

# Development Services

## From Concept to Construction

Phone: 503-823-7300 Email: [bds@portlandoregon.gov](mailto: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

<b>Appeal ID:</b> 23509	<b>Project Address:</b> 2516 NW 29th Ave
<b>Hearing Date:</b> 2/26/20	<b>Appellant Name:</b> John Kashiwabara
<b>Case No.:</b> B-016	<b>Appellant Phone:</b> 503-453-5476
<b>Appeal Type:</b> Building	<b>Plans Examiner/Inspector:</b> John Cooley
<b>Project Type:</b> commercial	<b>Stories:</b> 1 <b>Occupancy:</b> F-1 <b>Construction Type:</b> V-B
<b>Building/Business Name:</b> NW Marine Art Works - Building 5	<b>Fire Sprinklers:</b> Yes - Throughout
<b>Appeal Involves:</b> Alteration of an existing structure	<b>LUR or Permit Application No.:</b> 19-269646-CO
<b>Plan Submitted Option:</b> pdf [File 1] [File 2] [File 3]	<b>Proposed use:</b> Art Production

### APPEAL INFORMATION SHEET

#### Appeal item 1

<b>Code Section</b>	303.1.1, 303.4, Table 1004.1.2 Use and Occupancy
<b>Requires</b>	Dance halls and gymnasiums without spectator seating are considered A-3 occupancies. (303.4) Gymnasiums have an occupant load factor of 50 square feet per person, non-fixed chairs have an occupant load of 7 square feet per person. (Table 1004.1.2) Small assembly spaces with less than 50 occupants are considered B occupancies. (303.1.1)
<b>Code Modification or Alternate Requested</b>	We request an F-1 occupancy designation for room 502 "Dance Production."
<b>Proposed Design</b>	Located in Building 5 (see G1.1) in an F-1 occupancy that at one time was a machine shop for shaping metal boat parts, the proposed tenant improvement continues the ongoing development of an affordable, high-functioning art community. The utilitarian space of factory production is an ideal home for art production where high ceilings, ample light, and affordable rent is necessary. Dance Production Room 502 (see A1.0) is a space for the creation of new dance choreography and the only conditioned, insulated and lidded room in the Building 5 T.I. Nearly 90% of the single-room space is covered by a 3" thick, barefoot-only dance floor. There is no conference room, reception area, or administrative offices - this is solely an art studio for making dance - street shoes on the floor are prohibited. The walls are metal stud partitions. The ceiling, 13'-3" above the dance floor, is light-gauge metal channel with plywood and gypsum board sheathing. Walls and ceiling are insulated to code. There are no interior columns and two means of egress (along with emergency egress lighting) are provided.
<b>Reason for alternative</b>	According to its website, the proposed tenant "FLOCK is a dance center for movement exploration, creation and artistic practice, dedicated to Portland's dance artists." The space is an art studio for

choreographers to make new work. NW Marine Art Works is eager for FLOCK to join its community.

FLOCK's space is a 1,600 sf room - 1,400 sf of which is dedicated solely to dance. The size of the space, larger than its neighbors, is necessitated by the nature of the artistic medium - which is movement. FLOCK will use it's studio like any other artist, to develop new work. Unlike many other artists, there will be little or no use of flammable materials or power tools. Choreography is the end product.

Occupancy in the space is typically spare. Most of the occupancy time is for "Choreographer's rehearsal" - which ranges from 1 to 8 dancers. At most, there is one dance workshop or class per day. Class or workshop occupancy typically ranges from 7-15 students. There is a single, one-hour class a week where the student occupancy can range between 10 - 20 students (see FLOCK schedule for Jan\_Feb.pdf).

Per recommendation by the Fire Marshall, the space offers two means of egress and emergency exit lighting. Also, since the space will be used by movement artists in light clothing, the space is uniquely conditioned with mini-split heat pumps and the walls and ceiling are insulated to code.

The tenant improvement of Building 5 is part of a first-time collaboration between the building owner and the Portland BDS Arts Concierge. Should FLOCK plan an event the scale of which merits an assembly occupant load, it will utilize the Annual Permit for Temporary Arts and Cultural Events issued by Portland Fire & Rescue. Otherwise, it will function like it's neighbors, as a working F-1 artist studio.

## Appeal item 2

<b>Code Section</b>	706.6 Vertical Continuity of Fire Walls
<b>Requires</b>	Fire walls are not allowed to have a horizontal jog.
<b>Code Modification or Alternate Requested</b>	We request a 1'- 8 ½" horizontal jog in the North firewall for a man-door vestibule consisting of 2-hour rated assemblies.
<b>Proposed Design</b>	The proposed 2-hour rated vestibule at ground level is constructed on a solid cast-in-place concrete landing and consists of two-hour rated wall and ceiling assemblies. The firewall into which the vestibule is framed is a non-structural infill wall taking the place of large defunct sliding fire doors (see G1.1 & A1.0). The vestibule projects less than 2' horizontally from the face of the fire wall (see A4.0).
<b>Reason for alternative</b>	The door vestibule provides necessary clearance for a rated man-door at a horizontal exit (see A4.0). An existing ramp, a proposed overhead fire door, and maneuvering space around a tenant egress door necessitates a minor jog in the 2-hour firewall. The proposed door vestibule does not reduce the ability of the firewall to restrict the spread of fire. The horizontal jog does not reduce the structural stability of the fire wall. Fire resistance ratings of the firewall are maintained throughout.

## Appeal item 3

<b>Code Section</b>	OEESC 503.2.11.1 Spot Heating
<b>Requires</b>	Infrared spot heating meeting the control requirements of Section 503.2.11 shall be allowed within unconditioned and semi-heated spaces without requiring the envelope to comply as a conditioned space. Spot heating shall be limited to the larger of 500 sq ft or 10 % of the floor area.

<b>Code Modification or Alternate Requested</b>	We request to increase the allowable spot heating floor area from 10% to 53% without requiring the envelope to comply as conditioned space (see NW MarineBldg 5_Appeal for Spot HeatingDocuments.pdf).
<b>Proposed Design</b>	We propose six (6) spot heaters to heat 53% of the Building 5 floor area (see page 1 plan in NW MarineBldg 5_Appeal for Spot Heating_Documents.pdf). In Art Production room 501, infrared tube heaters on 2-hour timers are mounted on an existing non-functioning crane beam structure at 14' above the floor. This large art production room will be rented on an as-need basis to provide space for larger-scale art fabrication. Due to the variability of its use, spot heating individually switched on timers is efficient since it is only used when the space is rented. The heating units weight 124# apiece but only utilize the crane beam structure for support. Art studio rooms 503 and 504 will also utilize infrared tube heaters suspended from roof rafters at 14' above the floor. The heater units weigh 52# and 89# respectively and will be seismically braced to the partitions. These heating units will also be individually controlled by 2-hour timers to provide heat only when needed. All of the infrared tube heaters will be vented through the roof. Refer to pages 2 - 4 in NW Marine_Bldg 5_Appeal for Spot HeatingDocuments.pdf for spot heating calculations.
<b>Reason for alternative</b>	In an effort to retain the existing, affordable, utilitarian factory space for use in art production, the building owner has found - through trial and error - that the least invasive, controllable, safe, and energy efficient option is to utilize infrared spot heating on 2-hour timers. The costs to insulate and heat large industrial spaces would be passed onto the artist and substantially impact rental costs. Infrared tube heaters provide better air quality for artists because they do not rely on air currents which can circulate hazardous particles and chemical pollutants. The heaters also burn clean and emit few harmful emissions. The ability to heat each studio or work zone independently fits well within the often unconventional work hours of artists. The two-hour timers save energy and provide safety in case anyone forgets to turn off the heat. Infrared tube heaters also heat the floor zone and not the ceiling - which is vast in an industrial environment. Fuel savings from 20% to 50% are expected as compared to a warm air system.

## APPEAL DECISION

**1. Determination of dance area as F1 occupancy: Denied. Proposal does not provide equivalent Life Safety protection.**

**2. Alternate 2 hour fire wall configuration at new fire rated door: Granted provided the door is a 90 minute rated fire exit door with panic hardware.**

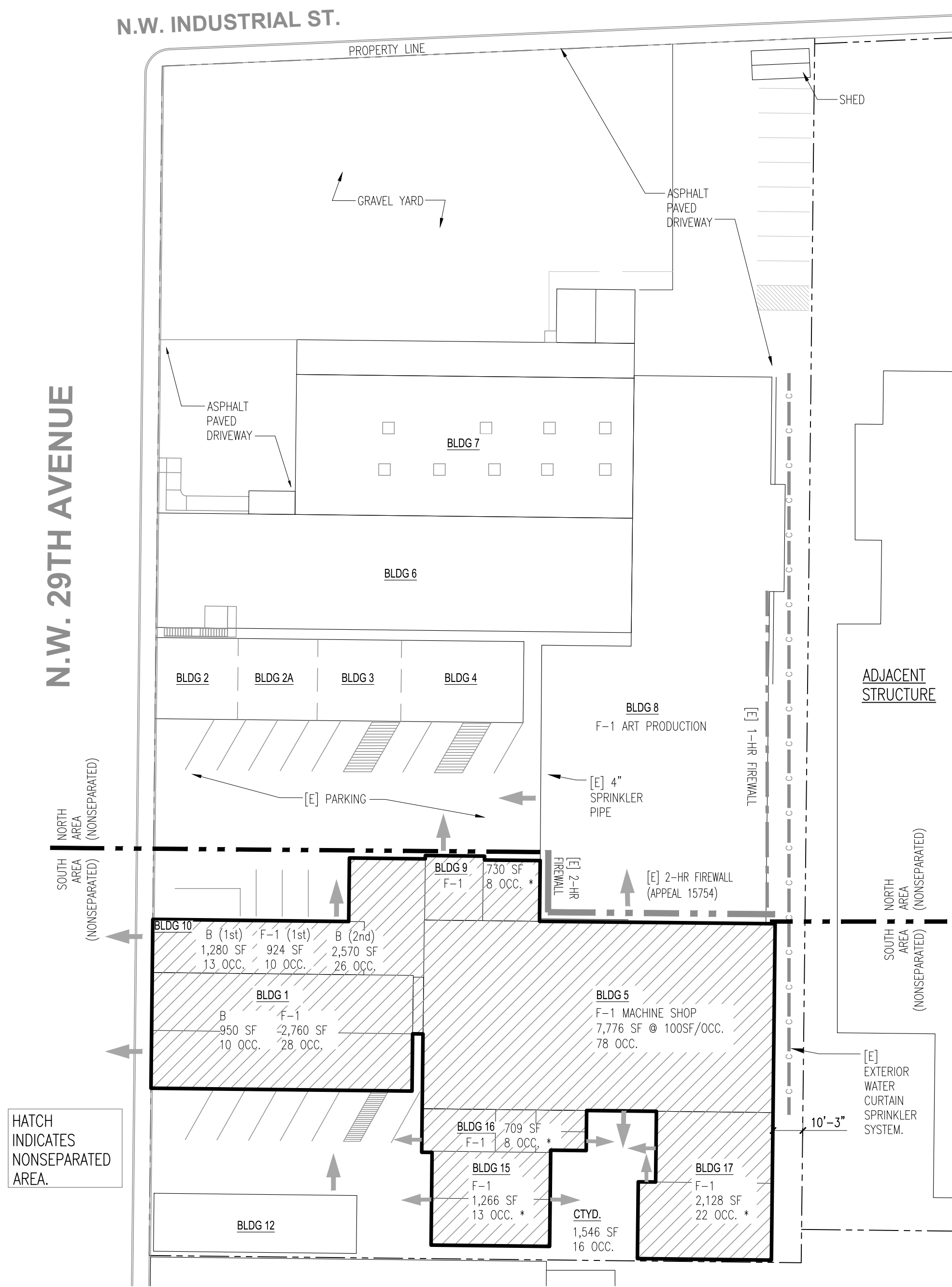
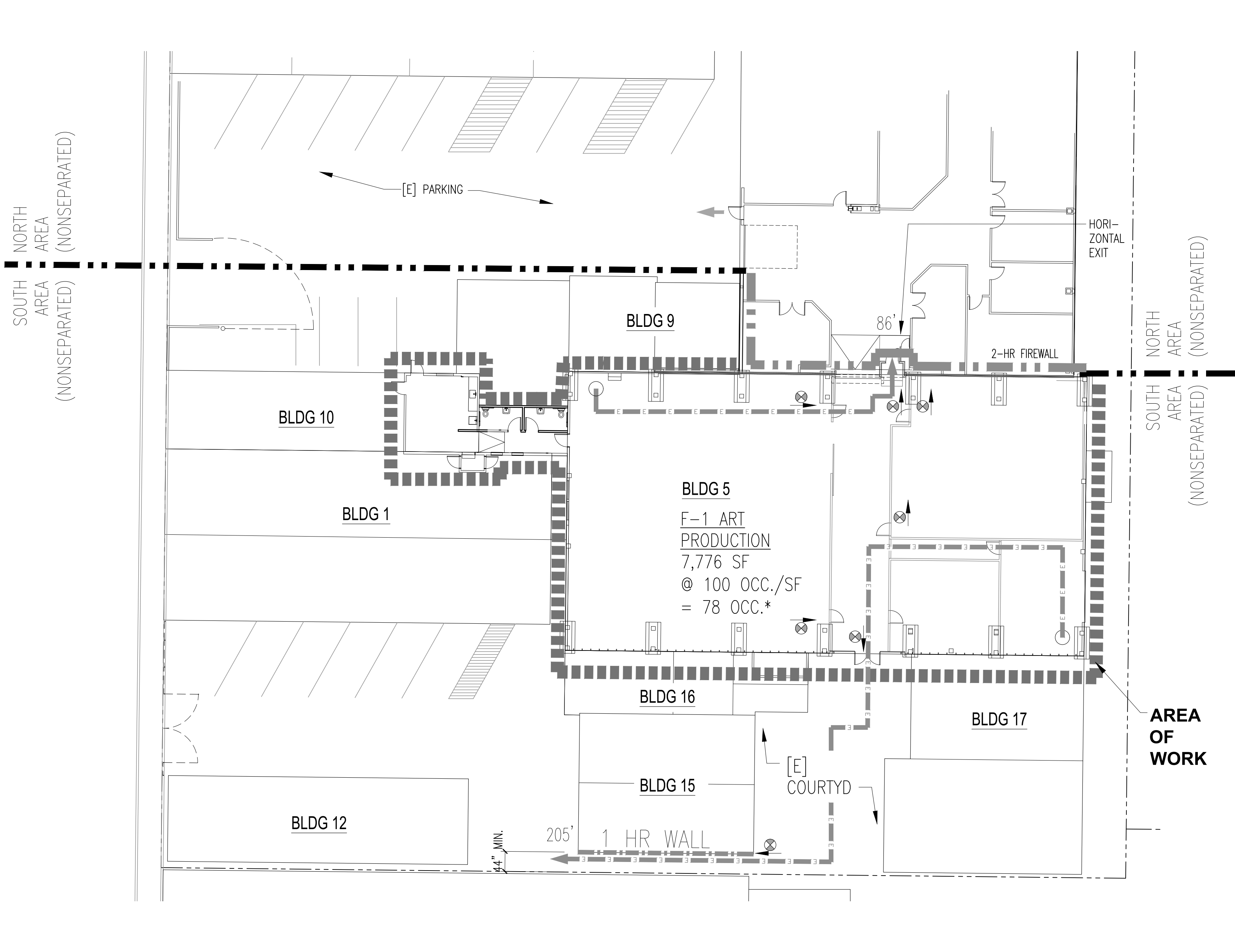
**3. Omission of building envelope insulation by use of spot heating: Granted as proposed for this use and configuration.**

**Appellant may contact John Butler (503 823-7339) with questions.**

For the items granted, the Administrative Appeal Board finds 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](http://www.portlandoregon.gov/bds/appealsinfo), call (503) 823-7300 or come in to the Development Services Center.





## 1 EXISTING USE & EXITING

1/32" = 1'-0"

**BUILDING FIRE SUPPRESSION, ALARM AND STANDPIPE SYSTEMS (Chapter 9):**

Sprinkler system	Provided: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO / PARTIAL	Required / Optional (list OSSC section(s))	Type/Class/Areas of coverage:
Fire alarm system	<input checked="" type="checkbox"/> R-1 <input type="checkbox"/> R-2		
Standpipe system			

**NUMBER OF PLUMBING FIXTURES (2902):**

Occupancy or function	Occ. Load	Drinking Fountains		Water closets		Lavatories	
		Required	Provided	Male	Female	Male	Female
Industrial	39	n.a	n.a	1	1	1	1

**BUILDING CODE APPEALS (104.10):**  
List all approved Building Code Appeals for this project:

Appeal ID#	Date	Code Section	Proposed Design (summary of the resulting design)
12060	6/3/15	1009.4	Decision assumes occupant load of 1 person per 200 sf of gross area

NO HAZARDOUS MATERIALS IN EXCESS OF THE MAXIMUM ALLOWABLE QUANTITIES (MAQ'S) WILL BE STORED ON SITE. BUILDING MAY CONTAIN QUANTITIES OF HAZARDOUS MATERIALS IN AMOUNTS NOT TO EXCEED THE MAXIMUM ALLOWABLE QUANTITY LIMITS LISTED IN CH. 50 OF THE FIRE CODE. INDUSTRY BEST PRACTICE AND SAFE HANDLING AND STORAGE TECHNIQUES SHALL BE FOLLOWED.

**OCCUPANCY CLASSIFICATION (302):**

A-1	A-2	A-3	A-4	A-5	B	E	F-1	F-2	H-1
H-2	H-3	H-4	H-5	I-1	I-2	I-3	I-4	M	R-1
R-2	R-3	R-4	S-1	S-2	U				

**PROPOSED AREAS PER OCCUPANCY**

	Occupancy (F-1)	Occupancy (B)	Occupancy (E)	Occupancy (H)
Basement				
First Floor	16,293	2,230		
Second Floor		2,570		
Total Proposed Building Area	21,093			

**MIXED OCCUPANCIES AND SEPARATIONS (508):**

Does building qualify for Nonseparated occupancies? ☒ Yes ☐ No

(508.3) (select one)

F-1	to	B	=	N	hr	to		=	hr
	to		=	hr		to		=	hr
	to		=	hr		to		=	hr

\* If there is more than one occupancy group on a floor, provide a "Sum of the Ratios" calculation per Section 508.4.2: (Aocc#1/Aa occ#1) + (Aocc#2/Aa occ#2) + (Aocc#3/Aa occ#3) + (Aocc#4/Aa occ#4) ≤ 1

**ALLOWABLE AND PROPOSED BUILDING AREA AND INCREASES (503, 506, 509):**  
(If the building is divided by a Fire Wall (503.1) or a Horizontal Assembly (510), provide a separate analysis for each area.)

ALLOWABLE AREAS and AREA MODIFICATIONS	Occupancy (F-1)	Occupancy (B)	Occupancy (E)	Occupancy (H)
Tabular floor area for each occupancy (At) (Table 503)	8,500	9,000		
Frontage Increase (If) (506.2) If = (FIP - 0.25) X W50 F = Building perimeter fronting on public way P = Perimeter of entire building W = Width of public way	.20	.20		
Fire sprinkler system increase (Is) (506.3) Additional 200% for buildings with more than one story above grade plane or an additional 300% for buildings with not more than one story above grade plane.	17,000	18,000		
Area Modification, allowable area per story (506.1) Aa = At + (At X If) + (At X Is)	27,200	28,800		
Total Allowable Building area: (Aa) X # of stories above grade plane as listed below (506.4): 1. Buildings with two stories above grade plane, X 2; 2. Buildings with three or more stories above grade plane, X 3; and 3. No story shall exceed the allowable area per story (Aa) as determined in 506.1, for the occupancies on that story.	54,400	57,600		

**SOUTH AREA SEISMIC OCCUPANCY CALCS. - TITLE 24, CHAPT. 24.85**

**24.85.040 - CHANGE OF OCCUPANCY OR USE**

EXISTING	F-1	16,293	HAZARD CLASSIFICATION 2
	B	4,800	HAZARD CLASSIFICATION 2
PROPOSED	F-1	NO CHANGE	NO CHANGE
	B	NO CHANGE	NO CHANGE

% OF BLDG NET FLR. AREA CHANGED	OCC LOAD INCREASE	REQUIRED IMPROVEMENT STANDARD	HAZARD CLASS
0.00%	0	NONE	2

**OREGON STRUCTURAL SPECIALTY CODE SUMMARY WORKSHEET**

**CONSTRUCTION TYPE, HEIGHT, AND EXTERIOR WALL FIRE RESISTANCE REQUIREMENTS:**

Special Provisions (check one if applicable)	<input type="checkbox"/> 510.2	<input type="checkbox"/> 510.3	<input type="checkbox"/> 510.4	<input type="checkbox"/> 510.5	<input type="checkbox"/> 510.6	<input type="checkbox"/> 510.7	<input type="checkbox"/> 510.8	<input type="checkbox"/> 510.9
Construction type(s) (602) (check each that apply)	<input type="checkbox"/> IA	<input type="checkbox"/> IB	<input type="checkbox"/> IIA	<input type="checkbox"/> IIB	<input type="checkbox"/> IIA	<input type="checkbox"/> IIB	<input type="checkbox"/> IV	<input checked="" type="checkbox"/> VA
Building height (503)	Allowed: 60' ft	2 stories	Proposed: 43' ft	1 stories				
Sprinklers used to increase stories (504.2)	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO						
Fire Resistive Requirements based on Construction Type (602.1)	Rating Require	Rating Provide						
Structural Frame	0	0						
Bearing walls - exterior	0	0						
Bearing walls - interior	0	0						
Floor	0	0						
Roof	0	0						
Exterior Wall fire resistance based on fire separation distance (602.1)	Allowable Area of Openings per story (705.8)							
Wall location	Distance to property line	Fire rating	Wall area	Area of openings	Allowable % of wall area in	Proposed % of wall area in	Wall area SF	Area of openings
North A	>30'	0						
North B								
East A	10'-3"	0					2,504	208
East B								
South A	>30'	0						
South B								
West A	>30'	0						
West B								

**BUILDING CODE SUMMARY NARRATIVE CHECKLIST:**

☒ Scope of work ADAPT & REUSE F-1 FACTORY SPACE (7,776 SF) INTO F-1 ART PRODUCTION SPACE

☒ Building code edition 2014 OSSC

☒ Date(s) of original building construction 1967

☒ Use(s) and occupancy classification(s) F-1 MACHINE SHOP (PREVIOUSLY)  
F-1 ART PRODUCTION (PROPOSED)

☒ Occupancy separation requirements - or nonseparated occupancies

☒ Number of stories 2

☒ Floor area per floor, total floor area 17,794 SF 1st FLR., 2,593 SF 2nd FLR.

☒ Construction type(s) VB - FULLY SPRINKLERED

☒ Fire sprinkler provided (yes/no), location and type

☒ Fire alarm pull stations and notification provided (yes/no)

☐ Number of standard and accessible parking spaces required/provided

☒ Number of plumbing fixtures required/provided 2 WC & 2 LAV REQ'D, 2 WC & 2 LAV PROVIDED

☒ Building code appeals with Date, ID #, and brief description of code requirement and alternate design approved .

-13731 ITEM 2- 2 HR FIREWALL IN LIEU OF 3 HOUR FIREWALL GRANTED, HORIZONTAL AND VERTICAL CONTINUITY REQUIREMENTS APPLY

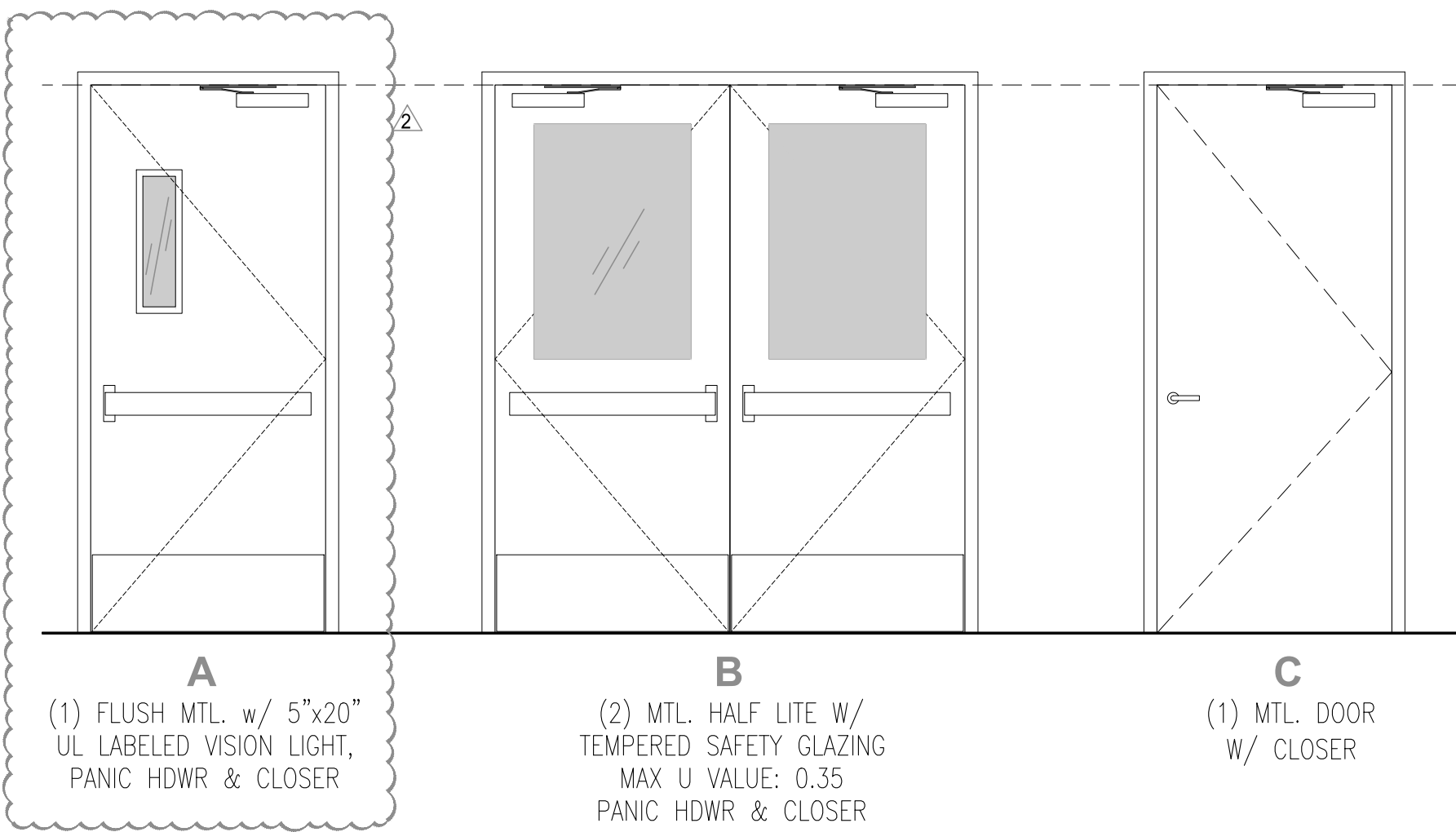
-14038 EAST TERMINATION- WATER CURTAIN SYSTEM TAKES THE PLACE OF 1-HR ASSEMBLY

WEST TERMINATION- TERMINATION TO REMAIN, INTERSECTING WALL TO BE RATED TO 2-HR

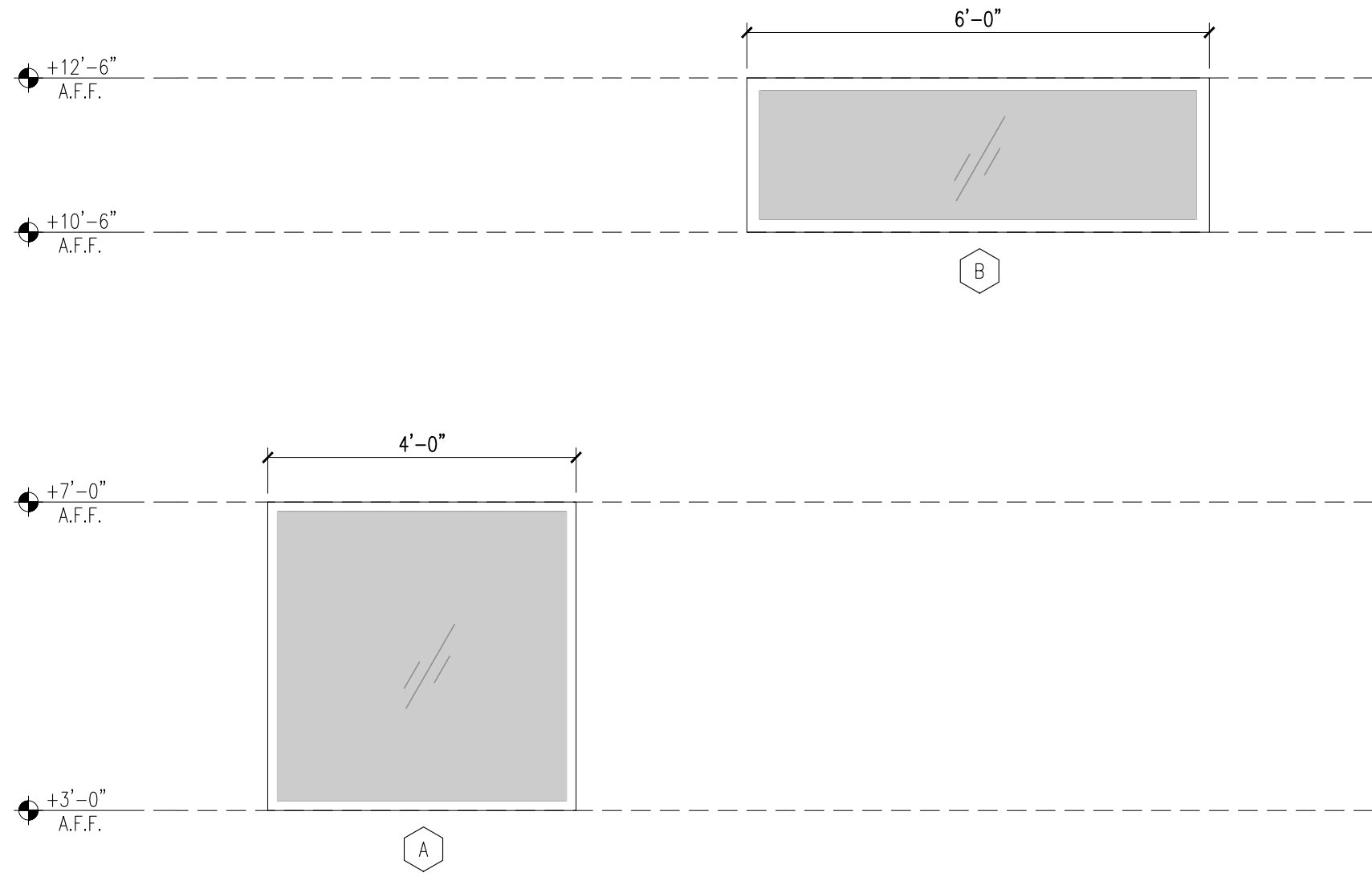
-12060 MAXIMUM OCCUPANT LOAD TO BE DETERMINED WITH THE ASSUMPTION OF 1 PERSON PER 200 SQUARE FEET OF GROSS AREA.



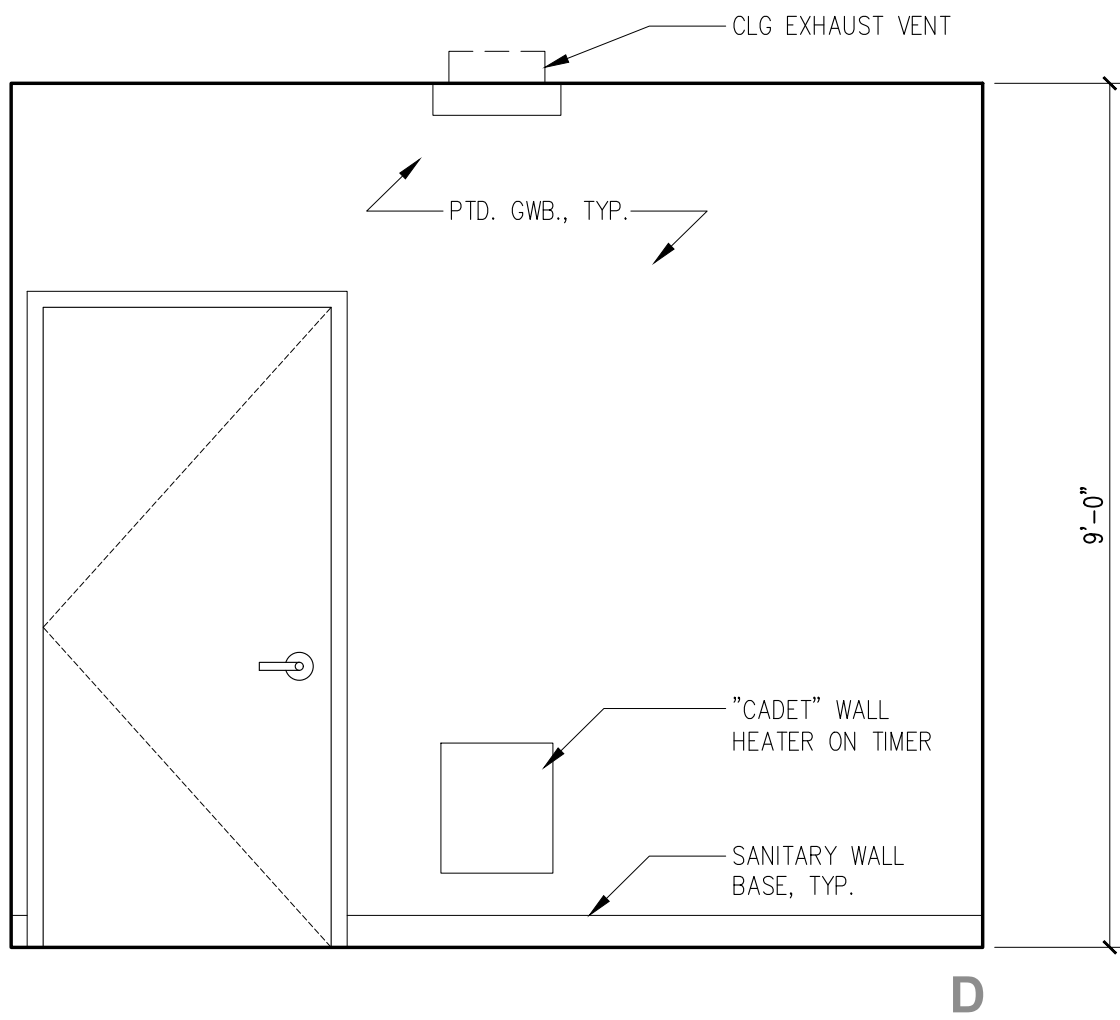
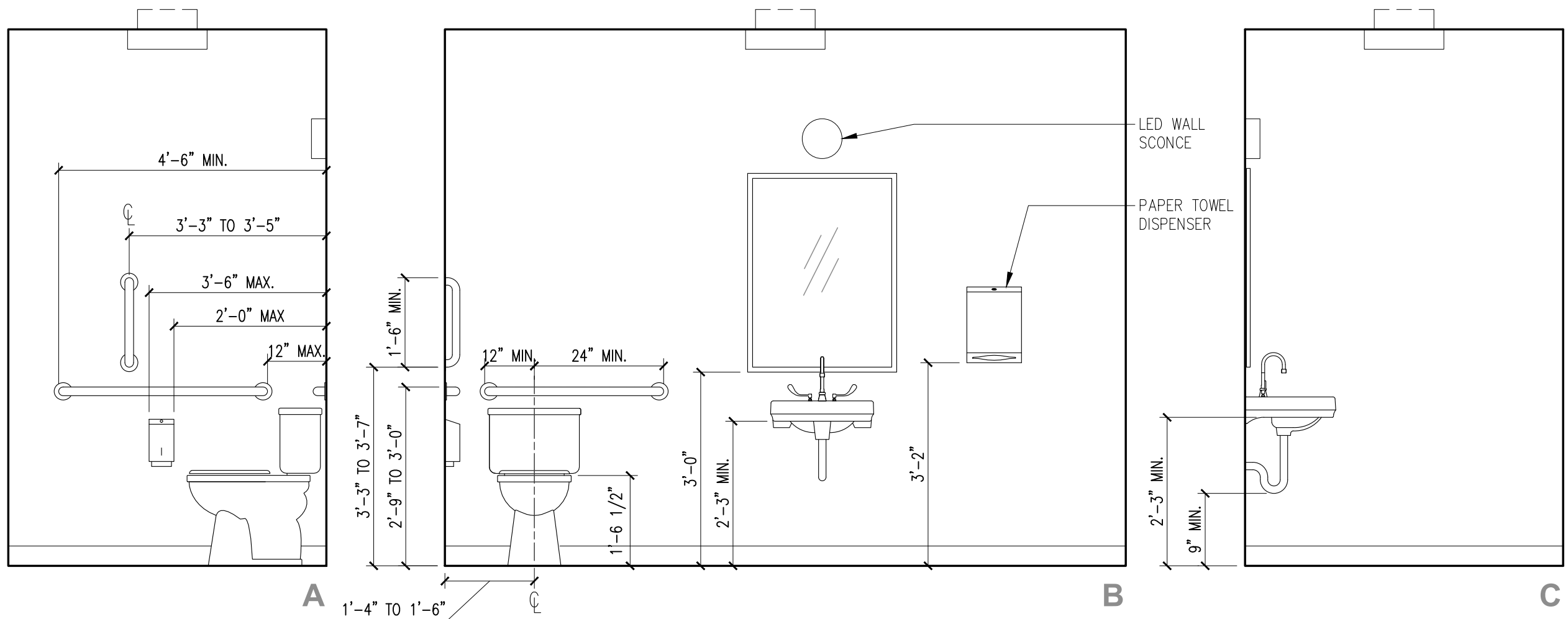
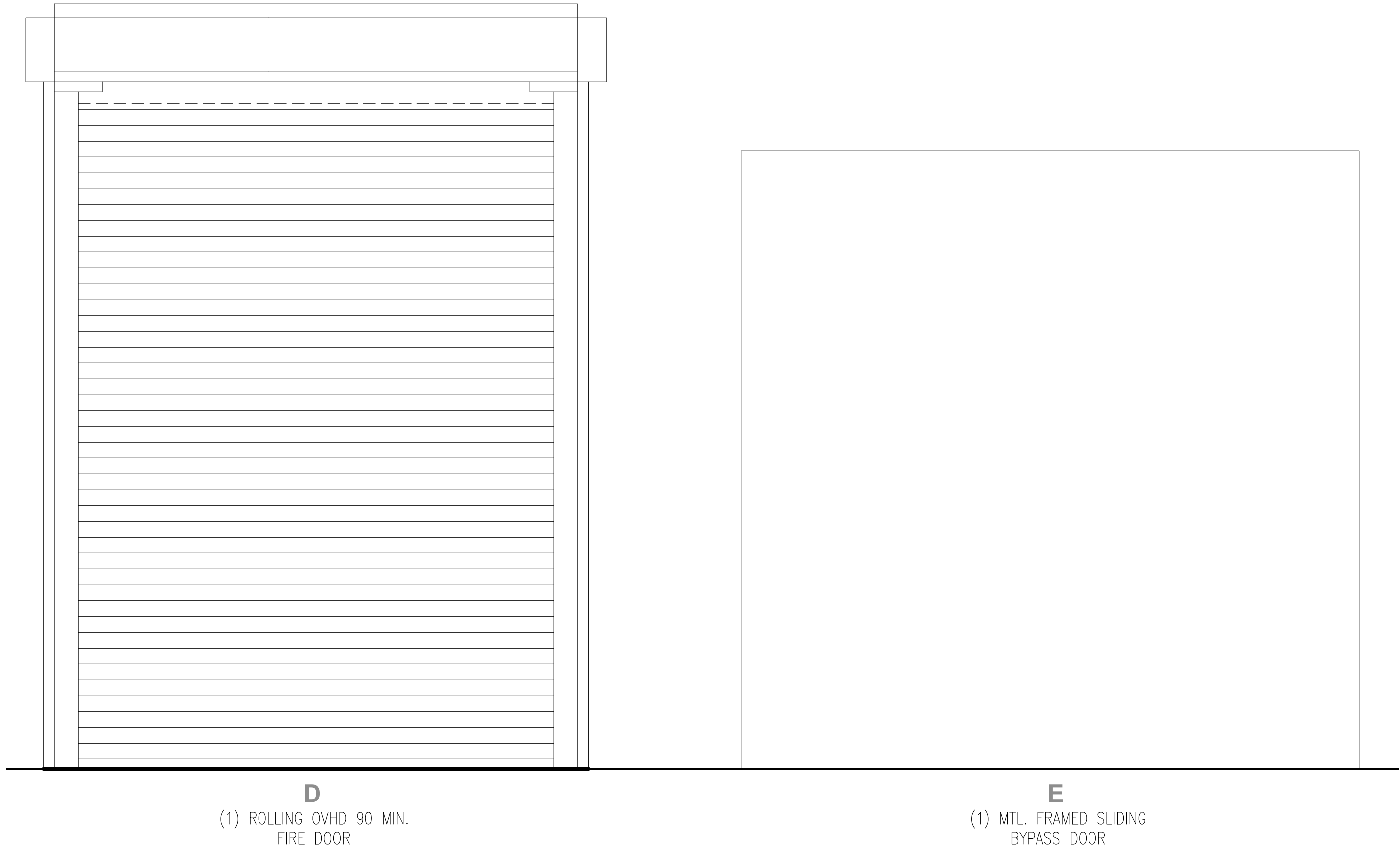




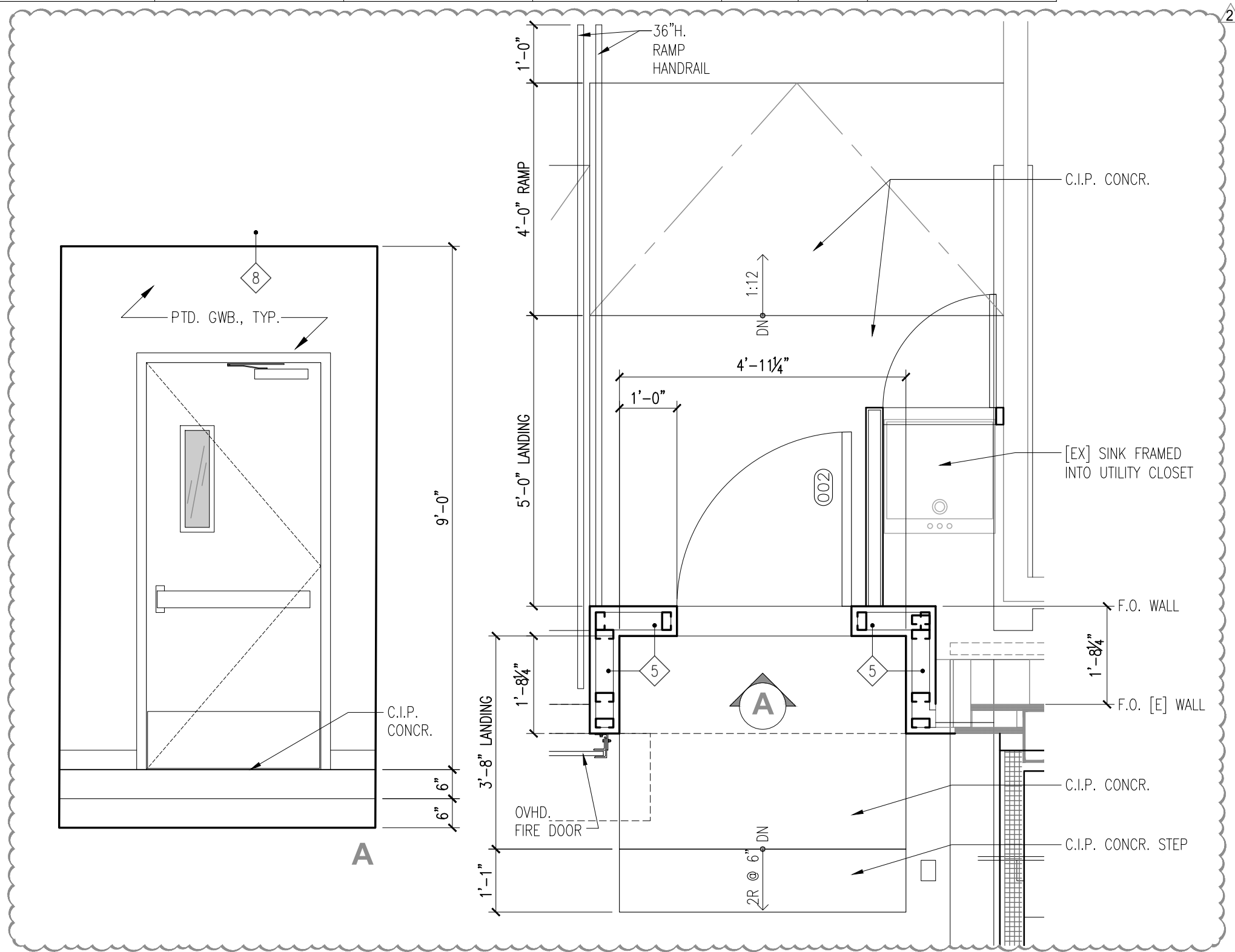
DOOR SCHEDULE						
MARK	ROOM	RATING	SIZE	HDW.	TYPE	NOTES
001	501	90 MIN	9'0" X 14'0"	OVHD	MTL.	90 MIN. FIRE-RATED WIRE GLASS, D-H MARKING
002	501	90 MIN	3'0" X 7'0"	PANIC	"	
003	501	-	(2) 3'0" X 7'0"	EGRESS	"	
004	501	-	3'0" X 7'0"	"	"	
005	501	-	(2) 3'0" X 7'0"	EGRESS	"	SLIDING HDWR. TBD
006	501	-	12'0" X 14'0"	SLIDER	WD.	
007	501	-	3'0" X 7'0"	EGRESS	MTL.	
008	502	-	3'0" X 7'0"	EGRESS	MTL.	
009	502	-	3'0" X 7'0"	EGRESS	"	
010	503	-	3'0" X 7'0"	OFFICE	"	
011	504	-	3'0" X 7'0"	OFFICE	"	
012	WC-1	-	3'0" X 7'0"	PVCY	"	
013	WC-2	-	3'0" X 7'0"	PVCY	"	CHAIN-LINK
014	CTYD.	-	3'0" X 7'0"	EGRESS	"	



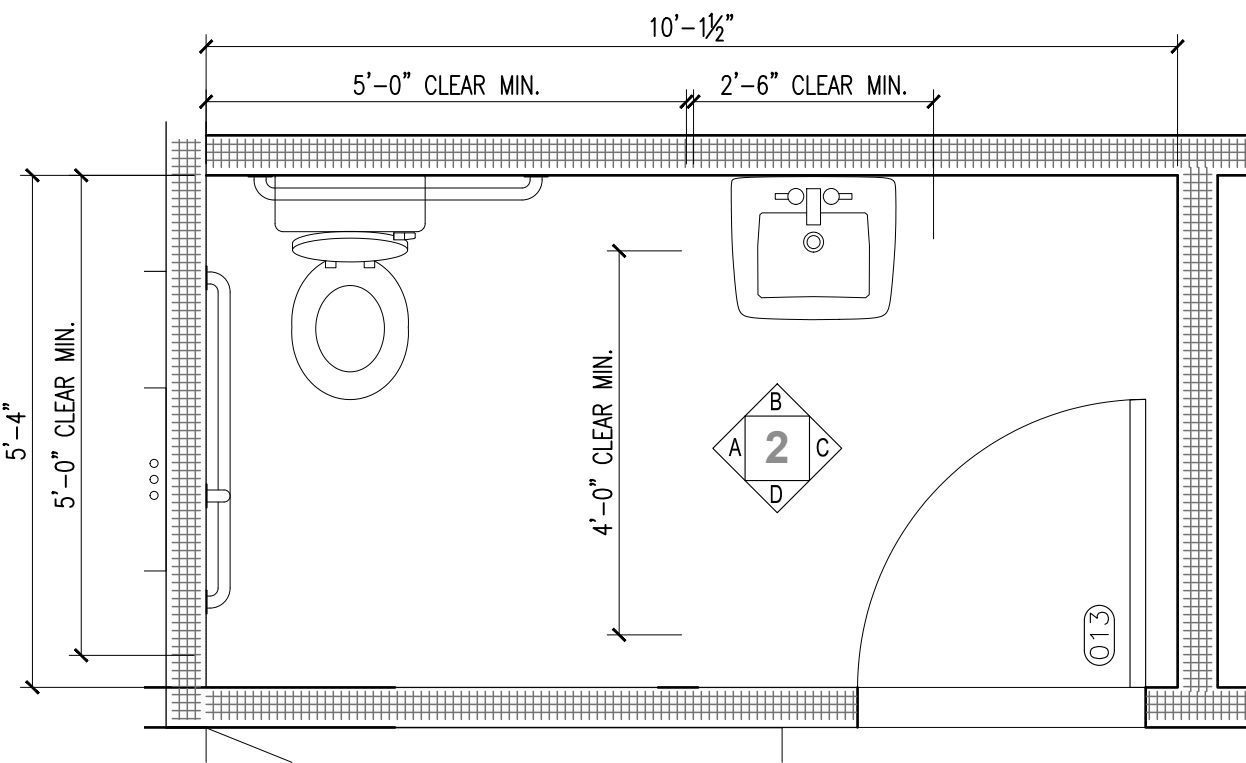
NW MARINE - BUILDING 5 - WINDOW SCHEDULE										
MARK	WINDOW SIZE		OPERATION	MANUFACTURER	WINDOW TYPE	FRAME MATERIAL	SAFETY GLAZING	MAX U-VALUE	COUNT	COMMENTS
	WIDTH	HEIGHT								
A	4'-0"	4'-0"	FIXED		INSULATED DBL GLZ.	ALUMINUM	—	0.35	3	
B	6'-0"	2'-0"	FIXED		INSULATED DBL GLZ.	ALUMINUM	—	0.35	2	



2 ELEVATIONS - WC  
SCALE: 1/2" = 1'-0"



3 ENL. PLAN - VESTIBULE  
SCALE: 1/2" = 1'-0"



1 ENL. PLAN - WC  
SCALE: 1/2" = 1'-0"

PERMIT

ENLARGED PLAN & ELEVATIONS

NORTHWEST MARINE  
2516 NW 29th Ave. | PORTLAND, OR 97210

rhiza architecture + design  
537N. Albina #303,  
Portland, OR 97227  
503.481.6895 (t)

Job No.

A-4.0

7 of 8 Sheets

© copyright 2017 rhiza A+D all rights reserved. This document may not be reproduced nor may the data represented in this document be used without written permission from rhiza A+D

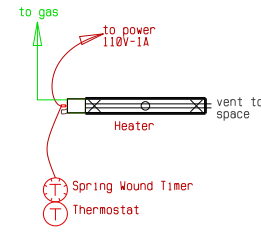
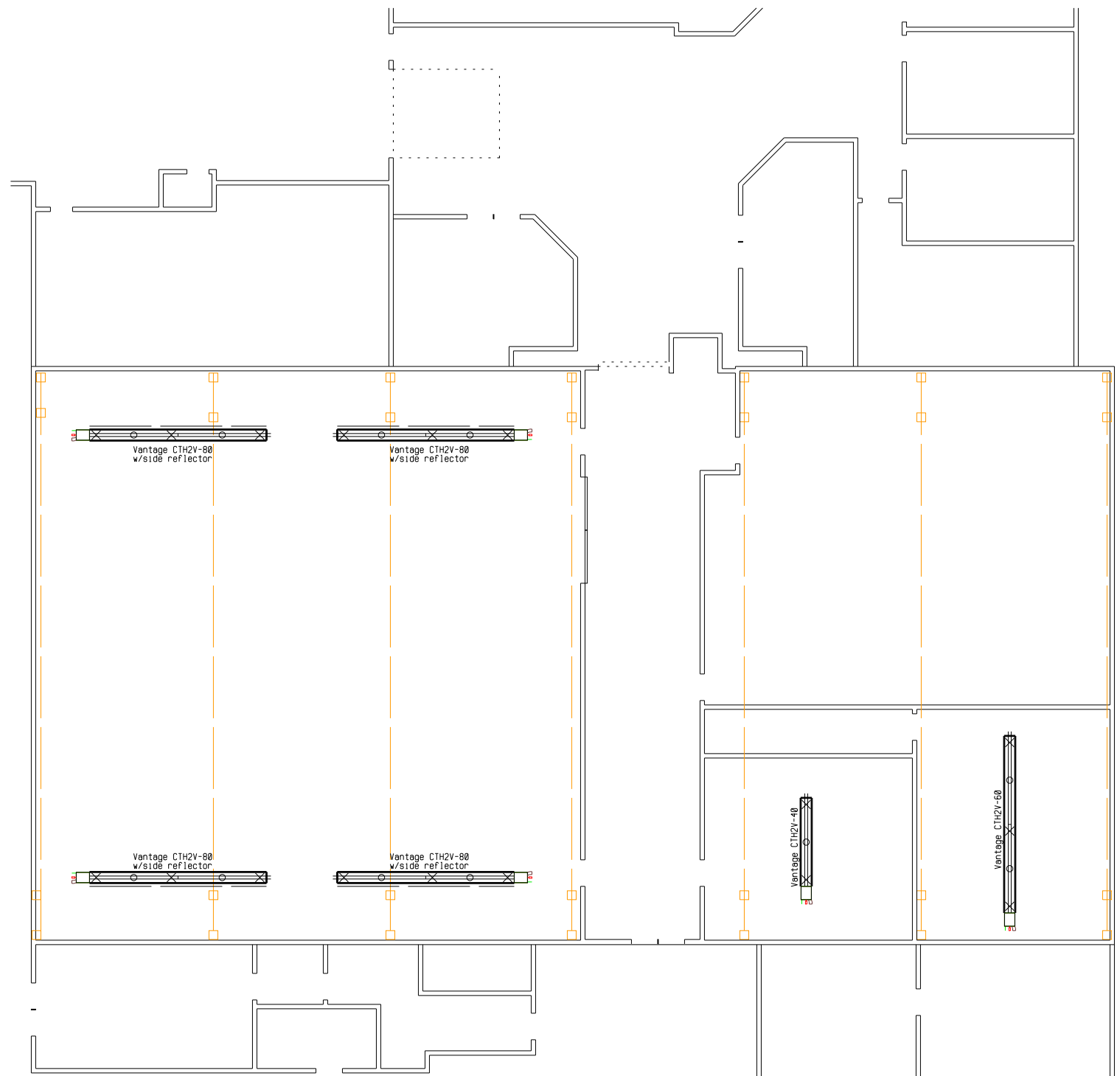
NOTE: 1/4" SET IS HALF THE SCALE NOTED.

SET	DATE	SET	DATE
PERMIT	12/27/19		
2. REVISION 2	2/20/20		

FLOCK Schedule  
for Jan/Feb

	Time	What	How many people
Mondays	9am-12pm	Choreographer's rehearsal (creation time)	3 dancers
	12pm-3pm	nothing scheduled: space is free	
	3pm-6pm	Choreographer's rehearsal (creation time)	1 dancer
	6:30-8:30pm	Dance Class: somatic technique	7-15 students
Tuesdays	9am-12pm	Choreographer's rehearsal (creation time)	1 dancer
	12pm-3pm	Choreographer's rehearsal (creation time)	1 dancer
	3pm-6pm	Choreographer's rehearsal (creation time)	2 dancers
	7pm-8pm	Dance Class: contemporary technique	10-20 students
Wednesdays	9:30am-11:30	Dance Class: Authentic movement	7-15 students
	12pm-3pm	Choreographer's rehearsal (creation time)	1 dancer
	3pm-6pm	nothing scheduled: space is free	
	6pm-9pm	Choreographer's rehearsal (creation time)	8 dancers
Thursdays	9am-12pm	Choreographer's rehearsal (creation time)	2 dancers
	12pm-3pm	Choreographer's rehearsal (creation time)	3 dancers
	3pm-6pm	nothing scheduled: space is free	
	6pm-9pm	Choreographer's rehearsal (creation time)	1 dancer
	9:30pm-11:30pm	Dance Class: LGBTQ + BIPOC Contact improve	7-15 students
Fridays			
	9am-12pm	Choreographer's rehearsal (creation time)	2 dancers
	12pm-3pm	Choreographer's rehearsal (creation time)	1 dancer
	3pm-6pm	nothing scheduled: space is free	
	6pm-9pm	Choreographer's rehearsal (creation time)	8 dancers
Saturdays			
	9am-12pm	Dance workshops: different types of contemporary classes	7-15 students
	12pm-3pm	Choreographer's rehearsal (creation time)	3 dancers
	3pm-6pm	Choreographer's rehearsal (creation time)	2 dancers
Sundays			
	9am-12pm	Dance workshops: different types of contemporary classes	7-15 students
	12pm-3pm	nothing scheduled: space is free	
	3pm-6pm	Choreographer's rehearsal (creation time)	8 dancers
	6pm-9pm	Choreographer's rehearsal (creation time)	1 dancer





Typical Heater Control

NW Marine Building 5  
Spot Heating Artist Suites  
2/19/20 JH



# Spot Heating Calculator

Constant: 0.5 Watts/°F/sf

Project: NW Marine Bldg 5

Area to Heat: 501 - Art Production

Width	Length	$\Delta T$	KWH	BTU
62	64	42	83.328	284,315

Enter Mounting Height: 16

Qty: 4

Heater: CTH2-80 (20' straight)

Length: 20

BTU's 320,000

Rec min hght: 11

Message: OK

Area to heat: 3968 sq.ft

Foot print of coverage (ea): 24 x 32 X 4

Area Heater will "see": 3072 sq.ft.

BTU's needed to cover area seen: 64,512

104.17 BTU/sq.ft.

Message: OK

Message: OK

Energy Saving Products, Inc.

February 19, 2020

# Spot Heating Calculator

Constant: 0.5 Watts/°F/sf

Project: NW Marine Bldg 5

Area to Heat: 503 Art Studio

Width	Length	$\Delta T$	KWH	BTU
24	21	42	10.584	36,113

Enter Mounting Height: 14

Qty: 1

Heater: CTH2-40 (10' straight)

Length: 10

BTU's 40,000

Rec min hght: 8

Message: OK

Area to heat: 504 sq.ft

Foot print of coverage (ea): 14 x 28

Area Heater will "see": 392 sq.ft.

BTU's needed to cover area seen: 8,232

102.04 BTU/sq.ft.

Message: OK

Message: OK

Energy Saving Products, Inc.

February 19, 2020



# Spot Heating Calculator

Constant: 0.5 Watts/°F/sf

Project: NW Marine Bldg 5

Area to Heat: 503 Art Studio

Width	Length	$\Delta T$	KWH	BTU
24	26	42	13.104	44,711

Enter Mounting Height: 14

Qty: 1

Heater: CTH2-60 (20' straight)

Length: 20

BTU's 60,000

Rec min hght: 9

Message: OK

Area to heat: 624 sq.ft

Foot print of coverage (ea): 24 x 28

Area Heater will "see": 624 sq.ft.

BTU's needed to cover area seen: 13,104

96.15 BTU/sq.ft.

Message: OK

Message: OK

Energy Saving Products, Inc.

February 19, 2020

# VANTAGE<sup>TM</sup>

## ROBERTS / GORDON<sup>®</sup>

### Premium Quality Unitary Heater



**MODEL  
CTH2V**

#### Long-Lasting Durability for Industrial/Commercial Applications

- Diagnostic capability incorporated in burner design
- Design flexibility achieved with straight, U-tube or L configurations and a broad range of burner sizes and tube lengths
- Years of field-proven product performance
- Burner box design with protective enclosure for controls helps minimize exposure to dirt and moisture from combustion air
- Longer life provided by durable components



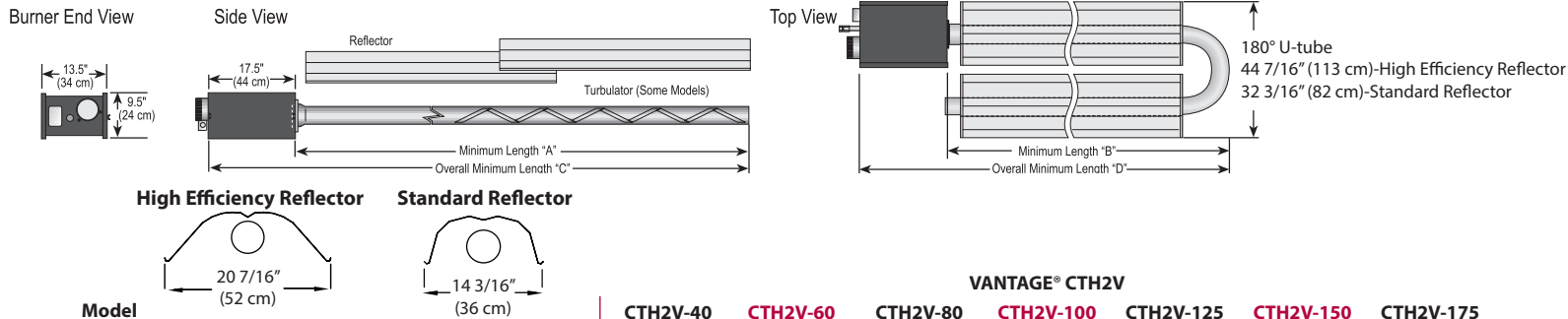
800.828.7450

[www.robertsgordon.com](http://www.robertsgordon.com)

Page 5

THE INDUSTRY LEADER  
**RADIANT**  
EFFICIENCY<sup>TM</sup>

# ROBERTS GORDON® THE EXCLUSIVE PRODUCER OF CORAYMAC™



		VANTAGE® CTH2V						
Model		CTH2V-40	CTH2V-60	CTH2V-80	CTH2V-100	CTH2V-125	CTH2V-150	CTH2V-175
Minimum Length of Straight Tube*	[ft] A	10	20	20	30	40	50	60
Minimum Length of U-tube*	[ft, in] B	N/A	11.7	11.7	16.7	21.7	26.7	31.7
Overall Minimum Length of Straight Tube	[ft, in] C	11, 5.5	21, 5.5	21, 5.5	31, 5.5	41, 5.5	51, 5.5	61, 5.5
Overall Minimum Length of U-tube	[ft, in] D	N/A	13, 0.5	13, 0.5	18, 0.5	23, 0.5	28, 0.5	33, 0.5
*For additional lengths, please see the current Installation, Operation and Service Manual.								
<b>Input (Btu/h) x (1000)</b>		<b>40</b>	<b>60</b>	<b>80</b>	<b>100</b>	<b>125</b>	<b>150</b>	<b>175</b>
Inlet Pressure	[in wc] NG min.	4.6	4.6	4.6	4.6	4.6	4.6	5
	LPG Propane min.	11	11	11	11	11	11	11
	NG & LPG Propane max.	14	14	14	14	14	14	14
Gas Connection	NPT	½"	½"	½"	½"	½"	¾"	¾"
Exhaust Flue	dia	4"	4"	4"	4"	4"	4"	4"
Combustion Air Inlet	dia	4"	4"	4"	4"	4"	4"	4"
<b>Weights</b>								
<b>Hot Rolled or Aluminized Tube and Accessory Packages [ft]</b>		<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>
Standard Aluminum Reflector	[lb]	52	86	120	161	206	240	281
High Efficiency Aluminium Reflector	[lb]	54	89	124	167	213	248	291
<b>Burner</b>	<b>[lb]</b>	40						
<b>U-tube Packages</b>								
Aluminized U-tube for Standard Reflector	[lb]	19						
Aluminized U-tube for High Efficiency Reflector	[lb]	23						

Fuel	NG or LPG Propane
Electrical Supply	120 V, 60 Hz, 1 A
Heat Exchanger Tubing	10 ft Sections, 4" dia, 16 Gauge, First 10 ft ALUMI-THERM® Steel Tubing [Remaining Hot Rolled or Heat Treated Aluminized Steel Tubing]
Exhaust Flue	dia 4"
Reflector and End Caps	.024 Aluminum [Optional - .024 Stainless Steel Type 304]
Control System	Fully Automatic, Three-Try, 100% Shut-Off, Direct Spark Electronic Ignition Control, LED Burner Status Light
Approved As	Indoor (Vented or Unvented)
Certification	ANSI Z83.20/CSA 2.34, 2.17
Warranty	Three-Year Limited (Refer to Installation, Operation and Service Manual for Details)

## Clearances to Combustibles \*\*[in]

Model		CTH2V-40		CTH2V-60		CTH2V-80		CTH2V-100		CTH2V-125		CTH2V-150		CTH2V-175	
Horizontal	45°	Horiz.	45°	Horiz.	45°	Horiz.	45°	Horiz.	45°	Horiz.	45°	Horiz.	45°	Horiz.	45°
	A	6	8	6	8	6	8	6	10	6	10	6	12	8	12
	B	27	8	35	8	38	8	40	8	46	8	50	8	52	8
	C	53	51	63	60	66	66	71	74	77	78	80	84	82	85
	D	27	46	35	54	38	60	40	64	46	69	50	74	52	79

\*\*Clearances B, C and D can be reduced by 50% for locations 25 ft (7 m) or more downstream of the burner. For other mounting options and associated clearances, complete installation, operation and service criteria, please see the current issue of the Installation, Operation and Service Manual.

**This product is not for residential use.**

**This document is intended to assist licensed professionals in the exercise of their professional judgment.**

Roberts-Gordon LLC  
1250 William Street  
P.O. Box 44  
Buffalo, NY 14240-0044 USA  
Telephone: +1.716.852.4400  
Fax: +1.716.852.0854  
Toll Free: 800.828.7450  
www.robertsgordon.com