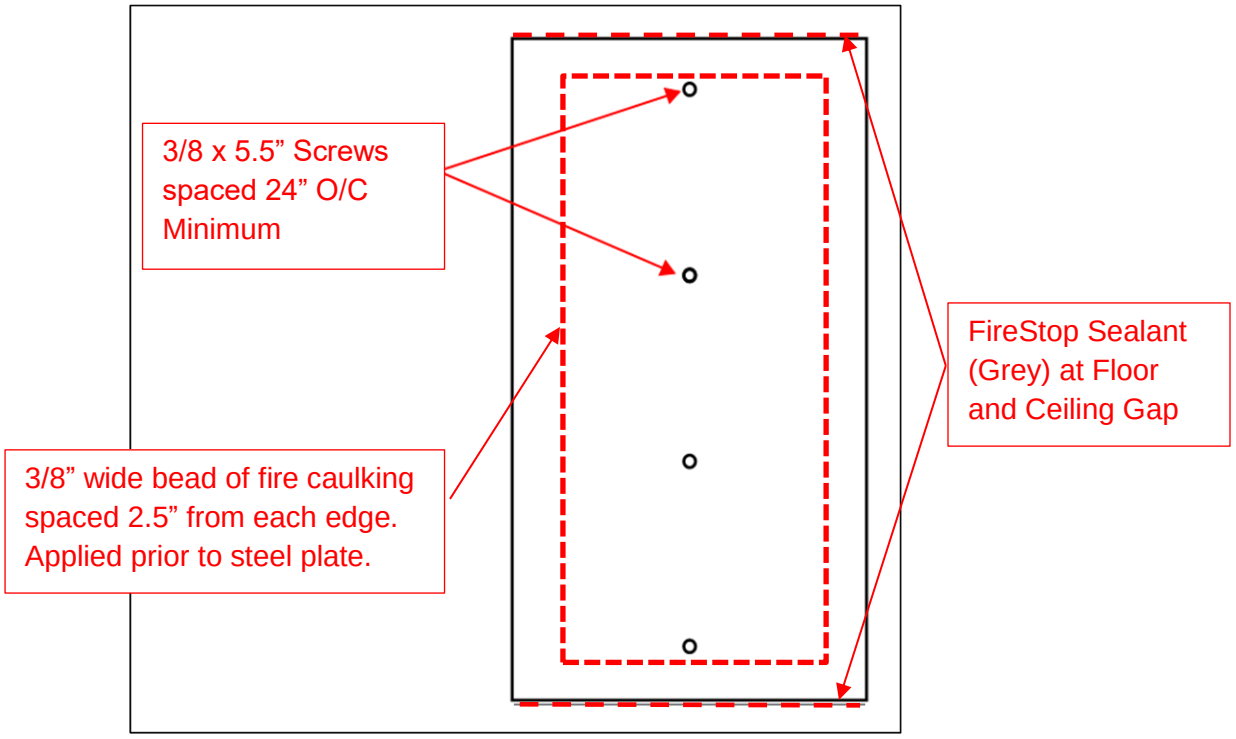


Figure 2: Screw spacing to attach steel plates to wood column.

5 ASSEMBLY ANALYSIS

5.1 W/D Ratio

The proposed protection of the existing 10x10 wood column is to cover 2 opposite sides with 5/16” steel plates. The calculated W/D ratio of the steel plates will be used to compare it to a listed UL assembly. W is the weight per unit length (lb/ft) and D is the heated perimeter (in.). The weight per unit length of a member is divided by the length of exposed heated perimeter area to determine the inherent fire resistance of a member. Lower W/D ratios correspond with thinner steel members that will be subject to earlier failure when heated.

The weight of the steel plate is 12.75 lbs/ft^2 each (*Steel Plates – Size & Weight*, Engineering Toolbox 2009). The weight of a single plate per linear foot of the column is 10.63 lbs/ft. The total W/D ratio provided by the steelplates is determined below.

Weight
Single plate = 10.63 lbs/ft.

Heated Perimeter
Single plate—10” + 5/16” + 5/16” = 10.625”
Calculated W/D Ratio for each plate = **1.00**

5.2 Char Analysis

The minimum wood bearing area available to sustain structural loading is estimated at 64 in^2. Since the wood column will be covered on 2 opposite sides with intumescent coated steel plates, the 2 uncovered sides will be exposed to fire and will develop a layer of char. The char rate analysis method is used to determine the capacity of the wood column after exposure to fire.

The nominal char rate for solid wood is 1.8 in/hour (NDS TR-10). For a 1-hour rated column, a maximum char depth is 1.8" (Figure 3). Due to the steel plate coverage, the char depth will be smaller at the corners of the wood column where the steel plates act as a heat sink and barrier to air fueling the fire.

$$a_{char} = \beta_n t$$

$$a_{char} = char\ depth, inches.$$

$$\beta_n = nominal\ char\ rate, inches\ per\ hour$$

$$t = fire\ exposure\ time, hour$$

$$a_{char} = 1.8\frac{in}{hr}\ x1\ hrs = 1.8\ in.\ char\ depth$$

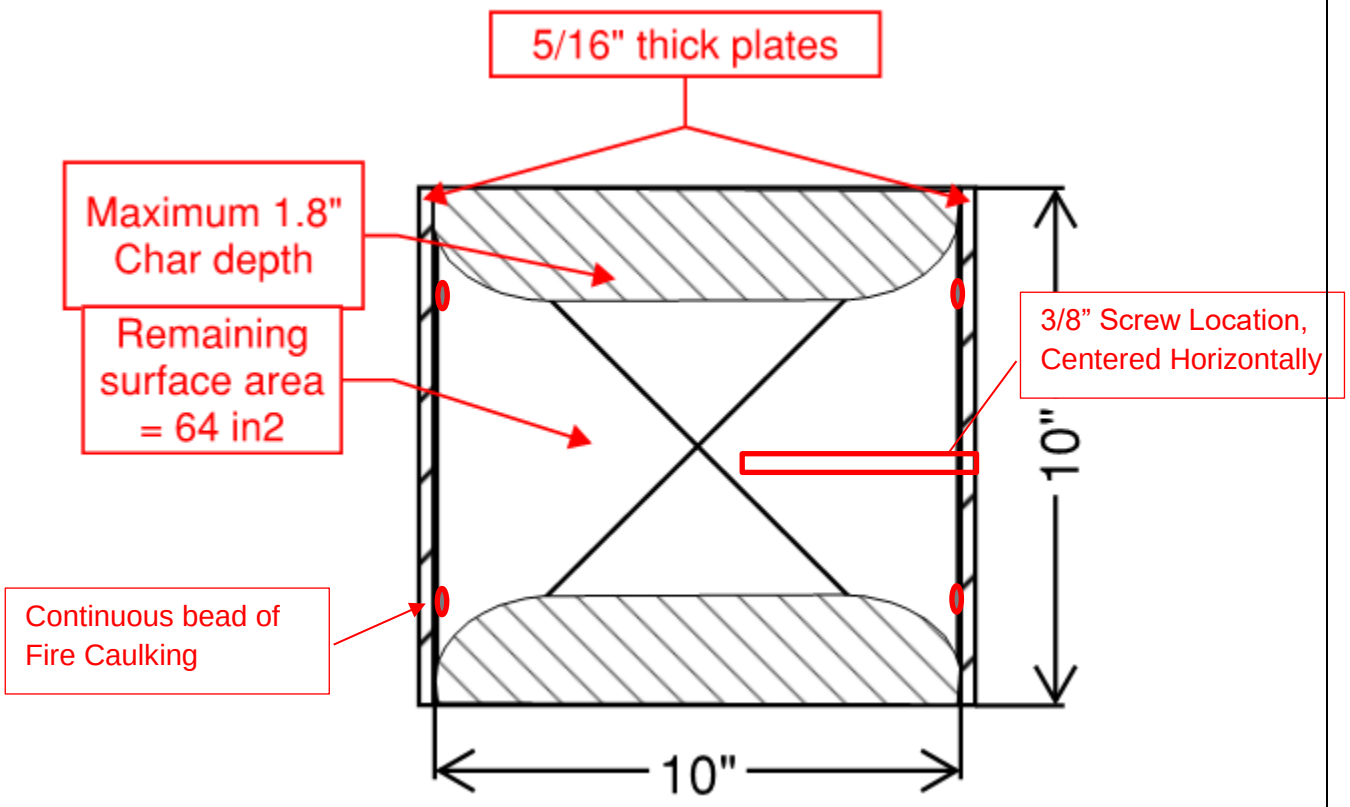


Figure 3: Char rate analysis of the proposed column.

5.3 UL Design No. Y616 Comparison

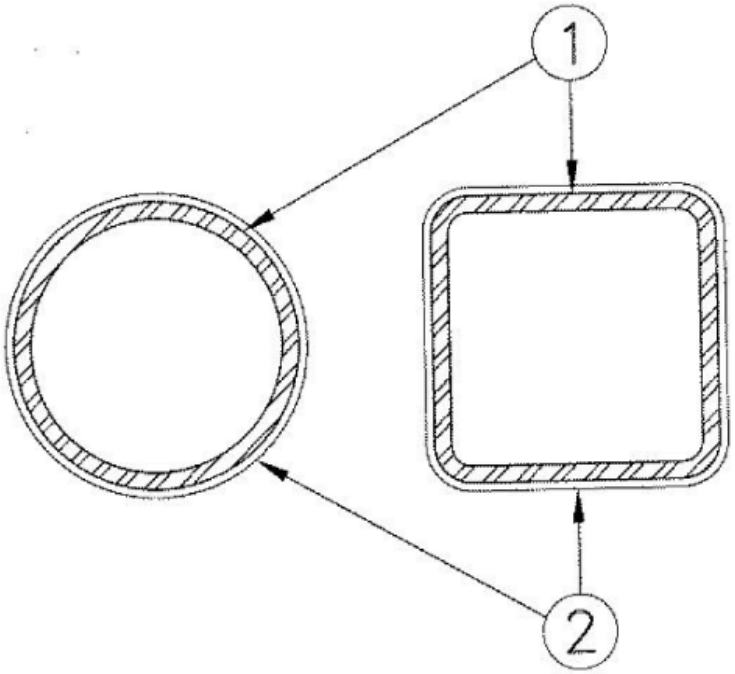
The proposed assembly is a non-load bearing column. It is compared the 10x10x5/16”column used in the tested assembly UL Y616 as shown below.

Design No. Y616

September 22, 2016

Ratings - 1, 1-1/2, 2 and 3 Hr. (See Item 2)

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Steel Column —** Steel tube (ST) or steel pipe (SP) with the minimum sizes shown in the table below. Columns shall be free of dirt, loose scale and oil. Columns shall be primed with a metal alkyd or epoxy primer at a nominal thickness of 1 mil.

2. **Mastic and Intumescent Coatings* —** Coating spray or brush applied directly from containers to desired thickness. See table below for appropriate minimum final dry thickness and applicable rating.

FOR STEEL PIPE

Steel Size	A/P	HP/A	1 Hr		1-1/2 Hr		2 Hr		3 Hr	
			in.	mm	in.	mm	in.	mm	in.	mm
SP 3 x 0.25	0.23	169	0.102	2.58	0.221	5.62	0.340	8.65	N/A	N/A
SP 5 x 0.3125	0.29	135	0.081	2.05	0.175	4.46	0.270	6.86	N/A	N/A
SP 5 x 0.375	0.35	114	0.067	1.70	0.145	3.69	0.224	5.69	N/A	N/A
SP 6 x 0.432	0.40	102	0.058	1.48	0.127	3.23	0.196	4.97	N/A	N/A
SP 4 x 0.5	0.44	93	0.053	1.35	0.115	2.94	0.178	4.52	N/A	N/A
SP 8 x 0.5	0.47	85	0.047	1.20	0.093	2.35	0.147	3.74	0.288	7.31

N/A = Not Available

FOR SQUARE AND RECTANGULAR STEEL TUBE

Steel Size	A/P	HP/A	1 Hr		1-1/2 Hr		2 Hr		3 Hr	
			in.	mm	in.	mm	in.	mm	in.	mm
ST 5x3x1/4	0.23	169	0.102	2.58	0.221	5.62	0.340	8.65	in.	mm
ST 5x3x5/16	0.29	135	0.081	2.05	0.175	4.46	0.270	6.86	N/A	N/A
ST 8x6x3/8	0.35	114	0.067	1.70	0.145	3.69	0.224	5.69	N/A	N/A
ST 6x6x7/16	0.40	102	0.058	1.48	0.127	3.23	0.196	4.97	N/A	N/A
ST 5x3x1/2	0.44	93	0.053	1.35	0.115	2.94	0.178	4.52	N/A	N/A
ST 8x8x1/2	0.47	85	0.047	1.20	0.093	2.35	0.147	3.74	0.288	7.31

N/A = Not Available

As an alternate to the above table, the required thickness of coating (in inches) to be applied to all surfaces of steel tube (ST) and steel pipe (SP) columns may be determined from the equations listed below. The equations may only be used for the indicated hourly rating, and for the corresponding listed ranges of thickness and A/P.

Hourly Ratng	Thickness Equation, in.	Thickness Range, in.	A/P Ratio Range
1	T = 0.02336/(A/P)	0.050 to 0.102	0.23 to 0.47
1-1/2	T = 0.05081/(A/P)	0.108 to 0.221	0.23 to 0.47
2	T = 0.07826/(A/P)	0.167 to 0.340	0.23 to 0.47

Where T = Thickness of coating in inches, A = Cross-sectional area of the pipe in square inches, and P = Heated perimeter of steel pipe or tube section in inches.

GREENTECH THERMAL INSULATION PRODUCTS MFG CO L L C — Type WB 5, Investigated for Interior Conditioned Space and Interior General Purpose

ISOLATEK INTERNATIONAL — Type SprayFilm WB 5, Type WB 5, Investigated for Interior Conditioned Space and Interior General Purpose

* **Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2016-09-22

Figure 4: UL Y616.

Y616
Structural Steel Square Tube Columns
CAFCO® SprayFilm® WB 5 & ISOLATEK® Type WB 5

ASTM Desig.	Wall Thk	A/P	Metric Desig.	M/D	Hp/A	1-Hour	1-1/2 Hour	2-Hour	3-Hour
10 x 10	5/8	0.59	254 x 254 x 15.9	112	71	0.047	0.093	0.147	0.288
	1/2	0.48	x 12.7	91	87	0.047	0.093	0.147	0.288
	3/8	0.36	x 9.5	68	116	0.065	0.142	0.218	NR
	5/16	0.30	x 7.9	57	139	0.078	0.170	0.261	NR
	1/4	0.24	x 6.4	46	173	0.098	0.212	0.327	NR
	3/16	0.18	x 4.8	34	231	NR	NR	NR	NR

Figure 5: Type WB 5 intumescent paint thickness to be applied to steel column for 1-hour fire-resistance per ISOLATEK.

IMPERIAL						
	COLUMN			BEAM		
SIZE (in. x in. x in.)	A/P	W/D	Heated Perimeter (in.)	A/P	W/D	Heated Perimeter (in.)
10 x 10 x 0.625	0.553	1.88	38.0	0.693	2.36	30.3
x 0.500	0.447	1.52	38.4	0.568	1.93	30.3
x 0.375	0.339	1.15	38.8	0.436	1.48	30.2
x 0.313	0.284	0.97	39.0	0.367	1.25	30.2
x 0.250	0.229	0.78	39.2	0.297	1.01	30.1
x 0.188	0.172	0.59	39.4	0.225	0.77	30.1

Figure 6: W/D ratio of the UL tested column.

Table 1: Comparison between UL Y616 and the proposed column assembly

Element	UL Assembly Design No. Y616	Proposed Assembly
1. Steel	HSS Steel Column; 10”x10”x5/16” (W/D = 0.97 - Column)	Steel Plate; 10” wide x 5/16” thick (W/D=1.00) Connected to the wood column using minimum 3/8 x 5.5” SWG ASSY Kombi screw spaced 24” O.C., centered horizontally. **Higher Inherent Fire-Resistance**
2. Intumescent Coating	Coating spray, brush or trowel applied directly from containers to the thickness of 0.078” (Figure 5).	Coating spray, brush or trowel applied directly from containers to the thickness of 0.078”, covered on exposed surfaces (Figure 5). **See Summary**
Fire-Resistance Rating	**1-Hour**	**1-Hour (minimum)**

6 SUMMARY

During this evaluation, UL test Y616 was considered to compare the protection provided by the steel plates on the opposite sides of the wood column. The tested column, 10x10x 5/16 requires 0.078” of intumescent painting to provide 1-hour of fire-resistance. The proposed steel plate fire protection is compared to the tested column using the W/D ratio. The proposed W/D ratio (1.00) is higher than the tested W/D ratio (0.97) due to the limited heated perimeter. The proposed steel plates have a relatively higher inherent resistance to heating. The proposed intumescent thickness is 0.078”, equivalent to the UL assembly to ensure a minimum of 1-hour fire-resistance.

The exposed sides of the wood column will experience charring when exposed to fire. As shown in Section 5.2, the maximum char depth for 1-hour of fire exposure is 1.8”. Char depth is less at the corners of the column due to steel plates acting as a heat sink and protecting the sides of the column from direct exposure to fire. The decrease in charring at the corners of the column provides more un-charred wood to maintain the loadbearing capacity of the column, which is conservatively estimated to be a minimum of 64 in^2 of un-charred wood. The screws will be positioned in the center of the column to ensure they are not weakened by heat in the char interface during the fire attack. Intumescent paint will coat the exposed steel, including the screws.

The project structural engineer has evaluated this report and ensures adequate column strength will be maintained after 1 hour of charring. It should be noted; the addition of the steel plates will provide additional strength to the wood column and lend support after the wood char has weakened the wood member.

Notes on joint and gap protection : Regarding the protection at joints and gaps at edge of steel plate, where the steel plate intersects the wood ceiling and floor, Hilti CP 606 Grey Fire Sealant (Or equal) shall be used to seal gaps at intersections or joints between at the steel plate interface at the floor and ceiling. Fire Caulking

shall be applied prior to the attachment of the steel plate to ensure gap protection is maintained on all edges. Apply 3/8” bead of fire caulking 2.5” from edge of column prior to the installation of steel plate. (See Figure 2 & 3) Upon heating, the fire caulk will expand and completely fill the vertical gap, thereby ensuring the wood char and 3will be limited at the column vertical wood/steel gap.

7 CONCLUSION

The proposed column assembly protection is compared to the 1-hour column tested in UL Y616, as permitted by OSSC §703.3. The column is protected by 5/16” thick steel plates on opposing sides. The steel plates are covered with 0.078” of intumescent painting to provide 1-hour fire-resistance, equivalent intumescent application to the tested UL column assembly.

The exposed sides of the existing heavy timber column will also maintain 1-hour fire protection, as evaluated per AWC-NDS TR-10. The steel plates covered with intumescent paint, sealed, and fire caulked at the gaps and joints provides protection through limiting heat exposure and charring of the wood column. As evaluated, the remaining un-charred wood column will maintain the required strength to perform after 1 hour of fire. (see attached letter from structural engineer).

Therefore, the proposed design, as detailed in this report, with the steel plate protection on two faces as compared with the UL column assembly and the char rate analysis provided above, provides sufficient wood depth to provide 1-hour fire protection for the columns as required by the OSSC.

Franklin Callfas
Principal/Fire Protection Engineer
Code Unlimited

PROJECT INFORMATION

PROJECT NAME: KEEN ROOF

DESCRIPTION: ADDITION OF AN OFFICE SPACE AT ROOF TOP OF EXISTING BUSINESS.

ADDRESS: 1313 NW GLISAN ST.
PORTLAND, OREGON 97209

DATE OF ORIGINAL BUILDING CONSTRUCTION: 1907

CONSTRUCTION TYPE: IIIA
OCCUPANCY: B

APPLICABLE BUILDING REGULATIONS

2014 OREGON STRUCTURAL SPECIALTY CODE (OSSC)

2014 OREGON MECHANICAL SPECIALTY CODE (OMSC)

2017 OREGON ELECTRICAL SPECIALTY CODE (OESC)

2017 OREGON PLUMBING SPECIALTY CODE (OPSC)

2014 OREGON FIRE CODE (OFC)

1 2016 PORTLAND FIRE CODE (PFC)

ICC/ANSI AII7.1-2009 - ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES

BUILDING OCCUPANCY AND SEPARATIONS

3 4 **OCCUPANCY CLASSIFICATION: B** CHAPTER 3, 5

OCCUPANCIES PER FLOOR (EXISTING):
- BASEMENT: B
- FIRST FLOOR: B, M
- SECOND FLOOR: B, I-4
- THIRD FLOOR: B
- FOURTH FLOOR: B
- FIFTH FLOOR: B

OCCUPANCIES PER FLOOR (PROPOSED):
- SIXTH FLOOR: B

OCCUPANCY SEPARATION (TABLE 508.4)

OCCUPANCY	**REQUIRED SEPARATION (SPRINKLER SYSTEM PER 903.3.1.1)**
B TO M	NO SEPARATION REQUIRED
B TO I-4	1-HR

5

BUILDING HEIGHT

CHAPTER 5

CONSTRUCTION TYPE: IIIA, GROUP B. PER OSSC TABLE 503

	ALLOWABLE	**PROPOSED**
BUILDING HEIGHT	85'-0"*	82'-10"
NUMBER OF STORIES	6*	6

*NOTE: AUTOMATIC SPRINKLER INCREASE PER OSSC 504.2. BUILDING TO BE EQUIPPED THROUGHOUT WITH AN APPROVED AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION OSSC 903.3.1.1 (NFPA 13)

ALLOWABLE AREA

CHAPTER 5

STORY AND HEIGHT LIMITATIONS - B CONSTRUCTION TYPE IIIA:
6 STORIES
PER OSSC TABLE 503 AND AUTOMATIC SPRINKLER SYSTEM INCREASE PER OSSC 504.2
ALLOWABLE BUILDING HEIGHT: 85'-0"
PER OSSC TABLE 503 AND AUTOMATIC SPRINKLER SYSTEM INCREASE PER OSSC 504.2
PROPOSED BUILDING HEIGHT: 82'-10" TO TOP OF LEVEL 6 ROOF

ALLOWABLE IIIA AREA = 57,000 SF PER STORY
PER OSSC TABLE 503 AND AUTOMATIC SPRINKLER SYSTEM INCREASE PER OSSC 506.3
EXISTING IIIA AREA = 9,792 SF PER STORY
MAXIMUM PROPOSED IIIA LEVEL 6 OFFICE AREA = 1,832 SF

3

FIRE RESISTANCE RATING

CHAPTERS 6, 7

FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS IN HOUR (TABLE 601)

	REQUIRED	**PROPOSED**
BUILDING ELEMENT	**TYPE IIIA**	**TYPE IIIA**
PRIMARY STRUCTURAL FRAME	1 HR	1 HR
BEARING WALLS - EXTERIOR - INTERIOR	2 HR 1 HR	2 HR 1 HR
NONBEARING WALLS AND PARTITIONS - INTERIOR	0 HR	0 HR
FLOOR CONSTRUCTION	1 HR	1 HR
ROOF CONSTRUCTION	1 HR	1 HR

FIRE RESISTANCE RATING REQUIREMENTS FOR EXTERIOR NON-BEARING WALLS BASED ON FIRE SEPARATION DISTANCE (TABLE 602)

	NORTH	**EAST**	**SOUTH**	**WEST**
FIRE SEPARATION DISTANCE	40'-0"	33'-0"	20'-0"	17'-0"
TYPE IIIA - EXT WALL RATINGS (PER OSSC TABLE 602)	0 HOUR	0 HOUR	1 HOUR	1 HOUR
PROPOSED - EXT (BEARING) WALL RATINGS	0 HOUR	0 HOUR	1 HOUR	2 HOUR

NOTE: NORTH, EAST, SOUTH AND WEST DISTANCES ARE MEASURED TO PROPERTY LINE

MAXIMUM AREA OF EXTERIOR WALL OPENINGS (TABLE 705.8)

	NORTH	**EAST**	**SOUTH**	**WEST**
FIRE SEPARATION DISTANCE	40'-0"	33'-0"	20'-0"	17'-0"
MAXIMUM AREA OF UNPROTECTED OPENINGS (BUILDING SPRINKLERED)	NOT REQ	NOT REQ	NO LIMIT	75%

NOTE: NORTH, EAST, SOUTH AND WEST DISTANCES ARE MEASURED TO PROPERTY LINE

3

FIRESTOPPING

CHAPTER 7

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

3

PARAPETS

CHAPTER 7

705.11 PARAPETS:

"A PARAPET NEED NOT BE PROVIDED ON AN EXTERIOR WALL WHERE ANY OF THE FOLLOWING CONDITIONS EXIST:

EXCEPTION 4.4:
"ONE HOUR FIRE-RESISTANCE-RATED EXTERIOR WALLS THAT TERMINATE AT THE UNDERSIDE OF THE ROOF SHEATHING DECK OR SLAB, PROVIDED:
THE ENTIRE BUILDING SHALL BE PROVIDED WITH NOT LESS THAN CLASS B ROOF COVERING"

REQUIRED LIFE SAFETY SYSTEMS

CHAPTER 9 & 11, FIRE CODE

	REQUIREMENT	**TYPE/CLASS**	**PROVIDED**
AUTOMATIC SPRINKLER SYSTEM*	NO	NFPA 13	YES
STANDPIPE SYSTEM	YES, PER 905.3.1	CLASS I	EXISTING
FIRE PUMPS	NO, PER 913	--	EXISTING
FIRE EXTINGUISHERS**	YES	2-A MIN.	YES
FIRE ALARM SYSTEM	YES, PER 907.2.2	GROUP B	EXISTING
SMOKE DETECTION SYSTEM	NO	--	NO

* SYSTEMS SERVING MORE THAN 20 HEADS SHALL BE SUPERVISED BY AN APPROVED CENTRAL, PROPRIETARY, OR REMOTE SERVICE.

** FIRE EXTINGUISHERS:
75'-0" MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER ALL AREAS (906.3)

1

MEANS OF EGRESS

CHAPTER 10

EGRESS WIDTH PER OCCUPANT SERVED (1005.3):
STAIRWAYS: 0.3/OCCUPANT
OTHER EGRESS COMPONENTS: 0.2/OCCUPANT

MEANS OF EGRESS ILLUMINATION (1006):
EGRESS LIGHTING REQUIRED PER 1006.1
EMERGENCY EGRESS LIGHTING REQUIRED PER 1006.3
PERFORMANCE REQUIREMENTS UNDER EMERGENCY POWER: AN AVERAGE OF 1 fc, AND A MINIMUM AT ANY POINT OF 0.1 fc MEASURED ALONG THE PATH OF EGRESS AT FLOOR LEVEL. ILLUMINATION LEVELS SHALL BE PERMITTED TO DECLINE TO 0.6 fc AVERAGE AND A MINIMUM AT ANY POINT OF 0.06 fc AT THE END OF THE EMERGENCY LIGHTING TIME DURATION. A MAXIMUM-TO-MINIMUM ILLUMINATION UNIFORMITY RATIO OF 40 TO 1 SHALL NOT BE EXCEEDED.

ACCESSIBLE MEANS OF EGRESS:
48" STAIRWAY WIDTH BETWEEN HANDRAILS NOT REQUIRED (1007.3, EXCEPTION 1)
AREA OF REFUGE NOT REQUIRED (1007.3, EXCEPTION 2)

ILLUMINATED EXIT SIGNS:
REQUIRED PER 1011.1

EXIT ACCESS - SPRINKLERED (TABLE 1014.3):
B OCCUPANCY COMMON PATH: 100'-0"
A OCCUPANCY COMMON PATH: 75'-0"

EXIT ACCESS TRAVEL DISTANCE - SPRINKLERED (TABLE 1016.2):
B OCCUPANCY: 300'-0"
A OCCUPANCY: 250'-0"

NUMBER OF EXITS (1015):
ONE EXIT REQUIRED PER TABLE 1015.1

MINIMUM CORRIDOR WIDTH (TABLE 1018.2):

LOCATION	**WIDTH**
ACCESS TO AND UTILIZATION OF MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS OR EQUIPMENT	24 INCHES
WITH A REQUIRED OCCUPANCY CAPACITY LESS THAN 50	36 INCHES
ALL OTHER LOCATIONS	44 INCHES

DEAD END CORRIDORS (1018.4):
B OCCUPANCY: 50'-0"

3

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3

PLUMBING FIXTURES

CHAPTER 29 & PLUMBING CODE

	TOTAL OCC.			WC		URINALS	LAVATORIES		FOUNTAINS
FIXTURES / FLOOR	T	M	F	M	F	M	M	F	
L6 - REQUIRED (B)	44	22	22	1	1	N/A	1	1	N/A
L6 - PROVIDED (B)				**1**	**1**	N/A	**1**	**1**	N/A

(B) WC - 1/25 FOR THE FIRST 50, 1/50 FOR THE REMAINDER EXCEEDING 50
LAV - 1/40 FOR THE FIRST 80, 1/80 FOR THE REMAINDER EXCEEDING 80

1

BICYCLE PARKING

1 TITLE 33, CHAPTER 33.266

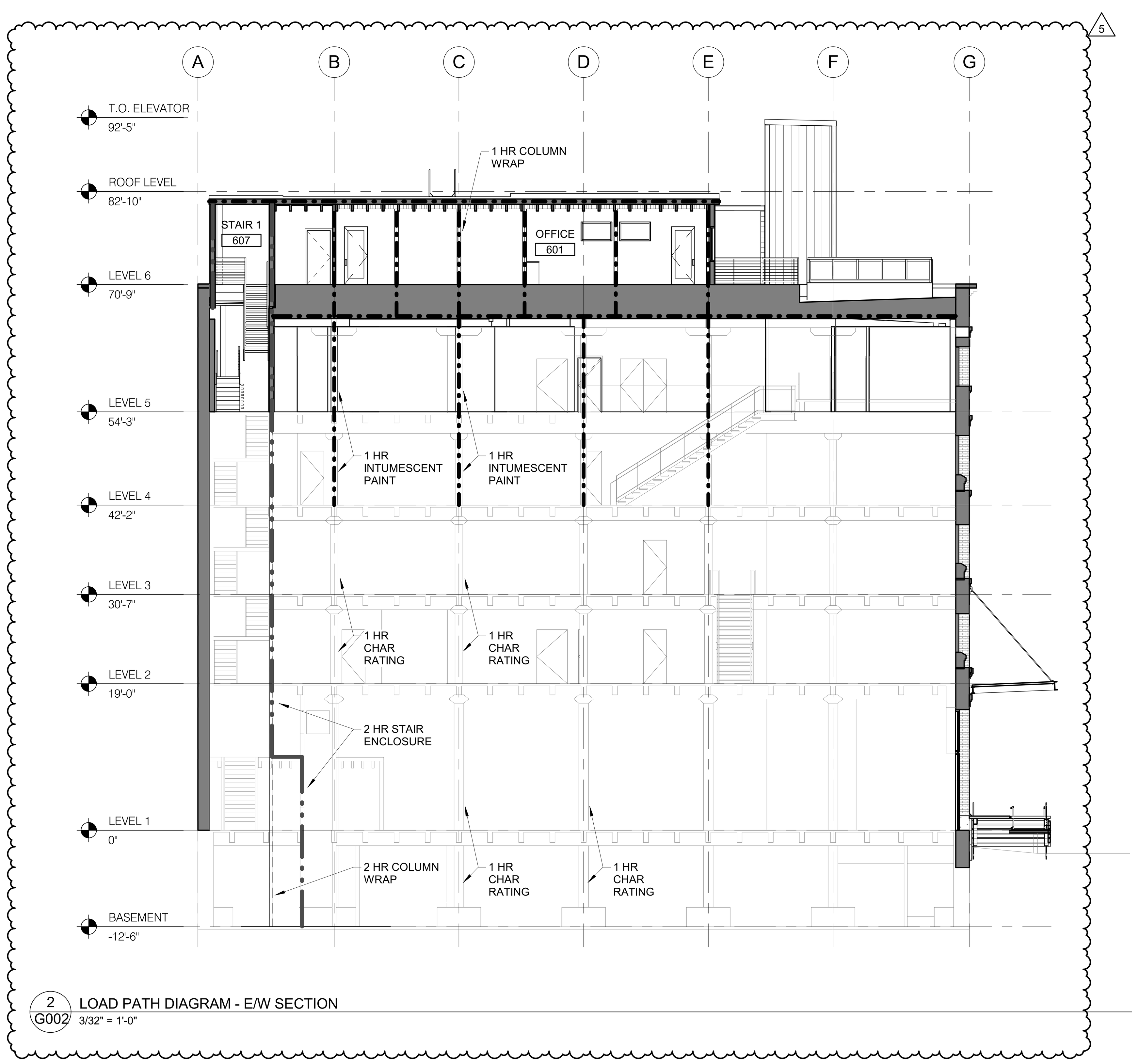
LONG TERM BICYCLE PARKING REQUIRED (TABLE 266-6)
OFFICE: 2, OR 1 PER 10,000 SQ FT OF NET BUILDING AREA = 7 SPACES
PROVIDED: 22 SPACES

SHORT TERM BICYCLE PARKING (TABLE 266-6)
OFFICE: 2, OR 1 PER 40,000 SQ FT OF NET BUILDING AREA = 2 SPACES
PROVIDED: 12 SPACES

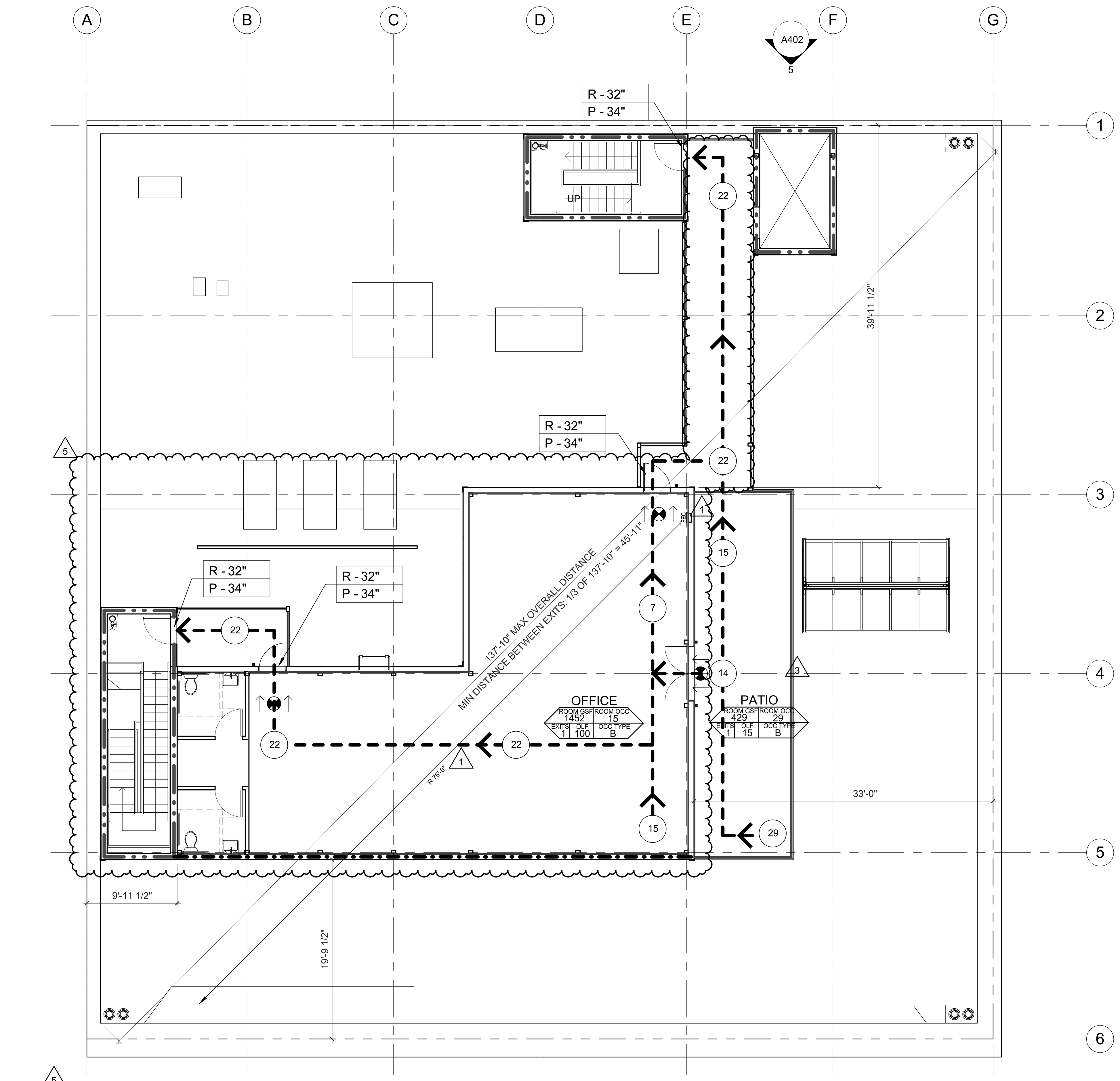
FIRE LIFE SAFETY LEGEND

- EXIT FIXTURE, DOUBLE FACED, DIRECTION OF ARROW(S) AS SHOWN.
- EXIT FIXTURE, SINGLE FACED, DIRECTION OF ARROW(S) AS SHOWN.
- COMMON PATH OF TRAVEL
- 1 HR WALL 5
- 2 HR WALL
- EXIT TRAVEL DISTANCE
- PROPERTY LINE
- NAME / ROOM GSF / ROOM OCC / EXITS / OLF / OCC TYPE — LIFE SAFETY SUMMARY TAG
- 23 — OCCUPANTS AT OCCUPANCY EXIT
- 23 — TOTAL OCCUPANTS AT EXIT DISCHARGE
- 23 — TOTAL OCCUPANTS IN AREA
- R - 37" — MINIMUM REQUIRED EGRESS WIDTH
- P - 40" — PROVIDED (CLEAR) EGRESS WIDTH

EGRESS WIDTH IS CALCULATED BASED ON OBC SECTION 1005.1:
0.3" PER OCCUPANT FOR STAIRWAYS AND 0.2" PER OCCUPANT FOR OTHER EGRESS COMPONENTS



2 LOAD PATH DIAGRAM - E/W SECTION
G002 3/32" = 1'-0"



1 LEVEL 6 - CODE ANALYSIS
G002 1/8" = 1'-0"

C 2K
ARCHITECTURE INC
1645 NW HOYT
PORTLAND OREGON 97209
503 444 2200

CITY STAMP

KEEN OFFICE ADDITION

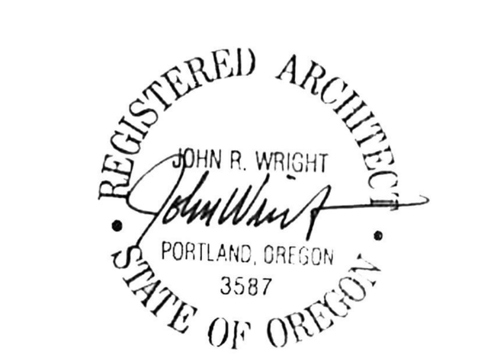
KEEN INC

1313 NW GLISAN ST
PORTLAND, OREGON

PROJECT NO.: 13136
DRAWN: JD
DATE: 16 JULY 2018
PERMIT DRAWINGS

REVISION: *DESCRIPTION:*

1	2018 10 19	PERMIT COMMENTS
3	2018 12 06	PERMIT COMMENTS
4	2019 02 26	PERMIT COMMENTS
5	2019 05 14	PERMIT COMMENTS



PERMIT DRAWINGS

SHEET TITLE:
CODE ANALYSIS - LIFE SAFETY

SHEET NO.:
G002

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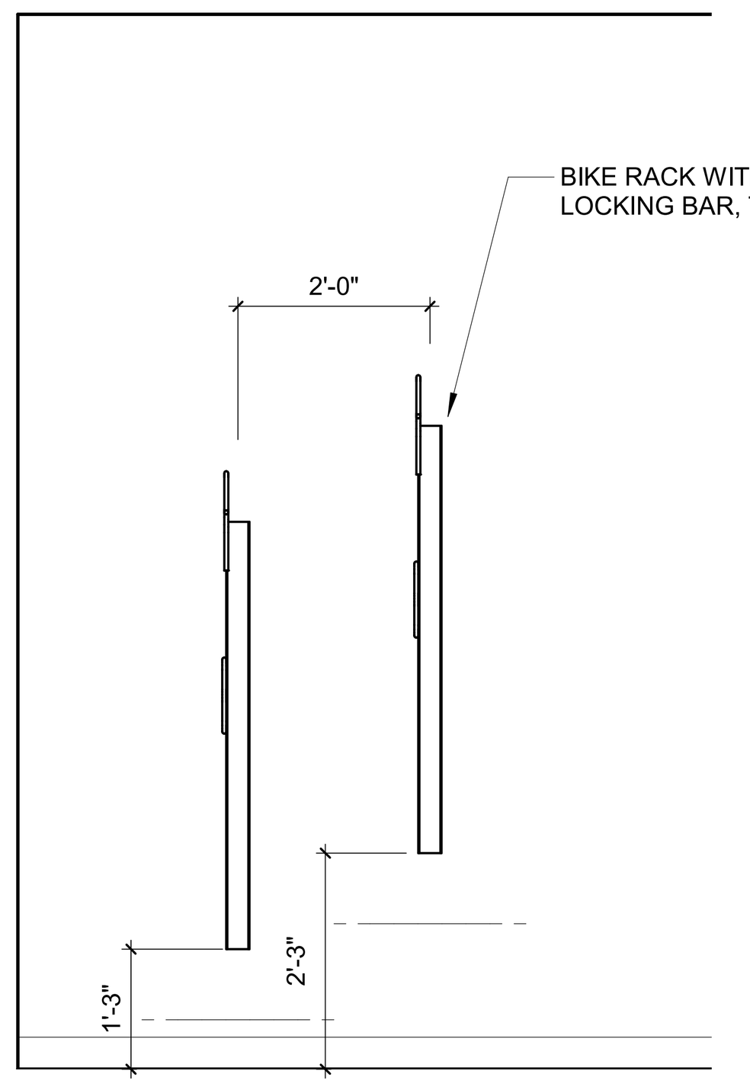
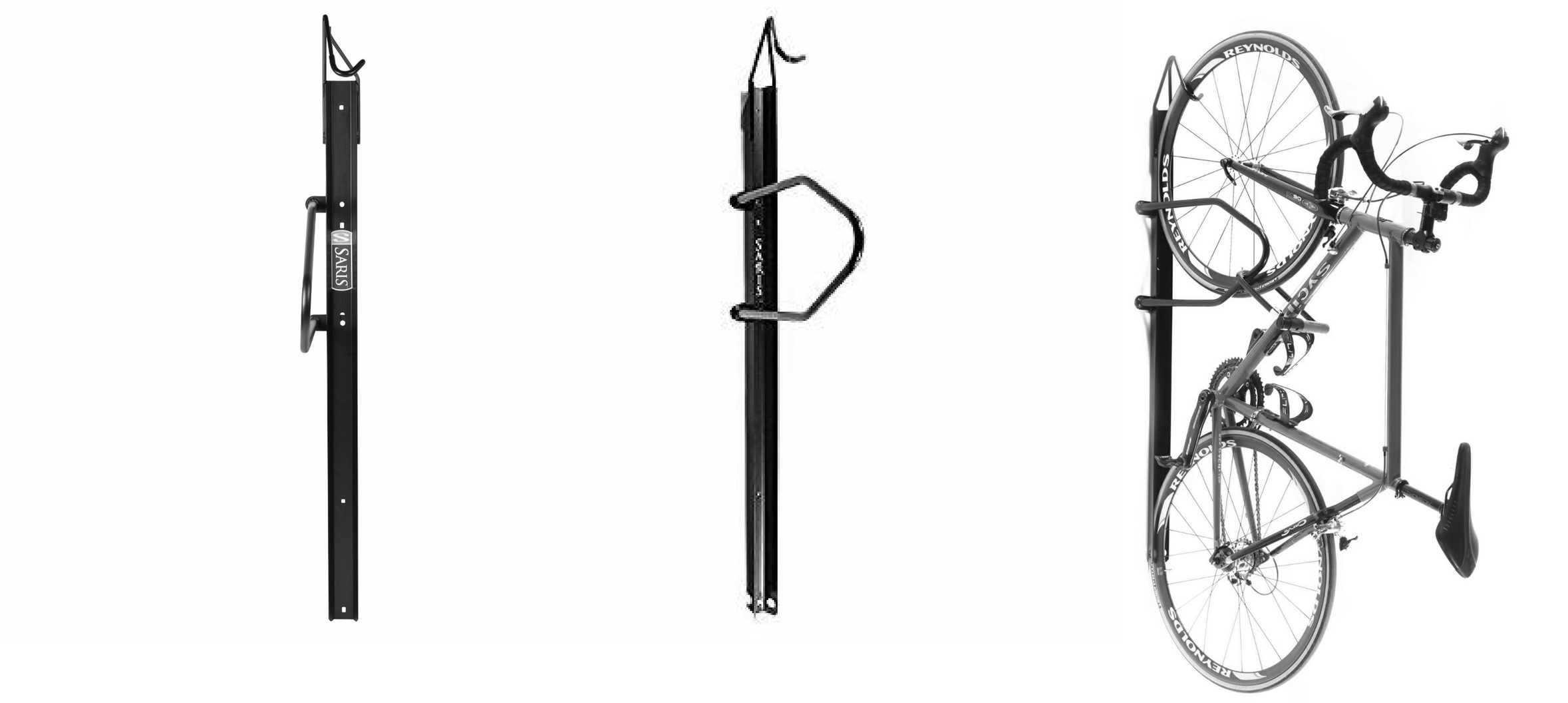
FIRE LIFE SAFETY LEGEND

Symbol	Description
	EXIT FIXTURE, DOUBLE FACED, DIRECTION OF ARROW(S) AS SHOWN.
	EXIT FIXTURE, SINGLE FACED, DIRECTION OF ARROW(S) AS SHOWN.
	COMMON PATH OF TRAVEL
	1 HR WALL
	2 HR WALL
	EXIT TRAVEL DISTANCE
	PROPERTY LINE
NAME (ROOM GSF, ROOM OCC, EXITS, OLF, OCC TYPE)	LIFE SAFETY SUMMARY TAG
23	OCCUPANTS AT OCCUPANCY EXIT
23	TOTAL OCCUPANTS AT EXIT DISCHARGE
23	TOTAL OCCUPANTS IN AREA
R - 37"	MINIMUM REQUIRED EGRESS WIDTH
P - 40"	PROVIDED (CLEAR) EGRESS WIDTH

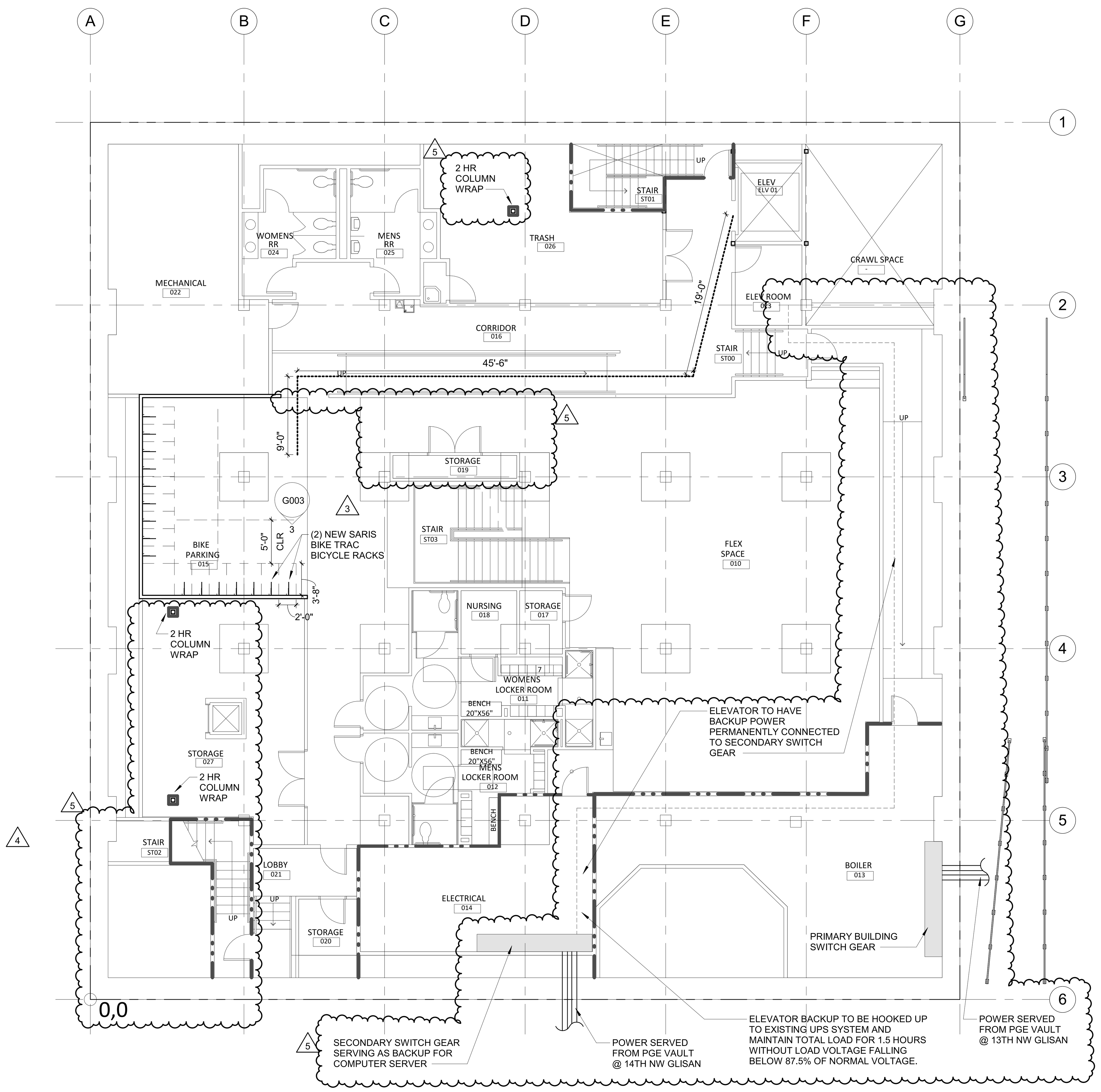
EGRESS WIDTH IS CALCULATED BASED ON OBC SECTION 1005.1: 0.3" PER OCCUPANT FOR STAIRWAYS AND 0.2" PER OCCUPANT FOR OTHER EGRESS COMPONENTS



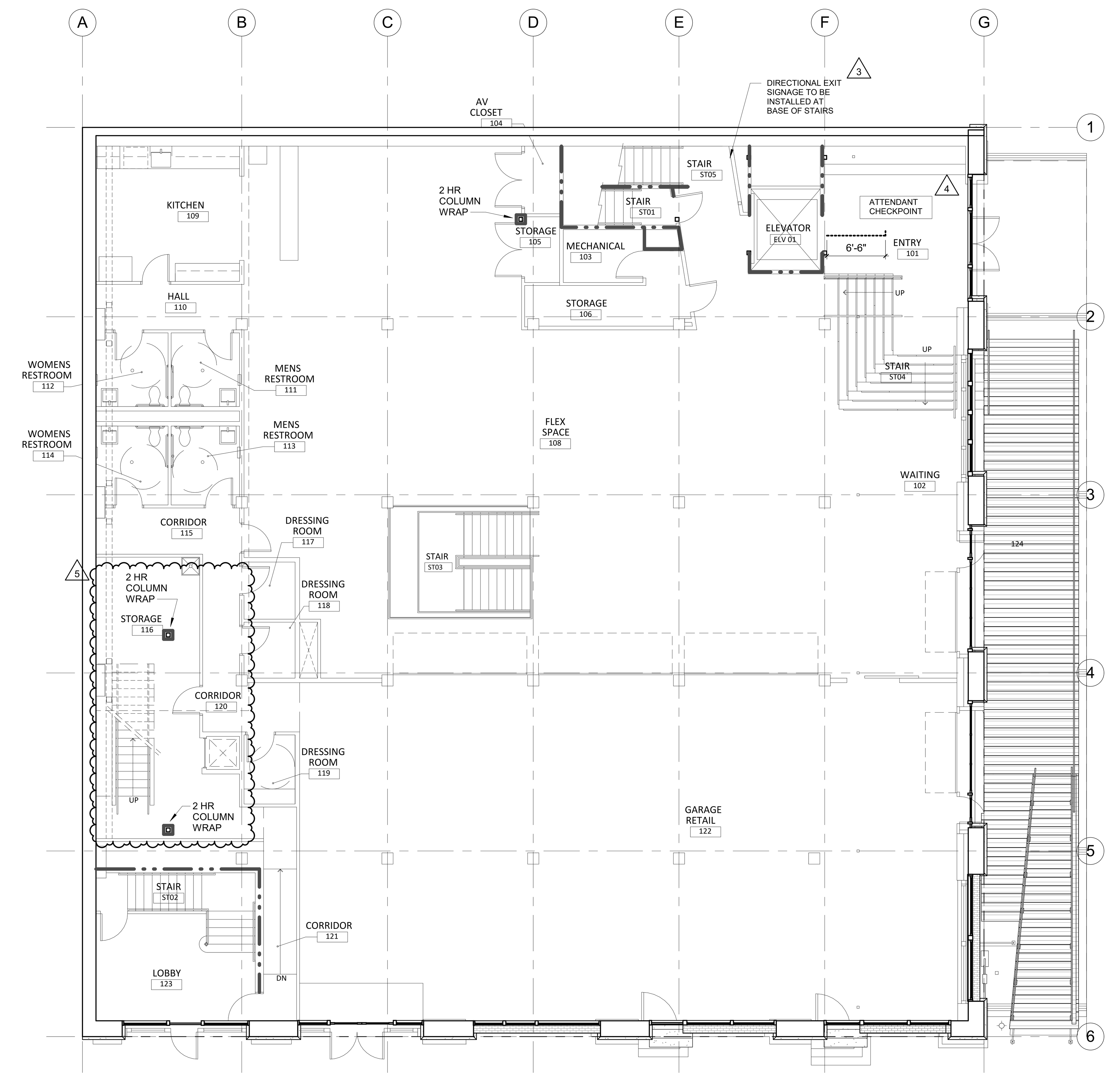
3 G003 BIKE RACK ELEVATION
1/2" = 1'-0"



4 G003 IMAGES OF BIKE RACK WITH LOCKING BAR TO BE INSTALLED - SARIS 6006
3" = 1'-0"



2 G003 BASEMENT - CODE ANALYSIS
1/8" = 1'-0"



1 G003 LEVEL 1 - CODE ANALYSIS
1/8" = 1'-0"

PERMIT DRAWINGS

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1645 NW HOYT
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503 444 2200

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REGISTERED ARCHITECT JOHN P. WRIGHT PORTLAND, OREGON 3587 STATE OF OREGON

SHEET TITLE:
CODE ANALYSIS - LIFE SAFETY

SHEET NO.:
G003

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FIRE LIFE SAFETY LEGEND

- EXIT FIXTURE, DOUBLE FACED, DIRECTION OF ARROW(S) AS SHOWN.
- EXIT FIXTURE, SINGLE FACED, DIRECTION OF ARROW(S) AS SHOWN.
- COMMON PATH OF TRAVEL
- 1 HR WALL
- 2 HR WALL
- EXIT TRAVEL DISTANCE
- PROPERTY LINE
- NAME / ROOM OSF / ROOM OCC / EXITS / OLF / OCC TYPE — LIFE SAFETY SUMMARY TAG
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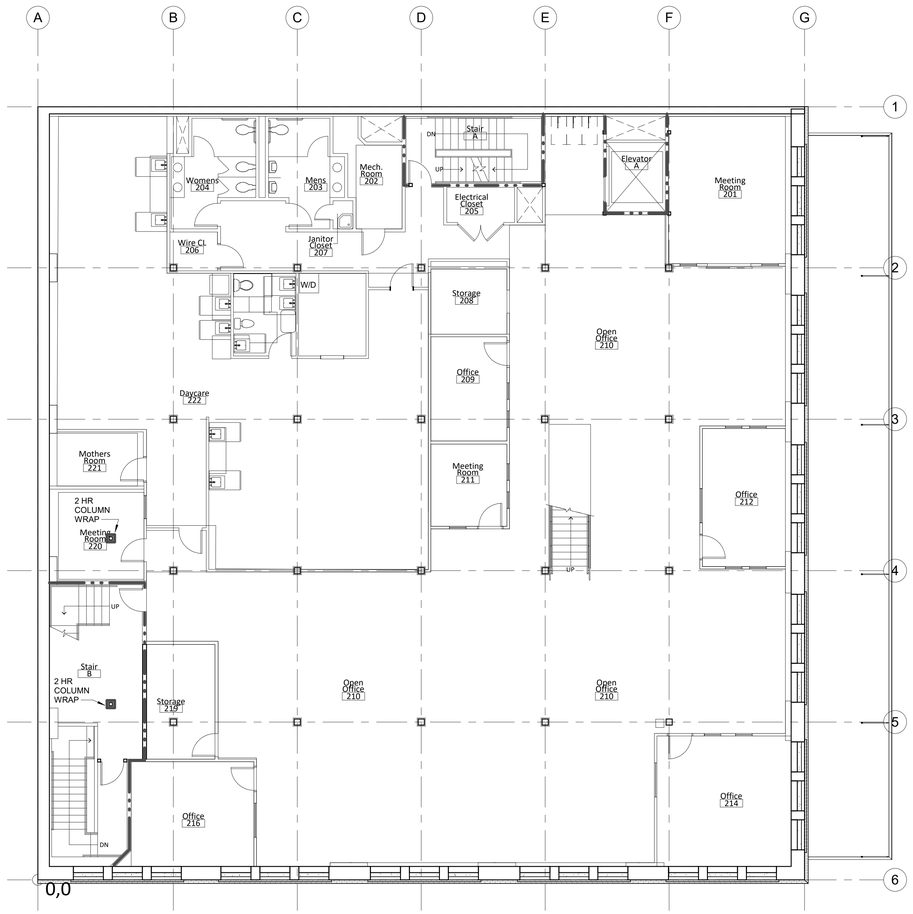
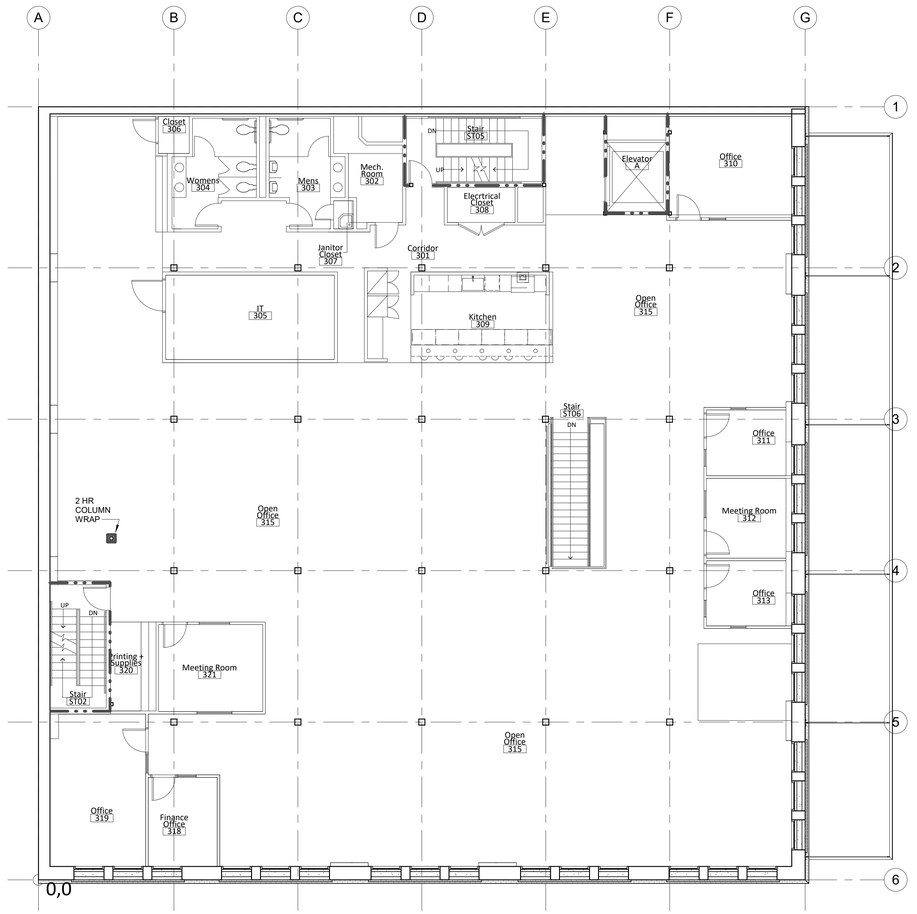


1 LEVEL 2 - CODE ANALYSIS
G003A 1/8" = 1'-0"



2 LEVEL 3 - CODE ANALYSIS
G003A 1/8" = 1'-0"

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1313 NW GLISAN ST
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PROJECT NO.: 13136
DRAWN: JD
DATE: 16 JULY 2018
PERMIT DRAWINGS

REVISION:	DESCRIPTION:
5	2019 05 14 PERMIT COMMENTS

REGISTERED ARCHITECT
JOHN R. WRIGHT
PORTLAND, OREGON
3587
STATE OF OREGON

PERMIT DRAWINGS

SHEET TITLE:
CODE ANALYSIS - LIFE SAFETY

SHEET NO.: **G003A** 5

FIRE LIFE SAFETY LEGEND

- EXIT FIXTURE, DOUBLE FACED, DIRECTION OF ARROW(S) AS SHOWN.
- EXIT FIXTURE, SINGLE FACED, DIRECTION OF ARROW(S) AS SHOWN.
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- 1 HR WALL
- 2 HR WALL
- EXIT TRAVEL DISTANCE
- PROPERTY LINE
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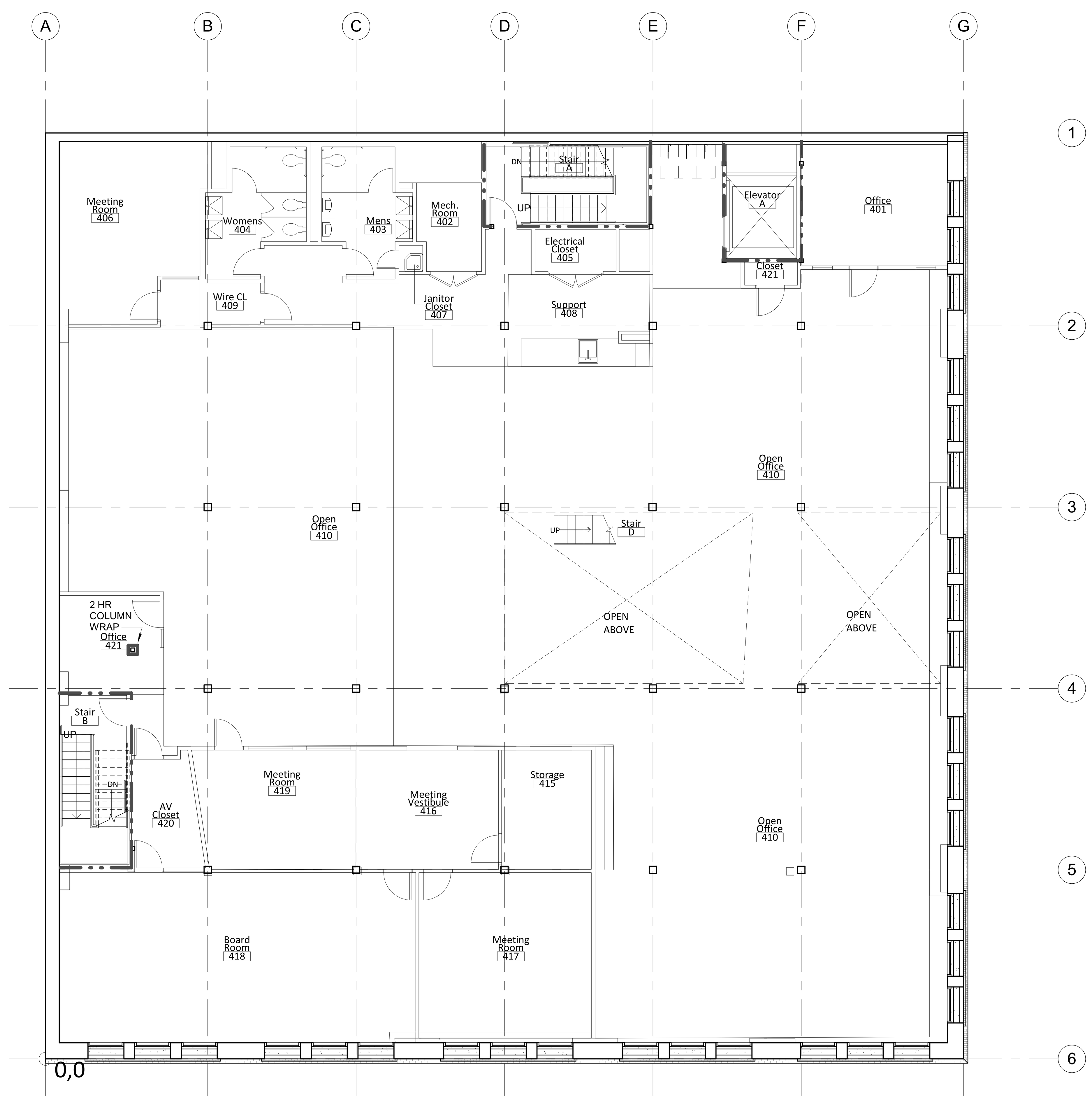
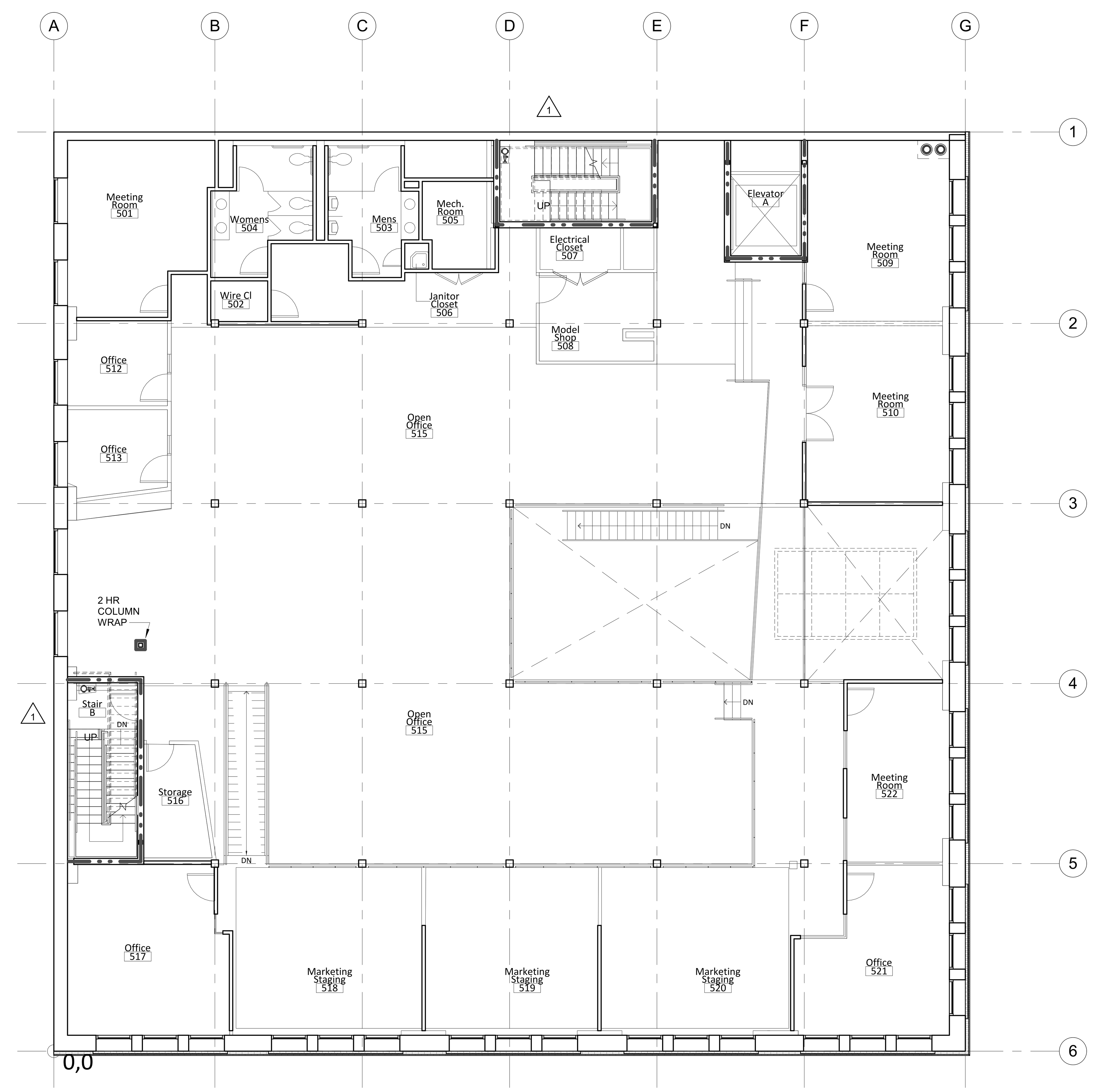


1 LEVEL 4 - CODE ANALYSIS
G003B 1/8" = 1'-0"



2 LEVEL 5 - CODE ANALYSIS
G003B 1/8" = 1'-0"

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503 444 2200

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PROJECT NO.: 13136
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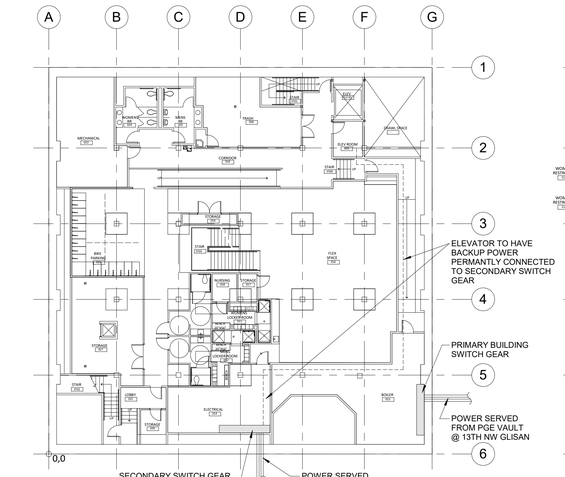
REGISTERED ARCHITECT JOHN P. WRIGHT PORTLAND, OREGON 3587 STATE OF OREGON

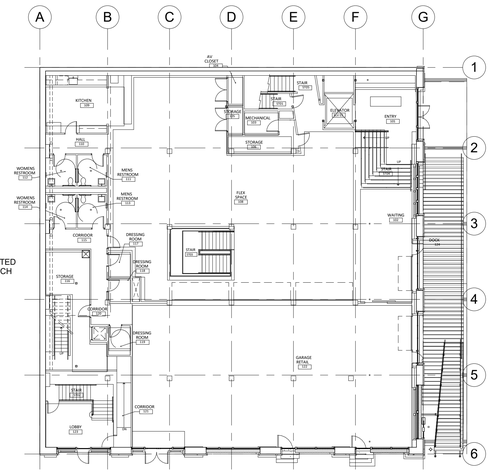
PERMIT DRAWINGS

SHEET TITLE:
CODE ANALYSIS - LIFE SAFETY

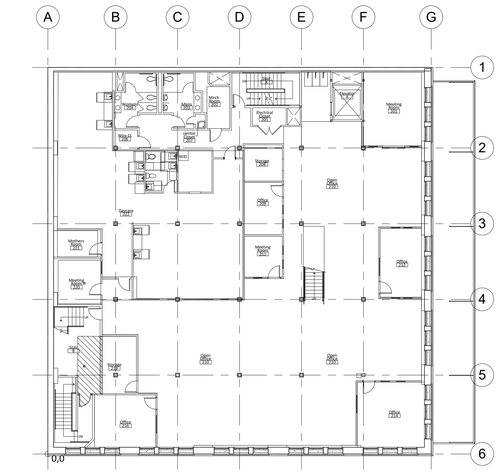
SHEET NO.:
G003B



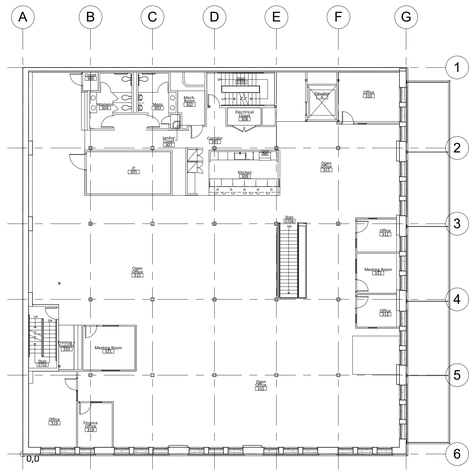
1 G004 BASEMENT 1/16" = 1'-0"



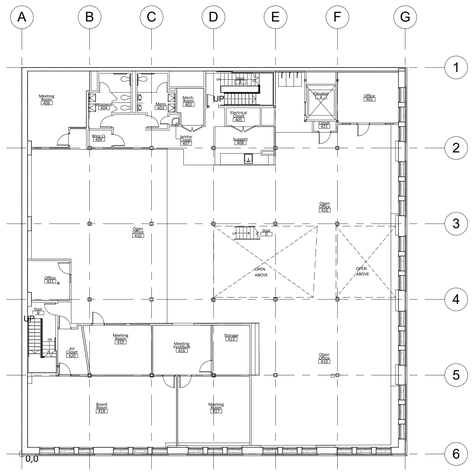
2 G004 LEVEL 1 1/16" = 1'-0"



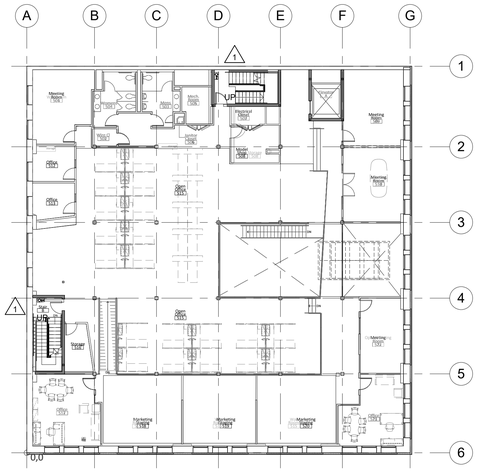
3 G004 LEVEL 2 1/16" = 1'-0"



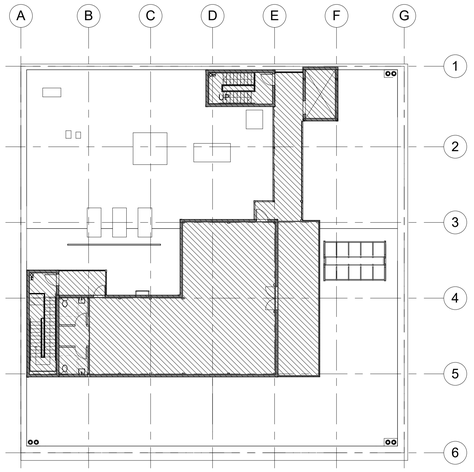
4 G004 LEVEL 3 1/16" = 1'-0"



5 G004 LEVEL 4 1/16" = 1'-0"



6 G004 LEVEL 5 1/16" = 1'-0"



7 G004 LEVEL 6 1/16" = 1'-0"

= AREA OF WORK UNDER THIS PERMIT

BUILDING OCCUPANCY - BASELINE*

EXISTING OCCUPANCY

FLOOR	PERMIT	AREA	OCCUPANCY / LOAD FACTOR	OCCUPANT LOAD
FIFTH FLOOR	91-100265-CO	8,173	B / 100	82
FOURTH FLOOR	91-100265-CO	8,744	B / 100	88
	91-100265-CO	192	B (CONF) / 15	13
THIRD FLOOR	91-100265-CO	8,957	B / 100	90
SECOND FLOOR	00-126360-CO	8,644	B / 100	87
FIRST FLOOR	91-105022-CO	730	B / 100	8
	91-105022-CO	7,758	M / 30	258
	91-105022-CO	815	M (STOR) / 300	3
BASEMENT		7,562	S / 300	26
BUILDING TOTAL		**51,575 AREA**		**655 OCC**

*BASELINE ESTABLISHED BASED ON LEGAL BUILDING OCCUPANCY AS OF OCTOBER 1, 2004.

BUILDING OCCUPANCY - 2006

EXISTING OCCUPANCY

FLOOR	PERMIT	AREA	OCCUPANCY / LOAD FACTOR	OCCUPANT LOAD
BASEMENT	06-125897-CO	1,466	B / 100	15
	06-125887-CO	3,295	M / 30	110
	06-125887-CO	1,981	B (ACSRY) 300	7
	06-125887-CO	820	M (ACSRY) 300	3
BUILDING TOTAL		**51,575 AREA**		**764 OCC**

BUILDING OCCUPANCY - 2012

EXISTING OCCUPANCY

FLOOR	PERMIT	AREA	OCCUPANCY/LOAD FACTOR	OCCUPANT LOAD
FIFTH FLOOR	2012-130000-FA	6,883	B / 100	69
	2012-130000-FA	668	B (CONF) / 15	45
	2012-130000-FA	504	B (ACSRY) / 300	3
FOURTH FLOOR	2012-130000-FA	8,158	B / 100	82
	2012-130000-FA	288	B (CONF) / 15	20
	2012-130000-FA	511	B (ACSRY) / 300	3
THIRD FLOOR	2012-130000-FA	7,855	B / 100	79
	2012-130000-FA	288	B (CONF) / 15	20
	2012-130000-FA	663	B (ACSRY) / 300	3
SECOND FLOOR	2012-130000-FA	4,853	B / 100	51
	2012-130000-FA	557	B (CONF) / 15	39
	2012-130000-FA	344	B (ACSRY) / 300	4
	2012-130000-FA	1,895	B / 100	19
FIRST FLOOR	2012-130000-FA	3,371	B / 100	34
	2012-130000-FA	273	B (ACSRY) / 30	1
	2012-130000-FA	1,150	B (EXCR) / 50	23
	2012-130000-FA	3,345	M / 30	112
	2012-130000-FA	1,295	M (ACSRY) / 300	5
BASEMENT	2012-130000-FA	5,732	B / 100	58
	2012-130000-FA	3,080	B (ACSRY) / 300	11
BUILDING TOTAL		**51,713 AREA**		**681 OCC**

BUILDING OCCUPANCY - 2017

EXISTING OCCUPANCY

FLOOR	PERMIT	AREA	OCCUPANCY/LOAD FACTOR	OCCUPANT LOAD
SECOND FLOOR	17-220272-FA	4,853	B / 100	51
	17-220272-FA	557	B (CONF) / 15	39
	17-220272-FA	344	B (ACSRY) / 300	4
	17-220272-FA	1,895	I / 35	54
BUILDING TOTAL		**51,713 AREA**		**716 OCC**

BUILDING OCCUPANCY - PROPOSED 2018

4

FLOOR LEVEL - SIXTH FLOOR ROOM #	ROOM NAME	AREA	OCCUPANCY / LOAD FACTOR	OCCUPANT LOAD
601	OPEN OFFICE	1,452	B / 100	15
602	PATIO	429	B (ACSRY) / 15	29
SIXTH FLOOR TOTAL		**1,881**		**44**
BUILDING TOTAL		**53,594 AREA**		**760 OCC** 5

BUILDING OCCUPANCY & AREA - SUMMARY OF PROPOSED

OCCUPANCY	OCC:B	OCC:M	OCC:I	TOTAL
BASEMENT	69	-	-	69
FIRST LEVEL	58	117	-	175
SECOND LEVEL	94	-	54	148
THIRD LEVEL	102	-	-	102
FOURTH LEVEL	105	-	-	105
FIFTH LEVEL	117	-	-	117
SIXTH LEVEL	**44**	-	-	**44**
TOTALS	**589**	**117**	**54**	**760**

AREA	TOTAL
BASEMENT	8,812
FIRST LEVEL	9,434
SECOND LEVEL	7,649
THIRD LEVEL	8,806
FOURTH LEVEL	8,957
FIFTH LEVEL	8,055
SIXTH LEVEL	**1,881**
TOTALS	**53,594** 5

YEAR	AREA/OCCUPANCY B	M	I	TOTAL AREA
BASELINE*	38,887	12,688	0	= 51,575
2017	45,178	4,640	1,895	= 51,713
2018 (PROPOSED)	**47,059** 5	**4,640**	**1,895**	**= 53,594** 5

(X 1/3 = 17,192 SQ FT)

BUILDING OCCUPANCY - SUMMARY OF CHANGE

SEISMIC TRIGGERS (DEFINED IN TITLE 24.85):
> 150 NEW OCCUPANTS
> 1/3 USE AREA CHANGE TO HIGHER HAZARD LEVEL
HAZARD LEVELS (HIGH TO LOW)
1. A, E, INSTITUTIONAL, & H
2. R, SR, INSTITUTIONAL
3. B, M
4. F, S AND S-PKG
5. R-3, U

YEAR	PERMIT	CHANGE IN OCC	BLDG OCC TOTAL
BASELINE*			655
2006	06-125897	+109	764
2012	12-160877	-83	681
2017	17-220272	+35	716
2018 (PROPOSED)		**+44** 5	**760**

NET CHANGE FROM NOVEMBER 2004 WHEN TITLE 24 WAS ADOPTED: +105 OCC

YEAR	PERMIT	CHANGE IN OCC	TOTAL AREA
2006	06-125897	S - B/M	7,562
2012	12-160877	B	1,250
2017	17-220272	B - I	1,895
2018 (PROPOSED)		**B**	**1,881** 5

4

NET CHANGE FROM NOVEMBER 2004 WHEN TITLE 24 WAS ADOPTED: 12,588 SF < 17,192 SF

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KEEN OFFICE ADDITION

KEEN INC

1313 NW GLISAN ST PORTLAND, OREGON

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PERMIT DRAWINGS

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5	2019 05 14	PERMIT COMMENTS

REGISTERED ARCHITECT JOHN R. WRIGHT PORTLAND, OREGON 3587 STATE OF OREGON

PERMIT DRAWINGS

SHEET TITLE:
CODE ANALYSIS - BUILDING SUMMARY

SHEET NO.:
G004

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE STATE OF OREGON 2014 STRUCTURAL SPECIALTY CODE; CITY AND COUNTY ORDINANCES; AND APPLICABLE, HEALTH, PLUMBING, MECHANICAL, FIRE AND ELECTRICAL CODES. FEES ASSOCIATED WITH IT SHALL BE INCLUDED IN THE CONTRACTOR'S BASE BID.
2. CONTRACTOR SHALL VISIT SITE AND BECOME THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS PRIOR TO BIDDING.
3. COORDINATE WITH OWNER FOR THE SCHEDULING OF ALL WORK AND UTILITY CONNECTIONS/SHUTDOWNS REQUIRED.
4. COORDINATE WITH THE OTHER TRADES, PRIOR TO BID, AND INCLUDE IN THE BASE BID THE ELECTRICAL DISCONNECTION OF ANY EQUIPMENT BEING DEMOLISHED, EVEN IF NOT EXPLICITLY IDENTIFIED IN THE ELECTRICAL PLANS.
5. STRUCTURAL MEMBERS SHALL NOT BE CUT OR PENETRATED UNLESS FIRST APPROVED BY THE STRUCTURAL ENGINEER.
6. TRAFFIC CONTROL (INCLUDING PEDESTRIAN WALKWAYS) TO BE INCLUDED IN THE BASE BID. CONTRACTOR TO BE RESPONSIBLE FOR PLAN DESIGN AND PERMIT AND ANY ASSOCIATED FEES.
7. CONTRACTOR TO PROVIDE ANY APPROPRIATE AND REQUIRED PROTECTION IN ORDER TO ALLOW ALL MAIN ENTRY DOORS TO REMAIN IN FUNCTION AS BEFORE AT ALL TIMES.
8. CONTRACTOR TO PROTECT EXISTING STOREFRONTS, WALLS, FLOORS, FURNITURE...ETC.

GENERAL NOTES - FLOOR PLAN

1. DIMENSIONS ARE TO FACE OF FRAMING AND MASONRY OR TO CENTERLINE OF COLUMNS AND OPENINGS U.N.O.

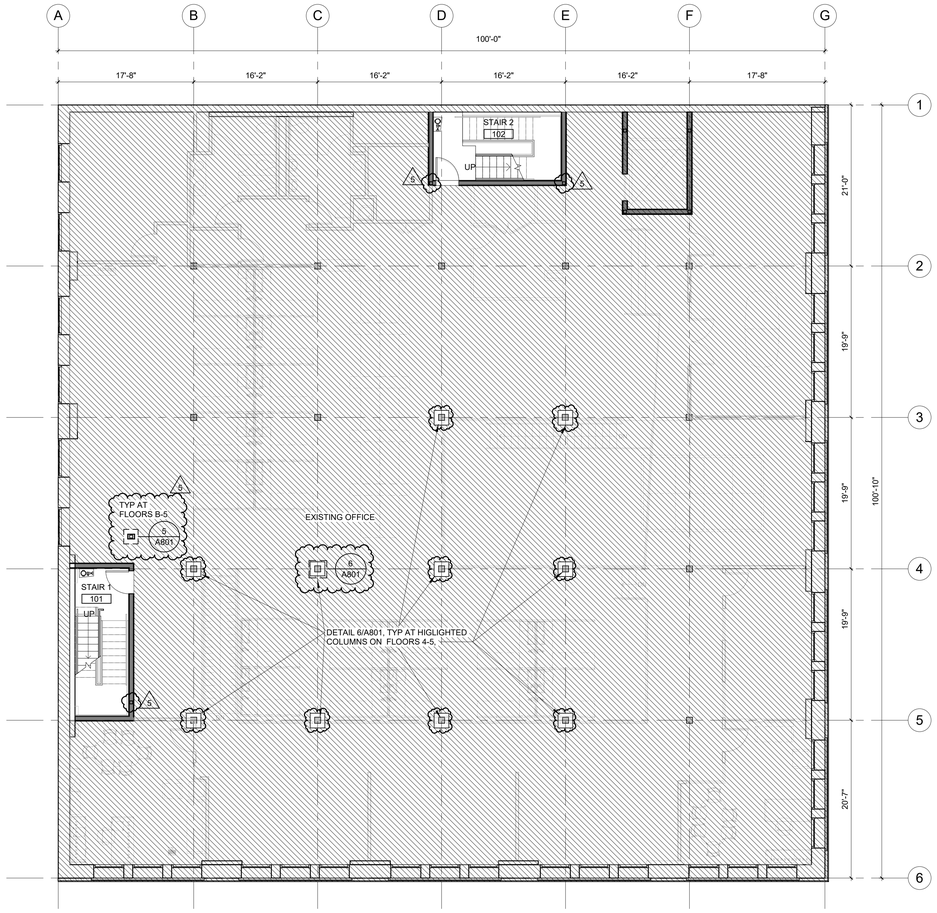
FLOOR PLAN LEGEND

EXISITNG WALL/ COMPONENT

NEW WALL/ COMPONENT

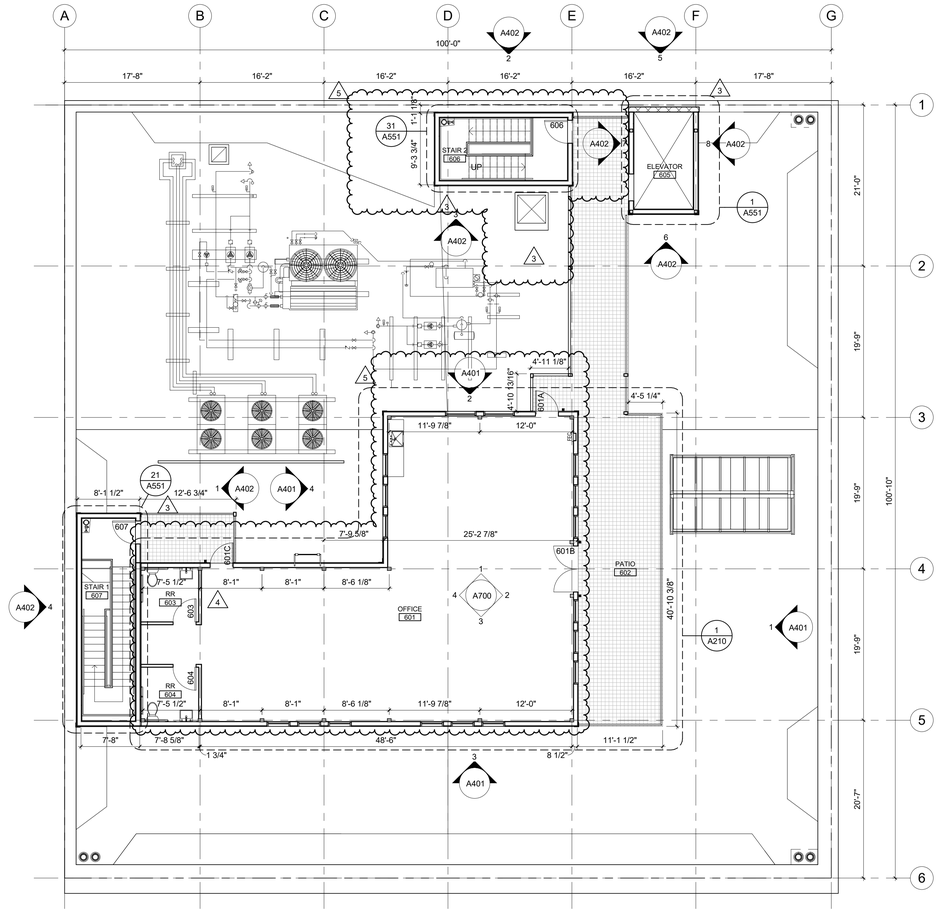
METAL GRATING DECK, SEE ASSEMBLY F2

ANSI CLEAR FLOOR SPACE



2 A200 LEVEL 5
1/8" = 1'-0"

0' 2' 4' 8' 16'



1 A200 LEVEL 6
1/8" = 1'-0"

0' 2' 4' 8' 16'

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REGISTERED ARCHITECT
JOHN R. WRIGHT
PORTLAND, OREGON
3587
STATE OF OREGON

PERMIT DRAWINGS

SHEET TITLE:
FLOOR PLANS

SHEET NO.:
A200

GENERAL NOTES

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2. CONTRACTOR SHALL VISIT SITE AND BECOME THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS PRIOR TO BIDDING.
3. COORDINATE WITH OWNER FOR THE SCHEDULING OF ALL WORK AND UTILITY CONNECTIONS/SHUTDOWNS REQUIRED.
4. COORDINATE WITH THE OTHER TRADES, PRIOR TO BID, AND INCLUDE IN THE BASE BID THE ELECTRICAL DISCONNECTION OF ANY EQUIPMENT BEING DEMOLISHED, EVEN IF NOT EXPLICITLY IDENTIFIED IN THE ELECTRICAL PLANS.
5. STRUCTURAL MEMBERS SHALL NOT BE CUT OR PENETRATED UNLESS FIRST APPROVED BY THE STRUCTURAL ENGINEER.
6. TRAFFIC CONTROL (INCLUDING PEDESTRIAN WALKWAYS) TO BE INCLUDED IN THE BASE BID. CONTRACTOR TO BE RESPONSIBLE FOR PLAN DESIGN AND PERMIT AND ANY ASSOCIATED FEES.
7. CONTRACTOR TO PROVIDE ANY APPROPRIATE AND REQUIRED PROTECTION IN ORDER TO ALLOW ALL MAIN ENTRY DOORS TO REMAIN IN FUNCTION AS BEFORE AT ALL TIMES.
8. CONTRACTOR TO PROTECT EXISTING STOREFRONTS, WALLS, FLOORS, FURNITURE...ETC.

GENERAL NOTES - FLOOR PLAN

1. DIMENSIONS ARE TO FACE OF FRAMING AND MASONRY OR TO CENTERLINE OF COLUMNS AND OPENINGS U.N.O.

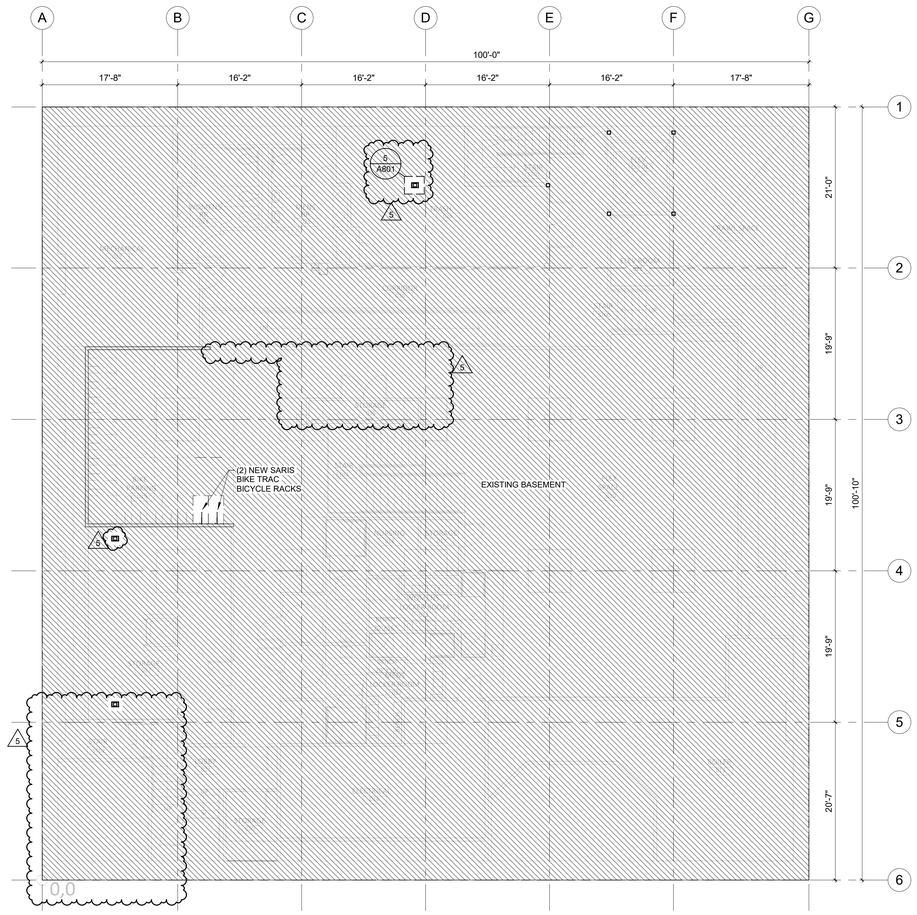
FLOOR PLAN LEGEND

EXISITNG WALL/ COMPONENT

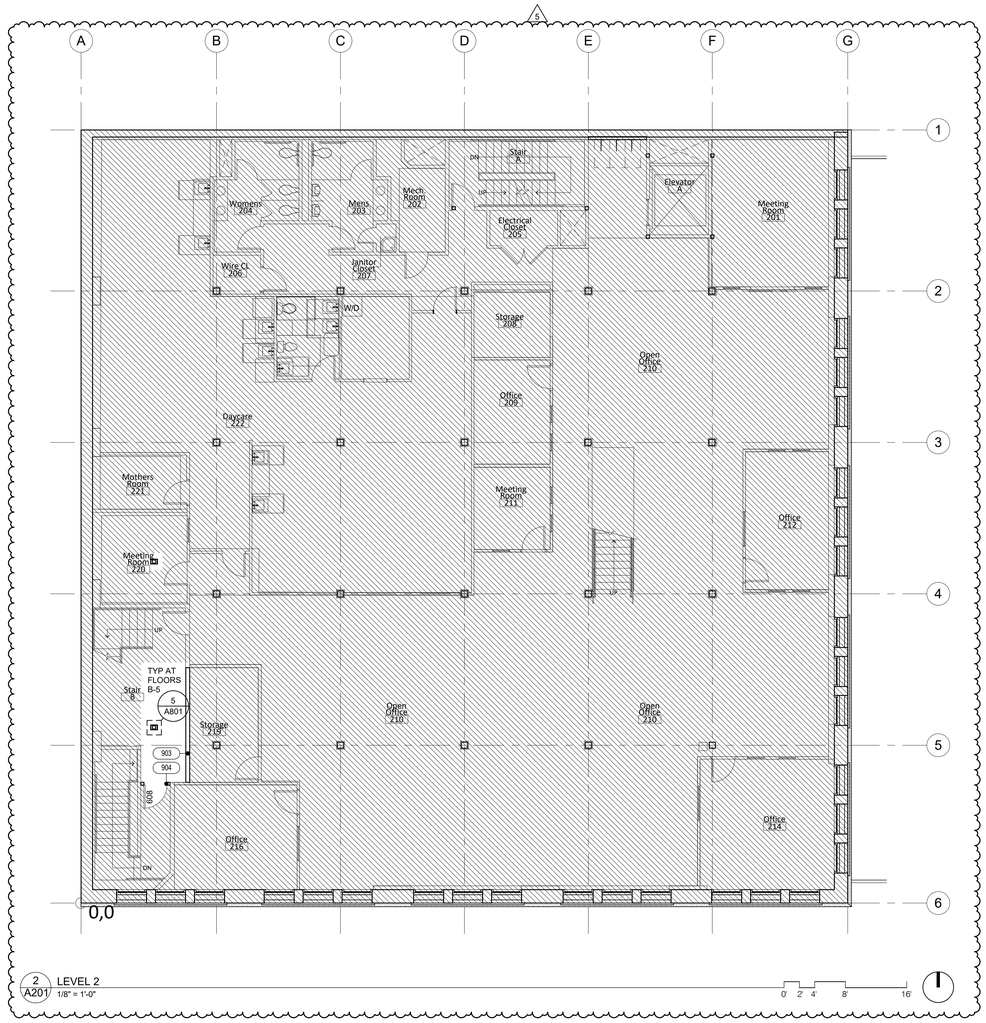
NEW WALL/ COMPONENT

METAL GRATING DECK, SEE ASSEMBLY F2

ANSI CLEAR FLOOR SPACE



1 A201 BASEMENT
1/8" = 1'-0"
0' 2' 4' 8' 16'



2 A201 LEVEL 2
1/8" = 1'-0"
0' 2' 4' 8' 16'

C 2K
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PORTLAND OREGON 97209
503 444 2200

CITY STAMP

KEEN OFFICE ADDITION

KEEN INC

1313 NW GLISAN ST PORTLAND, OREGON

PROJECT NO.: 13136
DRAWN: JD
DATE: 16 JULY 2018
PERMIT DRAWINGS

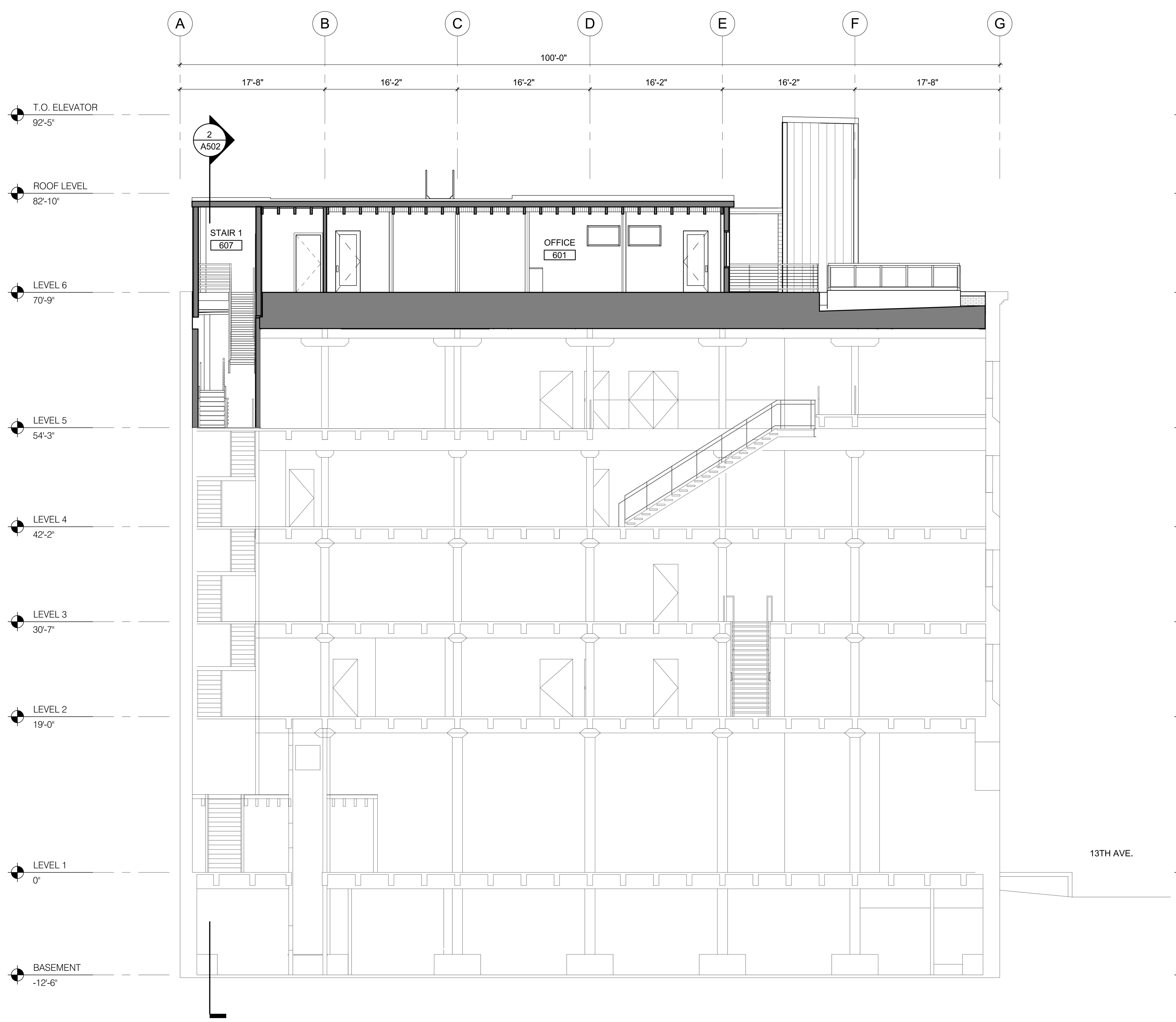
REVISION:	*DESCRIPTION:*	
4	2019 02 26	PERMIT COMMENTS
5	2019 05 14	PERMIT COMMENTS

REGISTERED ARCHITECT
JOHN R. WRIGHT
PORTLAND, OREGON
3587
STATE OF OREGON

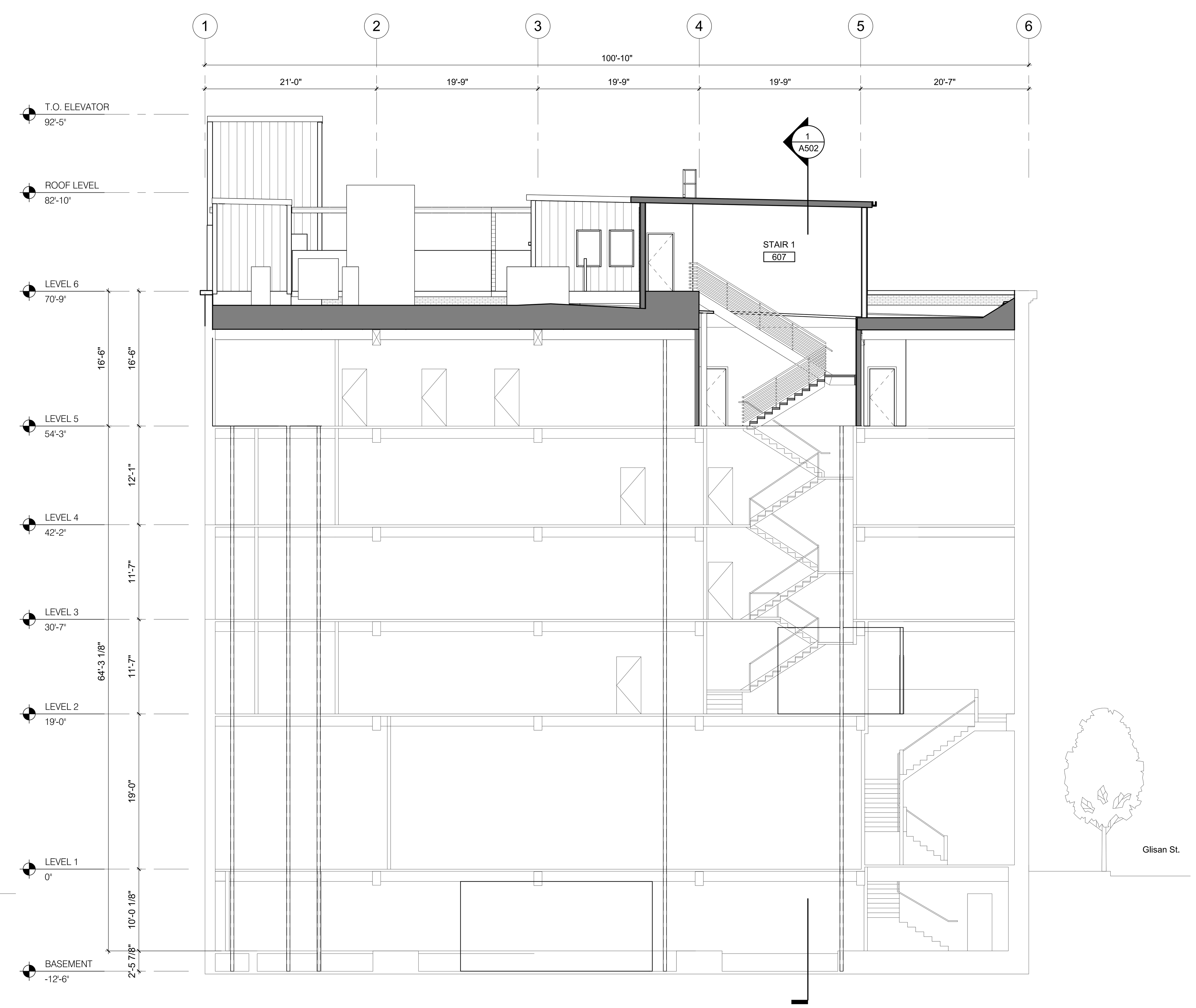
PERMIT DRAWINGS

SHEET TITLE:
FLOOR PLANS

SHEET NO.: 4
A201



1 A502 EAST / WEST BUILDING SECTION
1/8" = 1'-0"



2 A502 NORTH / SOUTH BUILDING SECTION
1/8" = 1'-0"

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PERMIT DRAWINGS

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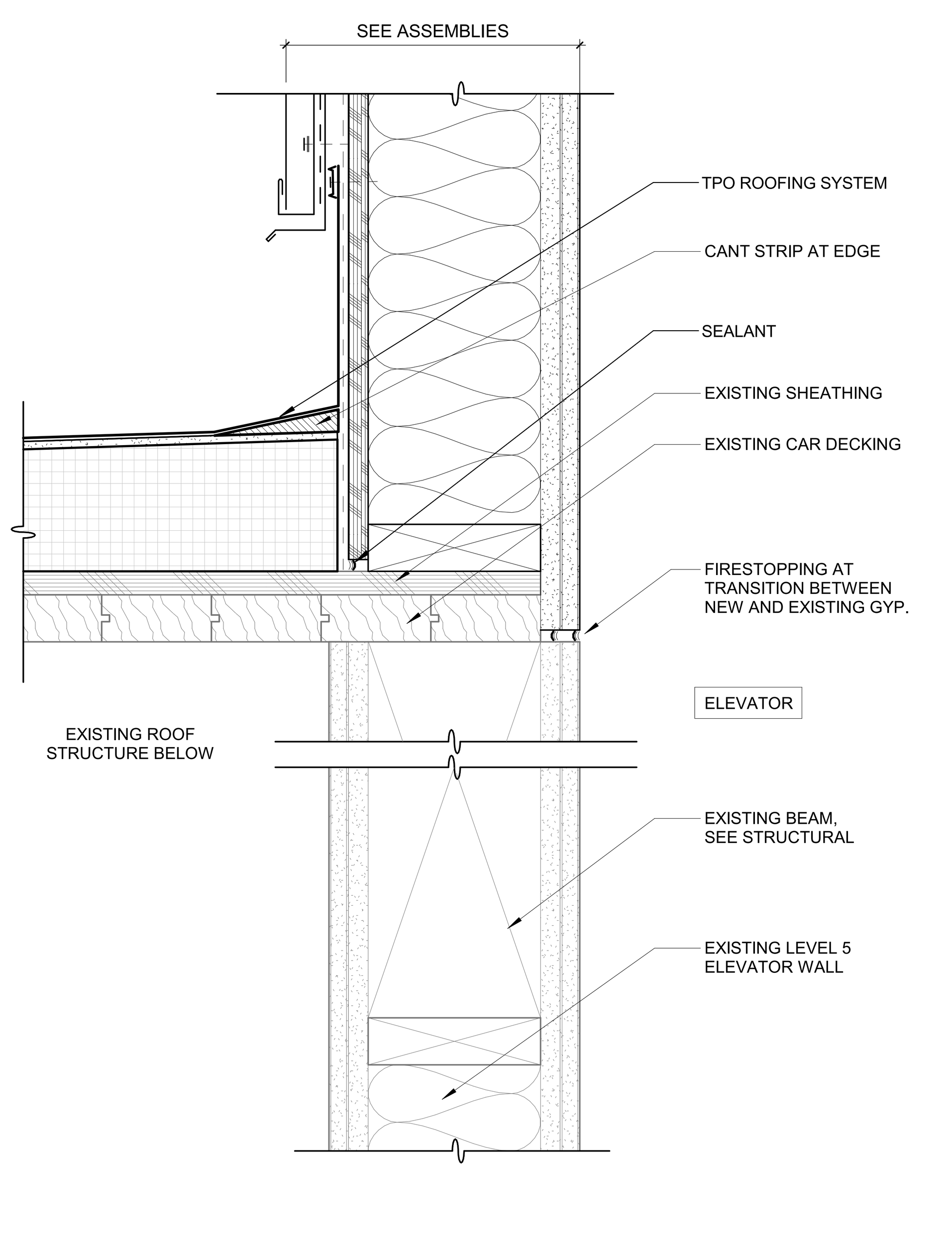
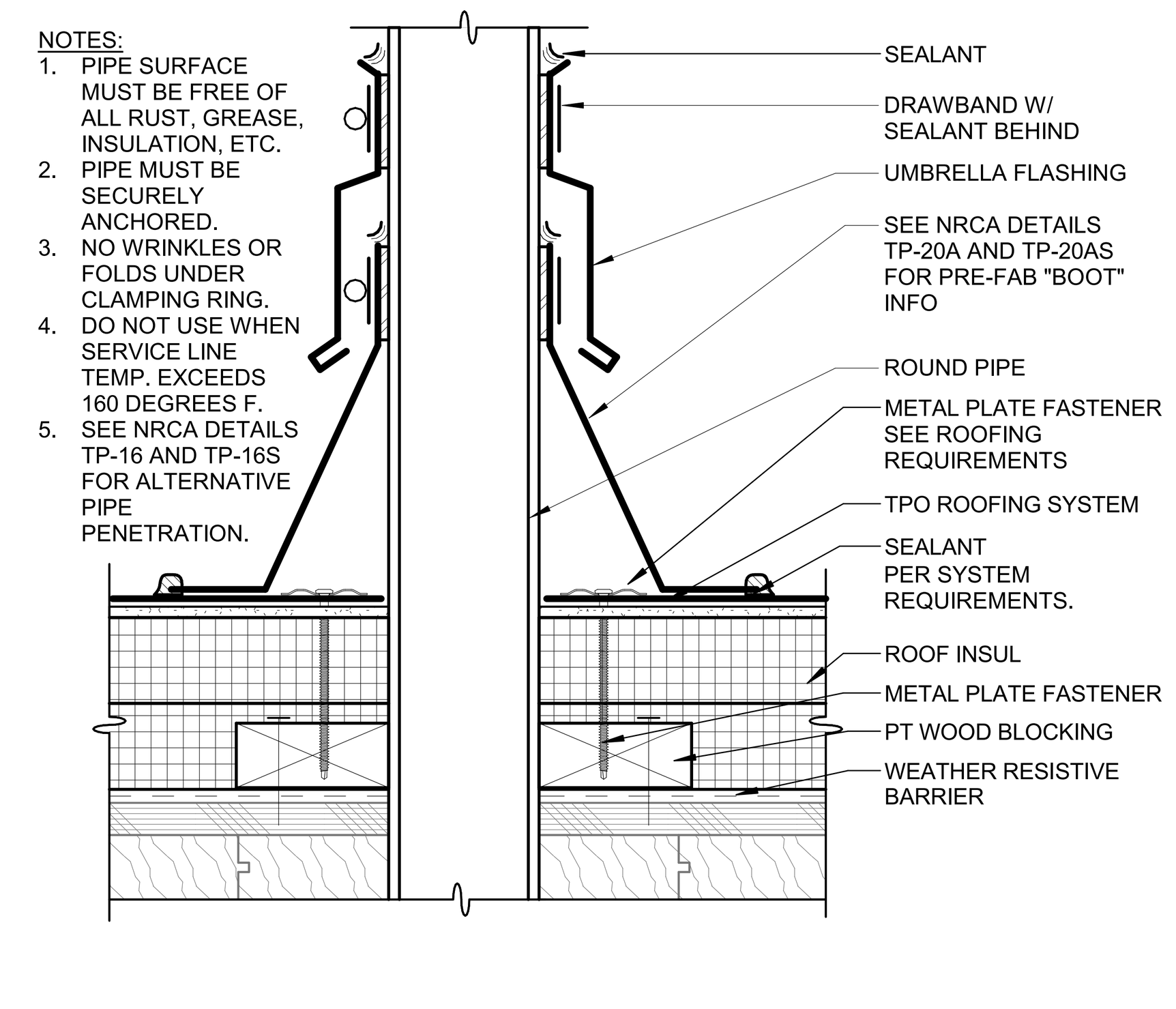
3

SHEET TITLE:
BUILDING SECTIONS

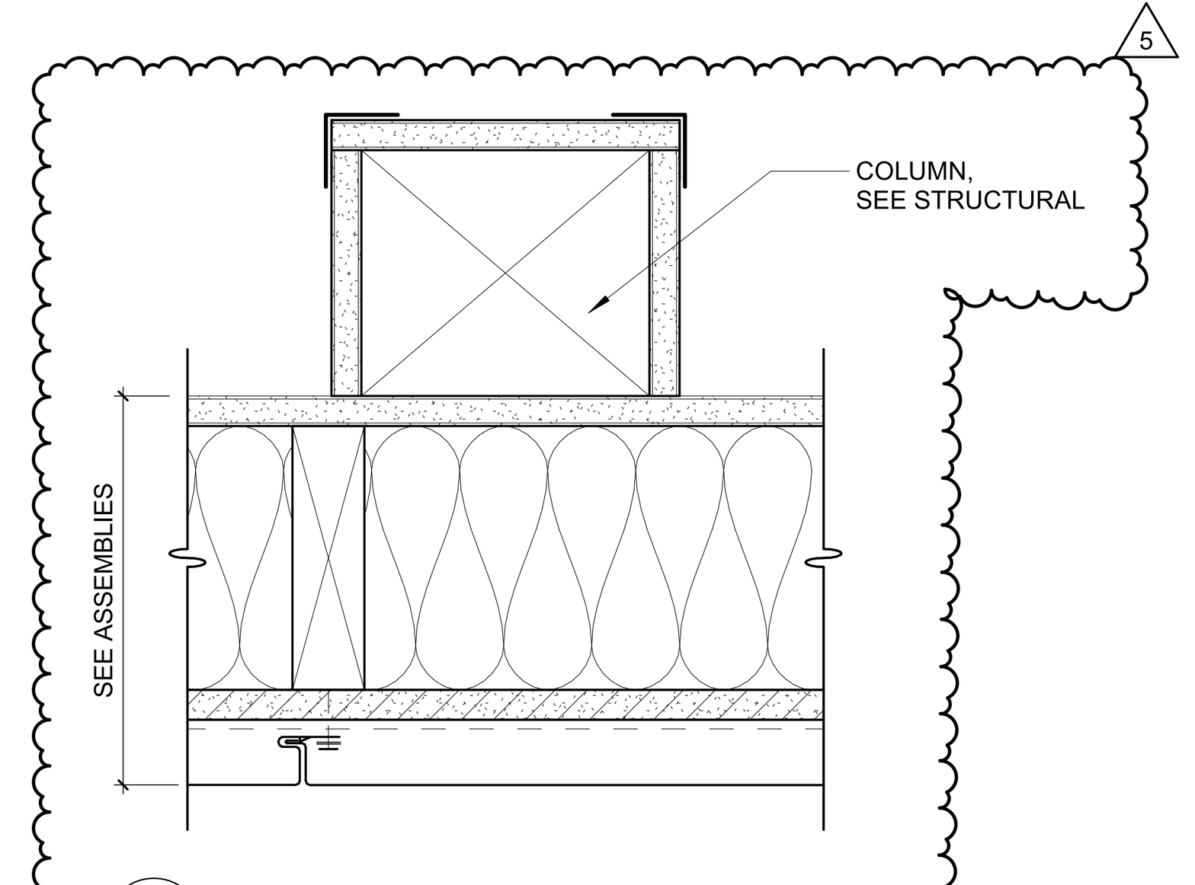
SHEET NO.:
A502



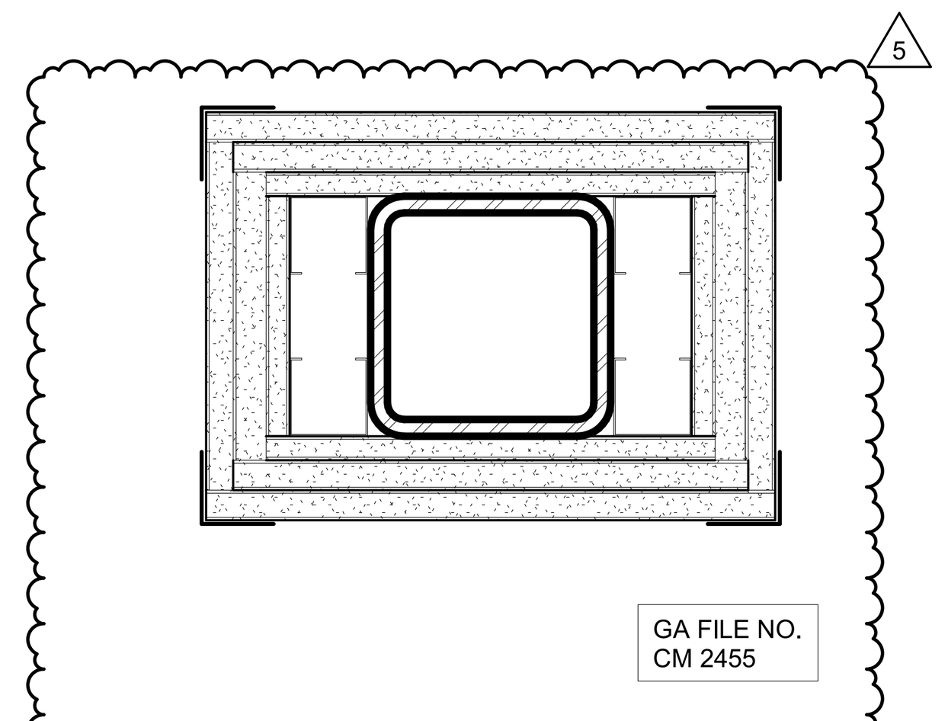
1 A801 ELEVATOR WALL @ EXISTING ROOF
3" = 1'-0"



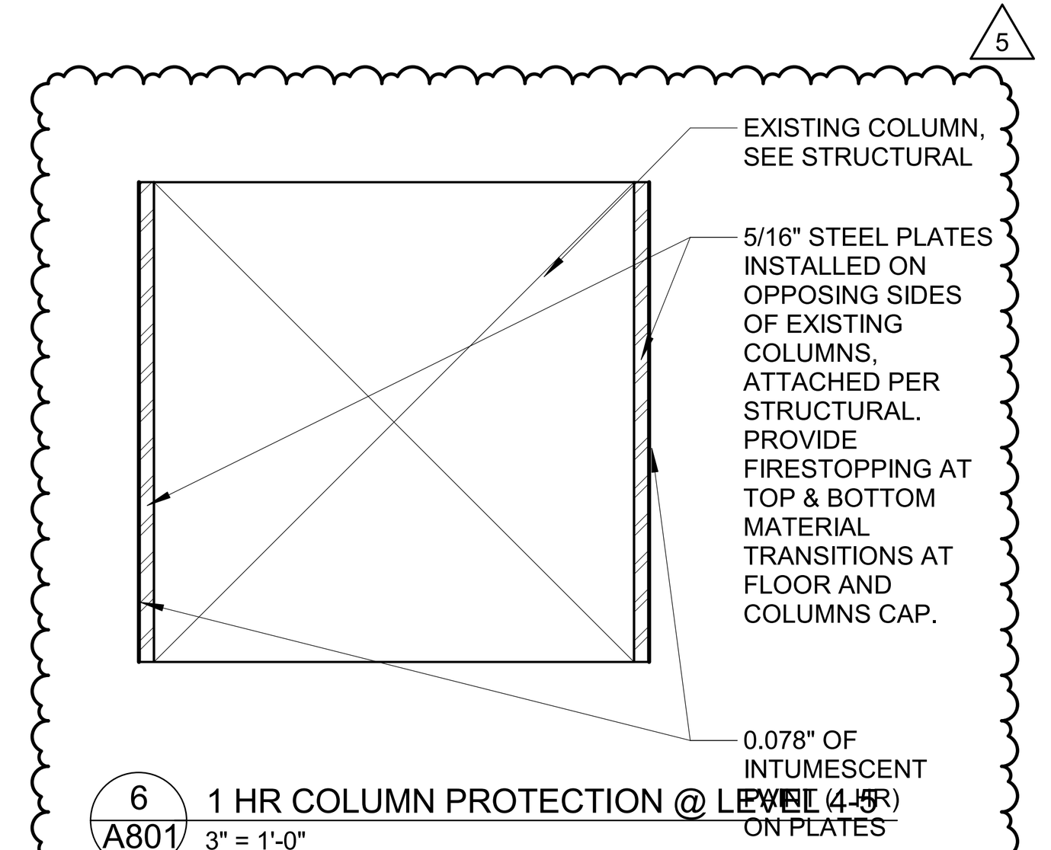
3 A801 ROOF PIPE PENETRATION
3" = 1'-0"



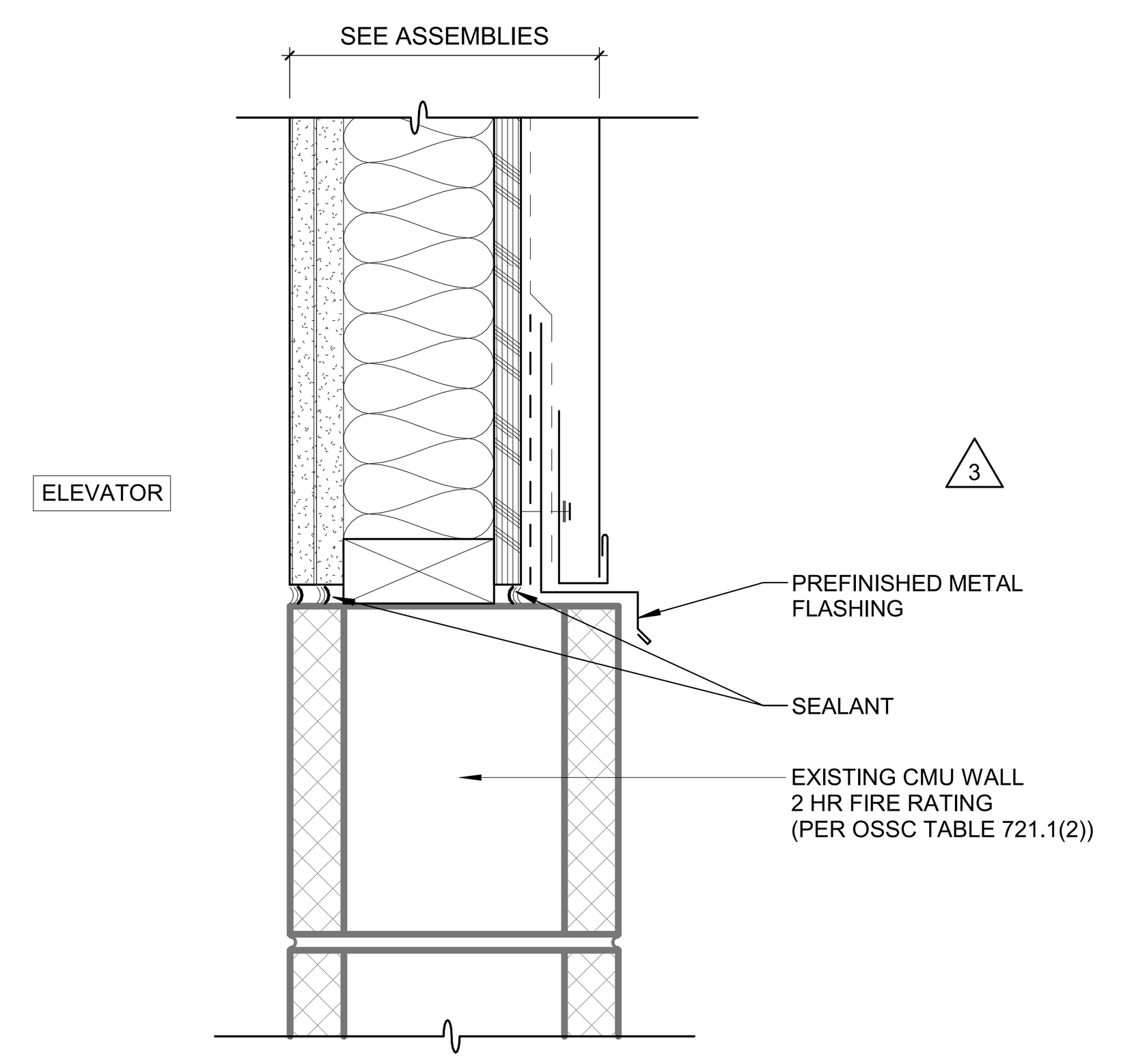
4 A801 1 HR COLUMN PROTECTION @ OFFICE
3" = 1'-0"



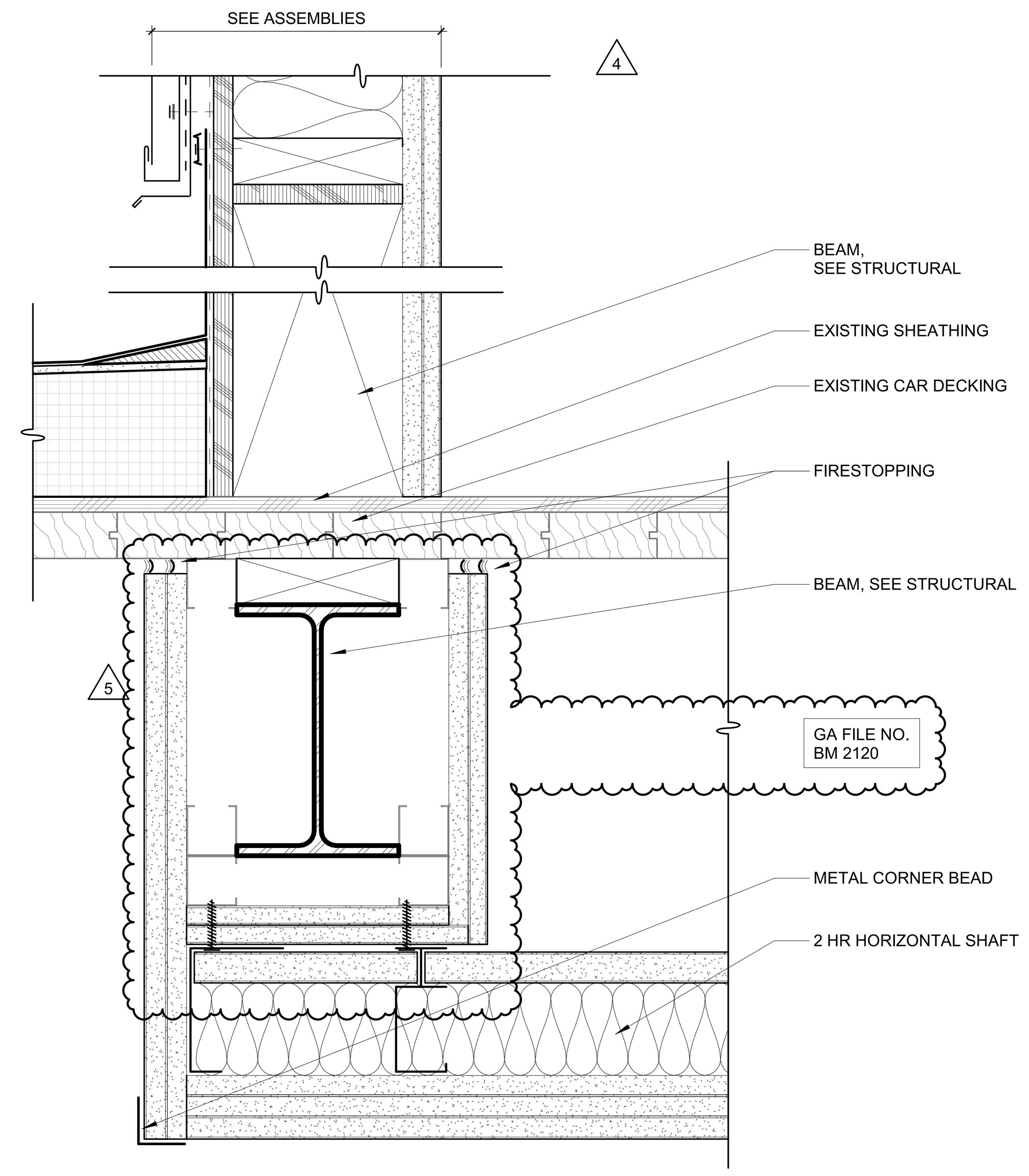
5 A801 2 HR COLUMN PROTECTION @ STAIR
3" = 1'-0"



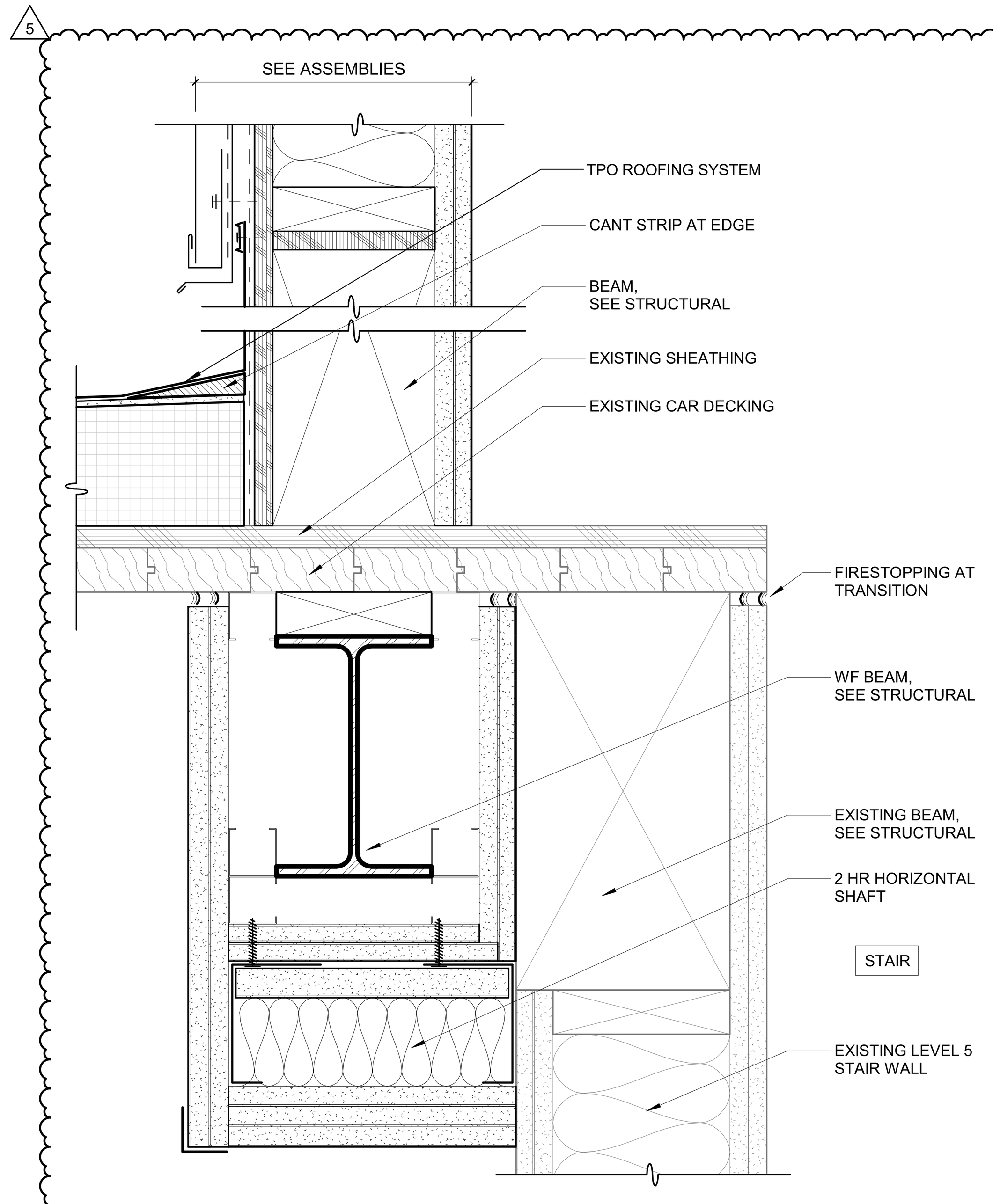
6 A801 1 HR COLUMN PROTECTION @ LEVEL 4-5
3" = 1'-0"



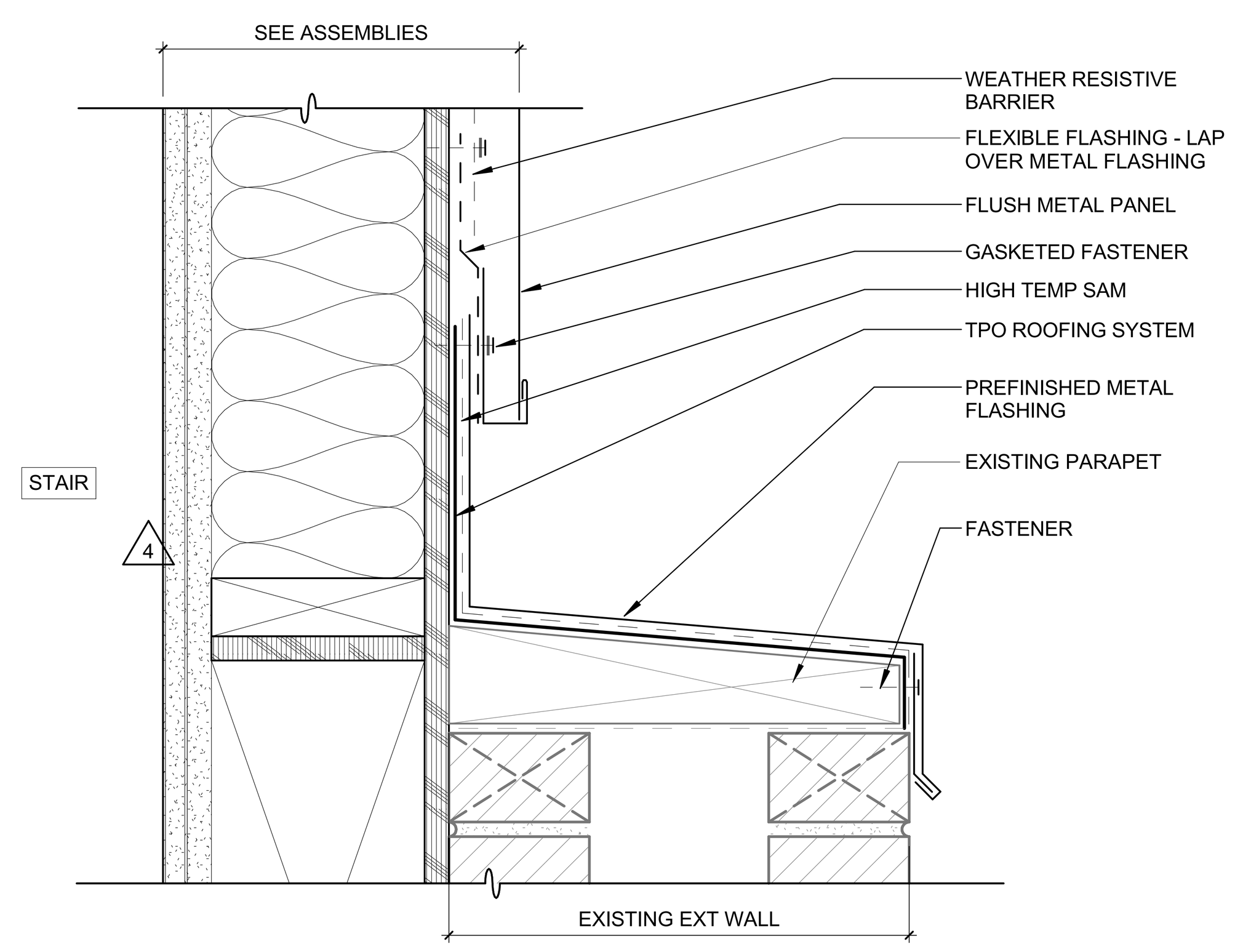
23 A801 ELEVATOR WALL @ EXISTING CMU WALL
3" = 1'-0"



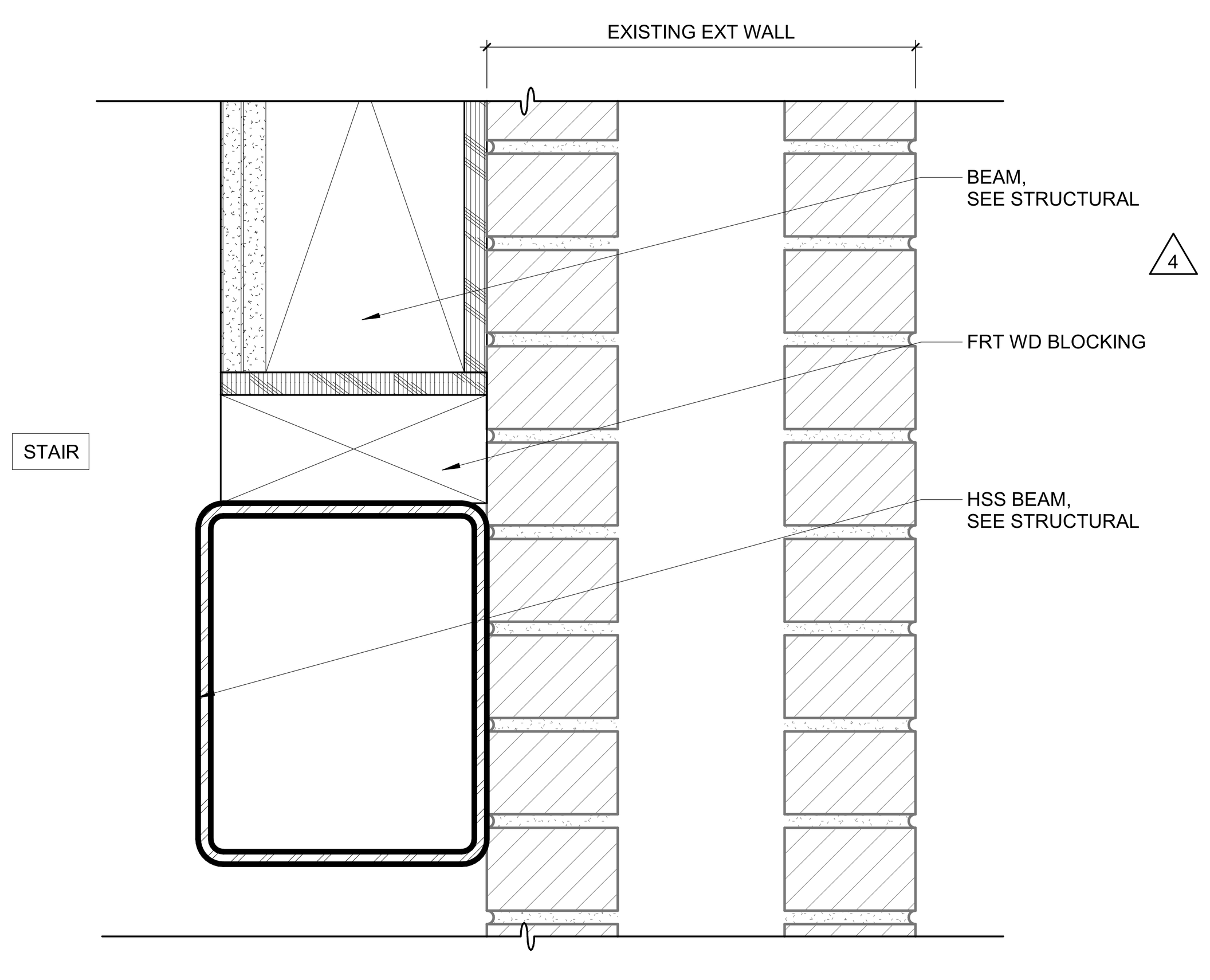
24 A801 STAIR WALL @ 2 HR HORIZONTAL SHAFT
3" = 1'-0"



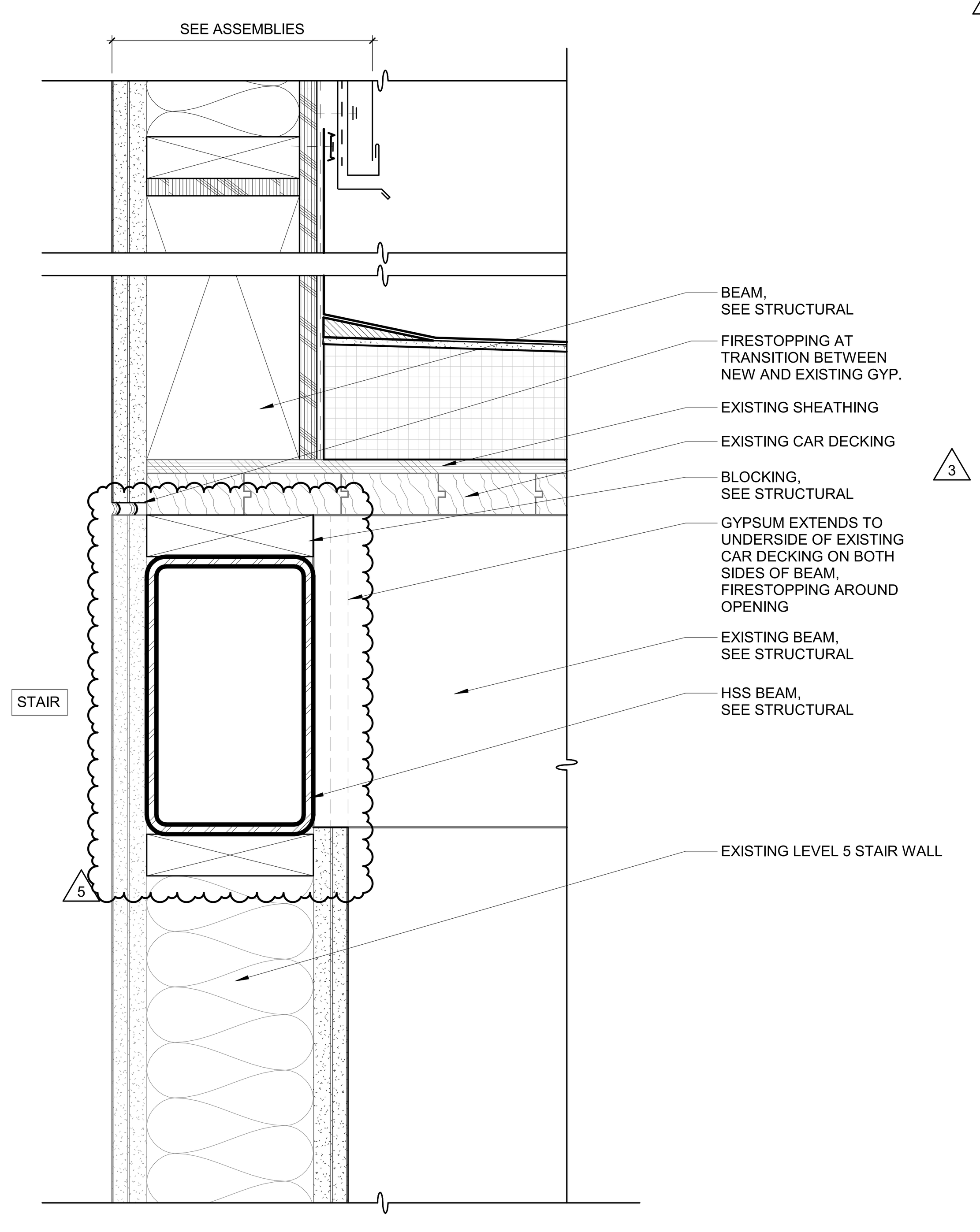
26 A801 STAIR WALL @ BEAM WRAP
3" = 1'-0"



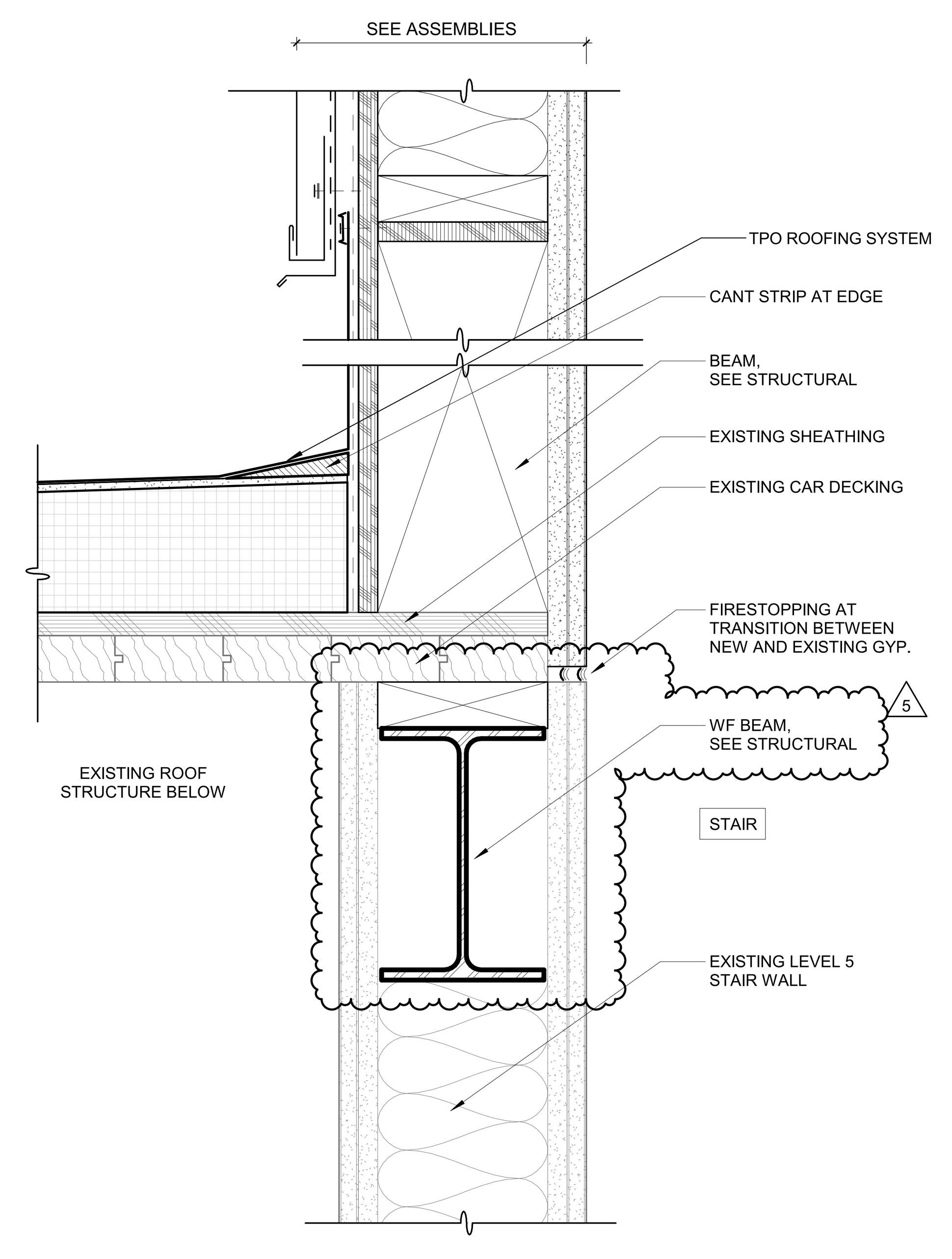
21 A801 STAIR WALL @ EXISTING PARAPET
3" = 1'-0"



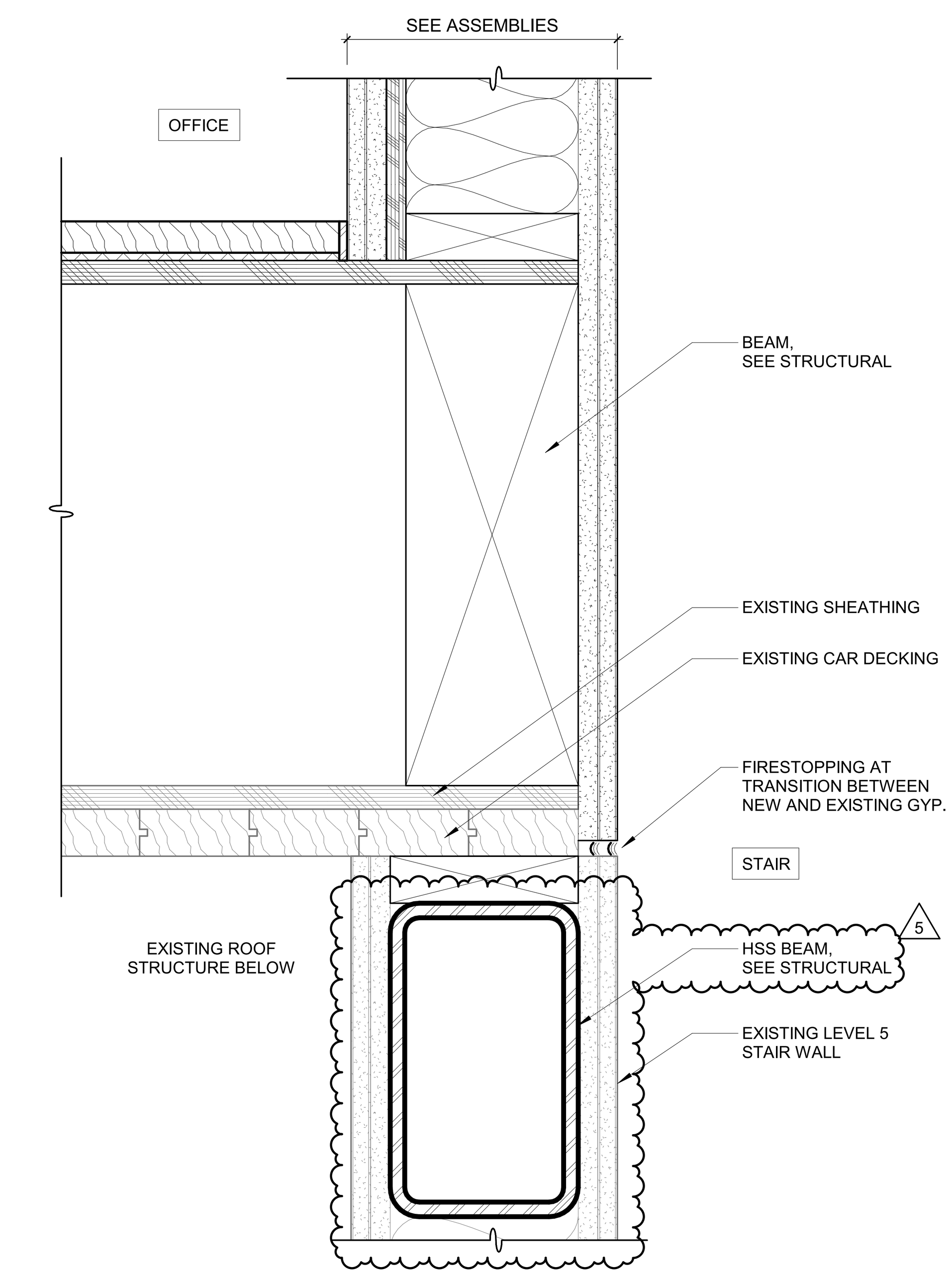
31 A801 STAIR WALL @ EXISTING EXT WALL
3" = 1'-0"



33 A801 STAIR 2 WALL @ EXISTING L5 STAIR WALL
3" = 1'-0"



34 A801 STAIR WALL @ EXISTING L5 STAIR WALL
3" = 1'-0"



36 A801 STAIR WALL @ OFFICE
3" = 1'-0"

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REGISTERED ARCHITECT JOHN P. WRIGHT PORTLAND, OREGON 3587 STATE OF OREGON

PERMIT DRAWINGS

SHEET TITLE:
EXTERIOR DETAILS

SHEET NO.:
A801