

Bradley Heights Apartments

A 236-Unit Apartment Development Puyallup, Washington

Bradley Heights SS LLC

PROJECT TEAM

Owner/Developer	Bradley Heights SS LLC 614 Boylston Ave E Seattle, WA 98102 (206) 557-7236
Architect:	Milbrandt Architects, Inc., P.S. 25 Central Way, Suite 210 Kirkland, WA 98033 (425) 454-7130
Structural Engineer	Solutions 4 Structure, Inc. 11605 135th St Ct E Puyallup, WA 98374 (253) 268-2923
Civil Engineer	Azure Green Consultants 409 East Pioneer Puyallup, WA 98372 (253) 770-3144
Landscape Architect	Nature By Design 1320 Alameda Avenue, Suite B Fircrest, WA 98466 (253) 460-6067
MEP Engineer	Robison Engineering Inc. 19401 40th Avenue W, Suite 302 Lynnwood, WA 98036 (206) 364-3343

PROJECT INFORMATION

Site Address:	202 27th Ave SE, Puyallup, WA 98374
Project Description:	Construction of 236 wood framed apartment units in eight stacked flat buildings along with a leasing amenity building.
Site Area:	7.785 acres (+/- 339,107 SQ. FT.)
Tax Parcel Number:	419036006
Occupancy Type:	All Apartment Buildings are R2 occupancy.
Type of Construction	All Apartment Buildings are Type V-B construction with NFPA 13R automatic sprinklers .
Applicable Codes:	2018 International Building Code 2018 Uniform Plumbing Code 2018 Washington State Energy Code 2018 International Mechanical code 2018 International Fire Code 2022 National Electrical Code ICC/ANSI A117.1-2009 Standard Washington State Amendments as modified and adopted by the local jurisdiction.

RATED ASSEMBLIES

Rated assemblies shall be provided in accordance with IBC section 420

Assembly	Fire Rating	Detail
Common walls separating dwelling units:	1-hour	4/D1
Exterior walls:	non-rated	1/D1
Interior bearing walls:	non-rated	2/D1
Interior non-bearing walls:	non-rated	2/D1
Corridor-to-unit walls:	1-hour	3/D1
Floor/ceiling:	1-hour	13/D1
Roof/ceiling:	1-hour	17/D1
Penetrations (firestopping)	Per situation	17/D7
Membrane penetrations by ducts in ceiling	26 ga. steel ducting	6/D7
Stair fire barrier wall:	1-hour @ 3-story 2-hour @ 4-story	3/D1 7/D1

Fire Alarm systems and smoke alarms shall be provided in accordance with IBC section 420.5 Refer to unit plan sheets for smoke detector locations and requirements.

GENERAL NOTES

- Comply with 2018 IBC and all applicable codes and ordinances of the local jurisdiction and the State of Washington.
- Do not scale drawings.
- Verify all rough-in dimensions for equipment provided in this contract or by others.
All rough-ins shall be approved and fireblocking shall be installed prior to framing inspection.
- Verify size and location of and provide all openings through floors and walls, furring, anchors, inserts, rough bucks and backing for surface mounted items.
- Provide furring as required to conceal mechanical and electrical work in all finished areas.
- All swinging doors not located by dimensions on plans, interior elevations, or details shall be 3" from face of stud to edge of rough openings or centered between room partitions as shown.
- Plans are drawn assuming the following rough openings:
Swinging doors: Nominal size +2".
Bi-Fold doors: Nominal size +1-1/2".
Bi-Pass doors: Nominal size +0".
Windows: Nominal size +0".
Sliding glass doors: Nominal size +0".
- Fill where required with earth free from organic material. Compact fill in 12" layers maximum.
- "Finish Floor" refers to the top of concrete slab or top of wood floor sheathing .
- Exterior walls shall be 2x6 studs at 16" o.c. and interior walls shall be 2x4 studs at 16" o.c., unless noted otherwise.
- Unless otherwise noted, plan dimensions are to face of studs and face of concrete walls.
- Refer to interior elevations for cabinet and counter lengths, dimensions, countertop materials and detail reference. Verify all existing dimensions before installation.
- Provide caulking between sole plates and subfloor and between rim joists at both top plate and subfloor.
- Hydrants shall be in service prior to start of framing.
- Through penetrations and membrane penetrations of rated wall or floor/ceiling assembly will require firestopping per 2018 IBC Section 714. See detail 7/D7 for diagram of specifics.
- Shall be no asbestos used on this project.
- All Tub-Shower valves installed shall conform to UPC 408.3 & ASSE 1016 or ASME A112.18.1
- Milbrandt Architects is not responsible for construction means, methods, techniques or procedures, or for the safety precautions and programs in connection with the work, and is not responsible for the failure of any contractor or subcontractor to carry out the work in accordance with the various contract documents and or governing jurisdiction, regardless of what is shown on these drawings.

FEDERALLY DECLARED SAFE HARBOR

Declared Safe Harbor: HUD Fair Housing Accessibility Guidelines published on March 6, 1991 and the Supplemental Notice to Fair Housing Accessibility Guidelines: Questions and Answers about the Guidelines, published on June 28, 1994.

ACCESSIBILITY

Design is based on the 2018 IBC Chapter 11 which has been amended by the State of Washington, & 2009 ICC A117.1 Accessible & Useable Buildings & Facilities.

None of the buildings are an elevator type building.
There are a total of 84 one-story dwelling units at ground level. All ground floor units are 1 or 2-bed unit designs. Provided total 84 accessible units: 12 Type A and 72 Type B units.

Type A units meet the requirements for Type B units.

- The 12 Type A units are proportioned as follows (see Site Plan):
 - (7) 1-Bed units (1 BR) in each of Buildings A, C, D, E, F & G - for a total of 7.
 - (5) 2-Bed units (2 BR) in Buildings A, D, E, F & G - for a total of 5.

Parking:

Section 1106.2 IBC requires 2% of each proposed parking stall type to be accessible.
Of the 354 total open stalls, 12 are accessible, including 5 van stalls. Each accessible open stall is indicated by the wheelchair symbol on the site plan and further designated by the detail symbols 10/A3.

VENTILATION NOTES

- Design Criteria: 2018 International Mechanical Code with Washington State Amendments.
- System Type: Balanced whole house fan system with energy recovery ventilator
- Use: Group R occupancy.
- Specifics: See mechanical plans by others.

ENERGY NOTES

Reference: 2018 WSEC
Chapter 4 using climate zone category 5 & marine 4 for all calculations.

All residential units shall comply with the Requirements By Component Table 402.1.1. Including but not limited to the following:

Code Requirements	Associated Notes/Details Showing Compliance
Window U-Factor	.24 or better See Insul. Notes on sheets U1, U2, U3, U4, U5
Ceiling R-Value	R-49 13 / D1
Wood Frame Wall R-Value	R-21 int. 1, 3, 4, 7 & 8 / D1
Floor R-Value	R-30 N/A
Slab R-Value & Depth	R-10, 2ft 1, 3, 5 & 6 / D2
"int" (intermediate framing)	denotes standard framing 16" o.c. with headers insulated with a min. of R-10 (see 6/D6).

All units need to have a certificate posted within 3 feet of the electrical distribution panel listing the following information: R-values, U-values, duct air leakage test results, building envelope air leakage test results, types and efficiencies of heating, cooling and service water heating equipment per R401.3

All insulation shall comply with table R402.4.1.1 WSEC
Hot water piping shall be insulated to a minimum of R-3 per R403.5.2
Water heaters in unheated spaces, or on concrete floors shall be placed on minimum of R-10 incompressible insulated surface per R403.5.5
Mechanical ventilation shall be provided per R403.6
A minimum of 90% of all permanently installed lamps in lighting fixtures shall be high-efficacy lamps per R404.1

See Insulation Notes on the Unit Plans, and Insulation and Energy Notes on sheet D.X.

Energy Credits used (see 2018 WSEC table 406.3 for all requirements):	
Fuel Normalization Credit System Type 3	-1.0 CREDITS
Option 1.1 Efficient Building Envelope	0.5 CREDITS
Option 2.1 Air Leakage Control	1.0 CREDITS
Option 5.5 Efficient Water Heating	2.5 CREDITS
Option 7.1 Appliance Package	1.5 CREDITS
TOTAL PROVIDED	4.5 CREDITS

Revise to match 2018 Prescriptive Energy Code Compliance report. Page A

Report selected 1.7 credit; plans show 1.1 credit

FIRE SYSTEMS

Buildings shall have an NFPA 13R sprinkler system installed throughout per 2018 IBC Section 903.3.1.2 which shall include a notification appliance which is activated upon sprinkler flow. Any alarms, bells or lights required due to the design of the sprinkler system or integral with the sprinkler system shall be considered part of the sprinkler system. The sprinkler system design, therefore, needs to include any and all integrated alarms.

Plans and specifications for sprinklers shall be submitted to the city of Puyallup as a separate permit for review and approval before installation.

DESIGN LOADS

See structural notes. Sheet S1.0

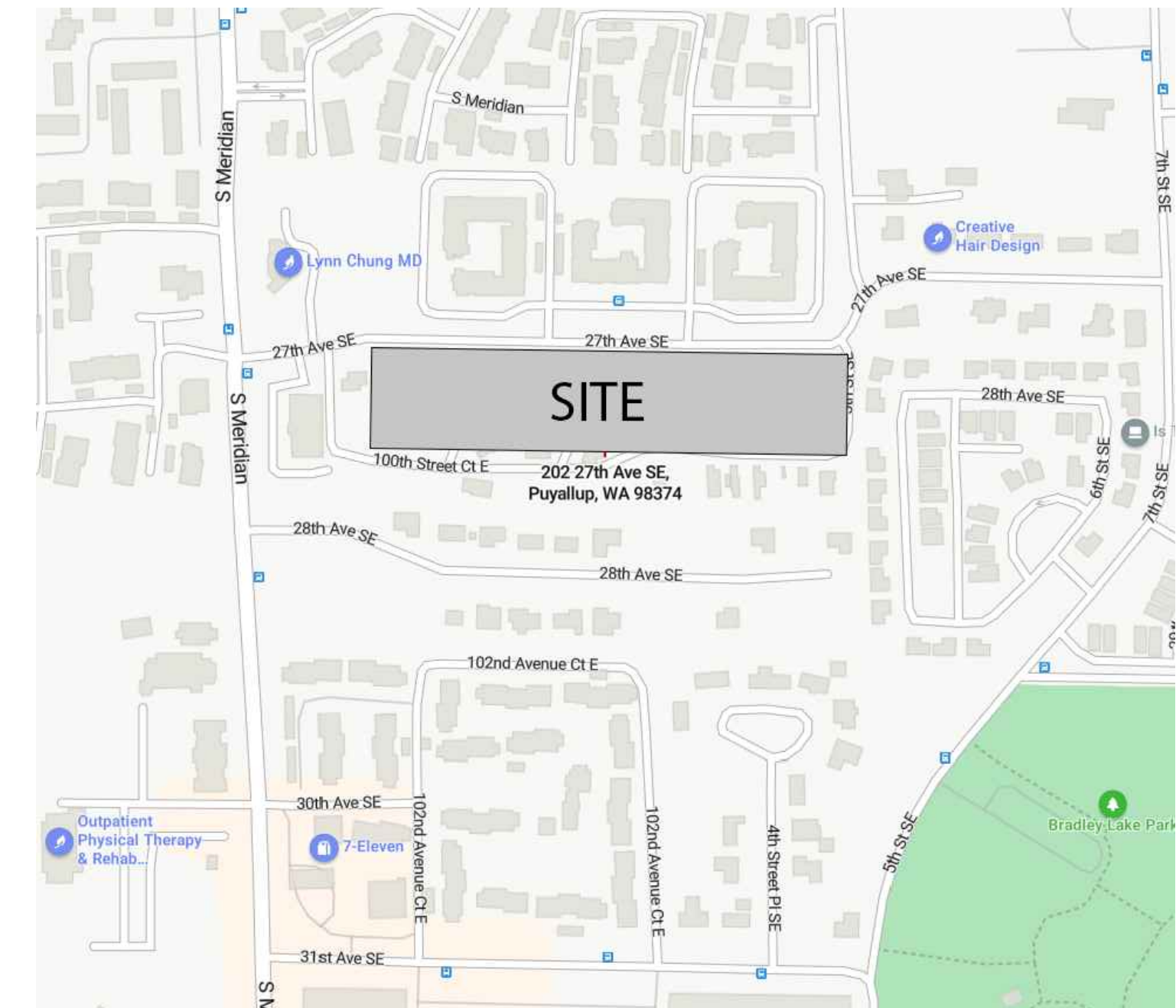
DEFERRED SUBMITTALS

Shop drawings and calculations are required for:

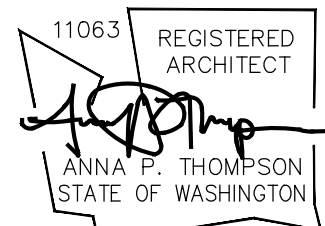
- Firestopping details. Firestopping methods and materials shall be determined by the Contractor except where details or notes are indicated in these drawings. Firestopping locations are indicated in part by detail 17/07. Contractor shall submit UL assembly details and product cuts of all relevant situations to the Architect for conformance to the building design. Upon the Architect's approval, they shall be submitted to the Building Official for approval. Firestopping shall not be installed without City approval.

SEPARATE PERMITS

The following required permits will be submitted separately:
1. Automatic Fire Sprinkler System (See fire systems note, this sheet).
2. Fire Alarm System.



VICINITY MAP



Bradley Heights Apartments

Puyallup, Wa

Timberlane Partners

Revisions

No. Date Description

Initial Publish Date:

Date Plotted: 2-20-24

Job No.: 23-06
Drawn By: TMK/HDM/APT

Sheet No.:

Bradley Heights Apartments

Building B Puyallup, Washington Bradley Heights SS LLC



Bradley Heights Building Areas

Bldg Letter	Floor Level	Unit																Other Unheated				Total Heated Area (SF)	Total Unheated Area (b)	Total Floor Area (SF)	Total Building Area (SF)	Total Allowable Bldg. Area (d)	Units Per Building								
		1-Bed End	Unit Area (SF)	Deck Area (SF)	1-Bed End-Alt	Unit Area (SF)	Deck Area (SF)	1-Bed Int-1	Unit Area (SF)	Deck Area (SF)	1-Bed Int-2	Unit Area (SF)	Deck Area (SF)	1-Bed Int-Alt-1	Unit Area (SF)	Deck Area (SF)	1-Bed Int-Alt-2	Unit Area (SF)	Deck Area (SF)	2-Bed	Unit Area (SF)							Deck Area (SF)	2-Bed Alt	Unit Area (SF)	Deck Area (SF)	Misc. (a)	Stair 1	Area (SF)	Stair 2
A	Bsmt	1	712	67			1	684	61	1	684	71												118	2	422	3099	799	3898						
	1st	2	1424	134			2	1368	122	2	1368	142							1	1019	66	1	1019	60		2	520	2	350	6198	1394	7592	22633		
	2nd	2	1424	134			2	1368	122	2	1368	142							1	1019	66	1	1019	60		2	350	2	478	6198	1352	7550	(Plus 3358 SF Basement)	See Sheet A4	
	3rd	1	712	67	1	625	78	1	684	61	1	684	71	1	634	74	1	634	86	1	1019	66	1	980	60		2	478	2	478	5972	1519	7491		28
B	Bsmt																							69	1	211	2038	400	2438						
	1st																		2	2038	132	2	2038	120		1	175	4076	687	4763	14233	21,000 SF			
	2nd																		2	2038	132	2	2038	120		1	239	4076	666	4742	(Plus 2438 SF Basement)	(Plus 7,000 SF Basement)	14		
	3rd																		2	2038	132	2	1960	120		1	239	3998	730	4728					
C	1st						4	2736	244	4	2736	284							4	4076	264				6	1560	9548	2372	11920						
	2nd						4	2736	244	4	2736	284							4	4076	264				6	1050	9548	1842	11390			See Sheet A4			
	3rd						4	2736	244	4	2736	284							4	4076	264				6	1434	9548	2226	11774	35084					
	Bsmt						2	1368	122	2	1368	142							2	2038	132	2	2038	120		3	633	4774	1184	5958	34743				
D	1st						4	2736	244	4	2736	284							2	2038	132	2	2038	120		3	780	9548	2085	11633	(Plus 1184 SF Basement)	See Sheet A4			
	2nd						4	2736	244	4	2736	284							2	2038	132	2	2038	120		3	525	9548	2022	11570					
	3rd						2	1368	122	2	1368	142							2	2038	132	2	1960	120		3	717	9270	2270	11540					
	Bsmt						1	684	61	1	684	71							2	2038	132	2	2038	120		2	422	3406	792	4198	24488				
E	1st						2	1368	122	2	1368	142							2	2038	132	2	2038	120		2	520	6812	1386	8198	24488				
	2nd						2	1368	122	2	1368	142							2	2038	132	2	2038	120		2	350	6812	1344	8156	(Plus 4198 SF Basement)	See Sheet A4			
	3rd						1	684	61	1	684	71	1	634	74	1	634	86	2	2038	132	2	1960	120		2	478	6634	1500	8134					
	Bsmt						1	684	61	1	684	71							2	2038	132	2	2038	120		2	422	3406	792	4198	24488				
F	1st						2	1368	122	2	1368	142							2	2038	132	2	2038	120		2	520	6812	1386	8198	24488				
	2nd						2	1368	122	2	1368	142							2	2038	132	2	2038	120		2	350	6812	1344	8156	(Plus 4198 SF Basement)	See Sheet A4			
	3rd						1	684	61	1	684	71	1	634	74	1	634	86	2	2038	132	2	1960	120		2	478	6634	1500	8134					
	Bsmt						1	684	61	1	684	71							2	2038	132	2	2038	120		2	422	3406	792	4198	24488				
G	1st						4	2736	244	4	2736	284							4	4076	264				6	1560	9548	2372	11920						
	2nd						4	2736	244	4	2736	284							4	4076	264				6	1050	9548	1842	11390			See Sheet A4			
	3rd						4	2736	244	4	2736	284							4	4076	264				6	1434	9548	2226	11774	35084					
	1st						2	1368	122	2	1368	142							4	4076	264				20	4	1040	6812	1588	8400					
H	2nd						2	1368	122	2	1368	142							4	4076	264				4	700	6812	1228	8040			See Sheet A4			
	3rd						2	1368	122	2	1368	142							4	4076	264				4	956	6812	1484	8296	24736					
	6	1	60	60	5	5	63	36	Total Gross SF										236179	236															

All buildings are Type V-B construction; all occupancies are R-2; all have NFPA 13R sprinkler systems throughout.

a. Misc. Areas include SF of sprinkler riser rooms and basement storage rooms.

b. Unheated Areas include SF of Decks, Patios, storage & sprinkler rooms.

c. Base Area allowed is 7000SF per floor for Type V-B construction (Table 506.2). See area increase diagrams on sheet A4 for total area allowed.

Unit Area Summary

Unit	Unit SF	Patio/ Deck SF	
1-Bed-End	1BR/1BA	712	67
1-Bed-End-Alt	1BR/1BA	625	78
1-Bed-Int-1	1BR/1BA	684	61
1-Bed-Int-2	1BR/1BA	684	71
1-Bed-Int-Alt-1	1BR/1BA	634	74
1-Bed-Int-Alt-2	1BR/1BA	634	86
2-Bed	2BR/2BA	1019	66
2-Bed-Alt	2BR/2BA	1019	60
2-Bed-Alt (3rd Floor)	2BR/2BA	980	60

SINGLE EXITS
Per IBC 1006.3.2 section 5, Individual single-story or multistory dwelling units shall be permitted to have a single exit or access to a single exit provided that the dwelling unit has a maximum occupant load of 20, is equipped throughout with an automatic sprinkler system in accordance with section 903.3.1.1 or 903.3.1.2, is provided with emergency escape and rescue openings in accordance with section 1030, and the common path of egress travel does not exceed 125'.

LIST OF DRAWINGS

- A Cover Sheet
- A1 Cover Sheet - Building Areas and Statistics
- A2 Site Plan
- A3 Site Standards
- A5 Grade Plane Calculations

B3 Building Floor Plans

- U4 2-Bed Unit - Basement & 1st Level Floor Plans
- U5 2-Bed Unit - 2nd & 3rd Level Floor Plans
- U8 Interior Elevations - 2-Bed
- U9 Accessibility Standards
- U11 Stair 1 - Floor Plans
- U12 Stair 2 - Floor Plans

F3 Foundation Plan

R2 Roof Plan

- E3 Exterior Elevations
- E4 Building Sections

- S1.0 Structural Notes
- S1.1 Structural Notes & Tables
- S1.2 Sheer Wall Notes
- S1.3 Sheer Wall Notes
- S2.3 Foundation Plans
- S2.4 2nd & 3rd Floor Framing Plans
- S2.5 Roof Framing Plan
- S3.0 Details
- S3.1 Details
- S4.0 Details
- S4.1 Details
- S5.0 Details
- S5.1 Details

- D1 Details
- D2 Details
- D3 Details
- D4 Details
- D5 Details

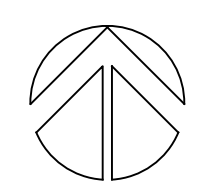
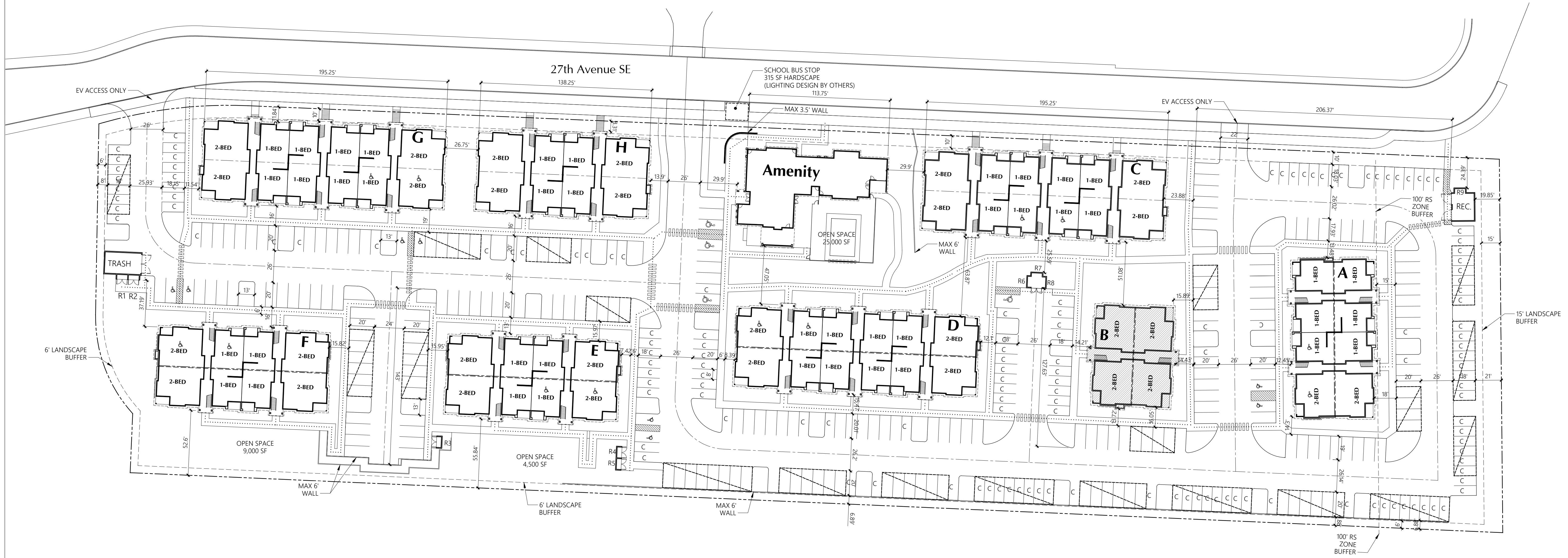
- D6 Details
- D7 Details

- M0.0 Legend, General Notes & Drawing Index
- M0.1 Project Notes
- M0.2 Tables & Calculations
- M0.3 Mechanical Schedules & WSEC Forms
- M2.0 Building B - HVAC Plans
- M3.0 HVAC Enlarged Plan

- E0.00 Electrical Cover Sheet
- E0.01 Electrical Cover Sheet
- E0.10 Power Site Plan
- E0.11 Lighting Site Plan
- E1.00 Basement Lighting Plan
- E1.01 1st Floor Lighting Plan
- E1.02 2nd & 3rd Floor Lighting Plan
- E1.50 Lighting Notes
- E3.00 Basement & 1st Floor Power Plans
- E3.01 2nd & 3rd Floor Power Plans
- E3.02 Roof Power Plan
- E5.00 Unit Plan Notes
- E5.01 Unit Electrical Plans
- E5.02 Unit Electrical Plans
- E6.00 One-Line Diagram & Notes
- E6.01 Panel Schedule

- P0B.00 Plumbing - Legend, General Notes & Drawing Index
- P0B.01 Plumbing Notes & Tables
- P0B.02 Plumbing Calculations
- P0B.03 Plumbing Schedules
- P2B.00 Underslab Waste & Vent Plan
- P2B.01 Basement Waste & Vent Plan
- P2B.02 1st Floor Waste & Vent Plan
- P2B.03 2nd Floor Waste & Vent Plan
- P2B.04 3rd Floor Waste & Vent Plan
- P2B.05 Roof Waste & Vent Plan
- P3B.01 Basement Plumbing Supply Plan
- P3B.02 1st Floor Plumbing Supply Plan
- P3B.03 2nd Floor Plumbing Supply Plan
- P3B.04 3rd Floor Plumbing Supply Plan
- P7B.00 Details
- P7B.01 Details

Sunset Garden Senior Living Apartments



SITE PLAN 236 UNITS
1" = 40'

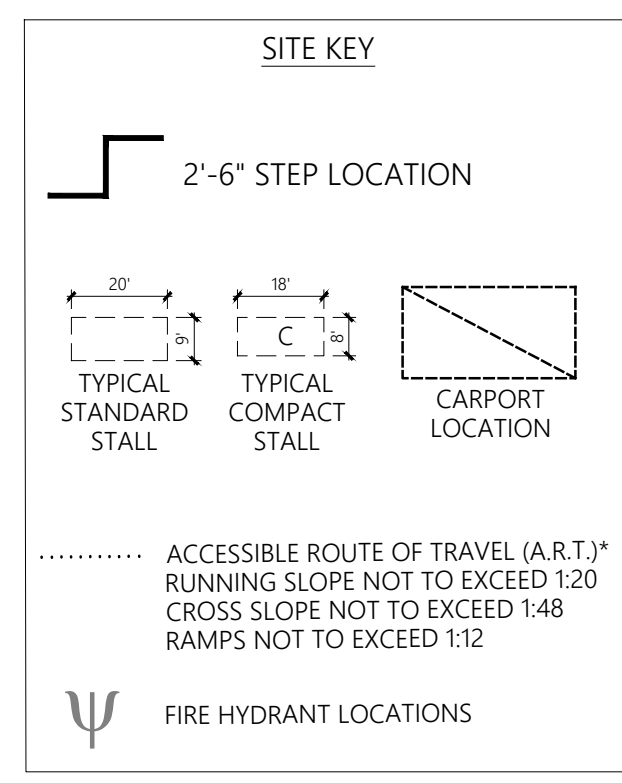
Provide egress plan with all dimensions with travel distance for all floors.
Page A2

SITE INFORMATION

SITE ADDRESS: 202 27th Ave SE, Puyallup, WA
PARCEL #: 419036006
SITE AREA: 339,107 SF (7.785 Acres)
ZONE: RM-CORE
SETBACKS: NORTH/FRONT: 10 FT setback to buildings
WEST/SIDE: 0 FT Building setback - 6 FT landscape buffer
SOUTH/REAR: 0 FT Building setback - 6 FT landscape buffer
EAST/SIDE: 25 FT Building setback - 15 ft landscape buffer
BUILDING HEIGHT: 50' Max
DENSITY: Min 16 units per acre (125 units)
no Max density
LOT COVERAGE: Max 90%
LANDSCAPE AREA: Min 10% of net lot area (33,910 SF)
OPEN SPACE: 10% of net lot area (33,910 SF)
38,500 SF provided
PRIVATE OPEN SPACE: 60 SF per ground floor unit
10' x 6' per upper story unit
PARKING: 1.5 PARKING SPACES PER UNIT
Required Parking: 354 Stalls
Provided Parking: 354 Stalls
EASEMENTS: no existing easements on site

PARKING SUMMARY		
Parking Stalls Required		354
Standard Stalls		118
Compact Stalls	41.5%	100
Parallel Stalls		0
Carport Stalls		124
Attached Garage Stalls		0
Detached Garage Stalls		0
Accessible Standard Stalls		6
Accessible Van Stalls		5
Accessible Parallel Stalls		0
Accessible Carport Stalls		1
Accessible Garage Stalls		0
Tandem Stalls		0
Tandem Garage Stalls		0
Subtotal	354	1.50 Stalls / D.U.
Aprons		0
Total Parking Stalls Provided	354	1.50 Stalls / D.U.

UNIT COUNT	
1 BED	137 (58%)
2 BED	99 (42%)
TOTAL	236



- SITE NOTES**
- 1) TYPICAL SIDEWALK WIDTH IS 6'
 - 2) A MINIMUM CLEAR WIDTH OF 44" IS REQUIRED FOR ALL EXTERIOR ACCESSIBLE ROUTES PER WASHINGTON STATE AMENDMENT SECTION 1101.2.1

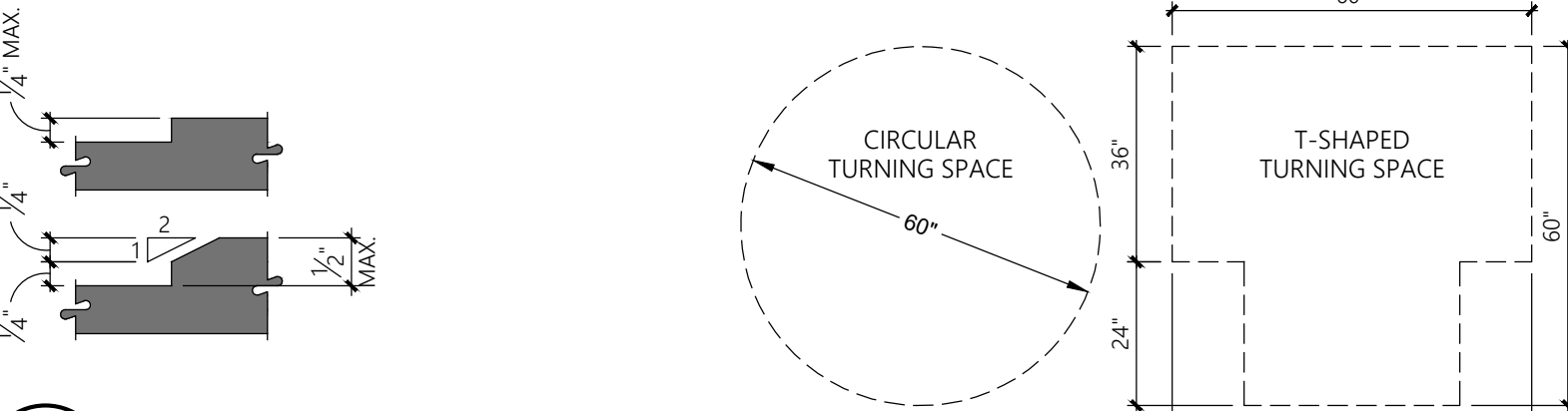
NOTE: ALL DIMENSIONS ARE FROM FINISHED SURFACE

CHANGES IN LEVEL

CHANGES IN LEVEL OF 1/4" MAX. SHALL BE PERMITTED TO BE VERTICAL AND WITHOUT EDGE TREATMENT.
CHANGES IN LEVEL BETWEEN 1/4" AND 1/2" MAX. SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2

TURNING SPACE & CLEAR FLOOR SPACE

TURNING SPACES SHALL BE EITHER A 60" CIRCLE OR A T-SHAPED SPACE WITHIN A 60" SQUARE.
CLEAR FLOOR SPACE IS DEFINED AS A SPACE 30"x48"
A SLOPE OF NOT MORE THAN 1:48 SHALL BE PERMITTED WITHIN TURNING AND CLEAR FLOOR SPACES. NO CHANGES IN LEVEL ARE PERMITTED.



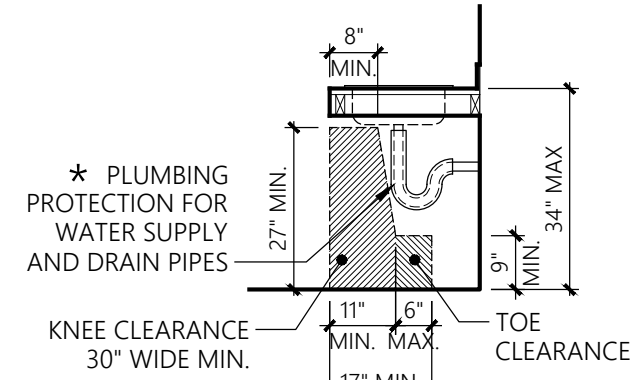
1 FLOOR CLEARANCES

3/8"=1'-0"

KNEE AND TOE CLEARANCE

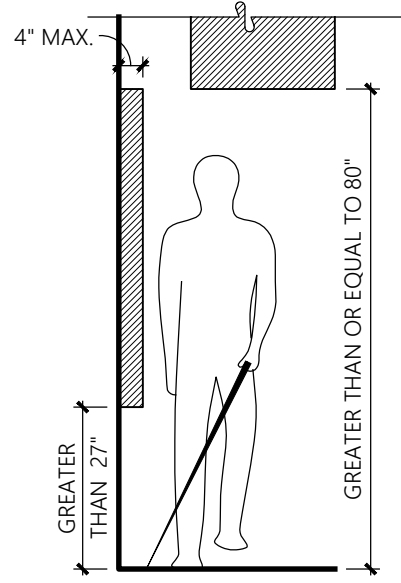
TOE OR KNEE CLEARANCE SHALL BE 30" WIDE MIN. THE DIP OF THE OVERFLOW ON A SINK SHALL NOT BE CONSIDERED IN DETERMINING KNEE AND TOE CLEARANCE.

* WATER SUPPLY & DRAINPIPES UNDER LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES AND SINKS.



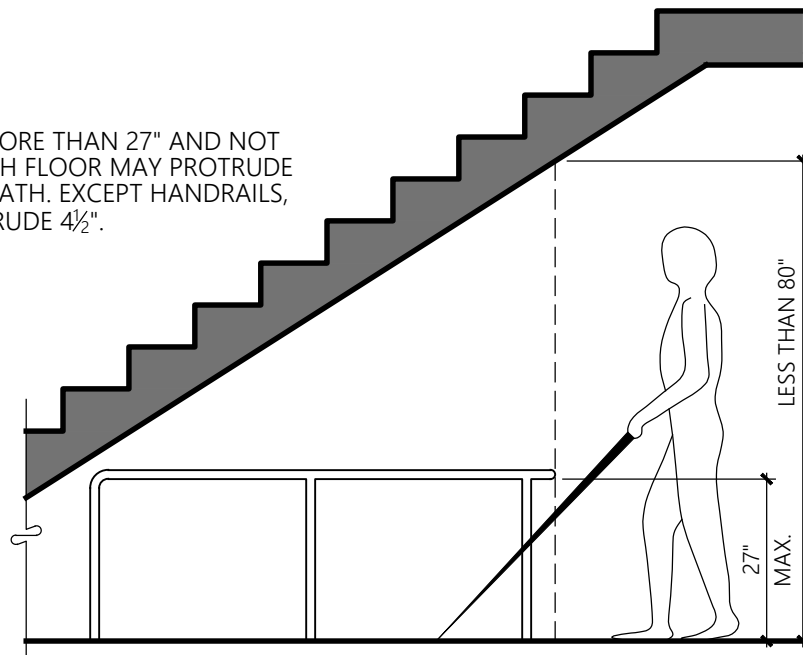
2 KNEE AND TOE SPACE

3/8"=1'-0"



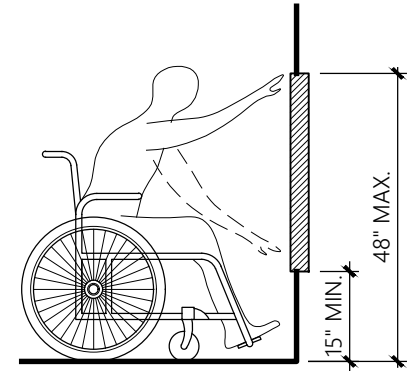
PROTRUDING OBJECTS

OBJECTS WITH LEADING EDGES MORE THAN 27" AND NOT MORE THAN 80" ABOVE THE FINISH FLOOR MAY PROTRUDE 4" MAX INTO THE CIRCULATION PATH. EXCEPT HANDRAILS, WHICH ARE PERMITTED TO PROTRUDE 4 1/2".
WHERE VERTICAL CLEARANCE IS LESS THAN 80", GUARDRAILS OR OTHER BARRIERS SHALL BE PROVIDED WITH THE LEADING EDGE OF THE GUARDRAIL NO MORE THAN 27" MAX. ABOVE THE FLOOR.

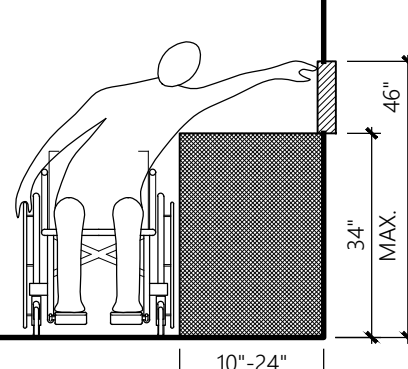
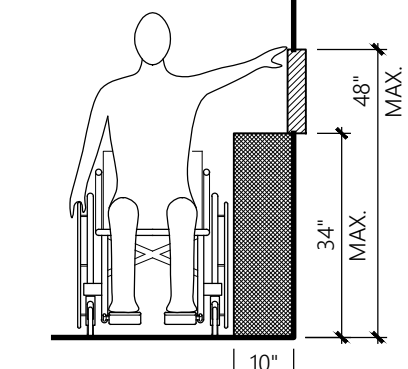
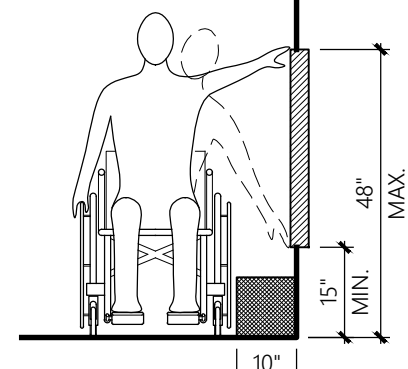
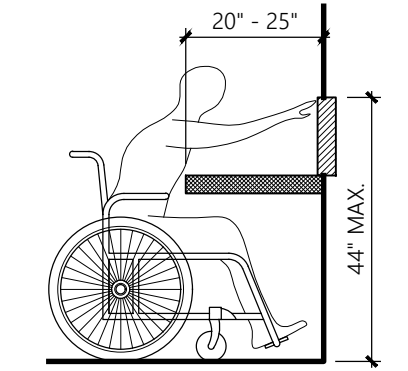
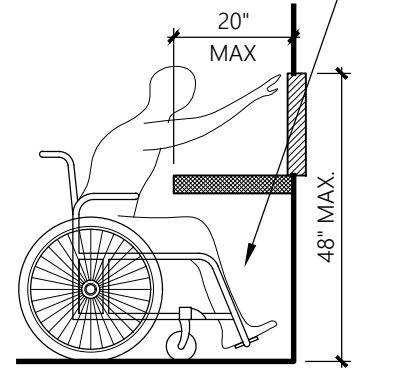


3 PROTRUDING OBJECTS

3/8"=1'-0"



CLEAR FLOOR SPACE SHALL EXTEND BENEATH THE ELEMENT FOR A DISTANCE NOT LESS THAN THE REQUIRED REACH DEPTH OVER THE OBSTRUCTION.



OPERABLE PARTS

A 30"x48" CLEAR FLOOR SPACE SHALL BE PROVIDED AT ALL OPERABLE PARTS. ALL OPERABLE PARTS SHALL BE WITHIN ONE OR MORE OF THE REACH RANGES.
OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5.0 LBS MAX.

4 REACH RANGES

3/8"=1'-0"

ACCESSIBLE ROUTE

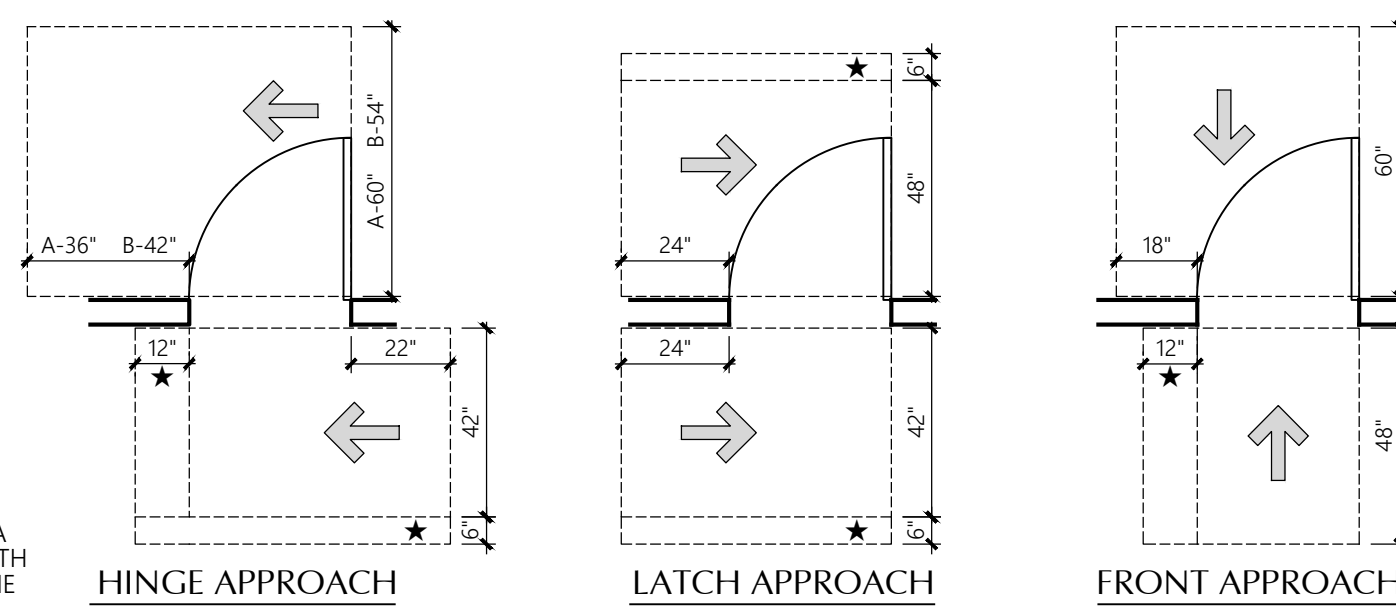
(PER IBC SECTION 1104.2)

AT LEAST ONE ACCESSIBLE ROUTE WITHIN THE SITE SHALL BE PROVIDED FROM PUBLIC TRANSPORTATION STOPS, ACCESSIBLE PARKING, ACCESSIBLE PASSENGER LOADING ZONES, AND PUBLIC STREETS OR SIDEWALKS TO THE ACCESSIBLE BUILDING ENTRANCES SERVED.
WHEN A BUILDING OR PORTION OF A BUILDING IS REQUIRED TO BE ACCESSIBLE, AT LEAST ONE ACCESSIBLE ROUTE SHALL BE PROVIDED TO EACH PORTION OF THE BUILDING, TO ACCESSIBLE BUILDING ENTRANCES CONNECTING ACCESSIBLE WALKWAYS AND TO THE PUBLIC WAY.
ACCESSIBLE ROUTES SHALL COINCIDE WITH OR BE LOCATED IN THE SAME AREAS AS A GENERAL CIRCULATION PATH.

ACCESSIBLE ROUTES SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING COMPONENTS: WALKING SURFACES WITH A SLOPE NOT STEEPER THAN 1:20, DOORS & DOORWAYS, RAMPS, CURB RAMPS EXCLUDING THE FLARED SIDES, ELEVATORS, AND PLATFORM LIFTS.

5 ACCESSIBLE ROUTE

* ADDITIONAL CLEARANCE IF DOOR HAS BOTH CLOSER AND LATCH



MANEUVERING CLEARANCES

MIN. MANEUVERING CLEARANCES SHALL COMPLY WITH THESE DIAGRAMS AND SHALL NOT INCLUDE KNEE & TOE CLEARANCE. THE FLOOR SURFACE WITHIN THE MANEUVERING CLEARANCE SHALL HAVE A SLOPE NOT GREATER THAN 1:48

DOORS

DOORWAY CLEAR WIDTH: DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32" MIN. CLEAR OPENING OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED FROM THE FACE OF THE DOOR TO THE STOP WITH THE DOOR OPEN 90°

THRESHOLDS: IF PROVIDED, THRESHOLDS SHALL BE 1/2" MAX. IN HEIGHT & SHALL COMPLY WITH SECTIONS 302 & 303. (See detail 1 ACC sheets)

DOOR HARDWARE: HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERABLE PARTS ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST TO OPERATE. OPERABLE PARTS OF SUCH HARDWARE SHALL BE 34" MIN. AND 48" MAX. ABOVE THE FLOOR.

WALKING SURFACES

SLOPE: THE RUNNING SLOPE OF WALKING SURFACES SHALL NOT BE STEEPER THAN 1:20. THE CROSS SLOPE OF A WALKING SURFACE SHALL NOT BE STEEPER THAN 1:48.

CHANGES IN LEVEL: CHANGES IN LEVEL SHALL COMPLY WITH SECTION 303 (see detail 1 ACC sheets)

CLEAR WIDTH: THE WIDTH OF AN ACCESSIBLE ROUTE SHALL BE 36" MIN. THE CLEAR WIDTH SHALL BE PERMITTED TO BE REDUCED TO 32" MIN. FOR A LENGTH OF 24" MAX. PROVIDED THE REDUCED WIDTH SEGMENTS ARE SEPARATED BY SEGMENTS THAT ARE 48" MIN. IN LENGTH AND 36" MIN. IN WIDTH. FOR EXTERIOR ROUTES OF TRAVEL, THE CLEAR WIDTH SHALL BE 44" MIN.

PASSING SPACE: AN ACCESSIBLE ROUTE WITH A CLEAR WIDTH LESS THAN 60" SHALL PROVIDE PASSING SPACES AT MAXIMUM INTERVALS OF 200 FEET. PASSING SPACES SHALL BE EITHER A 60"x60" MIN. SPACE, OR AN INTERSECTION OF WALKING SURFACES WITH A T-SHAPED TURNING SPACE (See detail 1 ACC sheets). PROVIDED THE BASE AND ARMS OF THE T-SHAPED SPACE EXTEND 48" MIN. BEYOND THE INTERSECTION.

6 DOORS

1/4"=1'-0"

RAMPS

GENERAL: RAMP RUNS SHALL HAVE A RUNNING SLOPE GREATER THAN 1:20 AND NOT STEEPER THAN 1:12. THE MAX. CROSS SLOPE OF A RAMP SHALL BE 1:48. THE MAX. RISE FOR ANY RAMP RUN SHALL BE 30". LANDINGS SUBJECT TO WET CONDITIONS SHALL BE DESIGNED TO PREVENT THE ACCUMULATION OF WATER.

CHANGES IN LEVEL: CHANGES IN LEVEL SHALL COMPLY WITH SECTION 303 (See detail 1 ACC sheets)

CLEAR WIDTH: THE CLEAR WIDTH SHALL BE 36" MIN. FOR EXTERIOR ROUTES OF TRAVEL THE CLEAR WIDTH SHALL BE 44" MIN. THE HANDRAILS SHALL NOT PROJECT INTO THE REQUIRED CLEAR WIDTH OF THE RAMP RUN.

LANDINGS: RAMP RUNS SHALL HAVE LANDINGS AT THE BOTTOM & TOP OF EACH RAMP RUN WITH A MAX. SLOPE OF 1:48. CLEAR WIDTH OF LANDINGS SHALL BE AS WIDE AS THE WIDEST RAMP RUN LEADING TO THE LANDING AND A MIN. CLEAR LENGTH OF 60". RAMP RUNS THAT CHANGE DIRECTION AT THE LANDING SHALL BE SIZED TO PROVIDE A TURNING SPACE (See detail 1 ACC sheets)

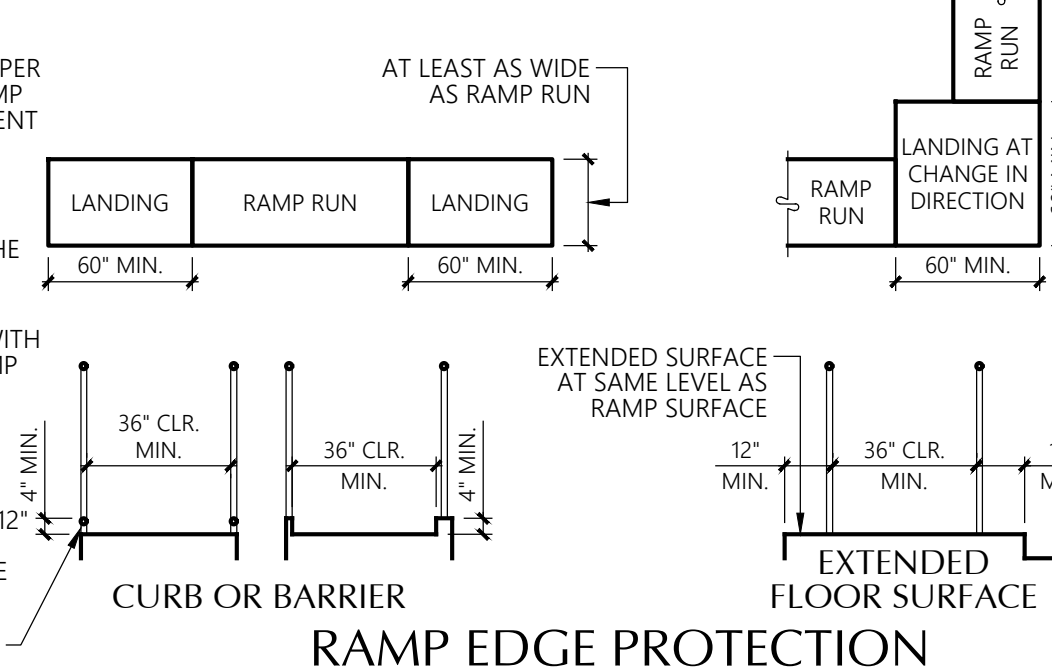
HANDRAILS: RAMP RUNS WITH A RISE GREATER THAN 6" SHALL HAVE HANDRAILS

EDGE PROTECTION: THE FLOOR SURFACE OF THE RAMP RUN OR LANDING SHALL EXTEND 12" BEYOND THE INSIDE FACE OF A RAILING OR THERE SHALL BE A 4" MIN. HEIGHT CURB OR A BARRIER AT THE EDGE OF THE RAMP OR LANDING CONSTRUCTED SO THAT IT PREVENTS THE PASSAGE OF A 4" DIAMETER SPHERE

CLOSING SPEED: DOORS WITH CLOSERS SHALL BE ADJUSTED SO THAT FROM A 90° OPEN POSITION, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12° FROM THE LATCH IS 5 SECONDS MIN.

DOORS WITH A SPRING HINGE: SHALL BE ADJUSTED SO THAT FROM A 70° OPEN POSITION, THE TIME REQUIRED TO MOVE THE DOOR TO A CLOSED POSITION IS 1.5 SECONDS MIN.

DOOR OPENING FORCE: HINGED, SLIDING OR FOLDING DOORS OTHER THAN FIRE DOORS SHALL HAVE AN OPENING FORCE AS FOLLOWS:
INTERIOR DOORS: 5 lbs. MAX.
EXTERIOR DOORS: 10 lbs. MAX.

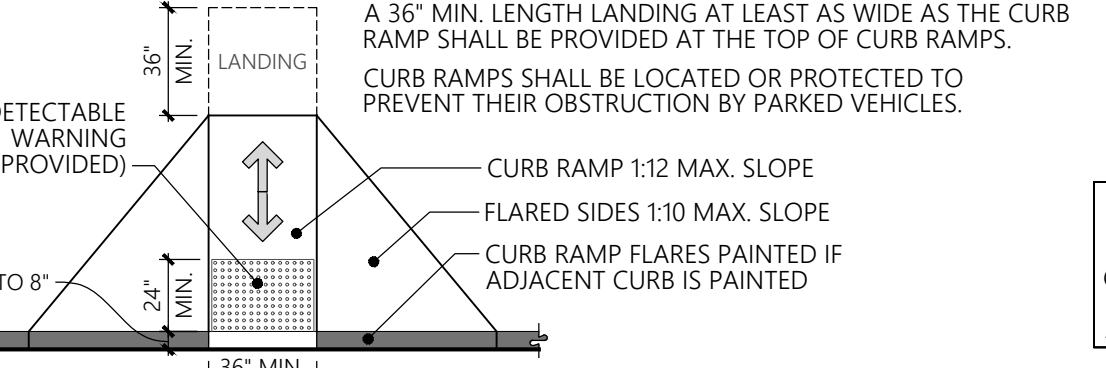


7 RAMPS

1/4"=1'-0"

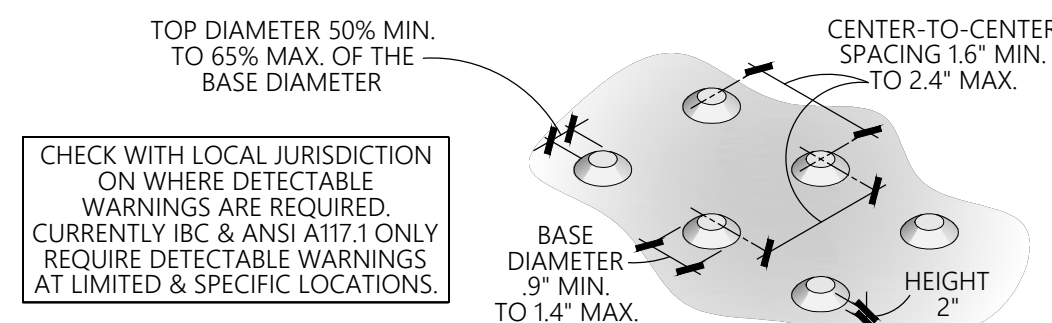
CURB RAMPS

THE MIN. WIDTH OF CURB RAMPS SHALL BE 36". ALL ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO THE CURB RAMP SHALL NOT BE STEEPER THAN 1:20. THE CURB RAMP SHALL HAVE A MAX. SLOPE OF 1:12 WITH A MAX. CROSS SLOPE OF 1:48. LANDINGS SUBJECT TO WET CONDITIONS SHALL BE DESIGNED TO PREVENT THE ACCUMULATION OF WATER.



DETECTABLE WARNINGS

DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJACENT SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT.
DETECTABLE WARNING SURFACES IN INTERIOR LOCATIONS SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT. TRUNCATED DOMES SHALL BE ALIGNED IN A SQUARE PATTERN.



8 CURB RAMPS AND DETECTABLE WARNINGS

1/4"=1'-0"

ACCESSIBLE PARKING SPACES

LOCATION: PER IBC SECTION 1106.6, ACCESSIBLE PARKING SPACES SHALL BE LOCATED ON THE SHORTEST ACCESSIBLE ROUTE OF TRAVEL FROM ADJACENT PARKING TO AN ACCESSIBLE BUILDING ENTRANCE. WHERE PRACTICAL, THE ACCESSIBLE ROUTE SHALL NOT CROSS LANES OF TRAFFIC. WHERE CROSSING TRAFFIC LANES IS NECESSARY, THE ROUTE SHALL BE DESIGNATED AND MARKED AS A CROSSWALK.

PARKING STALL SIZE: CAR AND VAN PARKING SPACES SHALL BE 96" MIN. WIDTH. ACCESS AISLES SERVING CAR PARKING SPACES SHALL BE 60" MIN. IN WIDTH. ACCESS AISLES SERVING VAN PARKING SPACES SHALL BE 96" MIN. IN WIDTH.

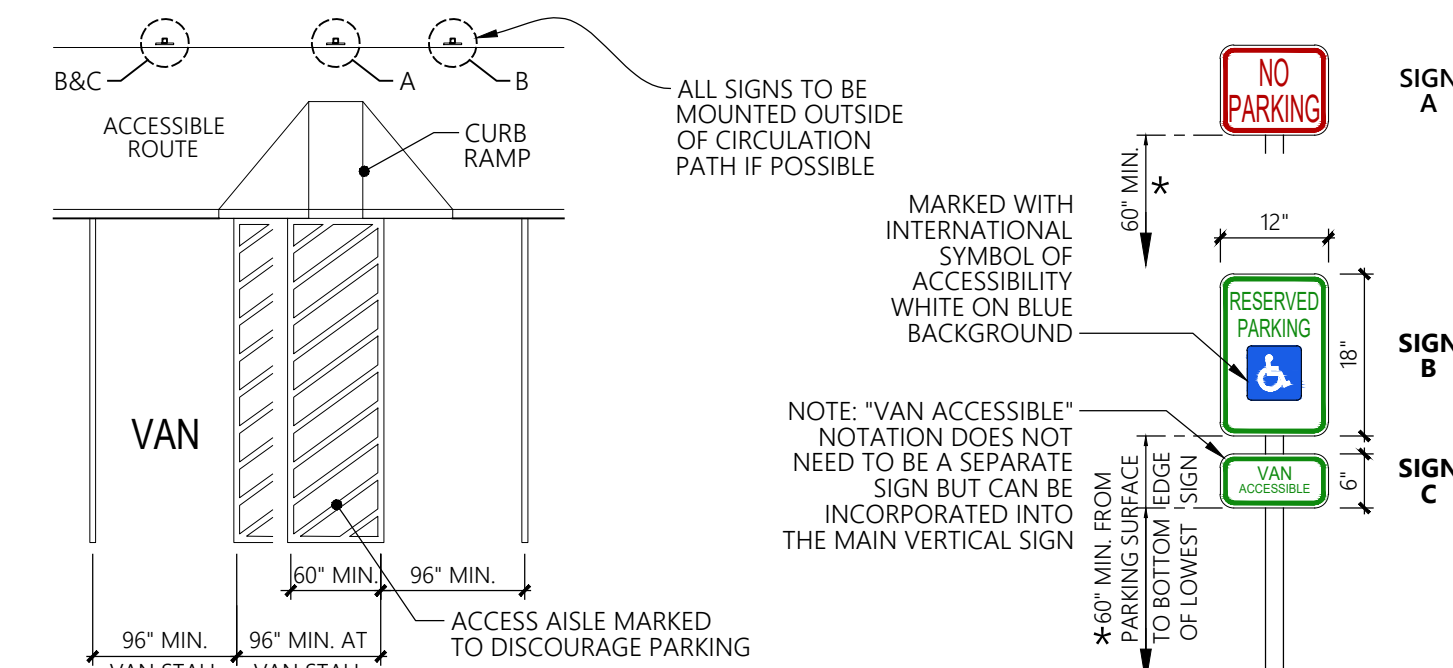
ACCESS AISLE: CAR AND VAN PARKING SPACES SHALL HAVE AN ADJACENT ACCESS AISLE ON EITHER SIDE OF THE PARKING SPACE. THE ACCESS AISLES SHALL BE 60" MIN. IN WIDTH FOR CAR STALLS AND 96" MIN. IN WIDTH FOR VAN STALLS AND EXTEND THE FULL LENGTH OF AND AT THE SAME LEVEL AS THE PARKING SPACE THEY SERVE. ACCESS AISLES SHALL BE MARKED SO AS TO DISCOURAGE PARKING IN THEM.

FLOOR SURFACES: PARKING STALLS & ADJACENT ACCESS AISLES SHALL HAVE A SURFACE SLOPE NOT GREATER THAN 1:48. WHERE MOUNTING IS NECESSARY WITHIN A PATH OF CIRCULATION, SIGNS SHALL MEET THE REQUIREMENTS OF IBC SECTION 1003.3 FOR PROTRUDING OBJECTS AND POST-MOUNTED OBJECTS.

IDENTIFICATION: ACCESSIBLE PARKING SPACES SHALL BE INDICATED BY A VERTICAL SIGN. SIGNS SHALL INCLUDE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY THAT IS WHITE WITH A BLUE BACKGROUND. SIGNS IDENTIFYING VAN PARKING SPACES SHALL CONTAIN THE DESIGNATION "VAN ACCESSIBLE". A VERTICAL "NO PARKING" SIGN SHALL BE ERRECTED AT THE HEAD OF EACH ACCESS AISLE LOCATED ADJACENT TO AN ACCESSIBLE PARKING SPACE. THESE SIGNS MAY INCLUDE ADDITIONAL LANGUAGE SUCH AS, BUT NOT LIMITED TO, AN INDICATION OF THE AMOUNT OF THE MONETARY PENALTY FOR PARKING IN THE SPACE WITHOUT A VALID PERMIT OR THE ACCESS AISLE. THESE SIGNS SHALL BE 60" MIN. ABOVE THE FLOOR OF THE PARKING SPACE MEASURED TO THE BOTTOM OF THE SIGN.

SIGN MOUNTING: SIGNS ARE TO BE MOUNTED COMPLETELY OUTSIDE OF CIRCULATION PATHS WHEREVER POSSIBLE. WHERE MOUNTING IS NECESSARY WITHIN A PATH OF CIRCULATION, SIGNS SHALL MEET THE REQUIREMENTS OF IBC SECTION 1003.3 FOR PROTRUDING OBJECTS AND POST-MOUNTED OBJECTS.

* SIGNS MOUNTED ON POSTS WITHIN A CIRCULATION PATH SHALL BE INSTALLED WITH A VERTICAL CLEARANCE OF 80" MIN. FROM THE LOWEST POINT OF THE SIGN(S) TO THE WALKING SURFACE. IF A POST MOUNTED SIGN IS SIZED SUCH THAT IT PROTRUDES 4" MAX. FROM THE MOUNTING POST, THEN THE MOUNTING HEIGHT SHALL BE MOUNTED AT 60" MIN. ABOVE THE PARKING SURFACE SO AS TO NOT BE OBSTRUCTED BY ANY PARKED VEHICLES.



10 ACCESSIBLE PARKING SPACES

NTS

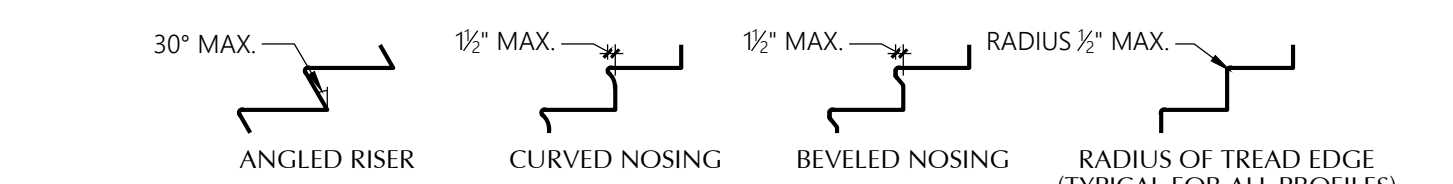
ACCESSIBLE STAIR REQUIREMENTS

ALL STEPS ON A FLIGHT OF STAIRS SHALL HAVE UNIFORM RISER HEIGHTS AND UNIFORM TREAD DEPTHS. RISERS SHALL BE 4" HIGH MIN. AND 7" HIGH MAX. TREADS SHALL BE 11" DEEP MIN.

OPEN RISERS ARE NOT PERMITTED & TREADS SHALL HAVE A SLOPE NOT MORE THAN 1:48.

STAIR NOSINGS SHALL CONFORM TO THE DIAGRAMS SHOWN HERE AND THE LEADING 2" OF THE TREAD SHALL HAVE VISUAL CONTRAST OF DARK-ON-LIGHT OR LIGHT-ON-DARK FROM THE REMAINDER OF THE TREAD.

STAIR TREADS & LANDINGS SUBJECT TO WET CONDITIONS SHALL BE DESIGNED TO PREVENT ACCUMULATION OF WATER. FLOOR IDENTIFICATION SIGNS SHALL BE LOCATED AT EACH FLOOR LANDING ADJACENT TO THE STAIRWELL DOOR LEADING INTO THE CORRIDOR. SIGNS SHALL BE IN RAISED CHARACTERS & BRAILLE. "EXIT" SIGNS SHALL BE LOCATED AT STAIRS LEADING TO THE EXTERIOR OF THE BUILDING. (See detail 21 ACC sheets)



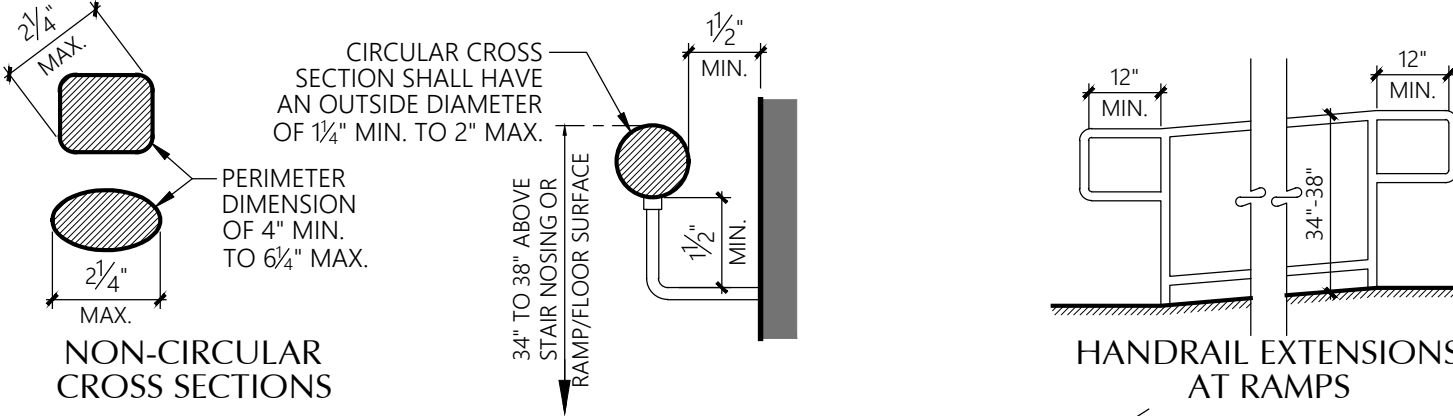
11 ACCESSIBLE STAIRS

3/8"=1'-0"

HANDRAILS

HANDRAILS SHALL BE PROVIDED ON BOTH SIDES OF STAIRS & RAMPS. THEY SHALL BE CONTINUOUS FOR THE FULL LENGTH OF EACH STAIR FLIGHT OR RAMP RUN. INSIDE HANDRAILS ON SWITCHBACK STAIRS SHALL BE CONTINUOUS BETWEEN FLIGHTS OR RUNS.

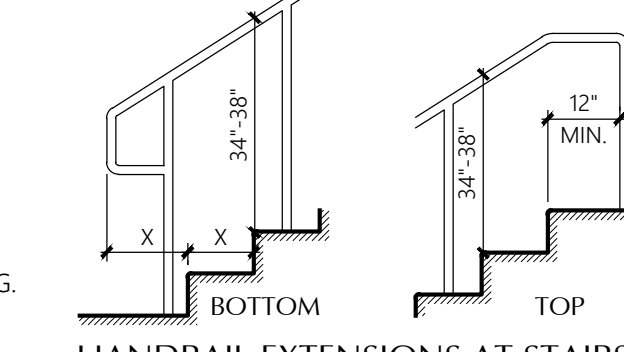
HANDRAIL GRIPPING SURFACES & ANY SURFACES ADJACENT TO THEM SHALL BE FREE OF SHARP OR ABRASIVE ELEMENTS & SHALL HAVE ROUNDED EDGES. THEY SHALL BE CONTINUOUS ALONG THEIR LENGTH AND SHALL NOT BE OBSTRUCTED ALONG THEIR TOPS OR SIDES. THE BOTTOM SHALL NOT BE OBSTRUCTED FOR MORE THAN 20% OF ITS LENGTH



HANDRAIL EXTENSIONS

EXTENSIONS SHALL EXTEND BEYOND AND IN THE SAME DIRECTION OF A STAIR FLIGHT OR RAMP RUN EXCEPT FOR THE INSIDE CONTINUOUS HANDRAIL AT SWITCHBACK STAIRS OR RAMPS. HANDRAILS SHALL RETURN TO A WALL, GUARD OR THE LANDING SURFACE, OR BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT STAIR FLIGHT OR RAMP RUN.

AT THE BOTTOM OF A STAIR FLIGHT THE HANDRAIL SHALL EXTEND AT THE SLOPE OF THE STAIR FLIGHT FOR A HORIZONTAL DISTANCE EQUAL TO ONE TREAD DEPTH BEYOND THE BOTTOM TREAD NOSING.



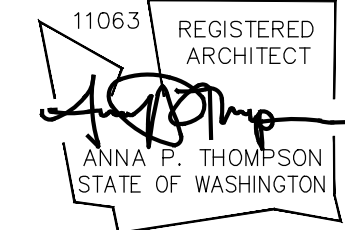
12 HANDRAILS

1 1/2" = 1'-0" AND 3/8"=1'-0"

GENERAL SITE & BLDG. ELEMENTS
CHAPTER 5

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Bradley Heights Apartments
Puyallup, Wa

Timberlane Partners

Revisions
No. Date Description

Initial Publish Date:
Date Plotted: 2-20-24
Job No.: 23-06
Drawn By: APT/DJV/JLL
Sheet No.:

IBC SECTION 202 DEFINITIONS

BASEMENT. A STORY THAT IS NOT A STORY ABOVE GRADE PLANE (SEE "STORY ABOVE GRADE PLANE"). THIS DEFINITION OF "BASEMENT" DOES NOT APPLY TO THE PROVISIONS OF SECTION 1612 FOR FLOOD LOADS.

STORY ABOVE GRADE PLANE. ANY STORY HAVING ITS FINISHED FLOOR SURFACE ENTIRELY ABOVE GRADE PLANE, OR IN WHICH THE FINISHED SURFACE OF THE FLOOR NEXT ABOVE IS:

- MORE THAN 6 FEET (1829 MM) ABOVE GRADE PLANE; OR
- MORE THAN 12 FEET (3658 MM) ABOVE THE FINISHED GROUND LEVEL AT ANY POINT

GRADE PLANE. A REFERENCE PLANE REPRESENTING THE AVERAGE OF FINISHED GROUND LEVEL ADJOINING THE BUILDING AT EXTERIOR WALLS. WHERE THE FINISHED GROUND LEVEL SLOPES AWAY FROM THE EXTERIOR WALLS, THE REFERENCE PLANE SHALL BE ESTABLISHED BY THE LOWEST POINTS WITHIN THE AREA BETWEEN THE BUILDING AND THE LOT LINE OR, WHERE THE LOT LINE IS MORE THAN 6 FEET (1829 MM) FROM THE BUILDING, BETWEEN THE BUILDING AND A POINT 6 FEET (1829 MM) FROM THE BUILDING.

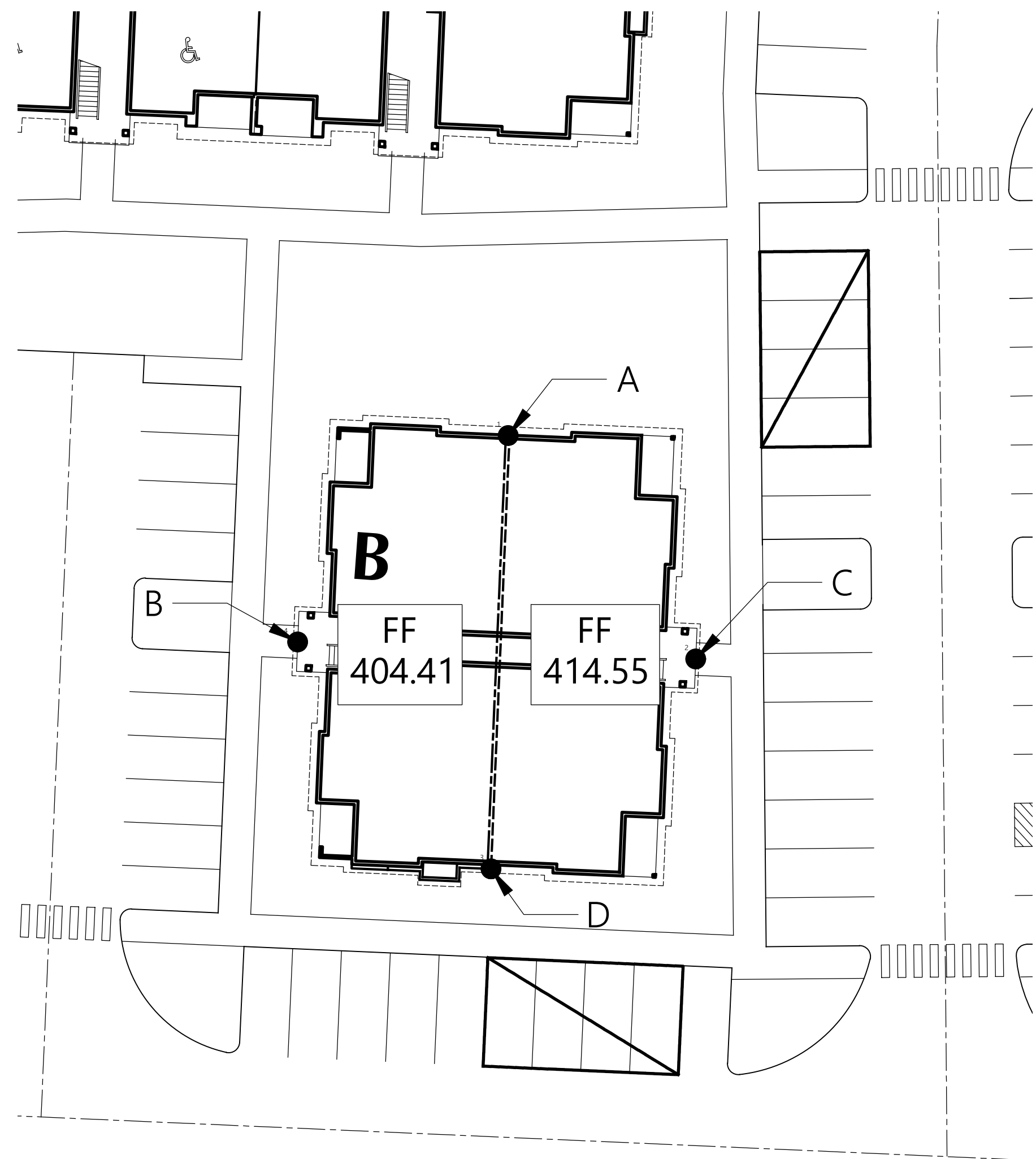
BUILDING B

AVERAGE GRADE ELEVATION AT EACH EXTERIOR WALL:

POINT A	=	408.99
POINT B	=	403.83
POINT C	=	413.97
POINT D	=	411.55
	$1638.34/4 =$	409.60 AEG

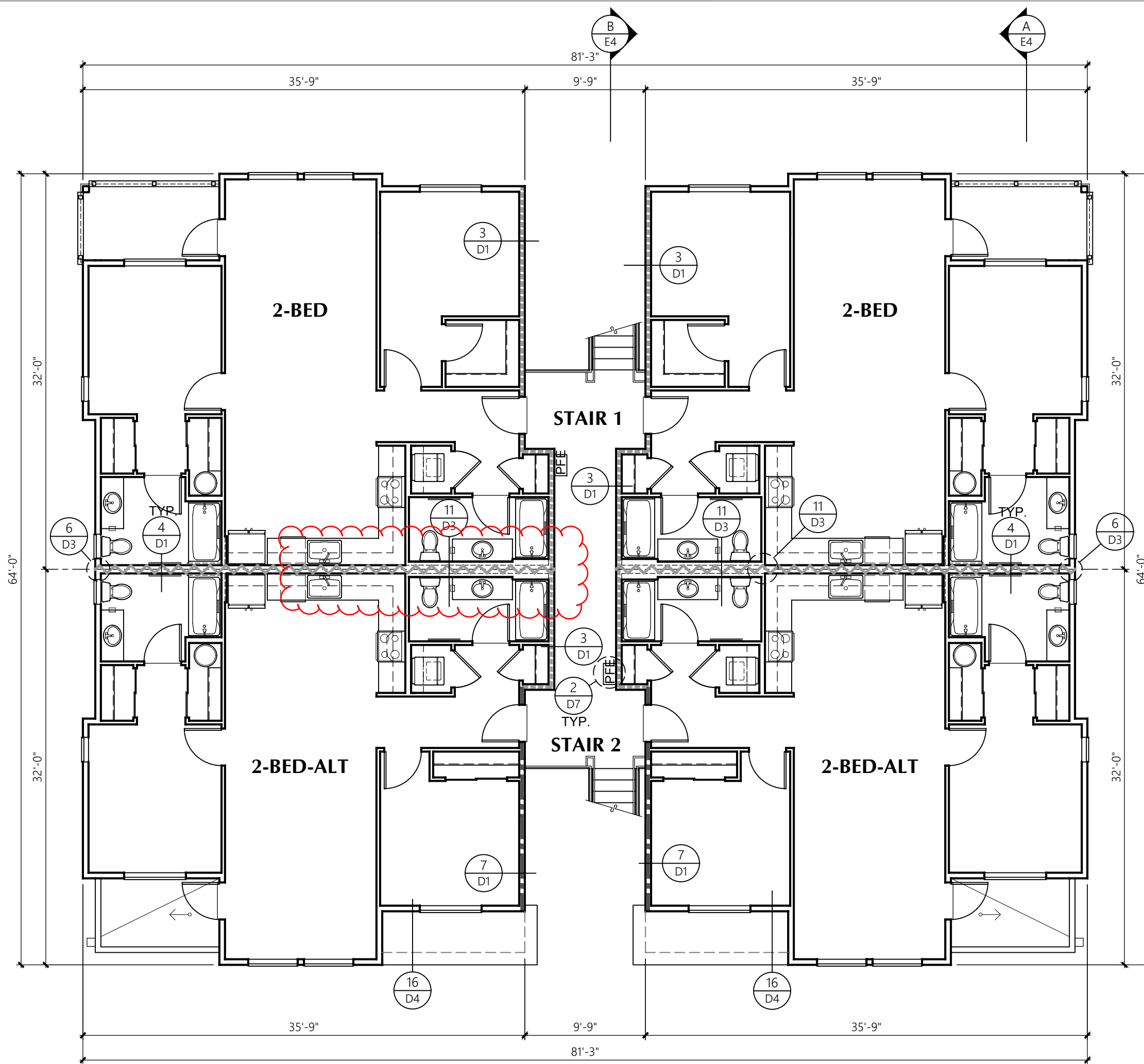
FIRST FLOOR (FLOOR NEXT ABOVE GRADE PLANE) IS LESS THAN 6- FEET (ACTUAL 3.2 FEET) BELOW FIRST FLOOR FINISHED FLOOR ELEVATION OF 414.55.

BUILDING A QUALIFIES AS 3-STORY OVER BASEMENT

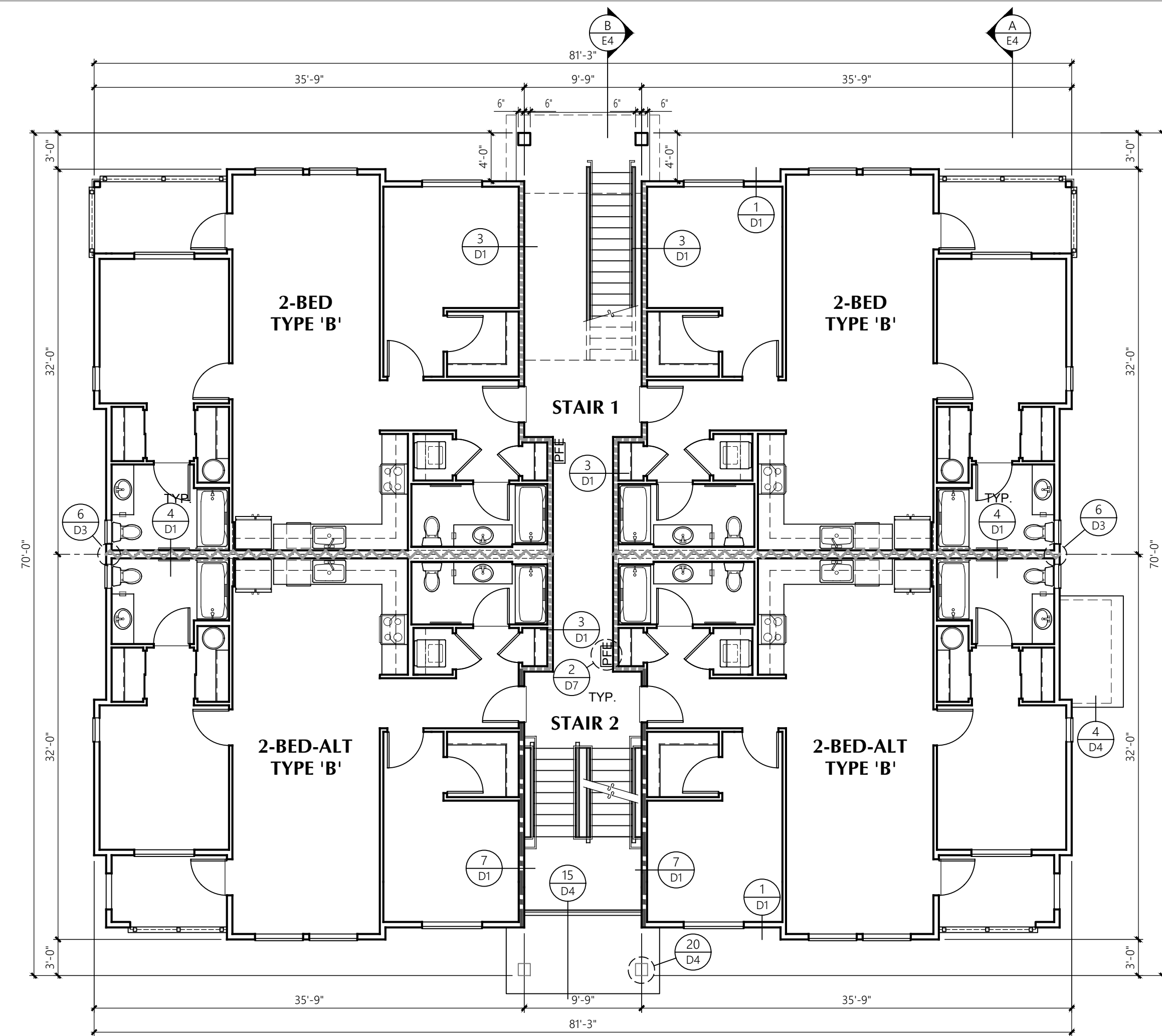


BUILDING B GRADE PLANE CALCULATIONS
1" = 20'

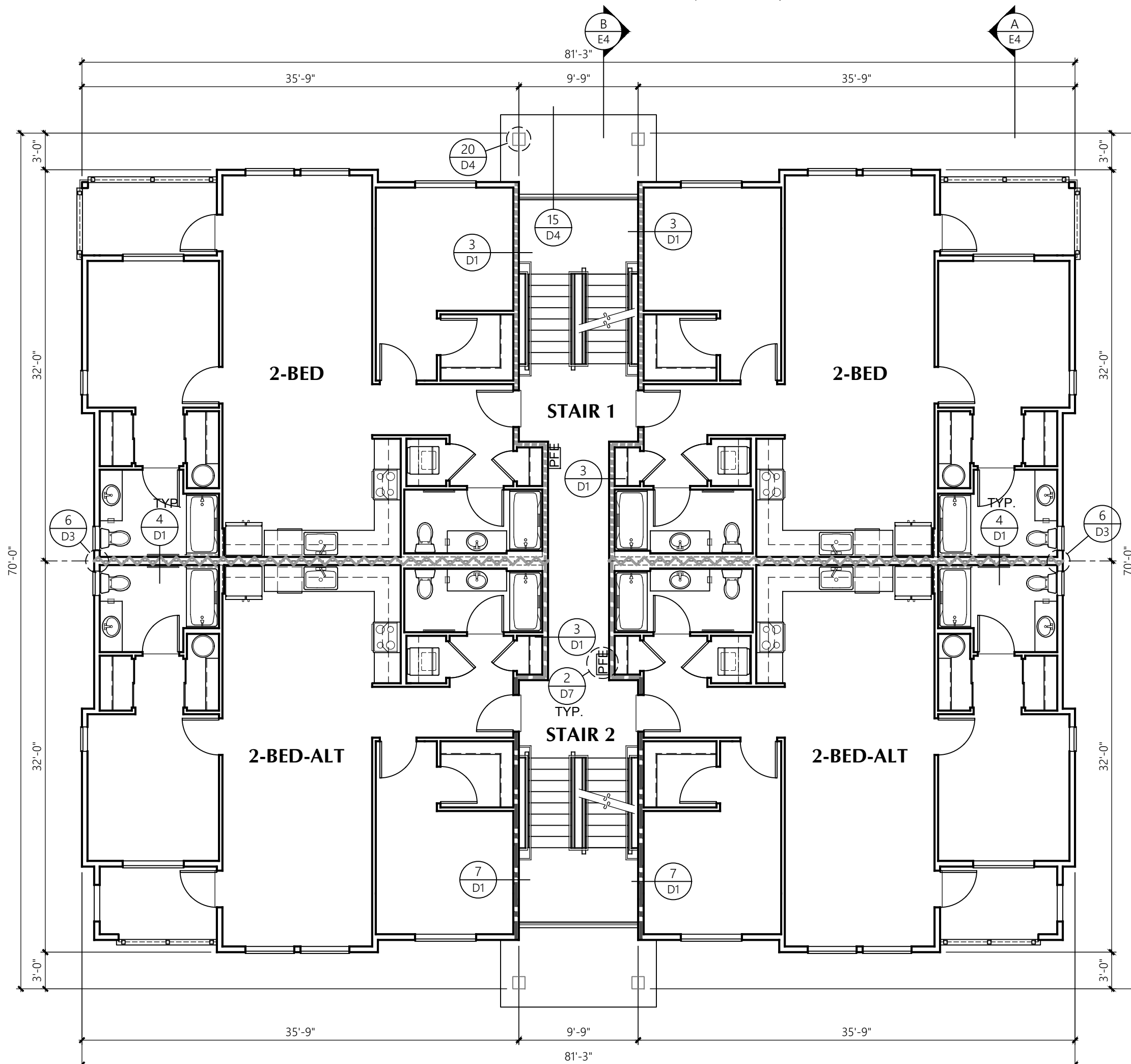
Provide fire stop detail for plumbing in 1-HR rated wall for all penetration in wall separating units.
 Wall section #6 unit separation wall does not reflect penetration in rated wall.
 Page B3



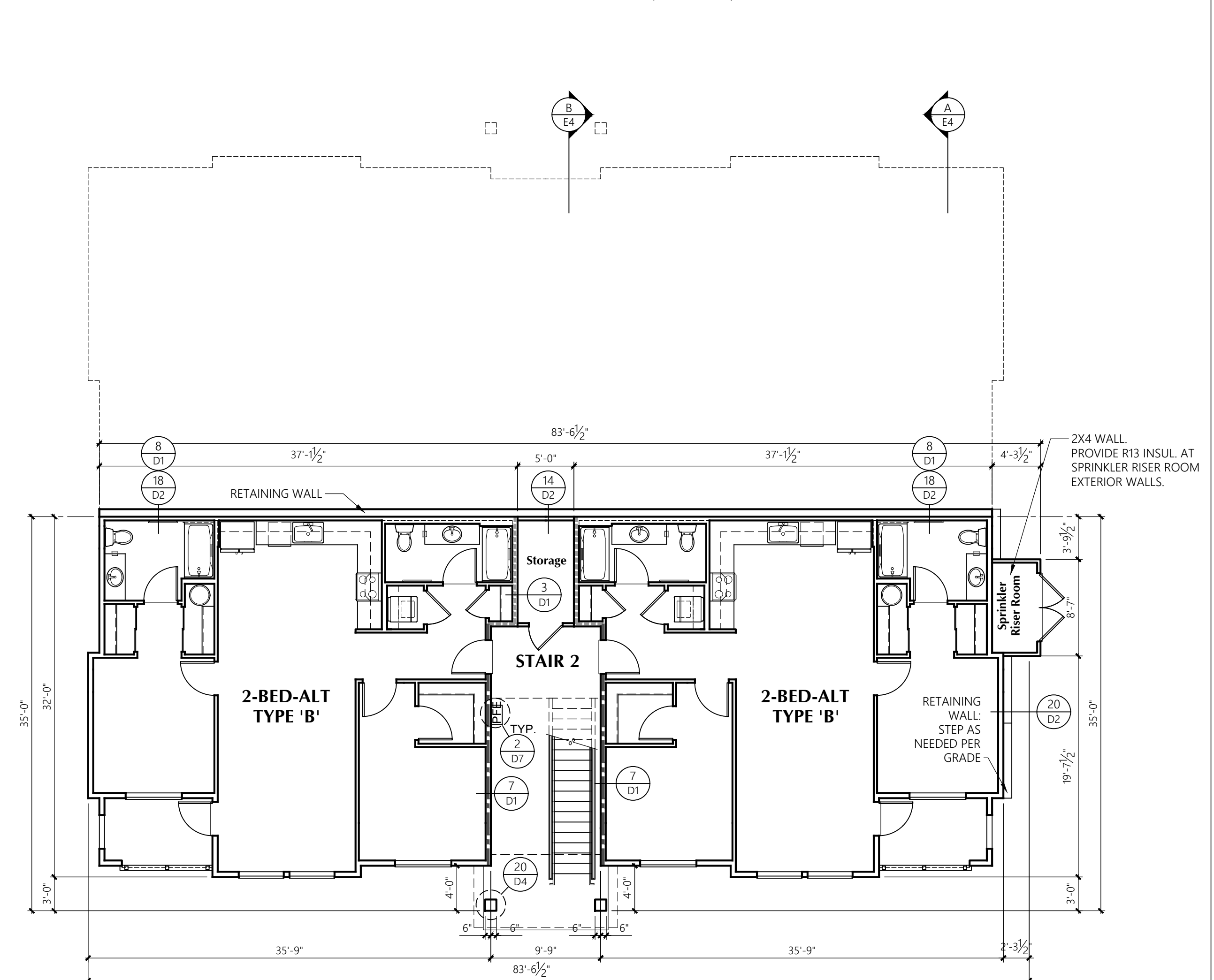
BUILDING B 3rd LEVEL PLAN
 1/8" = 1'-0" 3/4 SPLIT LEVEL, 14-UNIT BUILDING



BUILDING B 1st LEVEL PLAN
 1/8" = 1'-0" 3/4 SPLIT LEVEL, 14-UNIT BUILDING



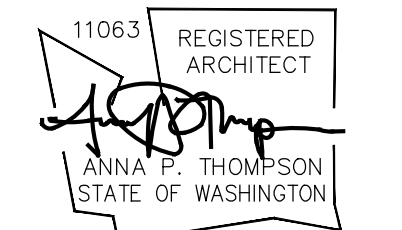
BUILDING B 2nd LEVEL PLAN
 1/8" = 1'-0" 3/4 SPLIT LEVEL, 14-UNIT BUILDING



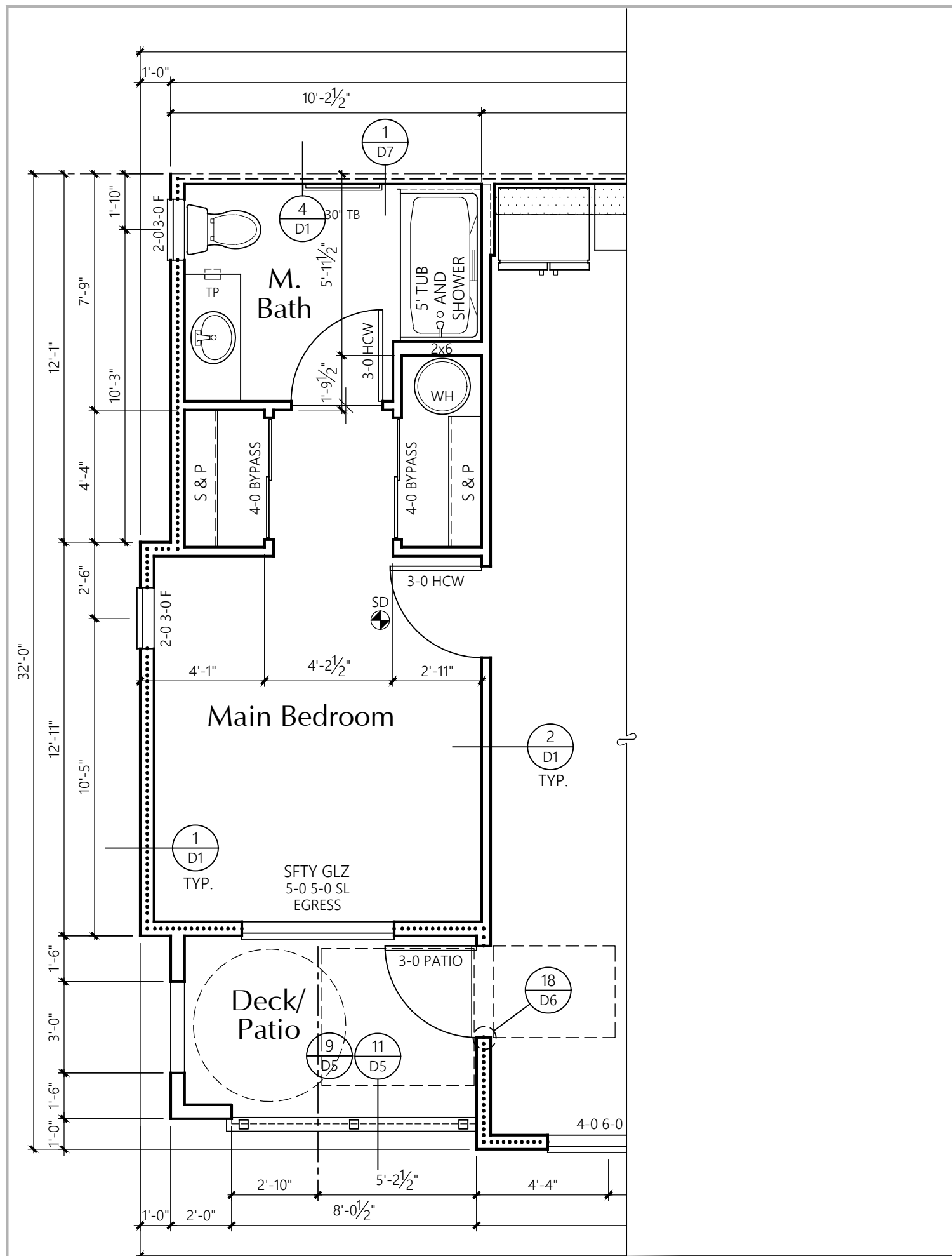
BUILDING B BASEMENT LEVEL PLAN
 1/8" = 1'-0" 3/4 SPLIT LEVEL, 14-UNIT BUILDING

LEGEND

	EXTENT OF 1-HR FIRE PARTITION
	1-HR FIRE BARRIER SEPARATES THE INTERIOR SPACES BETWEEN UNITS IN THE SAME BUILDINGS. IT'S EXTENT ENDS WHERE ONE SIDE WOULD BE AN EXTERIOR FACE. SEE 4/D1
	EXTENT OF 1-HR FIRE BARRIER AROUND EXIT STAIRS, SEE 3/D1
	EXTENT OF 2-HR FIRE BARRIER AROUND EXIT STAIRS, SEE 7/D1
	EXTENT OF 1-HR EXTERIOR WALL, SEE LOCATION SPECIFIC DETAIL
	FE* - SEMI RECESSED FIRE EXTINGUISHER CABINET/SEE DETAIL 2/D7



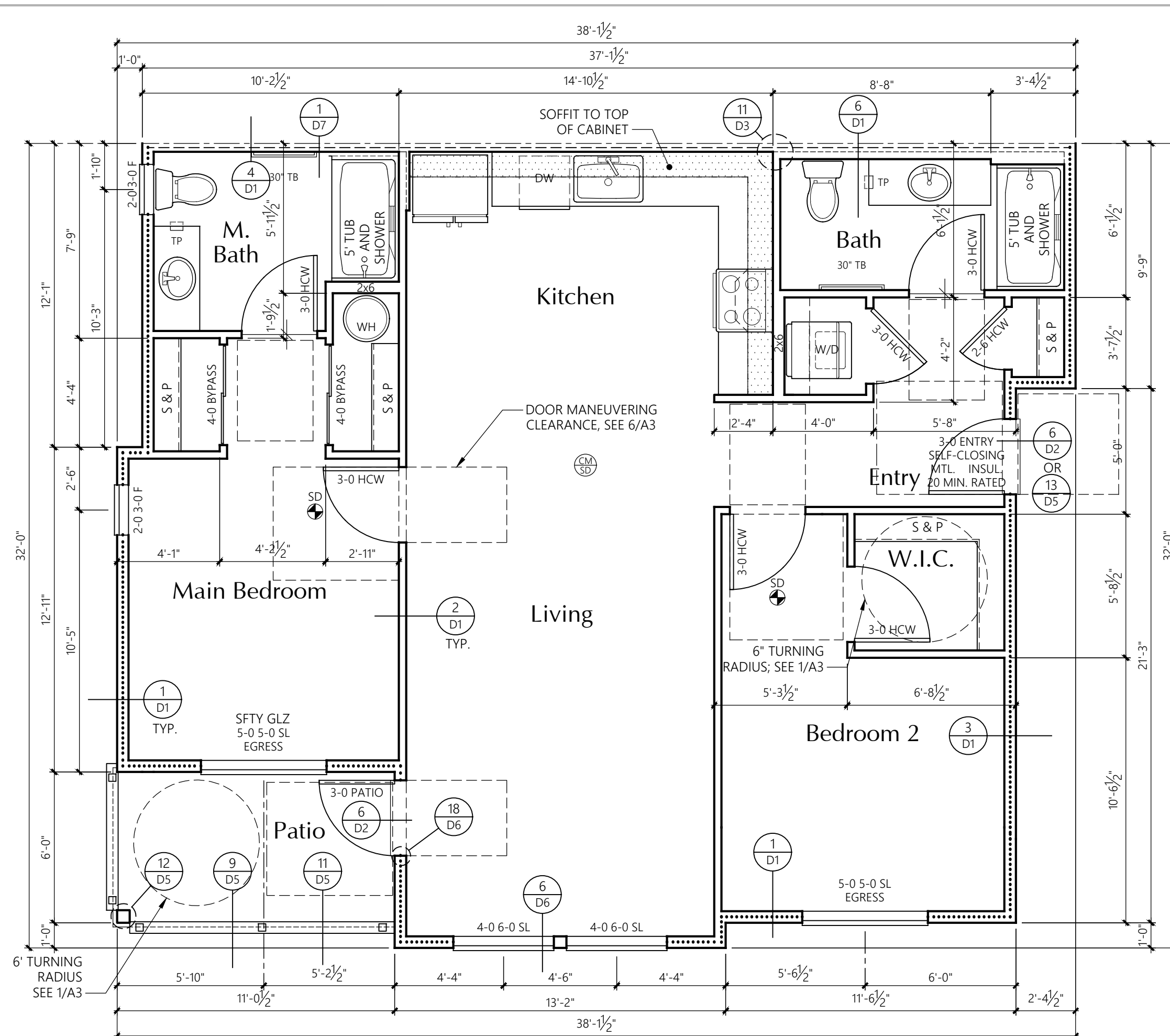
No.	Date	Description



2-BED-ALT UNIT ALTERNATE TYPE 'A' OR 'B' ACCESSIBLE
1st LEVEL FLOOR PLAN

1/4" = 1'-0"

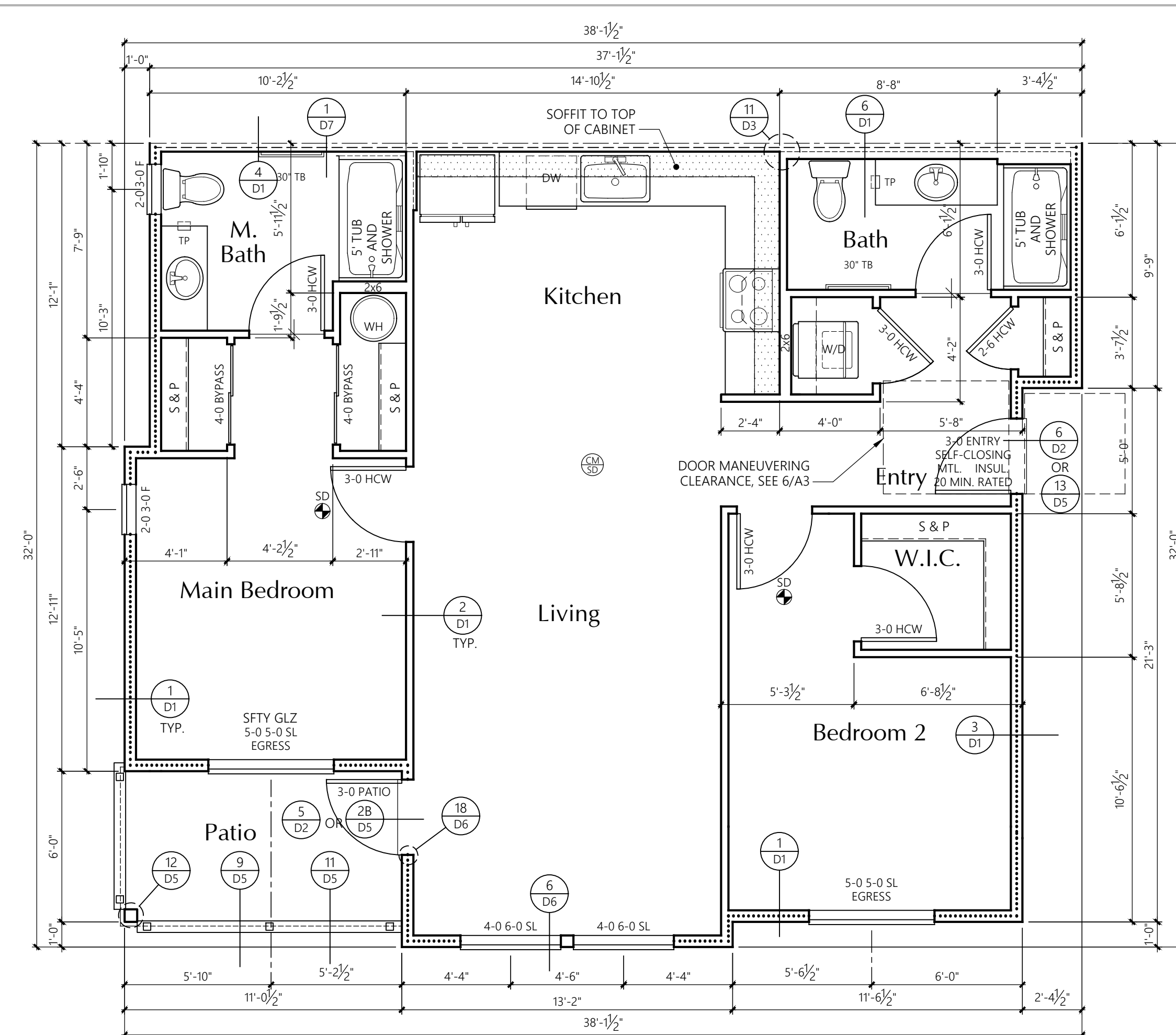
SEE TYPICAL 2-BED UNIT TYPE 'A' ACCESSIBLE FLOOR PLAN OR TYPE 'B' ACCESSIBLE FLOOR PLAN FOR REMAINDER OF UNIT



2 BED UNIT TYPE 'A' ACCESSIBLE
1st LEVEL FLOOR PLAN

1/4" = 1'-0"

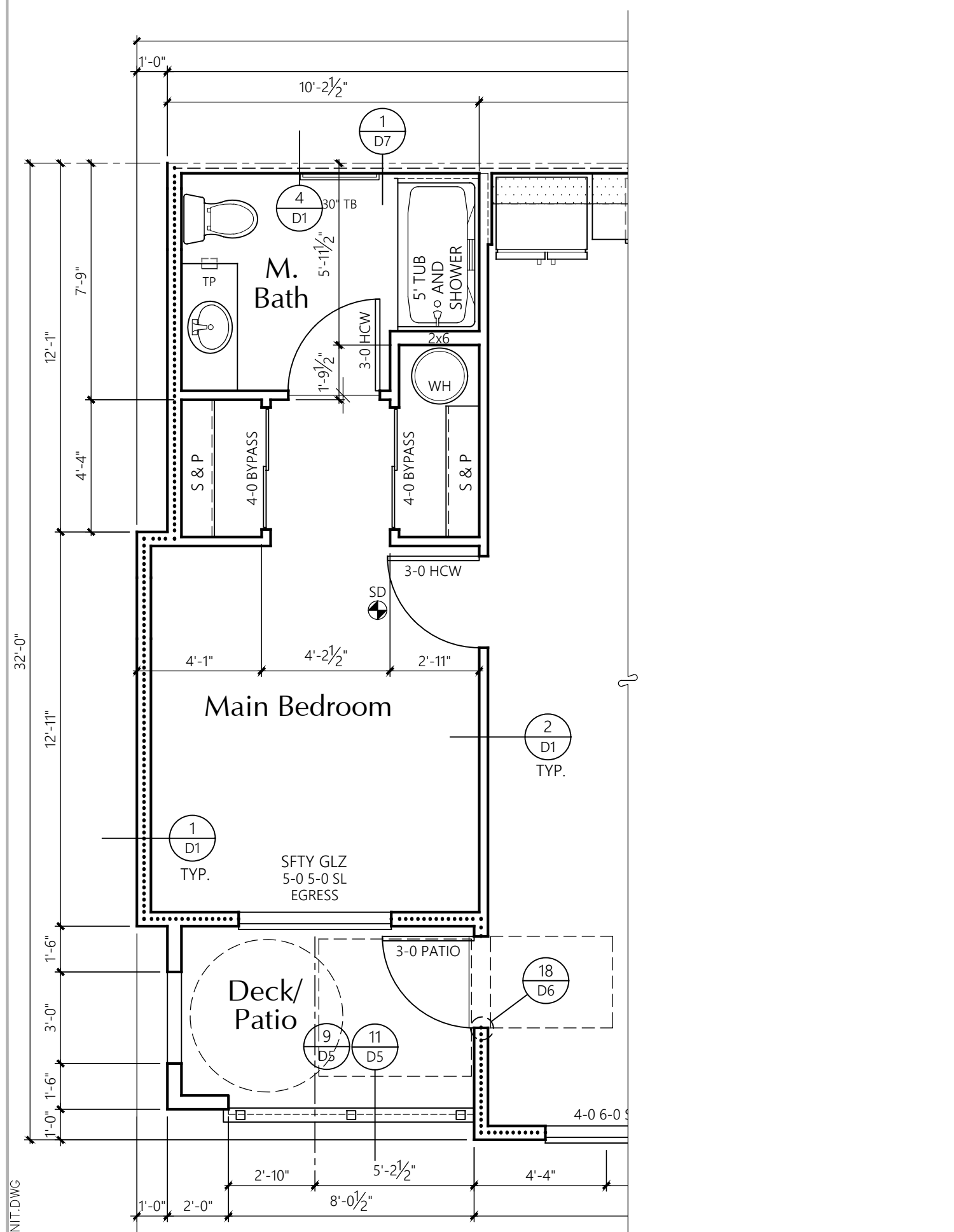
AREA SUMMARY		
	Heated SF	Patio/Deck SF
Total SF	1019	66



2-BED UNIT TYPE 'B' ACCESSIBLE
1st LEVEL FLOOR PLAN

1/4" = 1'-0"

AREA SUMMARY		
	Heated SF	Patio/Deck SF
Total SF	1019	66



2-BED-ALT UNIT ALT. 'A' OR 'B' ACCESSIBLE
BASEMENT PLAN

1/4" = 1'-0"

SEE TYPICAL 2-BED UNIT TYPE 'A' ACCESSIBLE FLOOR PLAN OR TYPE 'B' ACCESSIBLE FLOOR PLAN FOR REMAINDER OF UNIT

UNIT PLAN NOTES

- FRAMING: 2x6'S AT EXTERIOR WALLS
2x4'S AT INTERIOR WALLS
UNLESS NOTED OTHERWISE.
 - R-21 BATT INSULATION U.N.O.
 - R-13 BATT INSULATION
 - 3/8" ACOUSTICAL INSULATION ONE SIDE OF PARTYWALL, U.N.O.
 - LOCATION OF SOFFIT FOR VENT RUNS, SOFFIT HEIGHT +8'-0" A.F.F. U.N.O. ON PLANS; SEE DETAIL 1/D7
 - SMOKE DETECTOR
 - CARBON MONOXIDE/SMOKE DETECTOR
- CONCEALED SPACES SHALL BE FIRESTOPPED IN BOTH DIRECTIONS AT 10'-0" ON CENTER AND AT FLOORS. TYPICAL.
- ALL ESCAPE OR RESCUE WINDOWS FROM SLEEPING ROOMS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5.7 SQUARE FEET. THE MINIMUM CLEAR OPENING HEIGHT DIMENSION SHALL BE 24". MINIMUM CLEAR OPENING WIDTH DIMENSION SHALL BE 20". EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL HAVE THE BOTTOM OF CLEAR OPENING NOT GREATER THAN 44 INCHES MEASURED FROM THE FLOOR.
- WHERE THE OPENING OF THE SILL PORTION OF AN OPERABLE WINDOW IS LOCATED MORE THAN 72 INCHES ABOVE THE FINISHED GRADE OR OTHER SURFACE BELOW, THE LOWEST PART OF THE CLEAR OPENING OF THE WINDOW SHALL BE AT A HEIGHT NOT LESS THAN 36 INCHES ABOVE THE FINISHED FLOOR SURFACE OF THE ROOM IN WHICH THE WINDOW IS LOCATED. OPERABLE SECTIONS OF WINDOWS SHALL NOT PERMIT OPENINGS THAT ALLOW PASSAGE OF A 4 INCH DIAMETER SPHERE WHERE SUCH OPENINGS ARE LOCATED WITHIN 36 INCHES OF THE FINISHED FLOOR.
- ALL GLAZING SHALL CONFORM TO THE 2018 IBC, CHAPTER 24, SEC. 2406, SAFETY GLAZING. GLAZING IN ALL DOORS SHALL BE SAFETY TYPE AND ALL GLAZING WITHIN A 24" ARC OF EITHER VERTICAL EDGE SHALL BE SAFETY TYPE.
- PROVIDE 3/8" TYPE 'X' (MIN.) GYPSUM SHEATHING ON WALLS BEHIND TUB/SHOWERS TO SATISFY FIRE REQUIREMENTS AT PARTYWALL CONDITION. PROVIDE 3/4" PLYWOOD UNDER TUB IN PLACE OF THE GYPCRETE, SEE DETAIL 14/D1
- PROVIDE WATER RESISTANT GYPSUM WALLBOARD BEHIND TUB AND SHOWER ENCLOSURE MATERIALS TO A HEIGHT OF 70" MINIMUM ABOVE THE DRAIN INLET.
- NO PLUMBING SHALL BE LOCATED IN THE 1" AIR SPACE OF FIRE PARTITIONS OR FIRE WALLS.
- ALL BEDROOM AND BATHROOM DOORS SHALL BE UNDERCUT A MINIMUM OF 1/2" ABOVE THE ADJACENT FLOOR COVERING.
- THE FRONT DOOR SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. IT MAY BE PROVIDED WITH A NIGHT LATCH, DEAD BOLT OR SECURITY CHAIN. PROVIDED SUCH DEVICES ARE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR TOOL, AND MOUNTED NOT TO EXCEED 48" ABOVE THE FINISHED FLOOR.

GYPSUM WALLBOARD SCHEDULE

EXCEPT WHERE NOTED OTHERWISE, 5/8" TYPE 'X' GYPSUM WALLBOARD SHALL BE USED THROUGHOUT.

ON INTERIOR NON-RATED WALLS, EXTERIOR WALLS, CORRIDOR WALLS, AND 1-HOUR AND 2-HOUR FIRE-RATED WALLS.

STANDARD PLATE
HEIGHT: 9'-1"

SEE ELEVATION SHEETS FOR FLOOR TO FLOOR HEIGHTS

WINDOW HDR IS 8'-0"
UNLESS NOTED OTHERWISE

SEE SHEET U8 FOR INTERIOR ELEVATIONS AND ACCESSIBILITY REQUIREMENTS.

DOOR KEY:

- TYPE: SW = SWING
SL = SLIDER
BP = BIFOLD
BP = BYPASS
- CONSTRUCTION: HCW = HOLLOW CORE WD.
SCW = SOLID CORE WD.
MTL = METAL
HM = HOLLOW METAL

WINDOW KEY:

- TYPE: FIX = FIXED/PICTURE
SL = SLIDER
SH = SINGLE HUNG
SGD = SLIDING GLASS DOOR

INSULATION

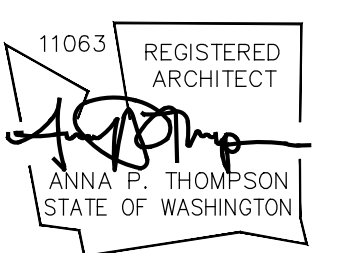
- FOUNDATION PERIMETER - R-10 RIGID INSULATION TO A DEPTH OF 24" OR TO TOP OF FOOTING AT HEATED PERIMETER
 - EXTERIOR WALLS: FIBERGLASS BATTS OR BLANKETS 2x6 WALLS - R21
 - FLOORS OVER UNHEATED SPACES - R30
 - ATTICS AND ROOF ASSEMBLIES - R-49
 - FULL HEIGHT OF UNCOMPRESSED INSULATION EXTENDS OVER THE WALL TOP PLATE AT THE EAVES
 - EXTERIOR DOORS: MAIN ENTRY U=0.20
ALL OTHERS U=0.40
 - WINDOWS: MILGARD VINYL
TYPE (VINYL) MODEL U-VALUE
 - SLIDING 6110 ARGON/LoE 0.24 or BETTER
 - FIXED 6310 ARGON/LoE 0.24 or BETTER
 - SINGLE HUNG 6210 ARGON/LoE 0.24 or BETTER
 - DBL. SLIDER 8125 ARGON/LoE 0.24 or BETTER
 - SGD 6610 ARGON/LoE 0.24 or BETTER
- NOTE: ALL CONCEALED OR EXPOSED INSULATION SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 450

ACCESSIBILITY NOTES:

- ALL GROUND FLOOR UNITS IN THIS PROJECT MUST MEET THE ACCESSIBILITY REQUIREMENTS OF TYPE 'B' ACCESSIBLE UNITS AS REQUIRED BY CHAPTER 11 OF THE 2018 IBC.
- INCLUDED IN THE ABOVE GROUND FLOOR UNITS 5% OF ALL UNITS NEED TO MEET THE ACCESSIBILITY REQUIREMENTS OF TYPE 'A' ACCESSIBLE UNITS AS REQUIRED BY CHAPTER 11 OF THE 2018 IBC. SEE BUILDING PLANS FOR LOCATION OF 'TYPE A' UNITS
- SEE SHEET U9 FOR SPECIFIC ADAPTABILITY STANDARD FOR BOTH 'TYPE A' AND 'TYPE B' ACCESSIBLE UNITS. SEE INTERIOR ELEVATION SHEETS FOR ADDITIONAL ACCESSIBILITY REQUIREMENTS.
- LIGHTING CONTROLS, ELECTRICAL SWITCHES, ENVIRONMENTAL CONTROLS, OPERATING HARDWARE FOR DOORS AND WINDOWS, AND PLUMBING FIXTURE CONTROLS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST TO OPERATE. EXCEPT FOR OPERABLE DOOR HARDWARE, SUCH ITEMS SHALL BE 15" MINIMUM AND 44" MAXIMUM ABOVE THE FLOOR (48" FOR WINDOWS).
- OPERABLE ENTRY DOOR HARDWARE SHALL BE 34" MINIMUM AND 48" MAXIMUM ABOVE THE FLOOR.
- OPENING FORCES FOR ENTRY DOOR SHALL BE: 15 POUNDS TO RELEASE THE LATCH
30 POUNDS TO SET DOOR IN MOTION
15 POUNDS TO OPEN DOOR TO FULL 90° FORCE MEASURED AT LATCH SIDE OF DOOR.
- THE DOOR CLOSER ON THE ENTRY DOOR SHALL BE ADJUSTED TO CLOSE FROM AN OPEN POSITION OF 90° TO AN OPEN POSITION OF 12° IN NOT LESS THAN 5 SECONDS.
- OPENING FORCE OF ALL SWINGING INTERIOR DOORS AND THE SLIDING GLASS DOOR SHALL NOT EXCEED 5 POUNDS APPLIED TO THE LATCH SIDE OF THE DOOR.
- THE FORCE REQUIRED TO ACTIVATE ALL OTHER OPERABLE ITEMS LISTED ABOVE SHALL BE 5 POUNDS.
- *BIFOLD DOOR HARDWARE AT LAUNDRY TO BE 'FULL ACCESS HARDWARE'.
- THE 30"x48" CLEAR FLOOR SPACE IS REQUIRED AT EACH FIXTURE OR LOCATION SHOWN ON THE FLOOR PLAN.

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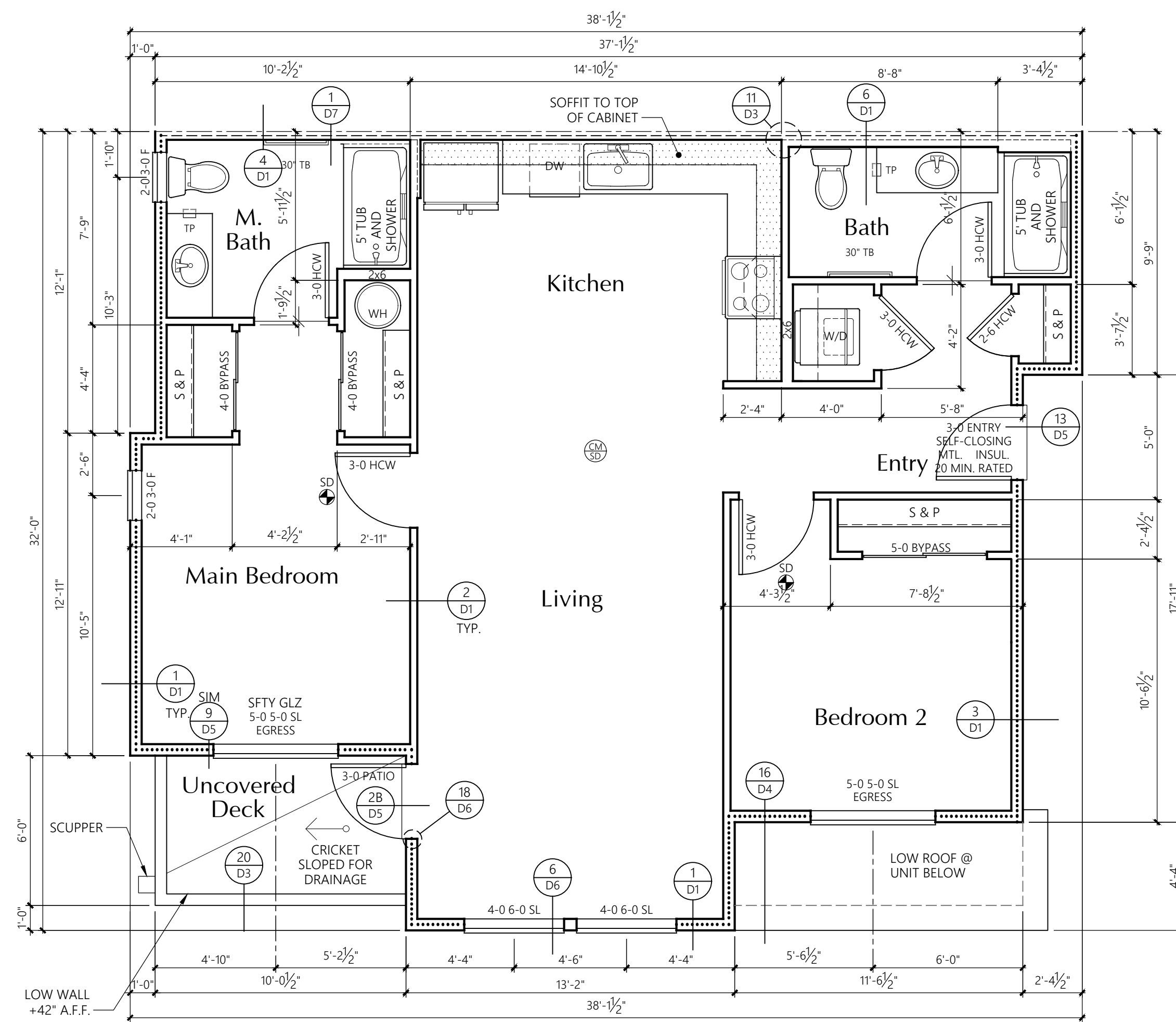
Bradley Heights Apartments
Puyallup, Wa

Timberlane Partners

Revisions

No.	Date	Description

Initial Publish Date:
Date Plotted: **2-20-24**
Job No.: **23-06** Drawn By: **APT/HDM/TMK**
Sheet No.:



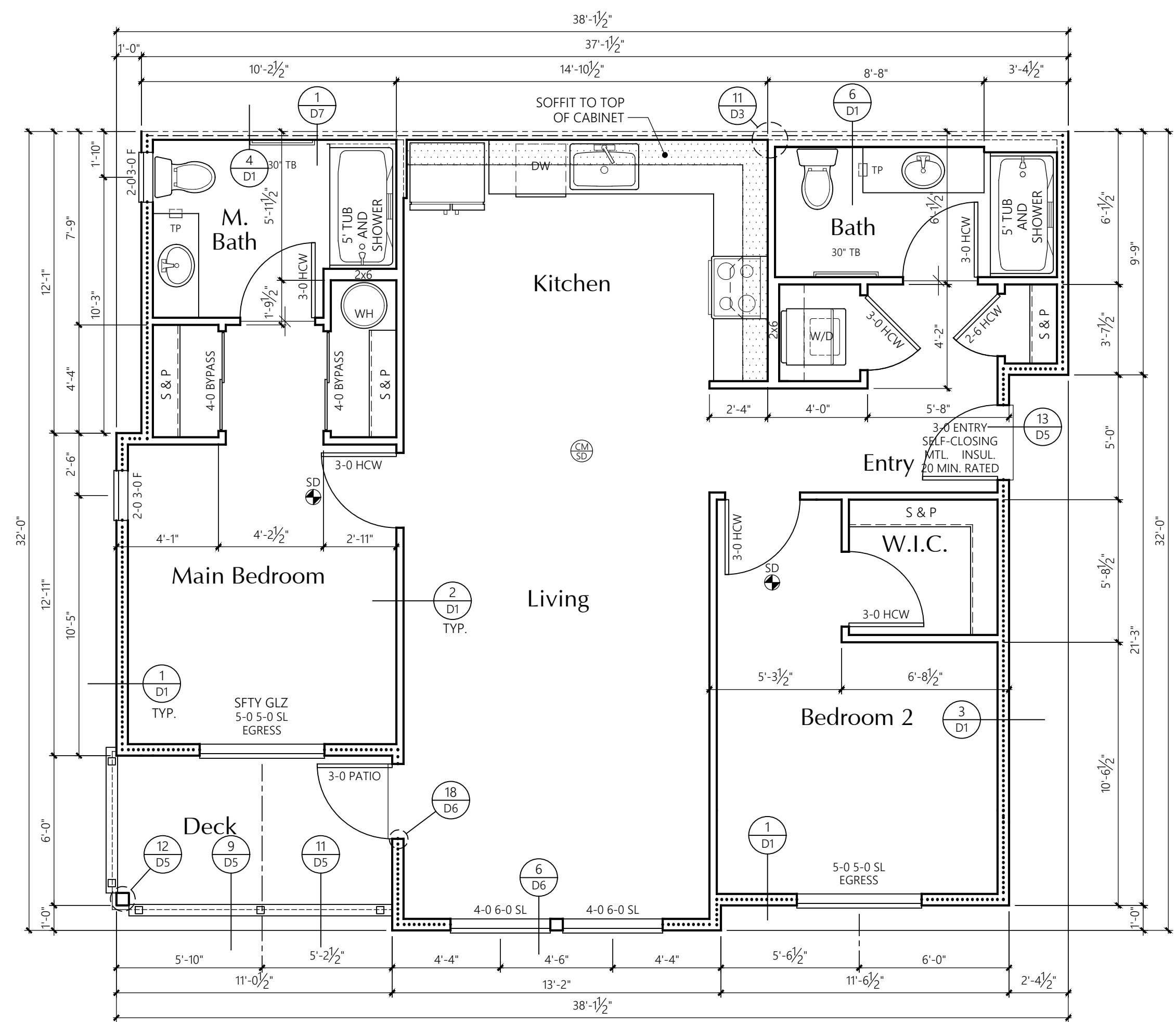
2-BED-ALT UNIT

1/4" = 1'-0"

ALTERNATE 3rd LEVEL FLOOR PLAN

AREA SUMMARY		
	Heated SF	Patio/Deck SF
Total SF	980	60

* Side of exterior walls to which area was measured



2-BED UNIT

1/4" = 1'-0"

NON-ACCESSIBLE 2nd & 3rd LEVEL FLOOR PLAN

AREA SUMMARY		
	Heated SF	Patio/Deck SF
Total SF	1019	66

UNIT PLAN NOTES

- FRAMING: 2x6'S AT EXTERIOR WALLS
2x4'S AT INTERIOR WALLS
UNLESS NOTED OTHERWISE.
- R-21 BATT INSULATION U.N.O.
- R-13 BATT INSULATION
3/8" ACOUSTICAL INSULATION ONE
SIDE OF PARTYWALL, U.N.O.
- LOCATION OF SOFFIT FOR VENT
RUNS. SOFFIT HEIGHT +8'-0" A.F.F.
U.N.O. ON PLANS; SEE DETAIL 1/D7
- SD
SMOKE DETECTOR
- SM
CARBON MONOXIDE/SMOKE DETECTOR

PROVIDE WATER RESISTANT GYPSUM WALLBOARD
BEHIND TUB AND SHOWER ENCLOSURE MATERIALS TO A
HEIGHT OF 70" MINIMUM ABOVE THE DRAIN INLET.

NO PLUMBING SHALL BE LOCATED IN THE 1" AIR SPACE OF FIRE
PARTITIONS OR FIRE WALLS.

ALL BEDROOM AND BATHROOM DOORS SHALL BE UNDERCUT
A MINIMUM OF 1/2" ABOVE THE ADJACENT FLOOR COVERING.

THE FRONT DOOR SHALL BE OPENABLE FROM THE INSIDE
WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR
EFFORT. IT MAY BE PROVIDED WITH A NIGHT LATCH, DEAD
BOLT OR SECURITY CHAIN, PROVIDED SUCH DEVICES ARE
OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR
TOOL, AND MOUNTED NOT TO EXCEED 48" ABOVE THE
FINISHED FLOOR.

GYPSUM WALLBOARD SCHEDULE
EXCEPT WHERE NOTED OTHERWISE, 5/8" TYPE 'X' GYPSUM
WALLBOARD SHALL BE USED THROUGHOUT;
ON INTERIOR NON-RATED WALLS, EXTERIOR WALLS,
CORRIDOR WALLS, AND 1-HOUR AND 2-HOUR FIRE-RATED
WALLS.

STANDARD PLATE
HEIGHT: 9'-1"

SEE ELEVATION SHEETS FOR
FLOOR TO FLOOR HEIGHTS

WINDOW HDR IS 8'-0"

UNLESS NOTED OTHERWISE

SEE SHEET U8 FOR INTERIOR ELEVATIONS
AND ACCESSIBILITY REQUIREMENTS.

CONCEALED SPACES SHALL BE FIRESTOPPED IN BOTH
DIRECTIONS AT 10'-0" ON CENTER AND AT FLOORS. TYPICAL.

ALL ESCAPE OR RESCUE WINDOWS FROM SLEEPING ROOMS
SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5.7 SQUARE
FEET. THE MINIMUM CLEAR OPENING HEIGHT DIMENSION
SHALL BE 24". MINIMUM CLEAR OPENING WIDTH DIMENSION
SHALL BE 20". EMERGENCY ESCAPE AND RESCUE OPENINGS
SHALL HAVE THE BOTTOM OF CLEAR OPENING NOT GREATER
THAN 44 INCHES MEASURED FROM THE FLOOR.

WHERE THE OPENING OF THE SILL PORTION OF AN OPERABLE
WINDOW IS LOCATED MORE THAN 72 INCHES ABOVE THE
FINISHED GRADE OR OTHER SURFACE BELOW, THE LOWEST
PART OF THE CLEAR OPENING OF THE WINDOW SHALL BE AT
A HEIGHT NOT LESS THAN 36 INCHES ABOVE THE FINISHED
FLOOR SURFACE OF THE ROOM IN WHICH THE WINDOW IS
LOCATED. OPERABLE SECTIONS OF WINDOWS SHALL NOT
PERMIT OPENINGS THAT ALLOW PASSAGE OF A 4-INCH
DIAMETER SPHERE WHERE SUCH OPENINGS ARE LOCATED
WITHIN 36 INCHES OF THE FINISHED FLOOR.

ALL GLAZING SHALL CONFORM TO THE 2018 IRC,
CHAPTER 24, SEC. 2406, SAFETY GLAZING. GLAZING IN ALL
DOORS SHALL BE SAFETY TYPE AND ALL GLAZING WITHIN A
24" ARC OF EITHER VERTICAL EDGE SHALL BE SAFETY TYPE.

PROVIDE 3/8" TYPE 'X' (MIN.) GYPSUM SHEATHING ON WALLS
BEHIND TUB/SHOWERS TO SATISFY FIRE REQUIREMENTS AT
PARTYWALL CONDITION. PROVIDE 1/2" PLYWOOD UNDER TUB
IN PLACE OF THE GYPCRETE, SEE DETAIL 14/D1

DOOR KEY:

- TYPE:
SW = SWING
BF = BIFOLD
BP = BYPASS
- CONSTRUCTION:
HCW = HOLLOW CORE WD.
SCW = SOLID CORE WD.
MTL = METAL
HM = HOLLOW METAL

WINDOW KEY:

- TYPE:
FIX = FIXED/PICTURE
SL = SLIDER
SH = SINGLE HUNG
SGD = SLIDING GLASS DOOR

INSULATION

FOUNDATION PERIMETER - R-10 RIGID INSULATION
TO A DEPTH OF 24" OR TO TOP OF FOOTING AT
HEATED PERIMETER

EXTERIOR WALLS: FIBERGLASS BATTS OR BLANKETS
2x6 WALLS - R21

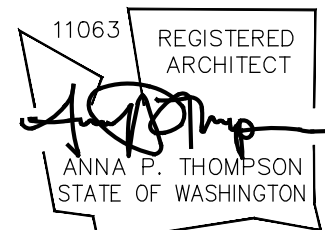
FLOORS OVER UNHEATED SPACES - R30

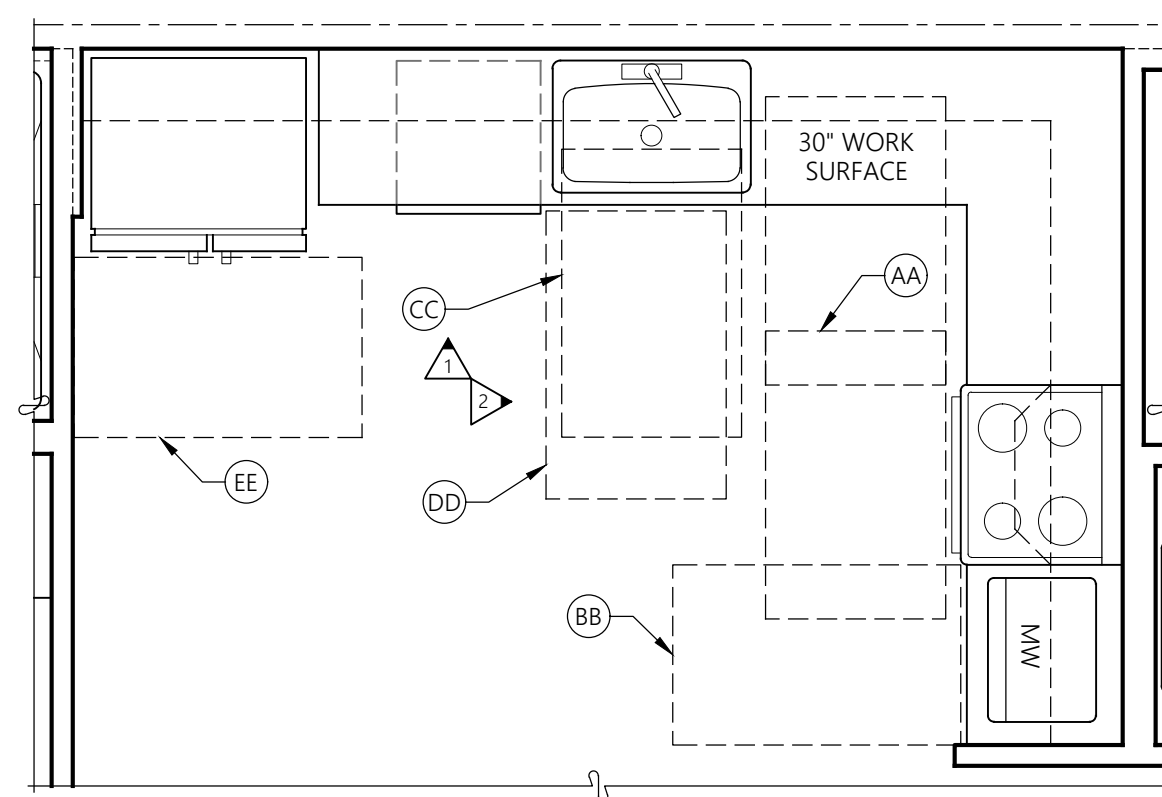
ATTICS AND ROOF ASSEMBLIES - R-49
FULL HEIGHT OF UNCOMPRESSED INSULATION
EXTENDS OVER THE WALL TOP PLATE AT
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ALL OTHERS U=0.40

WINDOWS: MILGARD VINYL
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SLIDING 6110 ARGON/LoE 0.24 or BETTER
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NOTE: ALL CONCEALED OR EXPOSED INSULATION
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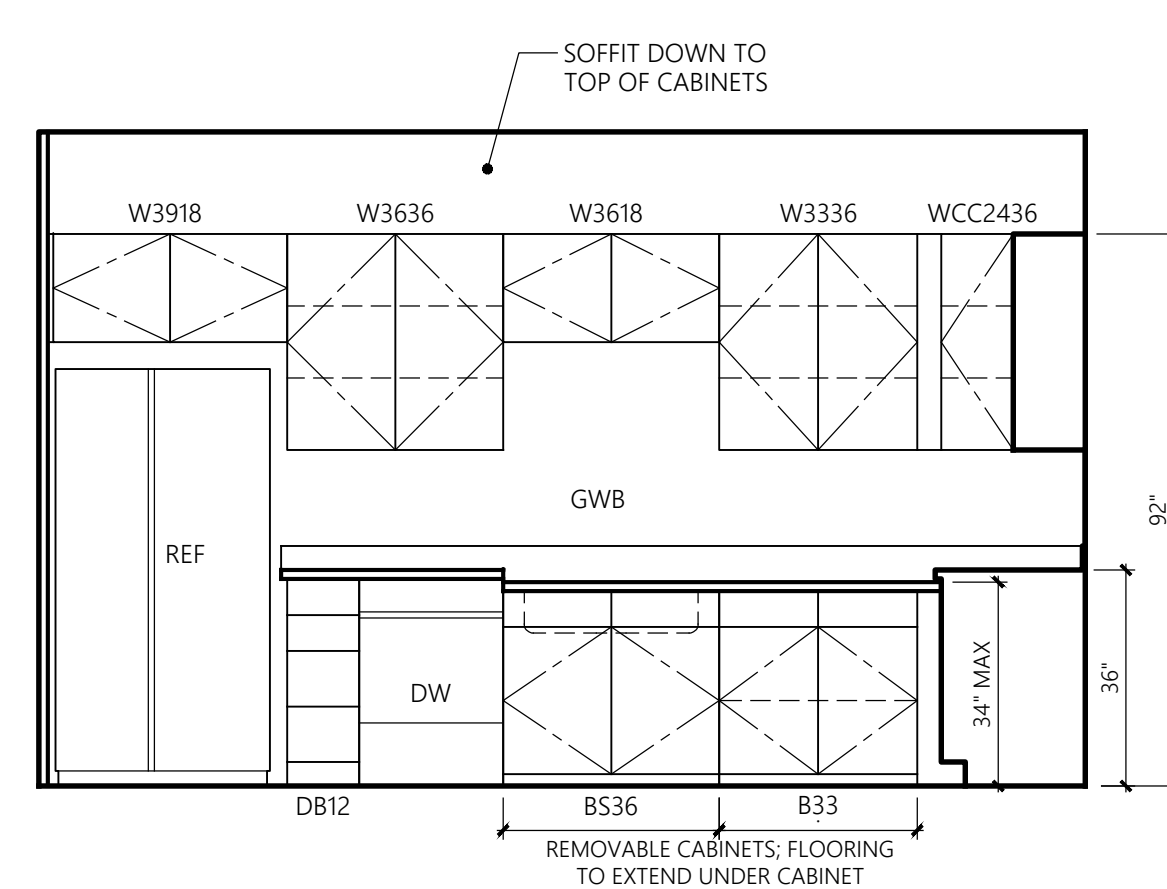




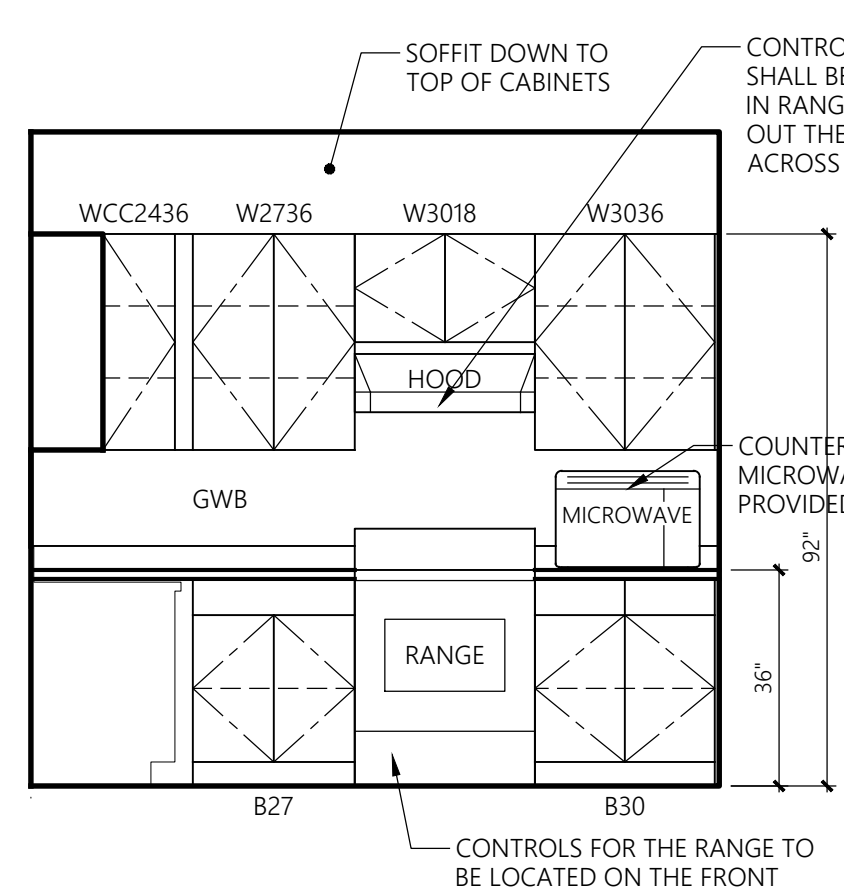
2-BED UNIT

3/8" = 1'-0"

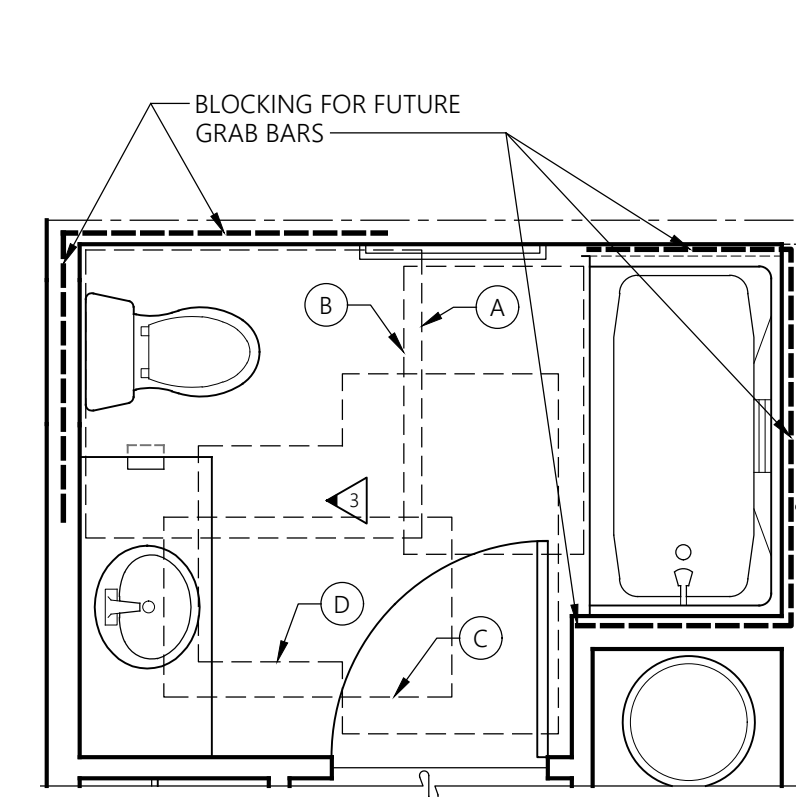
TYPE 'A'
KITCHEN PLAN



① KITCHEN



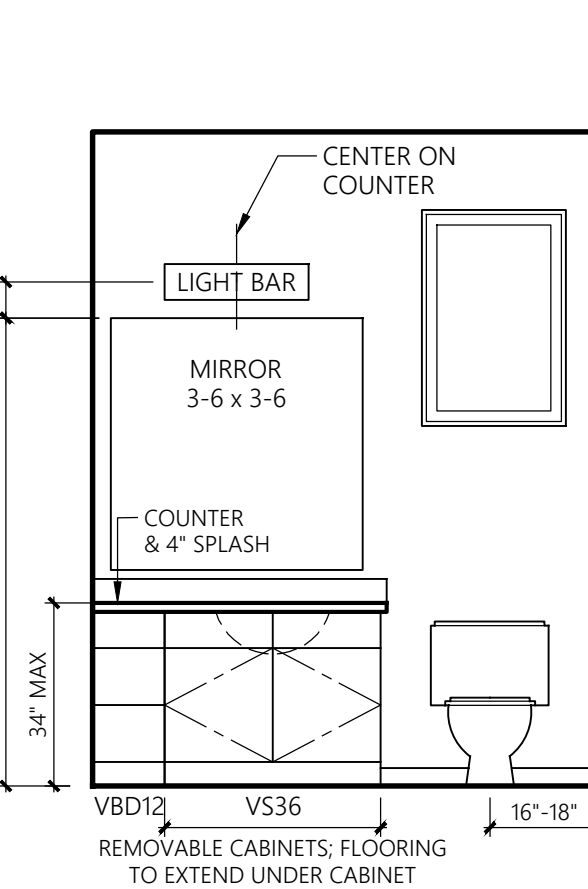
② KITCHEN



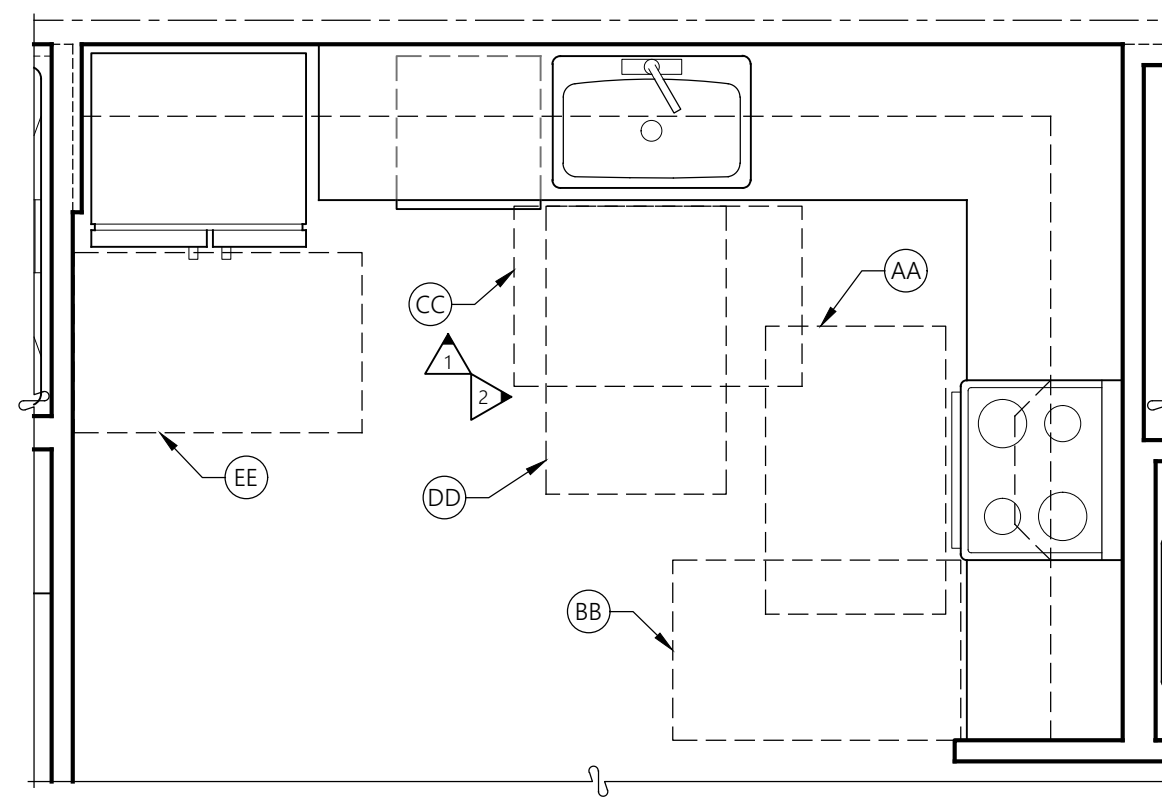
2-BED UNIT

3/8" = 1'-0"

TYPE 'A'
MAIN BATHROOM PLAN



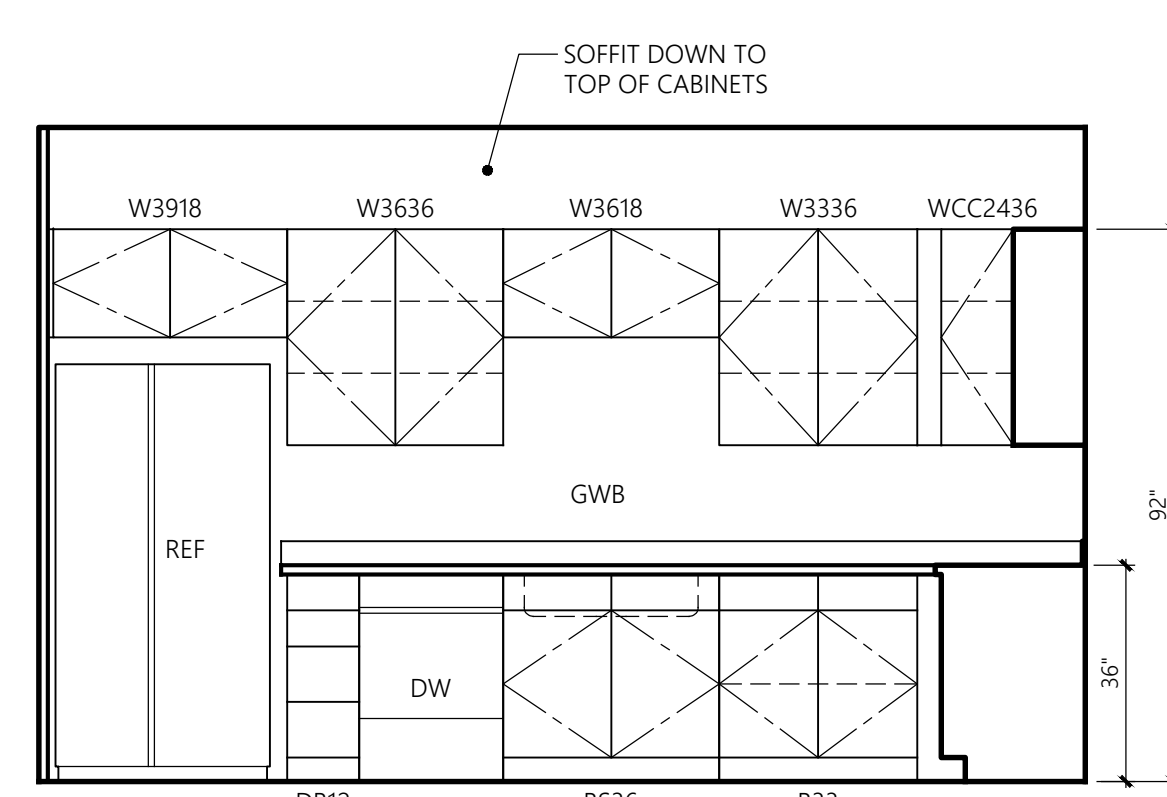
③ MAIN BATH



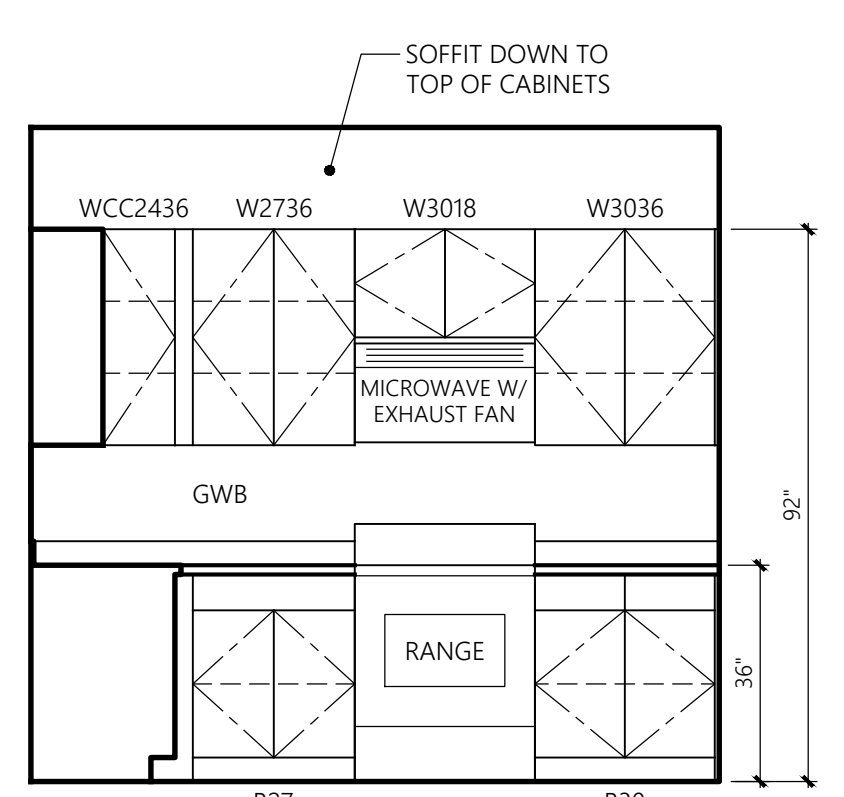
2-BED UNIT

3/8" = 1'-0"

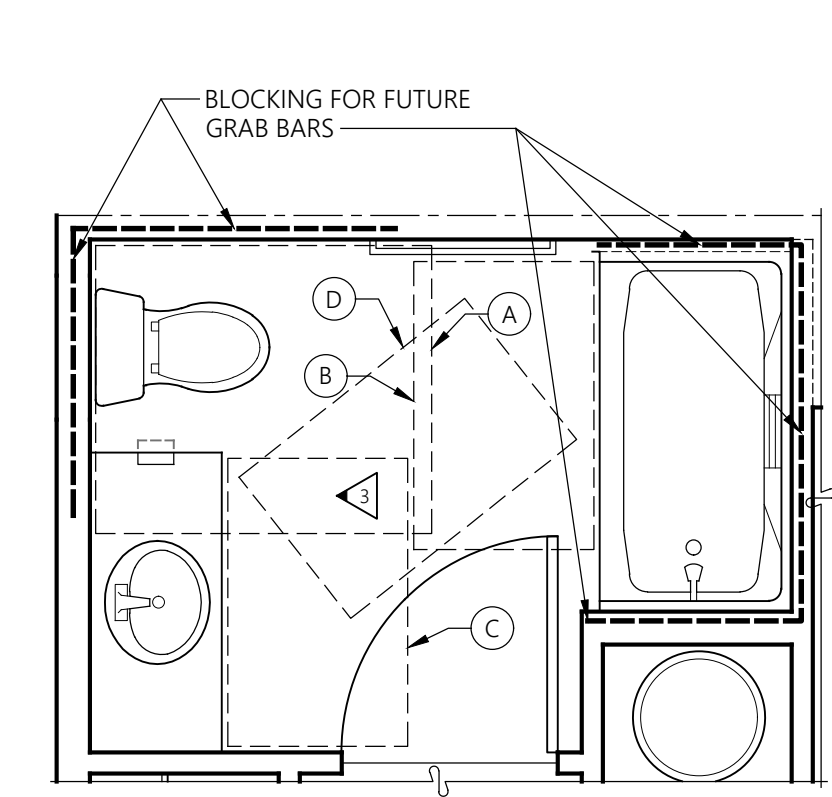
TYPE 'B'
KITCHEN PLAN



① KITCHEN



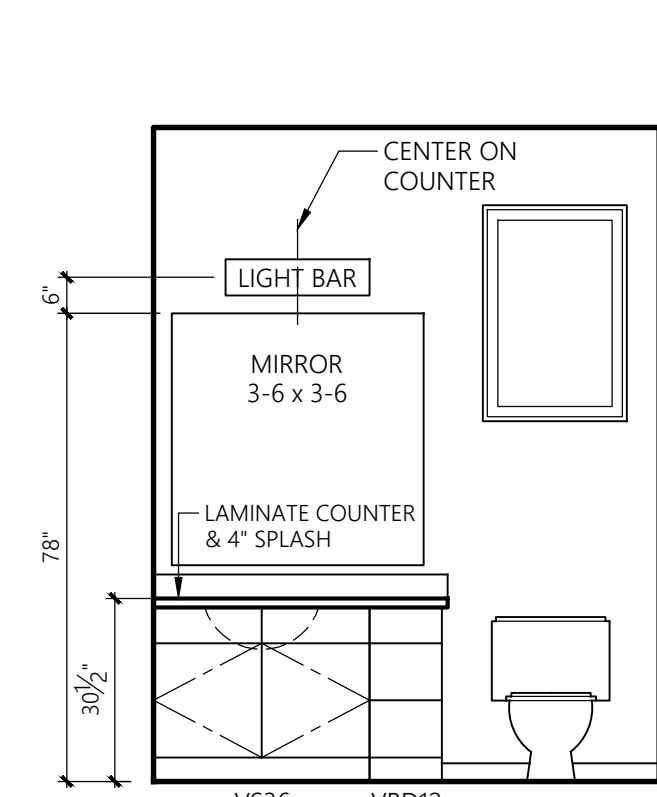
② KITCHEN



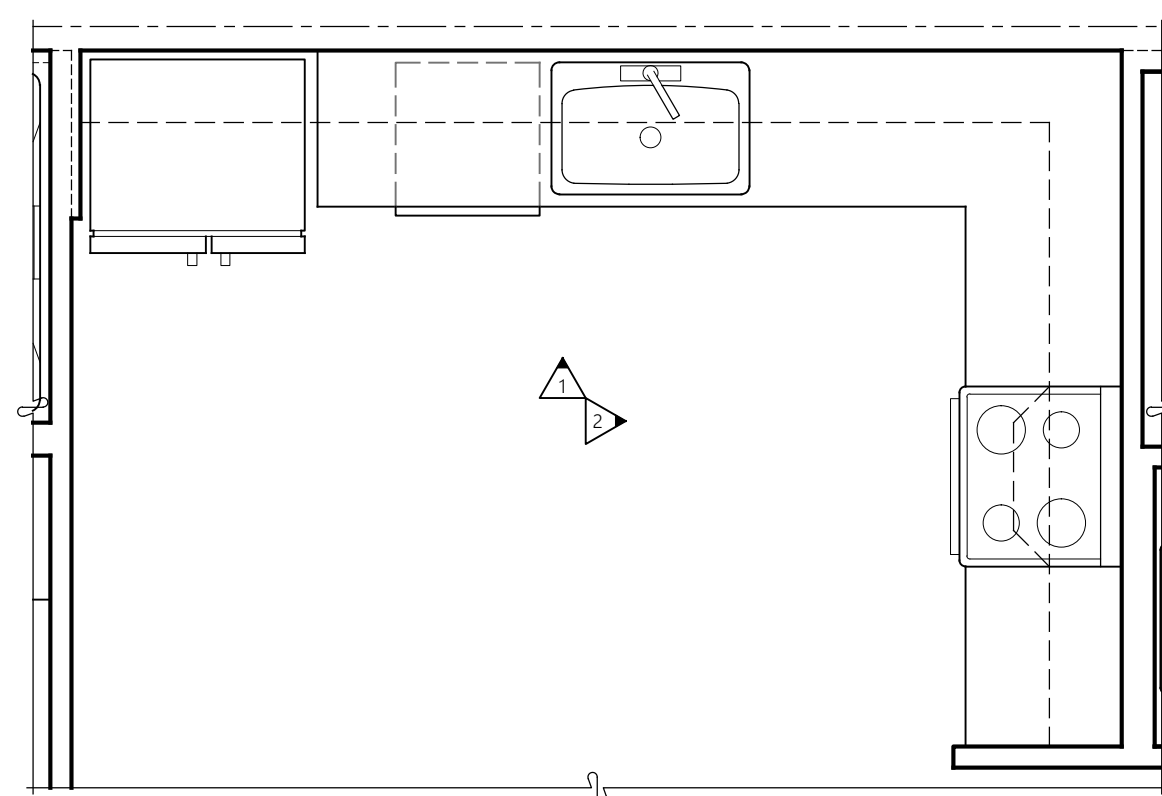
2-BED UNIT BATHROOM PLAN

3/8" = 1'-0"

TYPE 'B' ACCESSIBLE UNIT



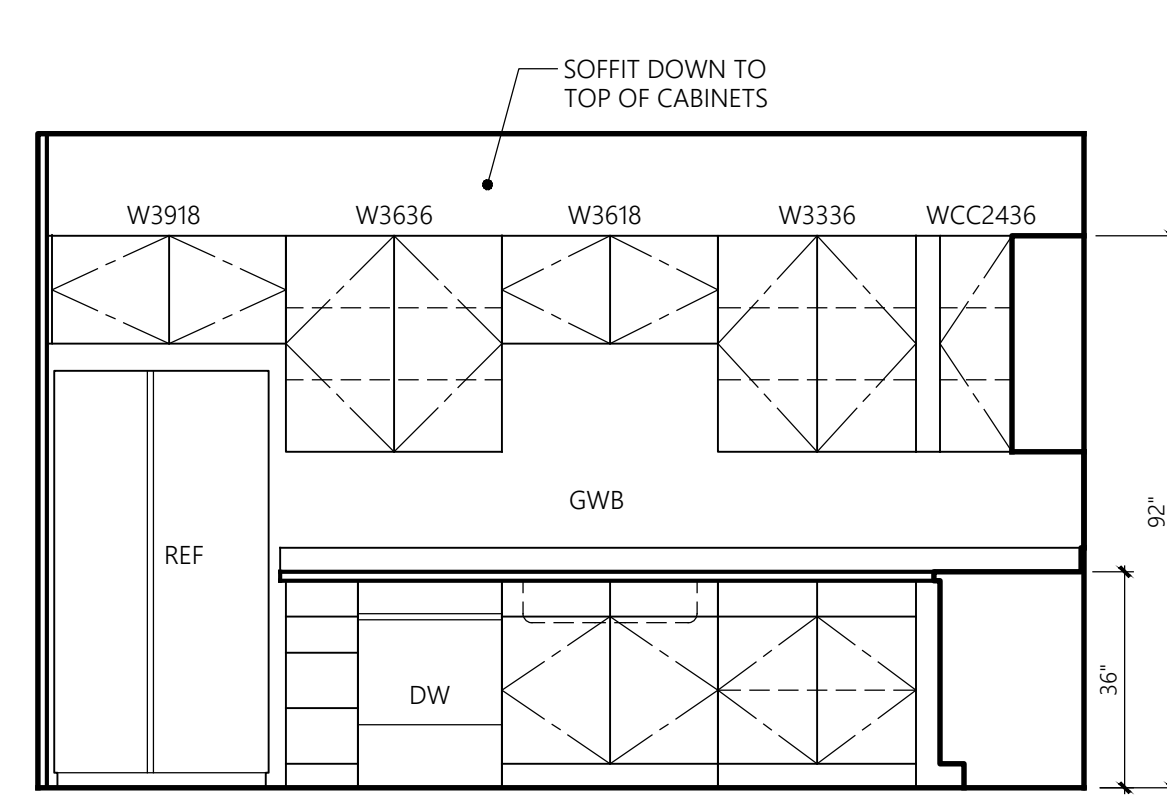
③ BATH



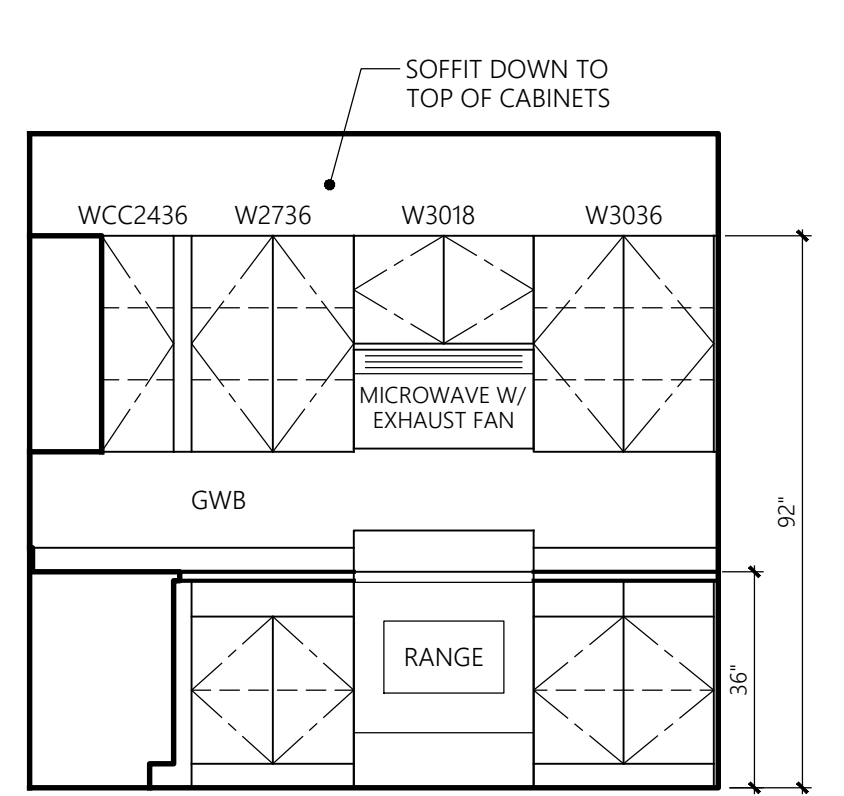
2-BED UNIT

3/8" = 1'-0"

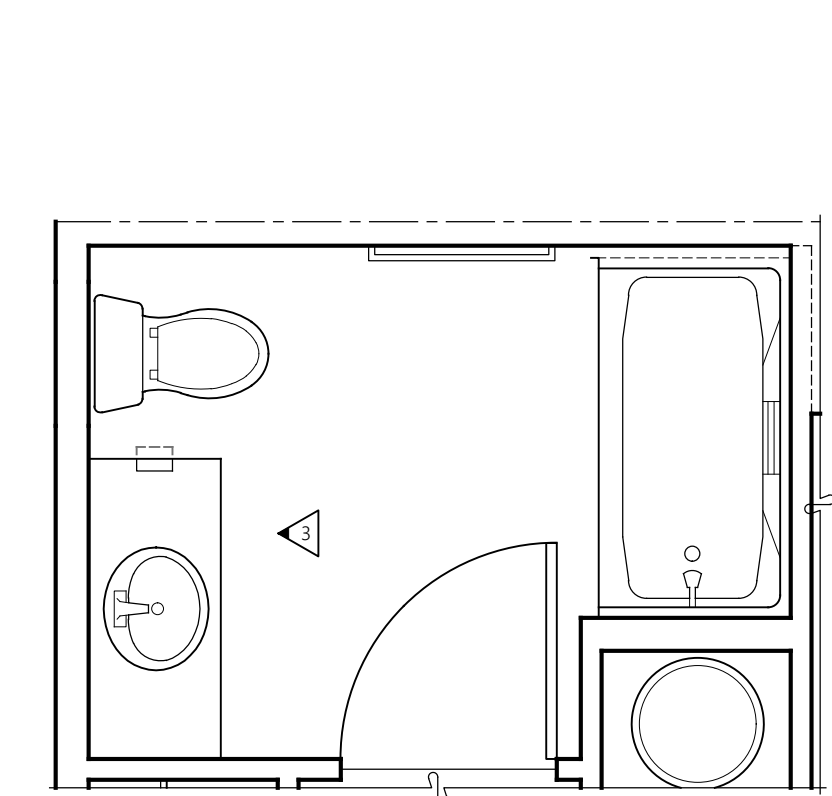
NON-ACCESSIBLE
KITCHEN PLAN



① KITCHEN

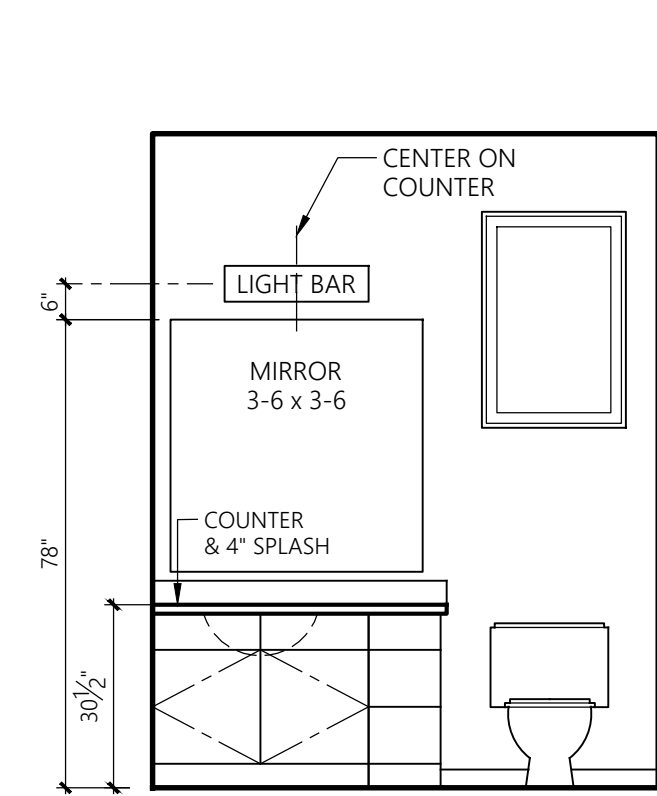


② KITCHEN

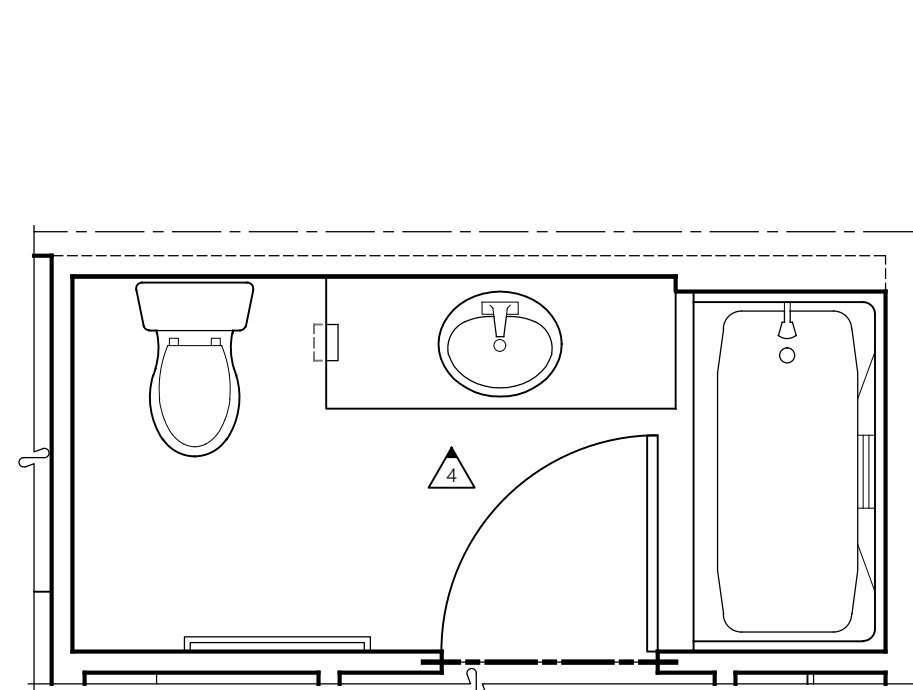


2-BED UNIT NON-ACCESSIBLE
BATHROOM PLAN

3/8" = 1'-0"



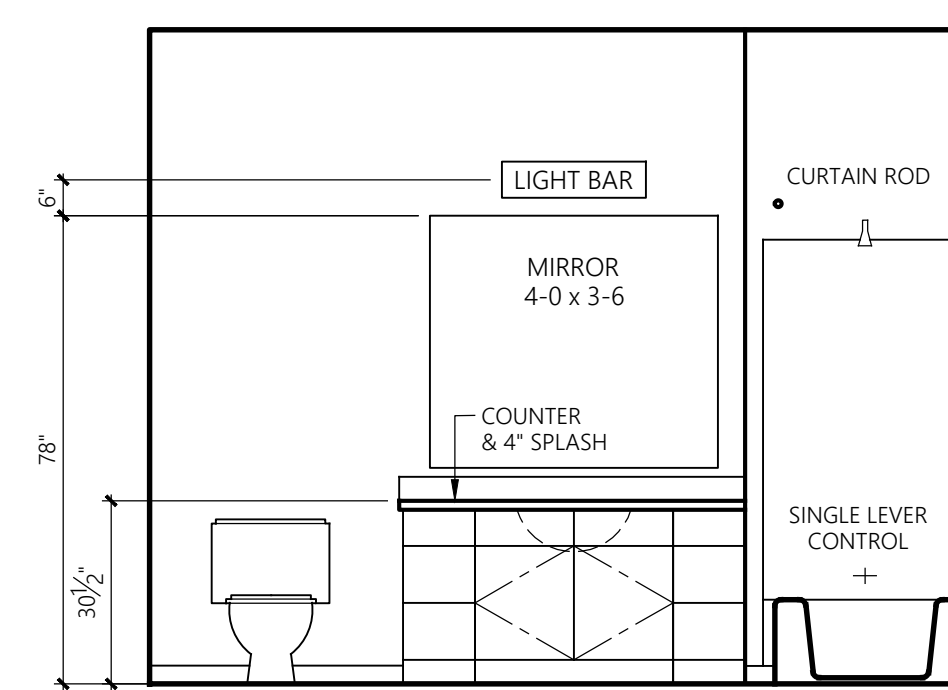
③ BATH



2-BED UNIT

3/8" = 1'-0"

TYPE 'A' & 'B' & NON-ACCESSIBLE
SECONDARY BATHROOM PLAN

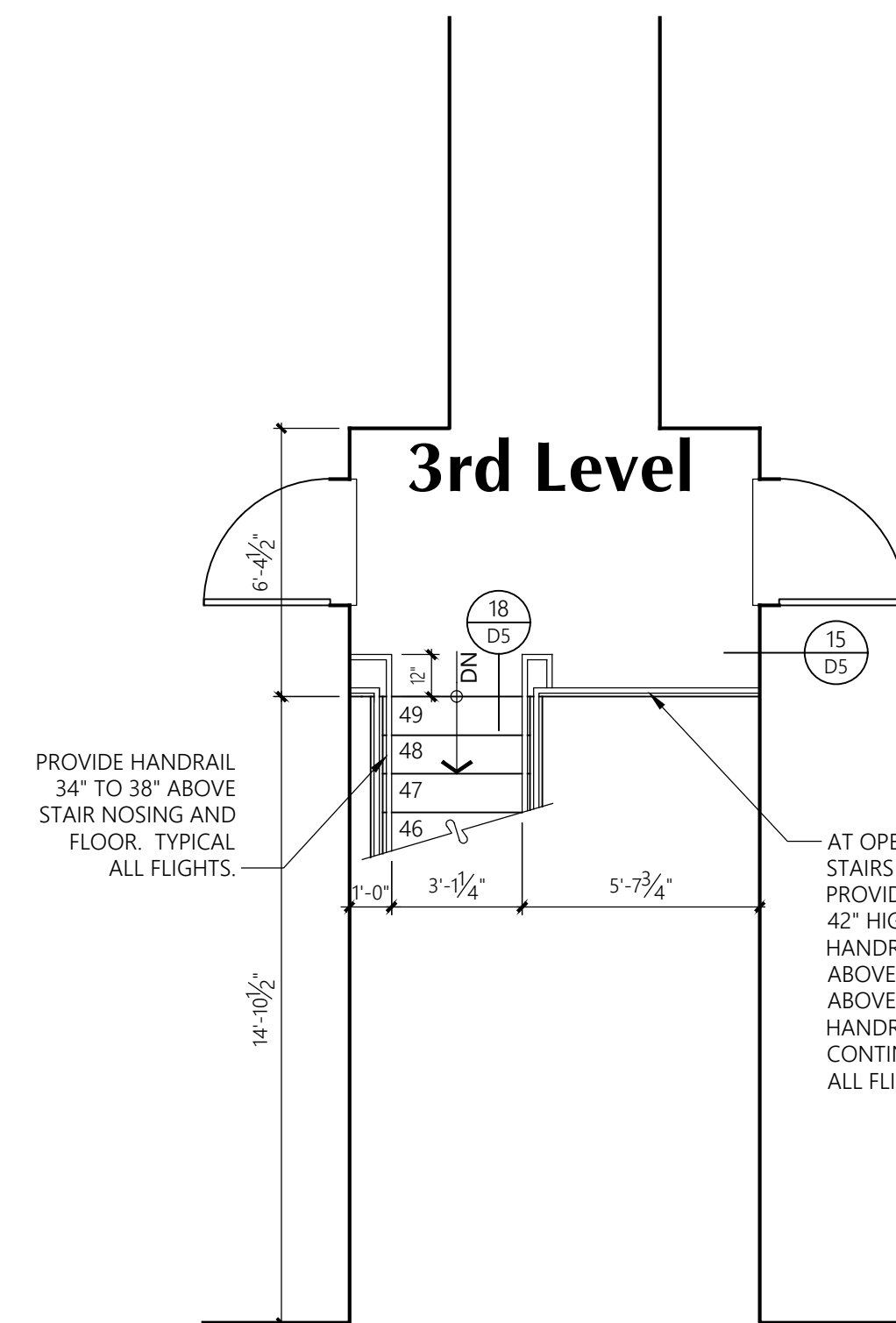


④ SECONDARY

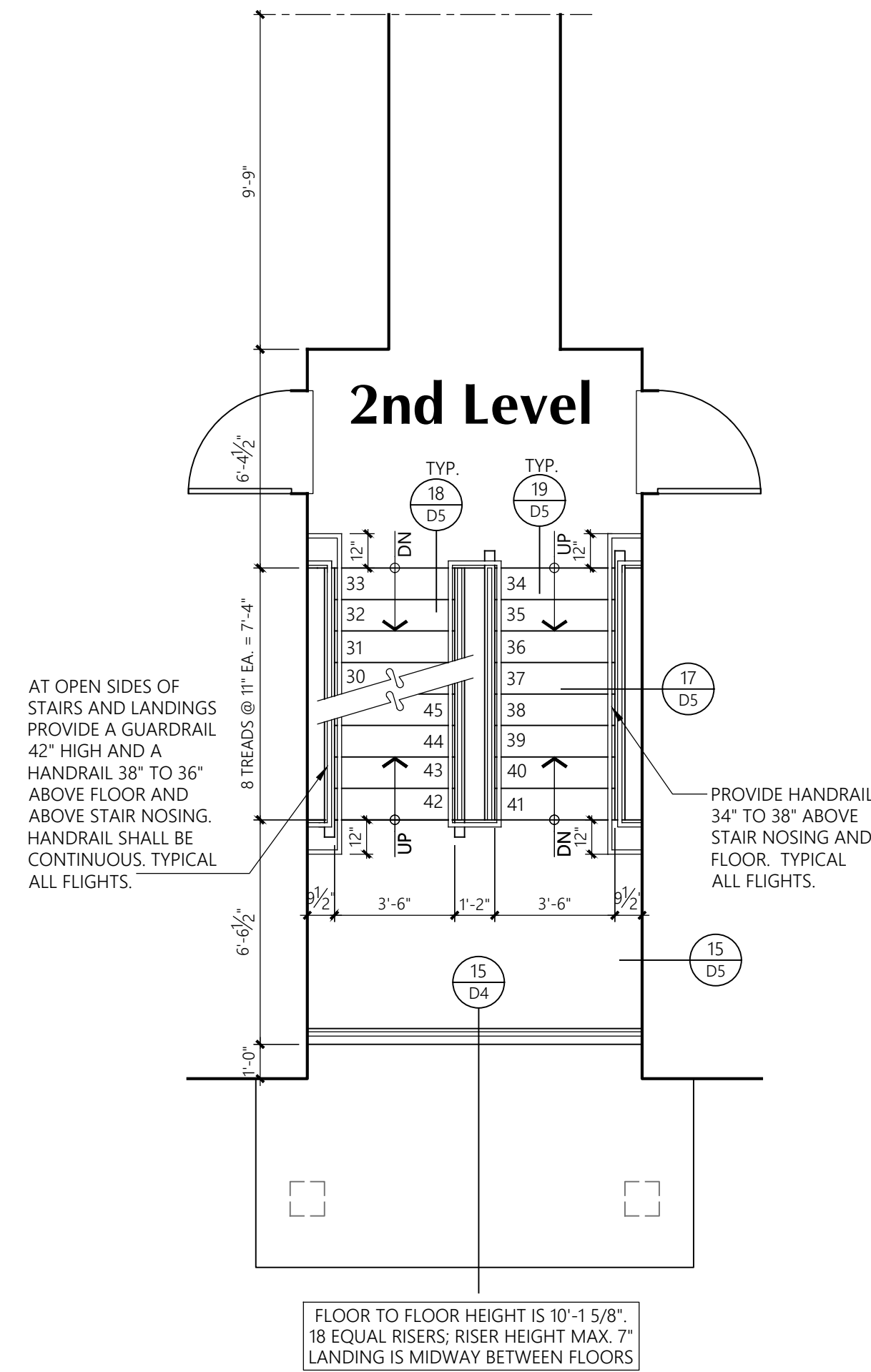
*SEE SHEET U9
FOR
ACCESSIBILITY
STANDARDS

CLEAR FLOOR SPACE LEGEND TYPE A UNIT	
(A)	60x66 CLEAR FLOOR SPACE AT TOILET.
(B)	30x60 CLEAR FLOOR SPACE AT TUB.
(C)	30"x48" CLEAR FLOOR SPACE CENTERED ON SINK
(D)	60" DIAMETER TURNING CIRCLE OR T-SHAPE TURNING SPACE
(AA)	30x48 CLEAR FLOOR SPACE AT STOVE.
(BB)	30x48 CLEAR FLOOR SPACE AT OVEN.
(CC)	30x48 CLEAR FLOOR SPACE AT SINK.
(DD)	30x48 CLEAR FLOOR SPACE AT DISHWASHER.
(EE)	30x48 CLEAR FLOOR SPACE AT REFRIGERATOR.
(FF)	30x48 CLEAR FLOOR SPACE AT WORK SURFACE.
(GG)	30x48 CLEAR FLOOR SPACE AT WASHER/DRYER

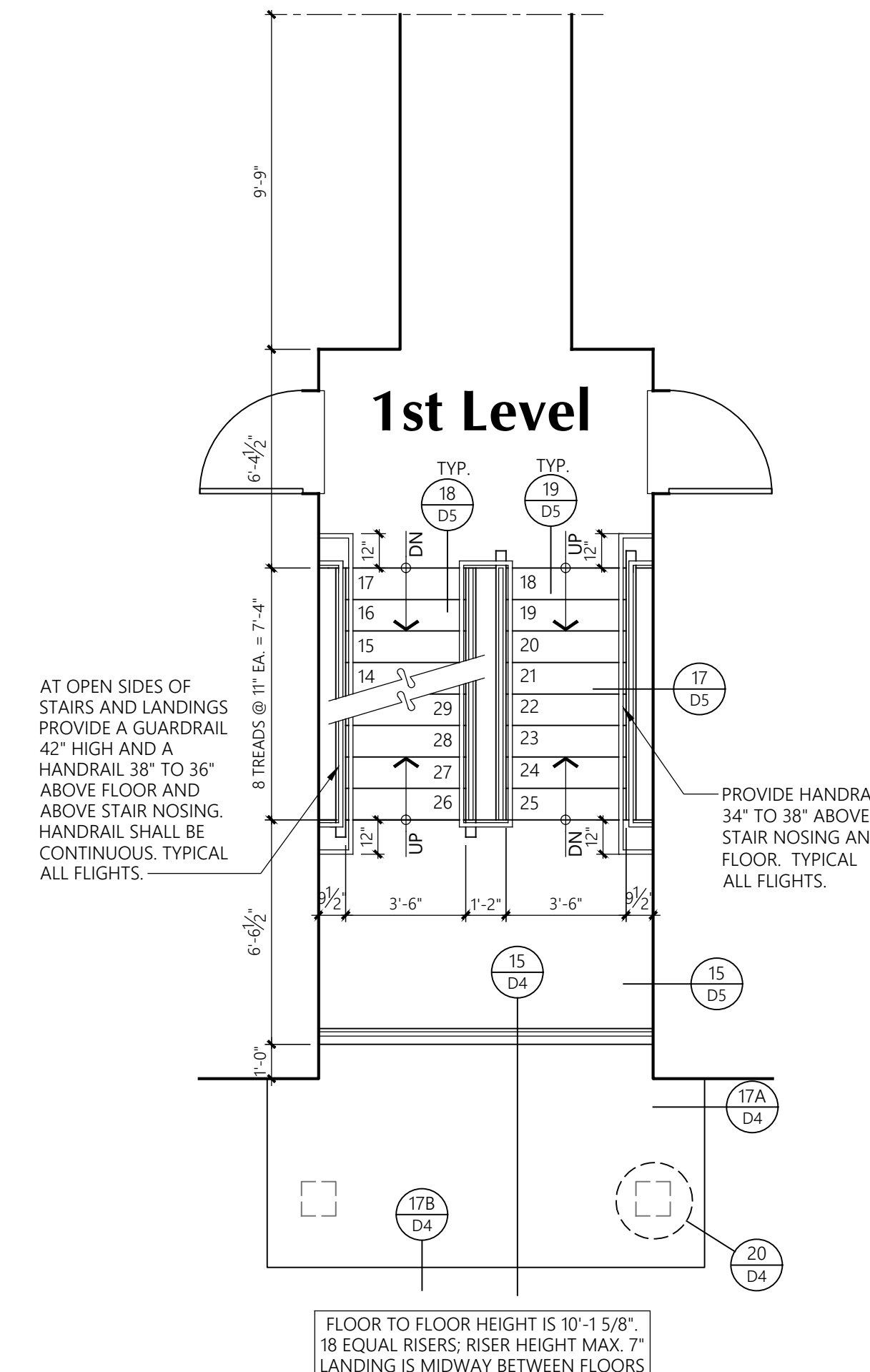
CLEAR FLOOR SPACE LEGEND TYPE B UNIT	
(A)	48x56 CLEAR FLOOR SPACE AT TOILET.
(B)	30x48 CLEAR FLOOR SPACE AT TUB.
(C)	30"x48" CLEAR FLOOR SPACE CENTERED ON SINK
(D)	30"x48" CLEAR FLOOR SPACE BEYOND ARC OF DOOR.
(AA)	30x48 CLEAR FLOOR SPACE AT STOVE.
(BB)	30x48 CLEAR FLOOR SPACE AT OVEN.
(CC)	30x48 CLEAR FLOOR SPACE AT SINK.
(DD)	30x48 CLEAR FLOOR SPACE AT DISHWASHER.
(EE)	30x48 CLEAR FLOOR SPACE AT REFRIGERATOR.
(GG)	30x48 CLEAR FLOOR SPACE AT WASHER/DRYER



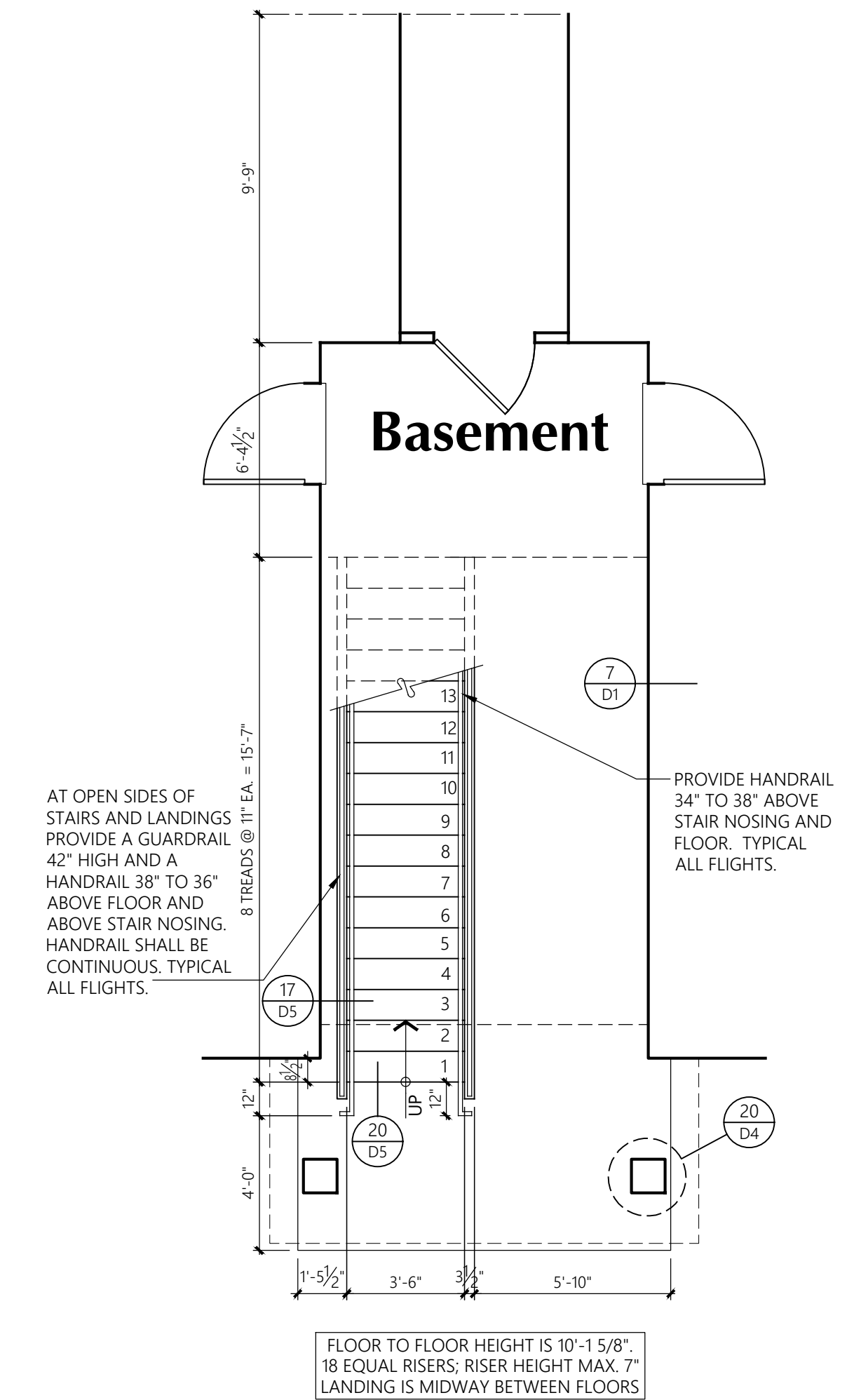
STAIR 2 3RD LEVEL FLOOR PLAN
1/4" = 1'-0"



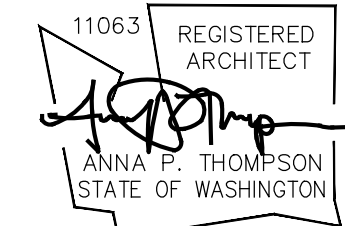
STAIR 2 2ND LEVEL FLOOR PLAN
1/4" = 1'-0"



STAIR 2 1ST LEVEL FLOOR PLAN
1/4" = 1'-0"



STAIR 2 BASEMENT LEVEL PLAN
1/4" = 1'-0"



Stair 2
Floor Plans

Bradley Heights Apartments
Puyallup, Wa

Timberlane Partners

Revisions

No. Date Description

Initial Publish Date:

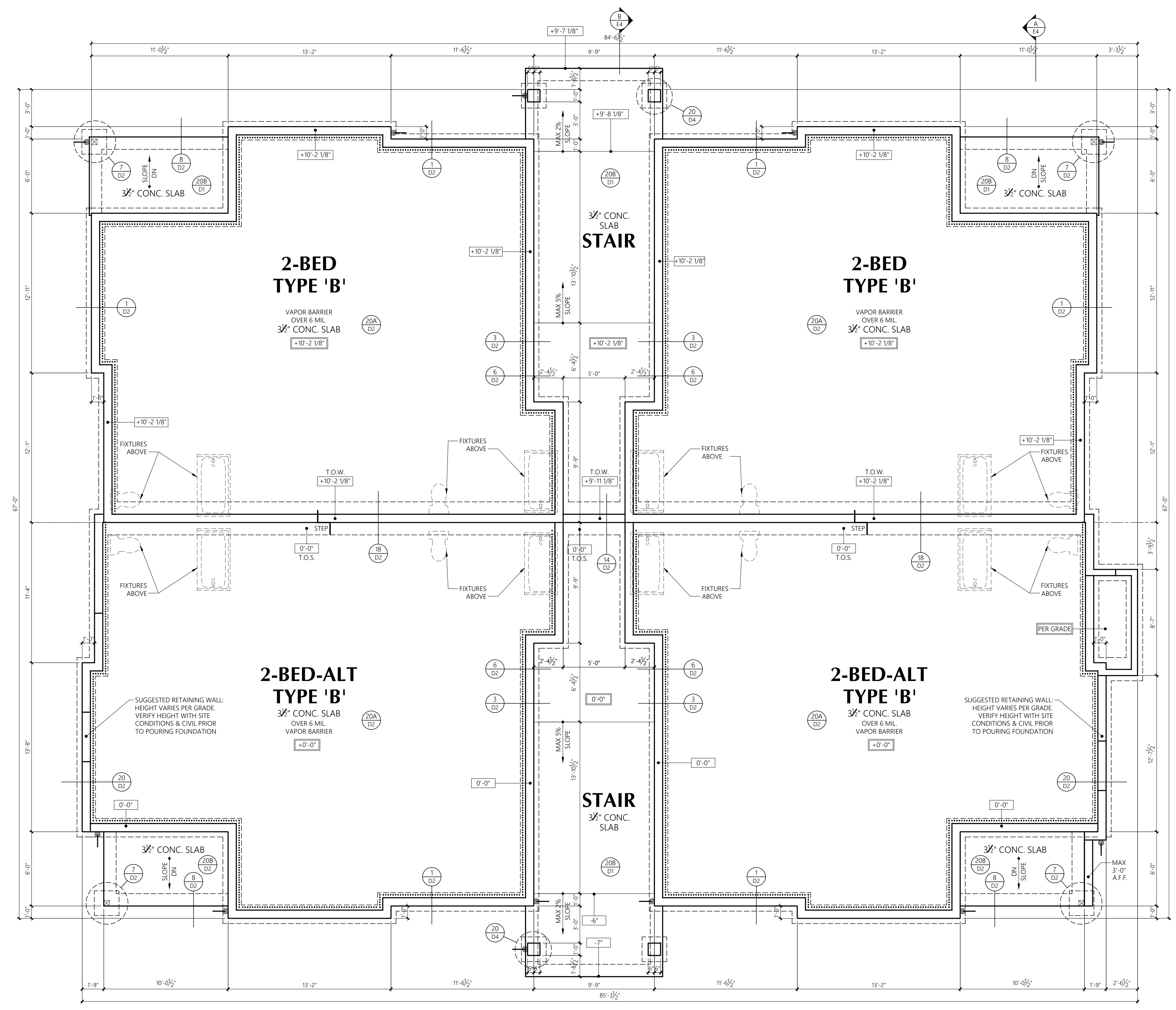
Date Plotted: 2-20-24

Job No.: 23-06

Drawn By: APT/HDM/TMK

Sheet No.:

U12



FOUNDATION NOTES

- LOCATION OF DOWNSPOUT: PROVIDE TIGHT LINE AND RISER BOOT
- X" ELEVATION AT TOP OF CONCRETE (TOP OF FOOTING MAY VARY BECAUSE OF EXCAVATION)
- +X'-X" FINISH SLAB ELEVATION
- R-10 RIGID PERIMETER INSULATION

BUILDING B
1/4" = 1'-0"

FOUNDATION PLAN
3/4 SPLIT LEVEL, 14-UNIT BUILDING

SEE S2.6 FOR STRUCTURAL FOUNDATION PLAN

PT 2306 BUILDING B.DWG



Building B
Roof Plan

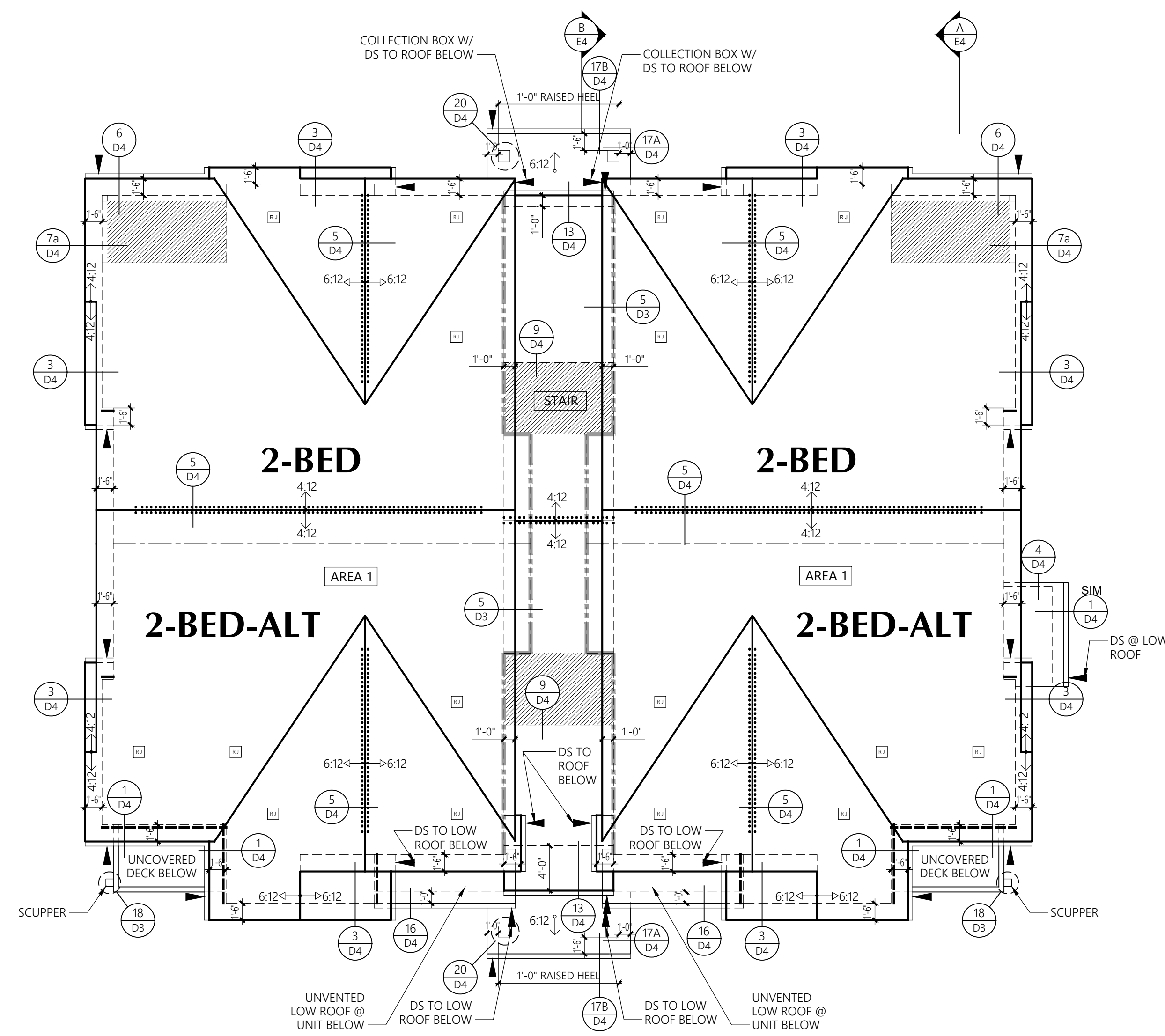
Bradley Heights Apartments
Puyallup, Wa

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No. Date Description

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Date Plotted: 2-20-24
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R2

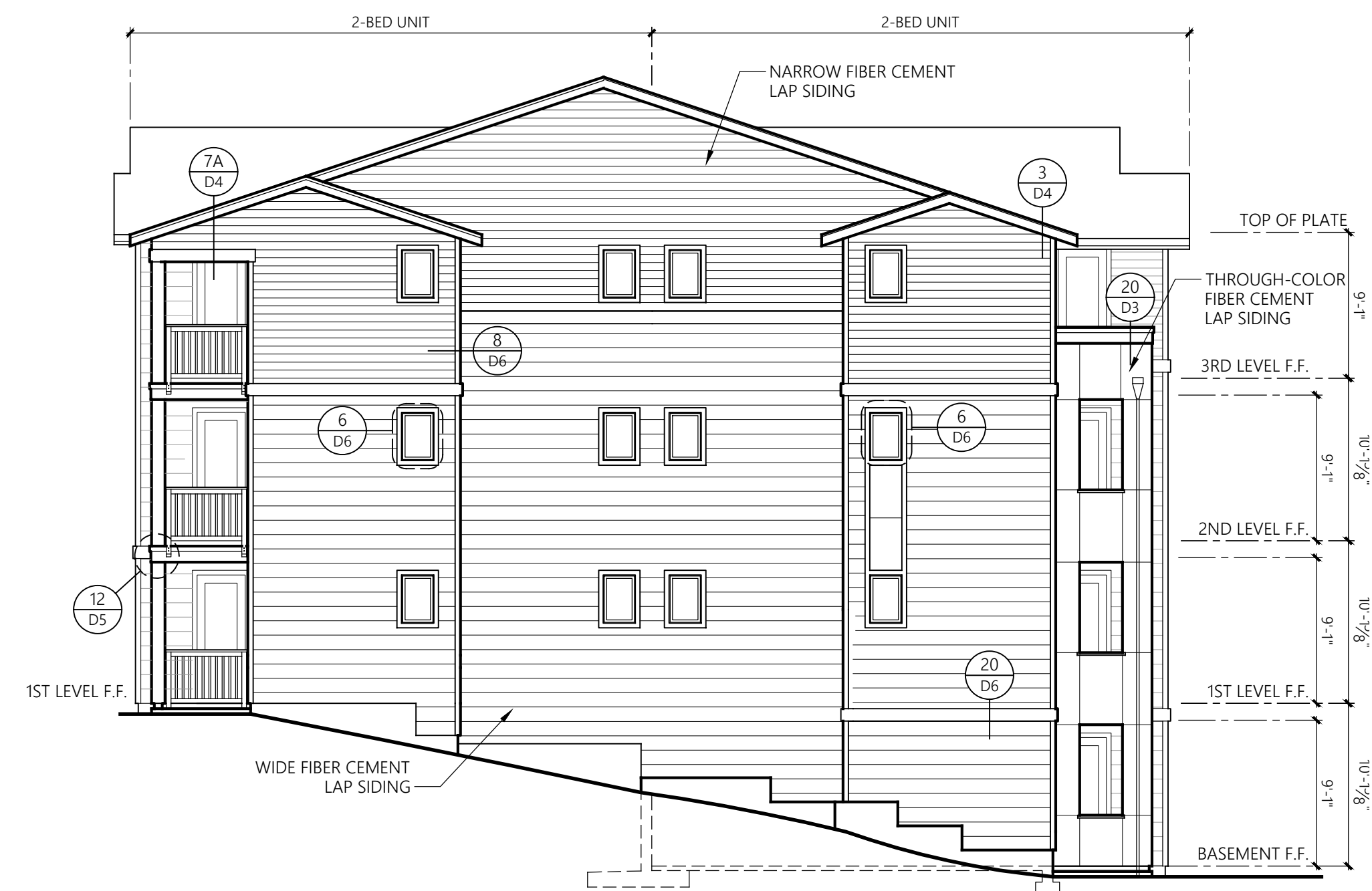


BUILDING B ROOF PLAN
1/8" = 1'-0"

ROOF VENTING CALCULATIONS													
Area Description	Attic Area (SF)	Venting Ratio	Required Venting (SI)	Low Eave Vent (LF)	Low Jacks (Qty)	Vented Soffit (SF)	Ridge Vent (LF)	Venting Provided (SI)				% of req'd	
								Lower	%	Upper	%	Total %	
AREA 1	2,160	1/300	1,037	20	8	58	64	790	51%	768	49%	1,558	150%
STAIR	462	1/150	444	0	0	124	5	732	92%	60	8%	792	179%

ROOF LEGEND	
	ROOF JACK 50 SQ.IN. NET FREE AREA
	4:12 SLOPE INDICATOR U.N.O.
	6:12 SLOPE INDICATOR U.N.O.
	BUILDING OUTLINE
	EAVE VENTING 2.4 SQ.IN./A.F. NET FREE AREA
	RIDGE VENTING 12 SQ.IN./A.F. NET FREE AREA
	UNIT SEPARATION AND DRAFT STOPPING LOCATIONS AT ATTIC
	GUTTER (DOUBLE LINE)
	DOWNSPOUT LOCATION
	VENTED FIBER CEMENT SOFFIT 5.9 SQ.IN./A.F. NET FREE AREA

PT. VENTING BUILDING B

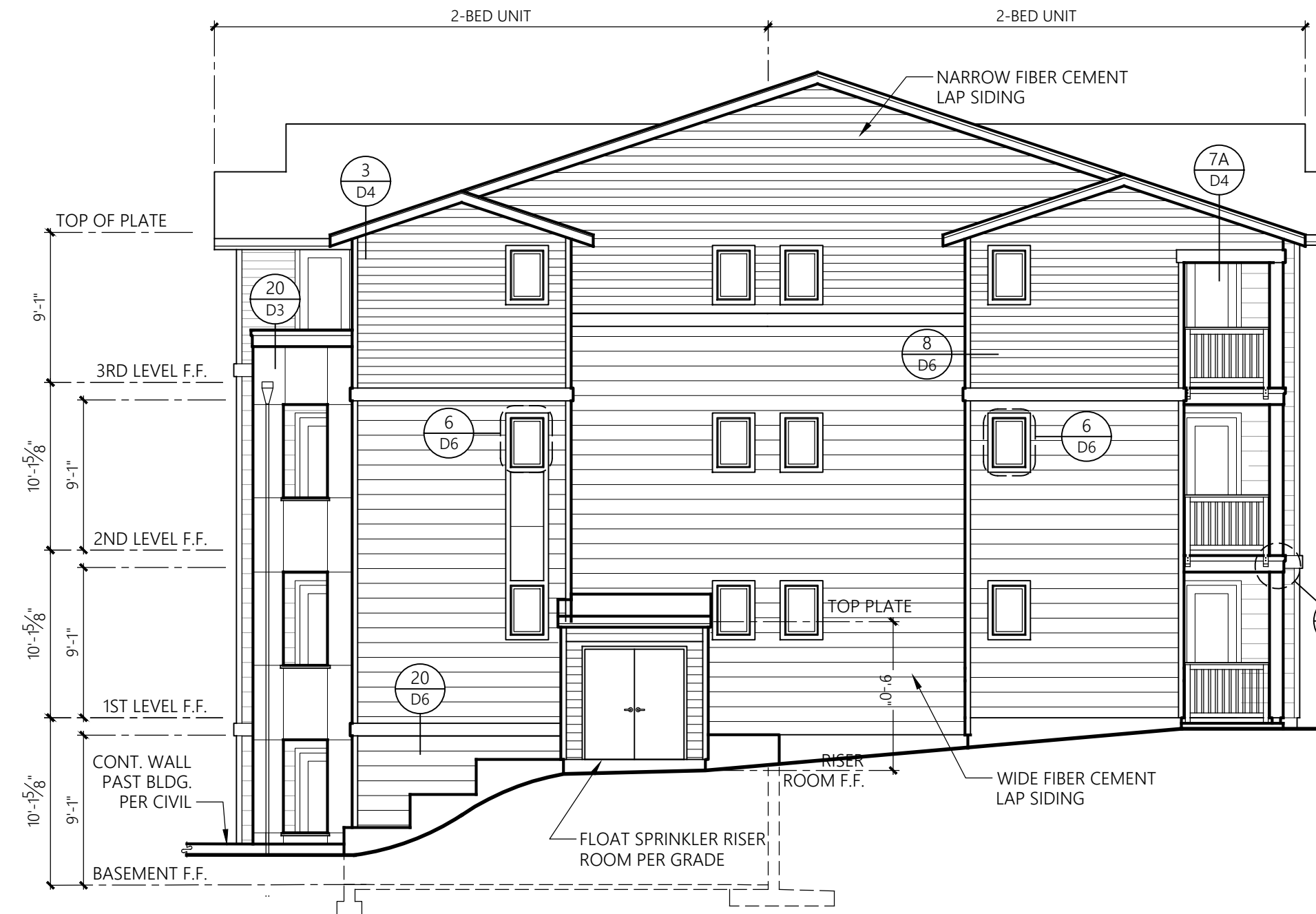


BUILDING B SIDE ELEVATION
1/8" = 1'-0"



BUILDING B FRONT ELEVATION
1/8" = 1'-0"

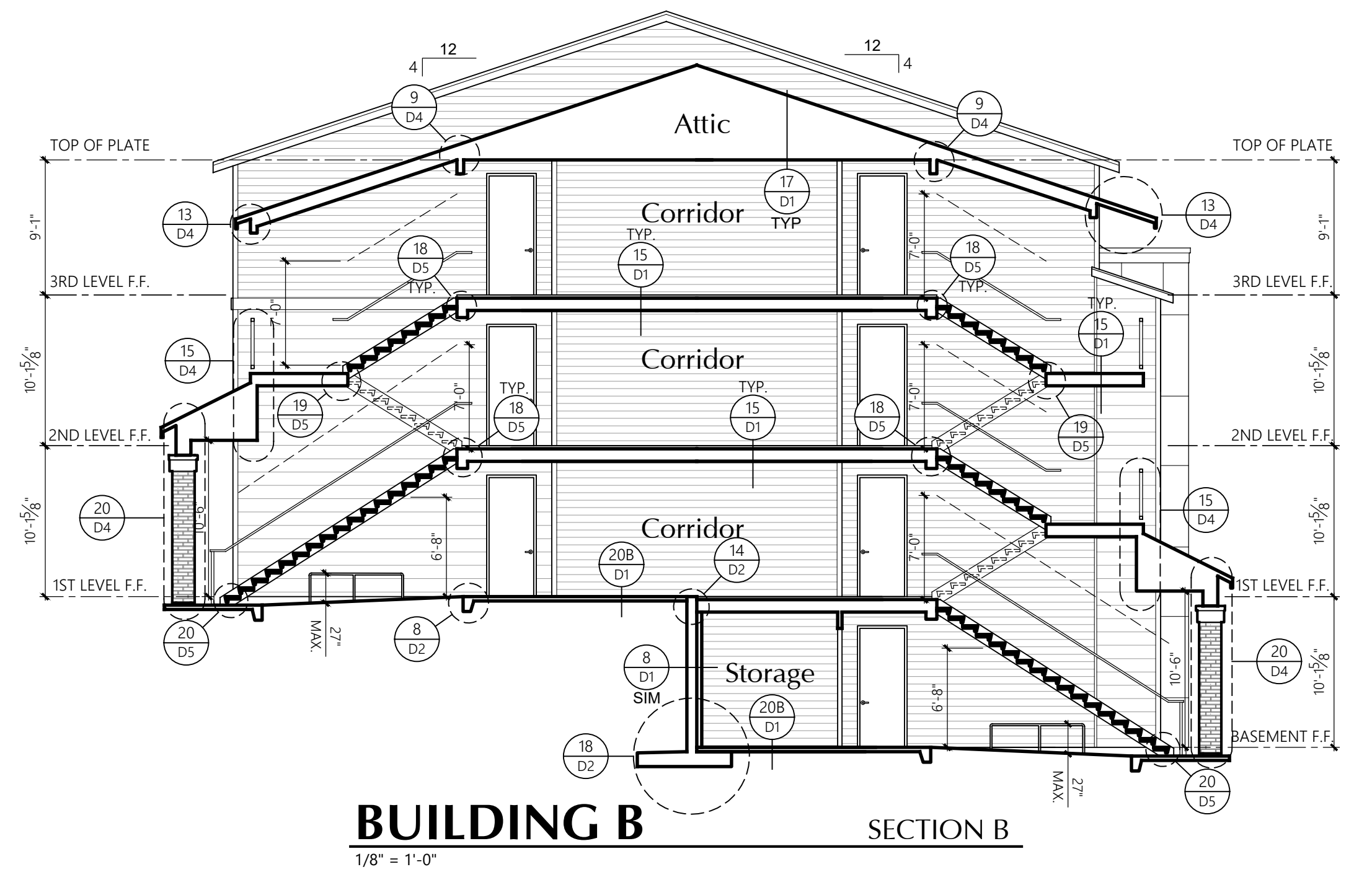
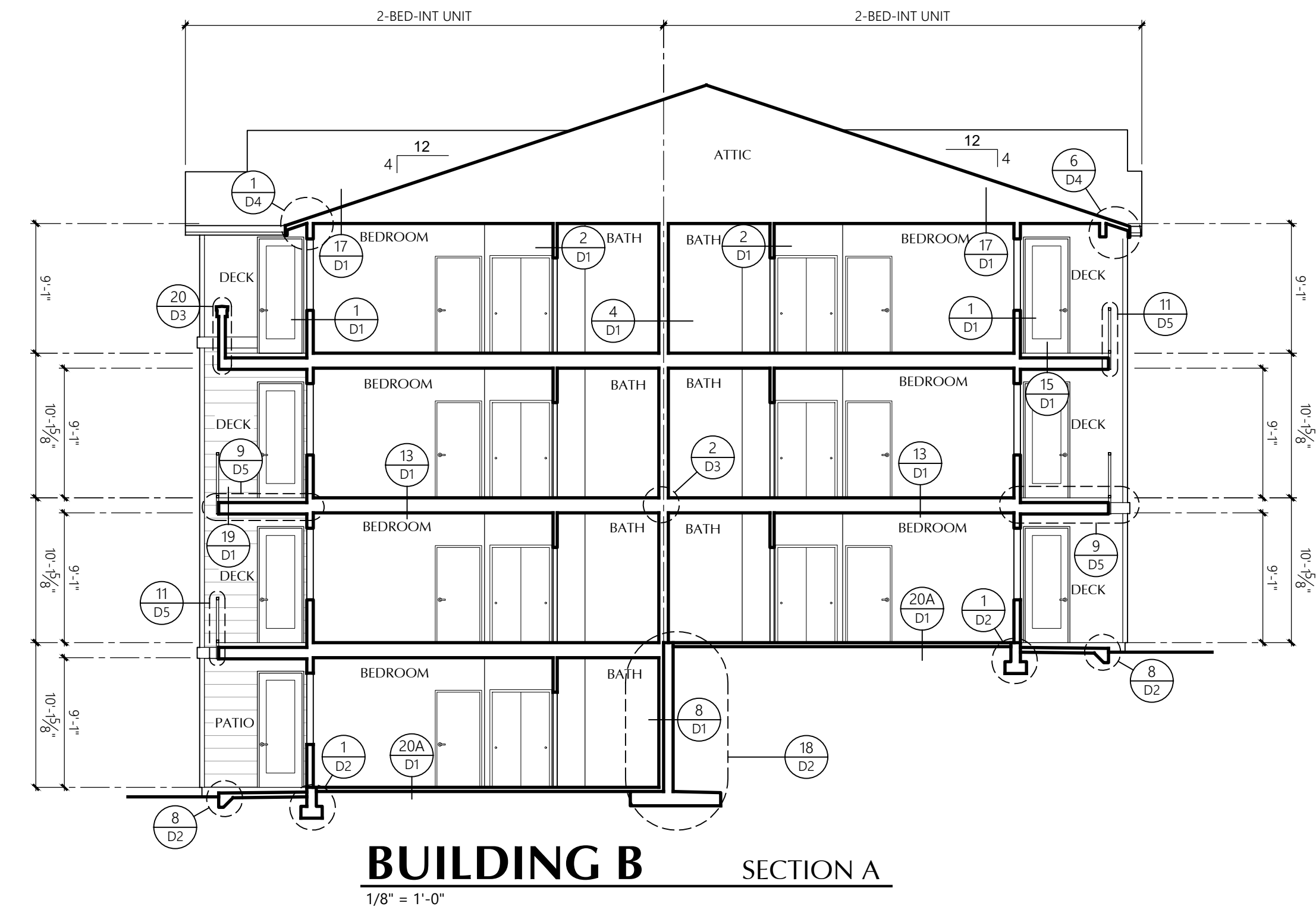
WINDOW HDR HEIGHT
8'-0" A.F.F. UNO



BUILDING B SIDE ELEVATION
1/8" = 1'-0"



BUILDING B REAR ELEVATION
1/8" = 1'-0"



Building B
Building Sections

Bradley Heights Apartments
Puyallup, Wa

Timberlane Partners

Revisions
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Initial Publish Date:
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Job No.: 23-06
Drawn By: APT/HDM/TMK
Sheet No.:

E4

STRUCTURAL NOTES-TABLES

Special Inspection required per Chapter 17 of the 2018 IBC - SUBMIT REPORTS TO INSPECTORS WITH THE CITY OF PUYALLUP

WIND PRESSURE TABLE FOR COMPONENTS & CLADDING (ASD)						
ROOF SURFACES ¹						
EFFECTIVE WIND AREA	POSITIVE PRESSURE (PSF)			NEGATIVE PRESSURE (PSF)		
	ZONE ²					
	1	2	3	1	2	3
10 SF	7.80	7.80	7.80	-12.39	-21.56	-31.89
20 SF	7.04	7.04	7.04	-12.01	-19.65	-29.59
50 SF	6.27	6.27	6.27	-11.62	-17.74	-27.30
100 SF	5.51	5.51	5.51	-11.24	-15.83	-25.01
500 SF	5.51	5.51	5.51	-11.24	-15.83	-25.01

WALL SURFACES						
EFFECTIVE WIND AREA	POSITIVE PRESSURE (PSF)			NEGATIVE PRESSURE (PSF)		
	ZONE ²					
	4	5	4	5	4	5
10 SF	12.18	12.18	-13.21	-16.31	-13.21	-16.31
20 SF	11.56	11.56	-12.59	-15.07	-12.59	-15.07
50 SF	10.94	10.94	-11.98	-13.83	-11.98	-13.83
100 SF	10.32	10.32	-11.36	-12.57	-11.36	-12.57
500 SF	9.08	9.08	-10.12	-11.36	-10.12	-11.36

1. NET WIND PRESSURES AT ROOF SURFACES = VALUE FROM TABLE ABOVE +2/3 DEAD LOAD (DEAD LOAD REDUCES NEGATIVE PRESSURE + ADDS TO POSITIVE PRESSURES)
 2. ZONES ARE DEFINED BY FIGURE 30.6-1 ASCE/SEI 07-10 FOR ROOF AND WALL ELEMENTS

2018 International Building Code - Statement of Special Inspection						
MATERIAL/ TYPE INSPECTION	IBC CODE REFERENCE	REFERENCE STANDARD	FREQUENCY APPLICABLE TO THIS PROJECT			SCOPE OF SERVICE
			CONT.	PERIODIC	REQUIRED	
Site Preparation	Table 1705.6 Item 5	-	-	X	N/A	Inspection to determine that the site has been prepared in accordance with the approved soils or geotechnical report.
Prepared Fill - During Fill Preparation	Table 1705.6 Item 4	-	X	-	YES	Inspection to determine that the materials being used and maximum lift thicknesses comply with the approved report as specified in Section 1804.2.
Evaluation of in-place Density	Table 1705.6 Item 3	-	-	X	YES	Tests to determine, at the approved frequency, that the in-place dry density of the compacted fill complies with the approved report.
Footings and Foundations	1805.1 - 1805.9 Table 1705.6 Item 1	-	-	X	YES	Confirm soils suitable for the design allowable soil bearing pressure are present at bearing grade. Confirm the footing dimensions are as specified on the project plans.
Foundation Depth	Table 1705.6 Item 2	-	-	X	YES	Confirm excavation are extended to proper depth and have reached proper materials.

2018 International Building Code - Statement of Special Inspection						
CONCRETE CONSTRUCTION						
MATERIAL/ TYPE INSPECTION	IBC CODE REFERENCE	REFERENCE STANDARD	FREQUENCY APPLICABLE TO THIS PROJECT			SCOPE OF SERVICE
			CONT.	PERIODIC	REQUIRED	
Materials	1705.3.1, Table 1705.3 Item 1	Applicable ASTM material spec.; AISC 360, Section A3.3	-	X	YES	Manufacturer's Certificates of Compliance or Tests per Chapter 3 of ACI 318, per ASTM A 706, and per 1705.3.1
Installation of Reinforcing Steel	1910.4 Table 1705.3 Item 1	ACI 318.3.5; 7.1 - 7.7	-	X	YES	Inspection to confirm compliance with details shown on approved Construction Documents, Shop Drawings, ACI 318 and Code Section 1910.4
Welding of Reinforcing Steel	Table 1705.3 Item 2	AWS D1.4, ACI 318.3.5.2	-	-	N/A	Observation of reinforcing steel welding in accordance with Table 1705.2.2, Item 2, (see attached steel construction table).
Bolt Installation	1908.5, 1901.1 Table 1705.3 Item 3	ACI 318: 8.1.3, 21.2.8	X	-	YES	Observation of anchor bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased.
Formwork	Table 1705.3 Item 12	ACI 318.6.1.1	-	X	YES	Inspection for compliance with ACI 318, Section 6.1, 6.2, for shape, location and dimensions of concrete member being formed.
Concrete Strength	1910.10, Table 1705.3 Item 6	ASTM C 172, ASTM C 31, ACI 318.5.6, 5.8	-	X	NO	Evaluation of Concrete strength in accordance with ACI 318, Section 5.6 and in accordance with the requirements of IBC 1905.6.
Concrete Mixes	1904.2, 1910.2, 1910.3 Table 1705.3 Item 5	ACI 318: 4, 5.2-5.4	-	X	YES	Inspection for use of proper mix proportions and techniques, ACI 318, Chapter 4, Sections 5.2 - 5.4.
Concrete Sampling	1910.10 Table 1705.3 Item 6	ASTM C 172, ASTM C 31, ACI 318.5.6, 5.8	X	-	NO	
Concrete Placement	1910.6, 1910.7, 1910.8, Table 1705.3 Item 7	ACI 318.5.9, 5.10	X	-	YES	Inspection for proper application techniques; ACI 318, Sections 5.9 and 5.10
Curing Temperatures and Techniques	1910.9 Table 1705.3 Item 8	ACI 318: 5.11-5.13	-	X	NO	Inspection for maintenance of curing temperatures and techniques; ACI 318, Sections 5.11, 5.12 and 5.13.
Prestressed Concrete: Application Prestressing Forces	Table 1705.3 Item 9a	ACI 318: 18.20, ACI 18.18.4	X	-	NO	Field inspections of precast concrete members in accordance with ACI 318, Section 18.20.
Prestressed Concrete: Grouting of unbonded prestressing tendons in seismic-force-resisting system	Table 1705.3 Item 9b	ACI 318: 18.20, ACI 18.18.4	X	-	NO	Field inspections of precast concrete members in accordance with ACI 318, Chapter 18.18.4.
Manufacture of Precast Concrete	1704.2.1	-	-	X	NO	Certificate from Independent Agency and current agreement for periodic (minimum 6 month intervals) in-plant quality assurance inspections.
Erection of Precast Concrete	Table 1705.3 Item 10	ACI 318: 16	-	X	NO	Field inspections of precast concrete members in accordance with ACI 318, Chapter 16.
Post Tensioning	Table 1705.3 Item 11	ACI 318: 6.2	-	X	NO	Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms for beams and structural slabs in accordance with ACI 318, Section, 6.2.
Post Installed Anchors	1909.1, Table 1705.3 Item 11	ACI 318: 3.8.6, 8.1.3, 21.1.8	-	X	YES	Verification of anchors post installed in hardened concrete members.

2018 International Building Code - Statement of Special Inspection						
WOOD CONSTRUCTION						
MATERIAL/ TYPE INSPECTION	IBC CODE REFERENCE	REFERENCE STANDARD	FREQUENCY APPLICABLE TO THIS PROJECT			SCOPE OF SERVICE
			CONT.	PERIODIC	REQUIRED	
Fabrication - Inspection of Fabricator's Quality Control Procedures	1704.2.5	-	-	X	YES	Certificate from Independent Agency and current agreement for periodic (minimum 6 month intervals) in-plant quality assurance inspections.

2018 International Building Code - Statement of Special Inspection						
SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE						
MATERIAL/ TYPE INSPECTION	IBC CODE REFERENCE	REFERENCE STANDARD	FREQUENCY APPLICABLE TO THIS PROJECT			SCOPE OF SERVICE
			CONT.	PERIODIC	REQUIRED	
Structural Steel	1705.11.1	AISC 341	X	-	N/A	Observation of structural welding in accordance with AISC Seismic. Not required for 5/16" single pass fillet welds or welding of metal deck.
Structural Wood: Inspection of field gluing operations of elements of the seismic force resisting system.	1705.11.2	-	X	-	N/A	Inspection of field gluing operations of elements of the seismic force resisting system.
Structural Wood: Inspection of nailing, bolting, anchoring and other fastening components within the seismic force resisting system, including drag struts, braces and hold-downs.	1705.11.2	-	-	X	YES	Inspection of nailing, bolting, anchoring and other fastening components within the seismic force resisting system, including drag struts, braces and hold-downs. Not required for nailing o.c. spacing greater than 4" o.c.
Cold-formed Steel Framing	1705.11.3	-	-	X	NO	Inspection of welding operations of elements of the seismic force resisting system.
Cold-formed Steel Framing	1705.11.3	-	-	X	NO	Inspection of screw attachments, bolting, anchoring and other fastening components within the seismic force resisting system, including struts, braces and hold-downs.

2018 International Building Code - Statement of Special Inspection						
STRUCTURAL OBSERVATIONS						
MATERIAL/ TYPE INSPECTION	IBC CODE REFERENCE	REFERENCE STANDARD	FREQUENCY APPLICABLE TO THIS PROJECT			SCOPE OF SERVICE
			CONT.	PERIODIC	REQUIRED	
Structural Observations	1704.5	-	-	X	If required by jurisdiction	Structural observations to be performed to observe general conformance to the construction documents.

Revisions to this sheet:

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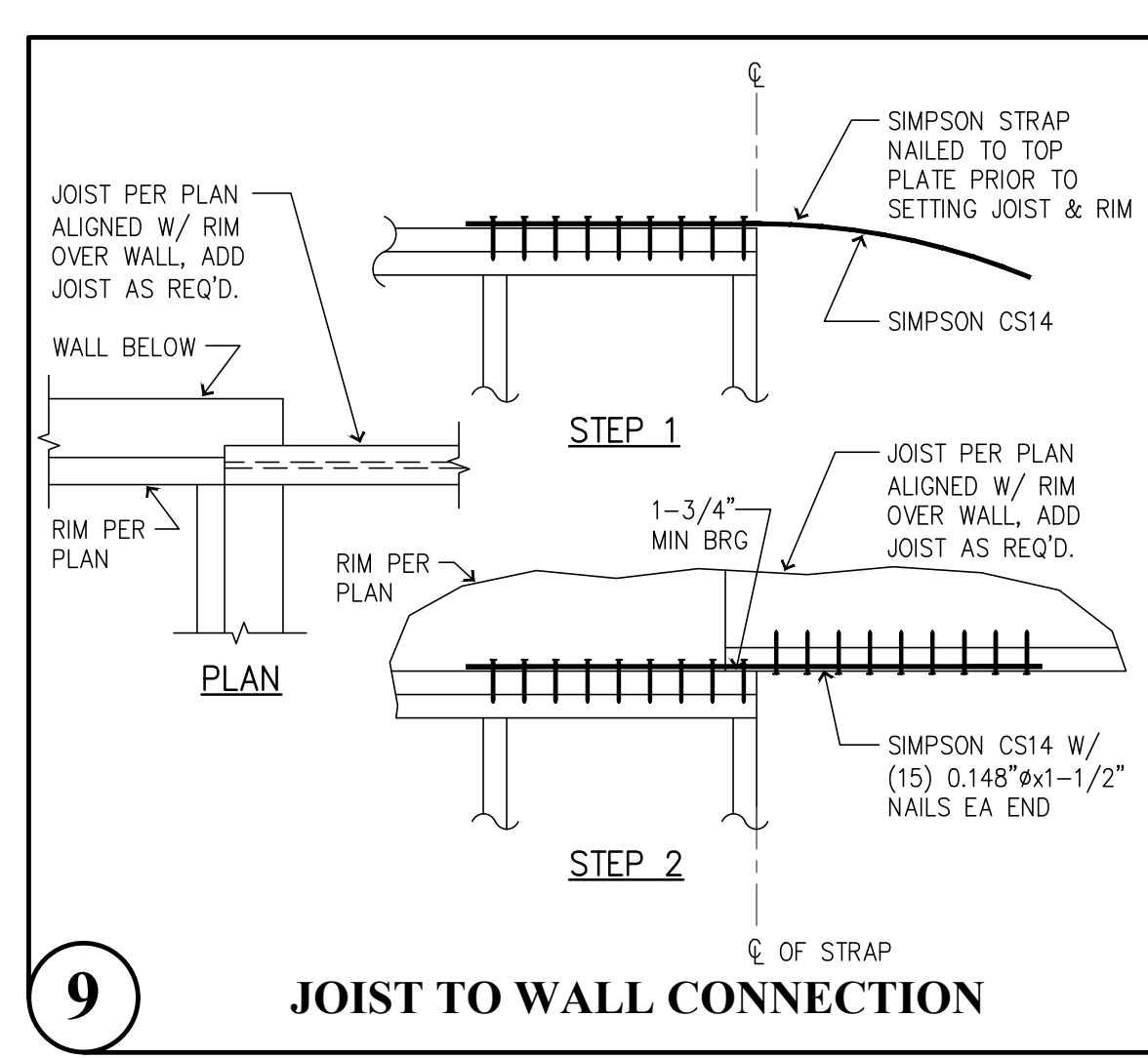
PROJECT NO. : 23-007
 DESIGNED BY : TLC, OGG, MRO
 DRAWN BY : RSO
 ISSUE DATE : 2-20-24
 LATEST REV. OF DWG. SET :

SUBMITTAL SET ONLY NOT FOR CONSTRUCTION
 THESE DRAWINGS ARE SUBJECT TO REVISIONS
 PENDING LOCAL JURISDICTIONAL REVIEW.

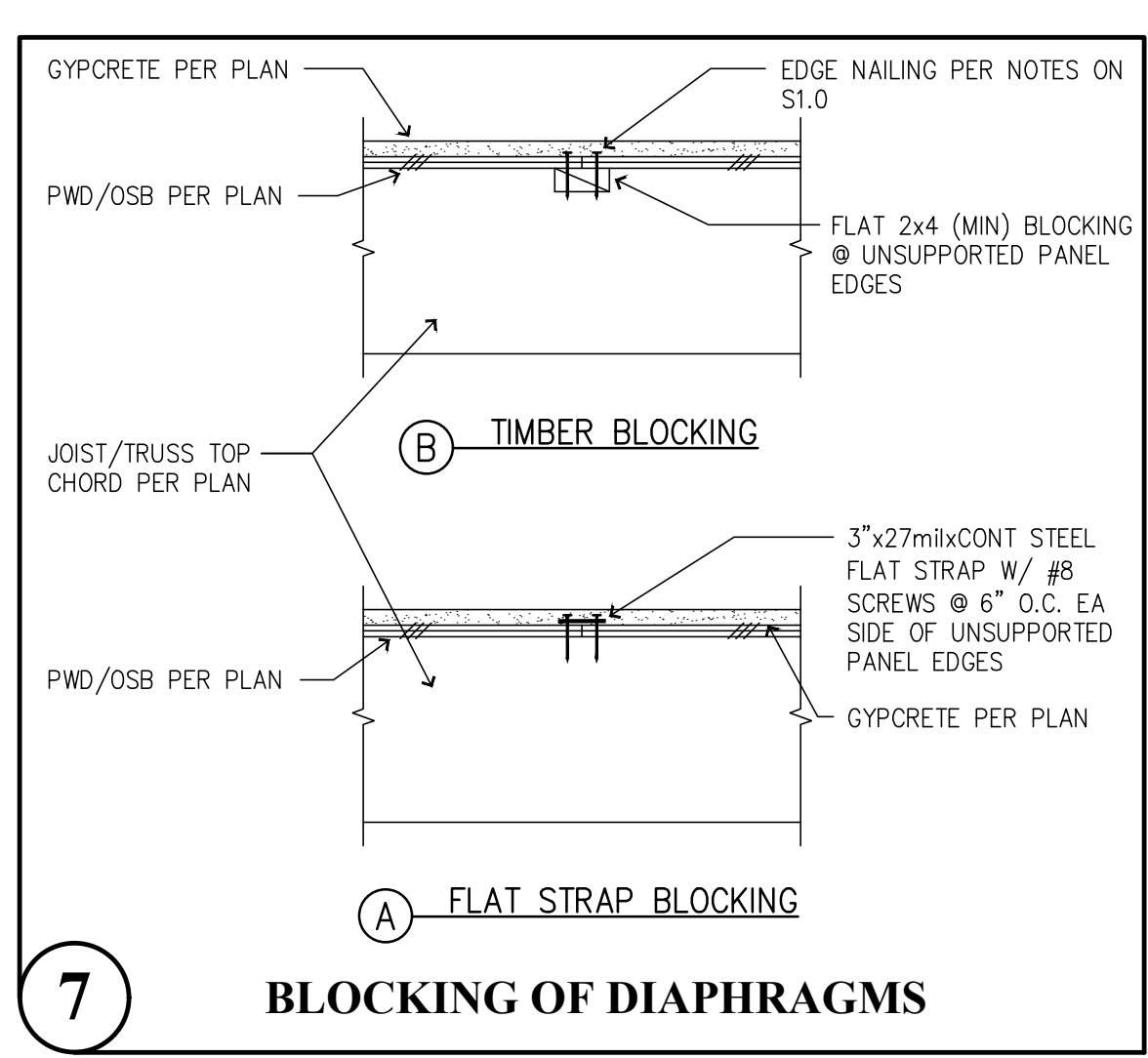
S1.1

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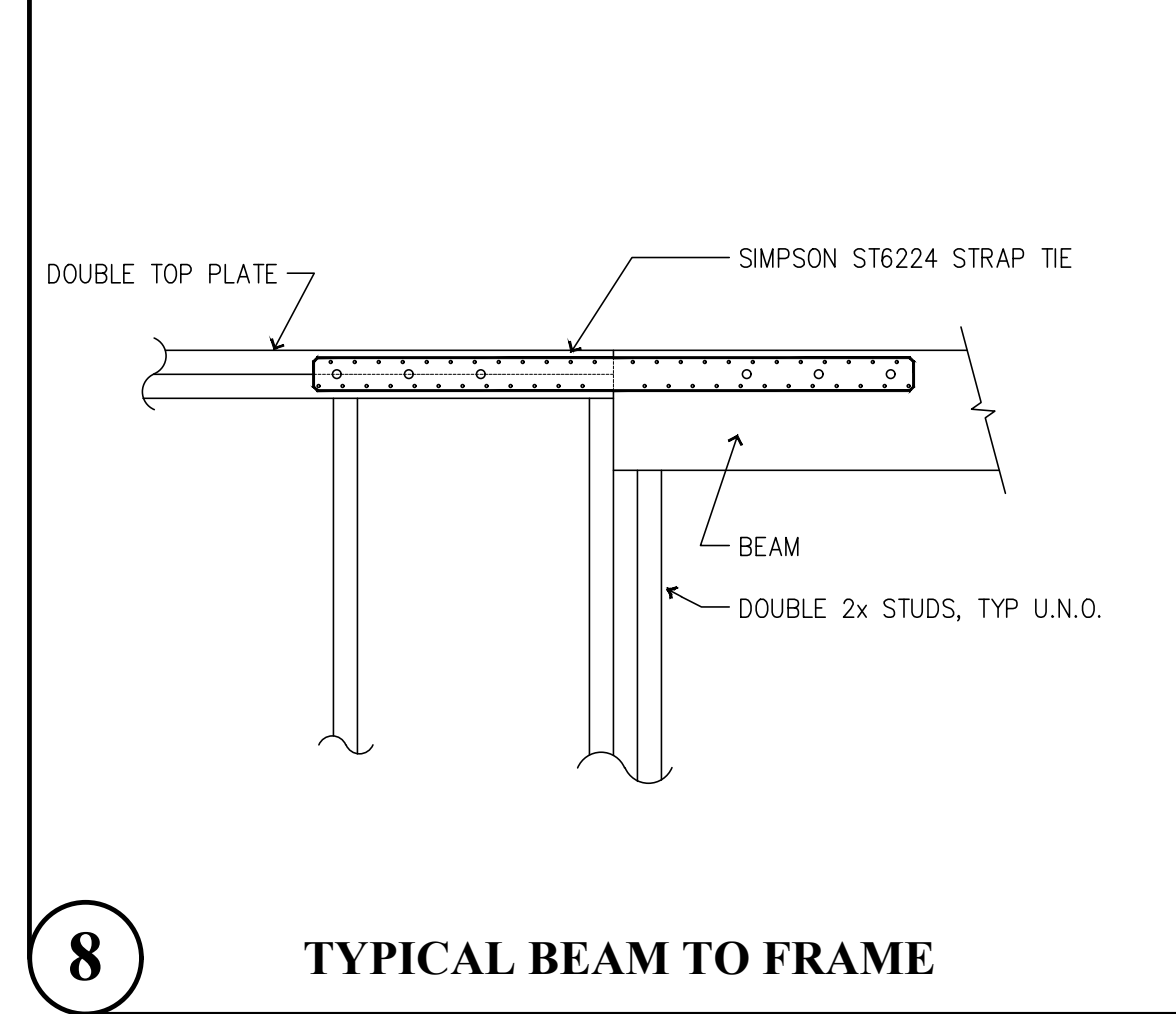
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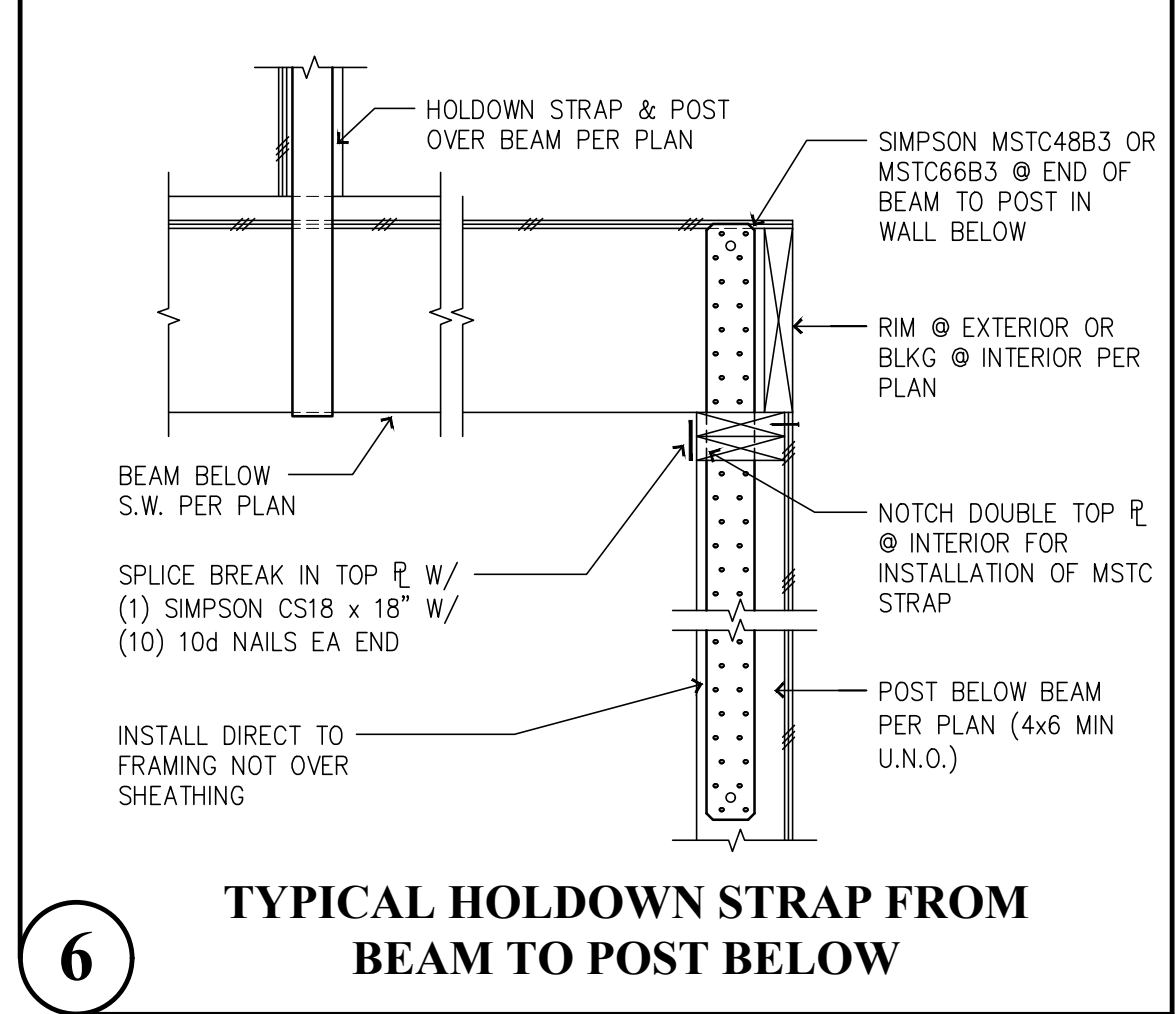
9 JOIST TO WALL CONNECTION



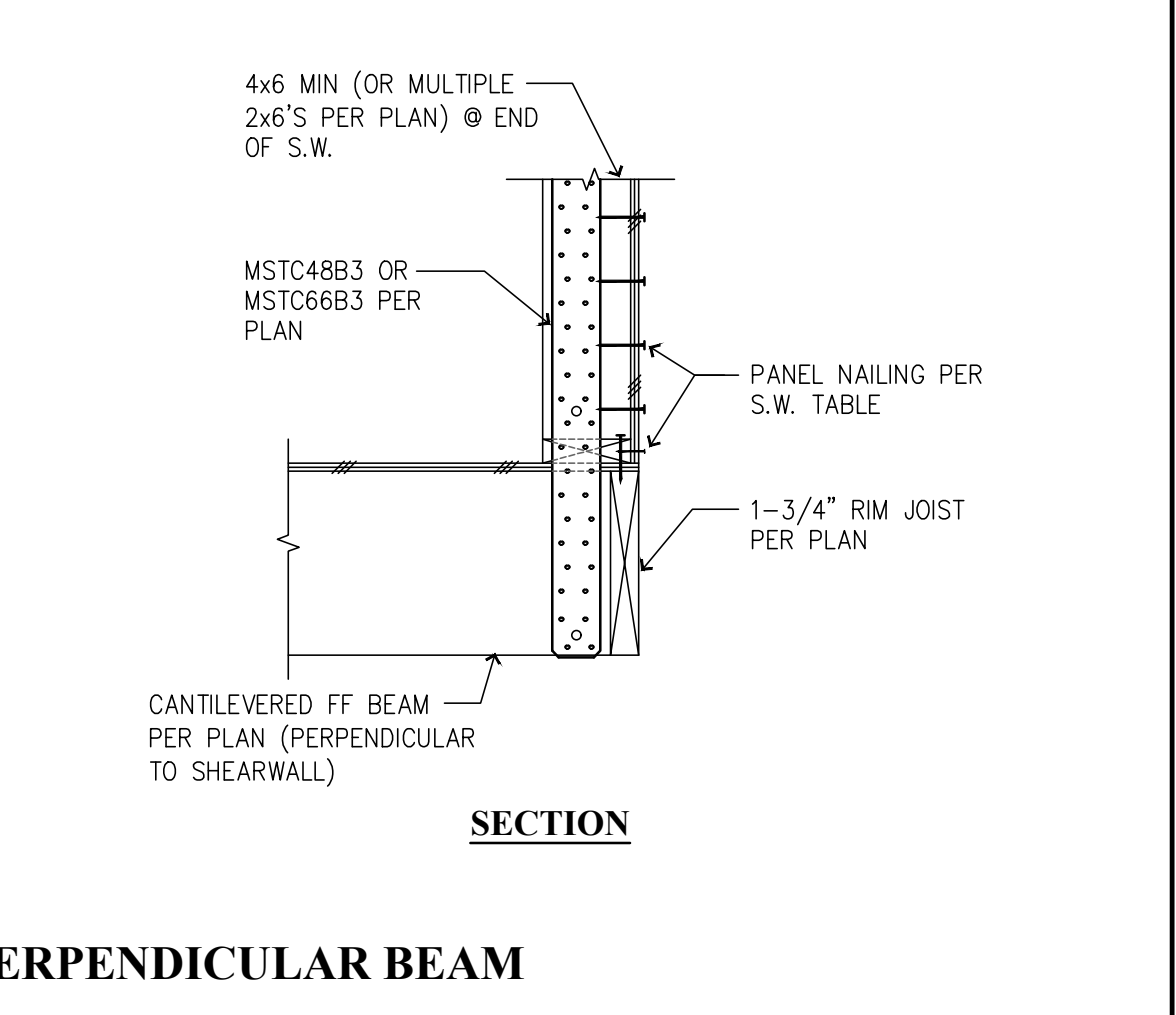
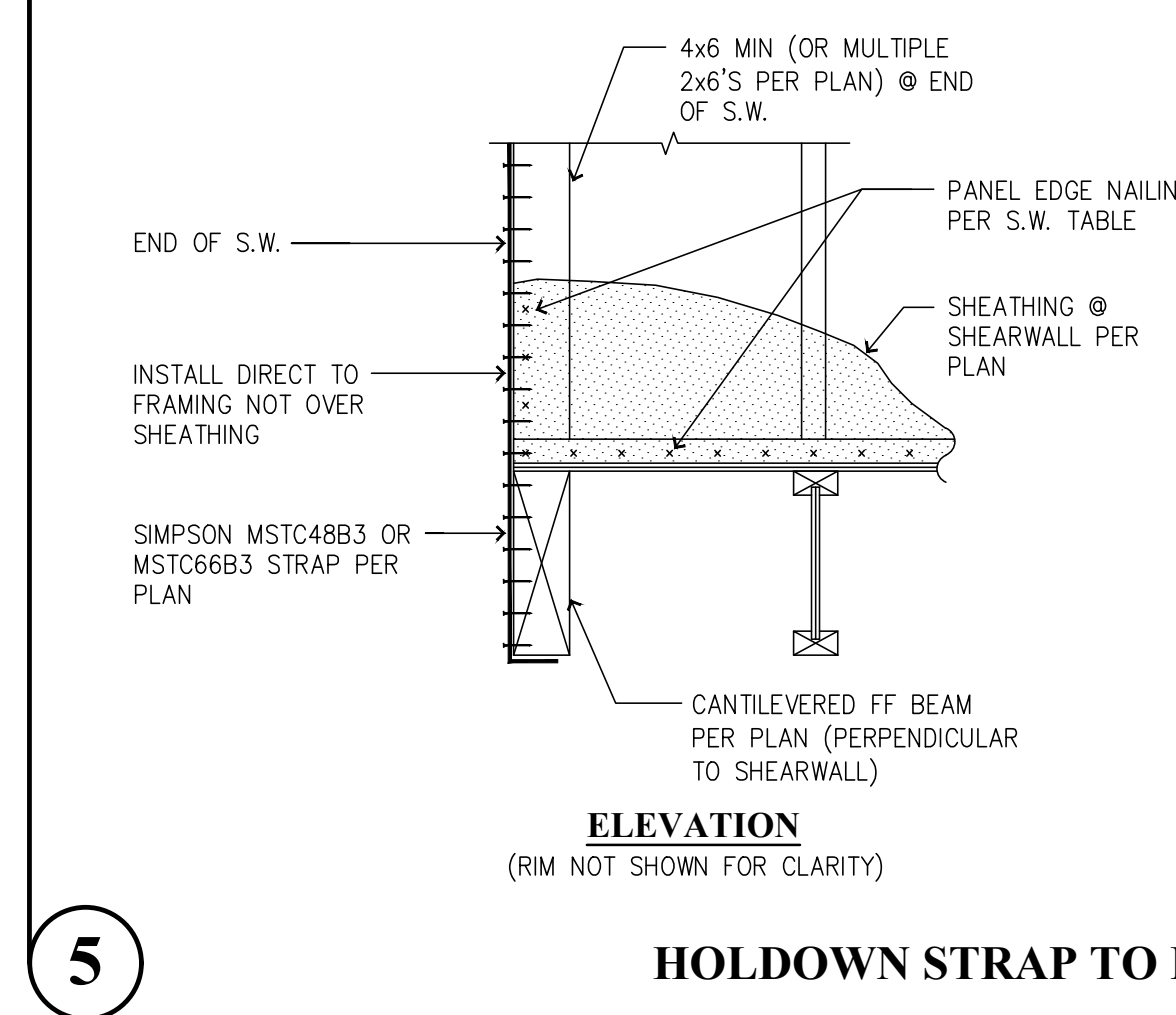
7 BLOCKING OF DIAPHRAGMS



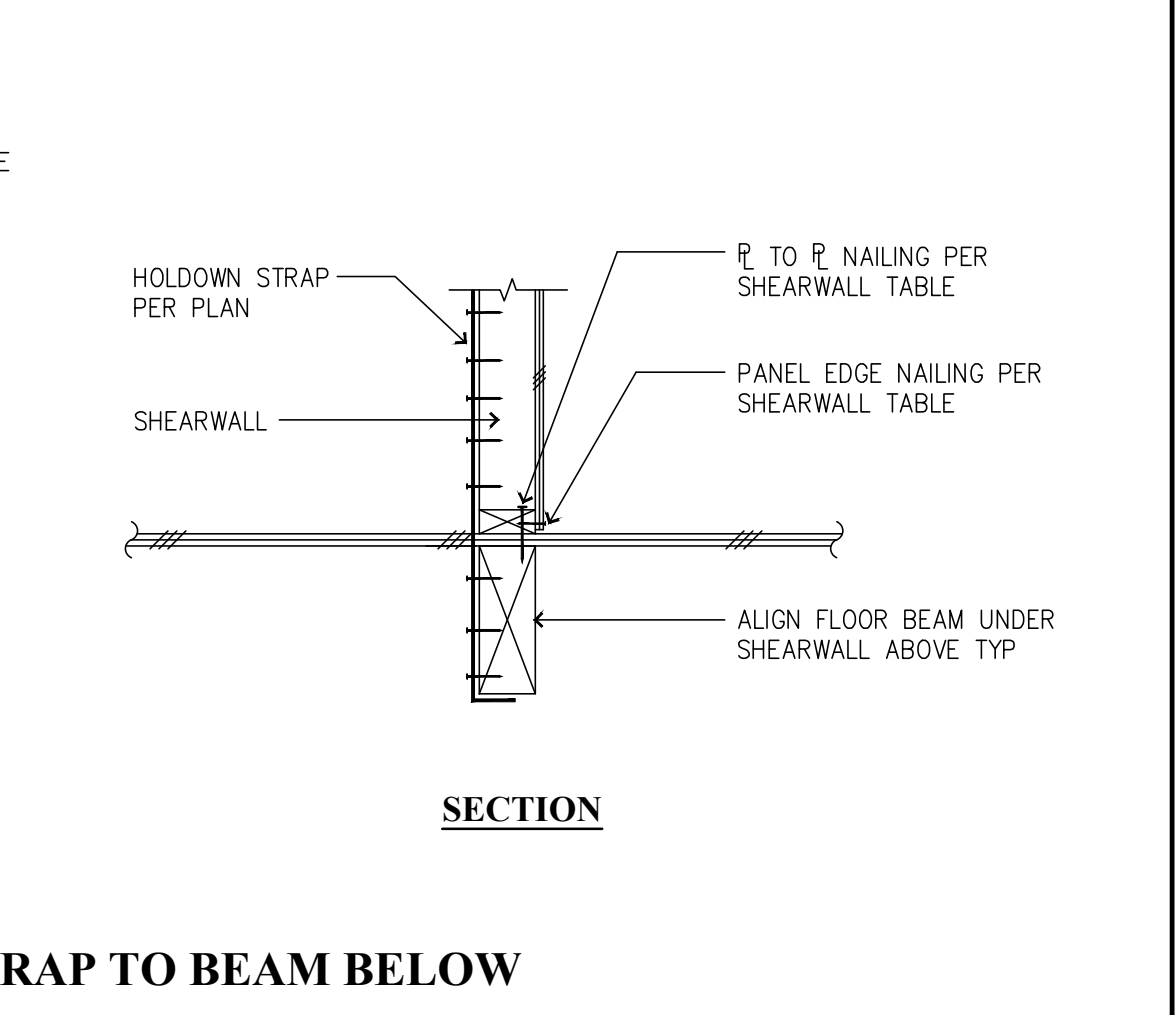
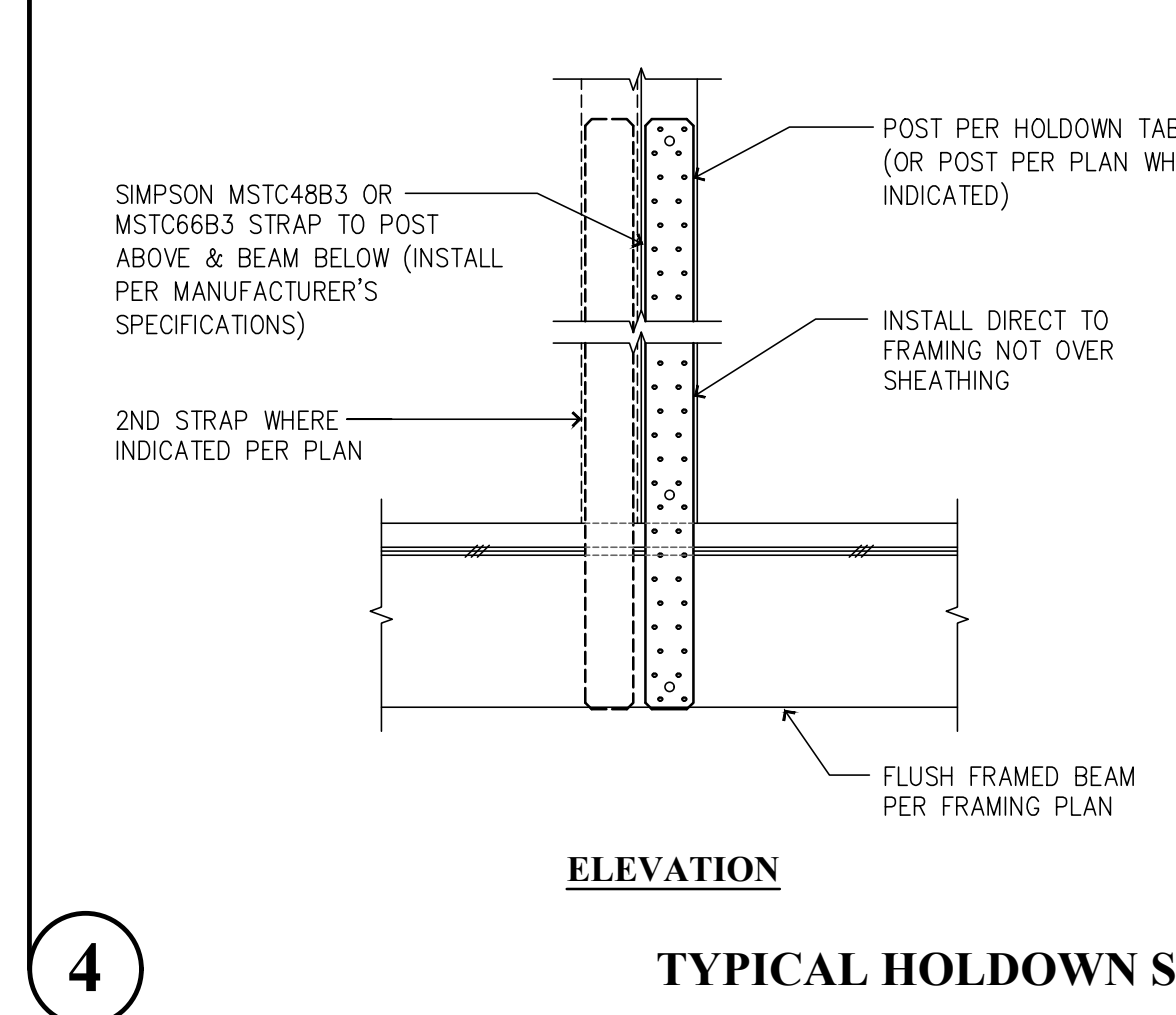
8 TYPICAL BEAM TO FRAME



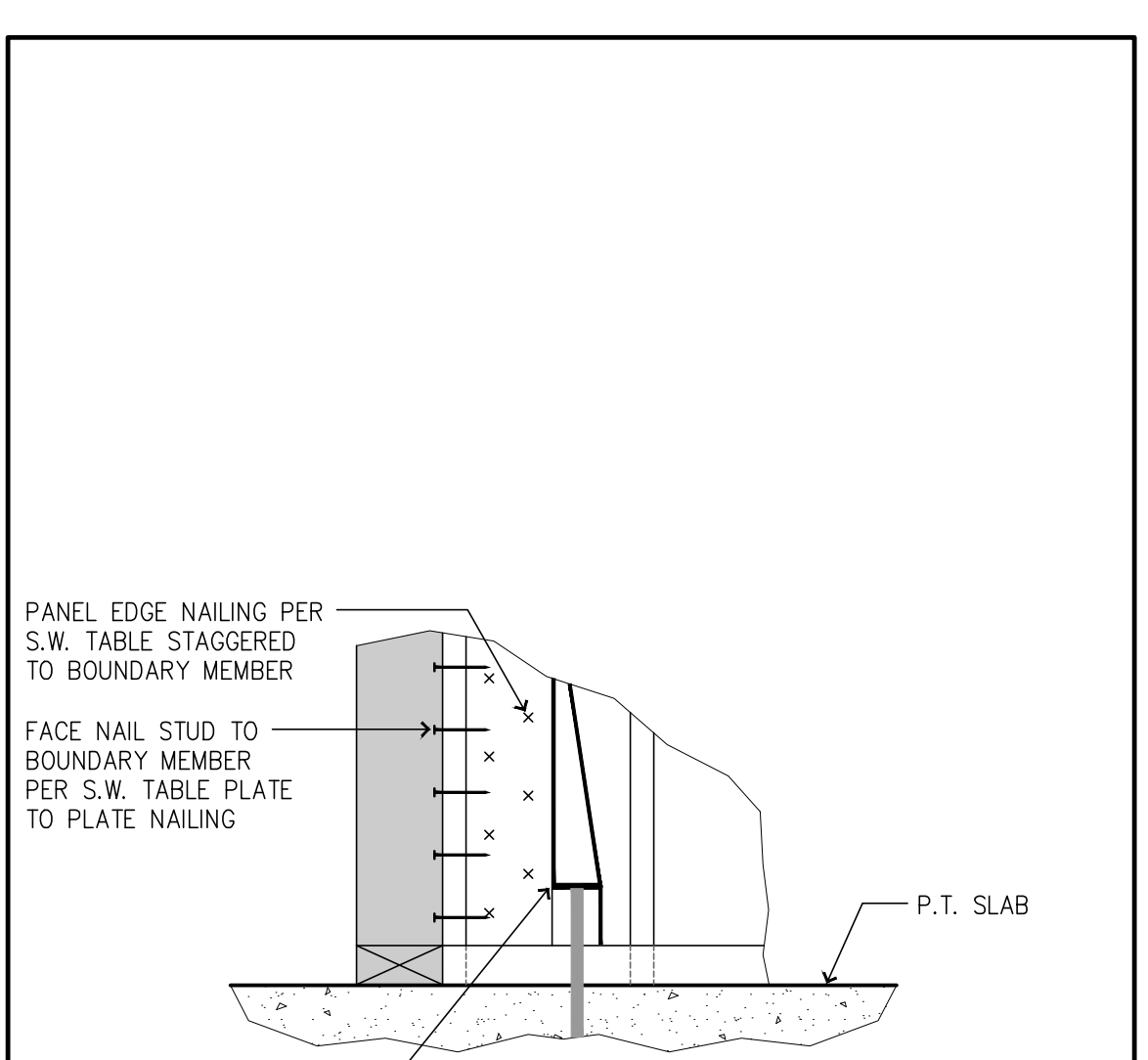
6 TYPICAL HOLDOWN STRAP FROM BEAM TO POST BELOW



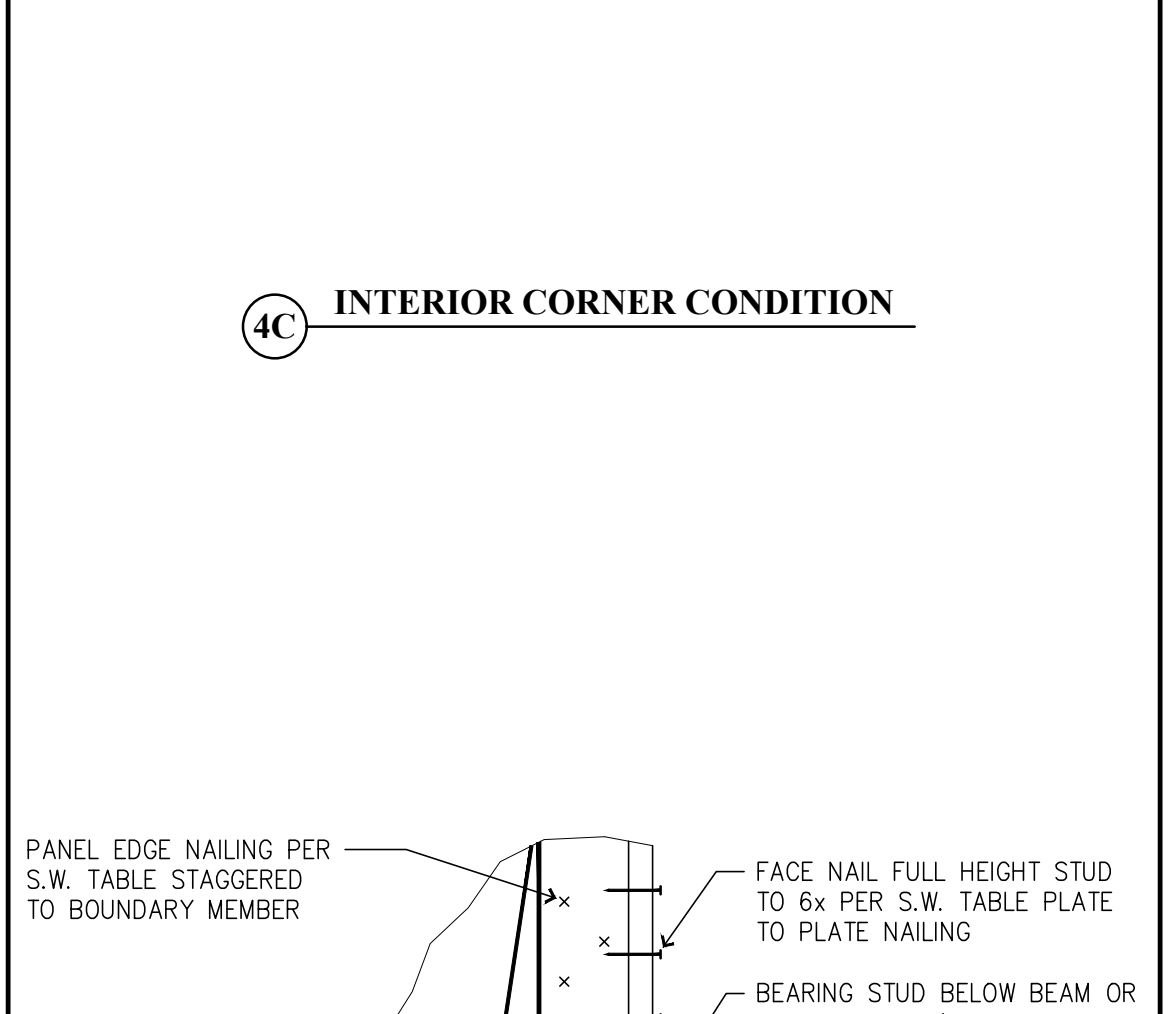
5 HOLDOWN STRAP TO PERPENDICULAR BEAM



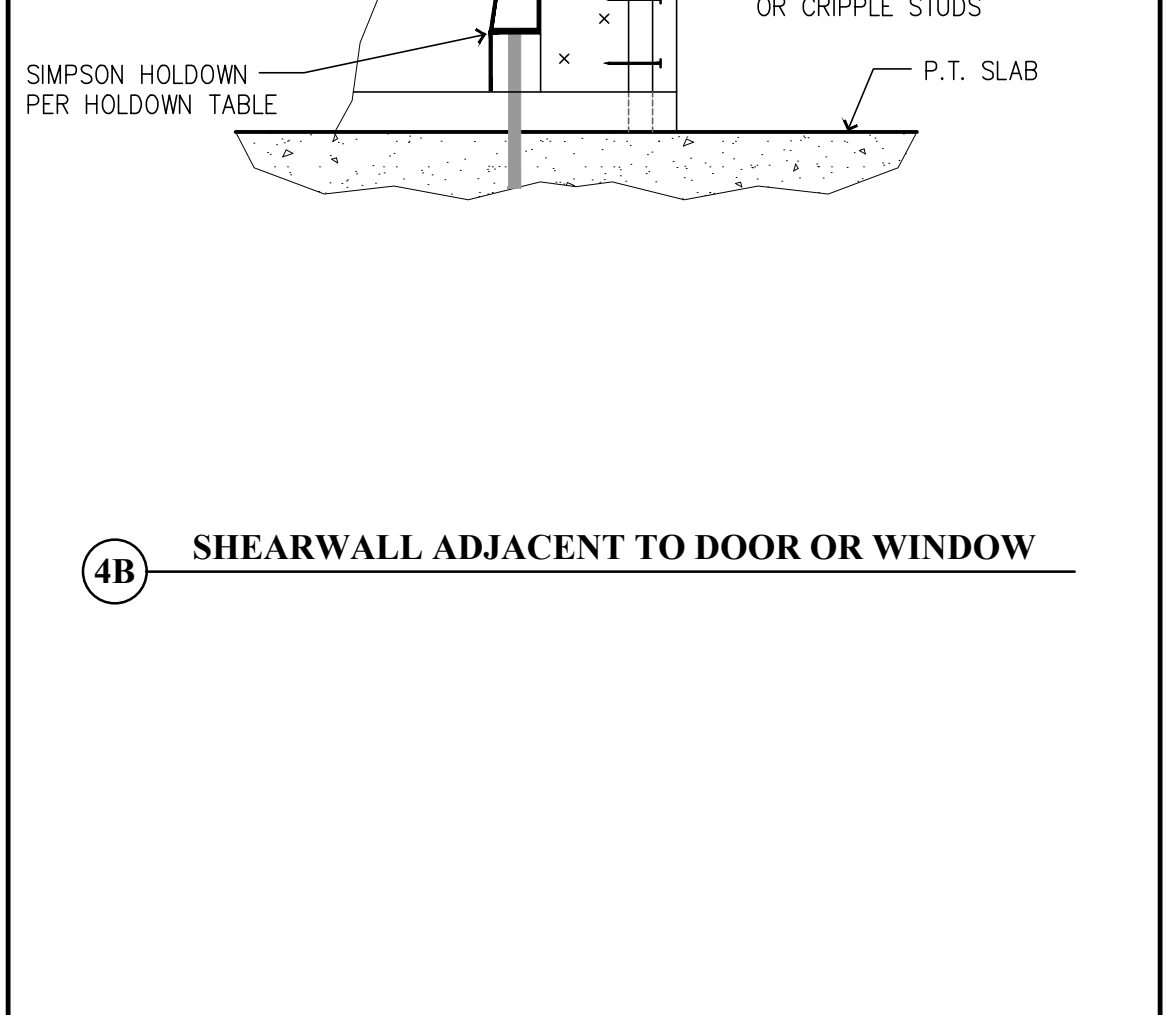
4 TYPICAL HOLDOWN STRAP TO BEAM BELOW



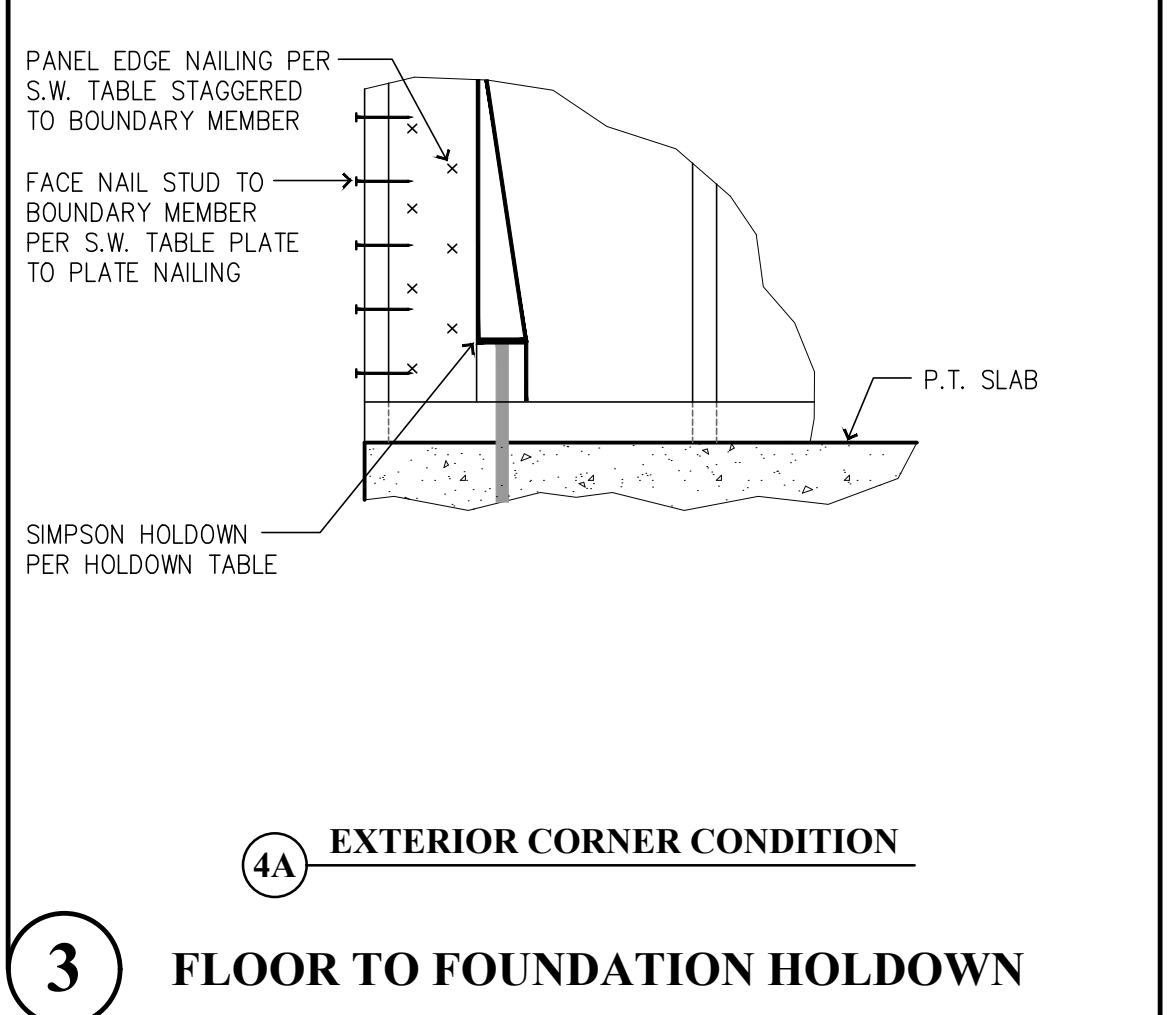
3 FLOOR TO FOUNDATION HOLDOWN



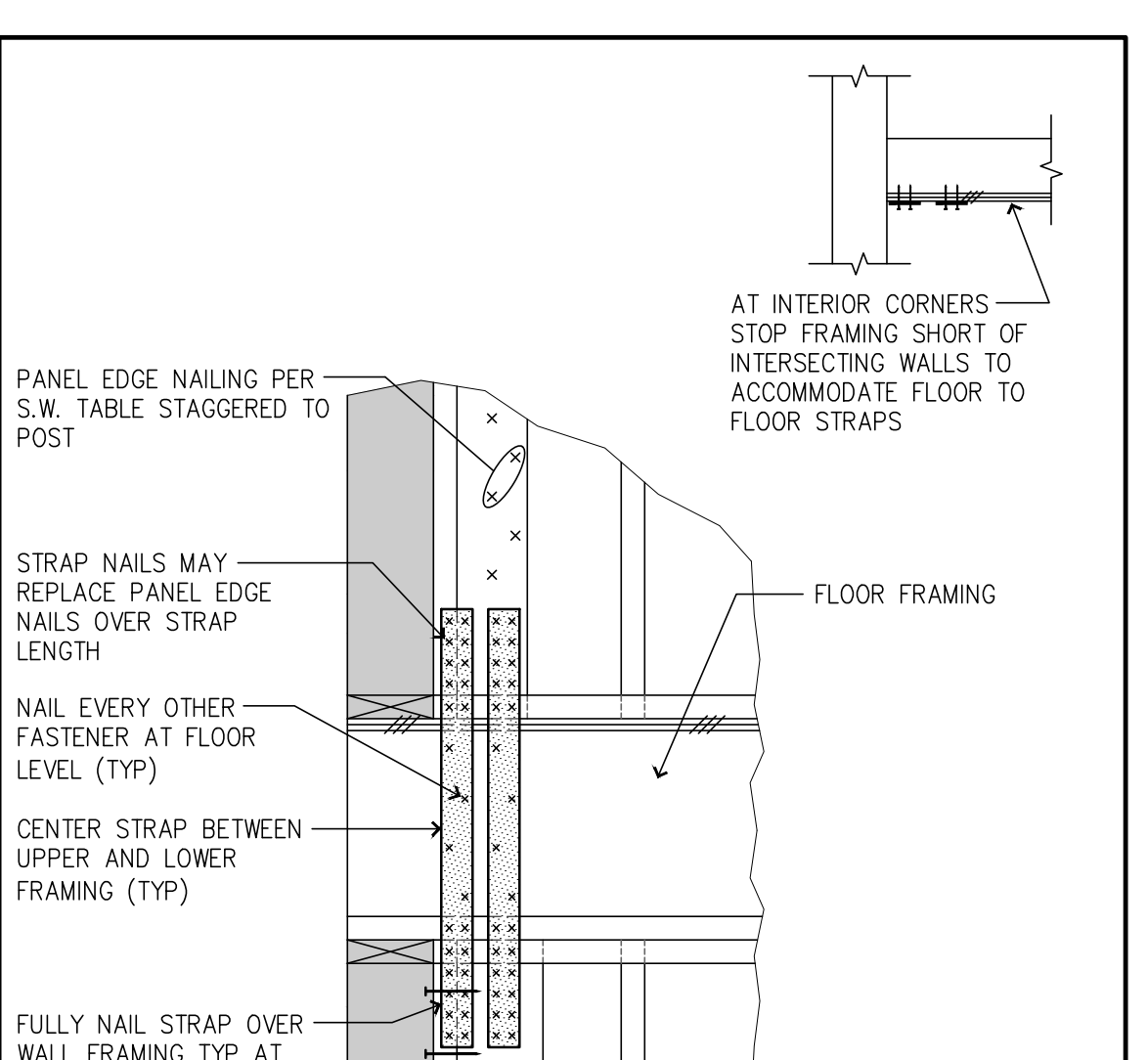
4C INTERIOR CORNER CONDITION



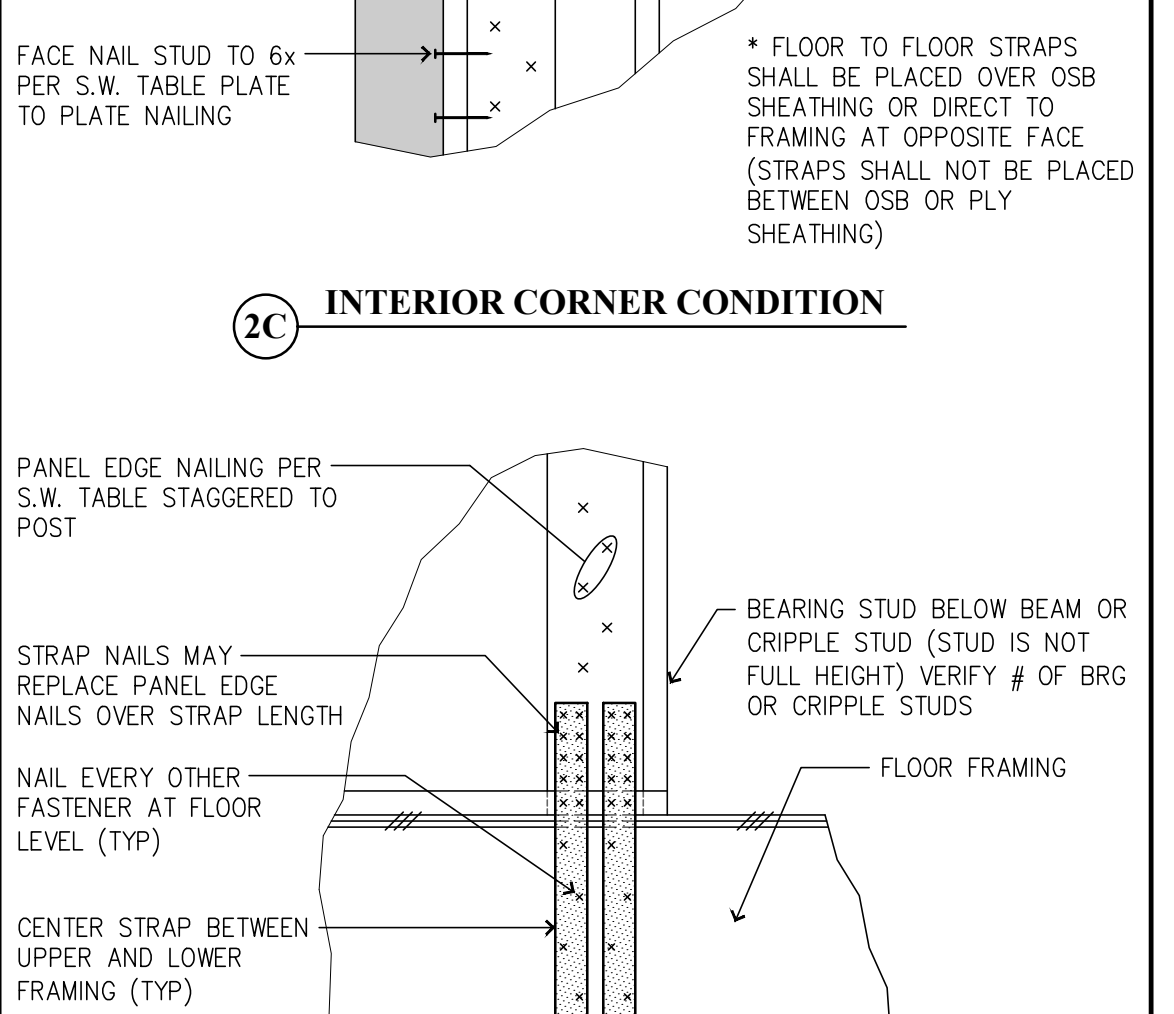
4B SHEARWALL ADJACENT TO DOOR OR WINDOW



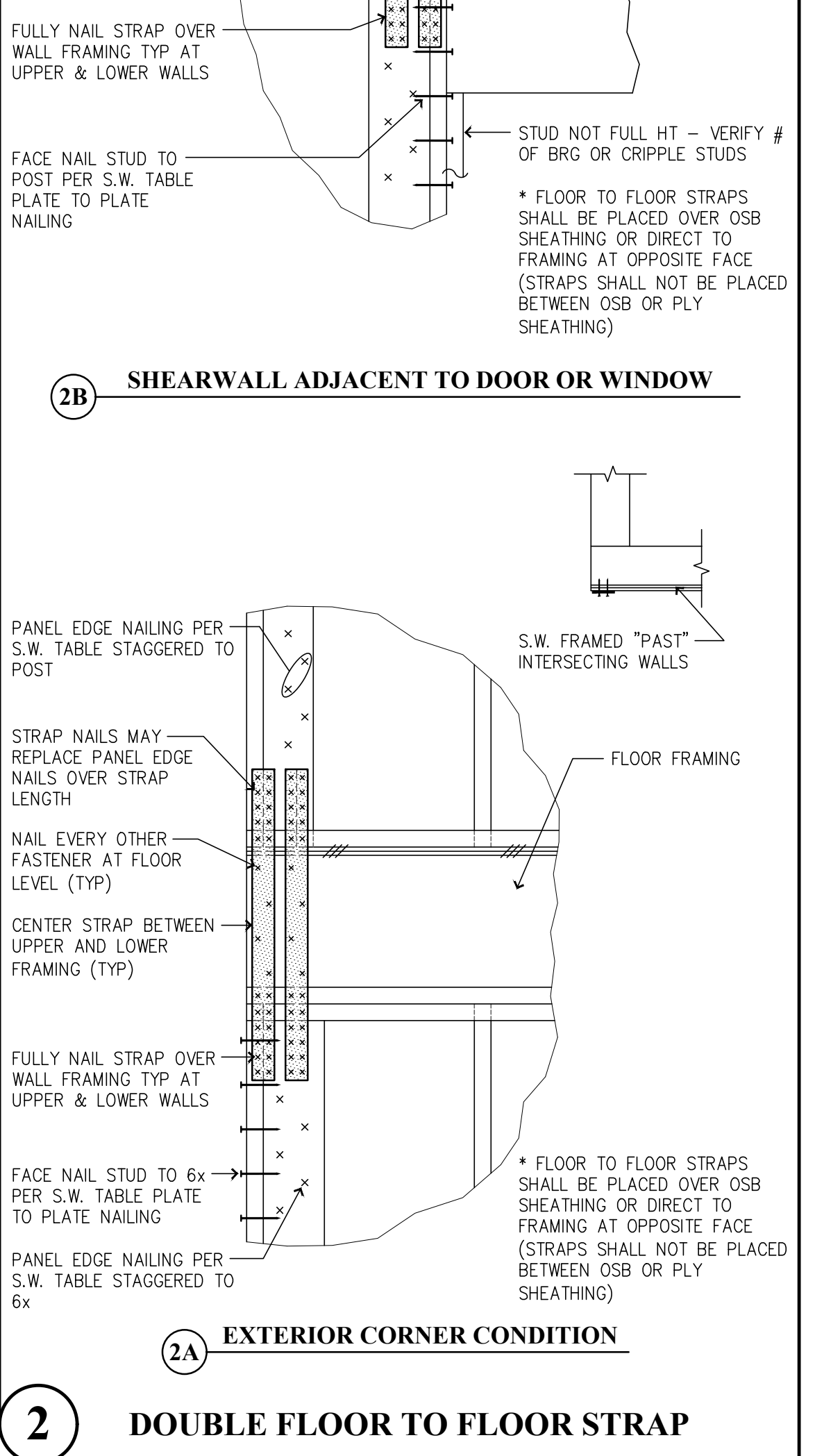
4A EXTERIOR CORNER CONDITION



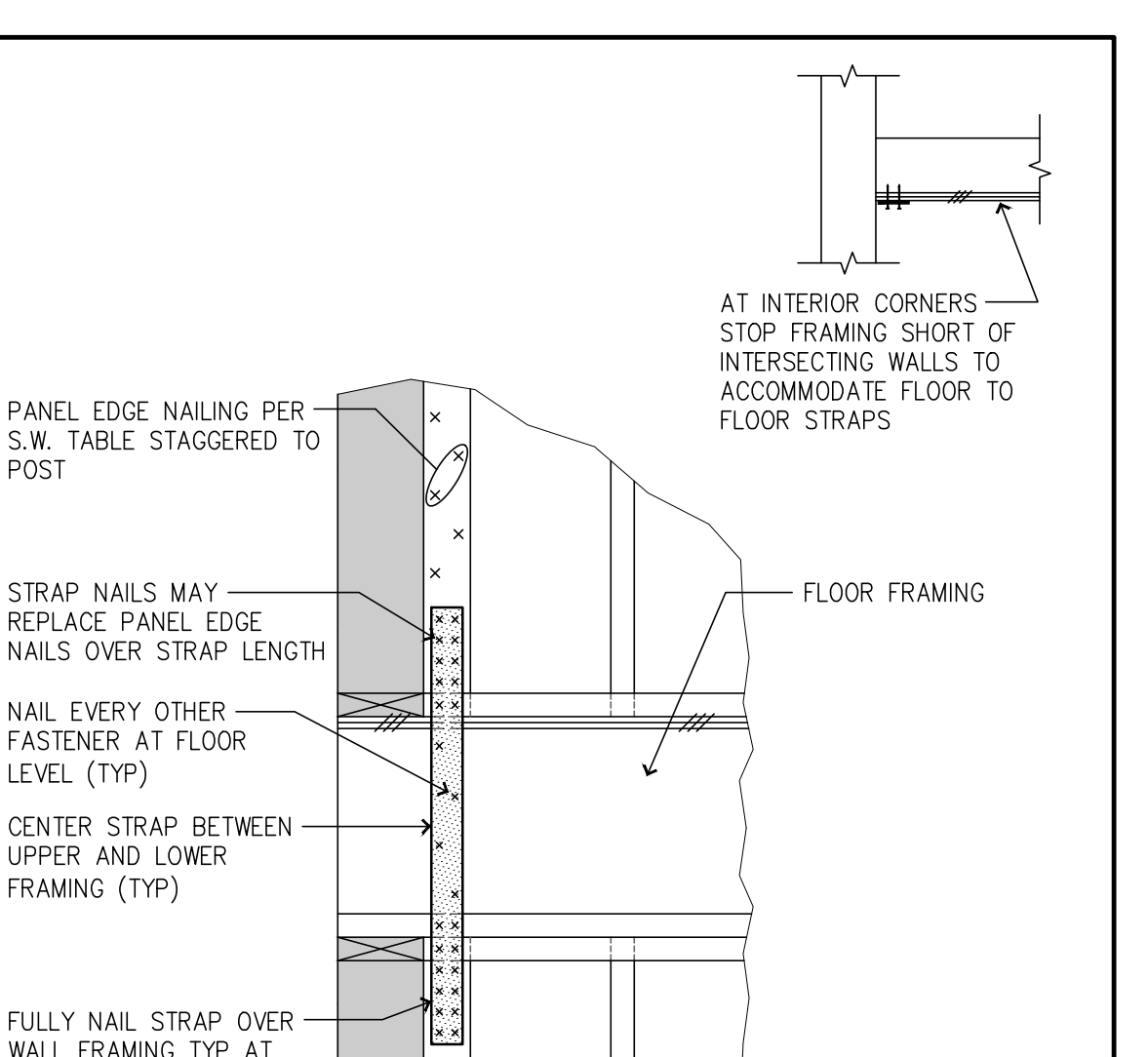
2C INTERIOR CORNER CONDITION



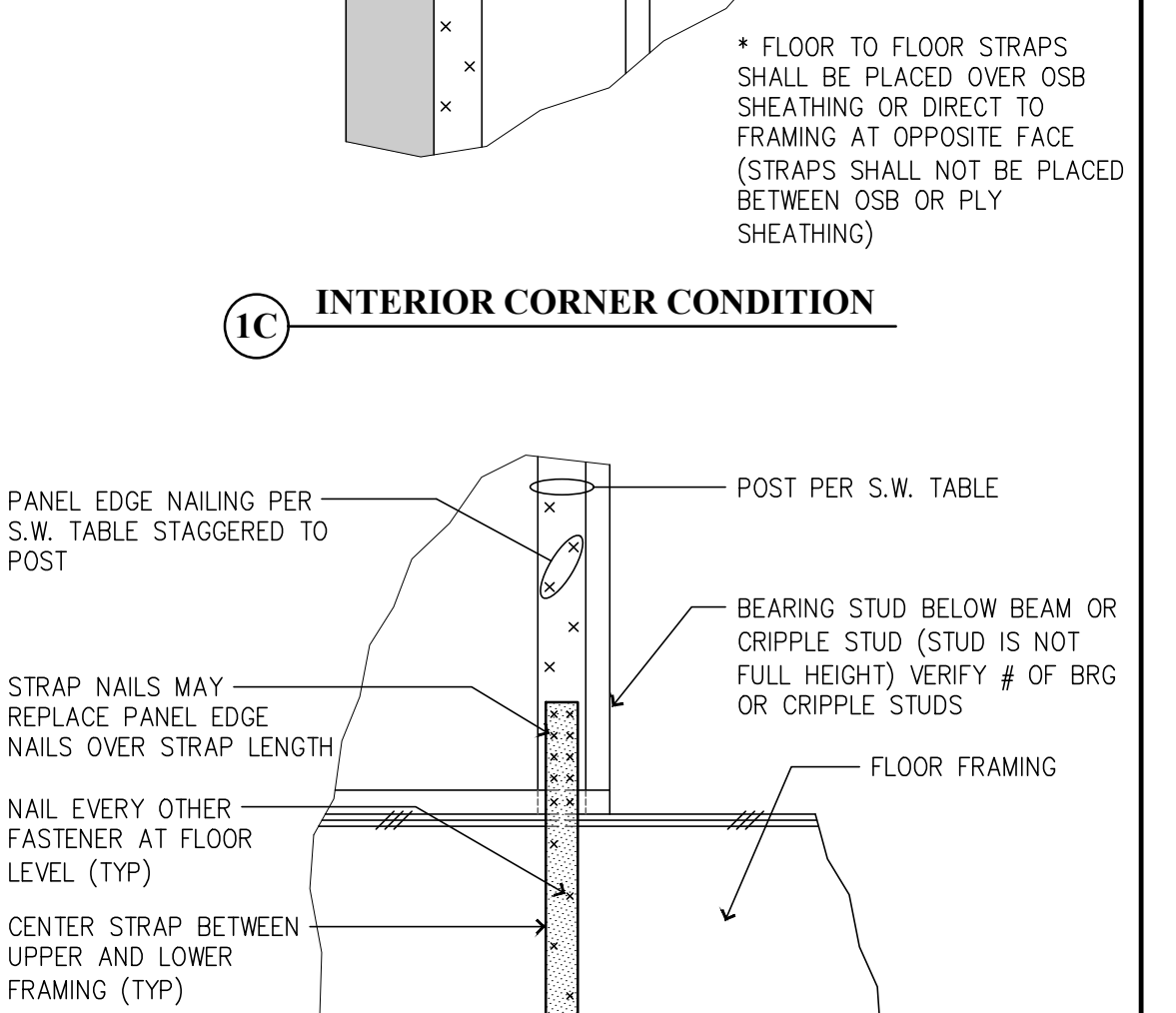
2B SHEARWALL ADJACENT TO DOOR OR WINDOW



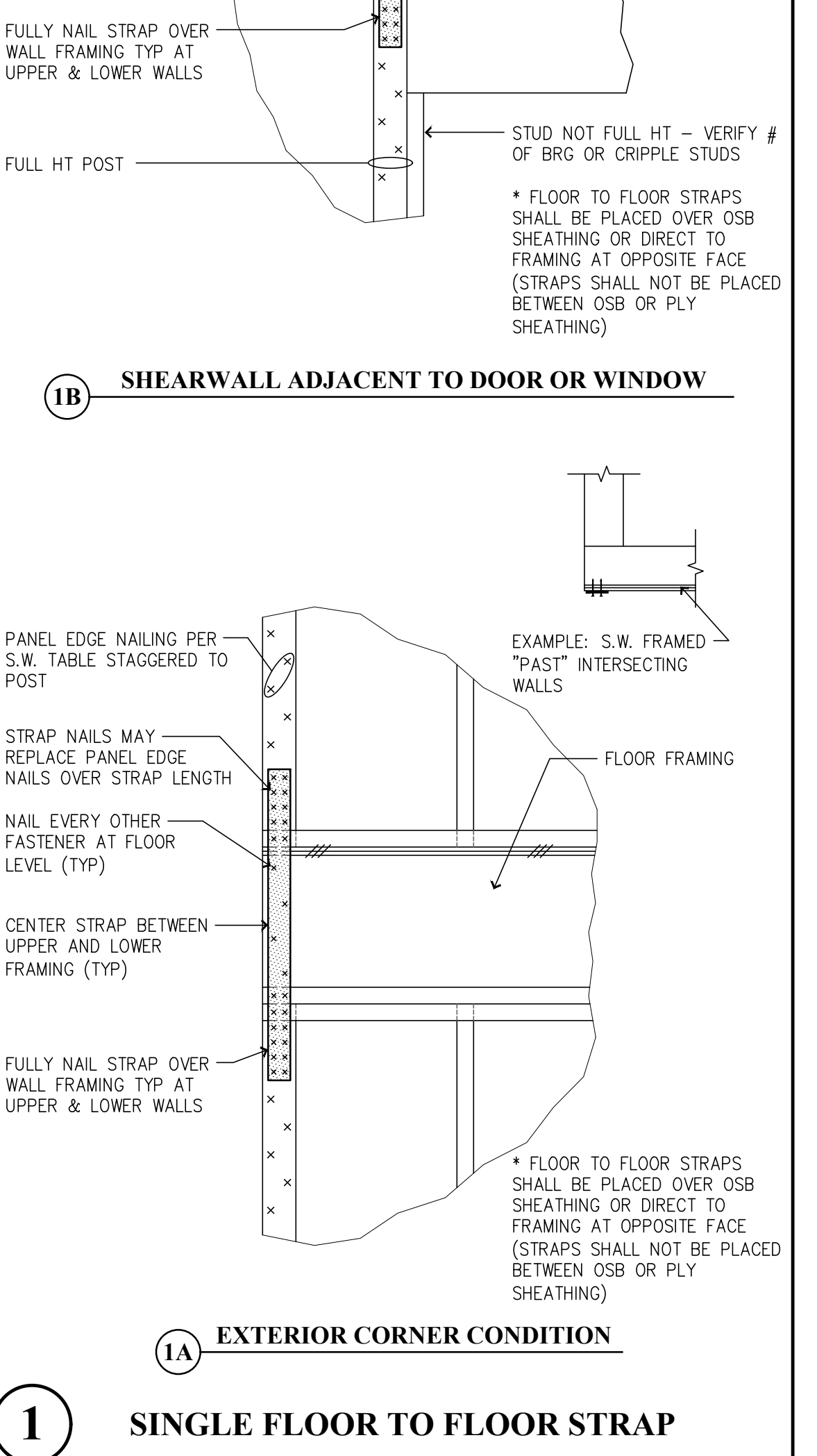
2A EXTERIOR CORNER CONDITION



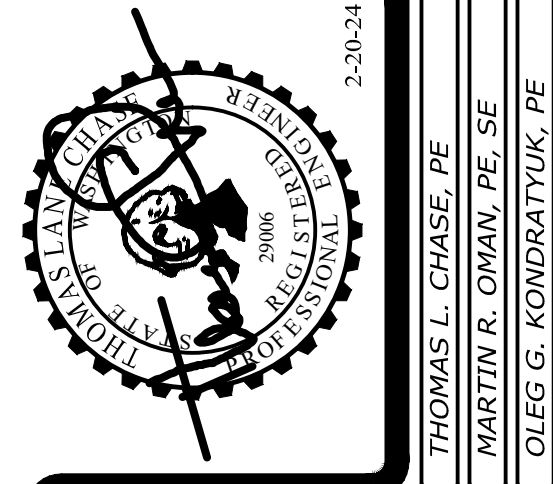
1C INTERIOR CORNER CONDITION



1B SHEARWALL ADJACENT TO DOOR OR WINDOW



1A EXTERIOR CORNER CONDITION



Revisions to this sheet:

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S1.3

Floor & Roof Framing Notes

- ROOF AND FLOOR JOIST LOCATIONS ARE SCHEMATICALLY SHOWN ON THE PLANS. IT IS NOT THE INTENT OF THE STRUCTURAL PLANS TO GRAPHICALLY LOCATE ALL FRAMING MEMBERS. THE ARCHITECT SHALL VERIFY THE COMPATIBILITY OF JOIST LAYOUT AND FRAMING W/ MECHANICAL, ELECTRICAL & PLUMBING AND ARCHITECTURAL PLANS. THE CONTRACTOR IS RESPONSIBLE FOR SPACING FRAMING MEMBERS AS NOTED ON THE PLANS AND GENERATING MEMBER LAYOUT FOR SHOP DRAWINGS AND QUANTITY TAKEOFFS.
- FOR ALL UNITS TYPES SEE WALL STUD SCHEDULE FOR BEARING WALL STUD REQUIREMENTS. ALL OTHER NON-BEARING 2x4 & 2x6 WALLS ARE AT 16" O.C.
- THE TRUSS AND JOIST MANUFACTURER SHALL VERIFY BEARING COMPATIBILITY (CRUSHING) WITH THE PLATE MATERIAL. TYPICALLY, COMPOSITE BEAMS SHALL BE FULLY BEARING ON 2x WALLS. I.E. BREAK IRM OR BLOCKING TO ALLOW FULL BEARING OVER PLATES.
- PLACE LONG DIRECTION OF ALL OSB SHEETS PERPENDICULAR TO TRUSS/RAFTER OR JOIST DIRECTION, SEE DETAIL 3/S1.2. FLOOR SHEATHING IS TO BE CONTINUOUS FROM UNIT TO UNIT. TYPICAL NAILING AT FLOOR AND ROOF DIAPHRAGMS IS PROVIDED IN THE GENERAL STRUCTURAL NOTES ON SHEETS S1.0.
- W DENOTES THE SHEARWALL TYPE, SEE THE SHEARWALL TABLE ON SHEET S1.2. INDICATES SHEARWALL LOCATION, THE CALLOUTS ON THE SHEARWALL TABLE APPLY ONLY ALONG THE LENGTH OF WALL SHOWN SHADED. PROVIDE SOLID BLOCKING IN FLOOR SPACE BELOW PERPENDICULAR SHEARWALLS. W/A INDICATES SHEAR WALL TYPE WITH OPENINGS. PROVIDE SHEATHING AROUND ALL OPENINGS AND ABOVE AND BELOW ALL OPENINGS. PROVIDE HORIZONTAL STRAPS & NAILING AT OPENINGS PER 8/S1.2
- THE DOUBLE TOP PLATE IS TO BE CONTINUOUS ALONG ALL EXTERIOR WALLS AND AT ALL WALL LINES CONTAINING SHEARWALLS. TYPICAL WALL TOP PLATE SPLICES SHALL BE PER DETAIL 7/S1.2 TYP.
- WHERE COMPOSITE JOISTS AND BEAMS ARE USED AS DRAG STRUTS THE MANUFACTURER SHALL PROVIDE THE FRAMING MEMBERS WITH THE CAPACITY CALLED OUT ON THE PLANS.
- TYPICAL FLOOR JOISTS SHALL BE 11-7/8" T&I/10 @ 16" O.C. TYP. U.N.O. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ALL JOIST AND BEAM HANGERS, WEB STIFFENERS, SOLID BLOCKING, AND ADDITIONAL RM OR JOIST MATERIAL TO ACCOMMODATE FLUSH-FRAMED CONDITIONS (F.F.), CANTILEVERED CONDITIONS, CONCENTRATED BEARING LOADS AND NAILING FROM SHEARWALLS ABOVE AND BELOW.
- F.F. = FLUSH-FRAMED BEAM. VERIFY FLUSH OR DROPPED BEAM CONDITION PER ARCHITECT.
- ALL BEAMS PER SCHEDULE U.N.O. ALL NON BEARING BEAMS SHALL BE A MIN OF (2)2x8 U.N.O. ALL OTHER BEAMS ARE AS MARKED ON PLANS.
- AT ALL BEAM BEARING/JAMB LOCATIONS, AT MINIMUM PROVIDE BEARING (TRIMMER) STUDS AND FULL HEIGHT (JAMB) STUDS PER THE JAMB STUD SCHEDULE FOR EACH BUILDING IF PROVIDED. IF NO SCHEDULE, PROVIDE (1) 2X, BEARING AND (1) 2X, FULL HEIGHT STUD MINIMUM.
- EXPOSED FRAMING SHALL BE PRESSURE TREATED (P.T.) VERTICAL & HORIZONTAL FRAMING @ WATERPROOFED WALKWAYS AND PRIVATE DECKS. ALL EXPOSED BEAM HANGERS SHALL BE POST HOT-DIPPED GALVANIZED AND HAVE CONCEALED FLANGES, VERIFY W/ ARCHITECT. SEE NOTE ON SHEET S1.0
- FOR TYPICAL HOLDOWN ASSEMBLIES SEE THE HOLDOWN TABLE ON 2/S1.2 AND DETAILS ON SHEET S3.0.
- SEE ARCHITECTURAL PLANS FOR STAIR FRAMING DETAILS & STAIR FRAMING DETAILS AND NOTES, CONTROL JOINTS IN CONCRETE FLOORING AND ROOF VENTILATION REQUIREMENTS AND DETAILS.
- SEE CIVIL AND ARCHITECTURAL PLANS FOR TOP OF WALL HEIGHTS AND ELEVATIONS. SEE ARCHITECTURAL PLANS FOR DIMENSIONS. WHERE DIMENSIONS ARE SHOWN ON THE STRUCTURAL PLANS, CONTRACTOR SHALL VERIFY COMPATIBILITY W/ ARCHITECTURAL PLANS. WHERE DISCREPANCY EXISTS, CONTRACTOR SHALL NOTIFY BOTH THE ENGINEER AND ARCHITECT FOR CLARIFICATION.
- WINDOW SUPPLIER TO VERIFY THAT WINDOW AND WINDOW FRAMES TRANSFER WIND LOADS EVENLY TO STRUCTURAL FRAMING ON ALL 4 SIDES OF WINDOW. WINDOW SUPPLIER TO VERIFY MINIMUM .005"H STORY DRIFT TOLERANCE IN PLANE OF ALL WINDOWS AND ALLOW FOR L/240 DEFLECTION (PERPENDICULAR) AT WINDOW MULLIONS.
- SEE GENERAL STRUCTURAL NOTES ON S1.0 TO S1.3 FOR ADDITIONAL INFORMATION.

18. LEGEND:
- INDICATES BEAM / GIRDER TRUSS PER PLAN SEE FRAMING PLANS
 - INDICATES HANGER PER MANUFACTURER
 - GT INDICATES GIRDER TRUSS PER PLAN
 - INDICATES JOIST / TRUSS BEARING @ WALL / BEAM
 - INDICATES JOIST / TRUSS INTERMEDIATE BEARING @ WALL / BEAM
 - INDICATES TYPICAL TOILET, BATHUB & SHOWER LAYOUT. CONTRACTOR TO COORDINATE JOIST LAYOUT WITH FIXTURE LOCATIONS TO AVOID PLUMBING & FRAMING CONFLICTS.
 - INDICATES ROOF OVERFRAMING - SEE DETAILS 5/S5.0

- PROVIDE WALL FIREBLOCKING @ DROPPED SOFFITS SHOWN ON ARCH.
- PROVIDE WALL BLOCKING FOR ALL WALL MOUNTED EQUIPMENT (SUCH AS TOWEL BARS, GRAB BARS, TOILET PAPER HOLDERS, DOOR STOPS, ETC.).
- LFA INDICATES - LOAD FROM ABOVE
- FF INDICATES FLUSH FRAMED BEAM
- INDICATES STRAP HOLDOWN, SEE SHEET 2/S1.2 FOR HOLDOWN TABLE & UPPER TO LOWER WALL STRAP/HOLDOWN KEY.
- REFER TO ARCHITECTURAL DRAWINGS FOR ALL FLOOR ELEVATIONS.
- SIMPSON STRONG TIE PRODUCTS ARE CALLED OUT ON THE DRAWINGS, HOWEVER, EITHER SIMPSON OR KC METALS PRODUCTS MAY BE USED PROVIDED IT HAS SAME OR GREATER CAPACITY.

NOTE:
 ALL JOISTS ARE 11-7/8" T&I/10 @ 16" O.C. TYPICAL U.N.O. USE FACE MOUNT HANGER @ F.F. COND U.N.O.

NOTE:
 P.T. 2x8 JOISTS @ 16" O.C. TYP. U.N.O. @ DECKS
 P.T. 2x10 JOISTS @ 16" O.C. TYP. U.N.O. @ STAIR LANDINGS

NOTE:
 ALL MULTIPLE 2x HEADERS HF #2 U.N.O. ALL 4x HEADERS HF #2 U.N.O. ALL 6x HEADERS/BEAMS D.F.#2 U.N.O. ALL EXPOSED 6x BEAM / POSTS HF.#1 U.N.O.

INDICATES CANTILEVER HANGER @ FLUSH FRAMED BEAM OR LEDGER

JOIST (CONTINUOUS) OVER BEARING WALL/HEADER

JOISTS STOP & START (NOT CONTINUOUS)

Framing Key

SEE SHEET S1.2 FOR SHEARWALL AND HOLDOWN TABLES

Beam Schedule

MARK	BEAM SIZE
B1	4x8
B2	4x10
B3	6x10 DF #2
B4	3-1/8 x 10-1/2 GLB
B5	P.T. 4x8
B6	P.T. 4x10
B7	P.T. 6x10 HF#1
B8	P.T. 3-1/8 x 10-1/2 GLB
B9	P.T. 5-1/8 x 10-1/2 GLB
B10	5-1/4x11-7/8 PSL
B11	3-1/2x11-7/8 LSL

Jamb Stud Schedule

TYPE	C1	C2	C3	C4	C5	C6	-	-
BEARING/FULL HT STUDS	1/2	1/3	2/1	2/2	2/3	2/4	-	-

NOTE: STUD SIZE SHOULD MATCH WALL SIZE PER PLAN.

Wall Stud Schedule

FRAMING LEVEL	2x6 EXTERIOR SINGLE WALL	2x6 BRG INT SINGLE WALL	2x4 BRG INT PARTY WALLS	2x4 BRG SINGLE WALL	2x4 BRG PARTY WALLS
ROOF	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.
3RD	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.
2ND	2x6 @ 16" O.C.	2x6 @ 16" O.C.	(2)2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.
BASEMENT	2x6 @ 16" O.C.	2x6 @ 12" O.C.	(2)2x4 HF#2 @ 12" O.C.	2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.

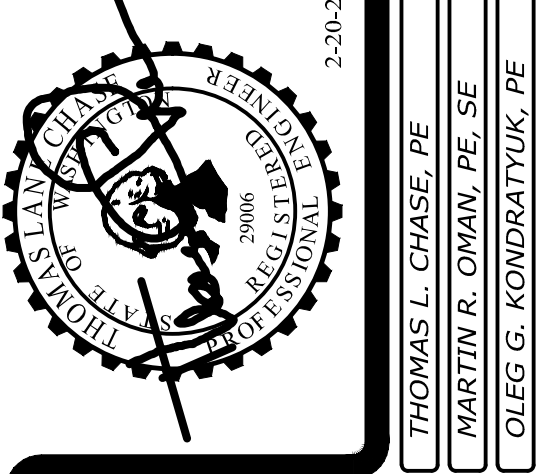
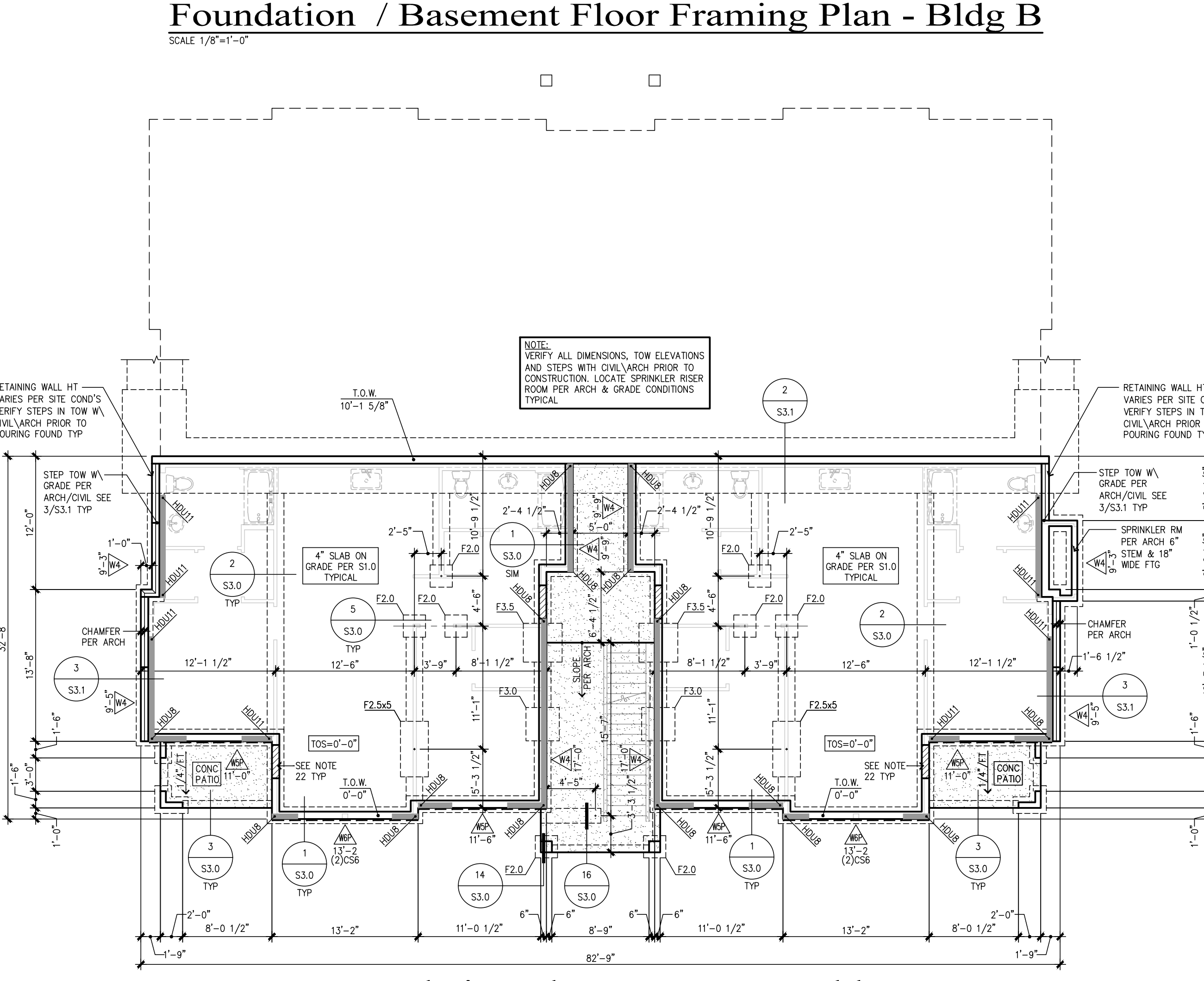
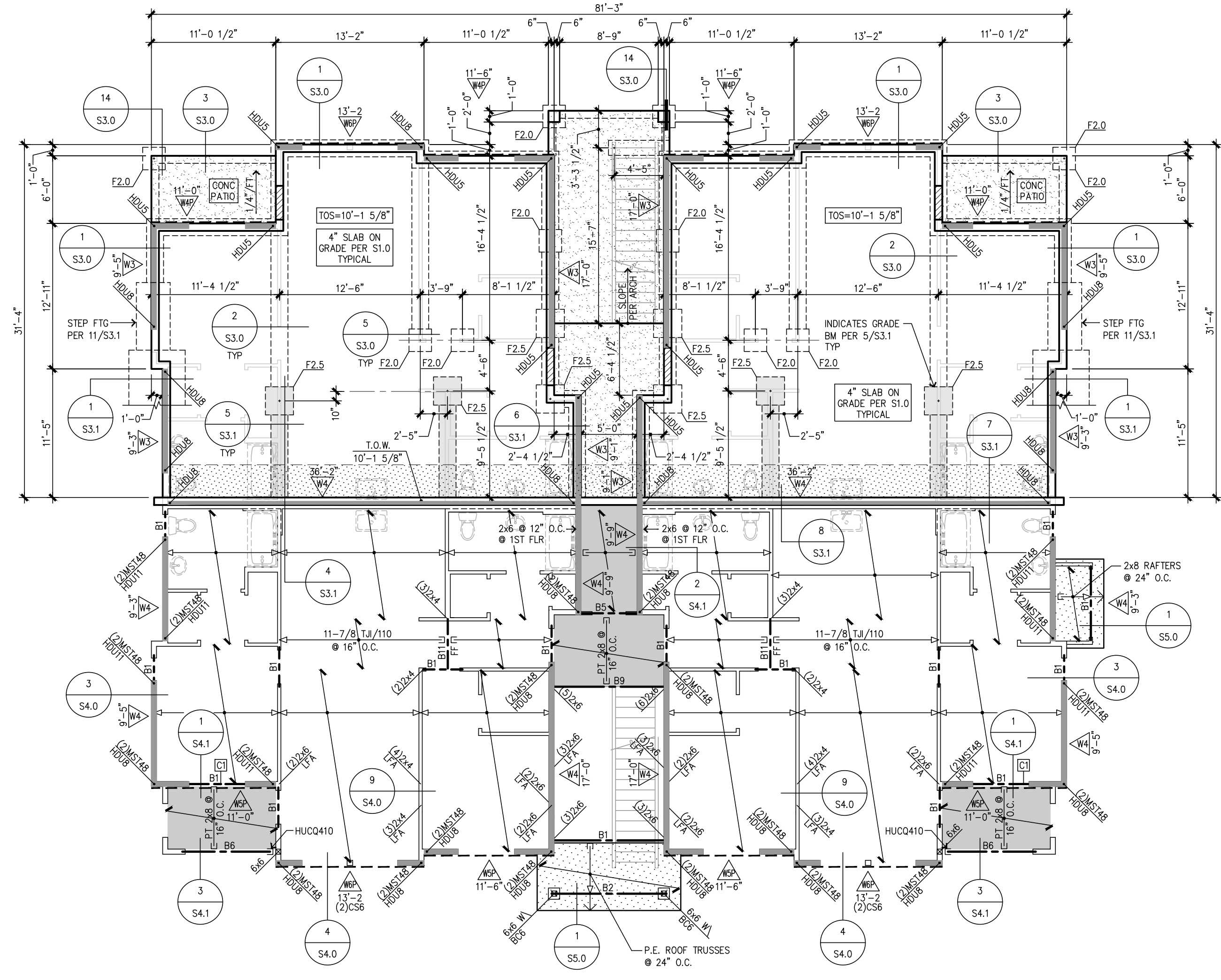
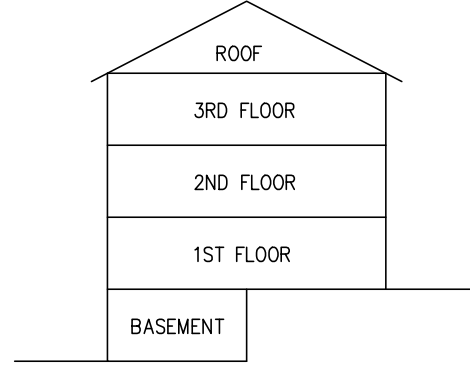
NOTES:
 1. ALL STUD MATERIAL SHALL BE HEM FIR STUD GRADE OR BETTER UNLESS NOTED OTHERWISE AND PLATE MATERIAL SHALL BE HEM FIR STANDARD OR BETTER UNLESS NOTED OTHERWISE.
 2. STUDS CALLED OUT IN THIS SCHEDULE ARE FOR WALL SUPPORTING THE FRAMING LEVEL INDICATED, THAT IS WALLS BELOW THE FRAMING LEVEL SHOWN.
 3. THIS SCHEDULE COVERS BUILDING UNITS 3 STORES IN HEIGHT. FIRST, DETERMINE THE NUMBER OF STORES FOR THE UNIT, SECOND, DETERMINE THE FRAMING LEVEL, THIRD, READ SCHEDULE HORIZONTALLY FOR THE WALL LOCATION.

Foundation Notes

- TYPICAL DIMENSIONS ARE TO FACE OF WALL OR TO CENTERLINE OF COLUMN OR FOOTING. VERIFY ALL DIMENSIONS & ELEVATIONS WITH THE ARCHITECT.
- PROVIDE FOOTING SUBSTRATE PREPARATION PER THE SOILS REPORT.
- F.-. INDICATES ISOLATED FOOTING TYPICAL ISOLATED FTG SHALL BE CONSTRUCTED PER FOOTING SCHEDULE 5/S3.0.
- EXTEND ALL CONTINUOUS FOOTINGS AT END WALLS 1'-0" MIN BEYOND END OF ALL BEARING WALLS & SHEARWALLS. (TYPICAL) UNO
- ALL EXTERIOR WALLS SHALL HAVE AN 8" STEM WALL AND A 18" WIDE x 8" DEEP FOOTING W/ STEEL REINFORCING 3" CLR. OF SOIL UNLESS NOTED OTHERWISE
- ADD STRIP DRAINS AT FACE OF BUILDINGS WHEN WALKS SLOPE TOWARD BUILDING, CONNECT TO TIGHTLINE.
- PROVIDE #4-24" x 24" CORNER BARS TO MATCH ALL HORIZONTAL REINFORCEMENT IN STEM WALLS AND FOOTINGS. (TYPICAL)
- FLOOR SLABS - 4" CONC. SLAB ON GRADE 6x6 @ 11-2/12 W/F @ CENTER-LINE OR FIBER MESH PER MANUFACTURER OVER SUBSTRATE PER SOILS ENGINEER, USE WWF WHERE INDICATED. PROVIDE CONTROL JOINTS PER DETAIL 15/S3.0 AT THE DIRECTION OF THE ARCHITECT.
- ENTRY SLABS - 4" CONC. SLAB (BROOM FINISH)
- PATIO SLABS - 4" CONC. W/ THICKENED EDGES. SLOPE AWAY FROM BUILDING AT 1/4"/FT. SEE 3/S3.0
- ALL THICKENED SLABS FOR BEARING WALLS AND PARTY WALLS SHALL BE 18" WIDE x 12" DEEP W/ (2) #4 BARS CONTINUOUS UNLESS NOTED OTHERWISE. DEEPEN LOCALLY AT HOLDOWNS TO OBTAIN EMBEDMENT DEPTH +3" MIN.
- ALL THICKENED EDGE SLABS SHALL BE 8" WIDE x 8" DEEP W/ (1) #4 BAR CONTINUOUS (3" FROM BOTTOM) UNLESS NOTED OTHERWISE. SEE 3/S3.0.
- W/A DENOTES THE SHEARWALL TYPE, SEE THE SHEARWALL TABLE ON SHEET S1.2. INDICATES SHEARWALL LOCATION, THE CALLOUTS ON THE SHEARWALL TABLE APPLY ONLY ALONG THE LENGTH OF WALL SHOWN SHADED. PROVIDE SOLID BLOCKING IN FLOOR SPACE BELOW PERPENDICULAR SHEARWALLS. W/A INDICATES SHEAR WALL TYPE WITH OPENINGS. PROVIDE SHEATHING AROUND ALL OPENINGS AND ABOVE AND BELOW ALL OPENINGS. PROVIDE HORIZONTAL STRAPS & NAILING AT OPENINGS PER 8/S1.2
- INDICATES HOLDOWN, SEE 2/S1.2 FOR HOLDOWN TABLE & UPPER TO LOWER WALL STRAPS HOLDOWN/KEY.
- VERIFY ALL TOP OF SLAB ELEVATIONS AND BUILDING STEPS WITH ARCH/CIVIL PLANS TYPICAL.
- TYPICAL PERIMETER FOOTING SHALL BE LOCATED A MIN. 18" BELOW GRADE OR AS REQUIRED BY LOCAL JURISDICTION.
- SEE DETAILS FOR TYPICAL STEM WALL/FOOTING & THICKENED SLAB CONSTRUCTION.
- T.O.W. = TOP OF STEM WALL
T.O.F. = TOP OF FOOTING
T.O.S. = TOP OF SLAB
- SEE THE GENERAL STRUCTURAL NOTES ON SHEET S1.0 FOR ADDITIONAL INFORMATION.
- VERIFY WITH CIVIL GRADING PLAN FOR GARAGE SLAB ELEVATION @ GARAGE DOORWAY.
- DEEPEN FOOTINGS AS NECESSARY TO MAINTAIN MINIMUM COVER. COORDINATE WITH CIVIL GRADING PLAN FOR GRADE CONDITIONS.
- INDICATES DEPRESSED TOP OF STEM WALL AT DOORWAY. POUR SLAB OVER SEE 4/S3.0.
- ALL INTERSECTING FOOTINGS / STEM WALLS SHALL HAVE CORNER BARS TO MATCH HORIZ REINFORCEMENT SEE 10/S3.0

Continuous Wall Footing Schedule

"W"	"D"	REINFORCEMENT	
		LONGITUDINAL	TRANSVERSE
1'-6"	12"	(2)-#4 BOT	-
2'-0"	12"	(3)-#4 BOT	-
3'-0"	14"	(3)-#5 BOT	#4 @ 18" O.C. BOT



THOMAS L. CHASE, PE
 MARTIN R. OMAN, PE, SE
 OLEG G. KONDRATYUK, PE

Revisions to this sheet:

Bradley Heights Apartments
 202 27th Ave SE
 Puyallup, Washington

Solutions 4 Structures
 A Structural Engineering Corporation

Puyallup, Washington 98374
 Ph. 253-314-9822
 www.solutions4structures.com

PROJECT NO. : 23-007
 DESIGNED BY : TLC, OGG, MRO
 DRAWN BY : RSO
 ISSUE DATE : 2-20-24
 LATEST REV. OF DWG. SET :

SUBMITTAL SET ONLY NOT FOR CONSTRUCTION
 THESE DRAWINGS ARE SUBJECT TO REVISIONS PENDING LOCAL JURISDICTIONAL REVIEW.

S2.3

Floor & Roof Framing Notes

- ROOF AND FLOOR JOIST LOCATIONS ARE SCHEMATICALLY SHOWN ON THE PLANS. IT IS NOT THE INTENT OF THE STRUCTURAL PLANS TO GRAPHICALLY LOCATE ALL FRAMING MEMBERS. THE ARCHITECT SHALL VERIFY THE COMPATIBILITY OF JOIST LAYOUT AND FRAMING W/ MECHANICAL, ELECTRICAL & PLUMBING AND ARCHITECTURAL PLANS. THE CONTRACTOR IS RESPONSIBLE FOR SPACING FRAMING MEMBERS AS NOTED ON THE PLANS AND GENERATING MEMBER LAYOUT FOR SHOP DRAWINGS AND QUANTITY TAKEOFFS.
- FOR ALL UNITS TYPES SEE WALL STUD SCHEDULE FOR BEARING WALL STUD REQUIREMENTS. ALL OTHER NON-BEARING 2x4 & 2x6 WALLS ARE AT 16" O.C.
- THE TRUSS AND JOIST MANUFACTURER SHALL VERIFY BEARING COMPATIBILITY (CRUSHING) WITH THE PLATE MATERIAL. TYPICALLY, COMPOSITE BEAMS SHALL BE FULLY BEARING ON 2x... WALLS. I.E. BREAK RIM OR BLOCKING TO ALLOW FULL BEARING OVER PLATES.
- PLACE LONG DIRECTION OF ALL OSB SHEETS PERPENDICULAR TO TRUSS/RAFTER OR JOIST DIRECTION, SEE DETAIL 3/S1.2. FLOOR SHEATHING IS TO BE CONTINUOUS FROM UNIT TO UNIT. TYPICAL NAILING AT FLOOR AND ROOF DIAPHRAGMS IS PROVIDED IN THE GENERAL STRUCTURAL NOTES ON SHEETS S1.0.
- INDICATES THE SHEARWALL TYPE, SEE THE SHEARWALL TABLE ON SHEET S1.2
 - INDICATES SHEARWALL LOCATION, THE CALLOUTS ON THE SHEARWALL TABLE APPLY ONLY ALONG THE LENGTH OF WALL SHOWN SHADDED. PROVIDE SOLID BLOCKING IN FLOOR SPACE BELOW PERPENDICULAR SHEARWALLS.
 - INDICATES SHEAR WALL TYPE WITH OPENINGS. PROVIDE SHEATHING AROUND ALL OPENINGS AND ABOVE AND BELOW ALL OPENINGS. PROVIDE HORIZONTAL STRAPS & NAILING AT OPENINGS PER 8/S1.2
- THE DOUBLE TOP PLATE IS TO BE CONTINUOUS ALONG ALL EXTERIOR WALLS AND AT ALL WALL LINES CONTAINING SHEARWALLS. TYPICAL WALL TOP PLATE SPLICES SHALL BE PER DETAIL 7/S1.2 TYP.
- WHERE COMPOSITE JOISTS AND BEAMS ARE USED AS DRAG STRUTS THE MANUFACTURER SHALL PROVIDE THE FRAMING MEMBERS WITH THE CAPACITY CALLED OUT ON THE PLANS.
- TYPICAL FLOOR JOISTS SHALL BE 11-7/8" T/J @ 110" O.C. TYP. U.N.O. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ALL JOIST AND BEAM HANGERS, WEB STIFFENERS, SOLID BLOCKING, AND ADDITIONAL RIM OR JOIST MATERIAL TO ACCOMMODATE FLUSH-FRAMED CONDITIONS (F.F.), CANTILEVERED CONDITIONS, CONCENTRATED BEARING LOADS AND NAILING FROM SHEARWALLS ABOVE AND BELOW.
- F.F. = FLUSH-FRAMED BEAM. VERIFY FLUSH OR DROPPED BEAM CONDITION PER ARCHITECT.
- ALL BEAMS PER SCHEDULE U.N.O. ALL NON BEARING BEAMS SHALL BE A MIN OF (2)2x8 U.N.O. ALL OTHER BEAMS ARE AS MARKED ON PLANS.
- AT ALL BEAM BEARING/JAMB LOCATIONS, AT MINIMUM PROVIDE BEARING (TRIMMER) STRIPS AND FULL HEIGHT (JAMB) STUDS PER THE JAMB STUD SCHEDULE FOR EACH BUILDING IF PROVIDED. IF NO SCHEDULE, PROVIDE (1) 2x... BEARING AND (1) 2x... FULL HEIGHT STUD MINIMUM.
- EXPOSED FRAMING SHALL BE PRESSURE TREATED (P.T.) VERTICAL & HORIZONTAL FRAMING @ WATERPROOFED WALKWAYS AND PRIVATE DECKS. ALL EXPOSED BEAM HANGERS SHALL BE POST HOT-DIPPED GALVANIZED AND HAVE CONCEALED FLANGES, VERIFY W/ ARCHITECT. SEE NOTE ON SHEET S1.0
- FOR TYPICAL HOLDOWN ASSEMBLIES SEE THE HOLDOWN TABLE ON 2/S1.2 AND DETAILS ON SHEET S3.0.
- SEE ARCHITECTURAL PLANS FOR STAIR FRAMING DETAILS & STAIR FRAMING DETAILS AND NOTES. CONTROL JOINTS IN CONCRETE FLOORING AND ROOF VENTILATION REQUIREMENTS AND DETAILS.
- SEE CIVIL AND ARCHITECTURAL PLANS FOR TOP OF WALL HEIGHTS AND ELEVATIONS. SEE ARCHITECTURAL PLANS FOR DIMENSIONS. WHERE DIMENSIONS ARE SHOWN ON THE STRUCTURAL PLANS, CONTRACTOR SHALL VERIFY COMPATIBILITY W/ ARCHITECTURAL PLANS. WHERE DISCREPANCY EXISTS, CONTRACTOR SHALL NOTIFY BOTH THE ENGINEER AND ARCHITECT FOR CLARIFICATION.
- WINDOW SUPPLIER TO VERIFY THAT WINDOW AND WINDOW FRAMES TRANSFER WIND LOADS EVENLY TO STRUCTURAL FRAMING ON ALL 4 SIDES OF WINDOW. WINDOW SUPPLIER TO VERIFY MINIMUM .005"H STORY DRIFT TOLERANCE IN PLANE OF ALL WINDOWS AND ALLOW FOR L/240 DEFLECTION (PERPENDICULAR) AT WINDOW MULLIONS.
- SEE GENERAL STRUCTURAL NOTES ON S1.0 TO S1.3 FOR ADDITIONAL INFORMATION.

SEE SHEET S1.2 FOR SHEARWALL AND HOLDOWN TABLES

Beam Schedule	
MARK	BEAM SIZE
B1	4x8
B2	4x10
B3	6x10 DF #2
B4	3-1/8 x 10-1/2 GLB
B5	P.T. 4x8
B6	P.T. 4x10
B7	P.T. 6x10 HF #1
B8	P.T. 3-1/8 x 10-1/2 GLB
B9	P.T. 5-1/8 x 10-1/2 GLB
B10	5-1/4x11-7/8 PSL
B11	3-1/2x11-7/8 LSL

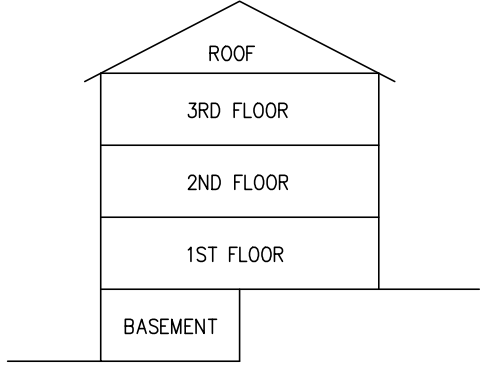
Jamb Stud Schedule							
TYPE	C1	C2	C3	C4	C5	C6	C7
BEARING/FULL HT STUDS	1/2	1/3	2/1	2/2	2/3	2/4	-

NOTE: STUD SIZE SHOULD MATCH WALL SIZE PER PLAN.

Wall Stud Schedule					
FRAMING LEVEL	2x6 EXTERIOR	2x6 BRG INT SINGLE WALL	2x6 BRG INT PARTY WALLS	2x4 BRG SINGLE WALL	2x4 BRG PARTY WALLS
ROOF	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x4 HF #2 @ 16" O.C.	2x4 HF #2 @ 16" O.C.
3RD	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x4 HF #2 @ 16" O.C.	2x4 HF #2 @ 16" O.C.
2ND	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x6 @ 16" O.C.	(2)2x4 HF #2 @ 16" O.C.	2x4 HF #2 @ 16" O.C.
BASEMENT	2x6 @ 16" O.C.	2x6 @ 12" O.C.	2x6 @ 16" O.C.	(2)2x4 HF #2 @ 12" O.C.	2x4 HF #2 @ 16" O.C.

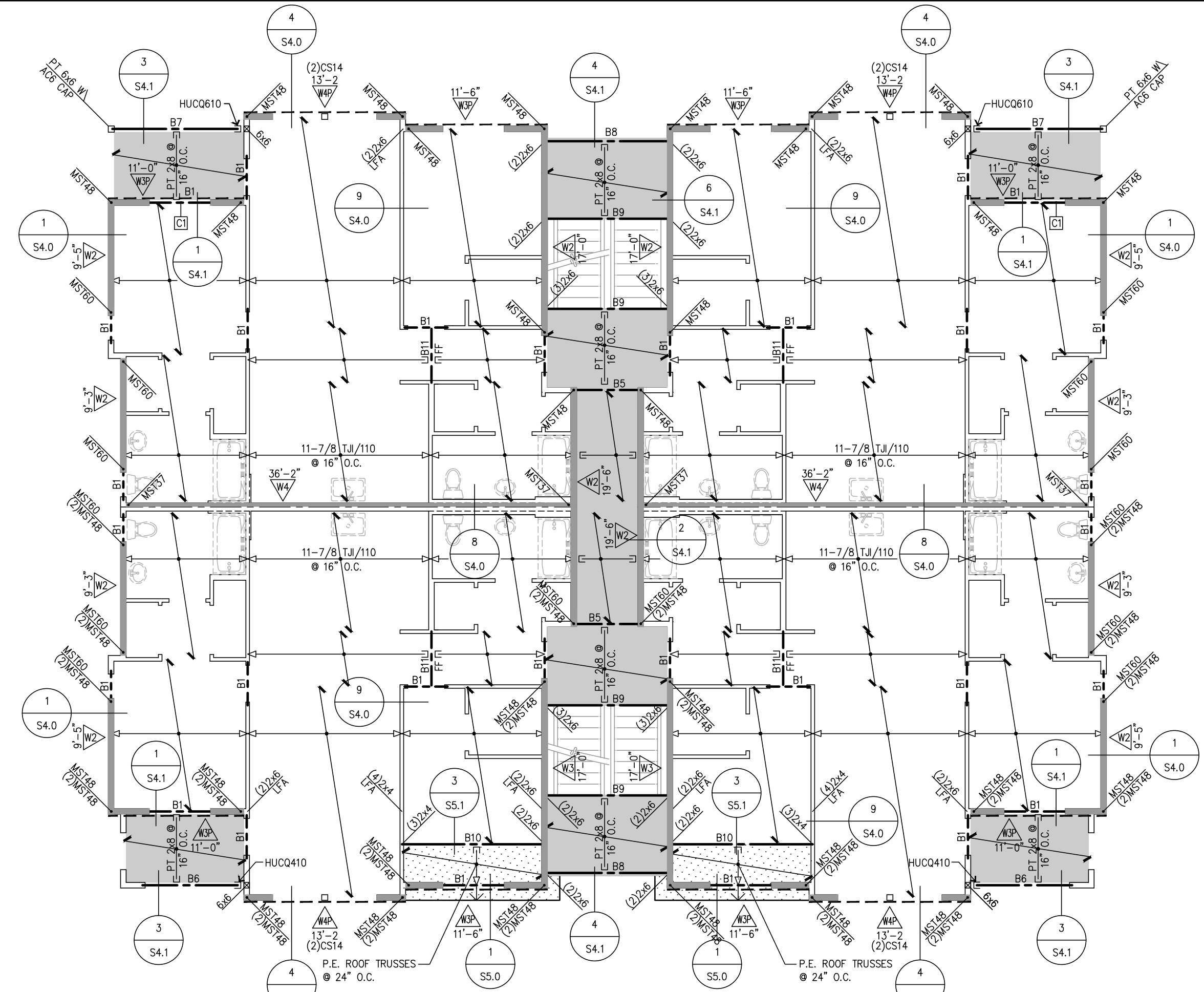
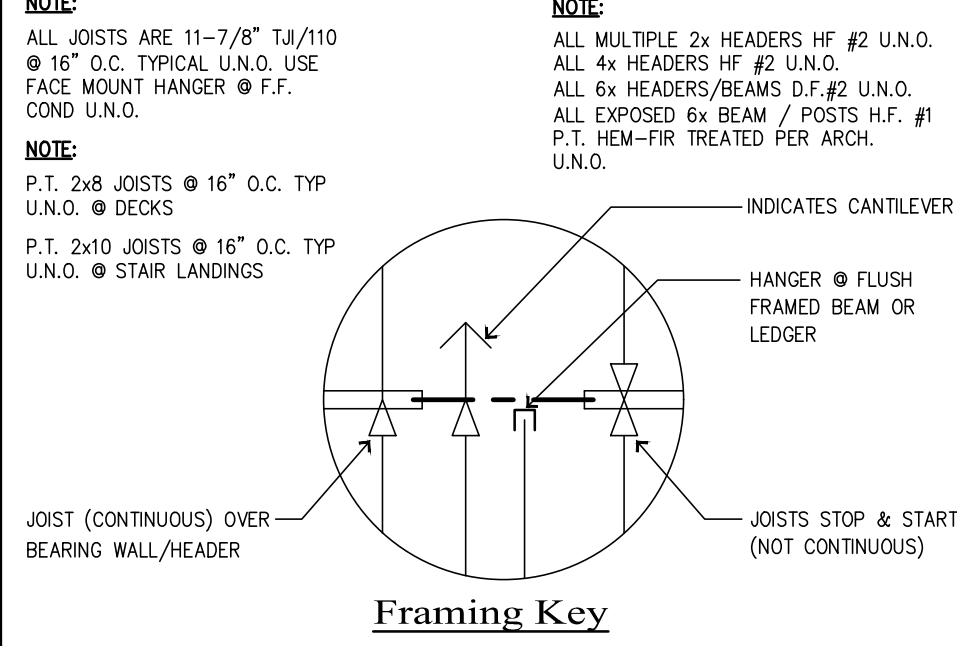
NOTES:

- ALL STUD MATERIAL SHALL BE HEM FIR STUD GRADE OR BETTER UNLESS NOTED OTHERWISE AND PLATE MATERIAL SHALL BE HEM FIR STANDARD OR BETTER UNLESS NOTED OTHERWISE.
- STUDS CALLED OUT IN THIS SCHEDULE ARE FOR WALL SUPPORTING THE FRAMING LEVEL INDICATED, THAT IS WALLS BELOW THE FRAMING LEVEL SHOWN.
- THIS SCHEDULE COVERS BUILDING UNITS 3 STORES IN HEIGHT. FIRST, DETERMINE THE NUMBER OF STORES FOR THE UNIT, SECOND, DETERMINE THE FRAMING LEVEL, THIRD, READ SCHEDULE HORIZONTALLY FOR THE WALL LOCATION.

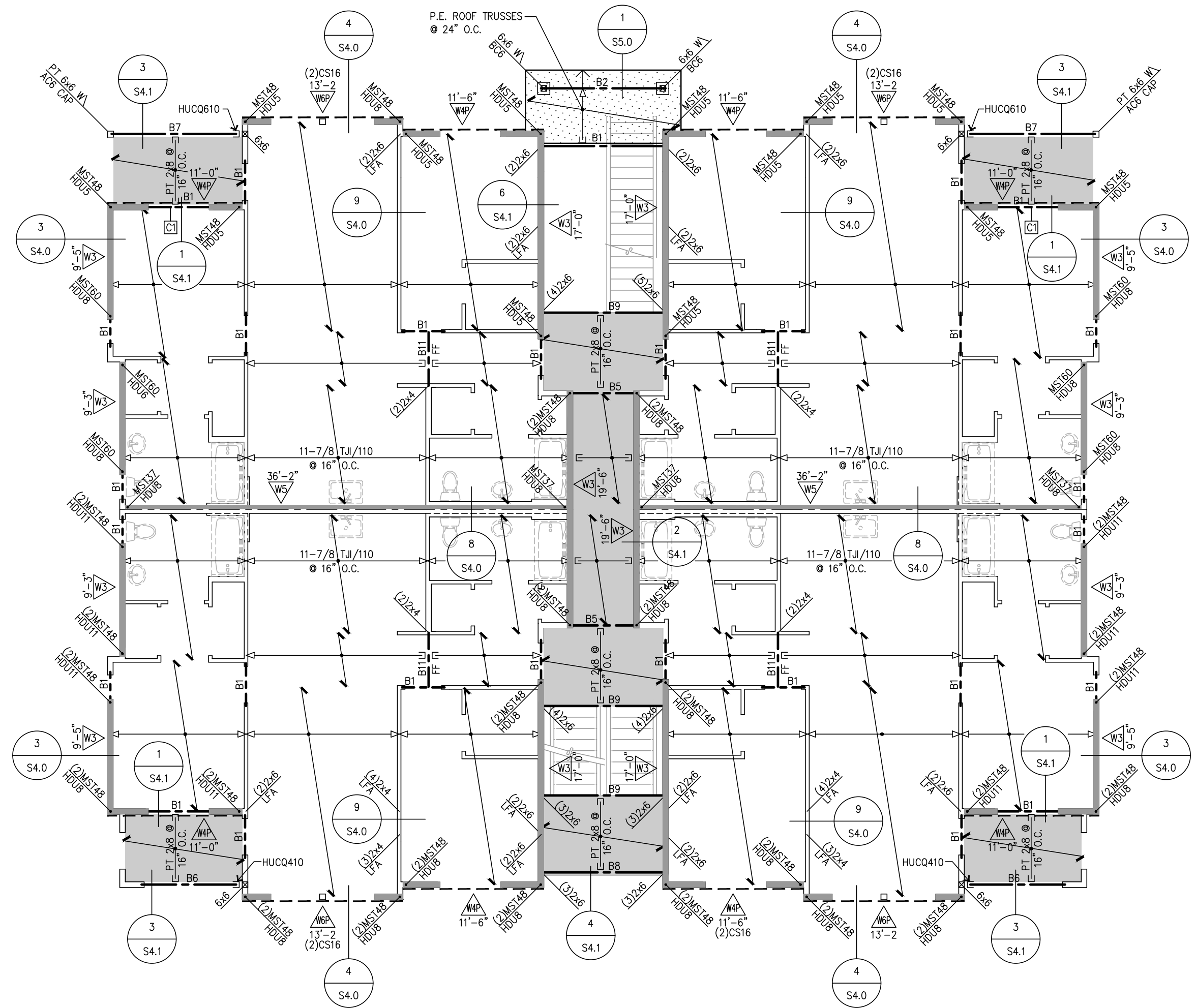


3/4 Bldg Split Key

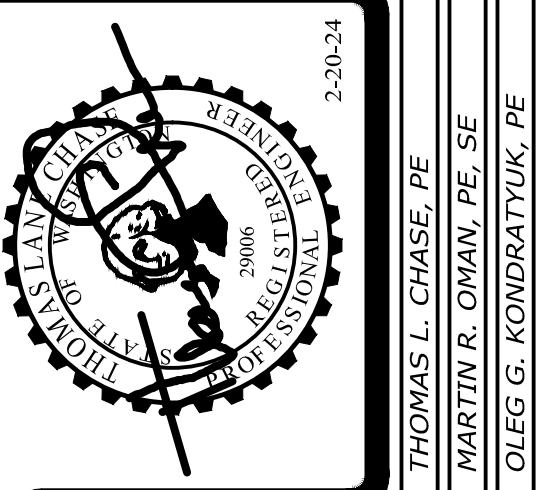
- INDICATES BEAM / GIRDER TRUSS PER PLAN SEE FRAMING PLANS
- INDICATES HANGER PER MANUFACTURER
- INDICATES GIRDER TRUSS PER PLAN
- INDICATES JOIST / TRUSS BEARING @ WALL / BEAM
- INDICATES JOIST / TRUSS INTERMEDIATE BEARING @ WALL / BEAM
- INDICATES TYPICAL TOILET, BATHTUB & SHOWER LAYOUT. CONTRACTOR TO COORDINATE JOIST LAYOUT WITH FUTURE LOCATIONS TO AVOID PLUMBING & FRAMING CONFLICTS.
- INDICATES ROOF OVERFRAMING - SEE DETAILS 5/S5.0
- PROVIDE WALL FIREBLOCKING @ DROPPED SOFFITS SHOWN ON ARCH.
- PROVIDE WALL BLOCKING FOR ALL WALL MOUNTED EQUIPMENT (SUCH AS TOWEL BARS, GRAB BARS, TOILET PAPER HOLDERS, DOOR STOPS, ETC.).
- LFA INDICATES - LOAD FROM ABOVE
- FF INDICATES FLUSH FRAMED BEAM
- INDICATES STRAP HOLDOWN, SEE SHEET 2/S1.2 FOR HOLDOWN TABLE & UPPER TO LOWER WALL STRAP/HOLDOWN KEY.
- REFER TO ARCHITECTURAL DRAWINGS FOR ALL FLOOR ELEVATIONS.
- SIMPSON STRONG TIE PRODUCTS ARE CALLED OUT ON THE DRAWINGS. HOWEVER, EITHER SIMPSON OR KC METALS PRODUCTS MAY BE USED PROVIDED IT HAS SAME OR GREATER CAPACITY.



3rd Floor Framing Plan - Bldg B



2nd Floor Framing Plan - Bldg B



Revisions to this sheet:

Bradley Heights Apartments
 202 27th Ave SE
 Puyallup, Washington

Solutions 4 Structures
 A Structural Engineering Corporation

PROJECT NO. : 23-007
 DESIGNED BY : TLC, OGG, MRO
 DRAWN BY : RSO
 ISSUE DATE : 2-20-24
 LATEST REV. OF DWG. SET :

SUBMITTAL SET ONLY NOT FOR CONSTRUCTION
 THESE DRAWINGS ARE SUBJECT TO REVISIONS PENDING LOCAL JURISDICTIONAL REVIEW.

S2.4

CAD FILE: F:\Projects\2023\Projects\Drawings\S2.4.dwg
 PLOT DATE/TIME: 2/15/2024 - 9:32am
 THANK YOU FOR USING SOLUTIONS 4 STRUCTURES

Floor & Roof Framing Notes

- ROOF AND FLOOR JOIST LOCATIONS ARE SCHEMATICALLY SHOWN ON THE PLANS. IT IS NOT THE INTENT OF THE STRUCTURAL PLANS TO GRAPHICALLY LOCATE ALL FRAMING MEMBERS. THE ARCHITECT SHALL VERIFY THE COMPATIBILITY OF JOIST LAYOUT AND FRAMING W/ MECHANICAL, ELECTRICAL & PLUMBING AND ARCHITECTURAL PLANS. THE CONTRACTOR IS RESPONSIBLE FOR SPACING FRAMING MEMBERS AS NOTED ON THE PLANS AND GENERATING MEMBER LAYOUT FOR SHOP DRAWINGS AND QUANTITY TAKEOFFS.
- FOR ALL UNITS TYPES SEE WALL STUD SCHEDULE FOR BEARING WALL STUD REQUIREMENTS. ALL OTHER NON-BEARING 2x4 & 2x6 WALLS ARE AT 16" O.C.
- THE TRUSS AND JOIST MANUFACTURER SHALL VERIFY BEARING COMPATIBILITY (CRUSHING) WITH THE PLATE MATERIAL. TYPICALLY, COMPOSITE BEAMS SHALL BE FULLY BEARING ON 2x_ WALLS. I.E. BREAK RIM OR BLOCKING TO ALLOW FULL BEARING OVER PLATES.
- PLACE LONG DIRECTION OF ALL OSB SHEETS PERPENDICULAR TO TRUSS/RAFTER OR JOIST DIRECTION, SEE DETAIL 3/S1.2. FLOOR SHEATHING IS TO BE CONTINUOUS FROM UNIT TO UNIT. TYPICAL NAILING AT FLOOR AND ROOF DIAPHRAGMS IS PROVIDED IN THE GENERAL STRUCTURAL NOTES ON SHEETS S1.0.
- INDICATES THE SHEARWALL TYPE, SEE THE SHEARWALL TABLE ON SHEET S1.2
 - INDICATES SHEARWALL LOCATION, THE CALLOUTS ON THE SHEARWALL TABLE APPLY ONLY ALONG THE LENGTH OF WALL SHOWN SHADED. PROVIDE SOLID BLOCKING IN FLOOR SPACE BELOW PERPENDICULAR SHEARWALLS.
 - INDICATES SHEAR WALL TYPE WITH OPENINGS. PROVIDE SHEATHING AROUND ALL OPENINGS AND ABOVE AND BELOW ALL OPENINGS. PROVIDE HORIZONTAL STRAPS & NAILING AT OPENINGS PER 8/S1.2
- THE DOUBLE TOP PLATE IS TO BE CONTINUOUS ALONG ALL EXTERIOR WALLS AND AT ALL WALL LINES CONTAINING SHEARWALLS. TYPICAL WALL TOP PLATE SPLICES SHALL BE PER DETAIL 7/S1.2 TYP.
- WHERE COMPOSITE JOISTS AND BEAMS ARE USED AS DRAG STRUTS THE MANUFACTURER SHALL PROVIDE THE FRAMING MEMBERS WITH THE CAPACITY CALLED OUT ON THE PLANS.
- TYPICAL FLOOR JOISTS SHALL BE 11-7/8" T&I/110 @ 16" O.C. TYP. U.N.O. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ALL JOIST AND BEAM HANGERS, WEB STIFFENERS, SOLID BLOCKING, AND ADDITIONAL RIM OR JOIST MATERIAL TO ACCOMMODATE FLUSH-FRAMED CONDITIONS (F.F.), CANTILEVERED CONDITIONS, CONCENTRATED BEARING LOADS AND NAILING FROM SHEARWALLS ABOVE AND BELOW.
- F.F. = FLUSH-FRAMED BEAM. VERIFY FLUSH OR DROPPED BEAM CONDITION PER ARCHITECT.
- ALL BEAMS PER SCHEDULE U.N.O. ALL NON BEARING BEAMS SHALL BE A MIN OF (2)2x8 U.N.O. ALL OTHER BEAMS ARE AS MARKED ON PLANS.
- AT ALL BEAM BEARING/JAMB LOCATIONS, AT MINIMUM PROVIDE BEARING (TRIMMER) STRIPS AND FULL HEIGHT (KING) STUDS PER THE JAMB STUD SCHEDULE FOR EACH BUILDING IF PROVIDED. IF NO SCHEDULE, PROVIDE (1) 2X_ BEARING AND (1) 2X_ FULL HEIGHT STUD MINIMUM.
- EXPOSED FRAMING SHALL BE PRESSURE TREATED (P.T.) VERTICAL & HORIZONTAL FRAMING @ WATERPROOFED WALKWAYS AND PRIVATE DECKS. ALL EXPOSED BEAM HANGERS SHALL BE POST HOT-DIPPED GALVANIZED AND HAVE CONCEALED FLANGES, VERIFY W/ ARCHITECT. SEE NOTE ON SHEET S1.0
- FOR TYPICAL HOLDOWN ASSEMBLIES SEE THE HOLDOWN TABLE ON 2/S1.2 AND DETAILS ON SHEET S3.0.
- SEE ARCHITECTURAL PLANS FOR STAIR FRAMING DETAILS & STAIR FRAMING DETAILS AND NOTES, CONTROL JOINTS IN CONCRETE FLOORING AND ROOF VENTILATION REQUIREMENTS AND DETAILS.
- SEE CIVIL AND ARCHITECTURAL PLANS FOR TOP OF WALL HEIGHTS AND ELEVATIONS. SEE ARCHITECTURAL PLANS FOR DIMENSIONS. WHERE DIMENSIONS ARE SHOWN ON THE STRUCTURAL PLANS, CONTRACTOR SHALL VERIFY COMPATIBILITY W/ ARCHITECTURAL PLANS. WHERE DISCREPANCY EXISTS, CONTRACTOR SHALL NOTIFY BOTH THE ENGINEER AND ARCHITECT FOR CLARIFICATION.
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- SEE GENERAL STRUCTURAL NOTES ON S1.0 TO S1.3 FOR ADDITIONAL INFORMATION.

18. LEGEND:
- INDICATES BEAM / GIRDER TRUSS PER PLAN SEE FRAMING PLANS
 - INDICATES HANGER PER MANUFACTURER
 - INDICATES GIRDER TRUSS PER PLAN
 - INDICATES JOIST / TRUSS BEARING @ WALL / BEAM
 - INDICATES JOIST / TRUSS INTERMEDIATE BEARING @ WALL / BEAM
 - INDICATES TYPICAL TOILET, BATHTUB & SHOWER LAYOUT. CONTRACTOR TO COORDINATE JOIST LAYOUT WITH FUTURE LOCATIONS TO AVOID PLUMBING & FRAMING CONFLICTS.
 - INDICATES ROOF OVERFRAMING - SEE DETAILS 5/S5.0

- PROVIDE WALL FIREBLOCKING @ DROPPED SOFFITS SHOWN ON ARCH.
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- SIMPSON STRONG TIE PRODUCTS ARE CALLED OUT ON THE DRAWINGS, HOWEVER, EITHER SIMPSON OR KC METALS PRODUCTS MAY BE USED PROVIDED IT HAS SAME OR GREATER CAPACITY.

NOTE:
ALL JOISTS ARE 11-7/8" T&I/110 @ 16" O.C. TYPICAL U.N.O. USE FACE MOUNT HANGER @ F.F. COND U.N.O.

NOTE:
P.T. 2x8 JOISTS @ 16" O.C. TYP U.N.O. @ DECKS
P.T. 2x10 JOISTS @ 16" O.C. TYP U.N.O. @ STAIR LANDINGS

NOTE:
ALL MULTIPLE 2x_ HEADERS HF #2 U.N.O.
ALL 4x_ HEADERS HF #2 U.N.O.
ALL 6x_ HEADERS/BEAMS D.F.#2 U.N.O.
ALL EXPOSED 6x_ BEAM / POSTS HF.#1 P.T. HEM-FIR TREATED PER ARCH. U.N.O.

INDICATES CANTILEVER
HANGER @ FLUSH FRAMED BEAM OR LEDGER
JOIST (CONTINUOUS) OVER BEARING WALL/HEADER
JOISTS STOP & START (NOT CONTINUOUS)

Framing Key

SEE SHEET S1.2 FOR SHEARWALL AND HOLDOWN TABLES

Beam Schedule

MARK	BEAM SIZE
B1	4x8
B2	4x10
B3	6x10 DF #2
B4	3-1/8 x 10-1/2 GLB
B5	P.T. 4x8
B6	P.T. 4x10
B7	P.T. 6x10 HF#1
B8	P.T. 3-1/8 x 10-1/2 GLB
B9	P.T. 5-1/8 x 10-1/2 GLB
B10	5-1/4x11-7/8 PSL
B11	3-1/2x11-7/8 LSL

Jamb Stud Schedule

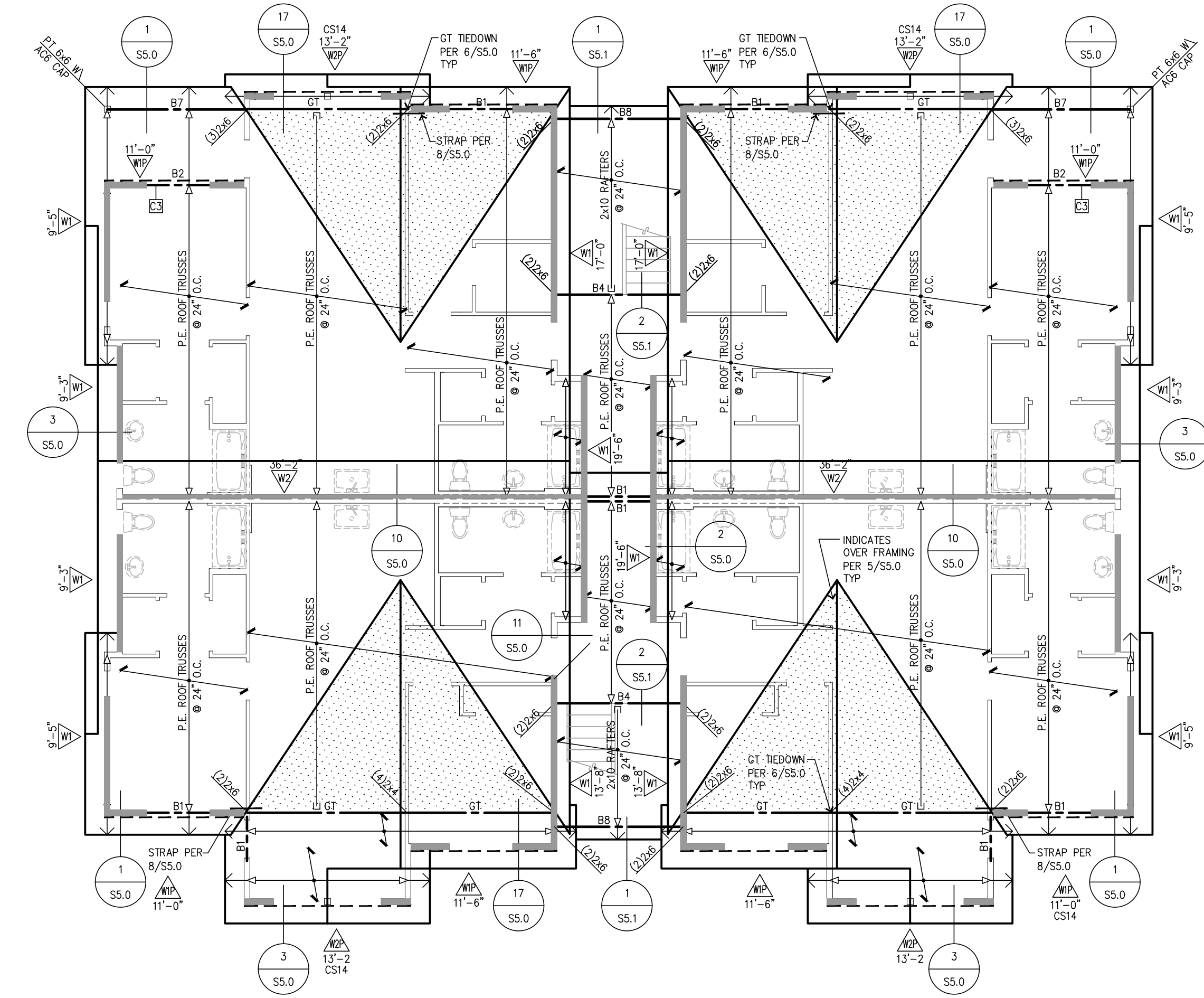
TYPE	C1	C2	C3	C4	C5	C6	-	-
BEARING/FULL HT STUDS	1/2	1/3	2/1	2/2	2/3	2/4	-	-

NOTE: STUD SIZE SHOULD MATCH WALL SIZE PER PLAN.

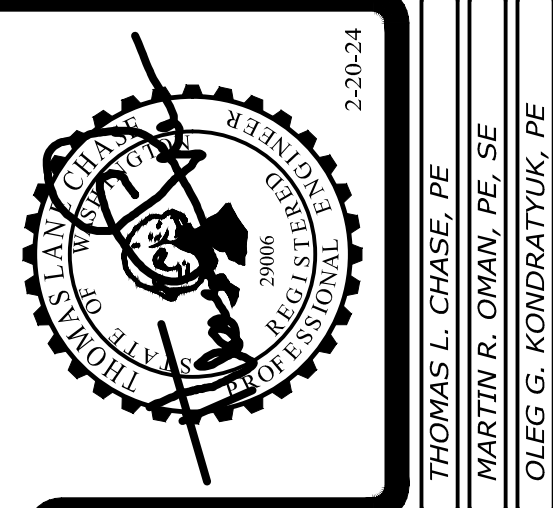
Wall Stud Schedule

FRAMING LEVEL	2x6 EXTERIOR	2x6 BRG INT @ SINGLE WALL	2x6 BRG INT @ PARTY WALLS	2x4 BRG @ SINGLE WALL	2x4 BRG @ PARTY WALLS
ROOF	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.
3RD	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.
2ND	2x6 @ 16" O.C.	2x6 @ 16" O.C.	2x6 @ 16" O.C.	(2)2x4 HF#2 @ 16" O.C.	2x4 HF#2 @ 16" O.C.
BASEMENT	2x6 @ 16" O.C.	2x6 @ 12" O.C.	2x6 @ 16" O.C.	(2)2x4 HF#2 @ 12" O.C.	2x4 HF#2 @ 16" O.C.

NOTES:
1. ALL STUD MATERIAL SHALL BE HEM FIR STUD GRADE OR BETTER UNLESS NOTED OTHERWISE AND PLATE MATERIAL SHALL BE HEM FIR STANDARD OR BETTER UNLESS NOTED OTHERWISE.
2. STUDS CALLED OUT IN THIS SCHEDULE ARE FOR WALL SUPPORTING THE FRAMING LEVEL INDICATED, THAT IS WALLS BELOW THE FRAMING LEVEL SHOWN.
3. THIS SCHEDULE COVERS BUILDING UNITS 3 STORES IN HEIGHT. FIRST, DETERMINE THE NUMBER OF STORES FOR THE UNIT, SECOND, DETERMINE THE FRAMING LEVEL, THIRD, READ SCHEDULE HORIZONTALLY FOR THE WALL LOCATION.



Roof Framing Plan - Bldg B
SCALE 1/8"=1'-0"



Revisions to this sheet:

Bradley Heights Apartments
202 27th Ave SE
Puyallup, Washington

Solutions 4 Structures
A Structural Engineering Corporation

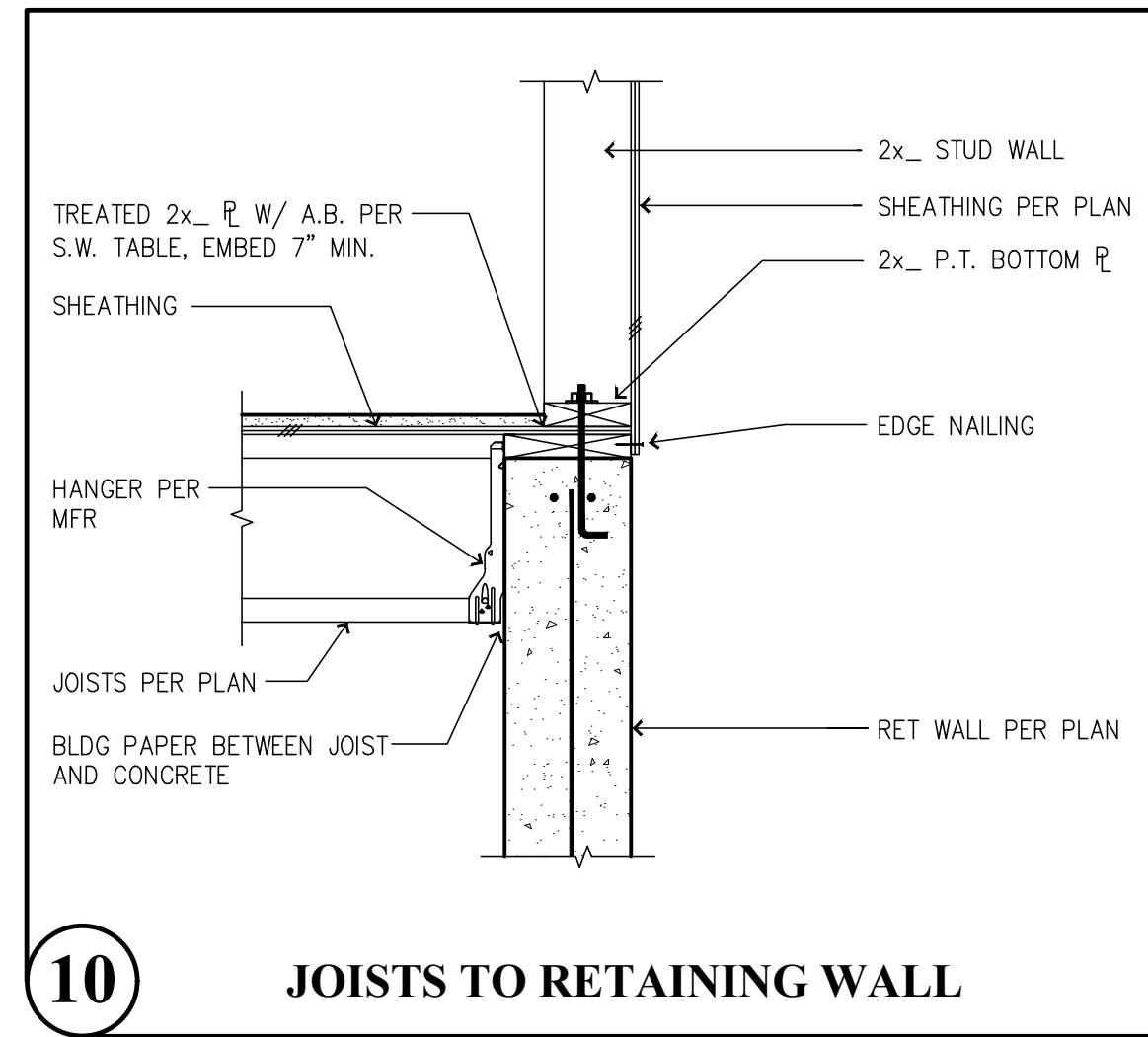
Puyallup, Washington 98374
Ph 253-314-9822
www.solutions4structures.com

PROJECT NO. : 23-007
DESIGNED BY : TLC, OGG, MRO
DRAWN BY : RSO
ISSUE DATE : 2-20-24
LATEST REV. OF DWG. SET :

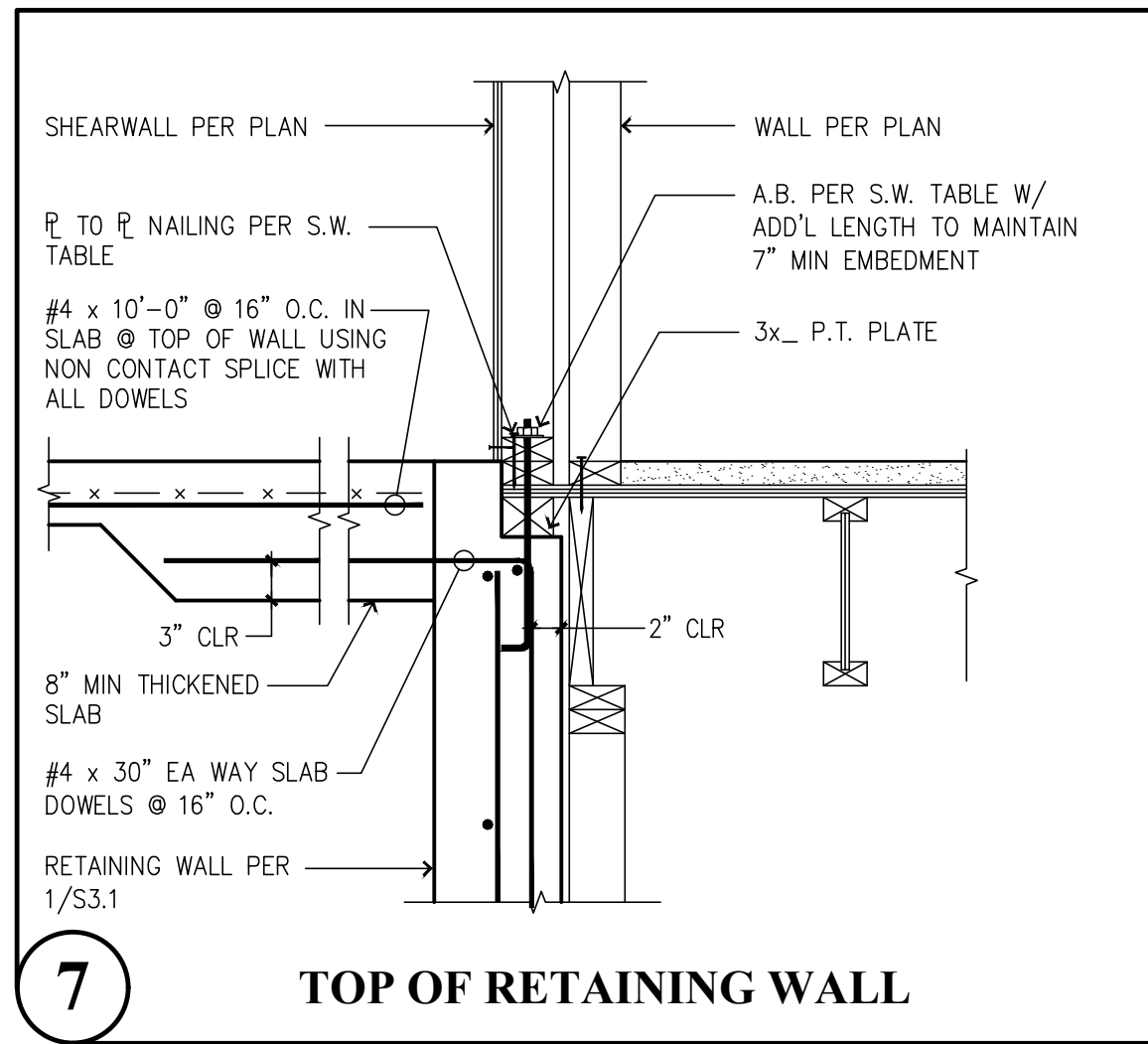
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THESE DRAWINGS ARE SUBJECT TO REVISIONS PENDING LOCAL JURISDICTIONAL REVIEW.

S2.5

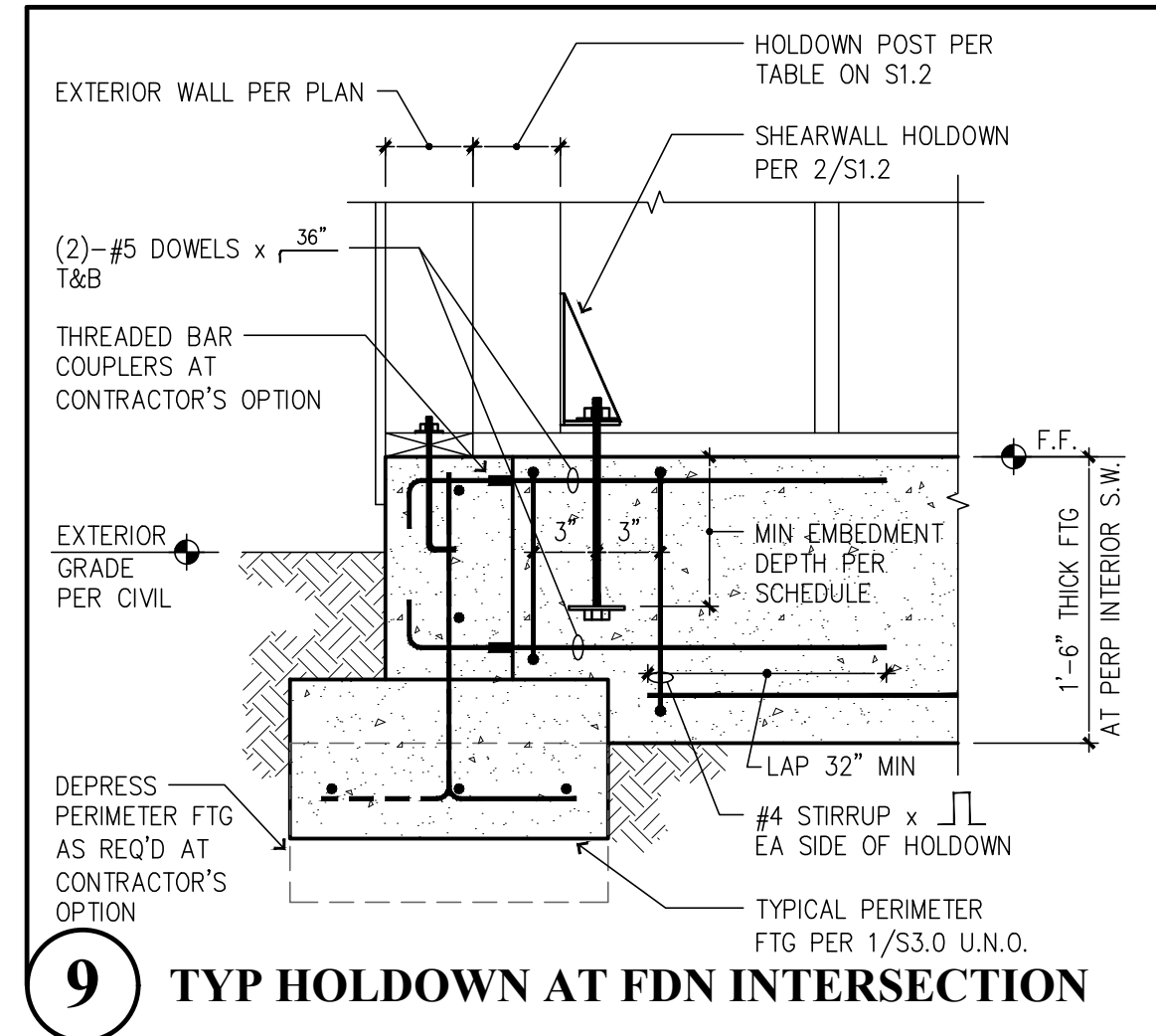
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THANK YOU FOR USING SOLUTIONS 4 STRUCTURES



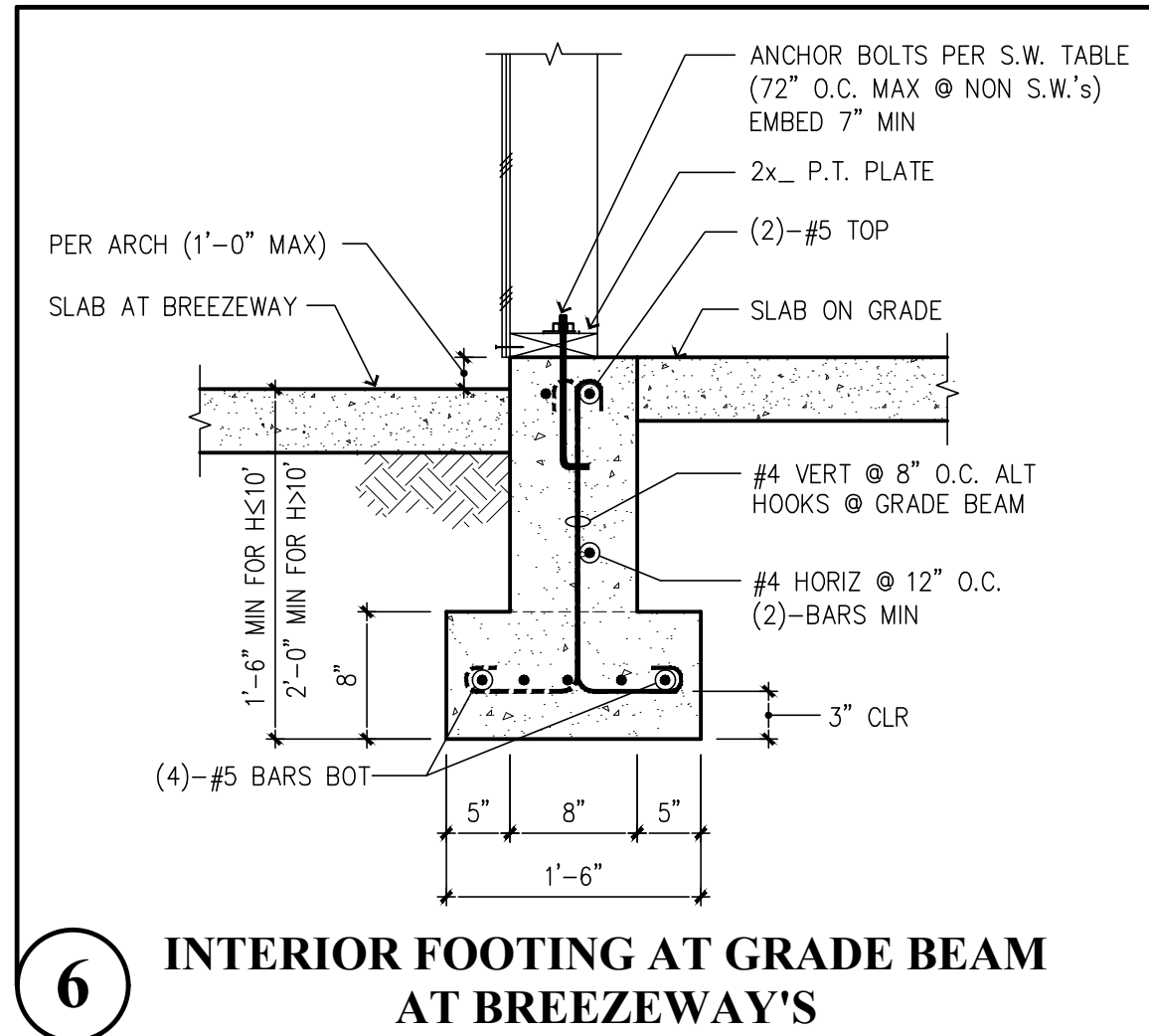
10 JOISTS TO RETAINING WALL



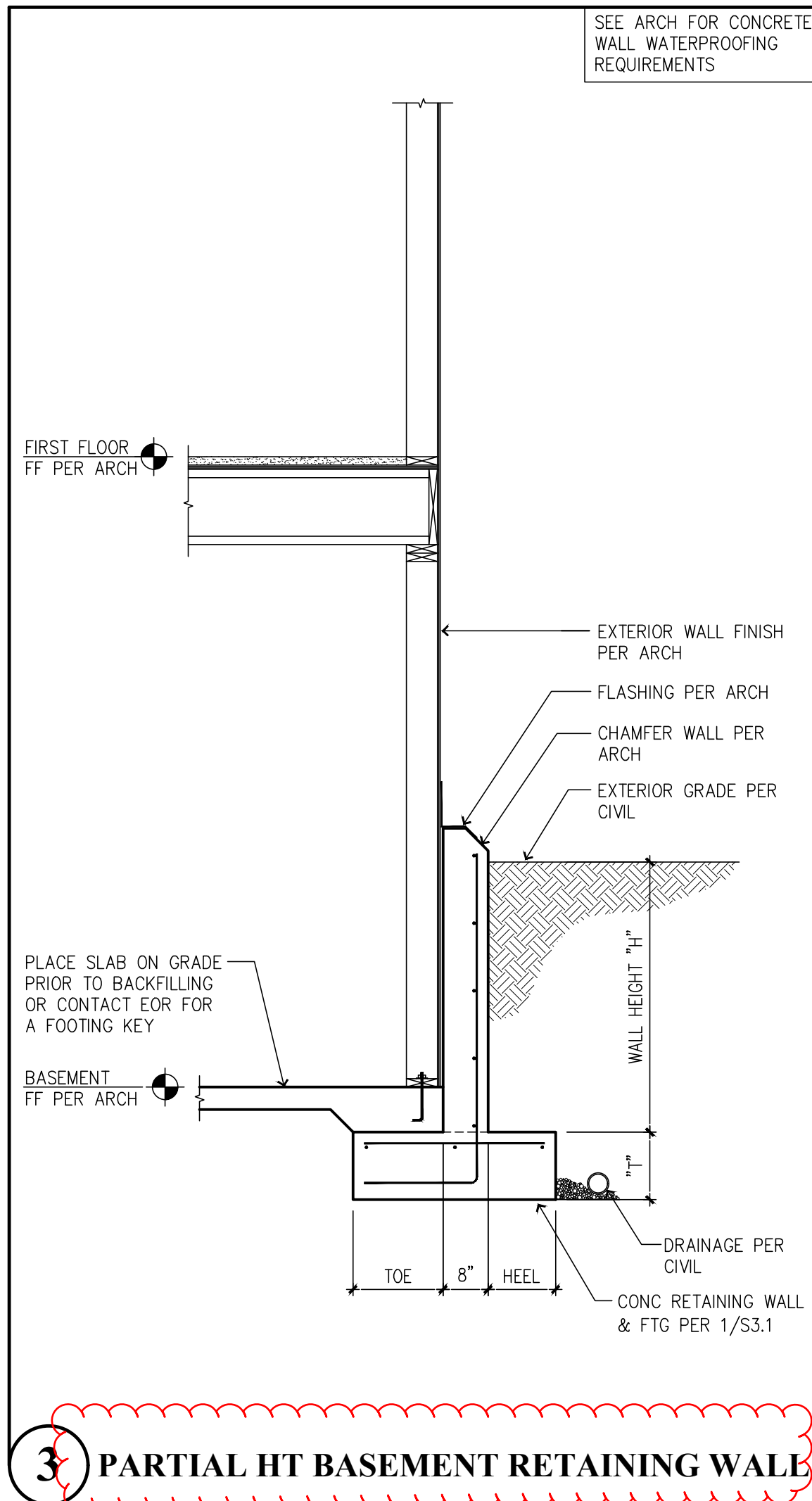
7 TOP OF RETAINING WALL



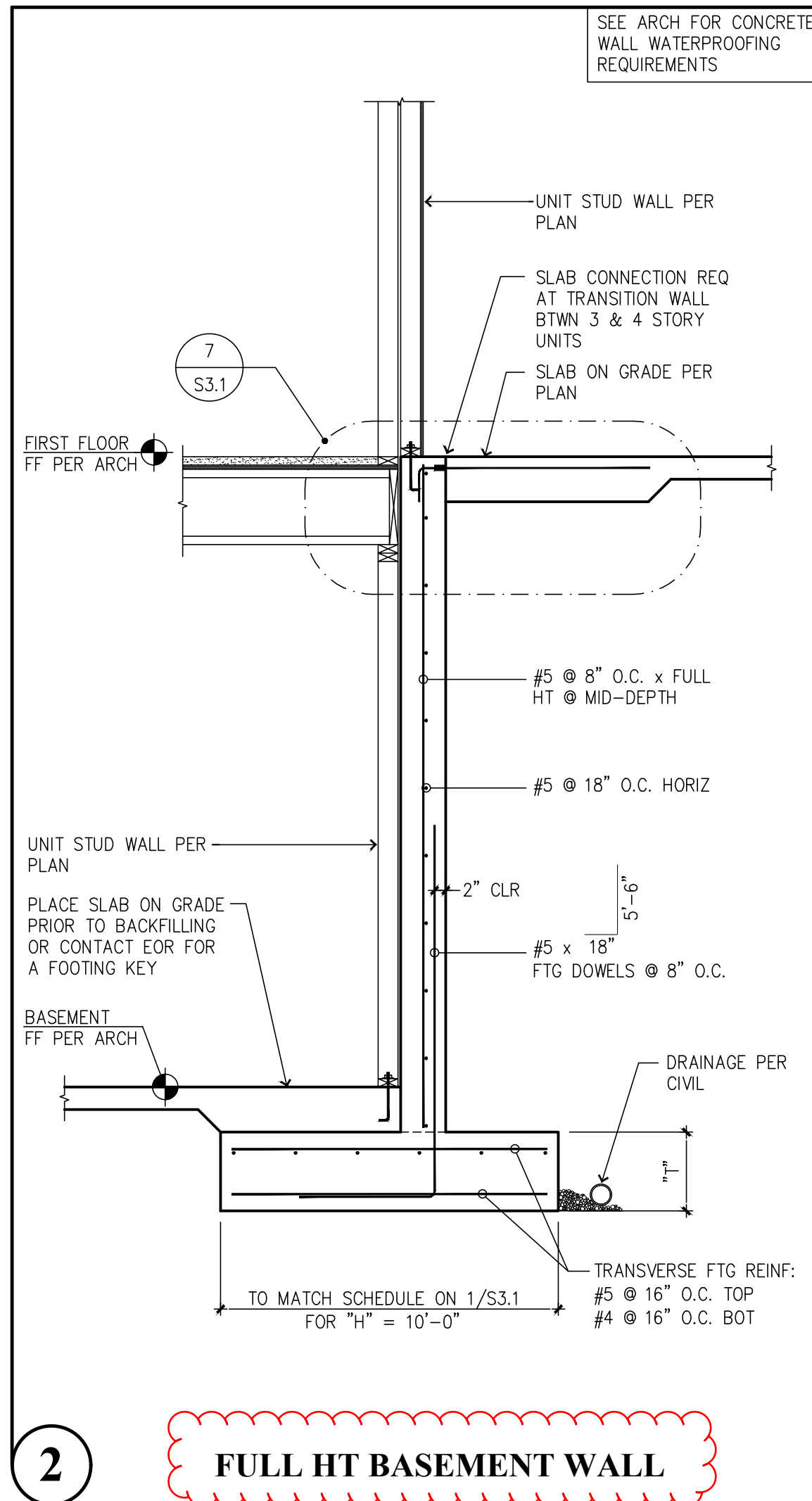
9 TYP HOLDOWN AT FDN INTERSECTION



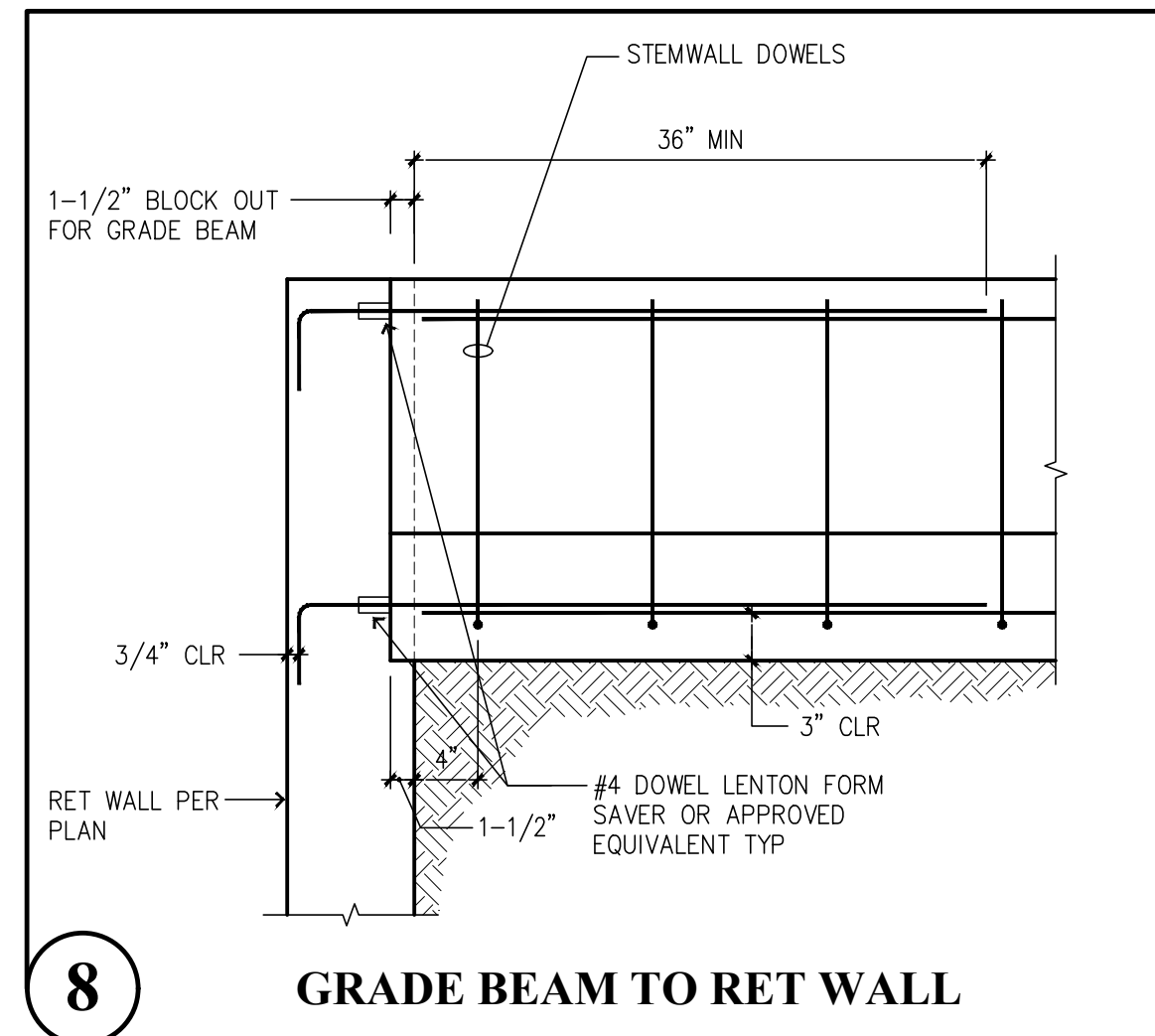
6 INTERIOR FOOTING AT GRADE BEAM AT BREEZEWAY'S



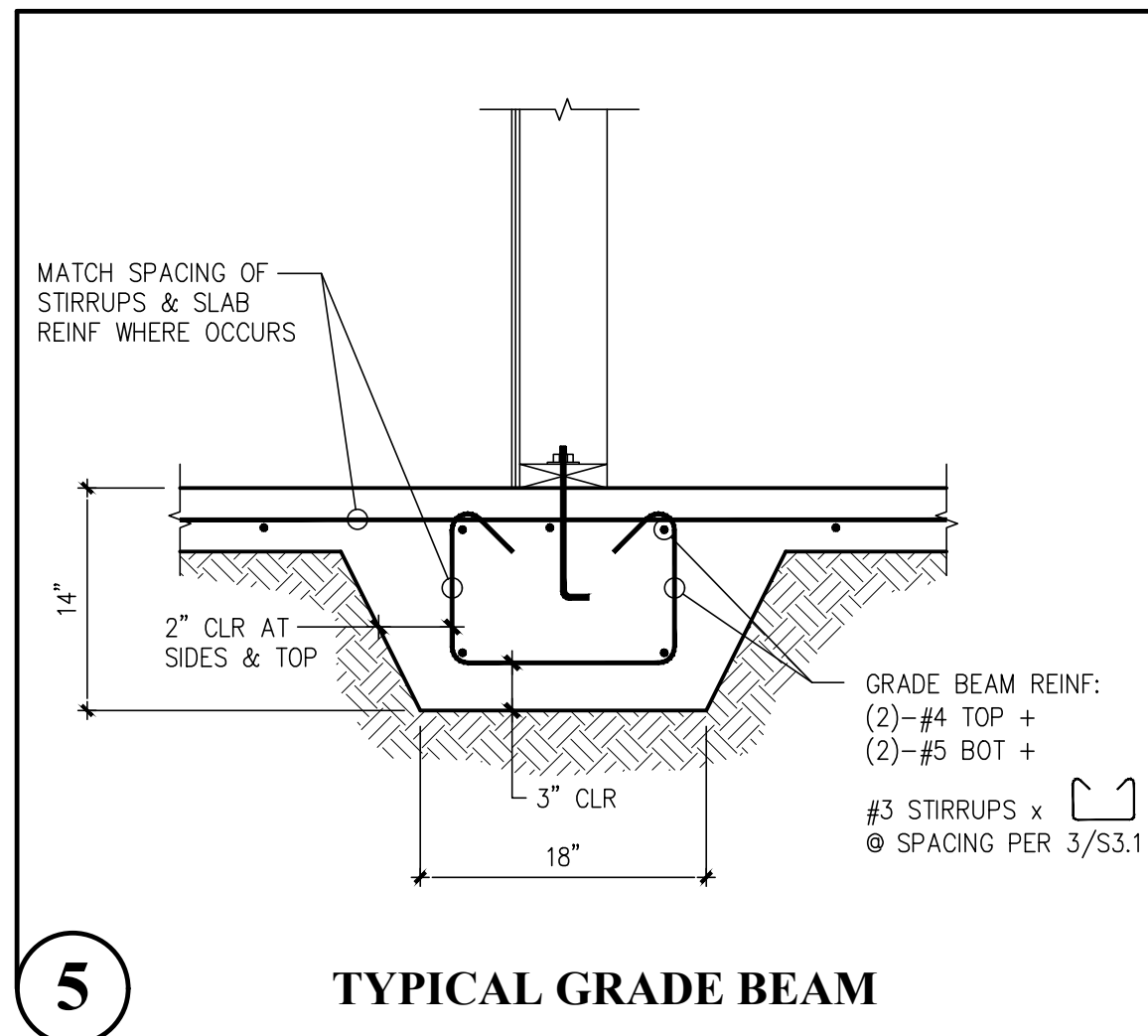
3 PARTIAL HT BASEMENT RETAINING WALL



2 FULL HT BASEMENT WALL

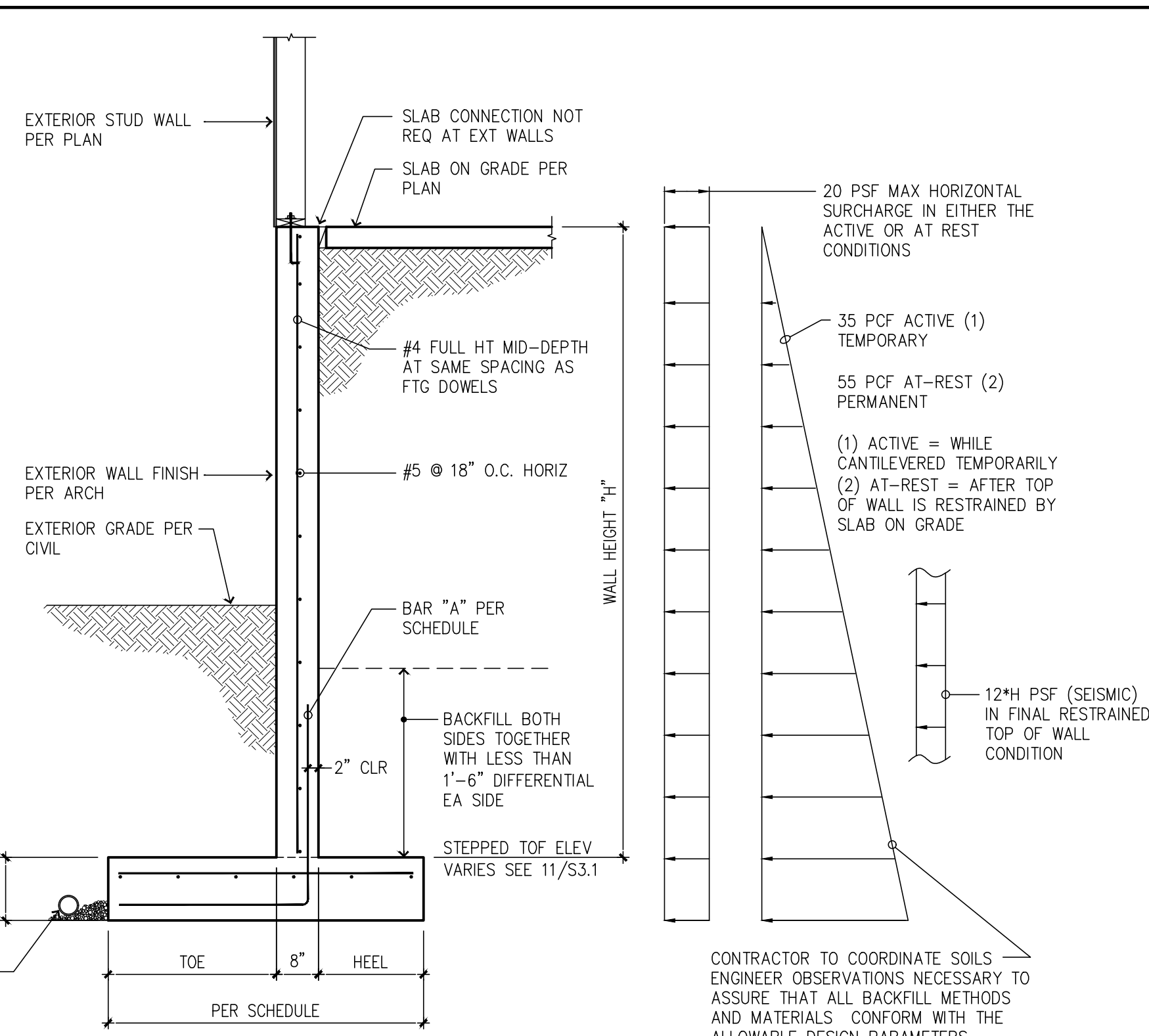


8 GRADE BEAM TO RET WALL



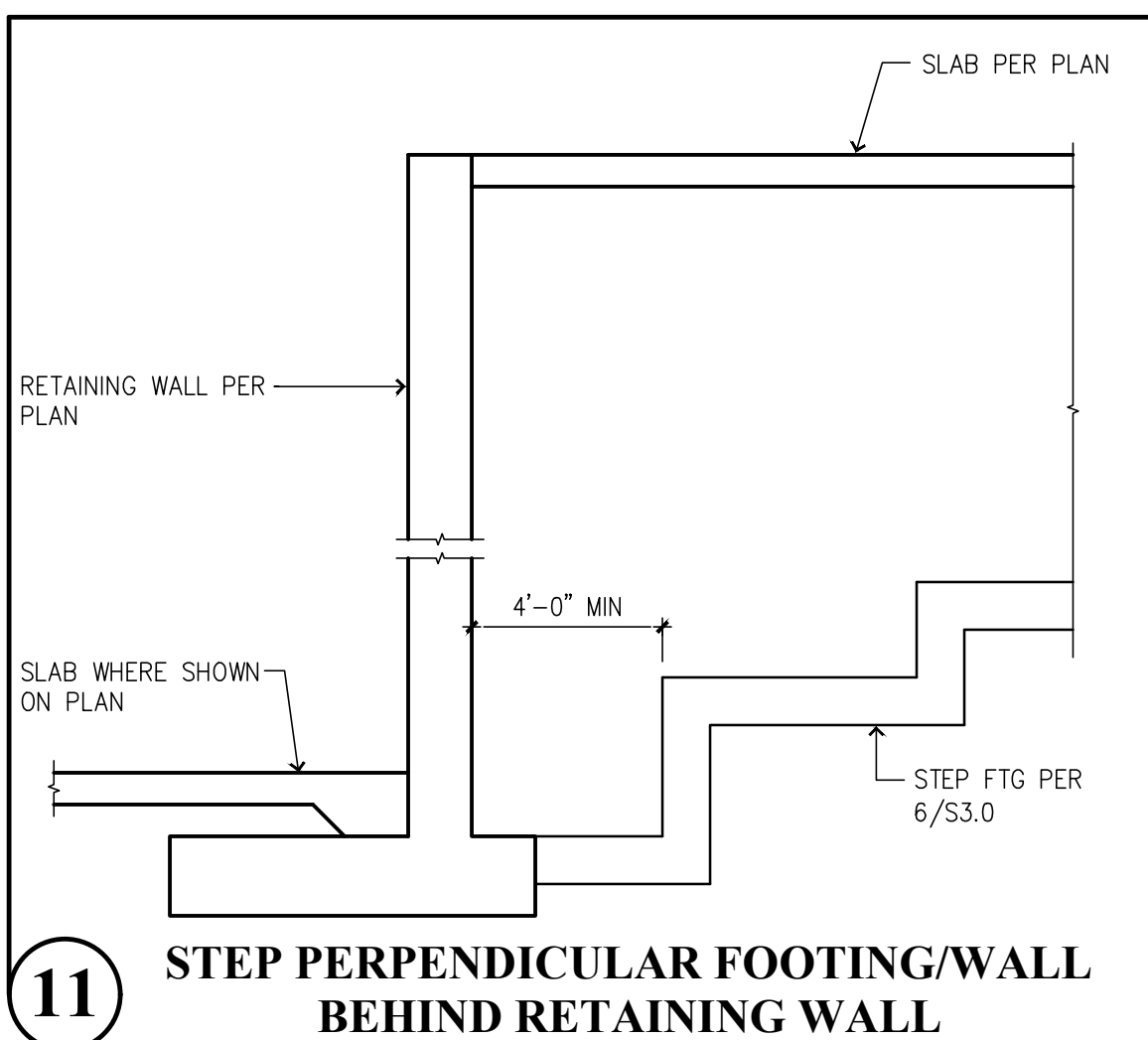
5 TYPICAL GRADE BEAM

- DESIGN PARAMETERS**
- SOIL BEARING = 2,000 PSF
 - ACTIVE & AT REST FLUID PRESSURES PER DIAGRAM
 - PASSIVE FLUID PRESSURE = 450 PCF
 - 20 PSF (MAX) LIVE LOAD SURCHARGE, HORIZ.
 - 12" H PSF (MAX) SEISMIC SURCHARGE, HORIZ.
 - SOIL FRICTION COEF. = 0.53
 - SOIL UNIT WEIGHT = 120 PCF (MIN)
 - DRAINAGE SYSTEM BY OTHERS. HYDROSTATIC PRESSURES BEHIND THE WALL ARE NOT PERMITTED
- NOTES**
- PROVIDE CORNER STEEL @ FTG CORNERS & INTERSECTIONS. USE 36"x36" ELBOW STEEL TO LAP HORIZ REINF, MATCH SIZE.
 - CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND HEIGHTS PRIOR TO CONSTRUCTION. NOTIFY ENGR/OWNER OF ANY DISCREPANCIES.
 - REINFORCEMENT GRADES SHALL TYPICALLY BE : GRADE 60
 - CONCRETE STRENGTH SHALL BE A MINIMUM OF 2500 PSI PRIOR TO BACKFILL.

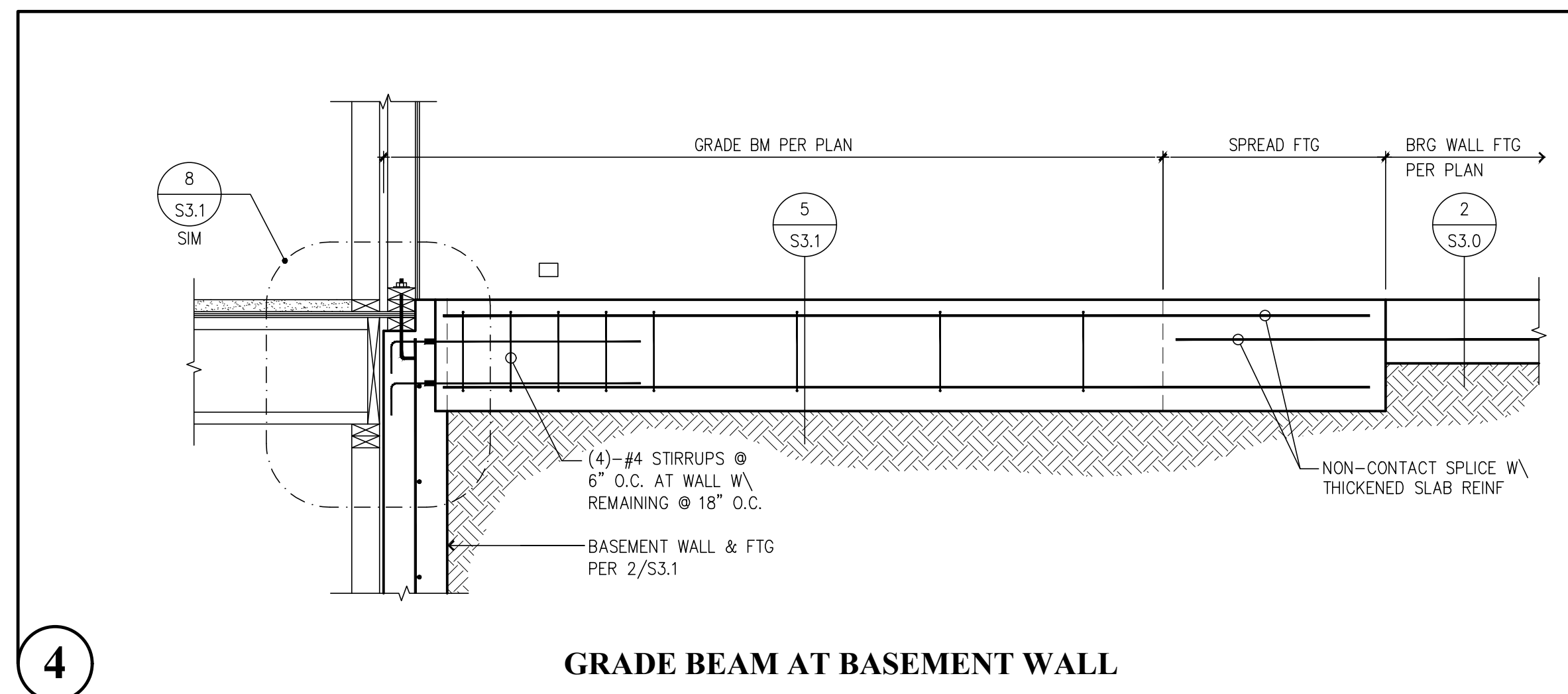


1 STEPPED BASEMENT WALL SCHEDULE

WALL HEIGHT MAX	FOOTING DIMENSIONS				"T" THKNS	BAR "A"		BAR "B"	
	TOE	STEM	HEEL	TOTAL		SIZE & SPACING	VERT LEG	HORIZ LEG	SIZE & SPACING
10'-0"	2'-8"	8"	1'-8"	5'-0"	14"	#5 @ 10" O.C.	5'-6"	2'-10"	#4 @ 10" O.C.
8'-0"	2'-0"	8"	1'-4"	4'-0"	12"	#5 @ 12" O.C.	4'-6"	2'-2"	#4 @ 12" O.C.
6'-0"	1'-4"	8"	1'-0"	3'-0"	12"	#4 @ 12" O.C.	FULL HT	1'-6"	#4 @ 12" O.C.
4'-0"	0'-8"	8"	0'-8"	2'-0"	10"	#4 @ 16" O.C.	FULL HT	0'-10"	#4 @ 16" O.C.



11 STEP PERPENDICULAR FOOTING/WALL BEHIND RETAINING WALL



4 GRADE BEAM AT BASEMENT WALL

Revisions to this sheet:

Bradley Heights Apartments
202 27th Ave SE
Puyallup, Washington

Solutions 4 Structures
A Structural Engineering Corporation

PROJECT NO. : 23-007
DESIGNED BY : TLC, OGG, MRO
DRAWN BY : RSO
ISSUE DATE : 2-20-24
LATEST REV. OF DWG. SET :

THOMAS L. CHASE, PE
MARTIN R. OMAN, PE, SE
OLEG G. KONDRATYUK, PE

Puyallup, Washington 98374
Ph 253-314-9822
www.solutions4structures.com

SUBMITTAL SET ONLY NOT FOR CONSTRUCTION
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PENDING LOCAL JURISDICTIONAL REVIEW.

S3.1

PLOT DATE/TIME: 2/15/2024 - 9:49am THANK YOU FOR USING SOLUTIONS 4 STRUCTURES

CAD FILE: F:\Projects\2023 Projects\23.007 Bradley Heights\Drawings\S4.0.dwg



THOMAS L. CHASE, PE
MARTIN R. OMAN, PE, SE
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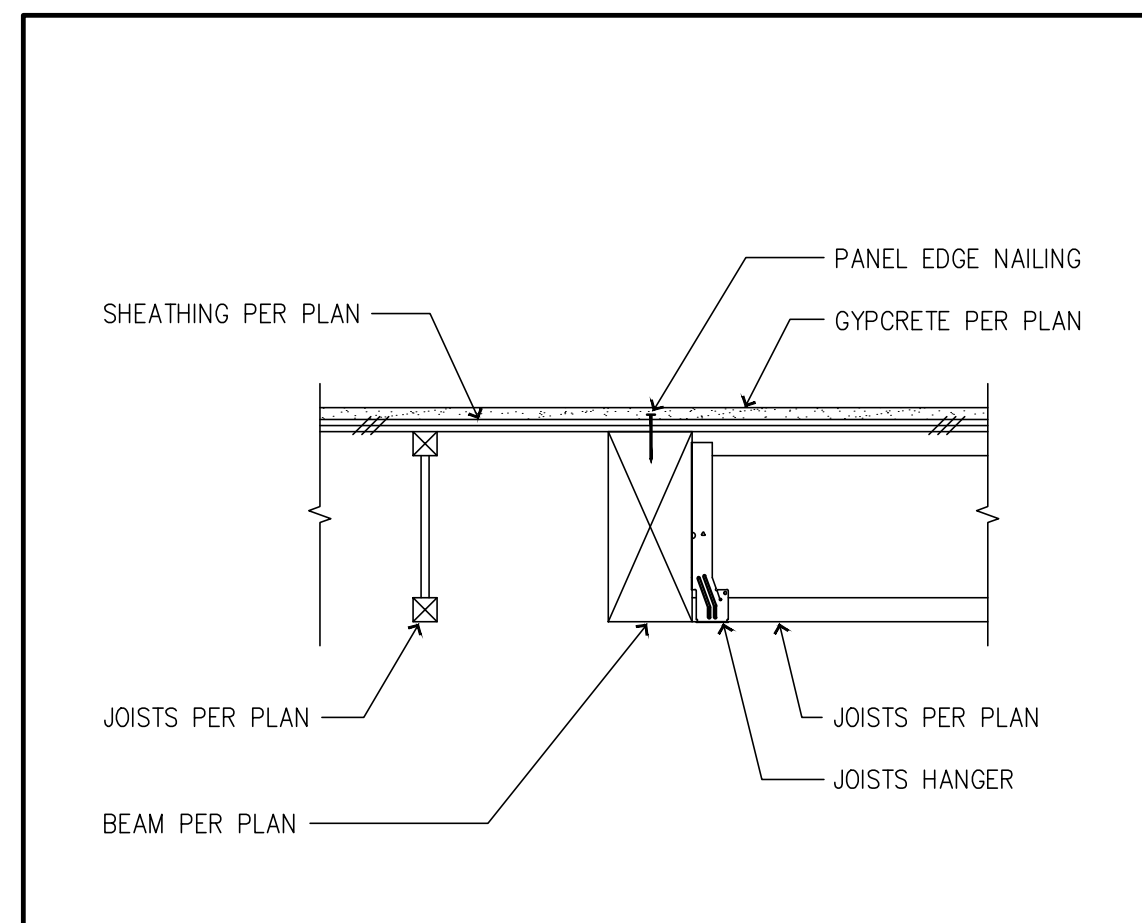
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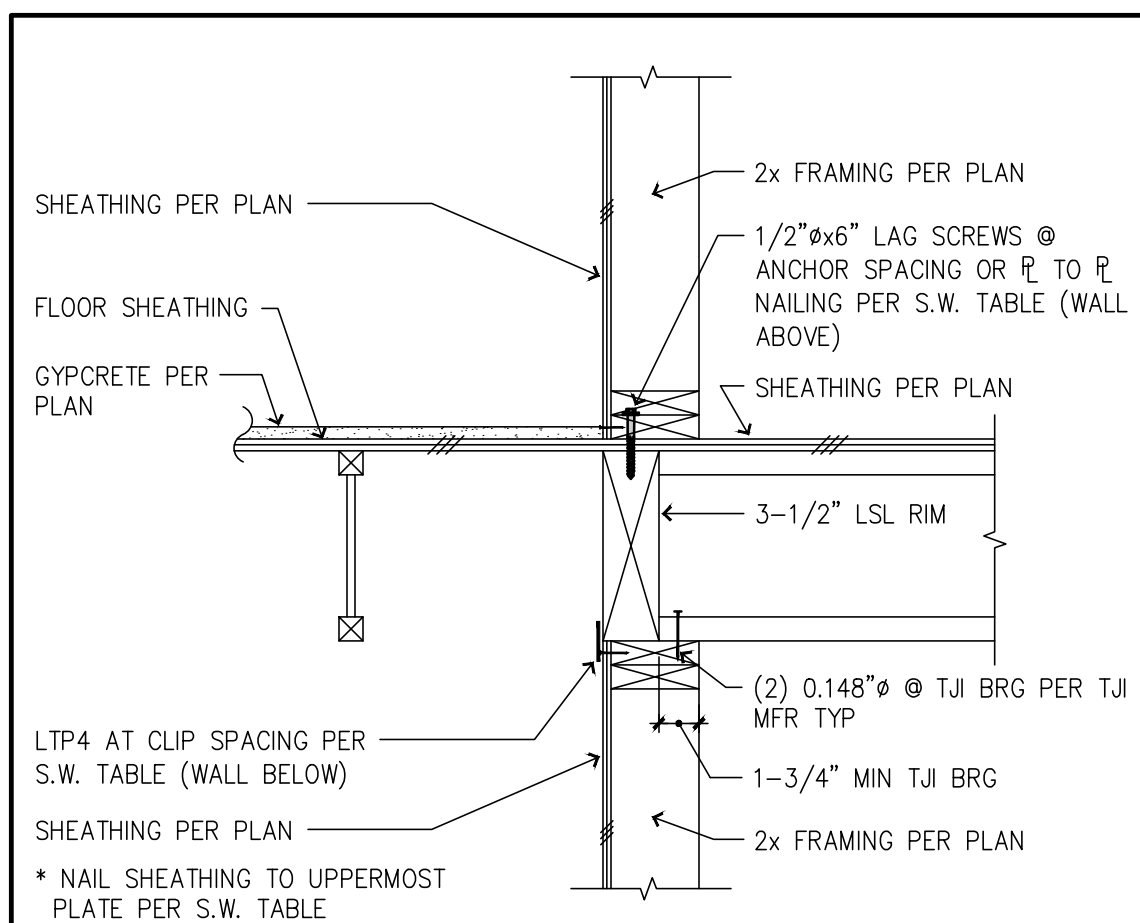
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S4.0

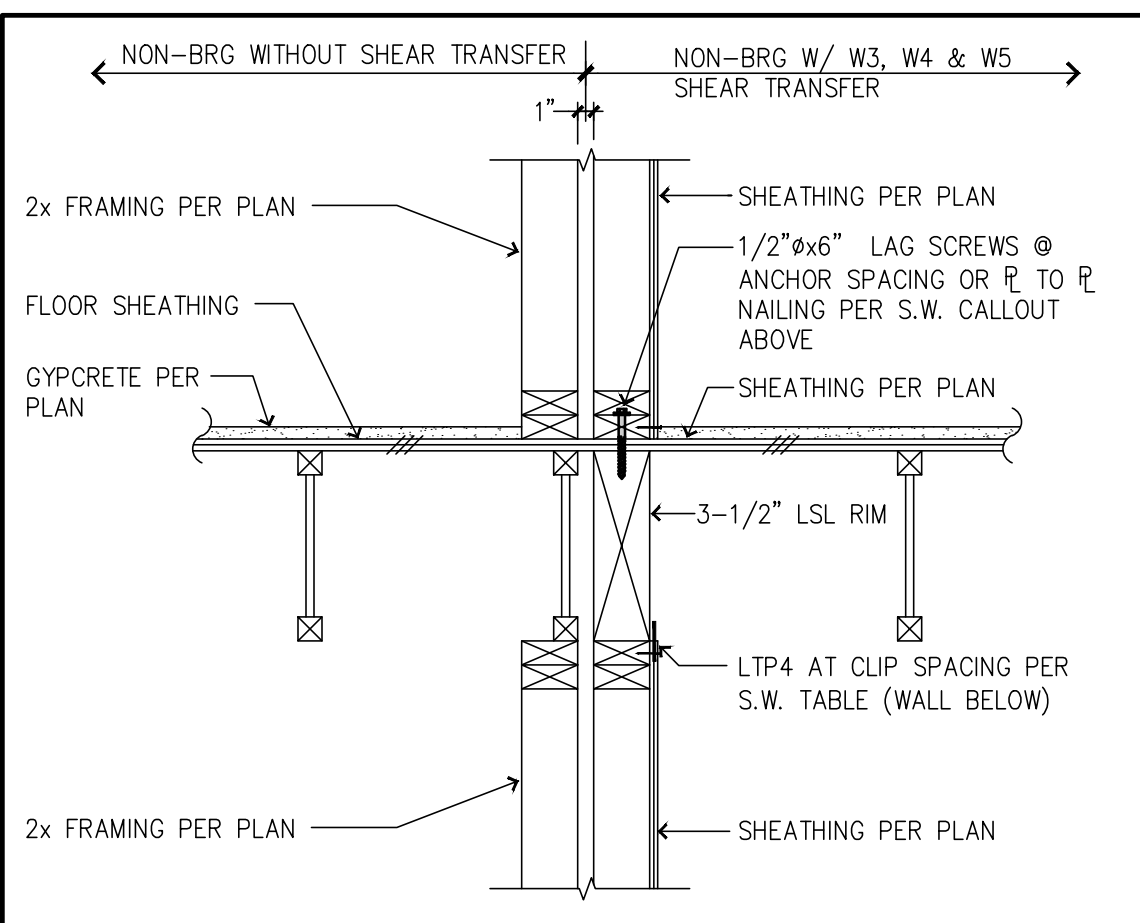
16 TYP BEAM AT INTERIOR ONE SIDE



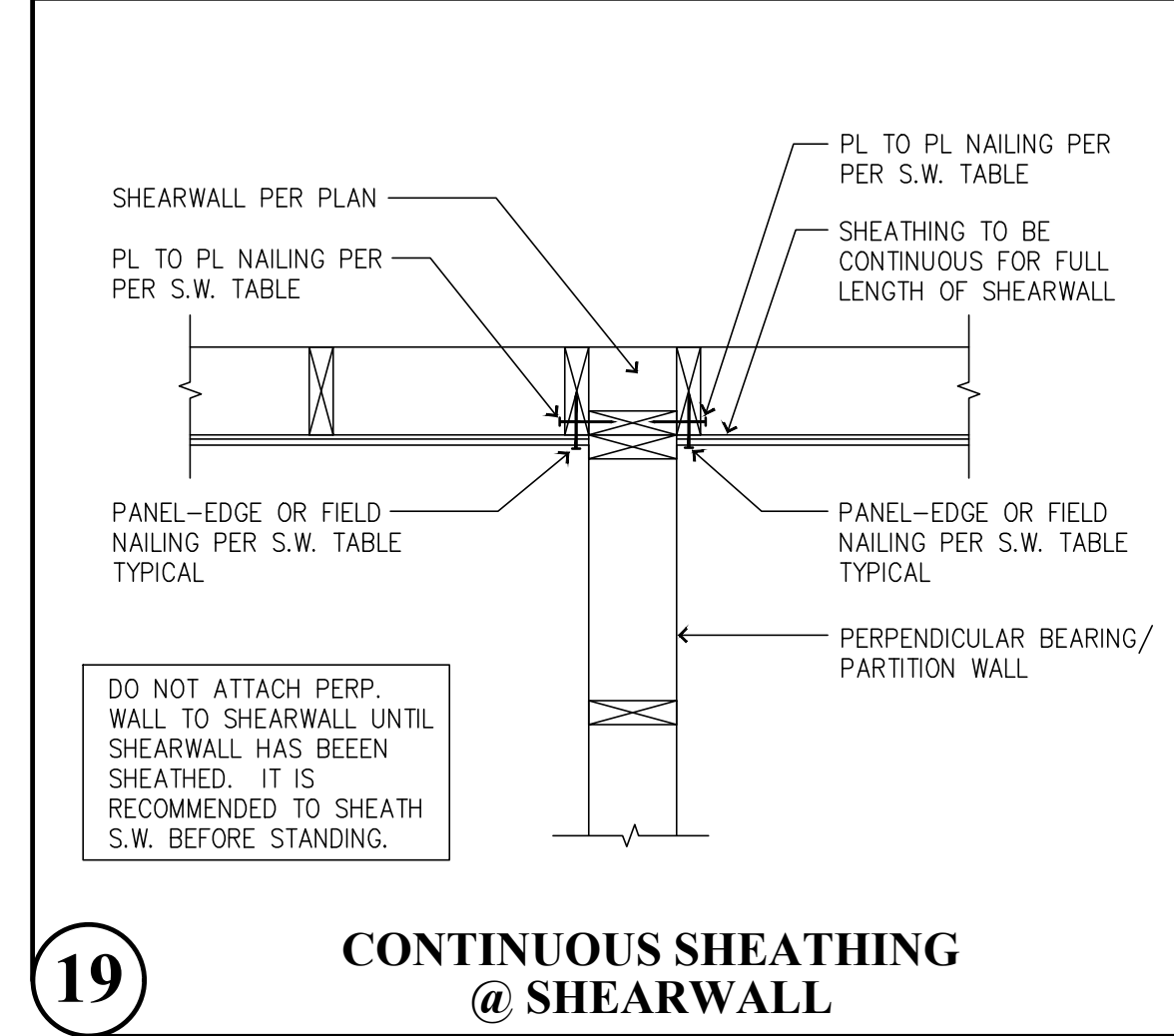
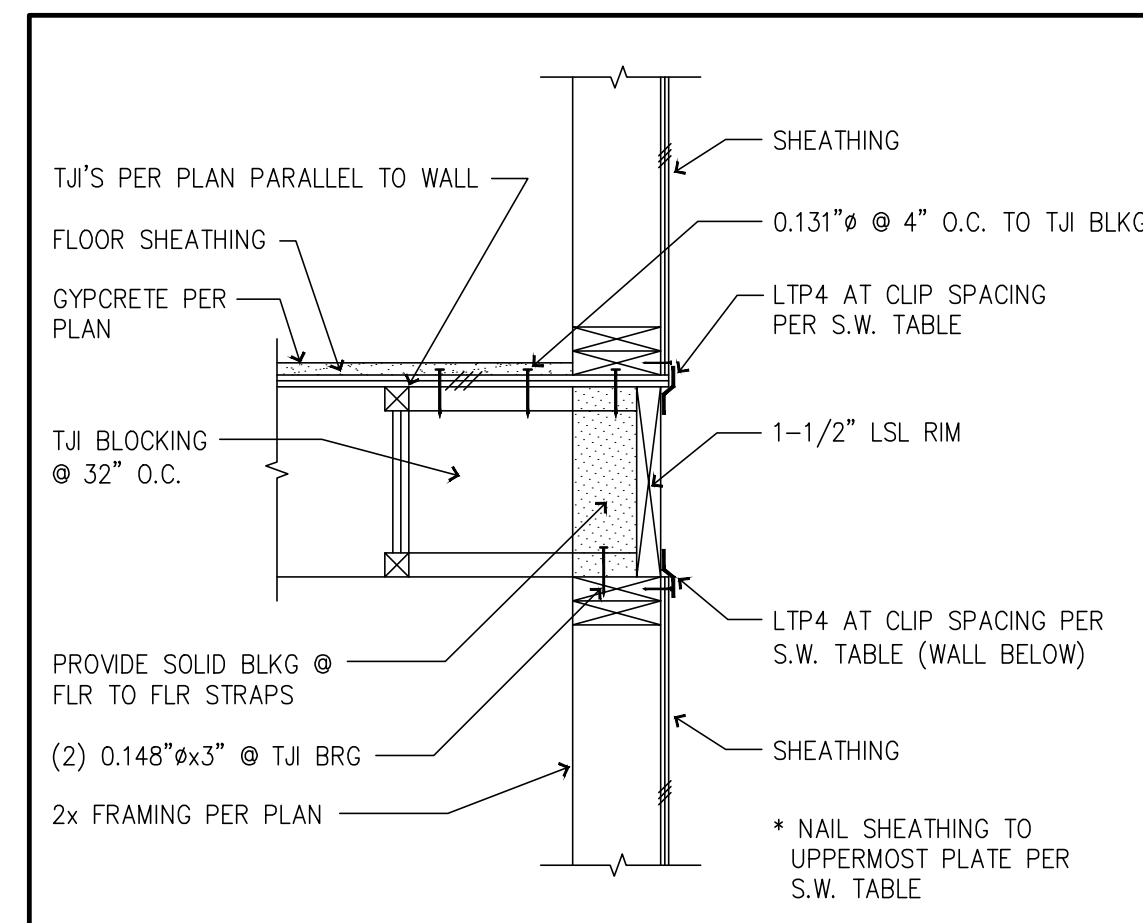
12 INTERIOR WALL BEARING ONE SIDE (W3, W4 & W5 SHEAR TRANSFER)



8 PARTY WALL NON-BEARING (W3, W4 & W5 SHEAR TRANSFER)

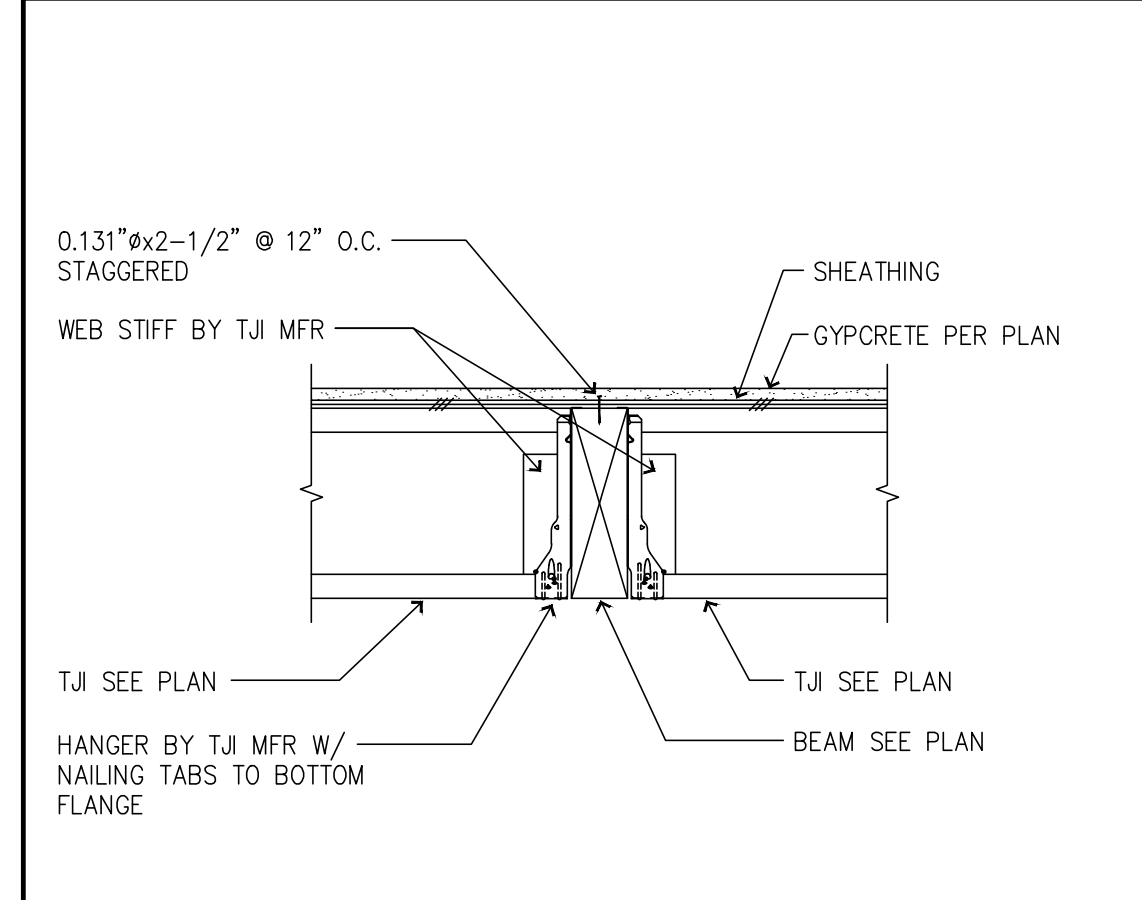


4 TJI FLOOR JOIST PARALLEL TO WALL (W3, W4 & W5 SHEAR TRANSFER)

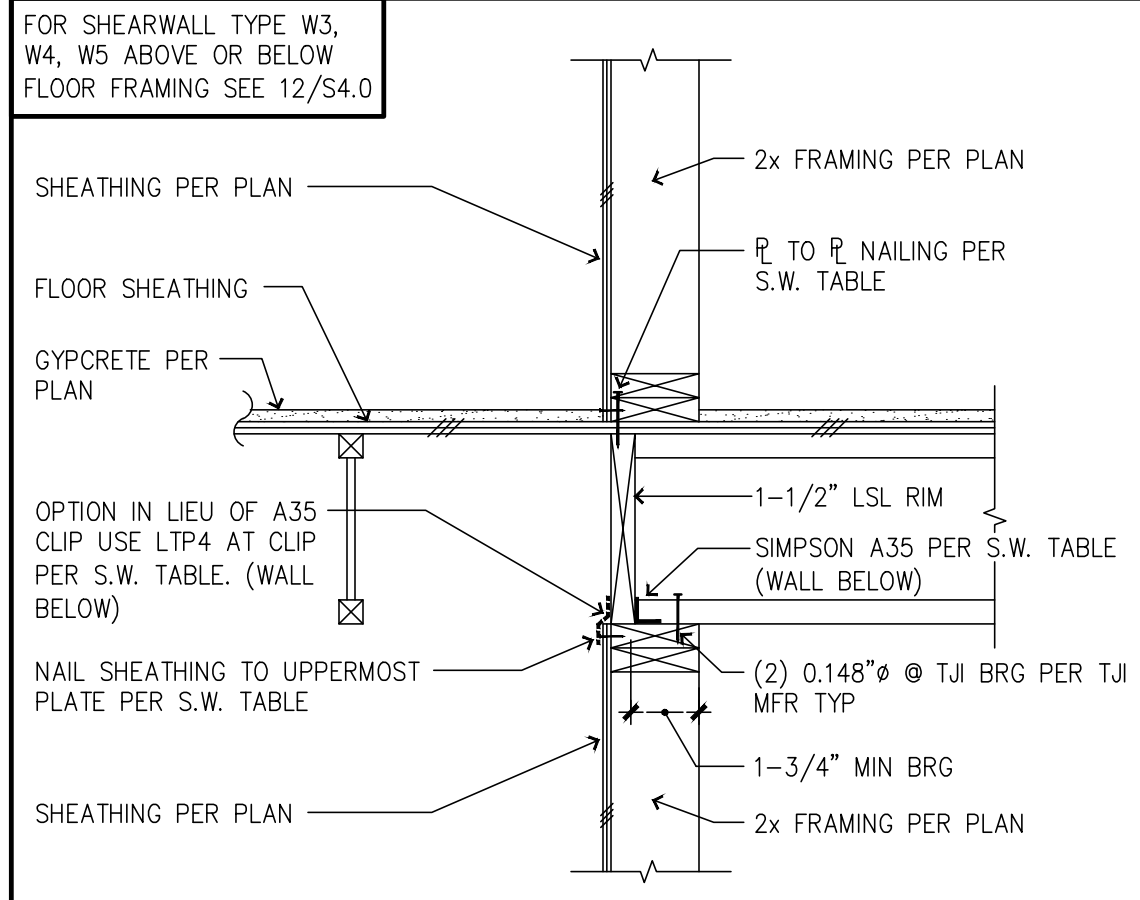


19 CONTINUOUS SHEATHING @ SHEARWALL

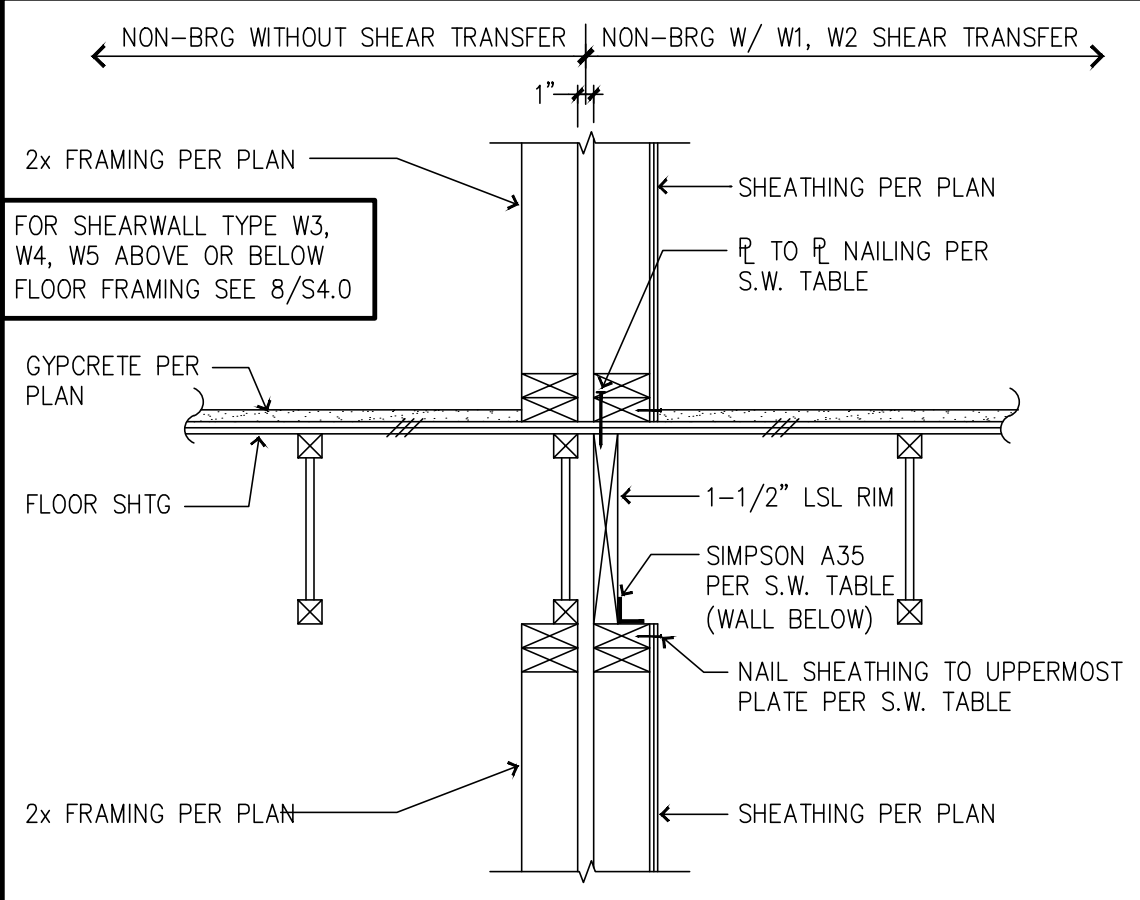
15 TYP TJI AT FLUSH FRAMED BM SUPPORT



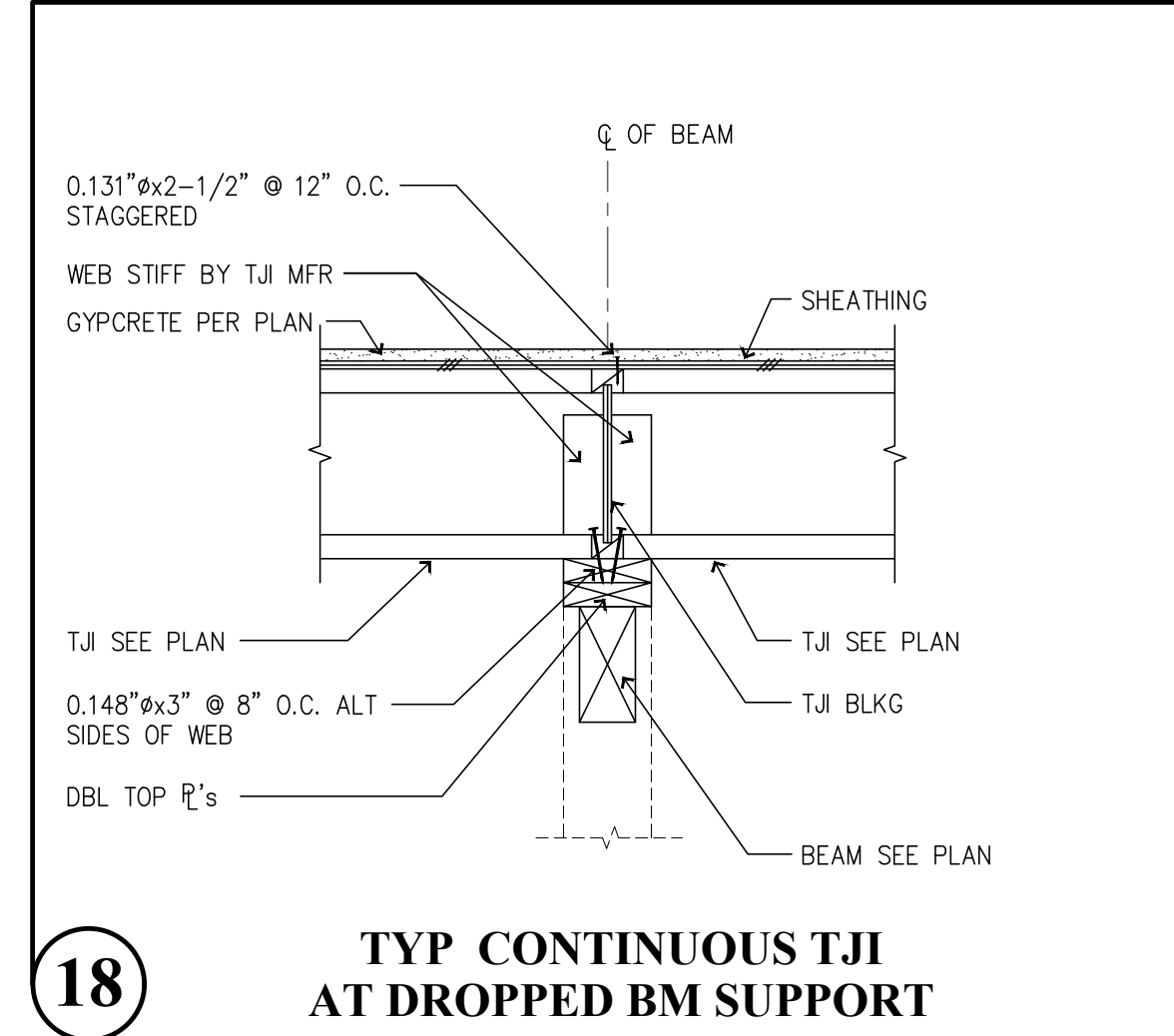
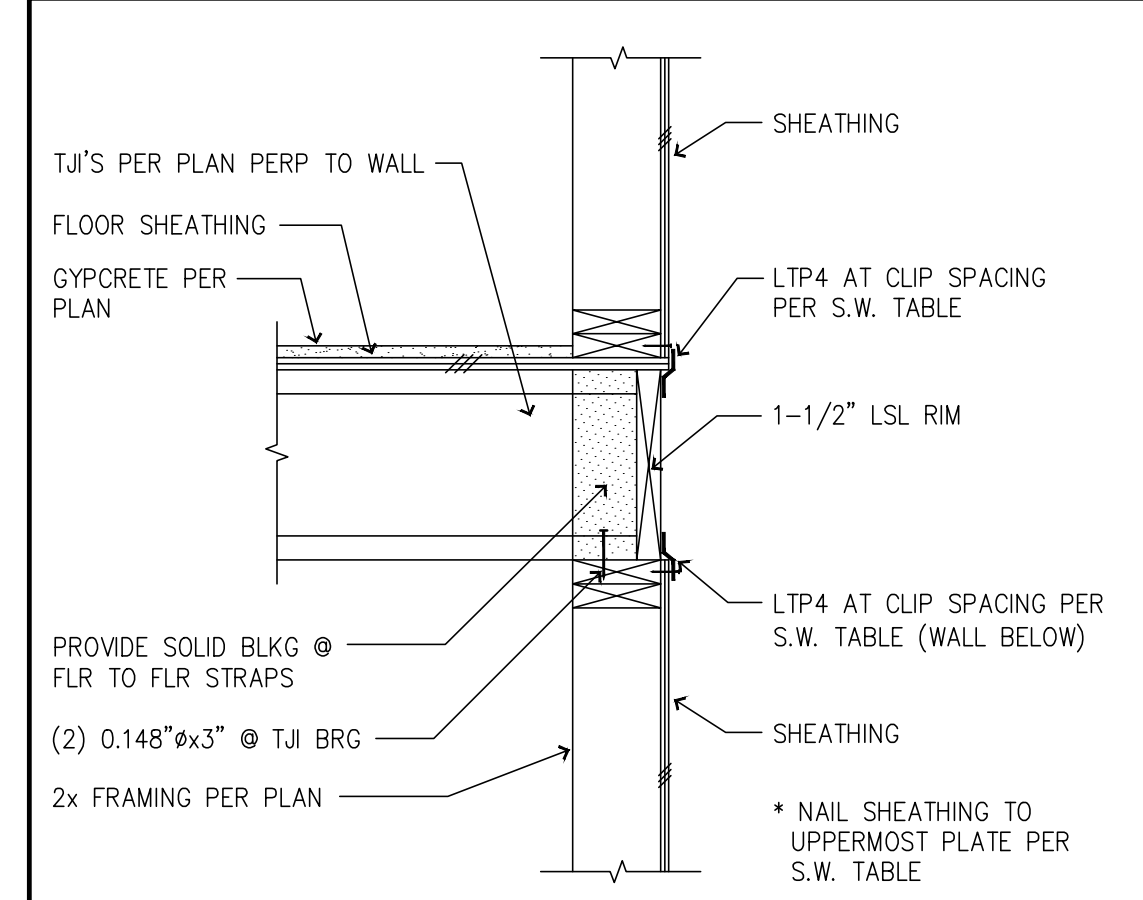
11 INTERIOR WALL BEARING ONE SIDE (W1, W2 SHEAR TRANSFER)



7 TYP PARTY WALL NON-BEARING (W1, W2 SHEAR TRANSFER)

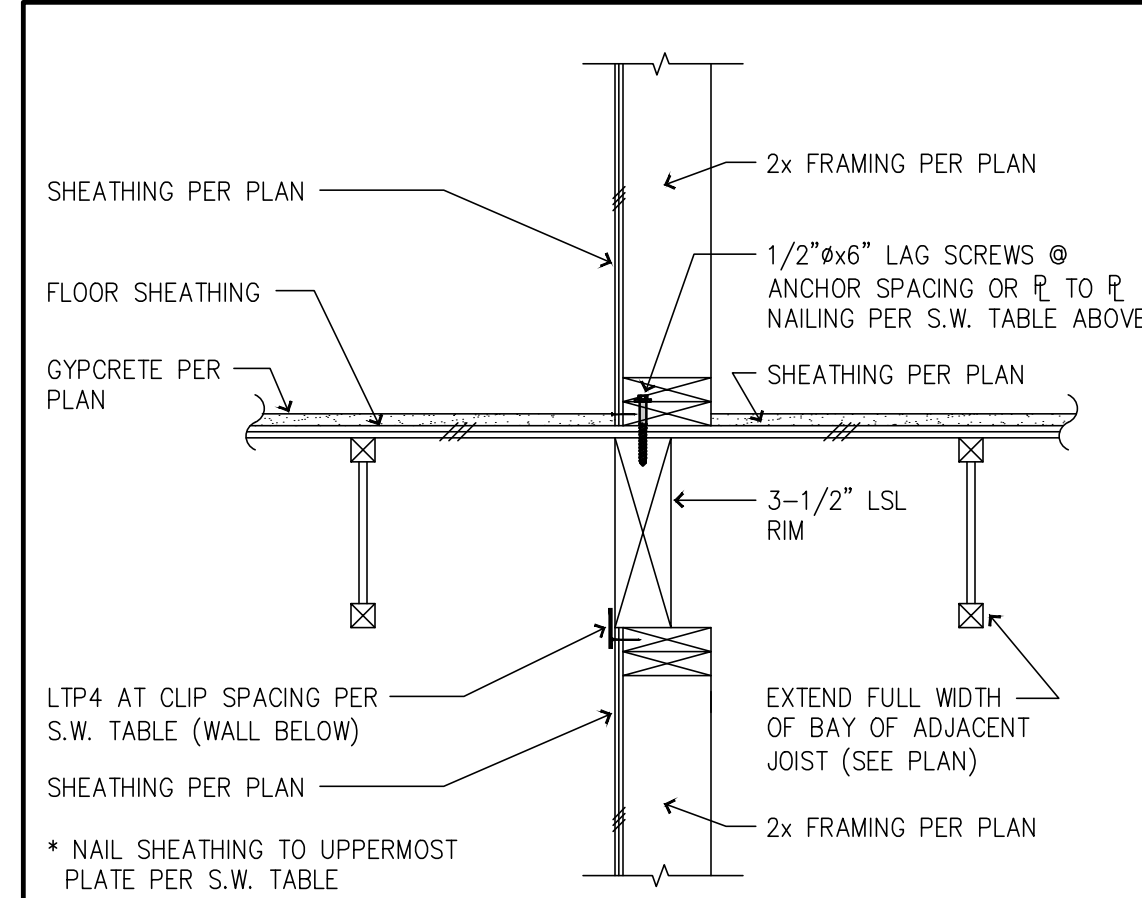


3 TJI FLOOR JOIST PERPENDICULAR TO WALL (W3, W4 & W5 SHEAR TRANSFER)

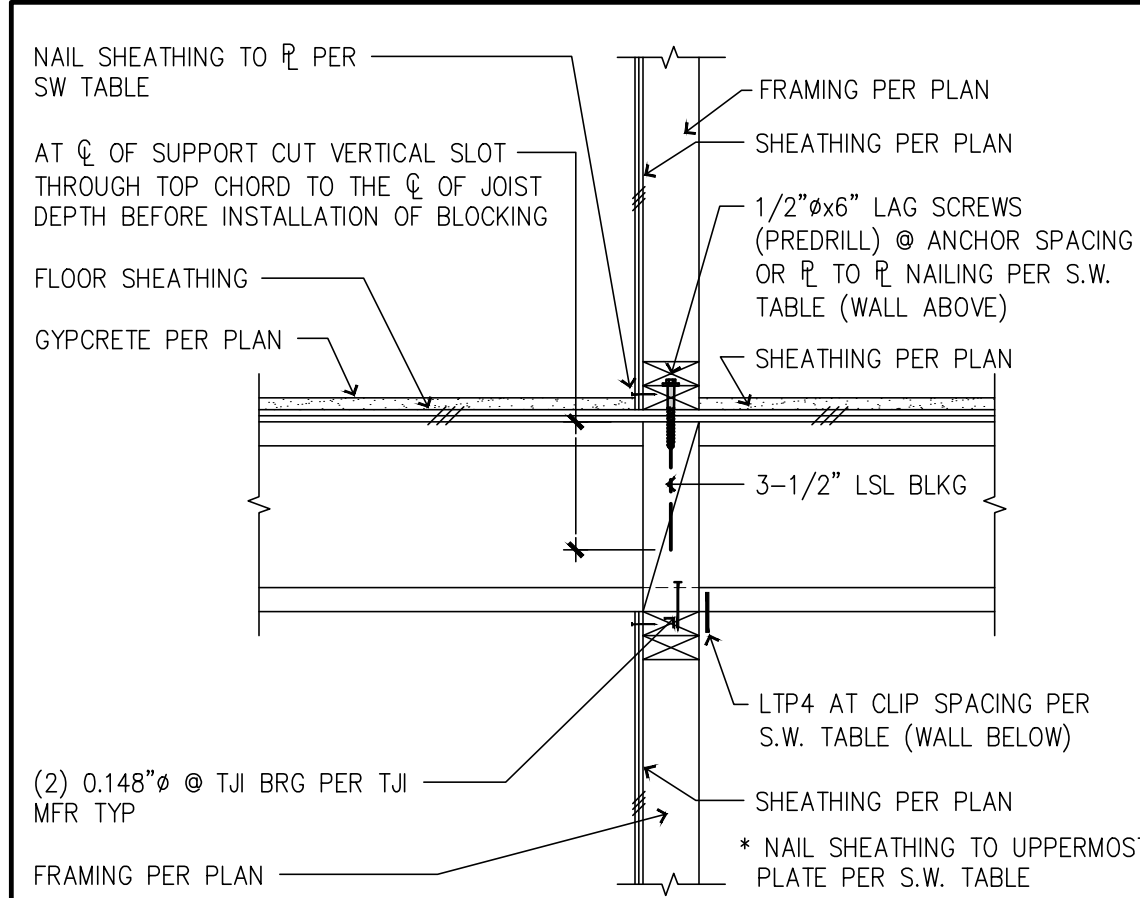


18 TYP CONTINUOUS TJI AT DROPPED BM SUPPORT

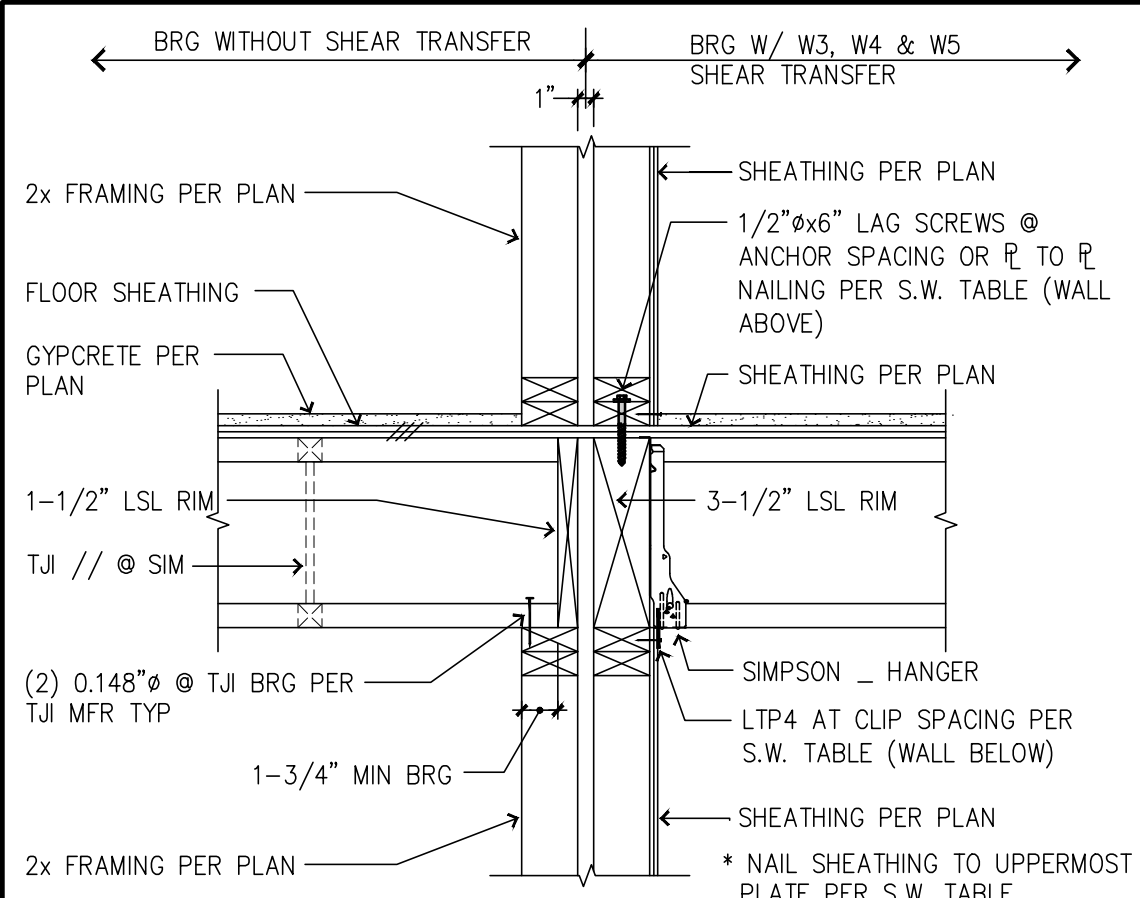
14 INTERIOR WALL NON-BEARING (W3, W4 & W5 SHEAR TRANSFER)



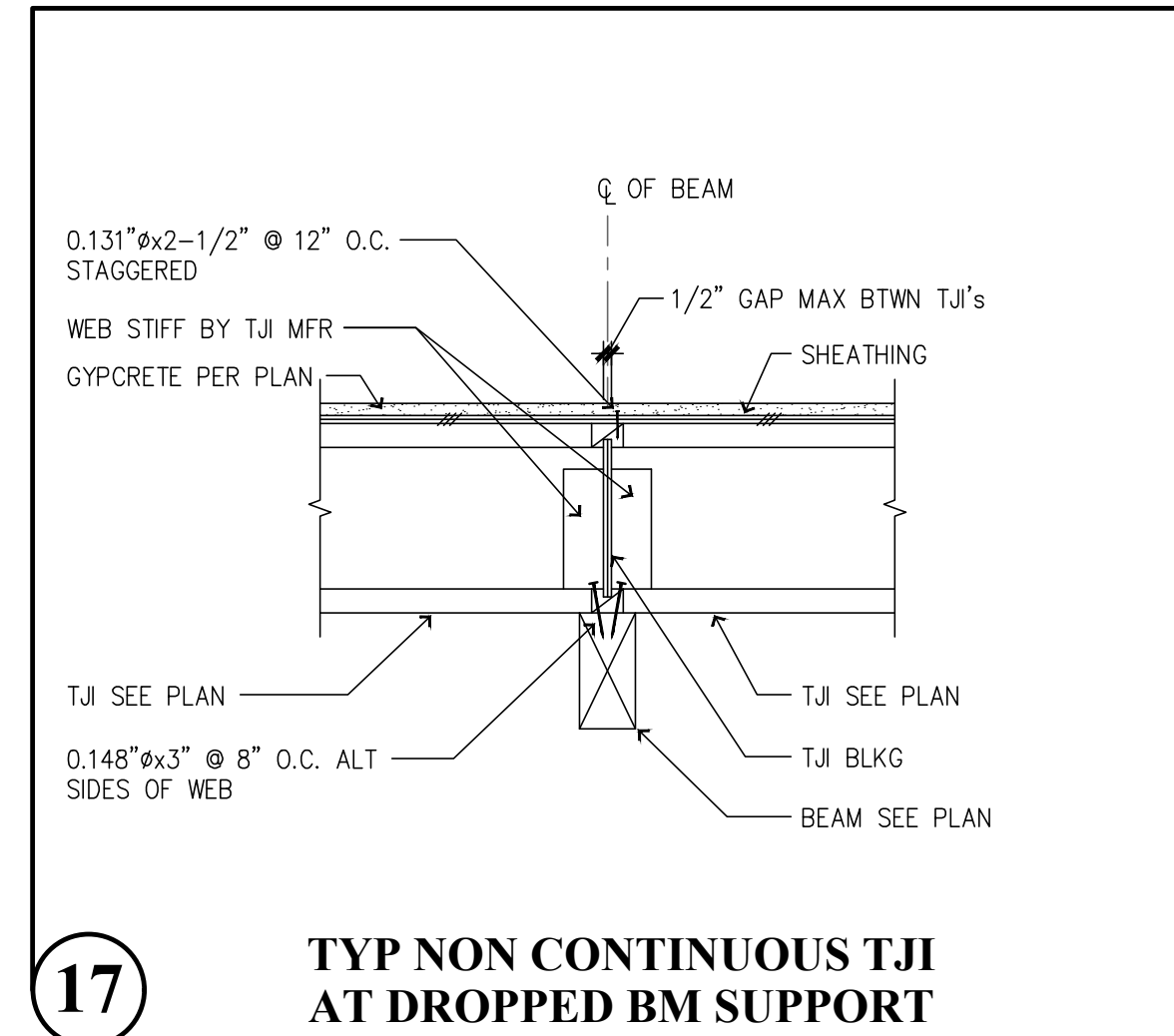
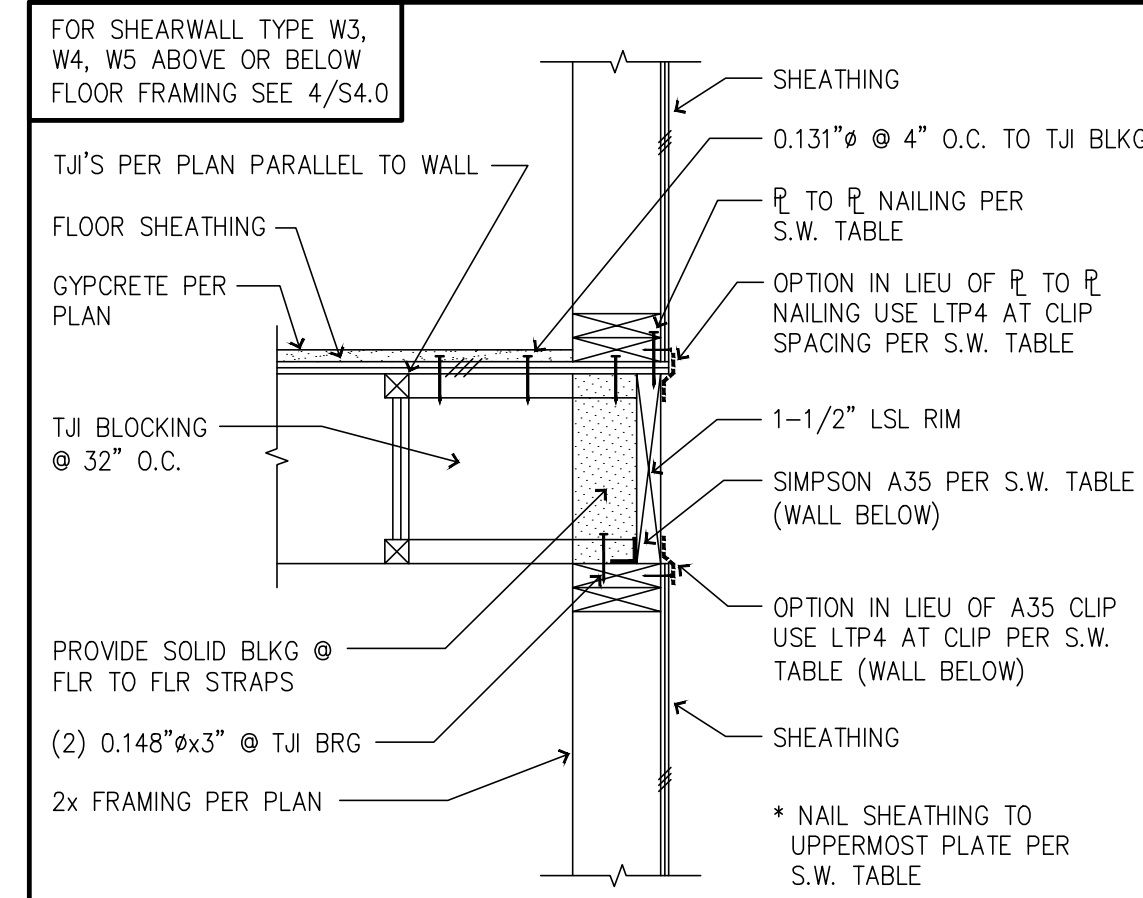
10 INTERIOR BEARING EA SIDE (W3, W4 & W5 SHEAR TRANSFER)



6 PARTY WALL BEARING EA SIDE (W3, W4 & W5 SHEAR TRANSFER)

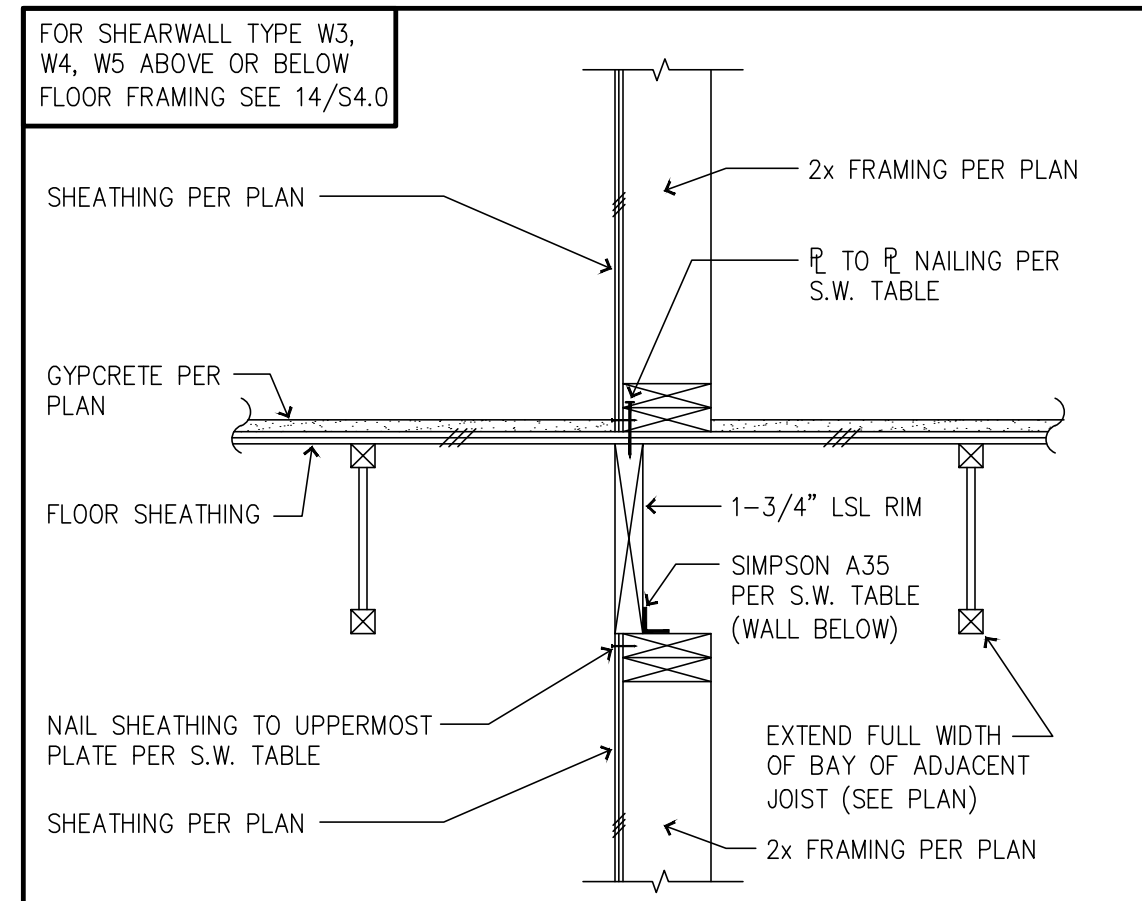


2 TYP TJI FLOOR JOIST PARALLEL TO WALL (W1, W2 SHEAR TRANSFER)

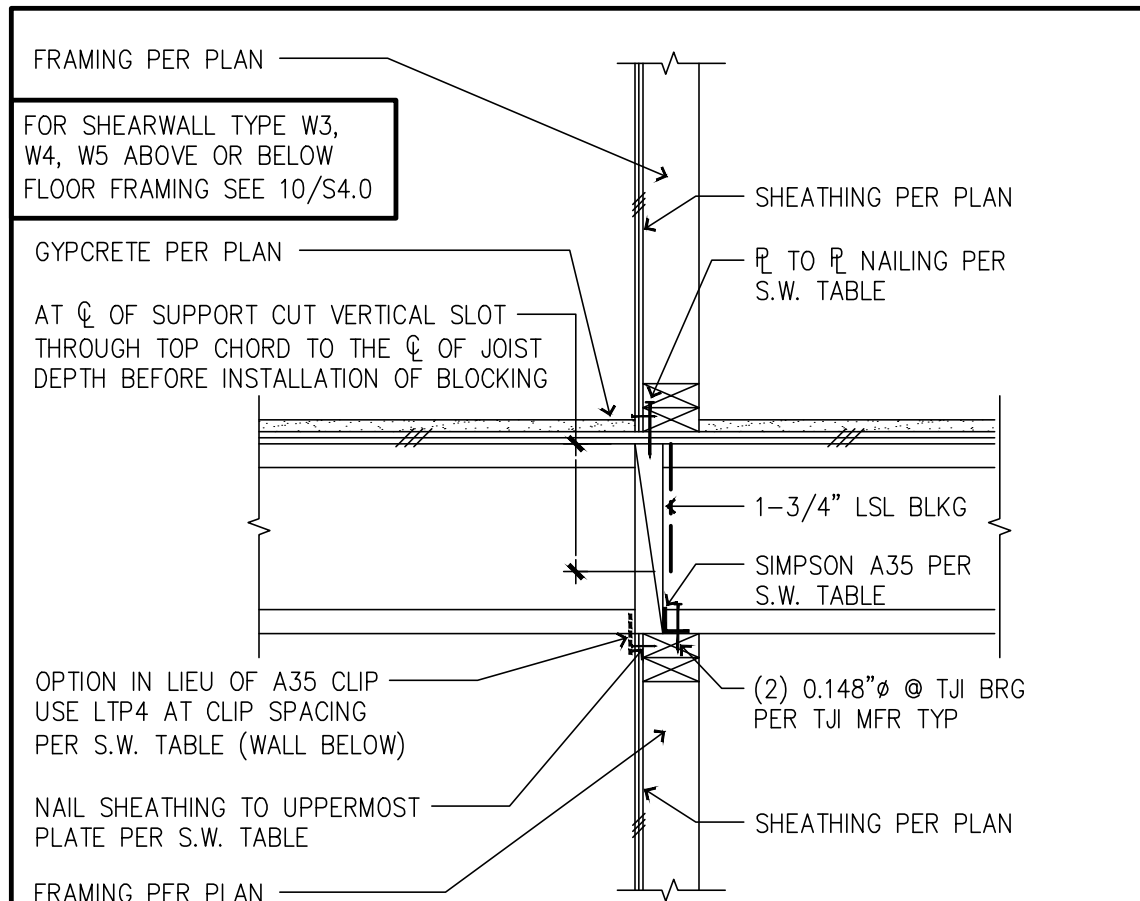


17 TYP NON CONTINUOUS TJI AT DROPPED BM SUPPORT

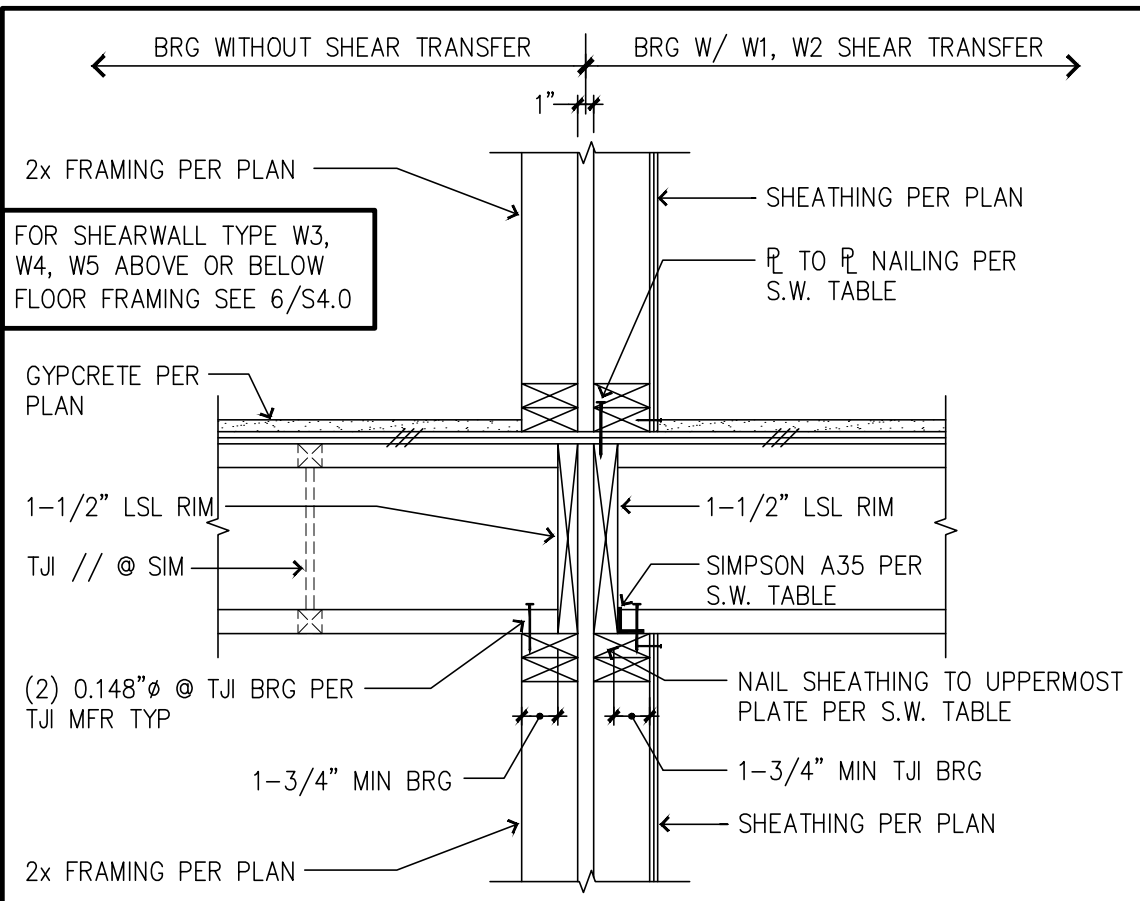
13 TYP INTERIOR WALL NON-BEARING (W1, W2 SHEAR TRANSFER)



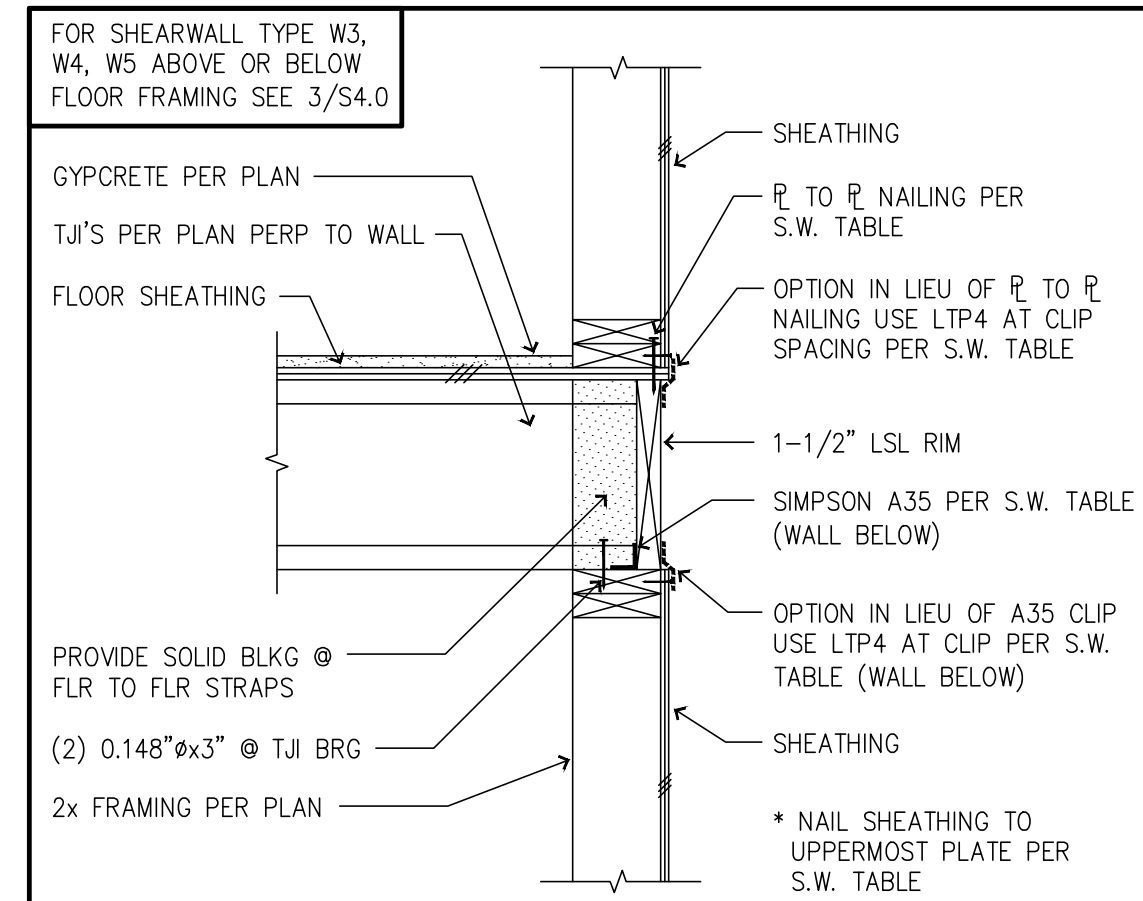
9 TYP INTERIOR BEARING EA SIDE (W1, W2 SHEAR TRANSFER)

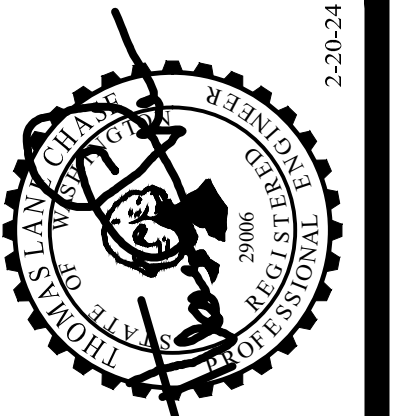


5 TYP PARTY WALL BEARING EA SIDE (W1, W2 SHEAR TRANSFER)



1 TYP TJI FLOOR JOIST PERPENDICULAR TO WALL (W1, W2 SHEAR TRANSFER)





THOMAS L. CHASE, PE
MARTIN R. OMAN, PE, SE
OLEG G. KONDRATYUK, PE

Revisions to this sheet:

Bradley Heights Apartments
202 27th Ave SE
Puyallup, Washington

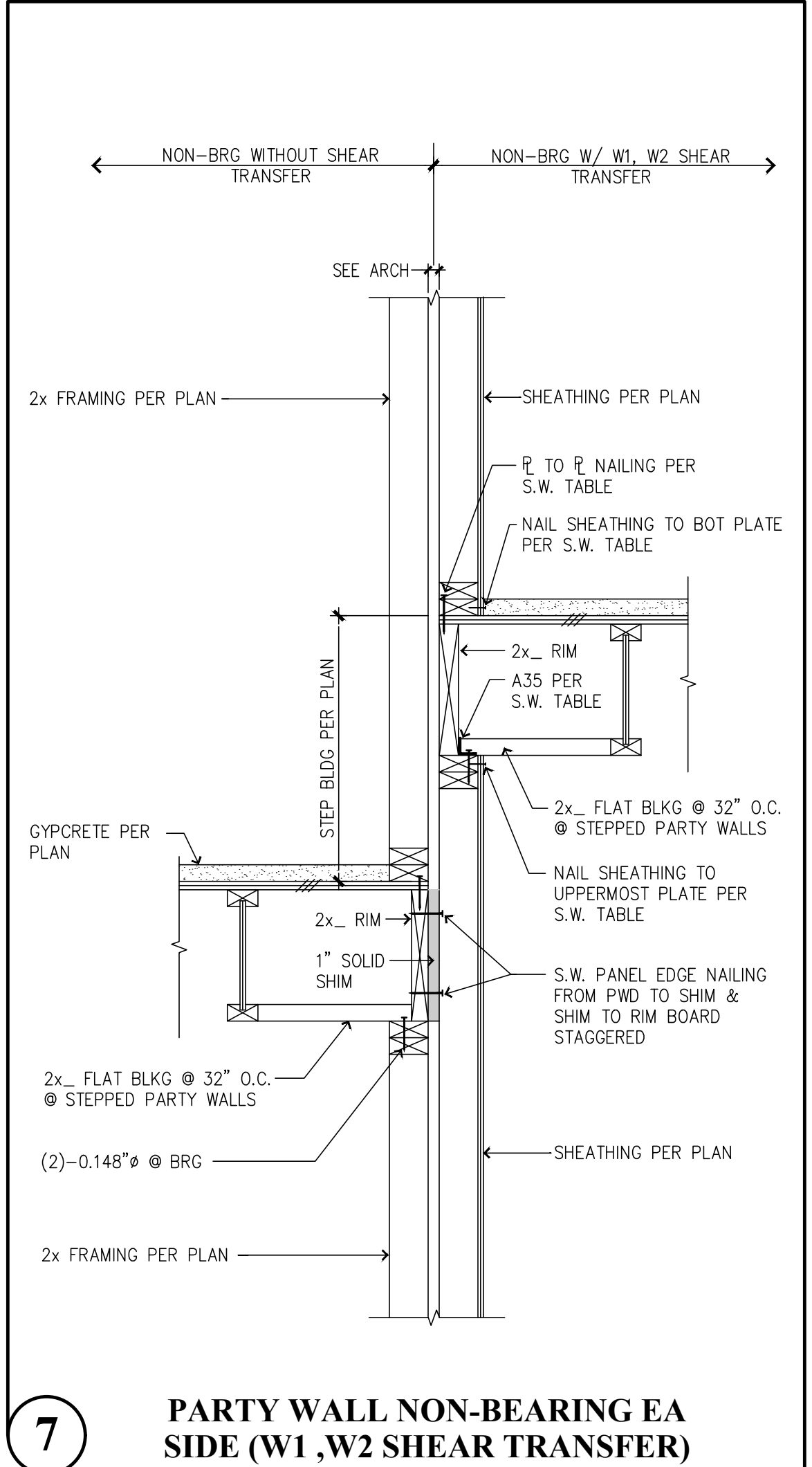
Puyallup, Washington 98374
Ph. 253-314-9822
www.solutions4structures.com

Solutions 4 Structures
A Structural Engineering Corporation

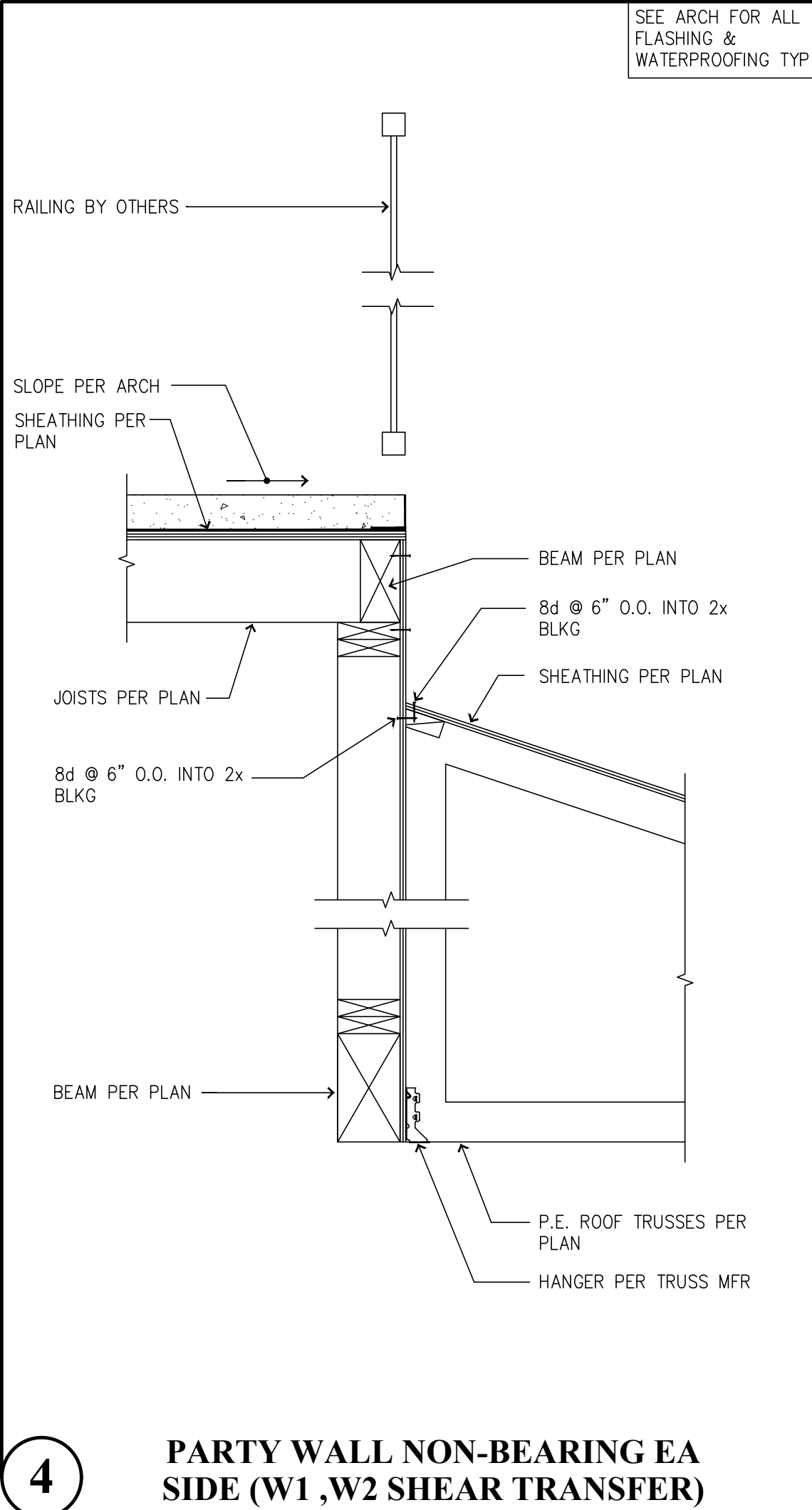
PROJECT NO. : 23.007
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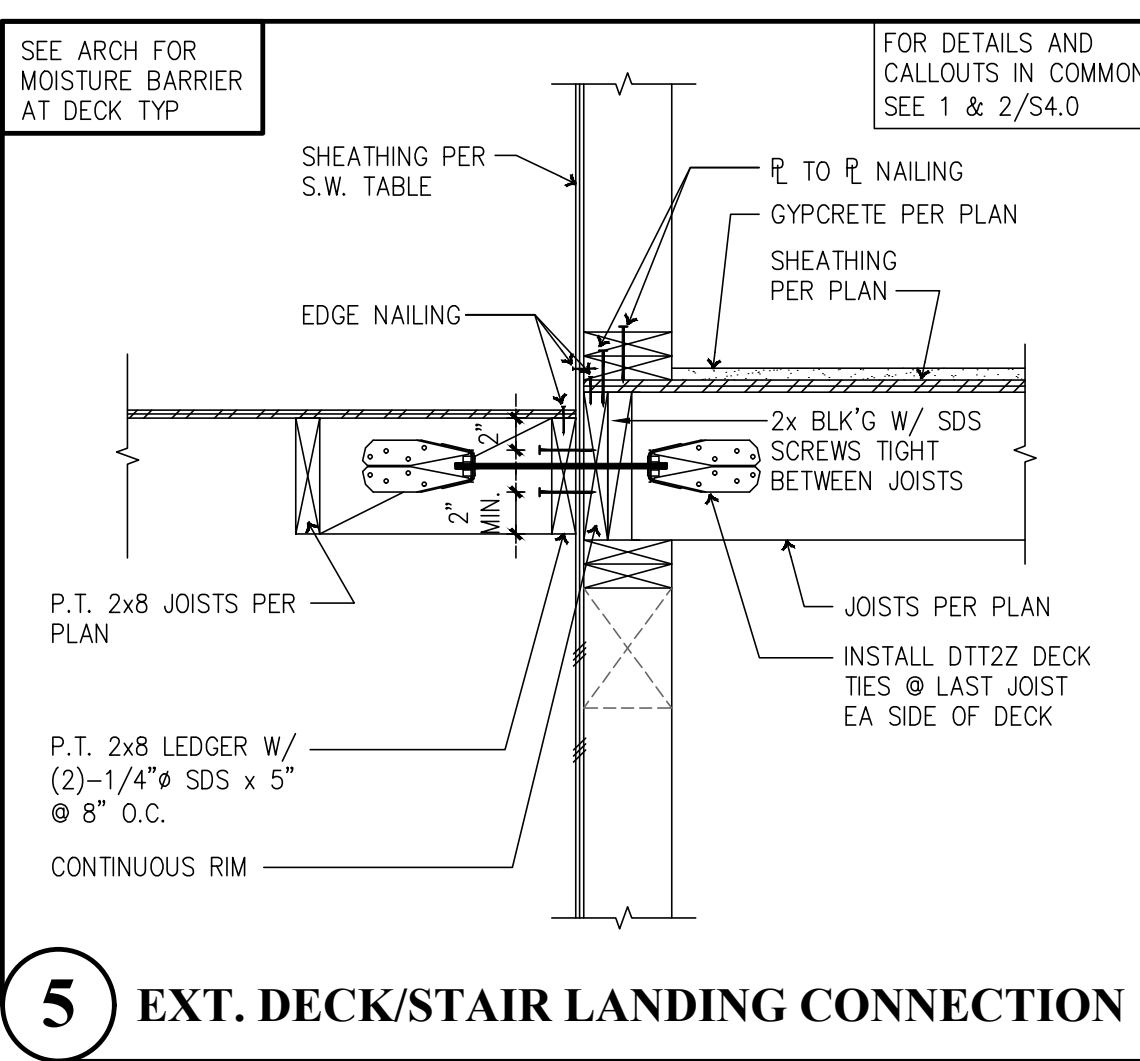
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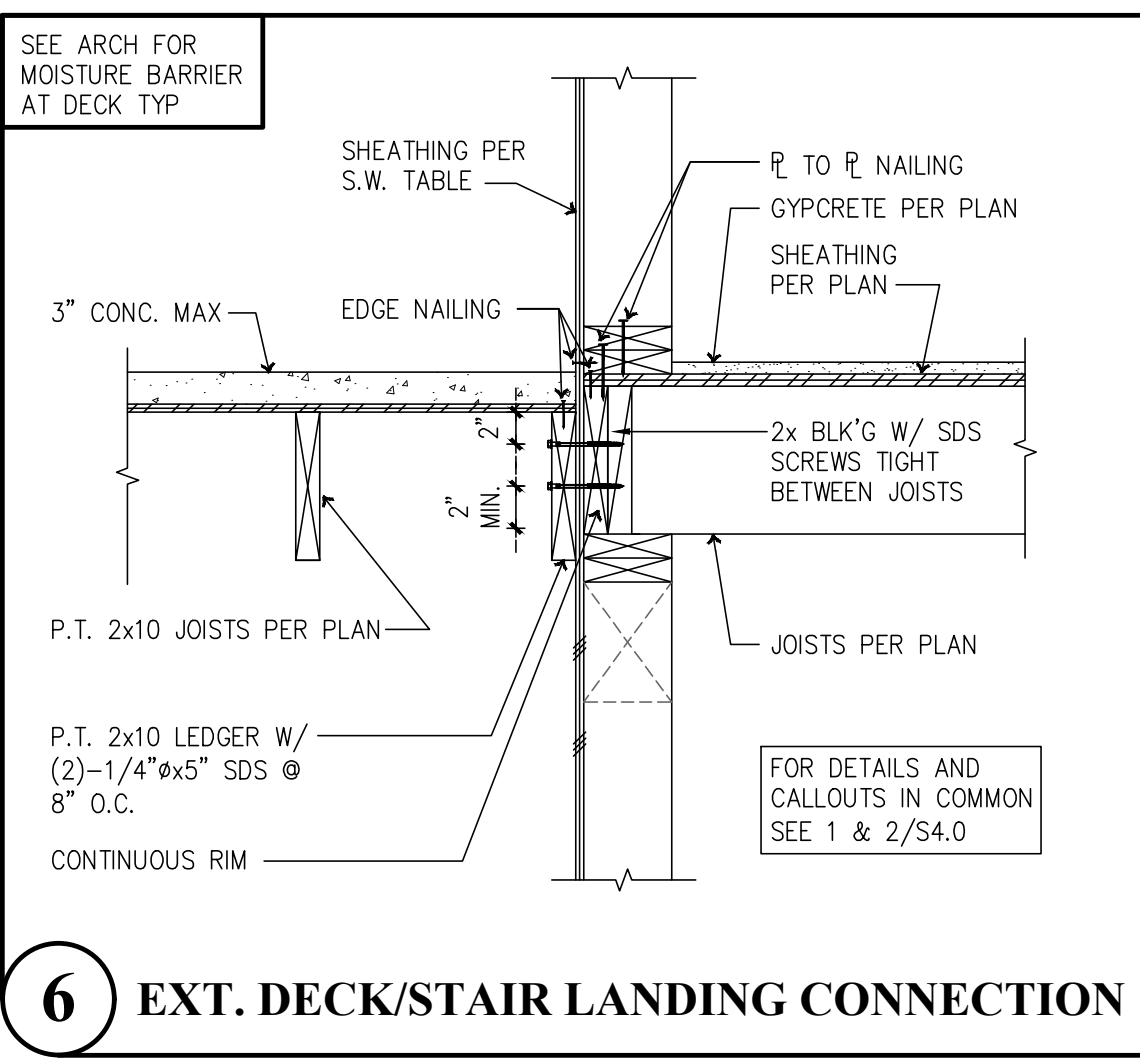
7 PARTY WALL NON-BEARING EA SIDE (W1, W2 SHEAR TRANSFER)



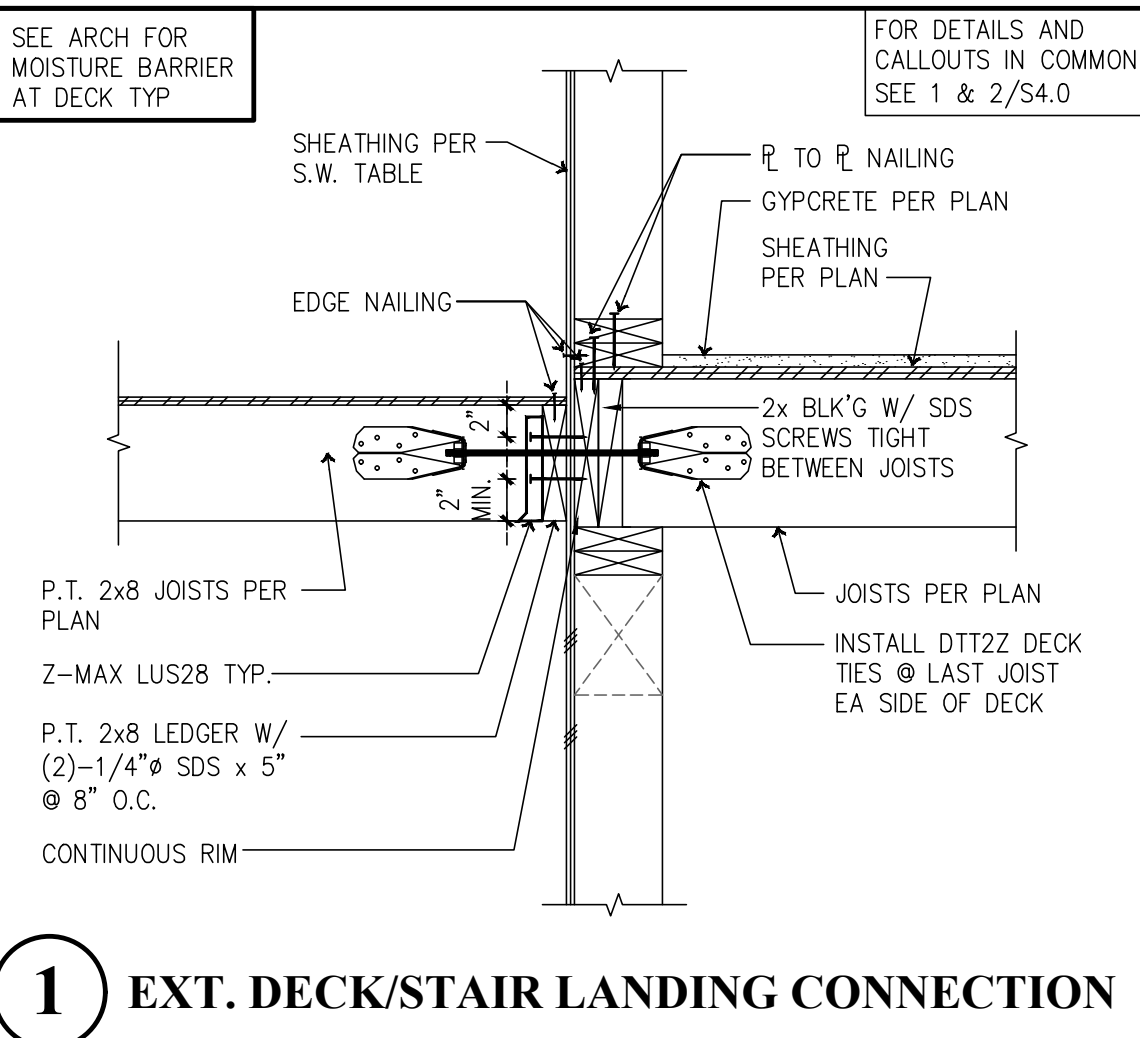
4 PARTY WALL NON-BEARING EA SIDE (W1, W2 SHEAR TRANSFER)



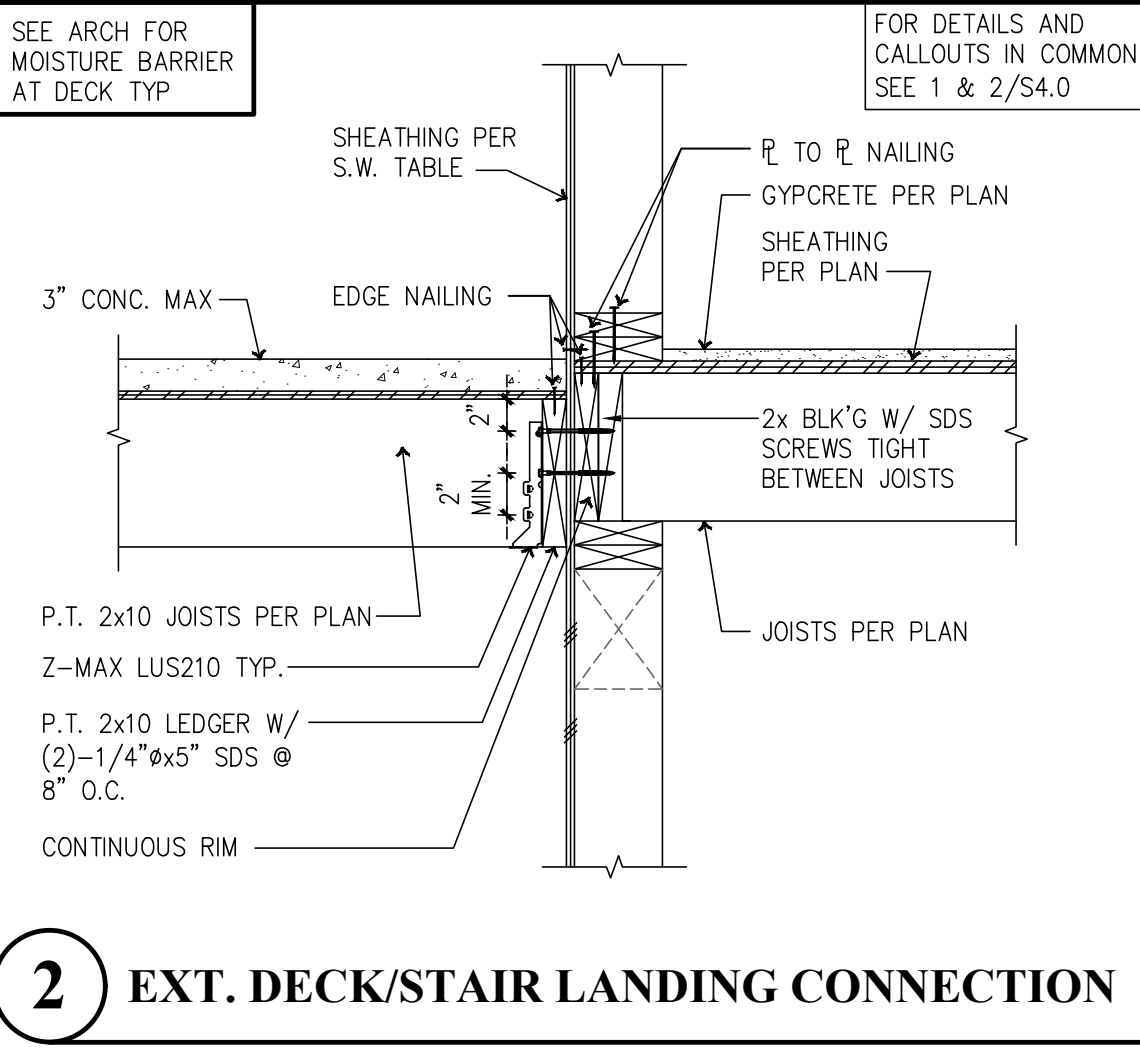
5 EXT. DECK/STAIR LANDING CONNECTION



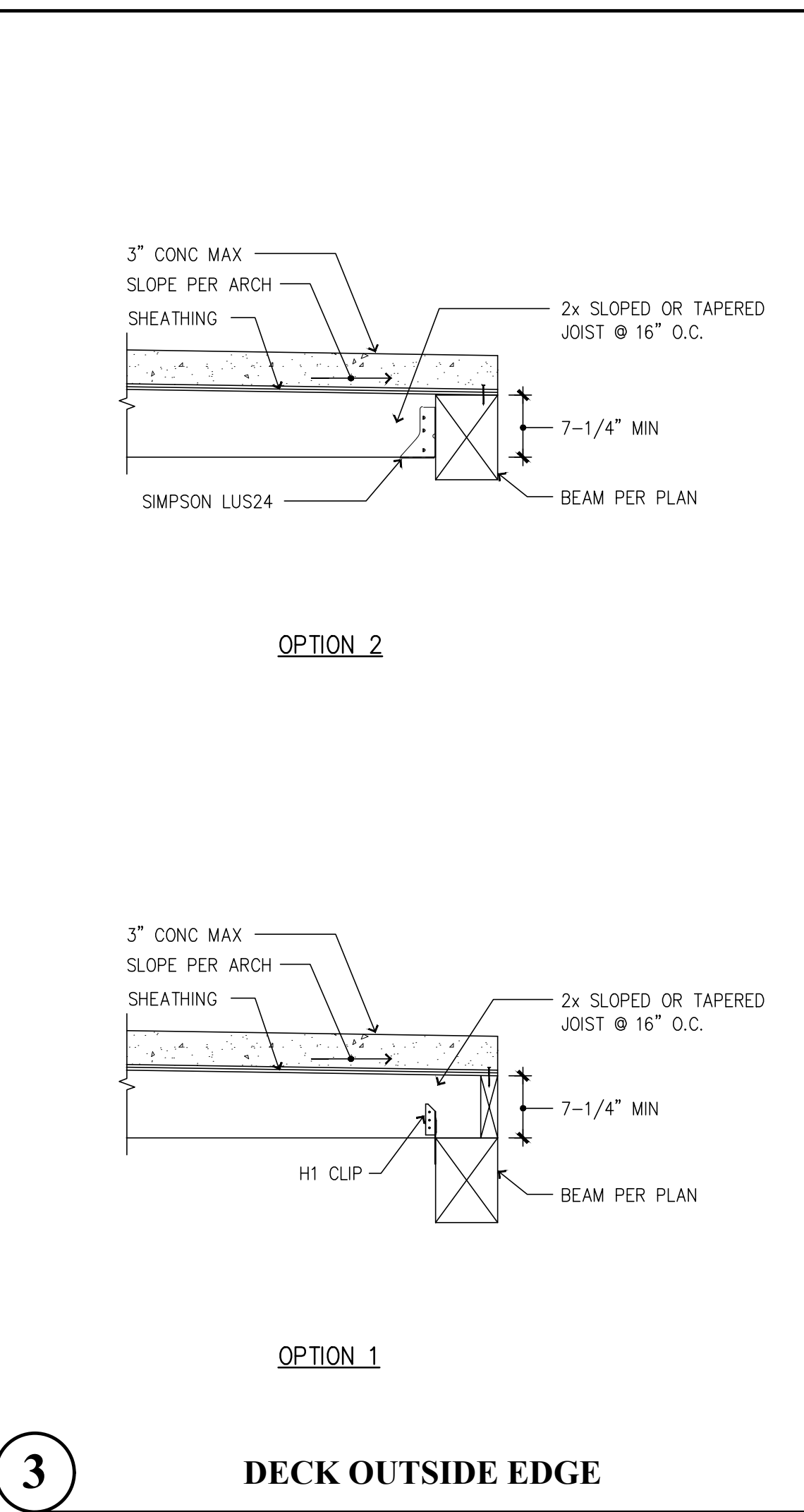
6 EXT. DECK/STAIR LANDING CONNECTION



1 EXT. DECK/STAIR LANDING CONNECTION



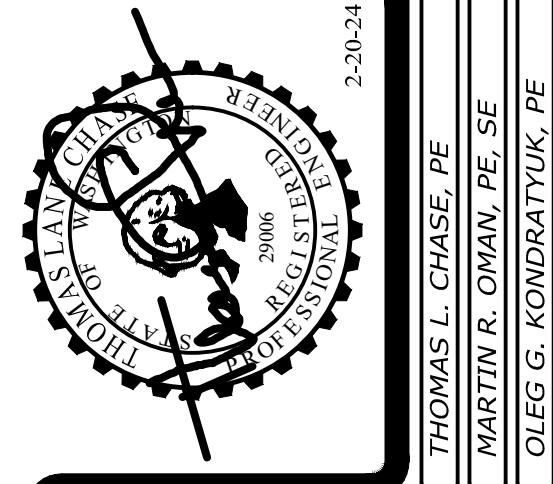
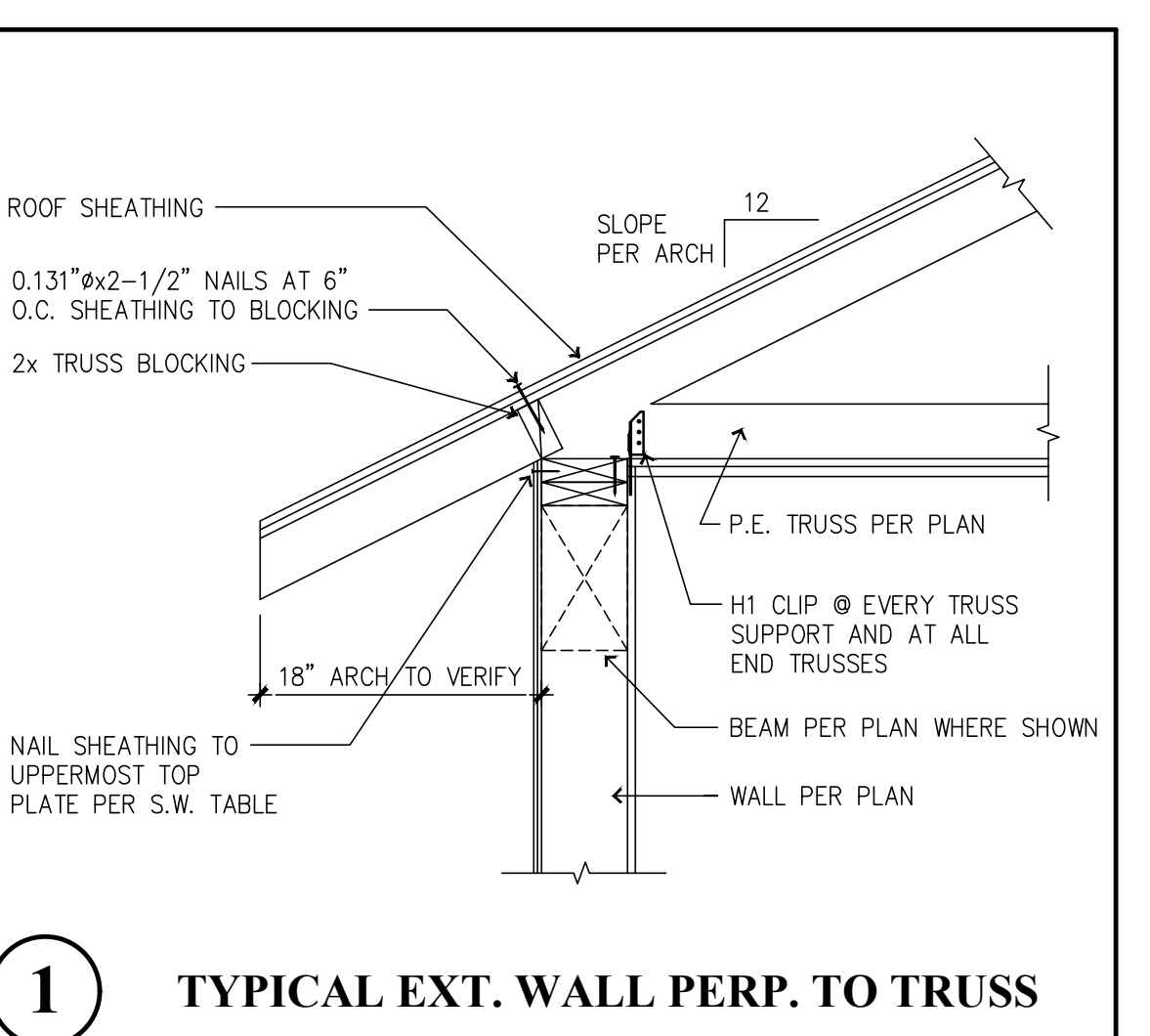
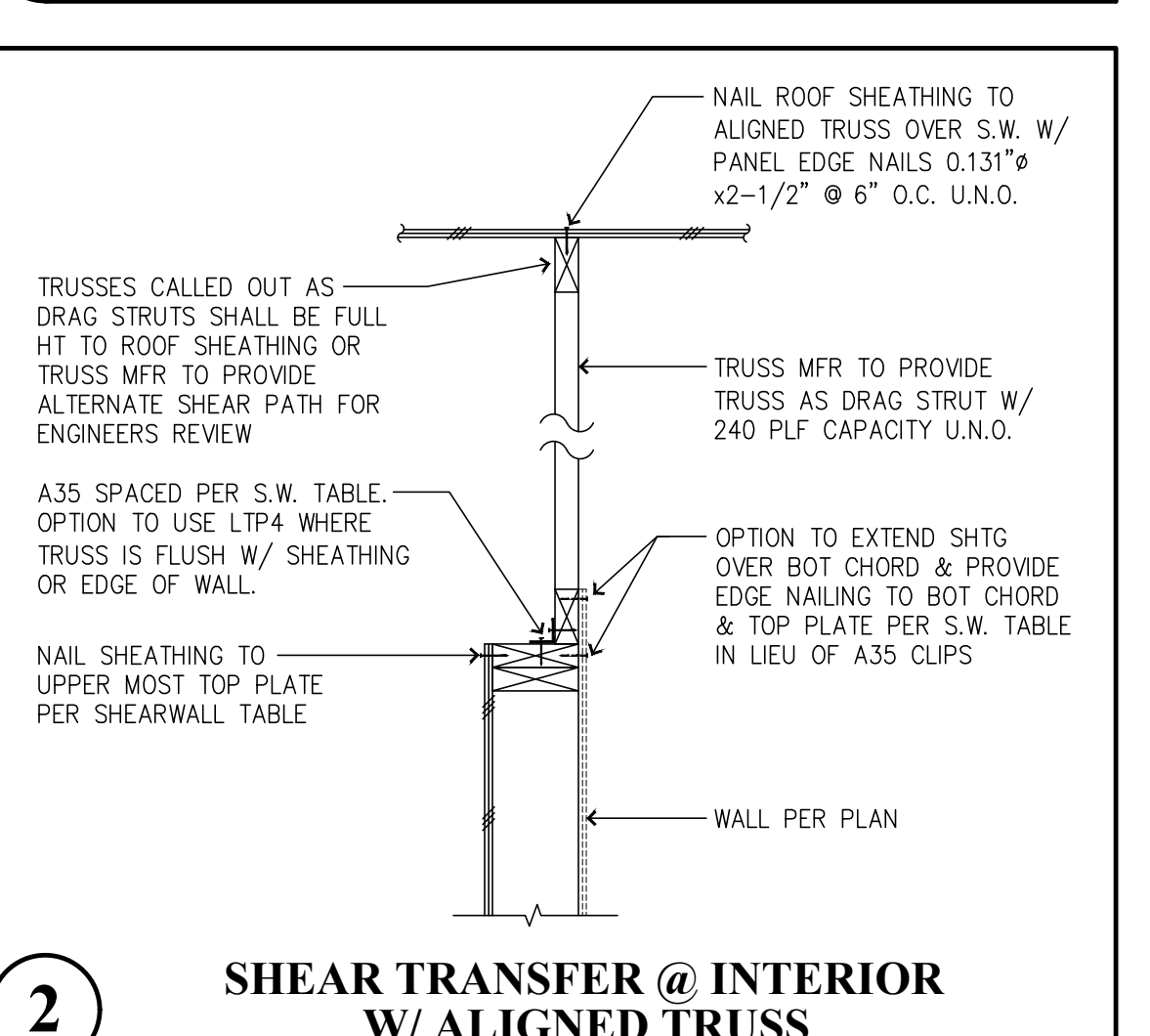
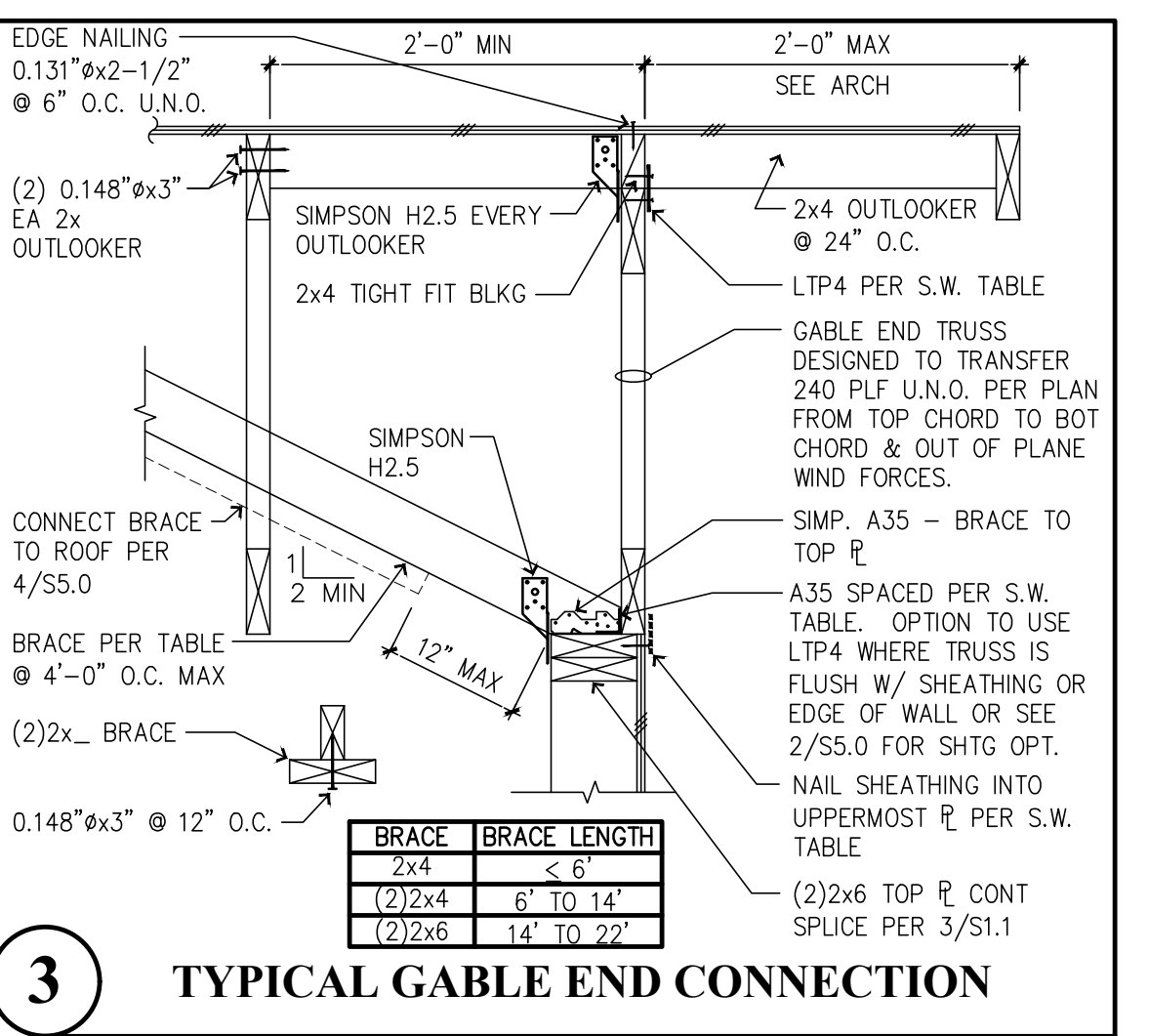
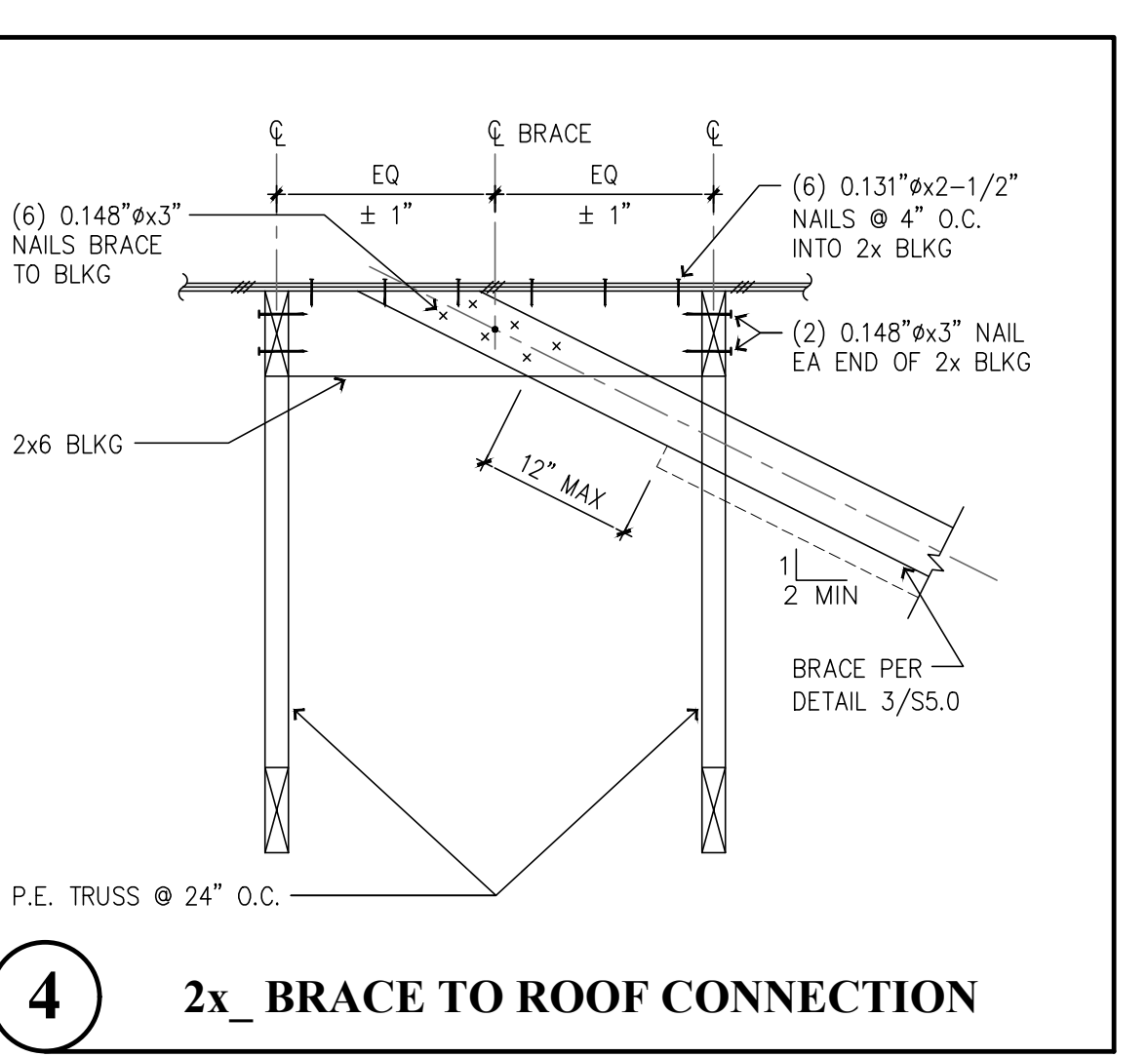
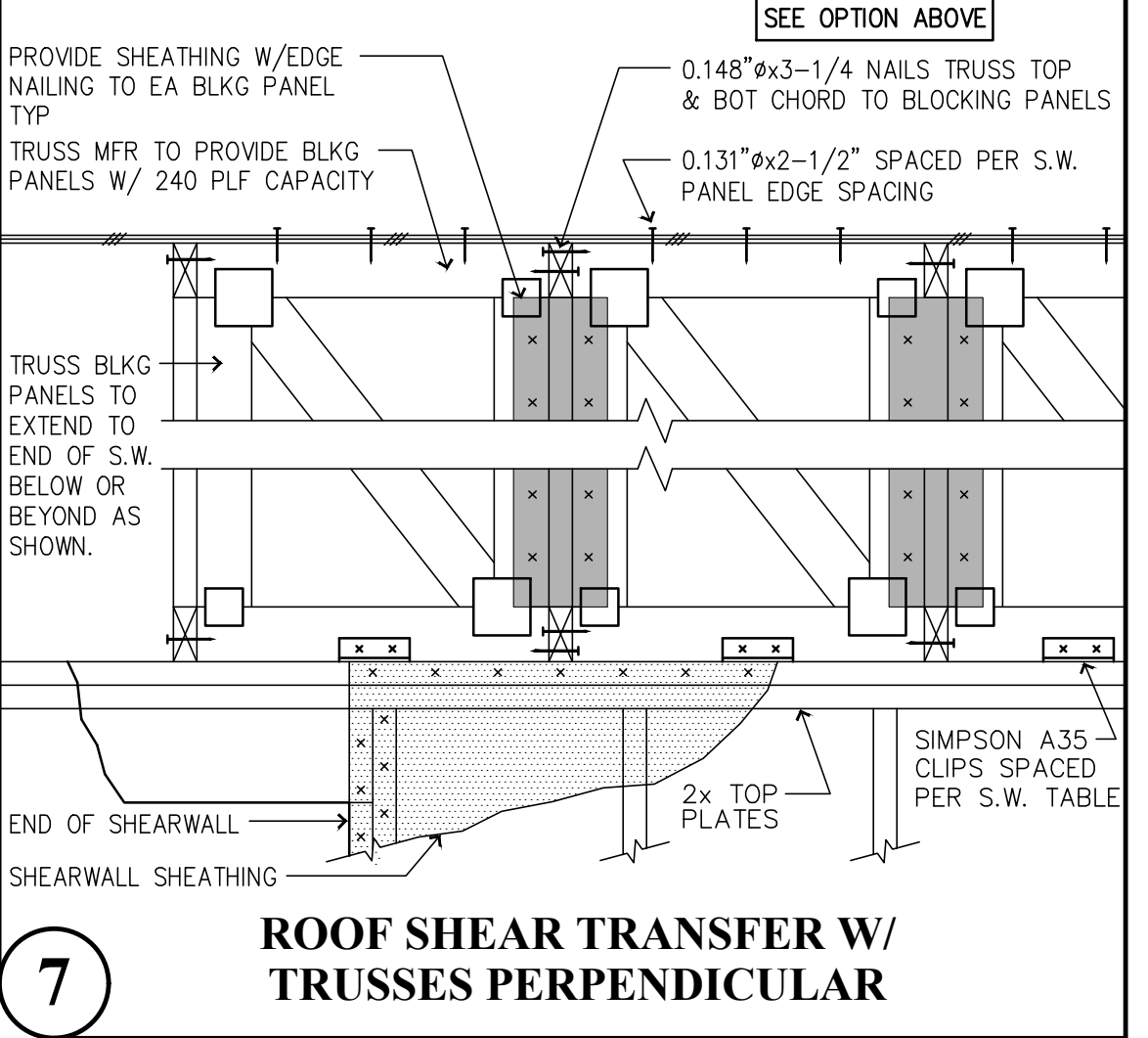
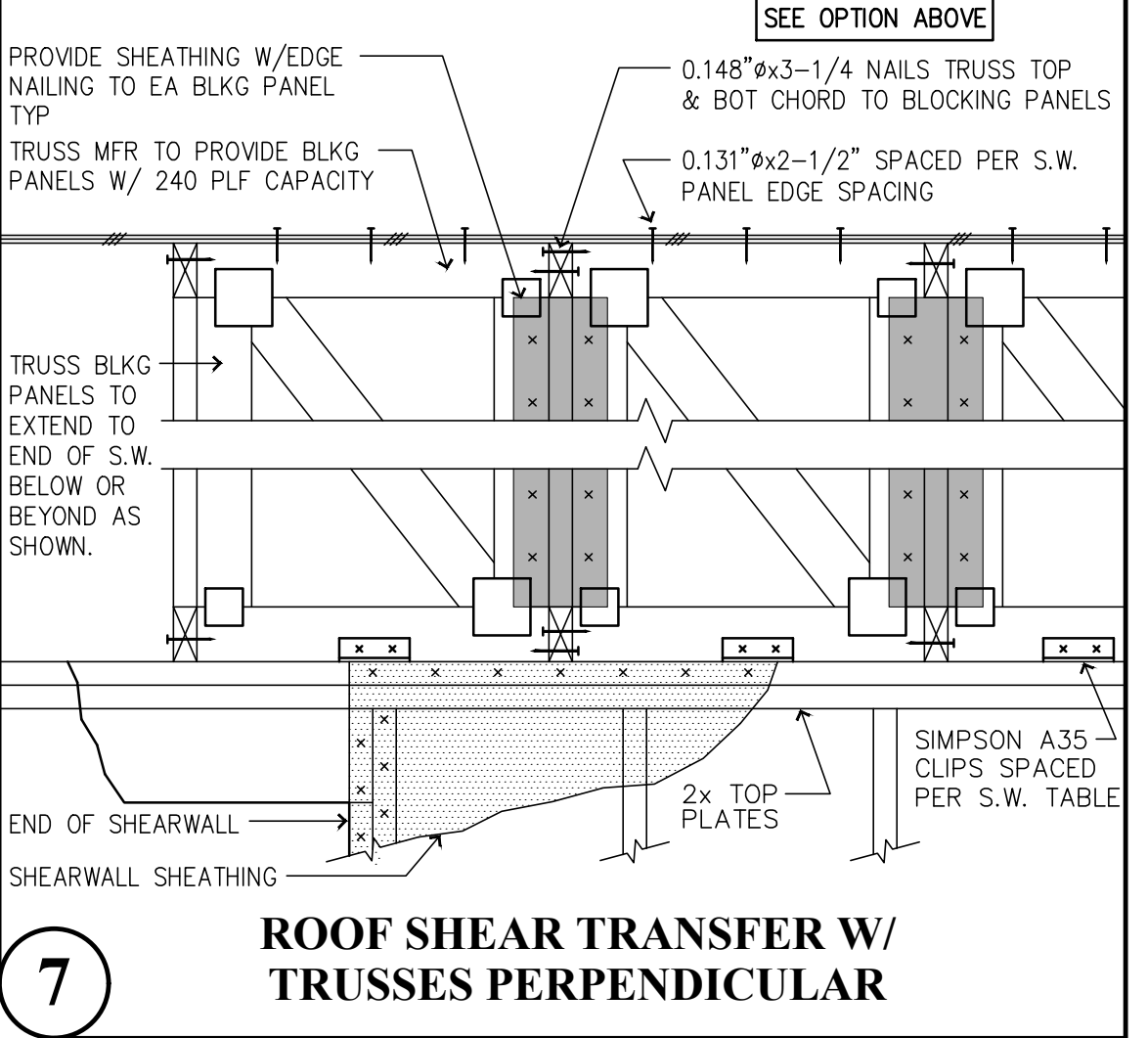
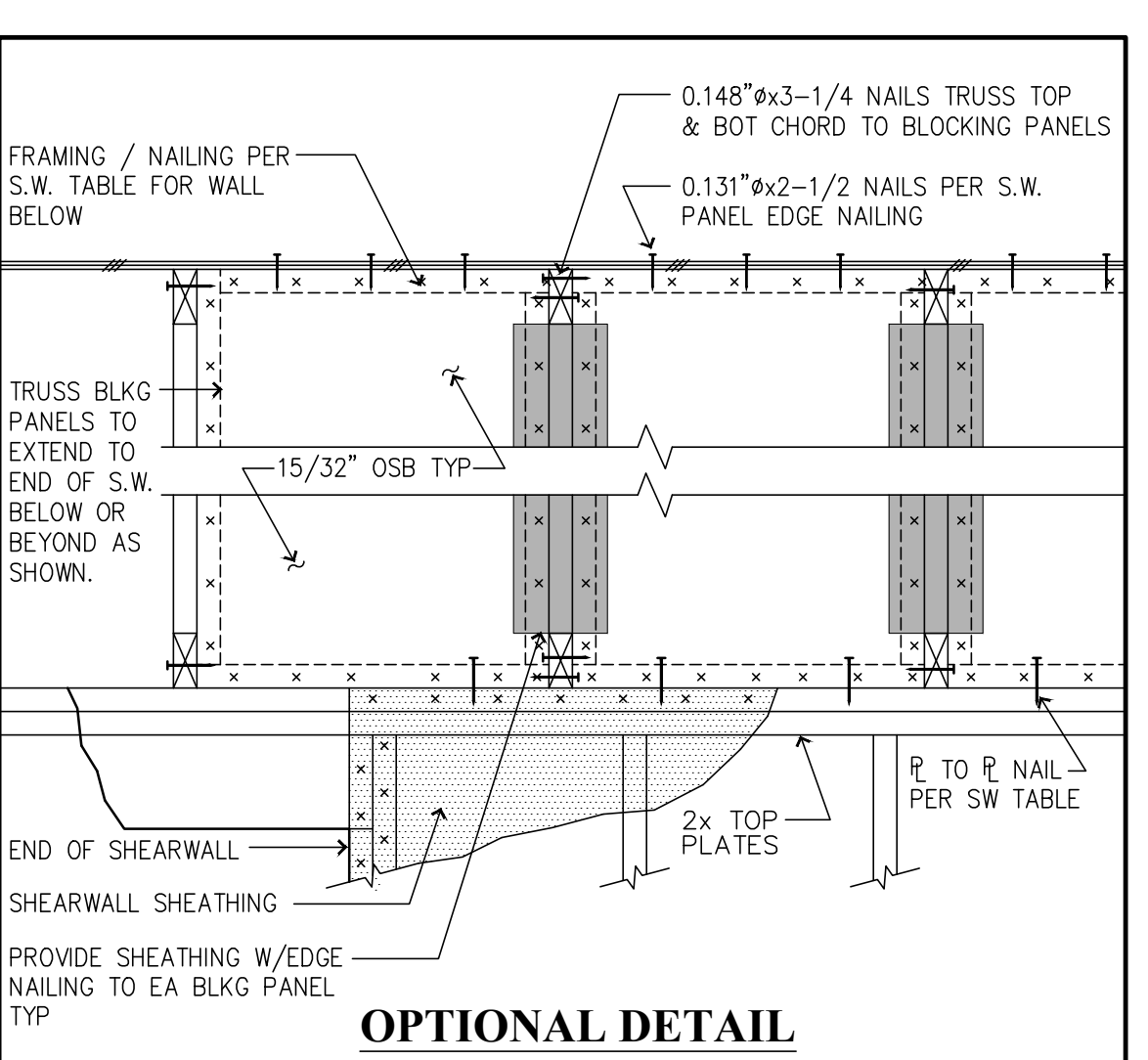
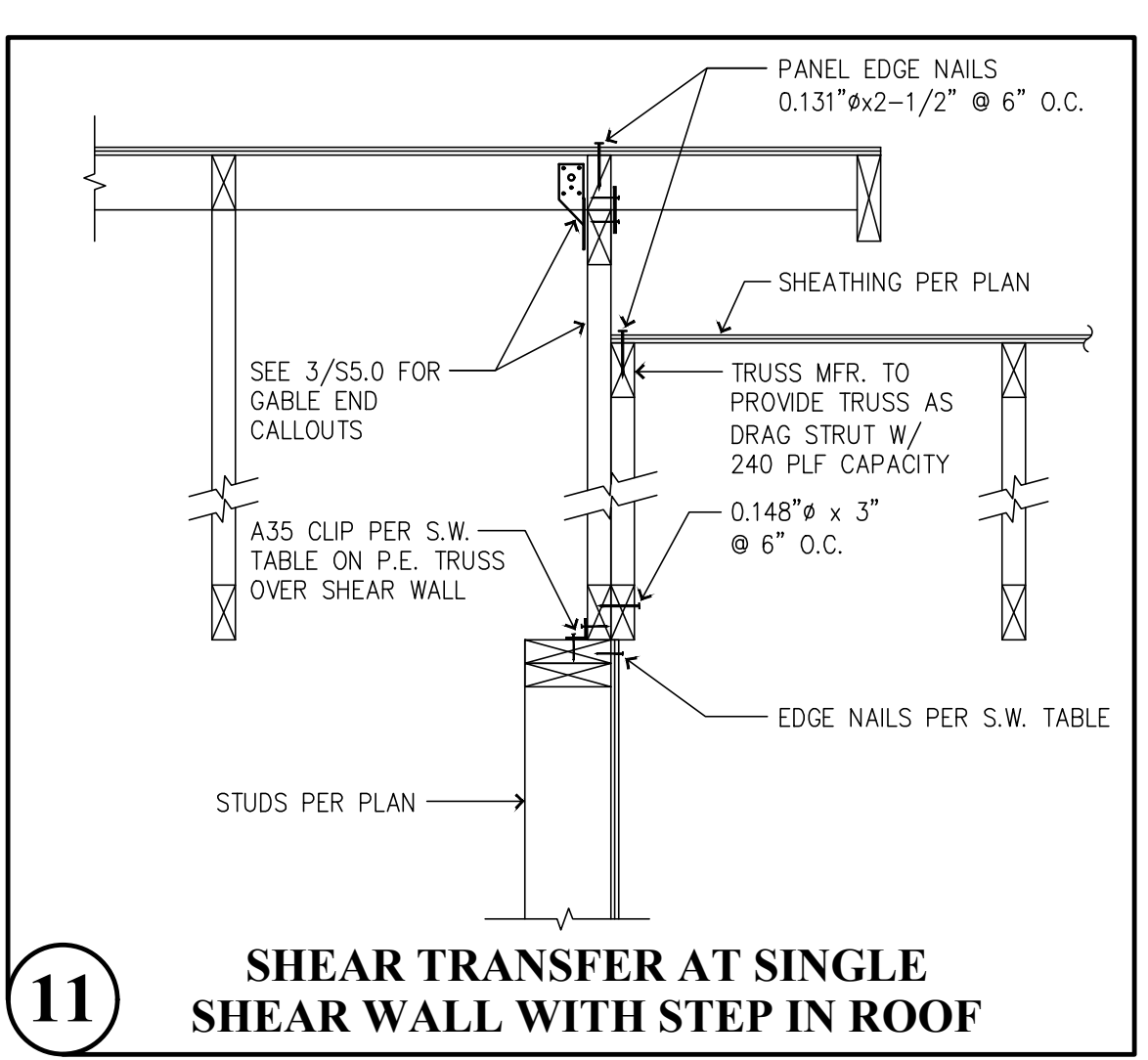
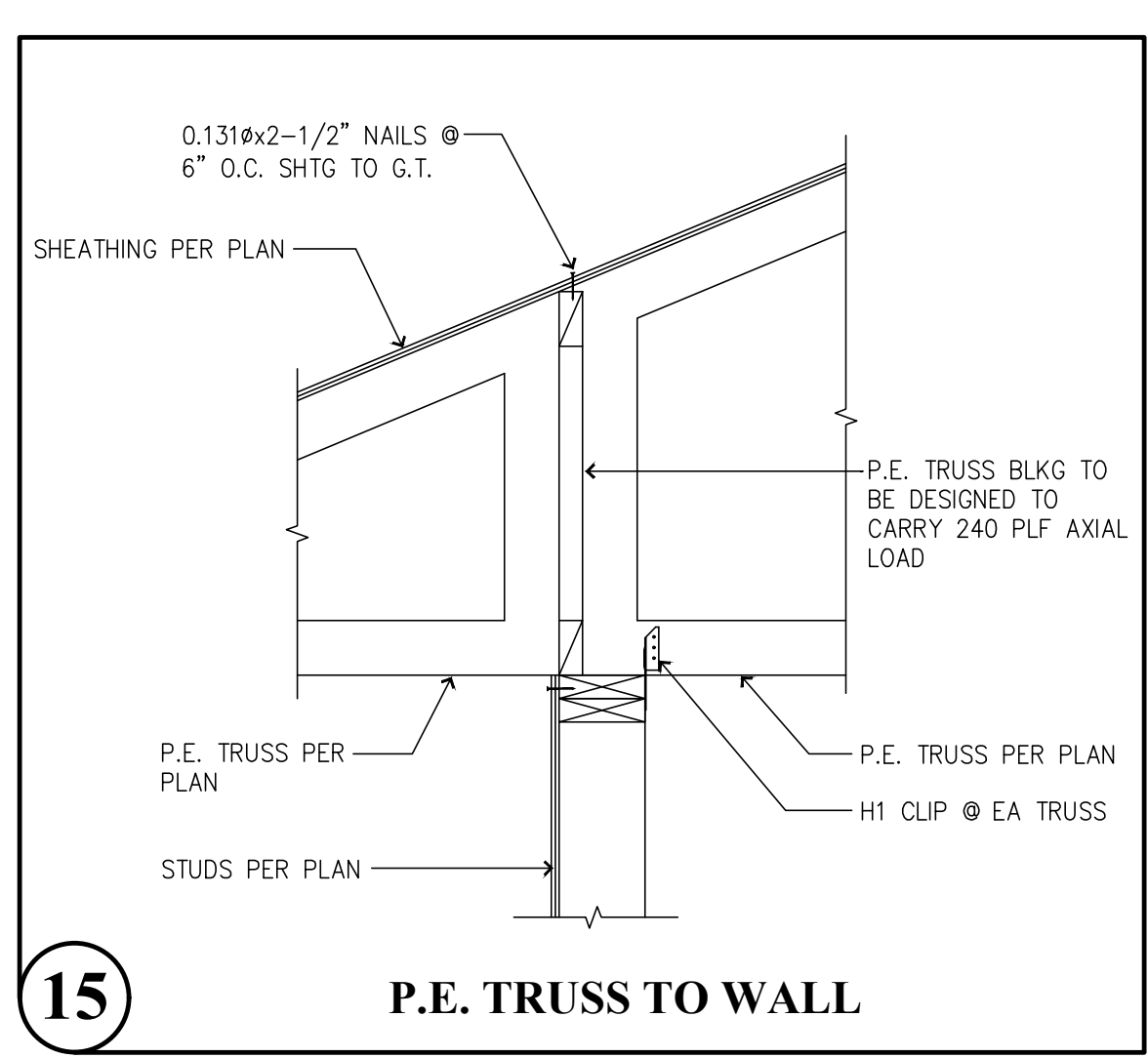
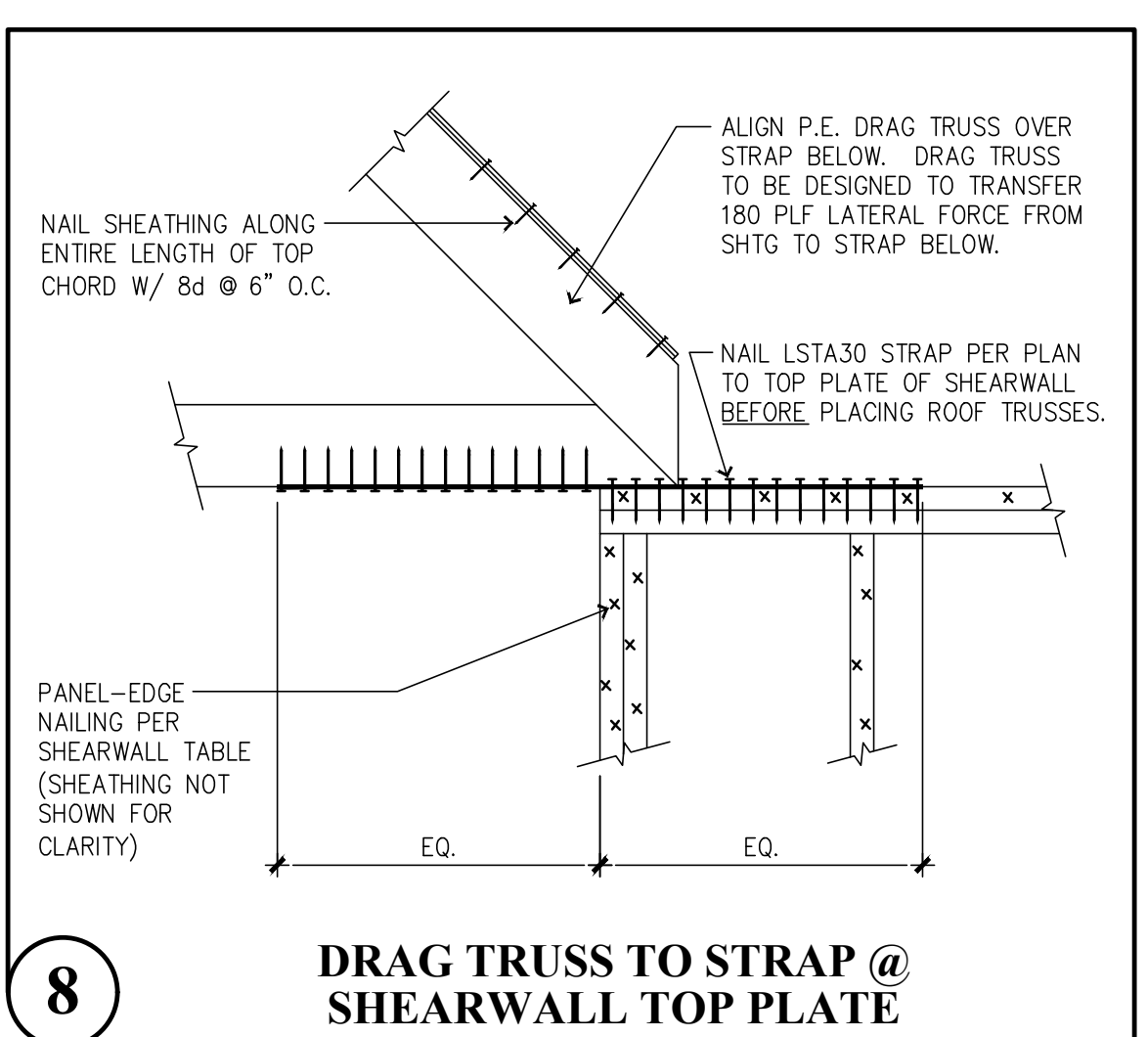
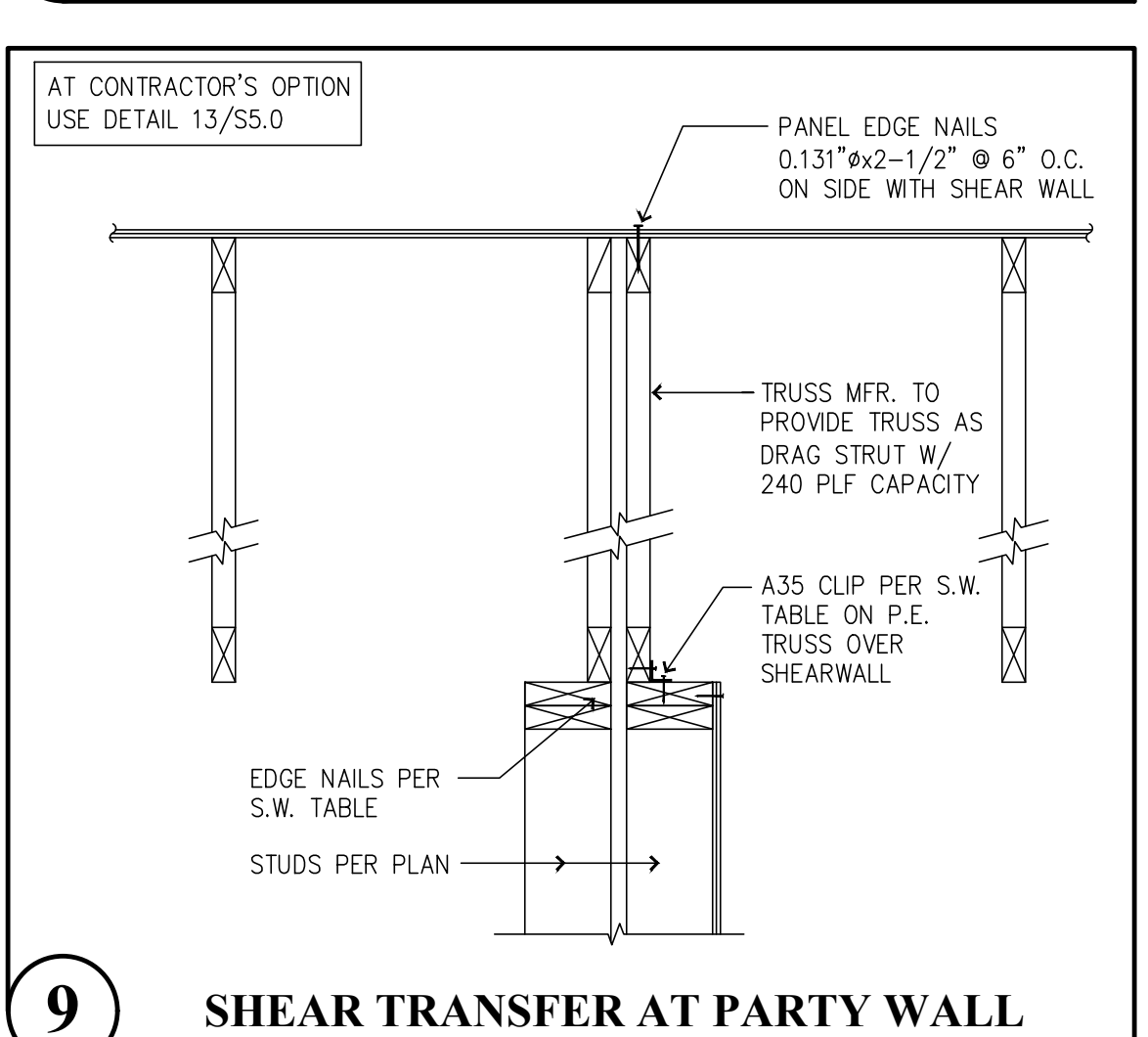
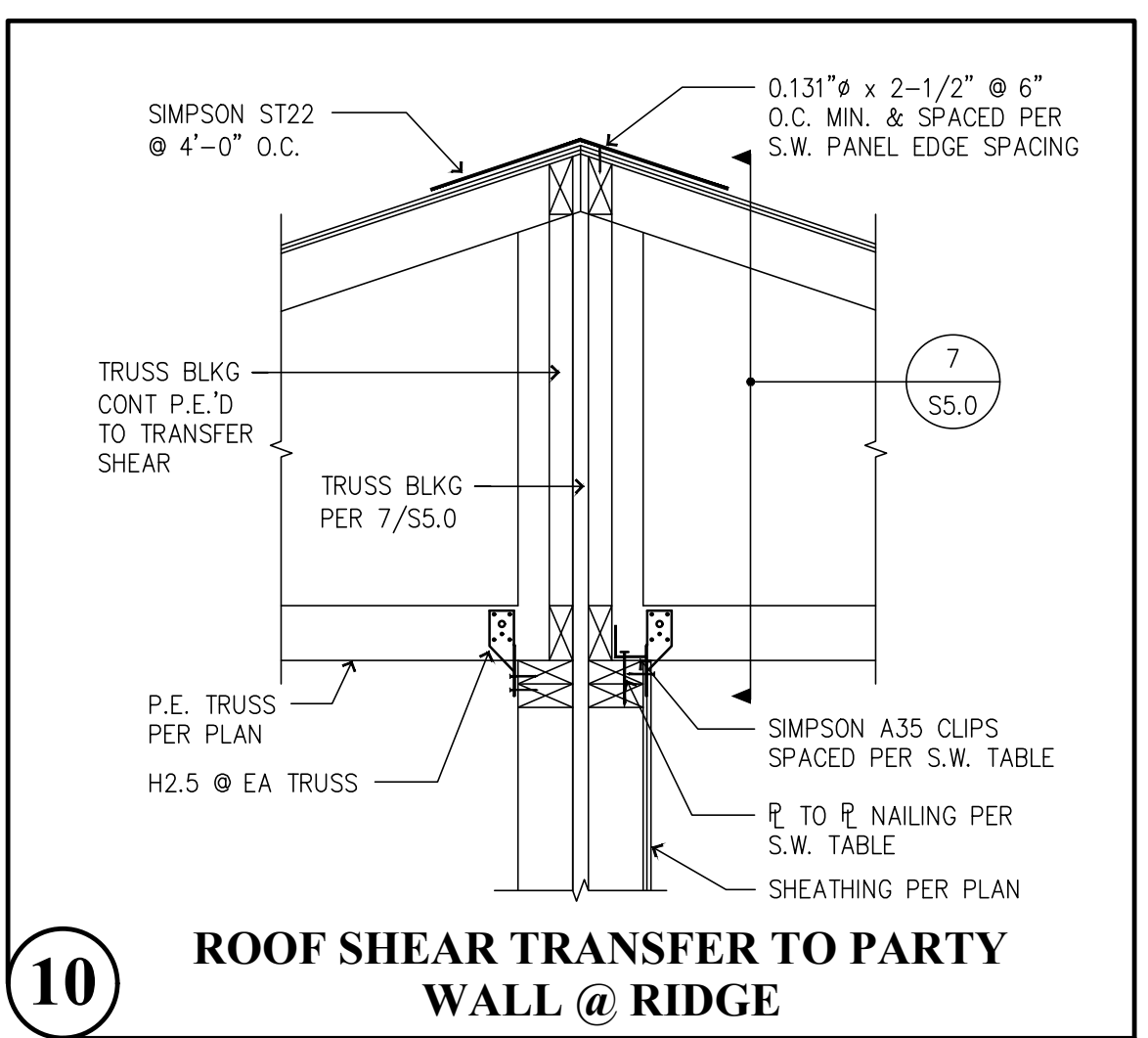
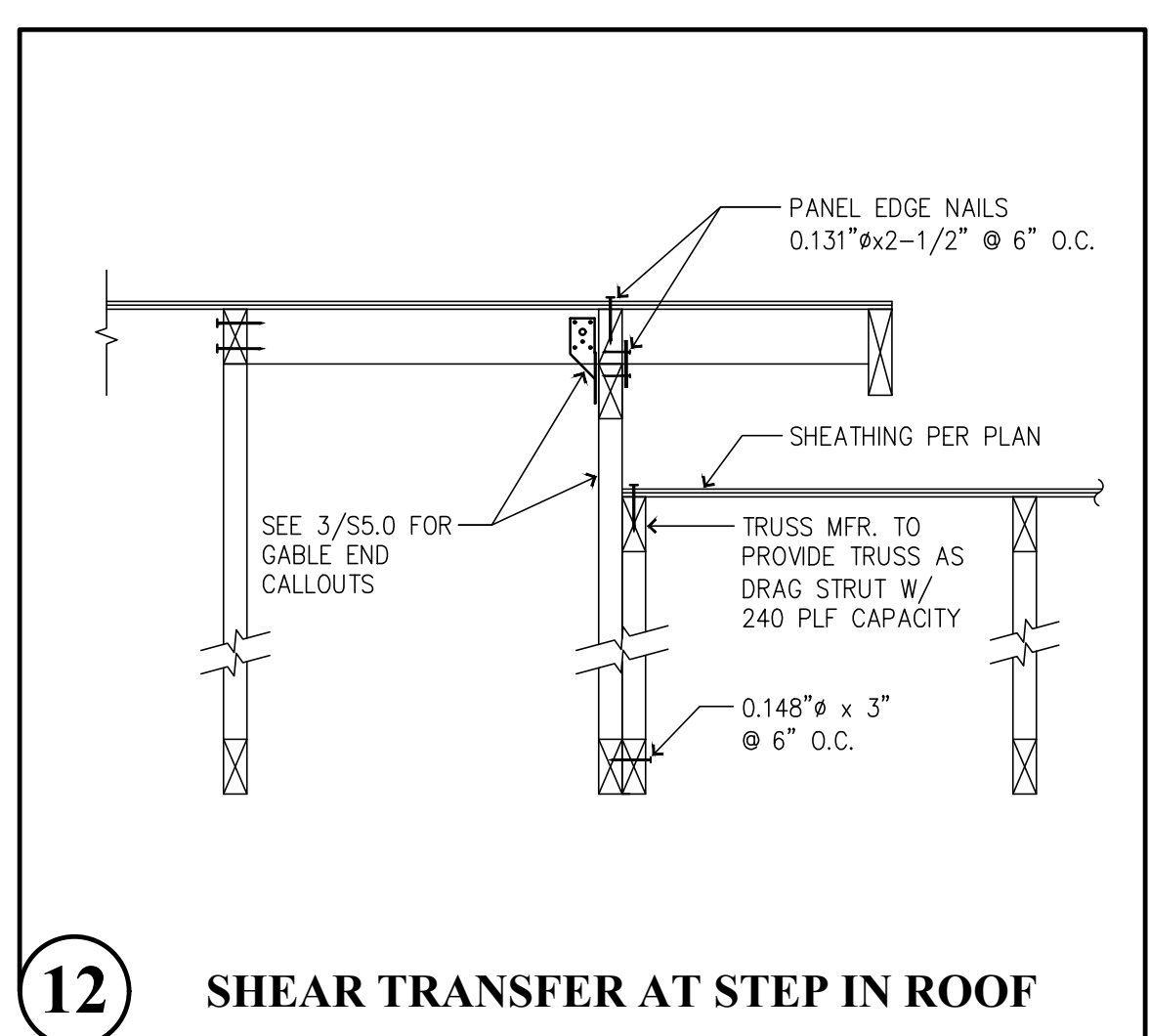
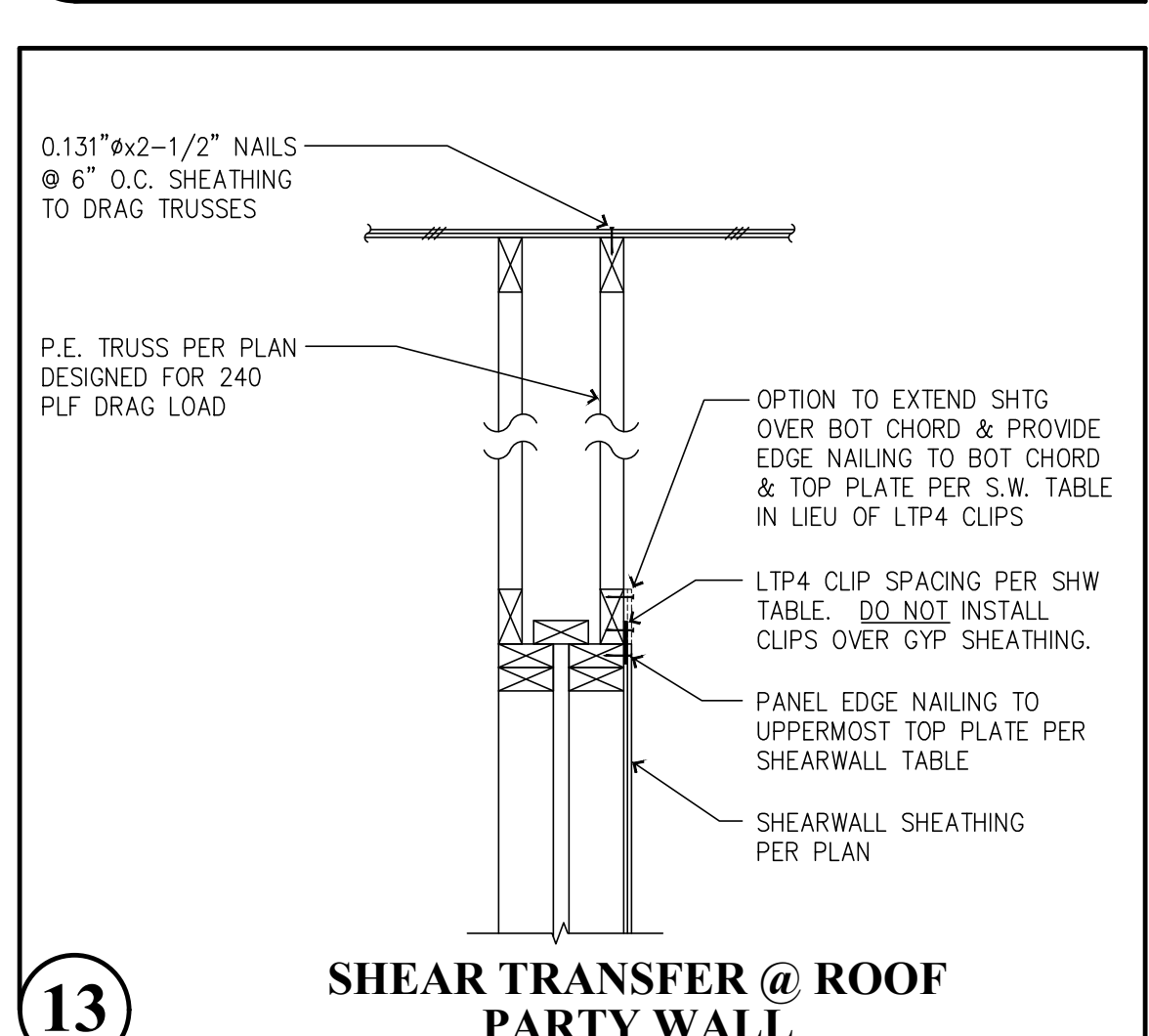
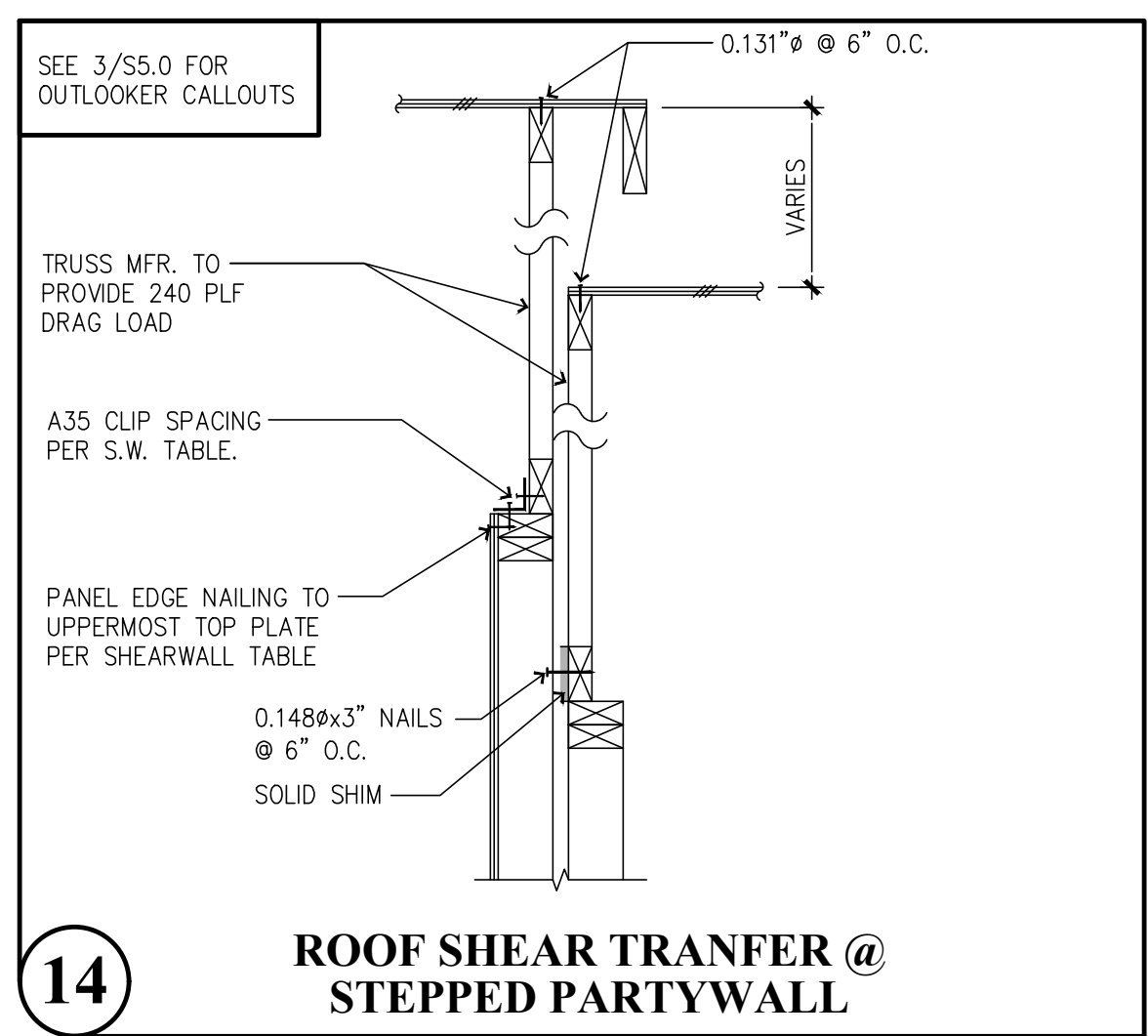
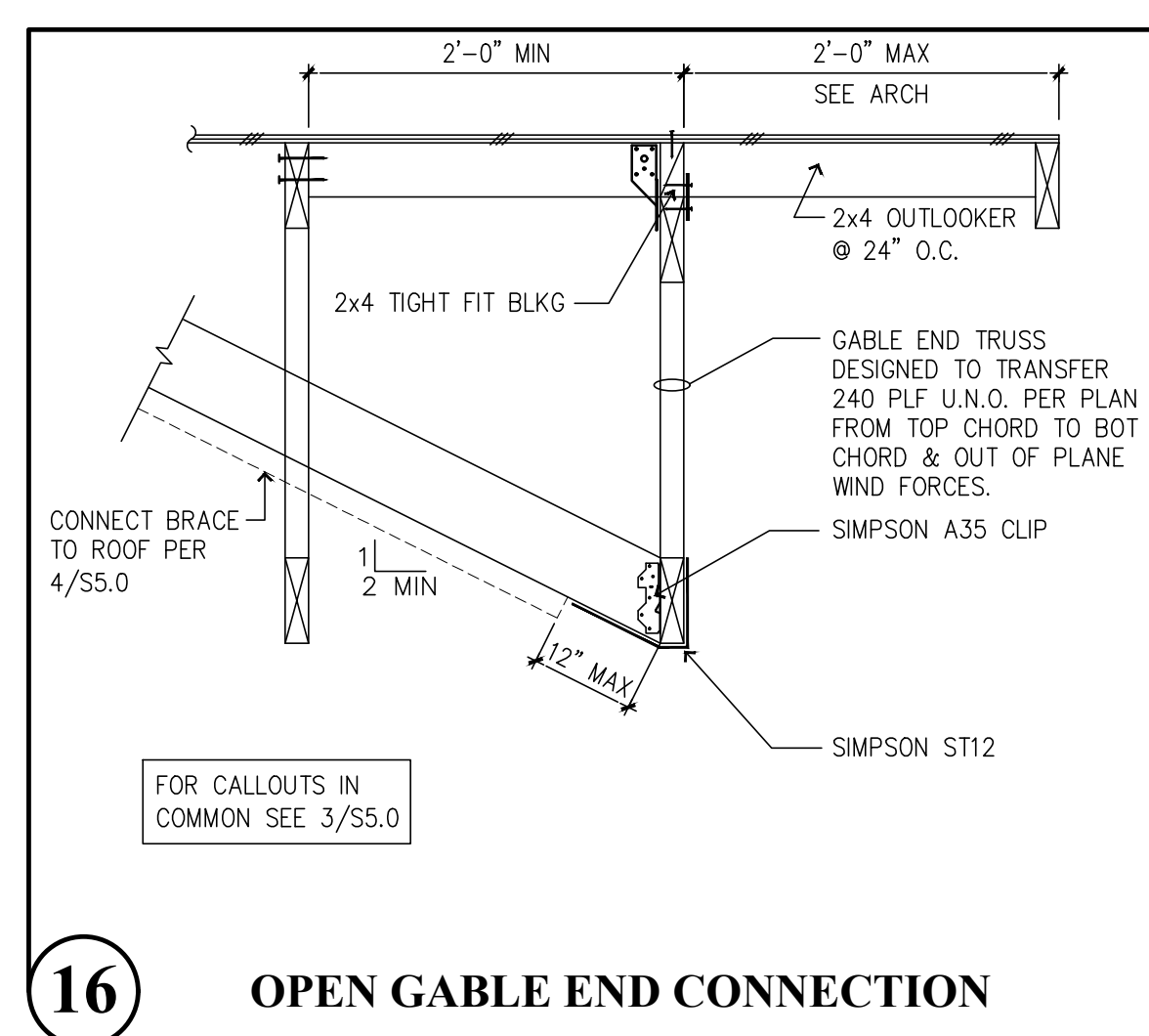
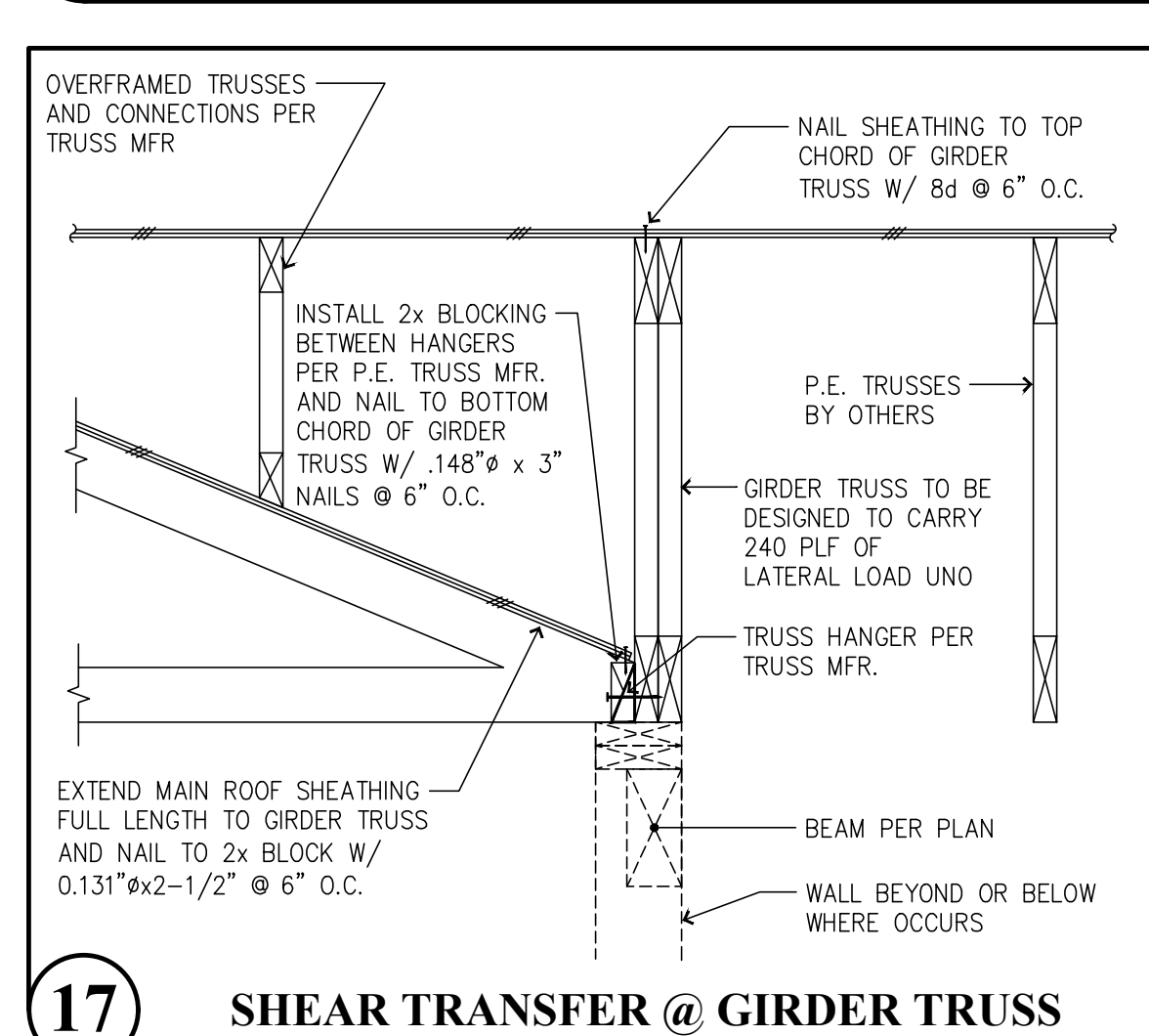
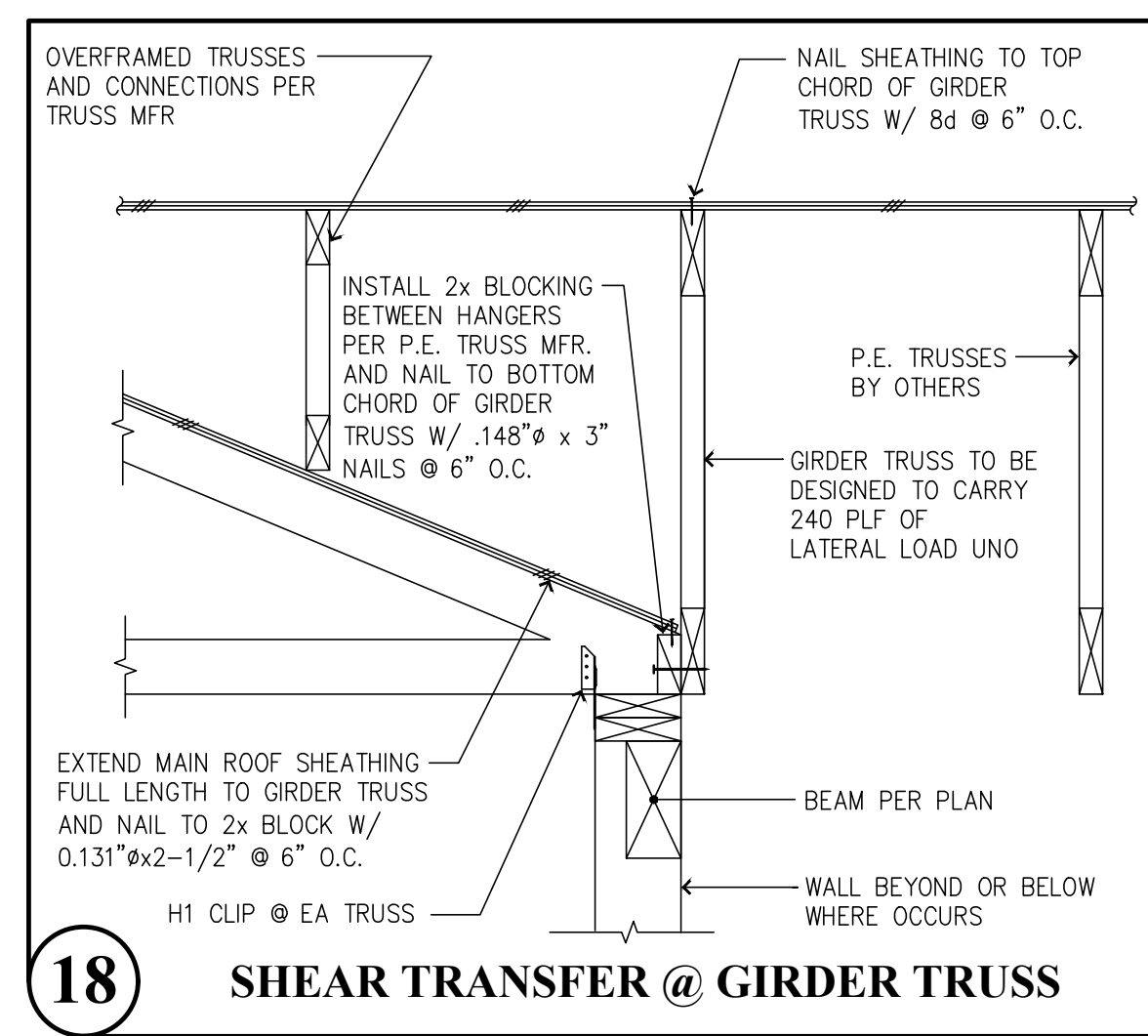
2 EXT. DECK/STAIR LANDING CONNECTION



3 DECK OUTSIDE EDGE

PLOT DATE/TIME: 2/15/2024 - 9:50am THANK YOU FOR USING SOLUTIONS 4 STRUCTURES

CAD FILE: F:\Projects\2023 Projects\23.007 Bradley Heights\Drawings\S5.0.dwg



Revisions to this sheet:

Bradley Heights Apartments
202 27th Ave SE
Puyallup, Washington

Solutions 4 Structures
A Structural Engineering Corporation

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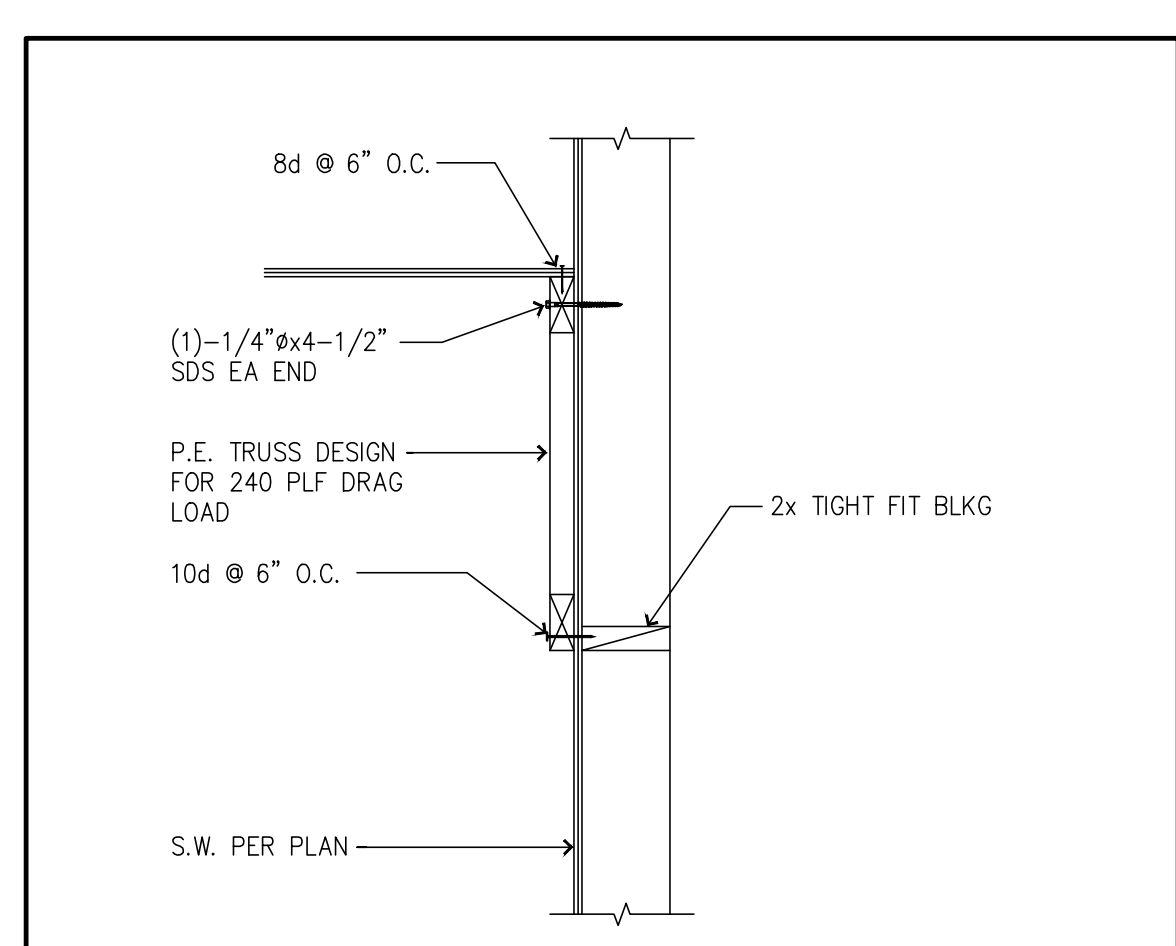
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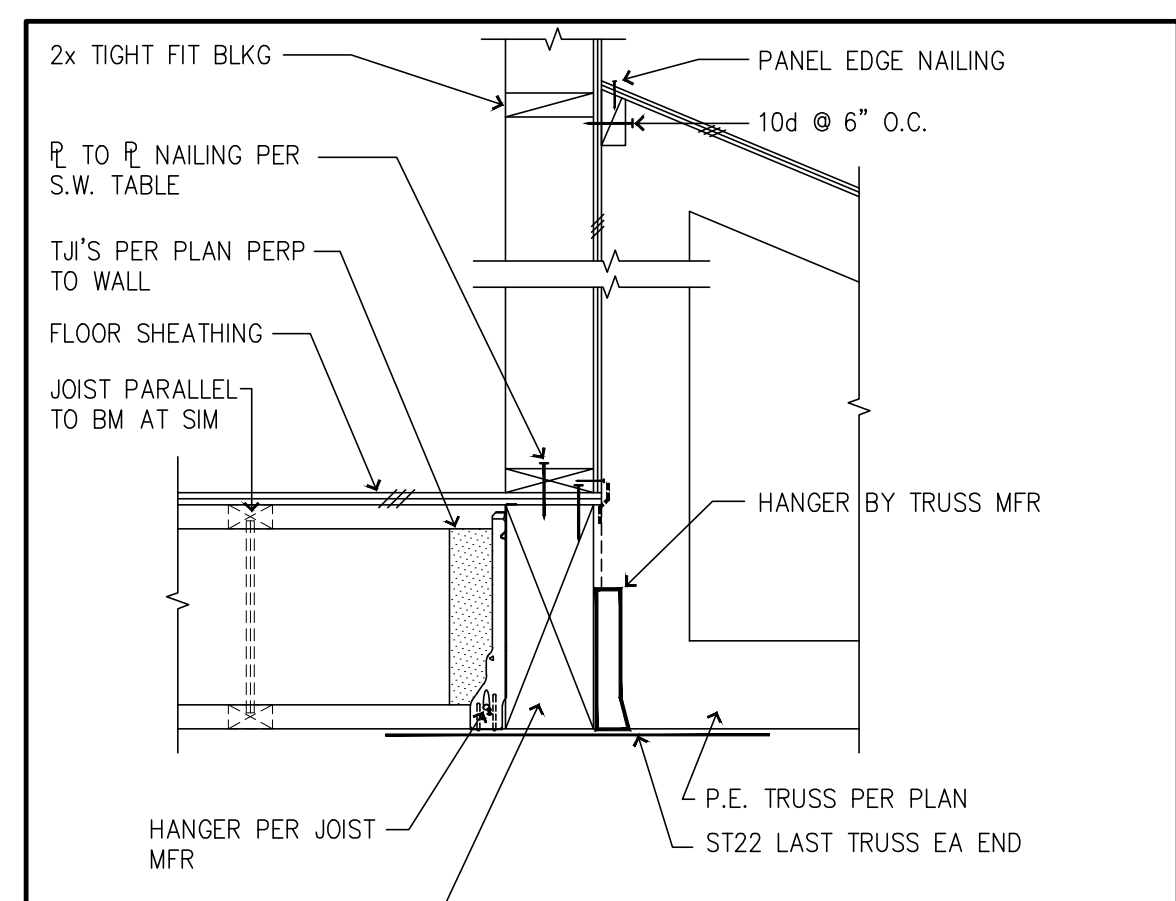
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S5.1

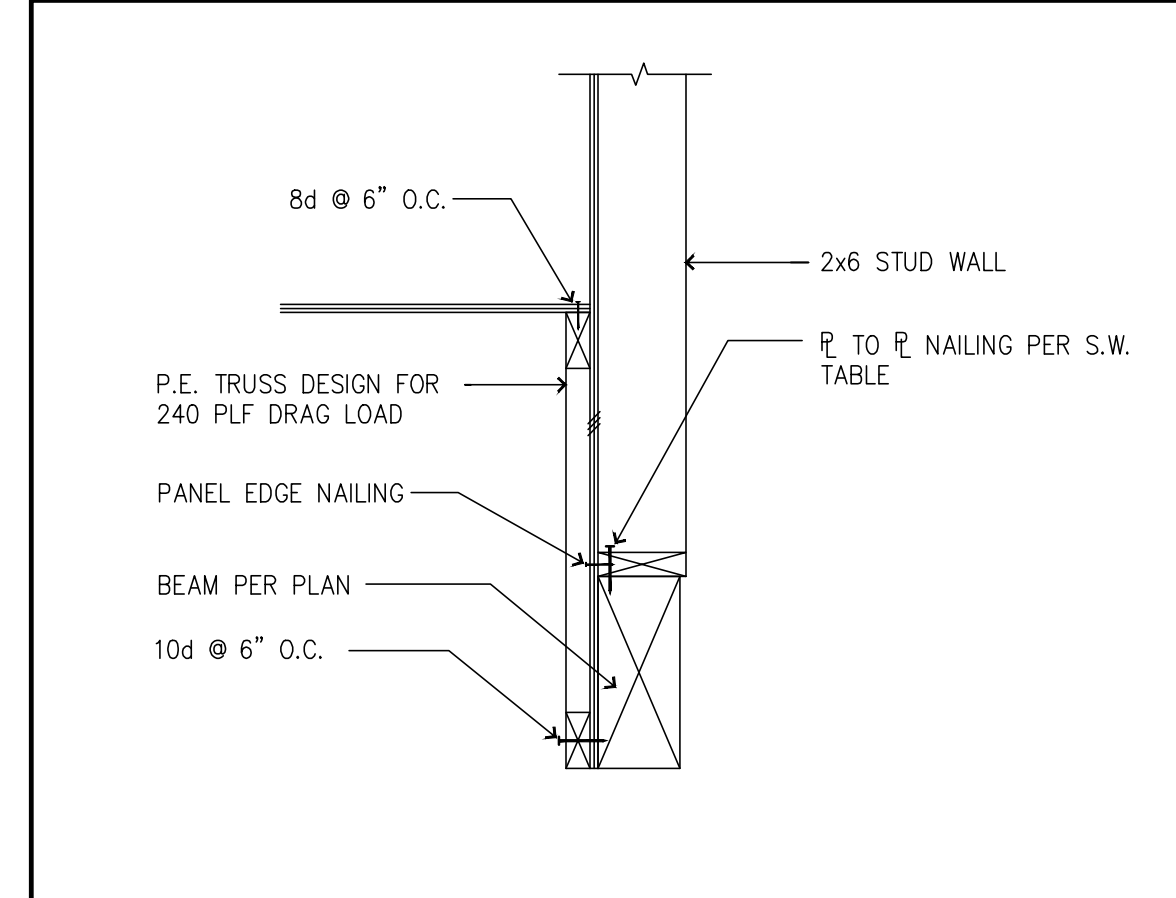
4 TRUSS // TO SHEARWALL



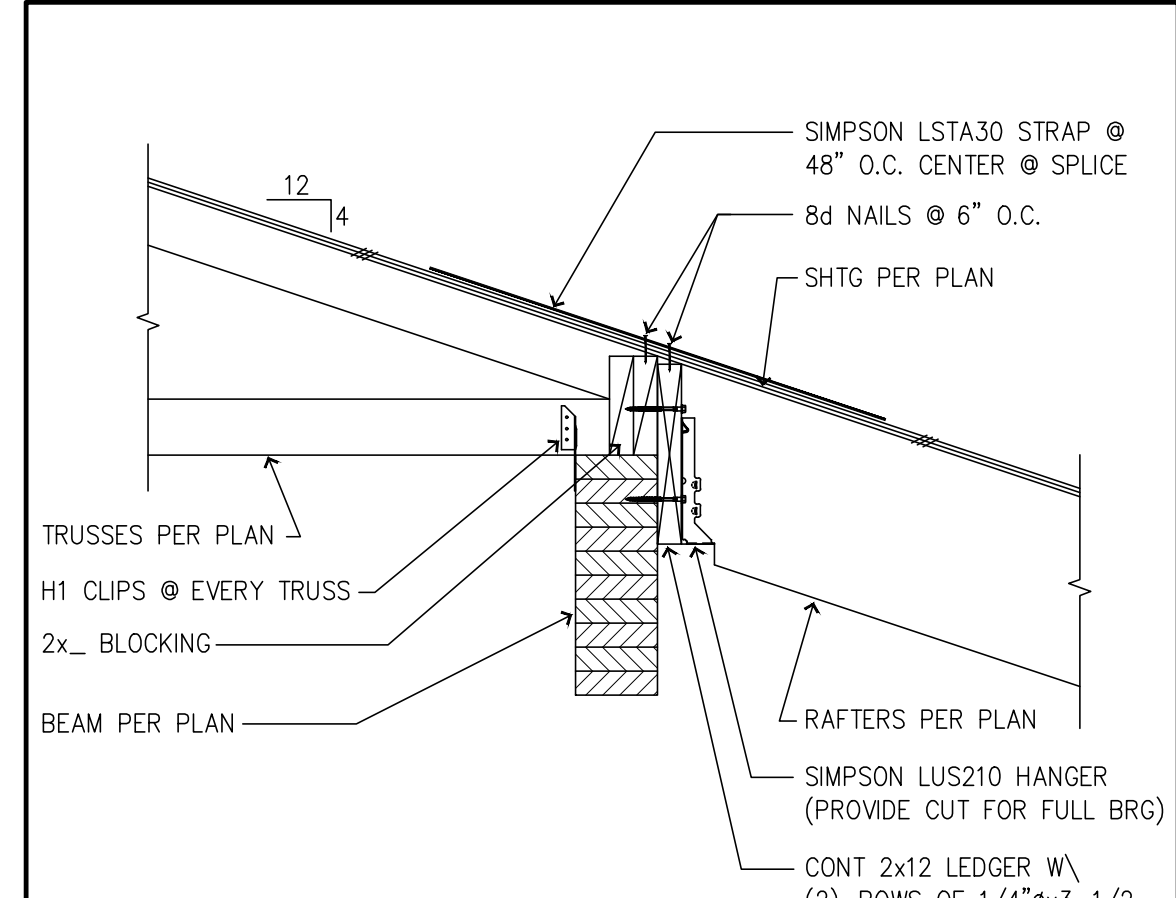
3 TJI FLOOR JOIST P.E. TRUSS PERPENDICULAR TO WALL



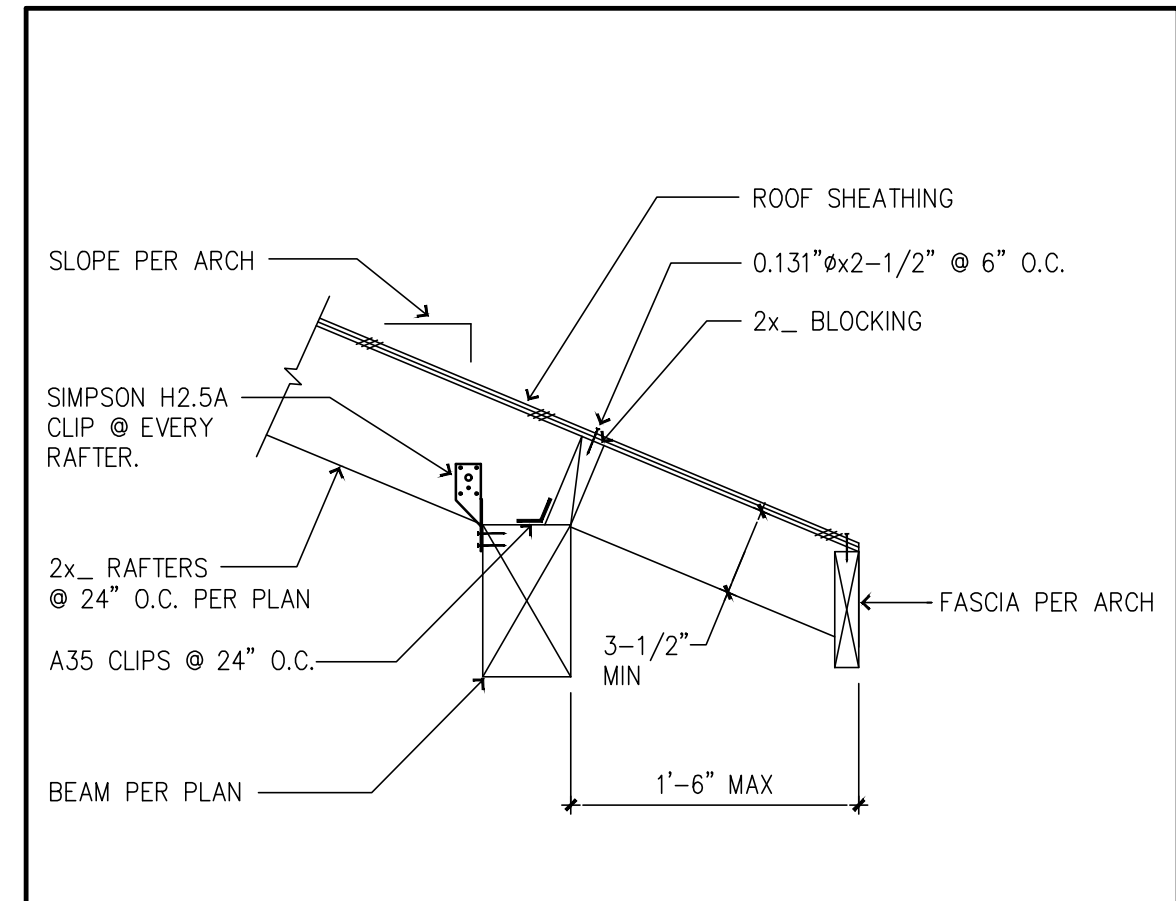
6 JOIST CANTILEVER @ FLOOR



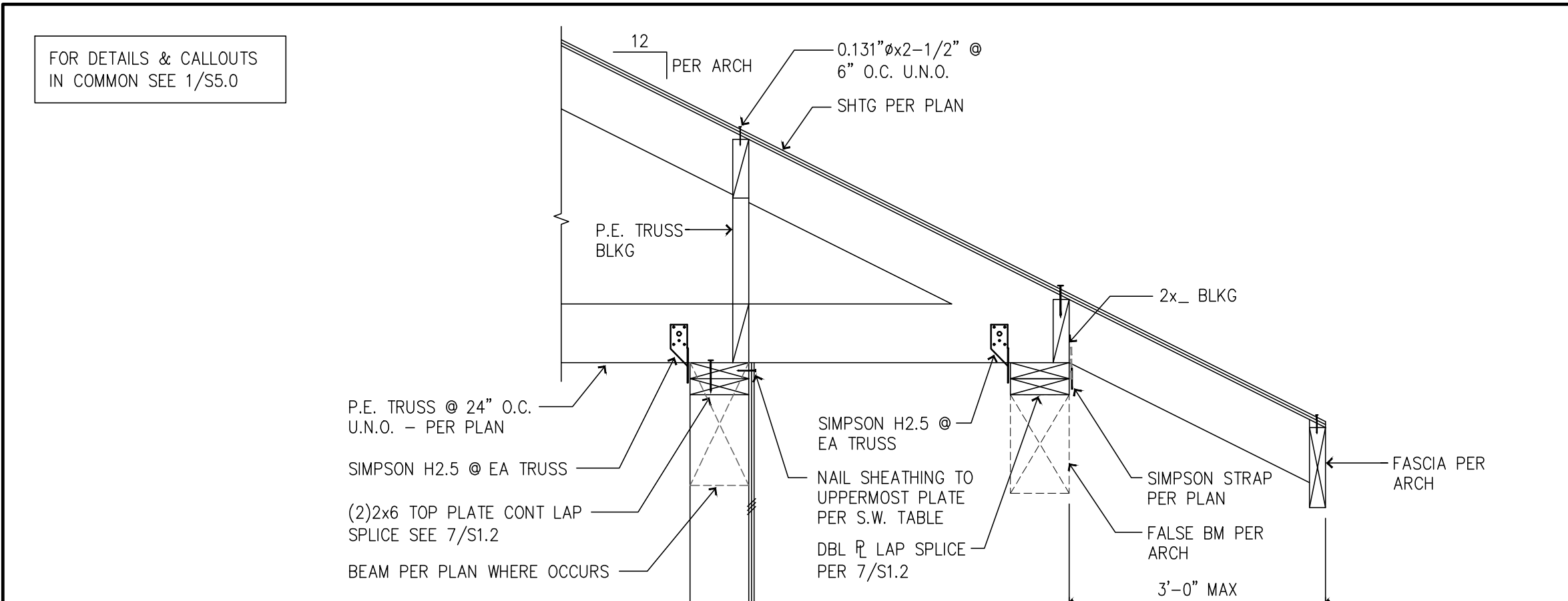
2 RAFTER CONNECTION



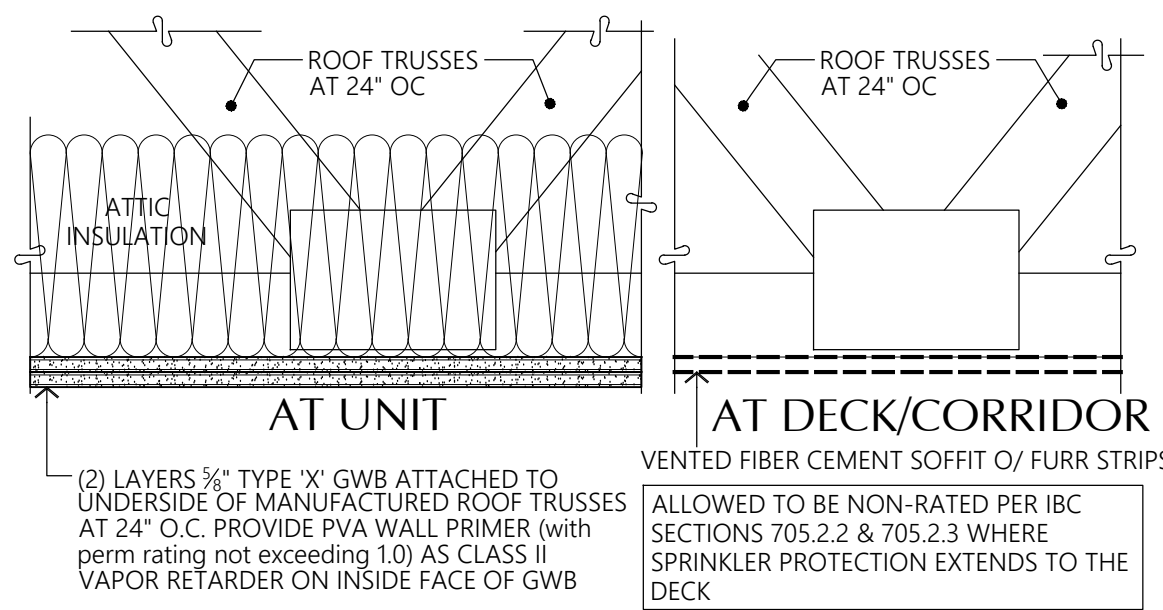
1 CANTILEVERED RAFTER



5 BEAM AT BOTTOM OF TRUSS AT SIM. P.E. TRUSS PERP TO WALL CONNECTION



FOR DETAILS & CALLOUTS IN COMMON SEE 1/S5.0

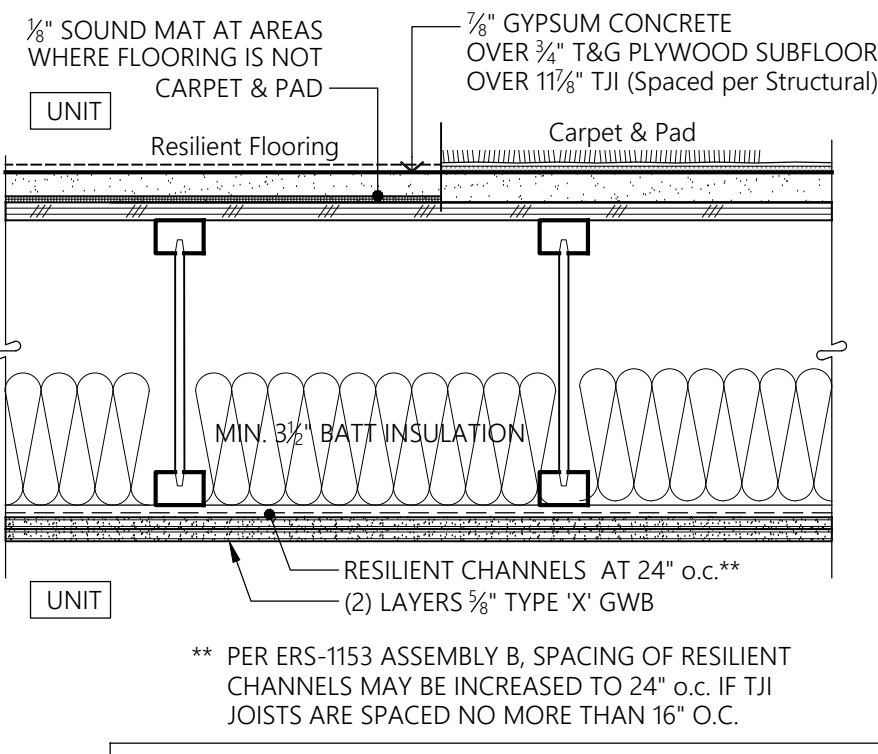


1-HR GA File No. RC 2602
 Base layer 5/8\" type X gypsum wallboard applied at right angles to wood roof trusses 24\" o.c. with 1/2\" Type W or S drywall screws 24\" o.c. Face layer 5/8\" type X gypsum wallboard or gypsum veneer base applied at right angles to trusses with 1/2\" Type W or S drywall screws 12\" o.c. at joints and intermediate trusses and 1/2\" Type G drywall screws 12\" o.c. placed 2\" back on either side of end joints. Joints offset 24\" from base layer joints. Wood trusses supporting 5/8\" wood structural panels applied at right angles to trusses with 8d nails. Appropriate roof covering. Ceiling provides one hour fire resistance protection for trusses.

17 TYPICAL 1-HR ROOF/CEILING SECTION
 1-1/2\" = 1'-0\"

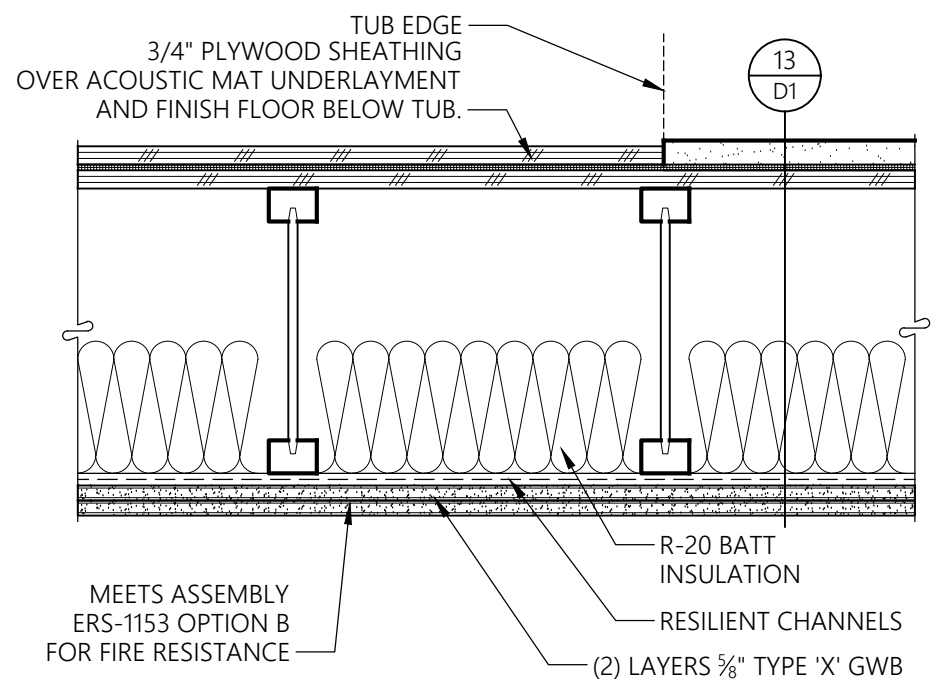
1-HR ESR-1153 Assembly B, Sound Rating Option 2

- The flooring must consist of a single layer of 3/4\" span-rated, T&G, sheathing (Exposure 1). Construction adhesive conforming to ASTM D3498 must be applied to the top or the joists prior to placing sheathing. All butt joints of the sheathing must be located over framing members.
- TJI joists must be installed with a maximum spacing of 24\" o.c. for floor-ceiling assemblies.
- Optional minimum 3/2\" glass fiber insulation or glass fiber insulation rated R-30 or less may be installed in the joist plenum when resilient channels are used. The insulation must be placed above the resilient channels between the joist bottom flanges.
- Ceiling membrane shall be two layers of same-type gypsum board, either: 1/2\" USG Firecode \"C\", 1/2\" NGC Gold Bond Fire-Shield \"C\", or 5/8\" type \"X\" complying with ASTM C36.
- The first layer of gypsum board must be installed perpendicular to the TJI joist and attached using 1\" long, Type S screws spaced 12\" o.c. The second layer must be installed with the joints staggered from the first layer. The second layer must be fastened to the TJI joists with 2\" long, Type S screws spaced 12\" o.c. in the field and 8\" o.c. at the butt joints. Type G screws, 1 1/2\" long, must be spaced 8\" o.c. and 6\" from each side of the transverse joints of the second layer. The second layer must be finished with joint tape and compound.
- Resilient channels are required to be used as part of the ceiling attachment system, provided they are spaced 16\" o.c. and fastened perpendicular to the TJI joists using 1\" long, Type S screws spaced 12\" o.c. When resilient channels are used, the first layer of the ceiling membrane must be installed perpendicular to the channels and attached to the resilient channels using 1\" long, Type S screws spaced 12\" o.c. The second layer must be installed with the joints staggered from the first layer and attached using 3/4\" long, Type S screws. The screw spacing for the second layer of gypsum board must be a maximum of 12\" o.c. in the field and 8\" o.c. at the butt joints. Type G screws, 1 1/2\" long, must be spaced 8\" o.c. and 6\" from each side of the transverse joints of the second layer, the second layer must be finished with joint tape and compound.

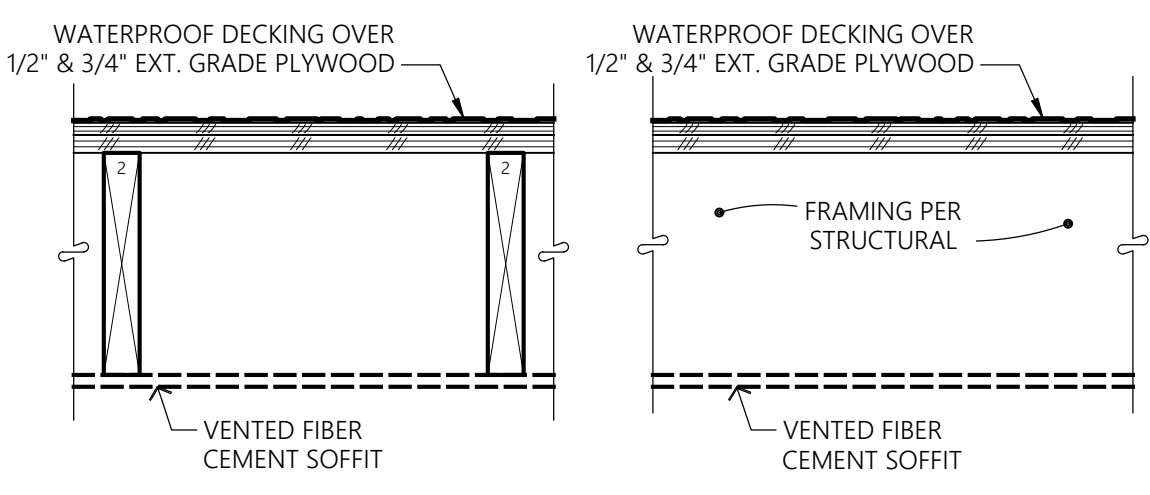


STC = 58 per ICC-ES Evaluation Report IIC = 54 With Carpet & Pad

13 TYP. 1-HR FLOOR/CEILING AT DWELLING UNITS SECTION
 1-1/2\" = 1'-0\"

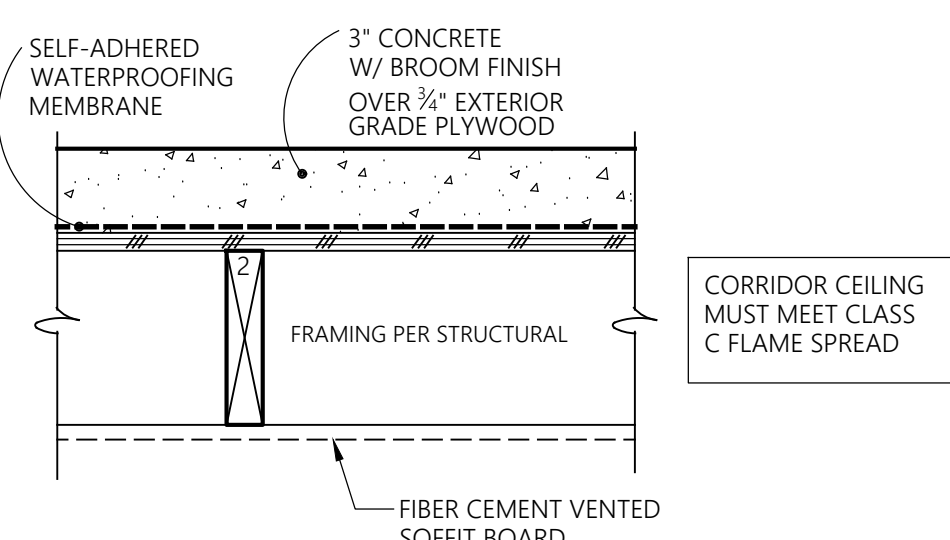


14 FLOOR BENEATH TUB SECTION
 1 1/2\" = 1'-0\"

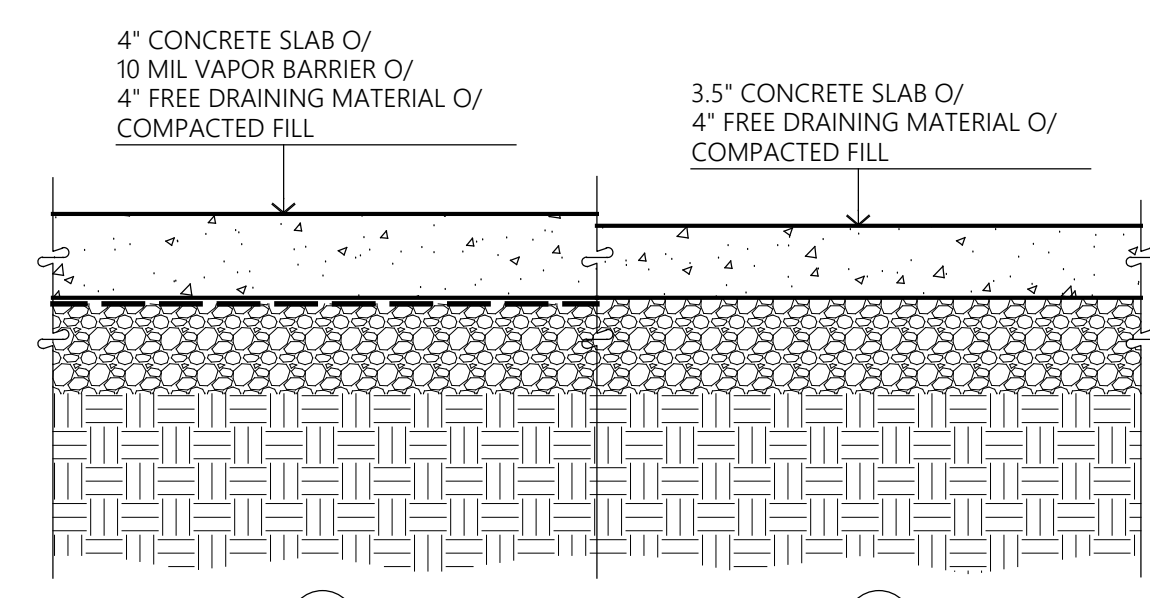


ASSEMBLY ALLOWED TO BE NON-RATED PER OSSC SECTIONS 705.2.2 AND 705.2.3 WITH FIRE SPRINKLERS PROTECTING DECK

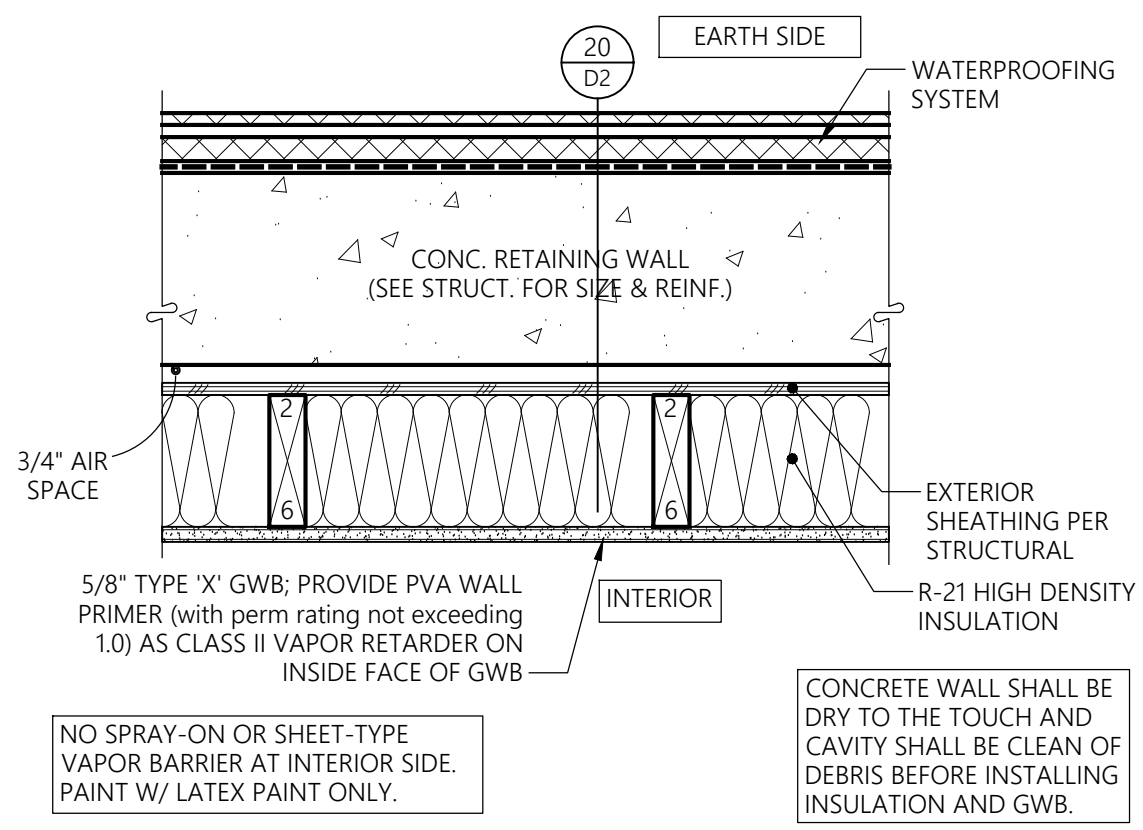
19 FLOOR AT DECK SECTION
 1 1/2\" = 1'-0\"



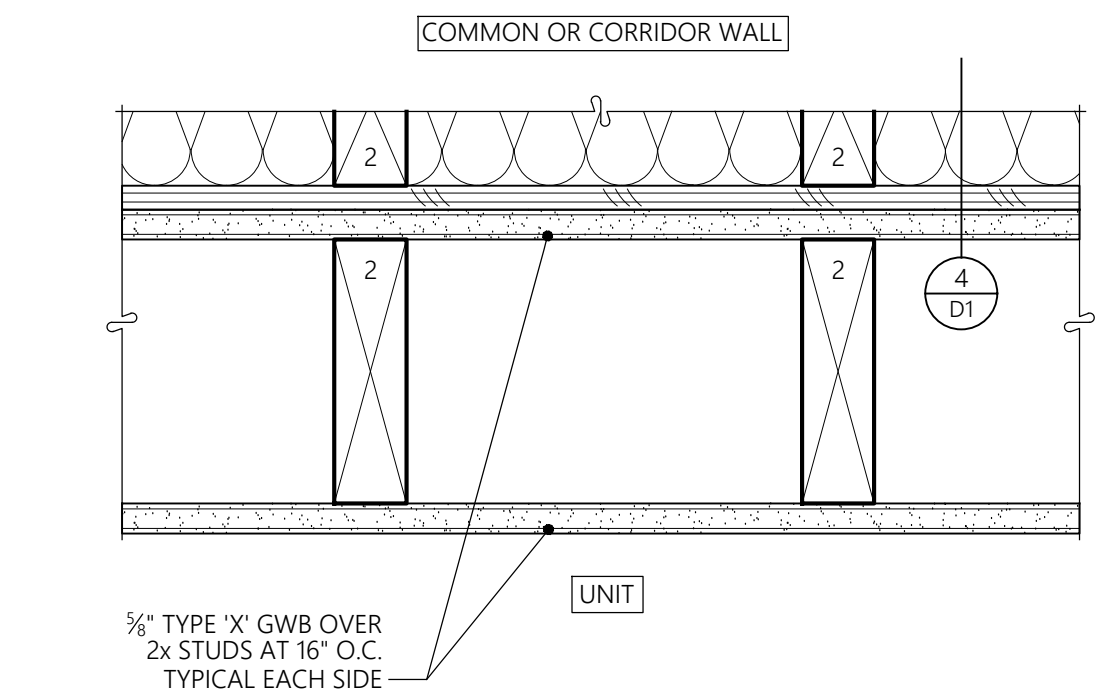
15 FLOOR AT CORRIDOR/LANDING SECTION
 1-1/2\" = 1'-0\"



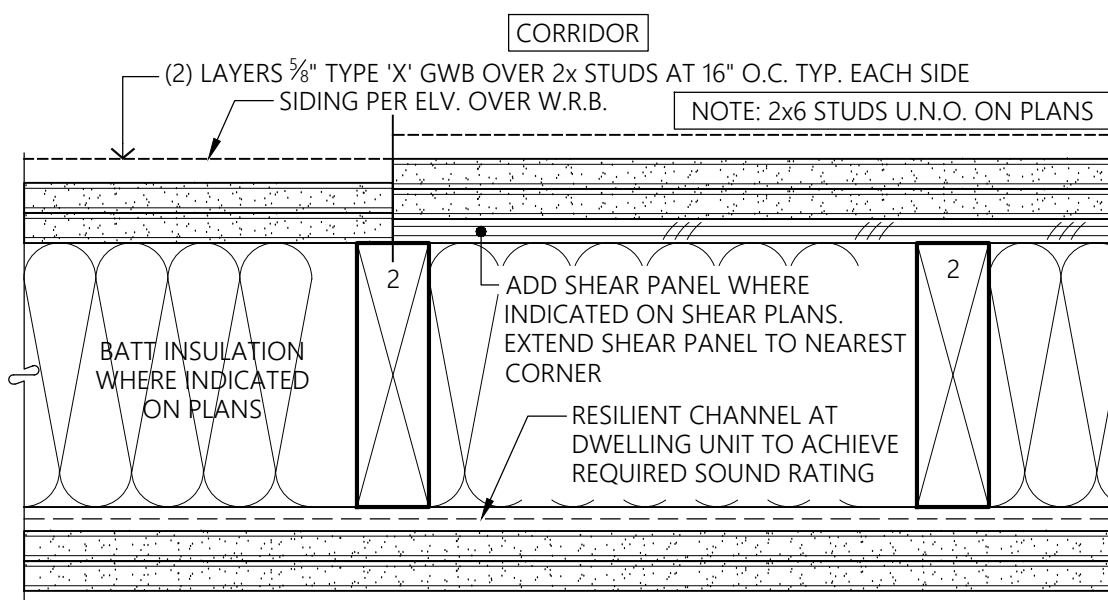
20 TYP. SLAB-ON-GRADE SECTION
 1-1/2\" = 1'-0\"



12 CONCRETE WALL @ EXTERIOR WALL PLAN
 1-1/2\" = 1'-0\"

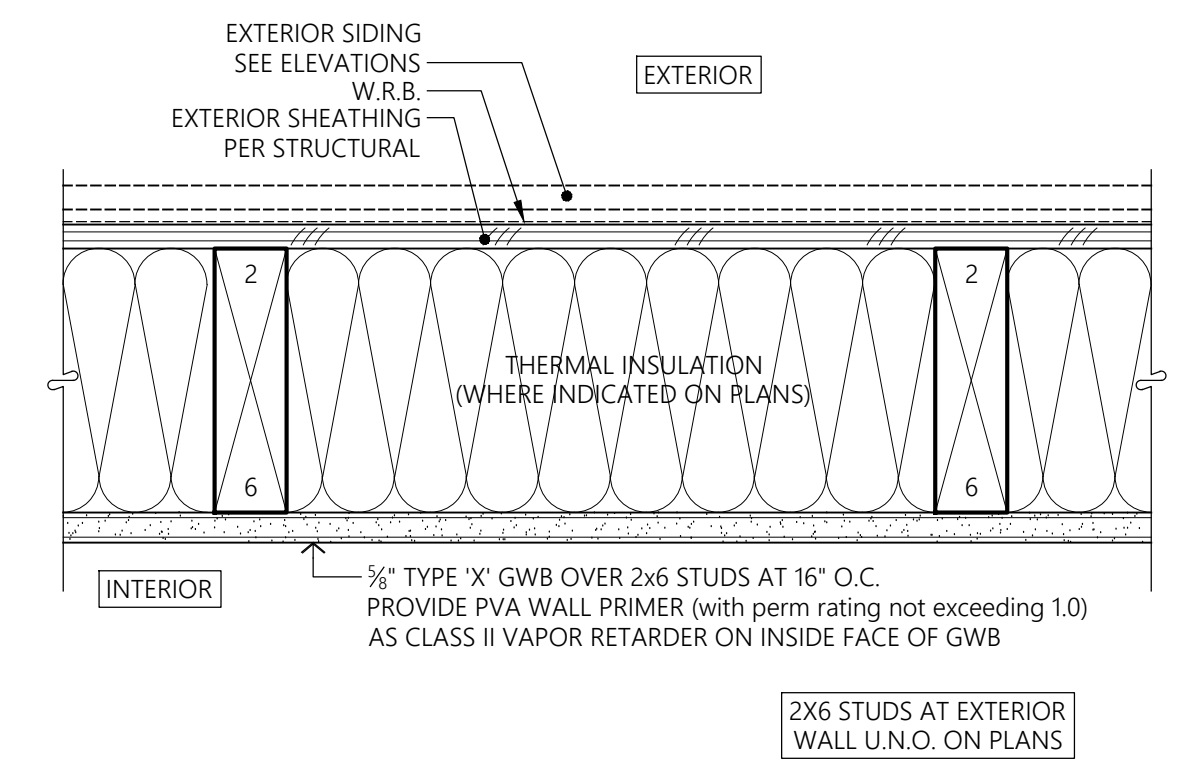


6 FURRED PLUMBING WALL PLAN
 3\" = 1'-0\"

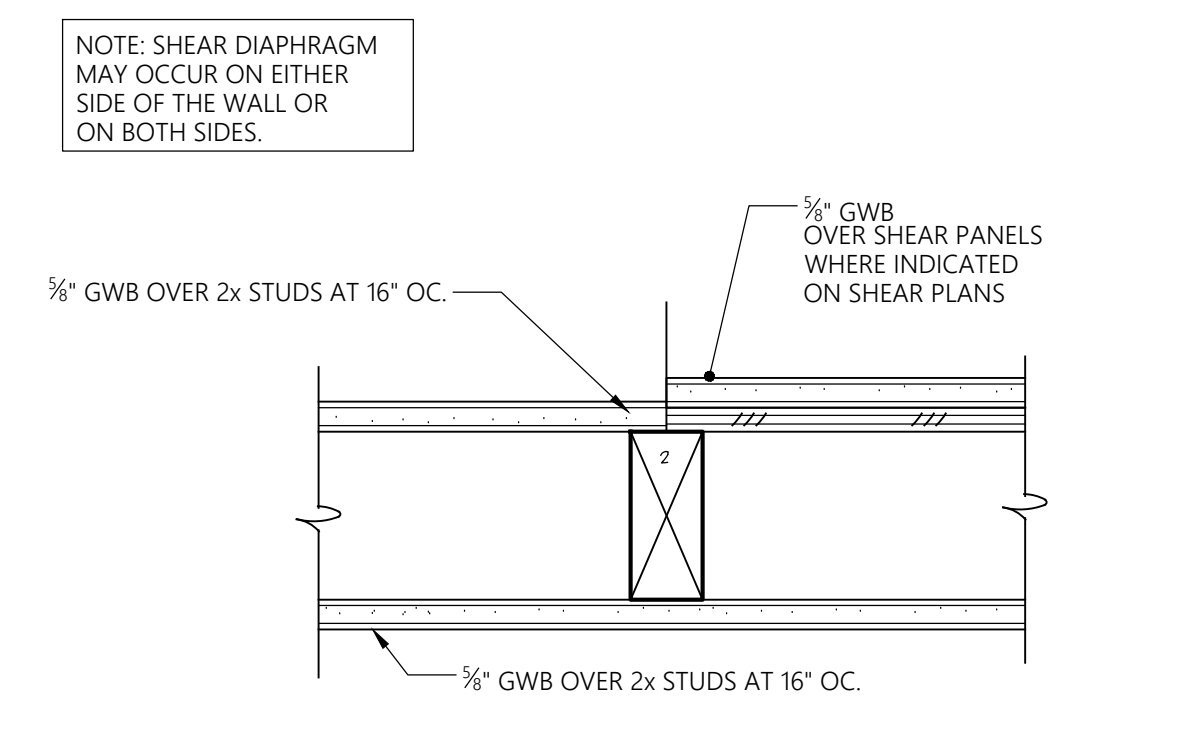


2-HR GA File No. WP4136 STC 50 (TL-93-103)
 Base layer 5/8\" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of 2 x 4 wood studs 16\" o.c. with 1 1/2\" Type W drywall screws 12\" o.c. Face layer 5/8\" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side with 1 1/4\" Type W drywall screws 12\" o.c. and offset 6\" from screws in base layer. Joints staggered 16\" each layer and side. At shear walls, increase fastener length by the thickness of the shear panel. Add resilient channel and 3\" insulation to achieve sound rating.

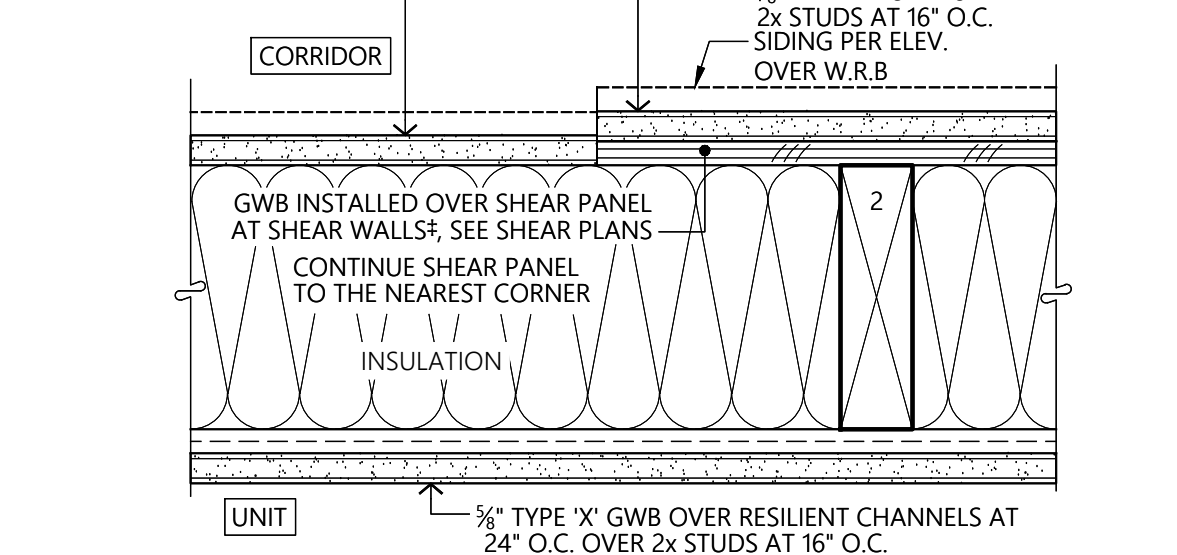
7 TYP. 2-HR FIRE BARRIER WALL AT EXIT CORRIDOR PLAN
 3\" = 1'-0\"



1 TYPICAL EXTERIOR WALL PLAN
 3\" = 1'-0\"

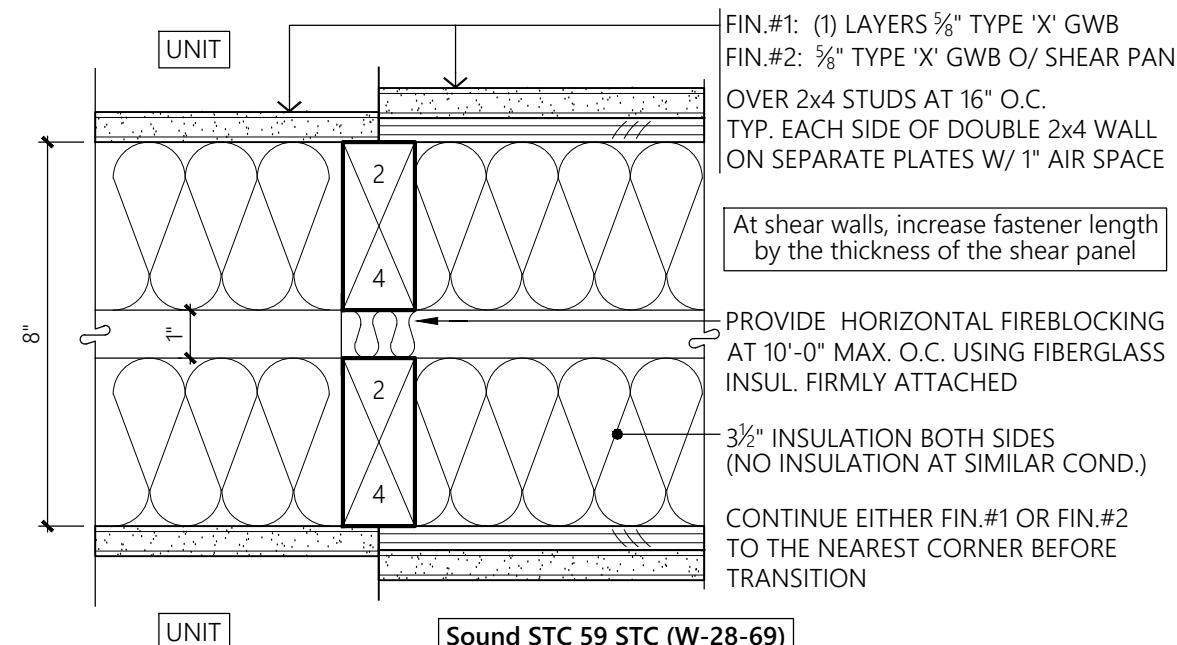


2 TYP. INTERIOR WALL PLAN
 3\" = 1'-0\"



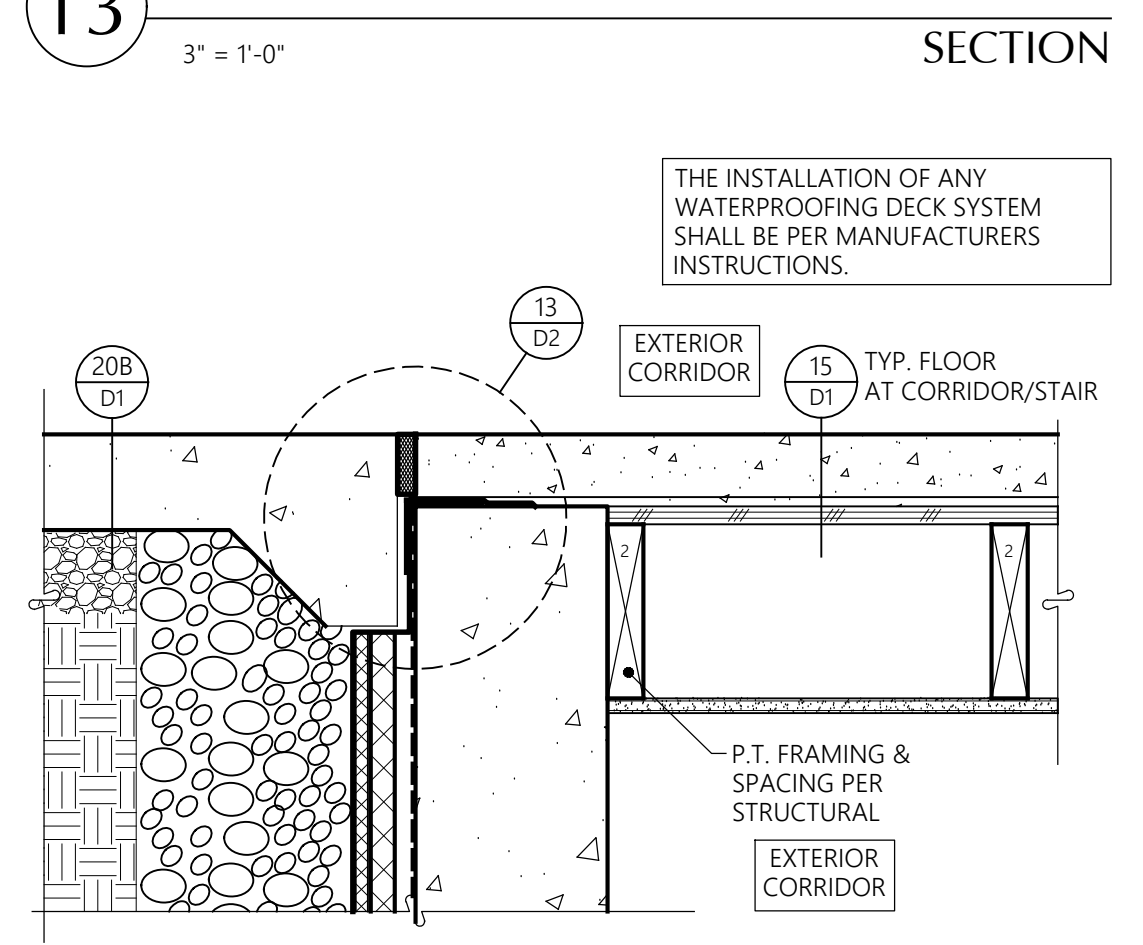
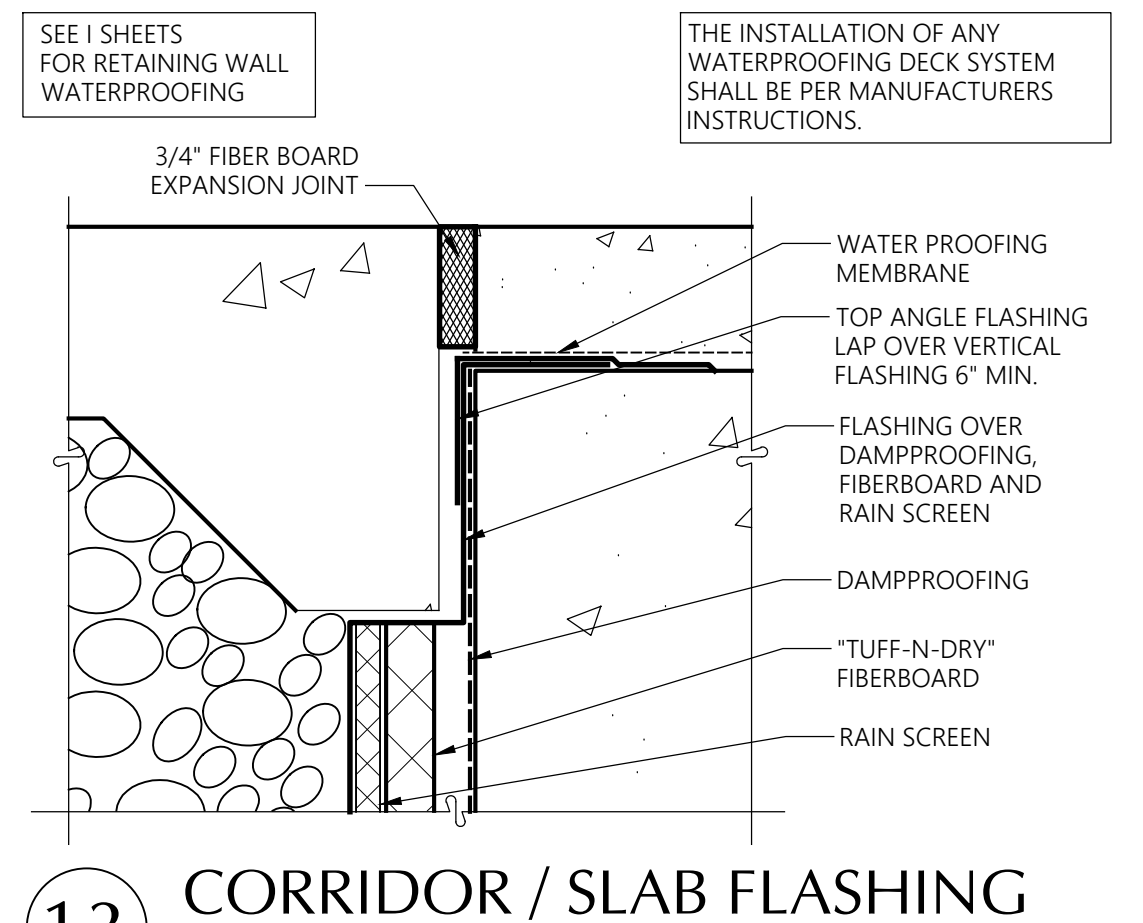
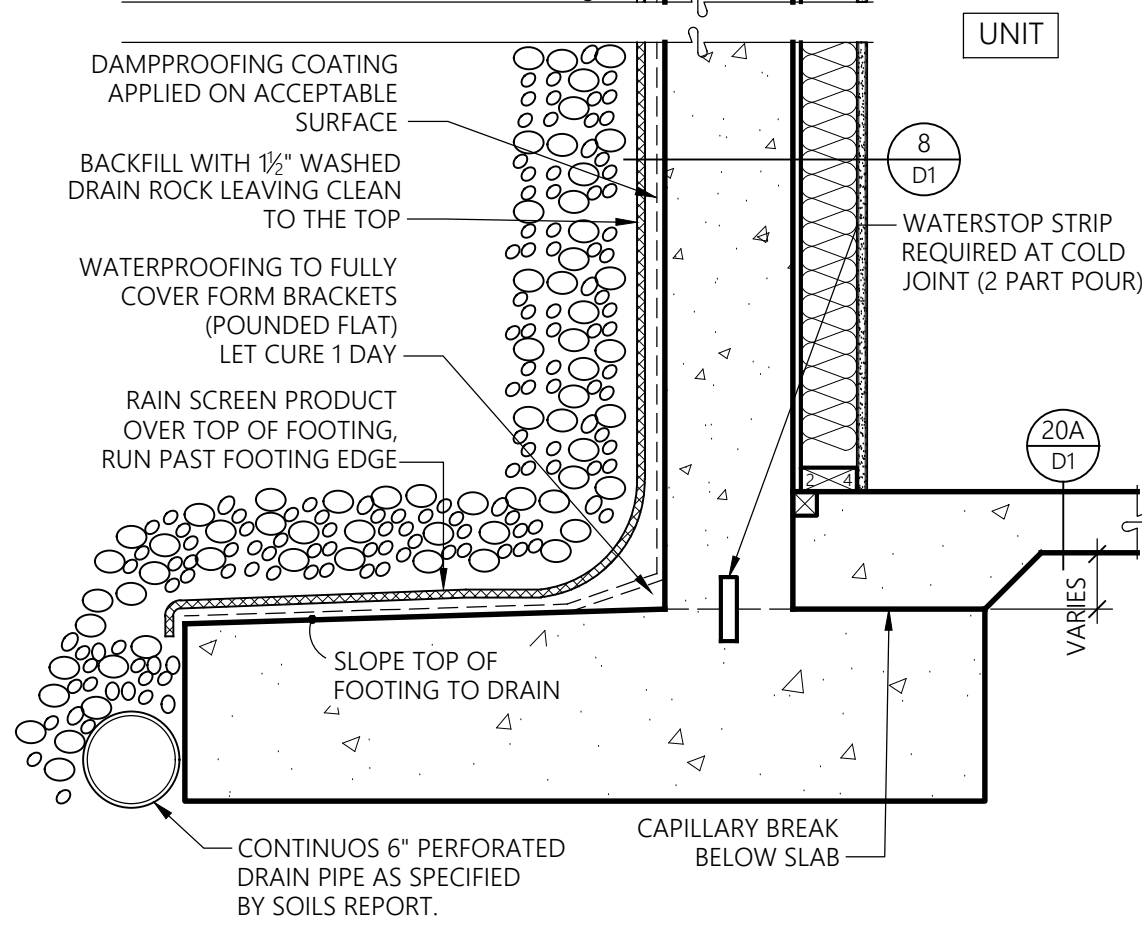
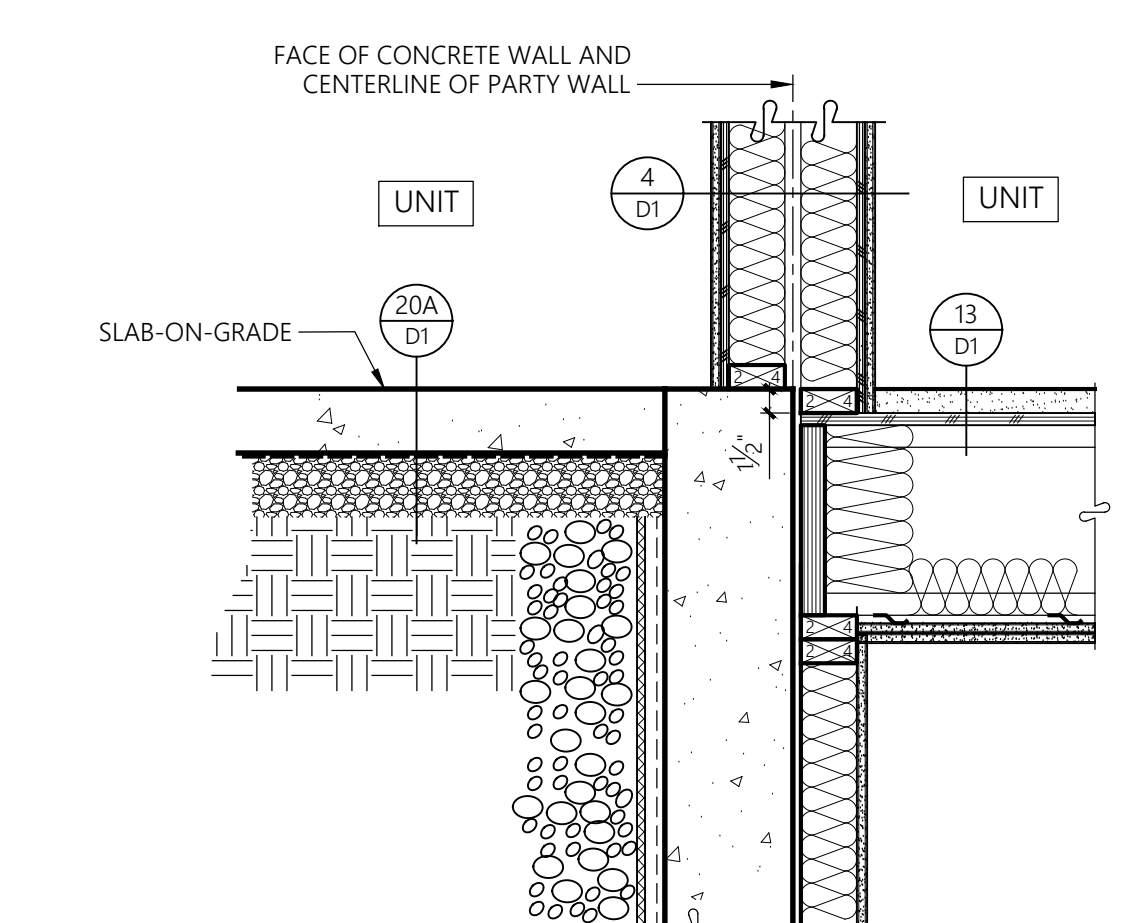
1-HR GA File No. WP3243 50-54 STC Sound
 Resilient channels 24\" o.c. attached at right angles to ONE SIDE of 2x4\" wood studs 24\" o.c. with 1 1/2\" Type S drywall screws. One layer 5/8\" type X gypsum wallboard or gypsum veneer base applied at right angles to channels with 1\" Type S drywall screws 8\" o.c. with vertical joints located midway between studs. 3\" mineral or glass fiber insulation in stud space.
 OPPOSITE SIDE - One layer 5/8\" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to studs with 6d cement coated nails 1 1/4\" long, 0.0915\" shank, 3/4\" heads, 7\" o.c. Vertical joints staggered 24\" on opposite sides. (LOAD-BEARING)
 * Per general note 16 greater stud sizes are permitted than those specified.
 † At shear walls, increase fastener length by the thickness of the shear panel.

3 TYP. 1-HR CORRIDOR WALL PLAN
 3\" = 1'-0\"



1-HR Using Calculated Fire Resistance Method
 Using IBC Section 722, Tables 722.6.2(1) and 722.6.2(2), 5/8\" Type X GWB (40 min.) and studs at 16\" o.c. (20 min.) provide 60 minutes of protection.
 DETAIL SIMILAR WHERE UNIT SEPARATION WALL CONTINUES DOWN TO GARAGES

4 TYP. 1-HR COMMON WALL SEPARATING DWELLING UNITS PLAN
 3\" = 1'-0\"

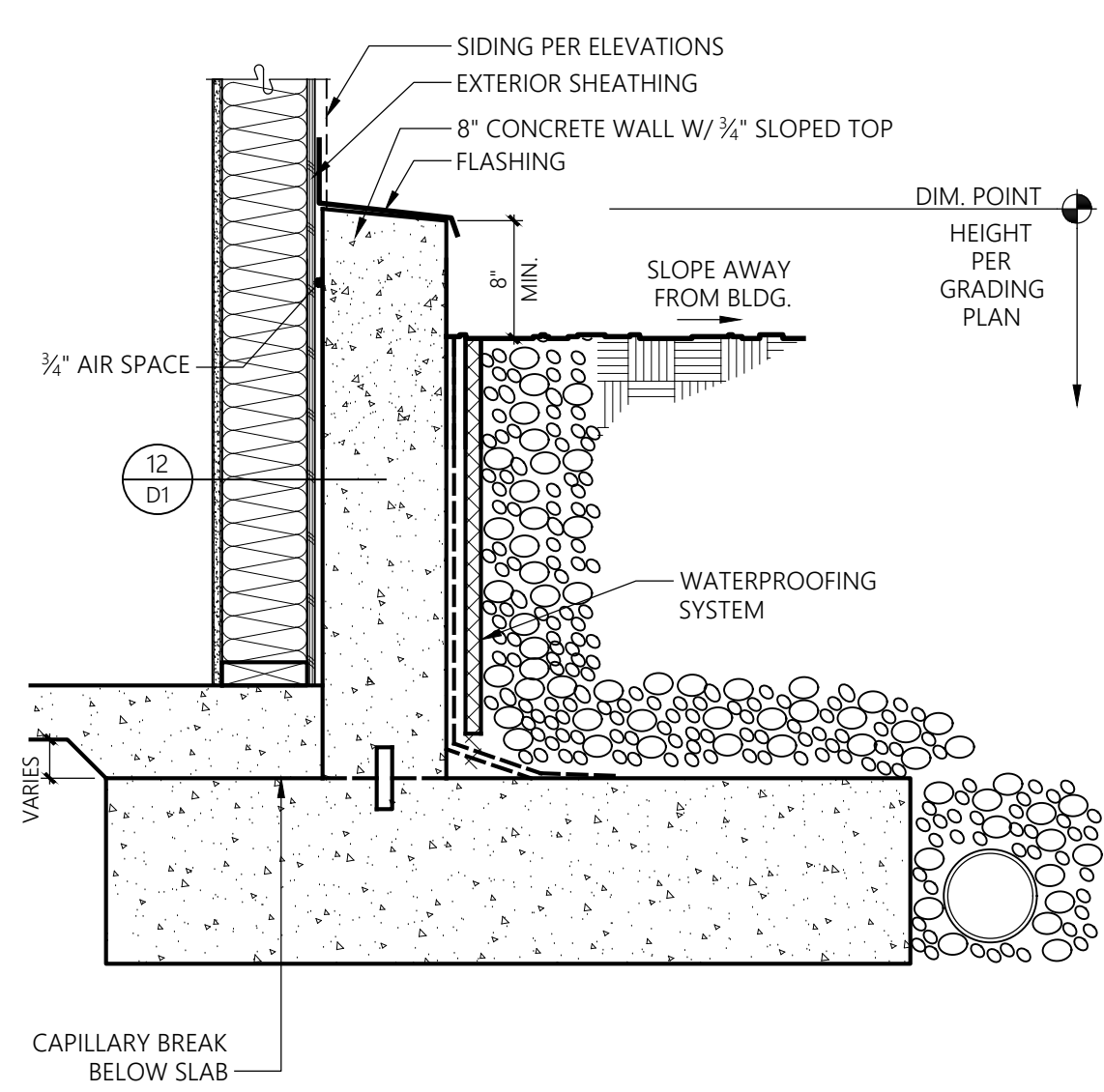


18 BASEMENT RETAINING WALL SECTION
1" = 1'-0"

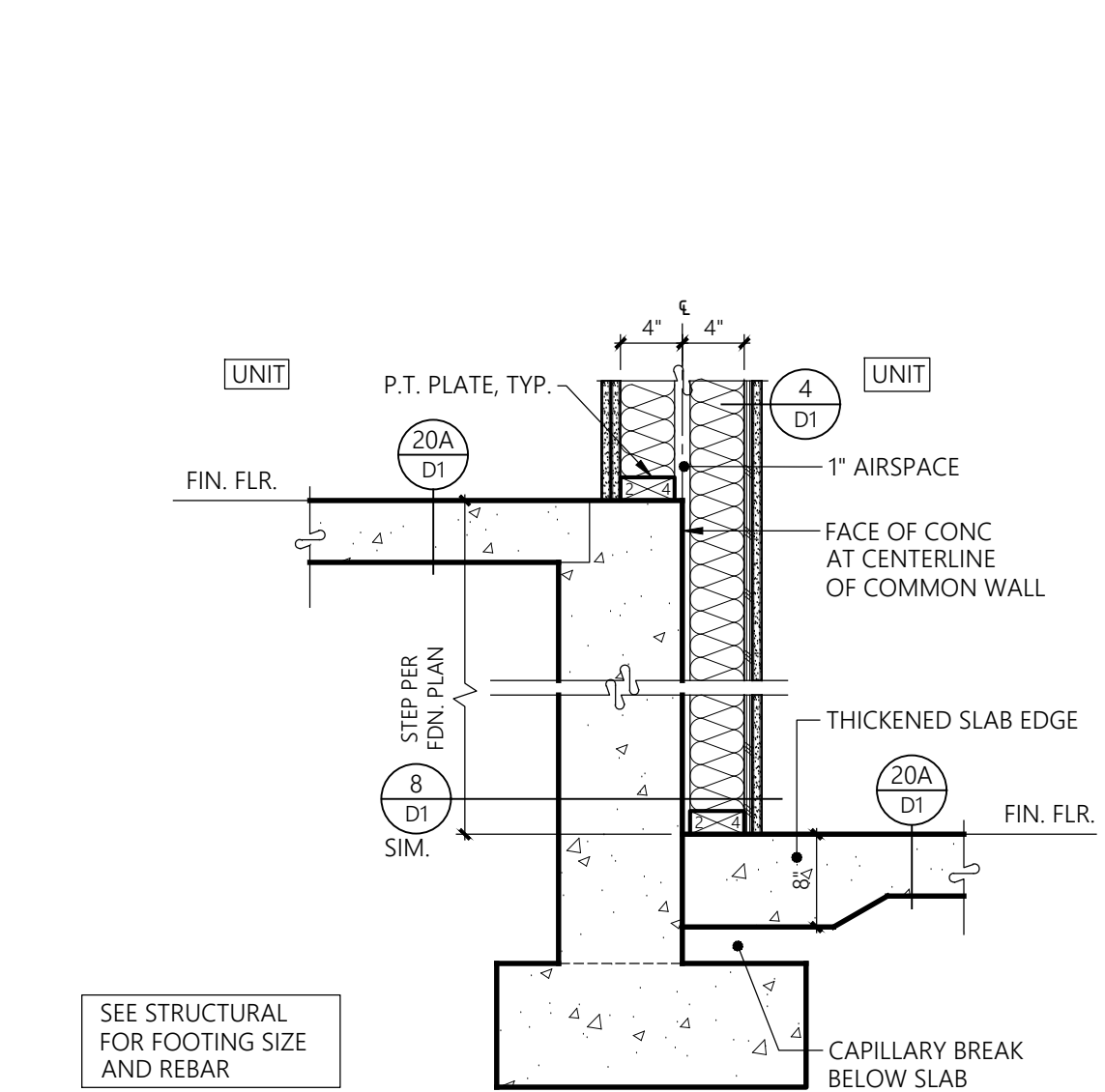
13 CORRIDOR / SLAB FLASHING SECTION
3" = 1'-0"

14 CORRIDOR / SLAB TRANSITION SECTION
1-1/2" = 1'-0"

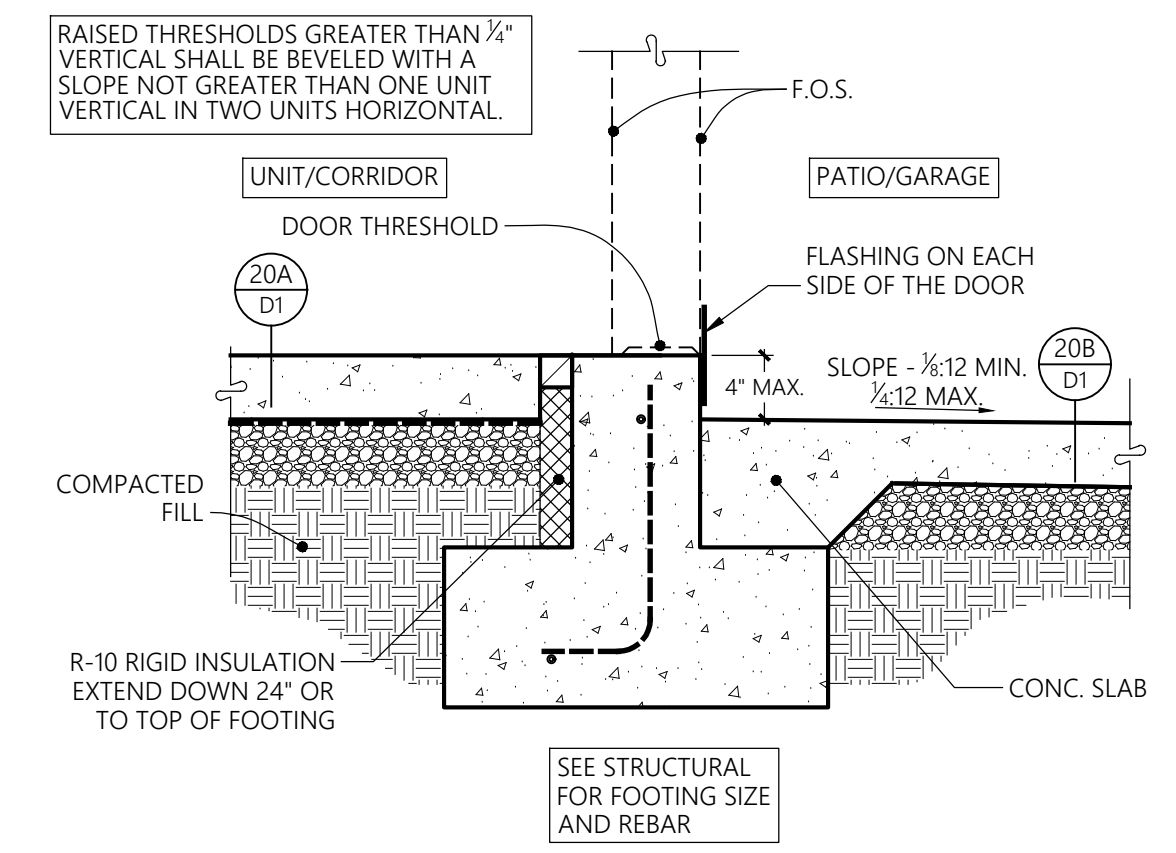
SEE STRUCTURAL ENGINEERS DESIGN, PAGE S3.1



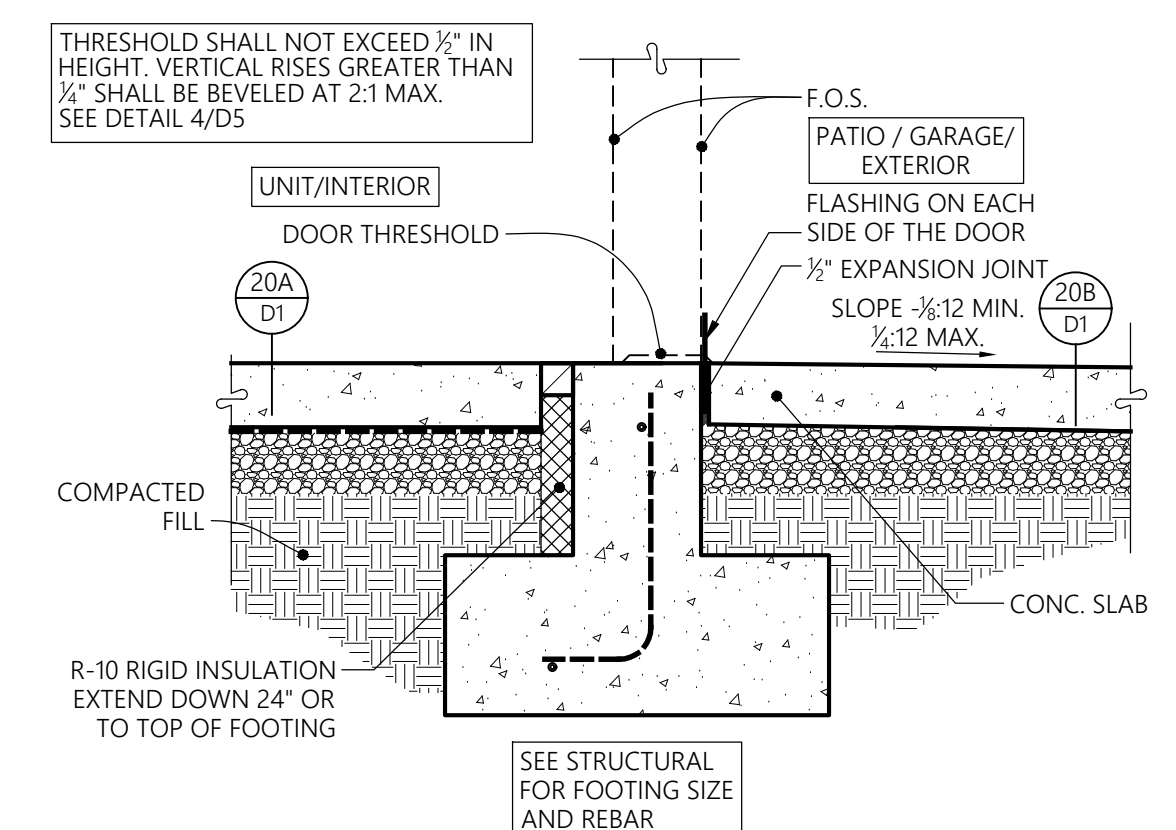
20 CONCRETE WALL SECTION
1" = 1'-0"



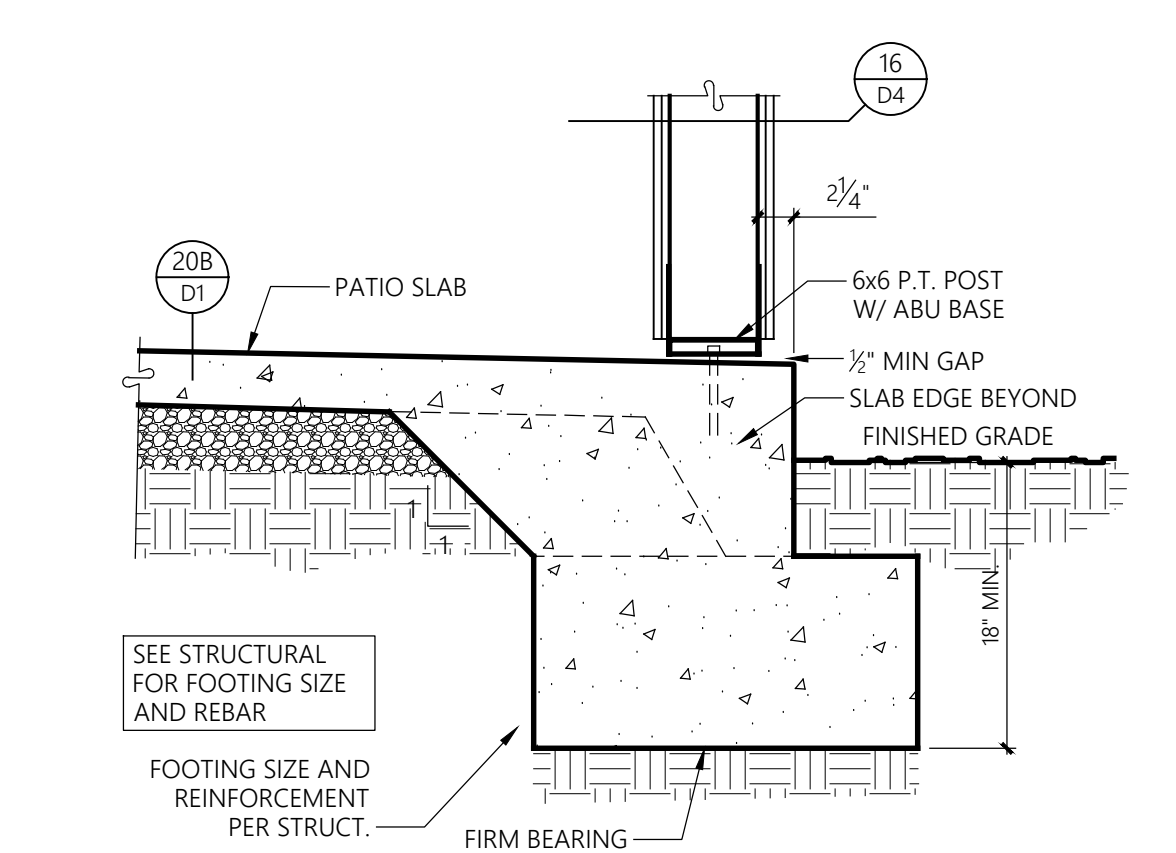
16 COMMON WALL FOUNDATION UNIT -T0- UNIT AT STEP SECTION
1" = 1'-0"



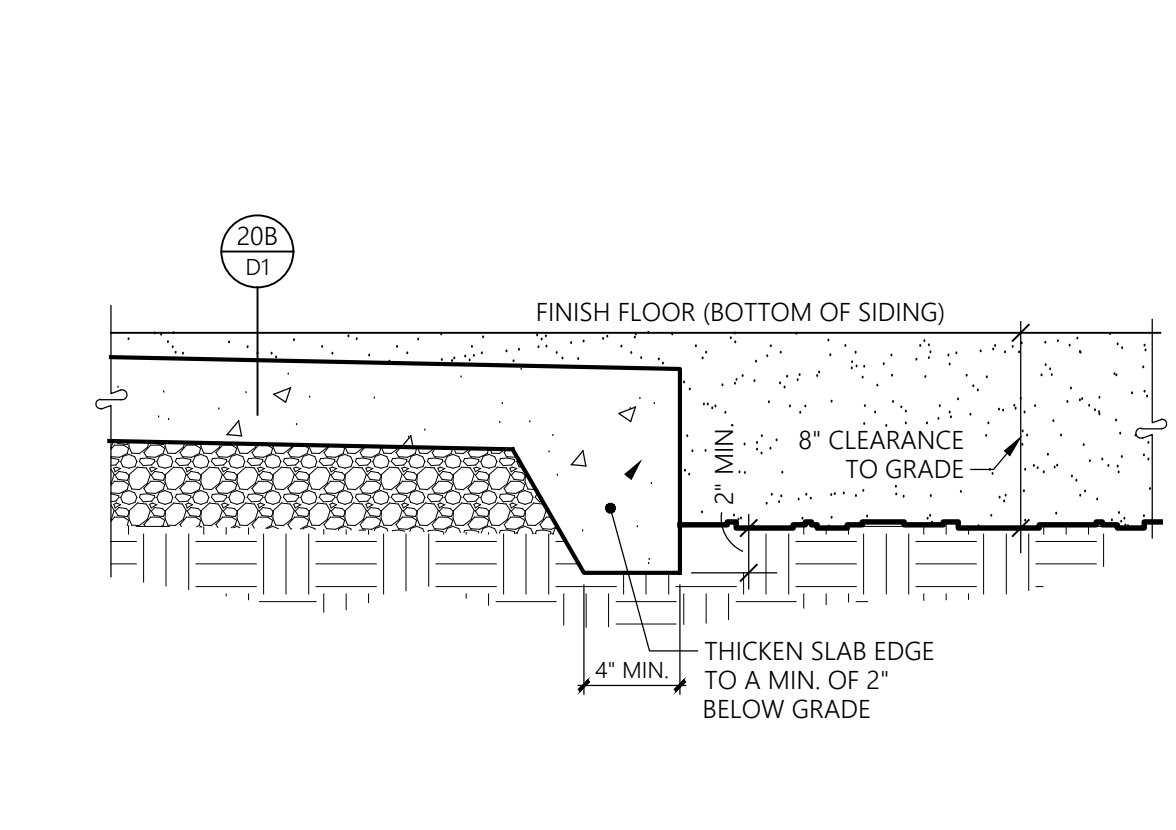
5 SWING DOOR THRESHOLD AT PATIO OR GARAGE SECTION
1" = 1'-0"



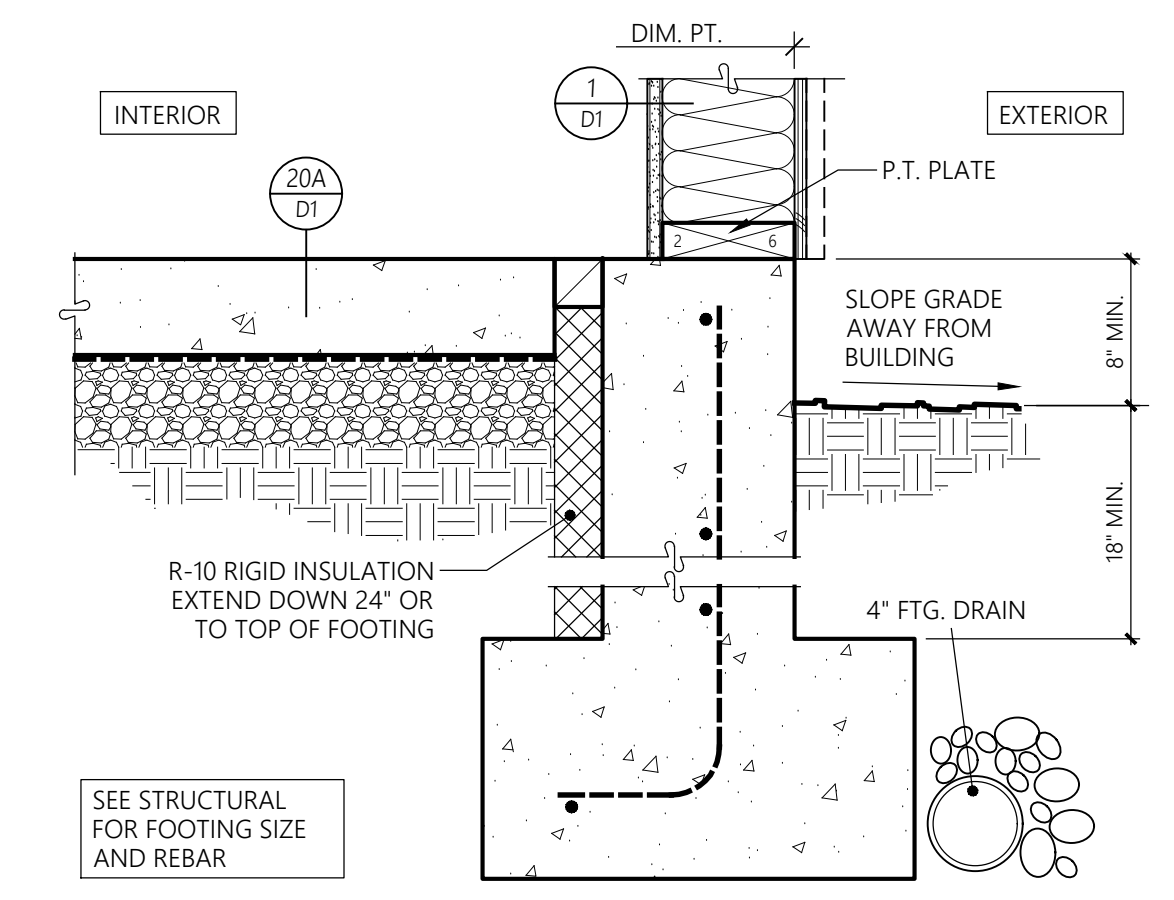
6 SWING DOOR THRESHOLD AT ACCESSIBLE ENTRANCE SECTION
1" = 1'-0"



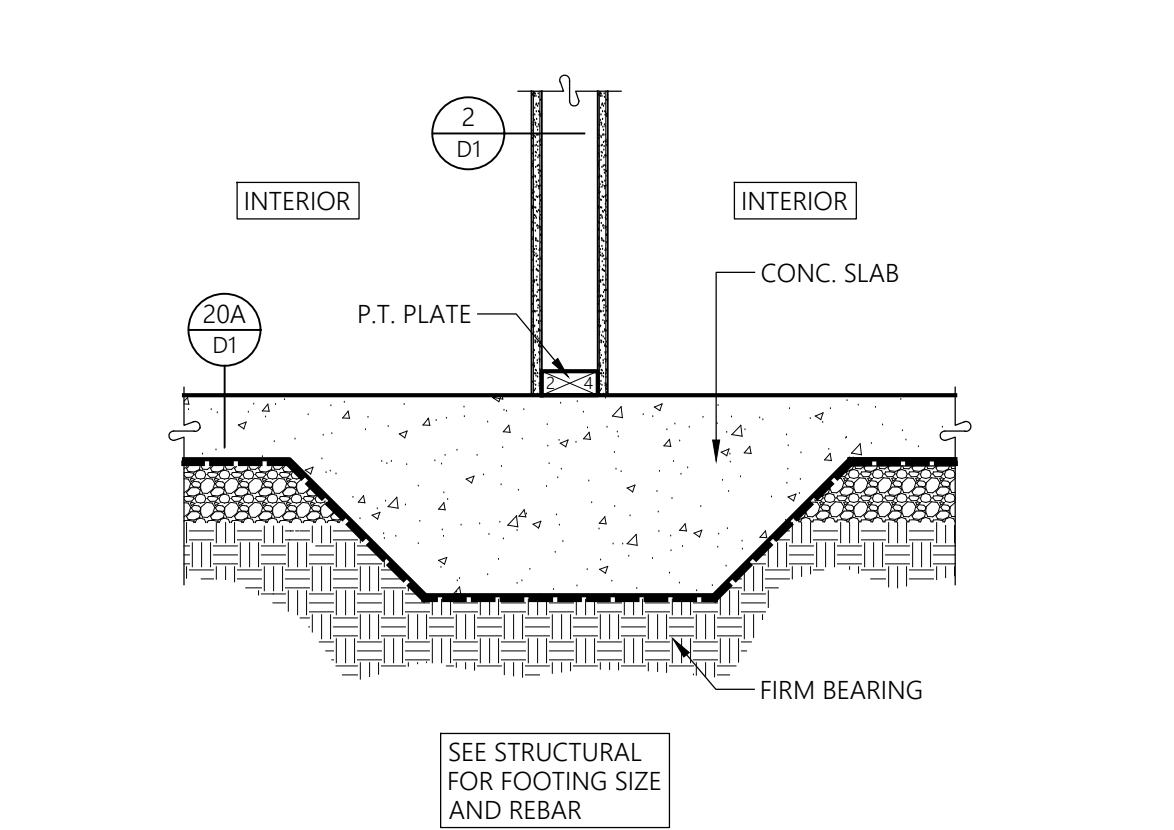
7 POST FOOTING AT PATIO SECTION
1" = 1'-0"



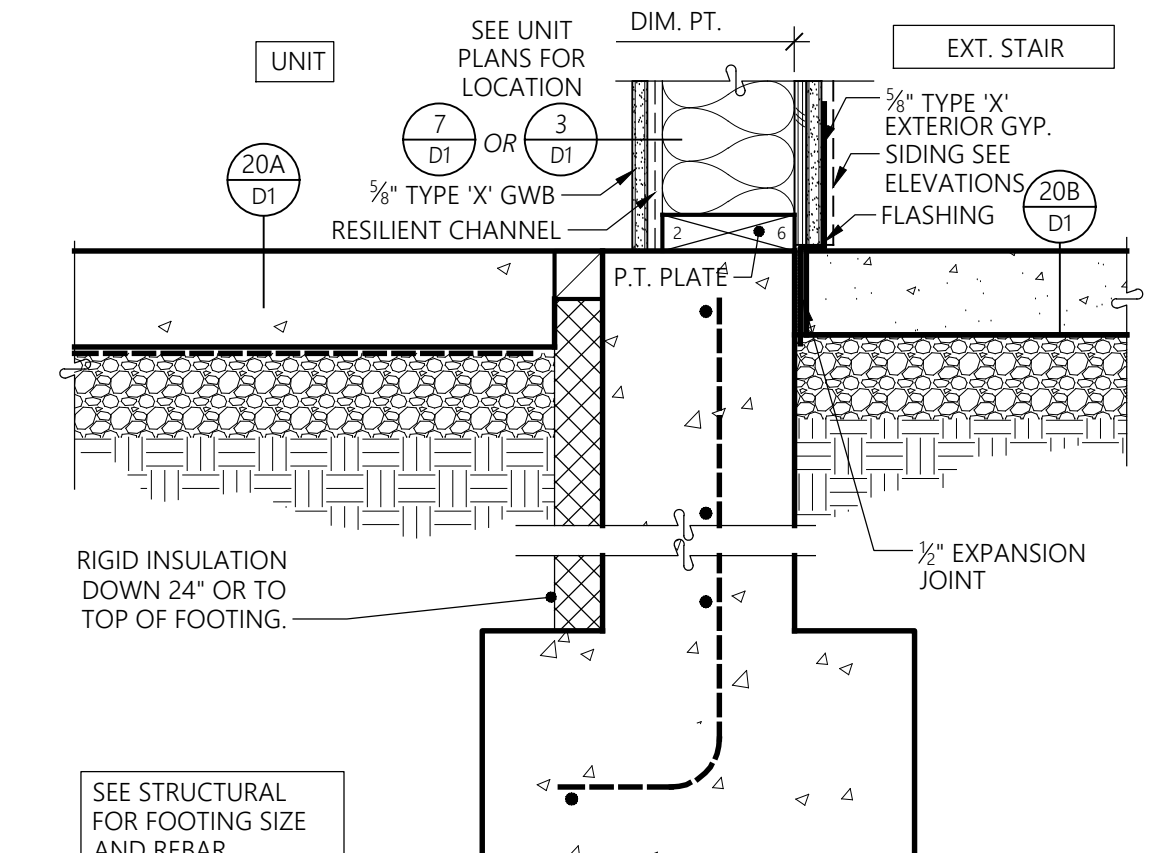
8 THICKENED CONC. SLAB EDGE AT PORCH / PATIO SECTION
1-1/2" = 1'-0"



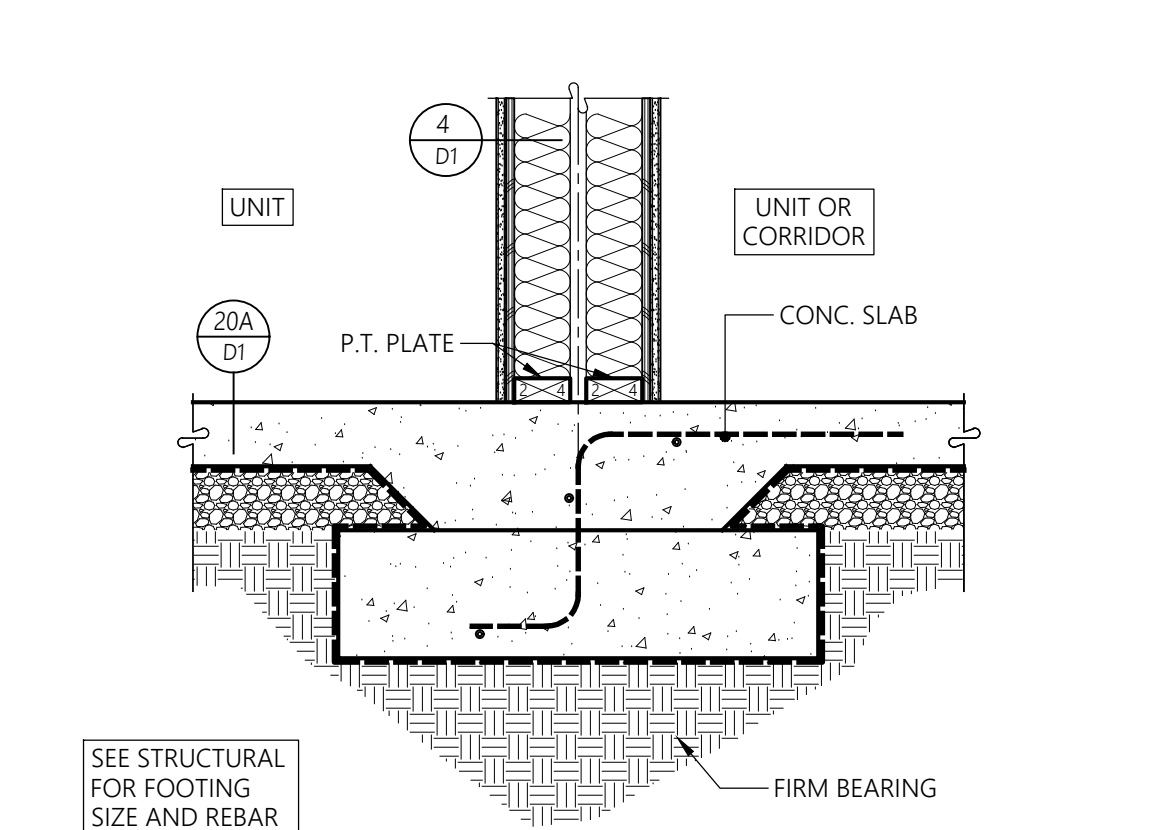
1 TYP. EXTERIOR WALL FOOTING SECTION
1-1/2" = 1'-0"



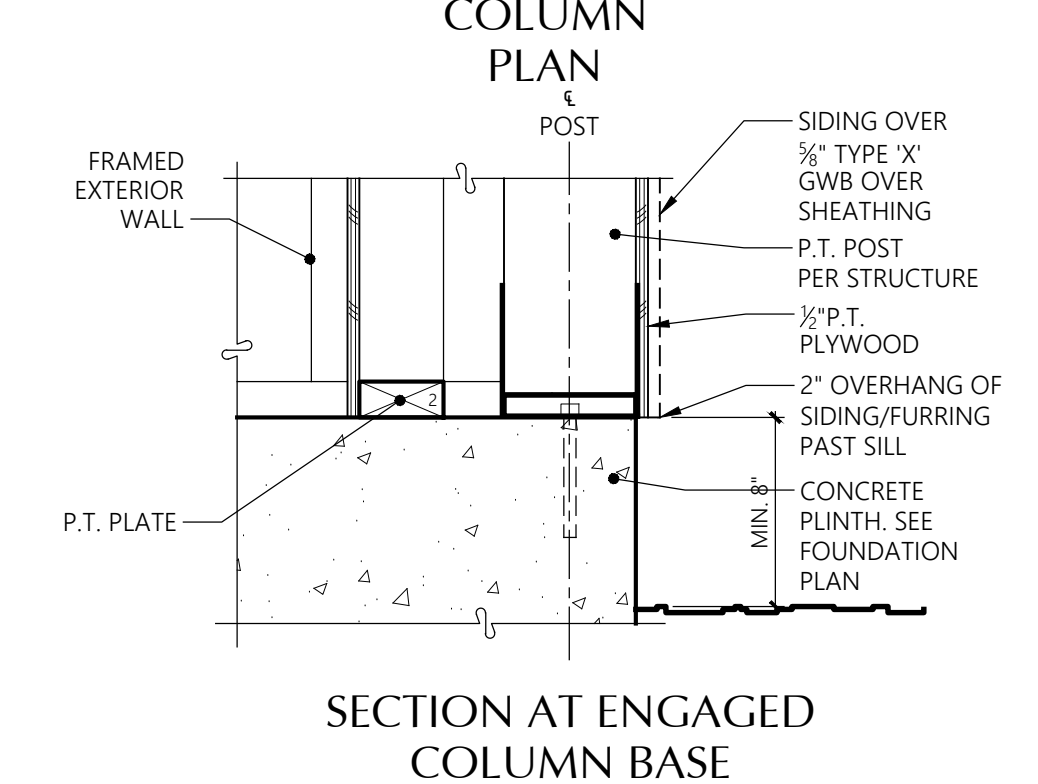
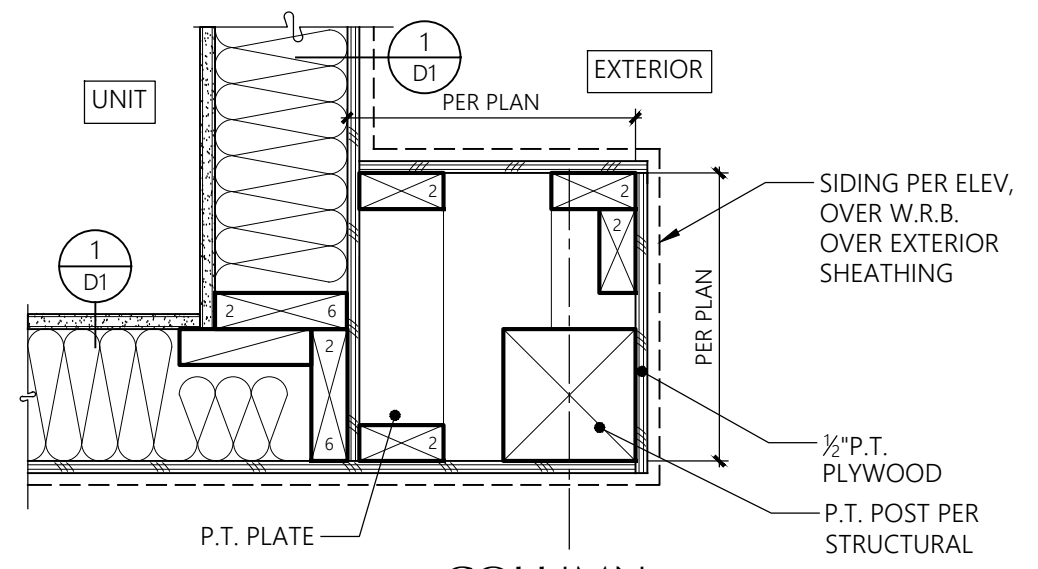
2 INTERIOR WALL FOOTING SECTION
1" = 1'-0"



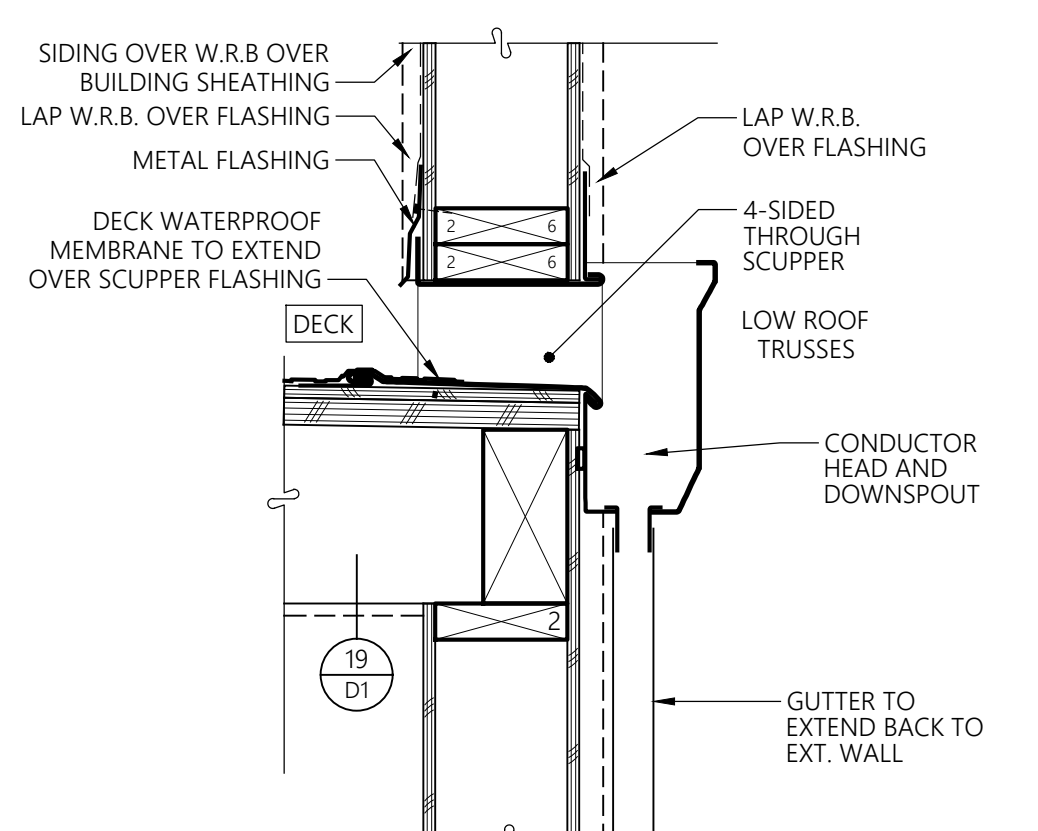
3 TYP. STAIR WALL FOOTING SECTION
1 1/2" = 1'-0"



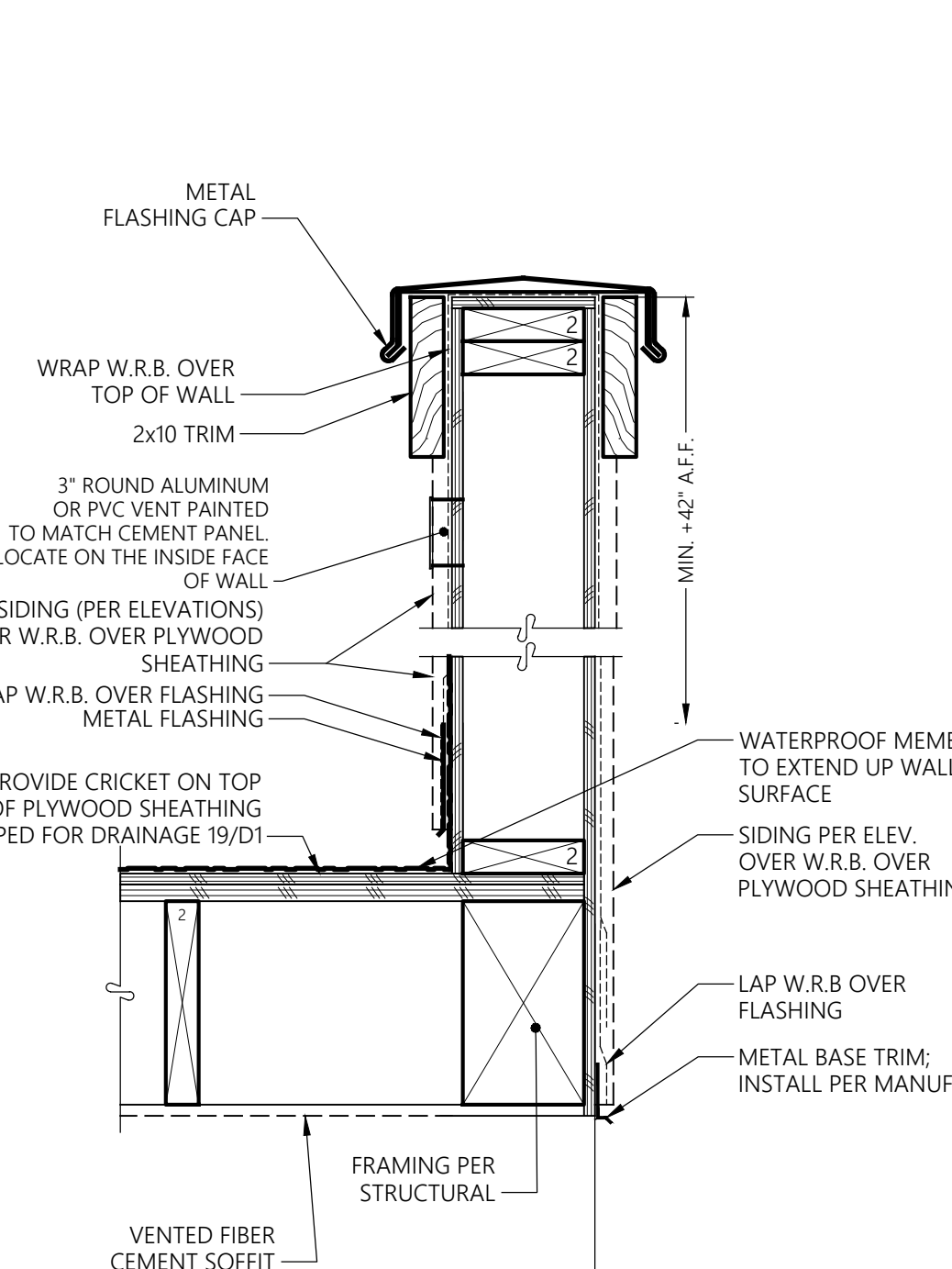
4 COMMON WALL FOUNDATION SECTION
1" = 1'-0"



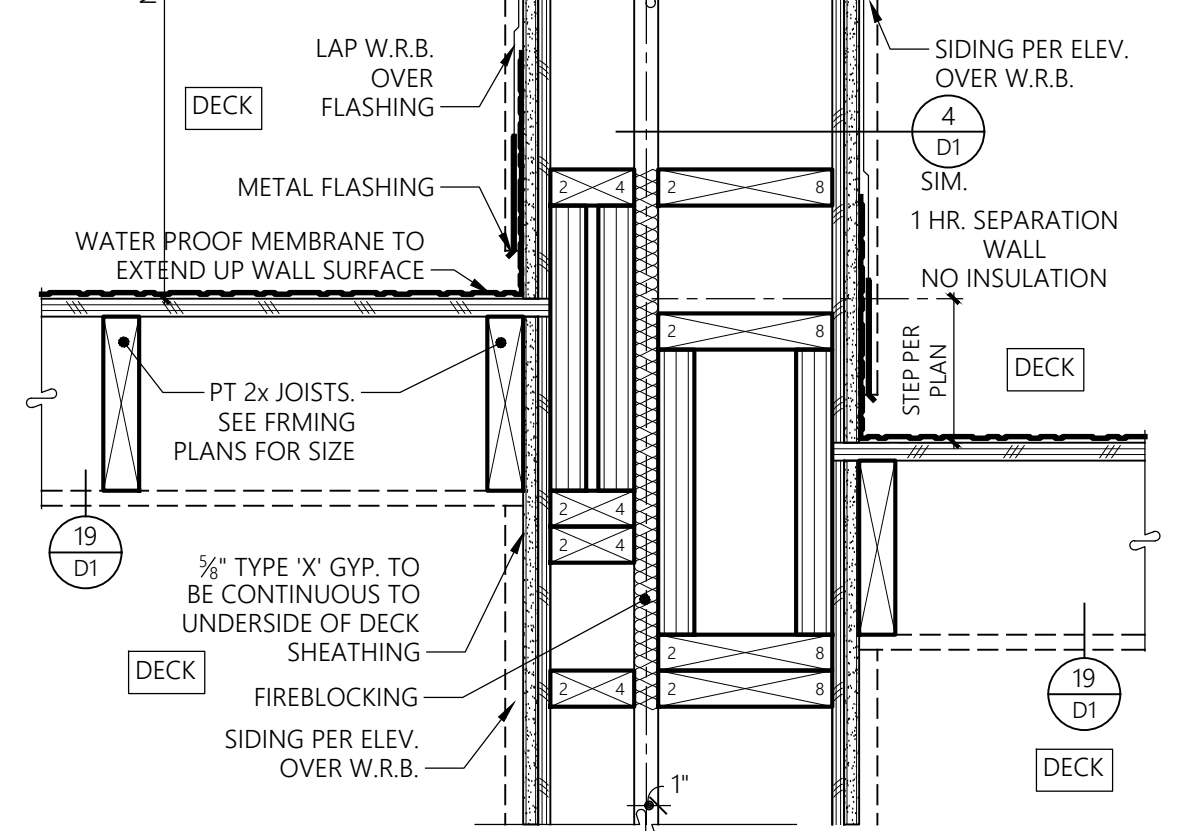
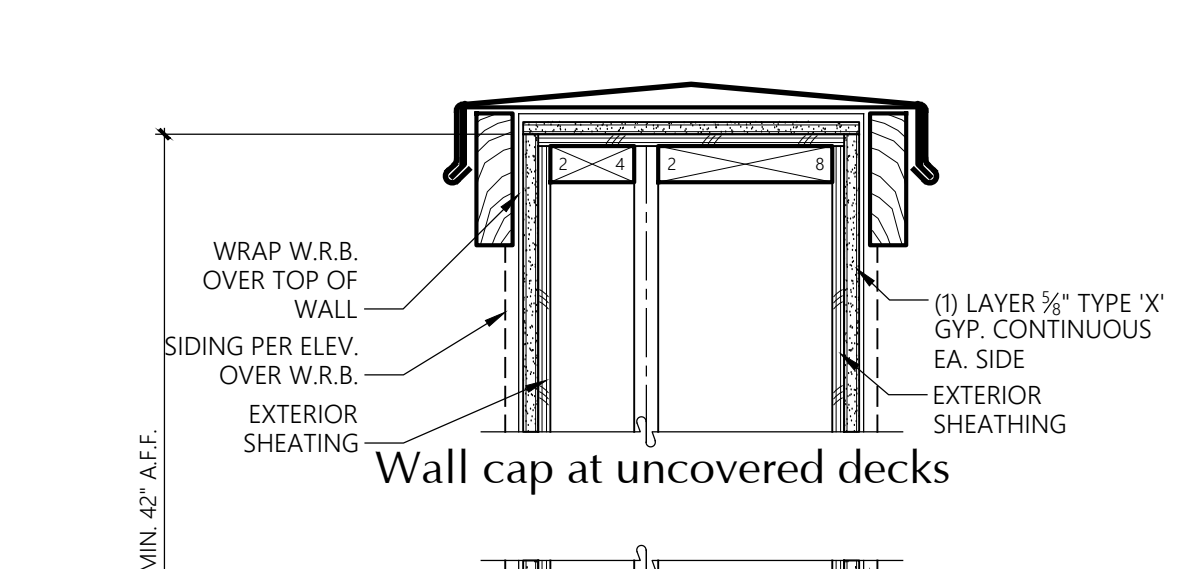
17 FURRED COLUMN
1-1/2" = 1'-0"



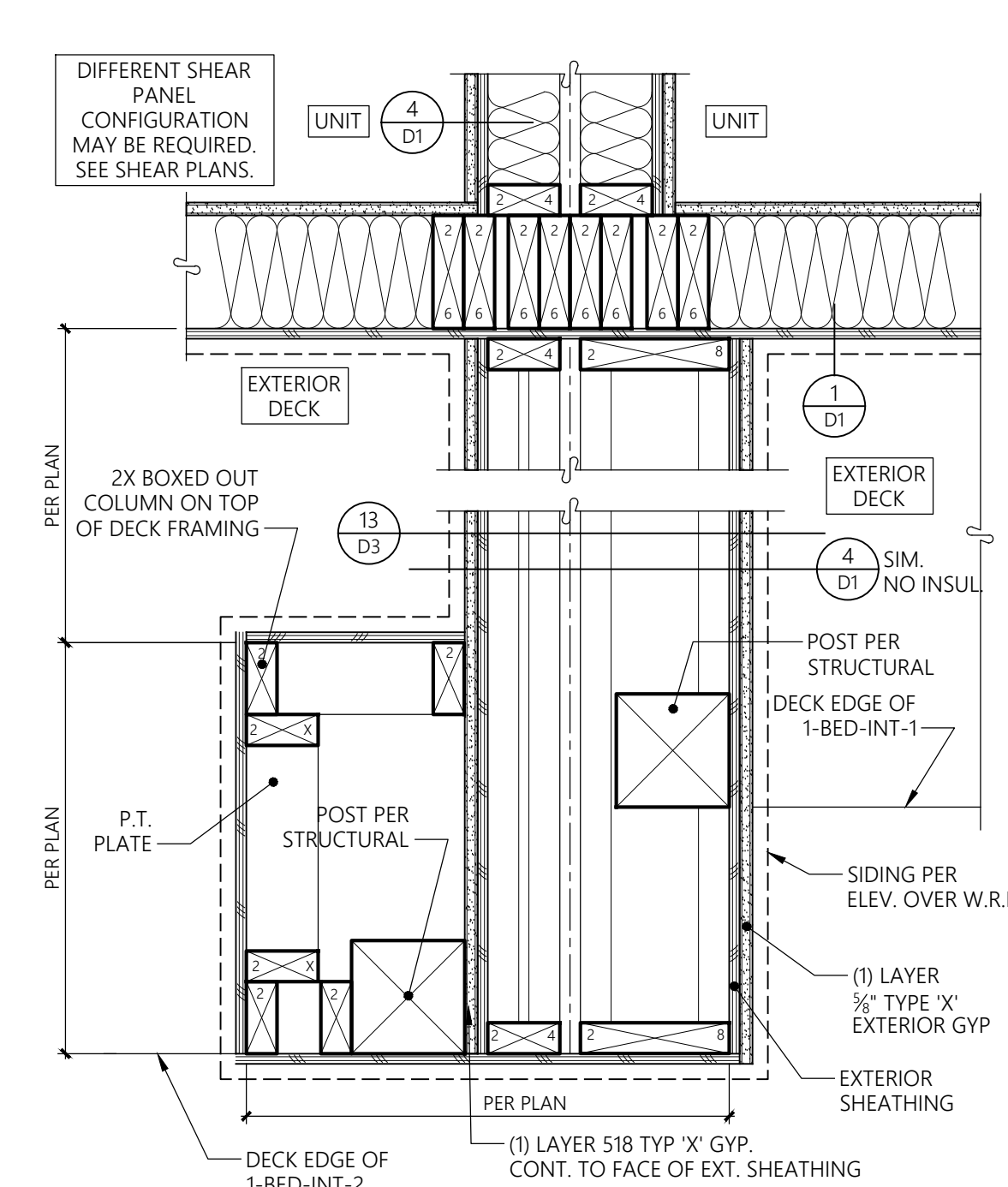
18 SCUPPER AT DECK
1-1/2" = 1'-0"



20 LOW WALL @ DECK EDGE
1-1/2" = 1'-0"



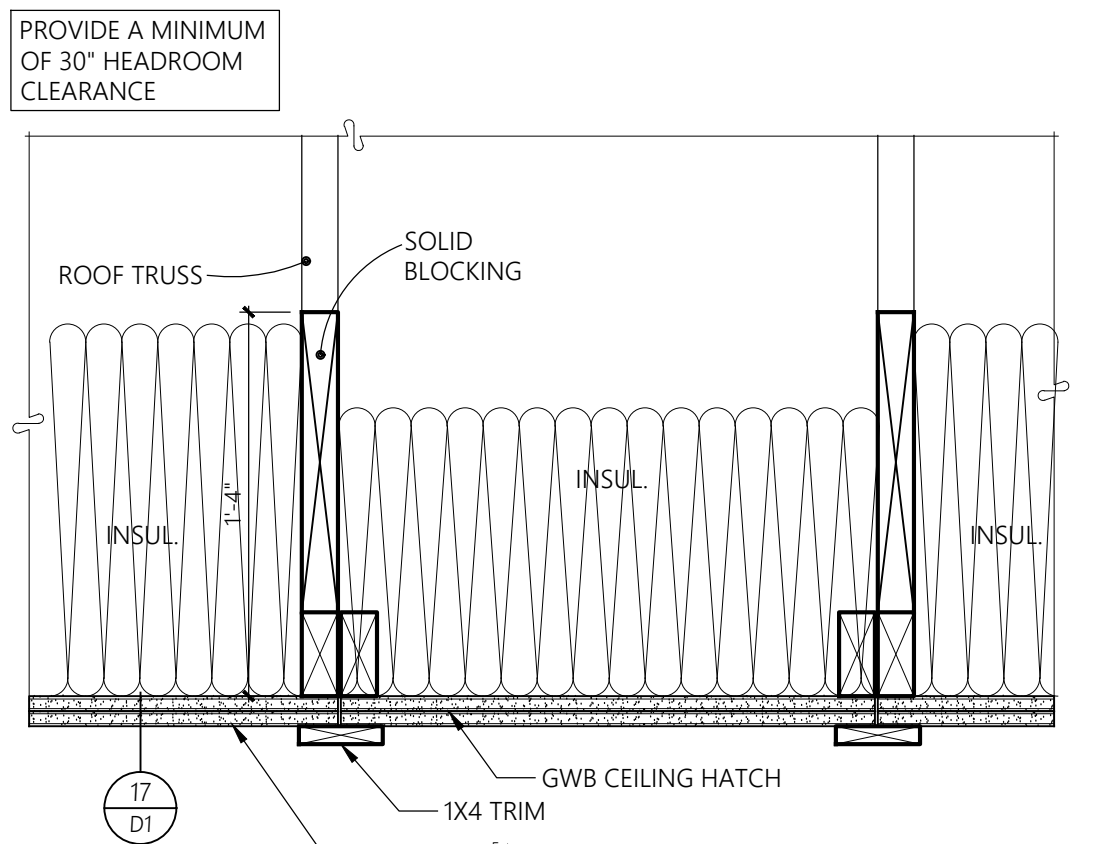
9 ATTIC ACCESS
1-1/2" = 1'-0"



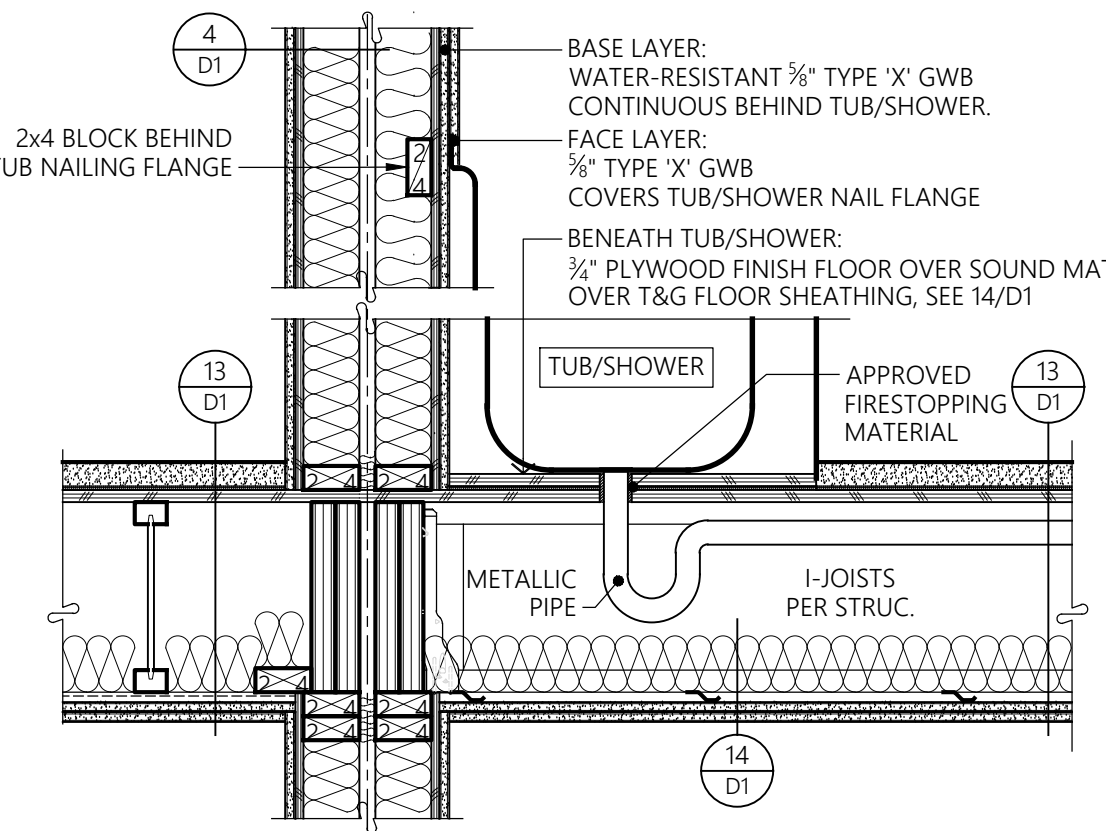
13 STEPPED COMMON WALL @ DECK
1-1/2" = 1'-0"



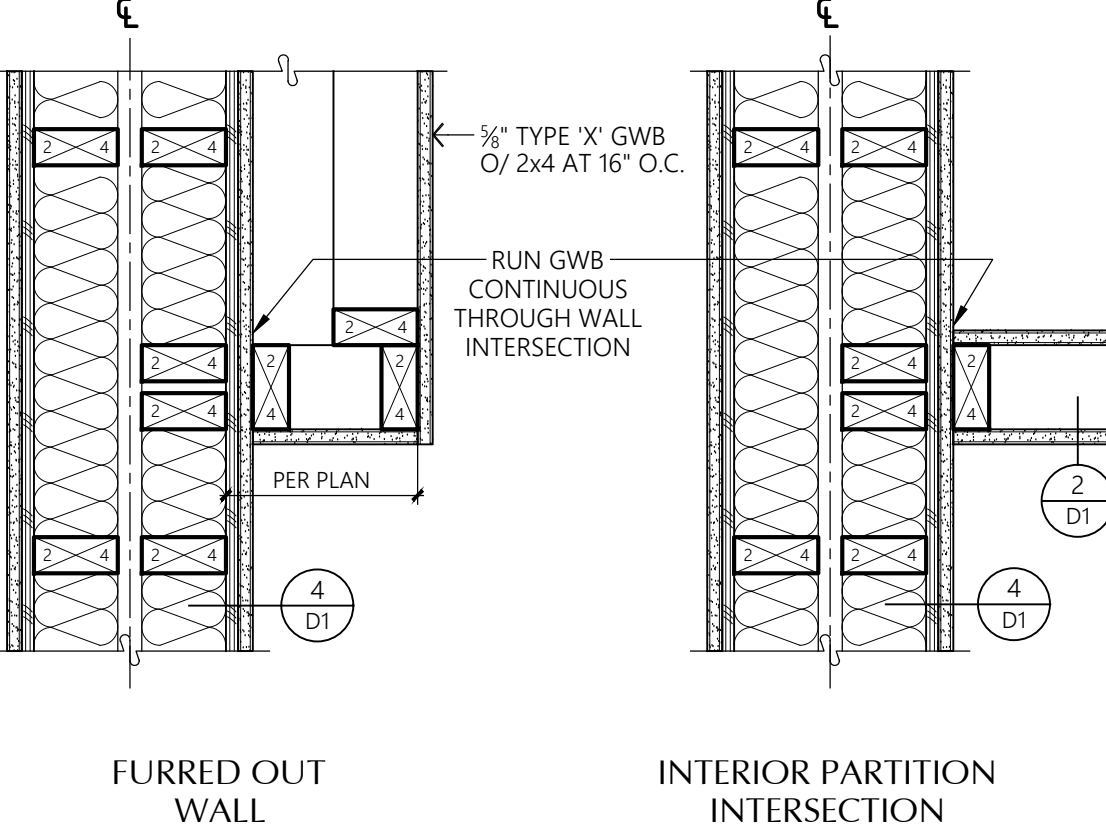
15 UNIT SEP. WALL AT DECK
1-1/2" = 1'-0"



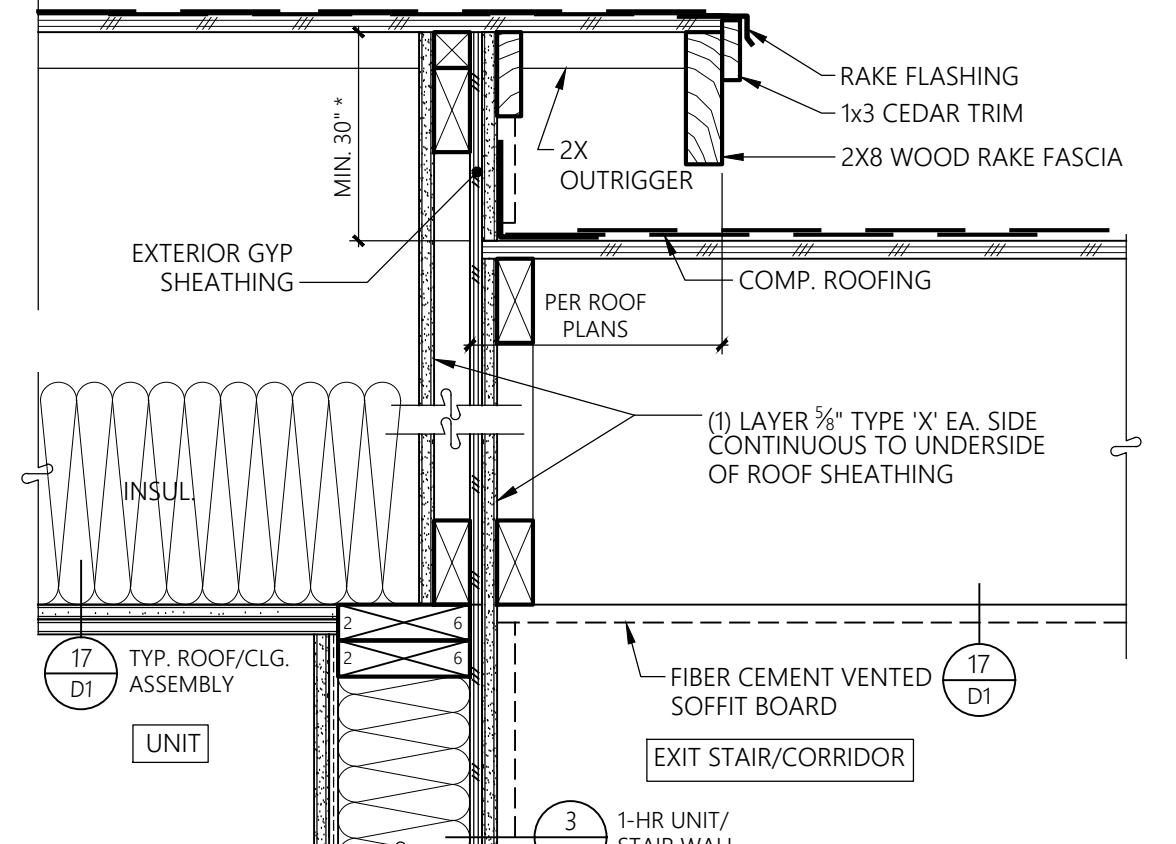
10 TUB/SHOWER AT 1-HR SEP. WALL
1" = 1'-0"



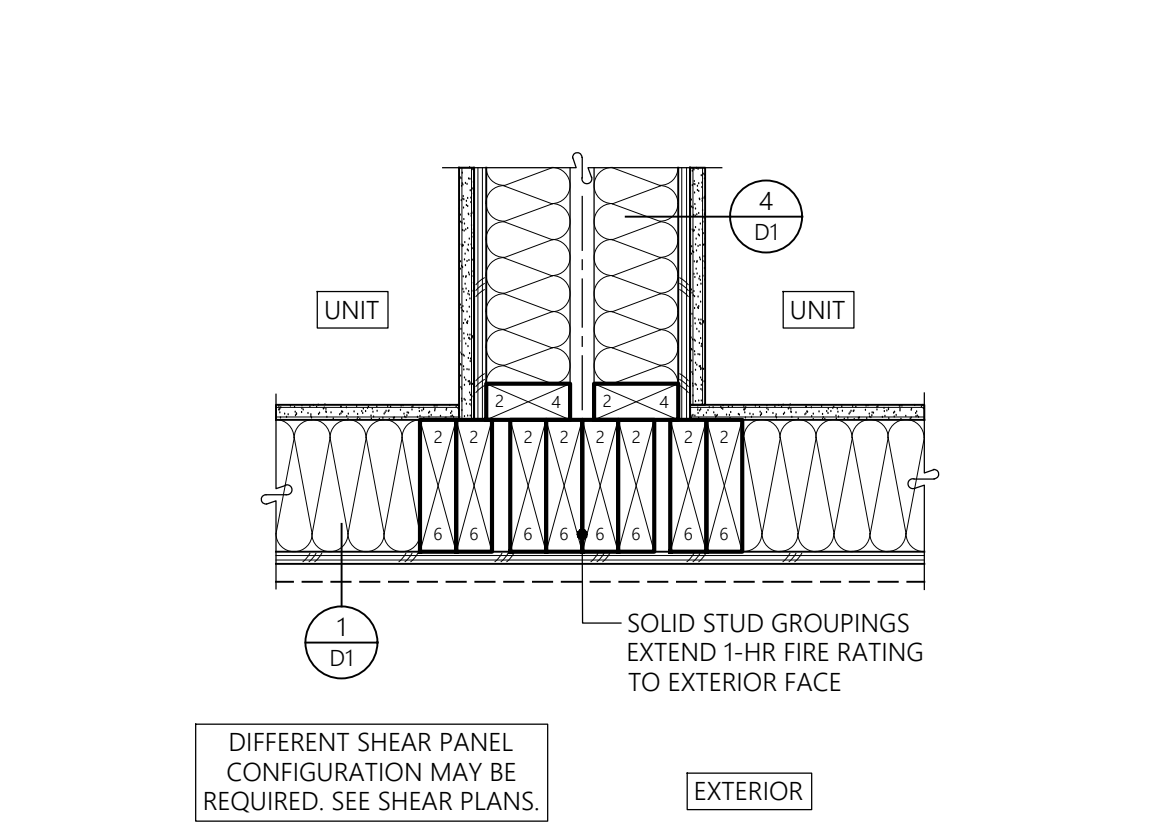
11 INTERIOR WALL AT UNIT SEP. WALL
1-1/2" = 1'-0"



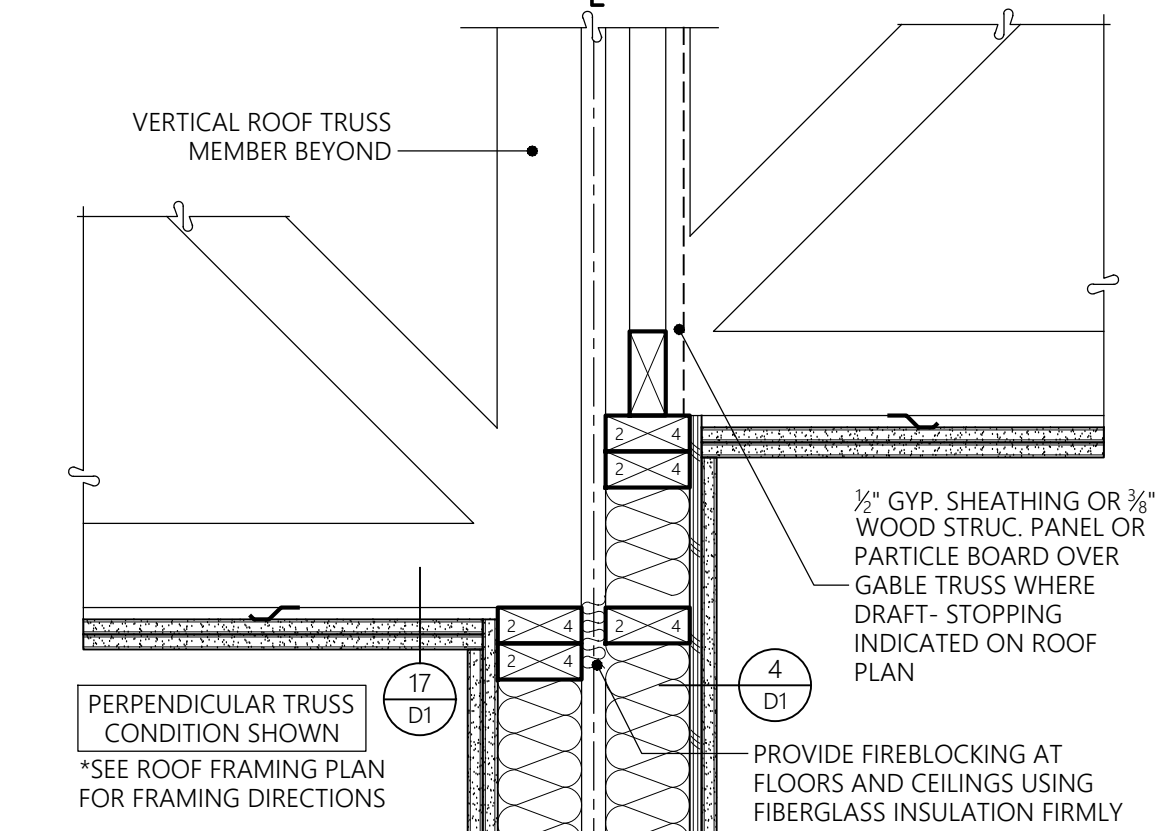
11 INTERIOR WALL AT UNIT SEP. WALL
1-1/2" = 1'-0"



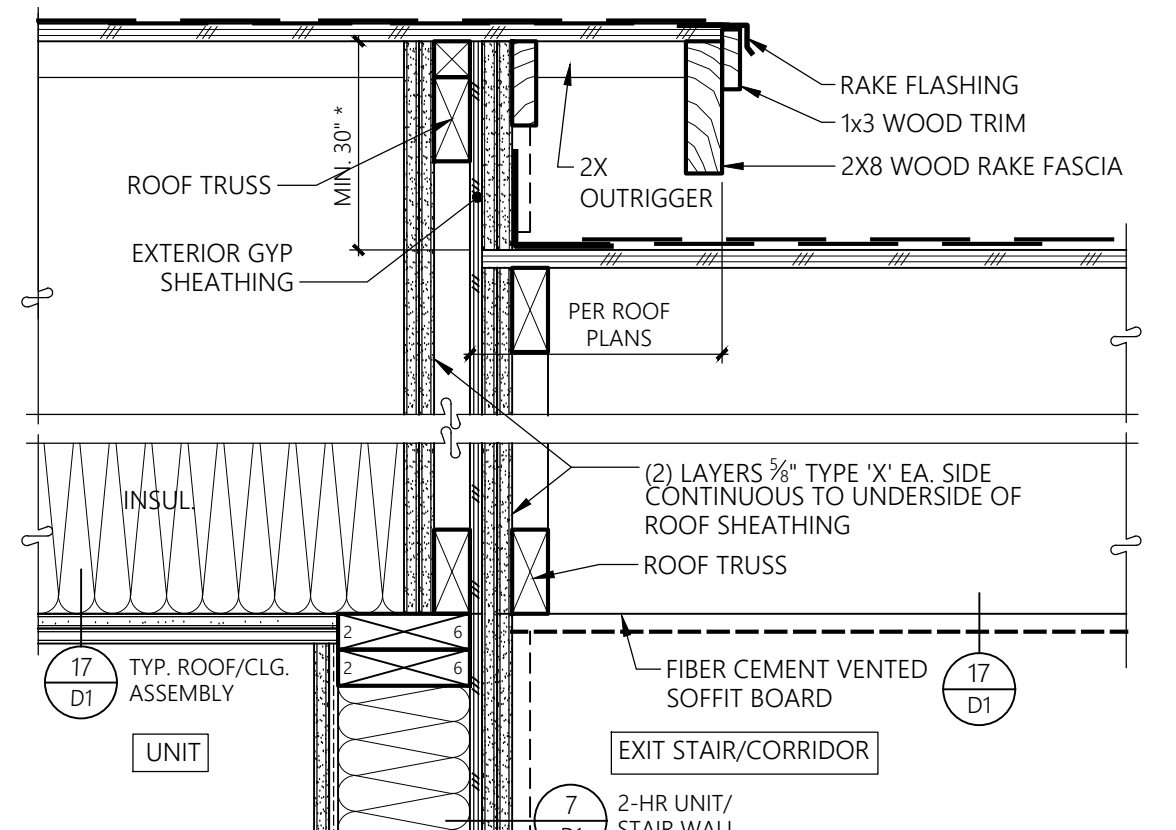
5 1-HR STAIR WALL AT ROOF
1-1/2" = 1'-0"



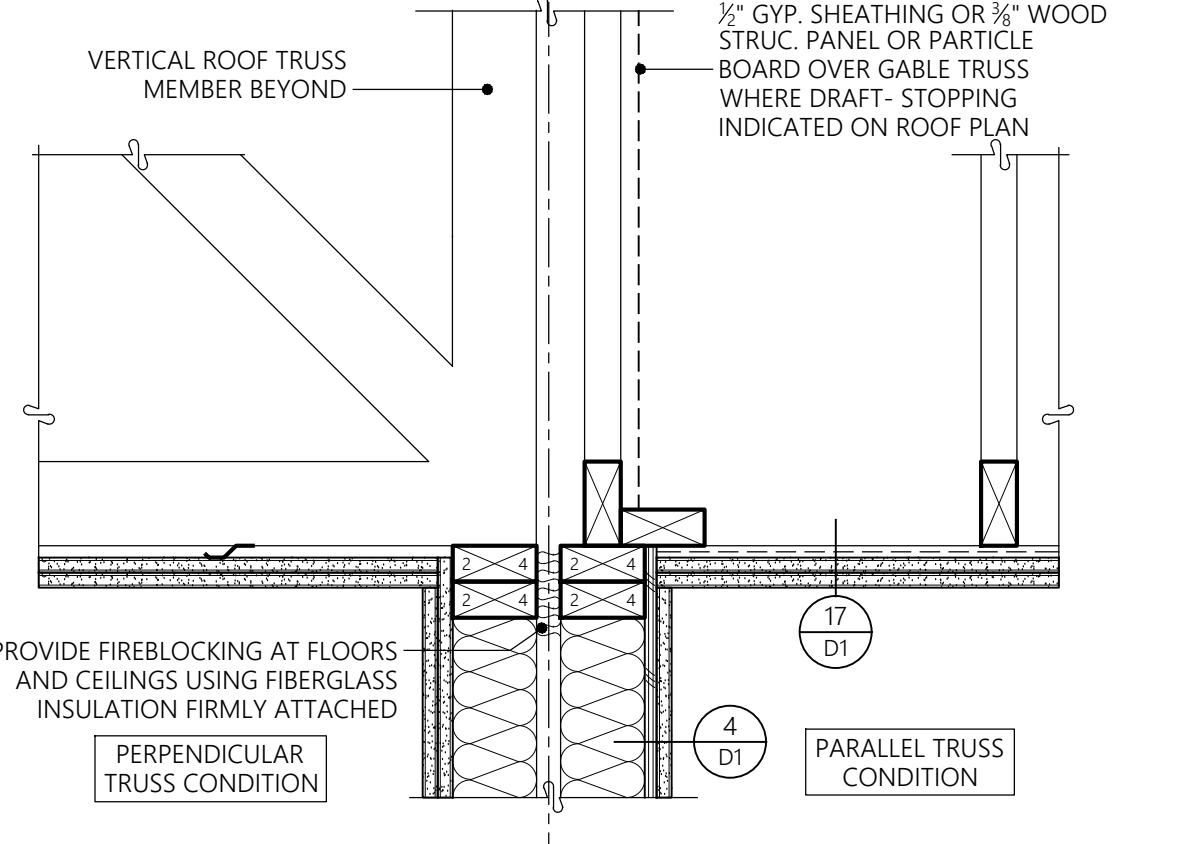
6 UNIT SEP. WALL AT EXT. WALL
1-1/2" = 1'-0"



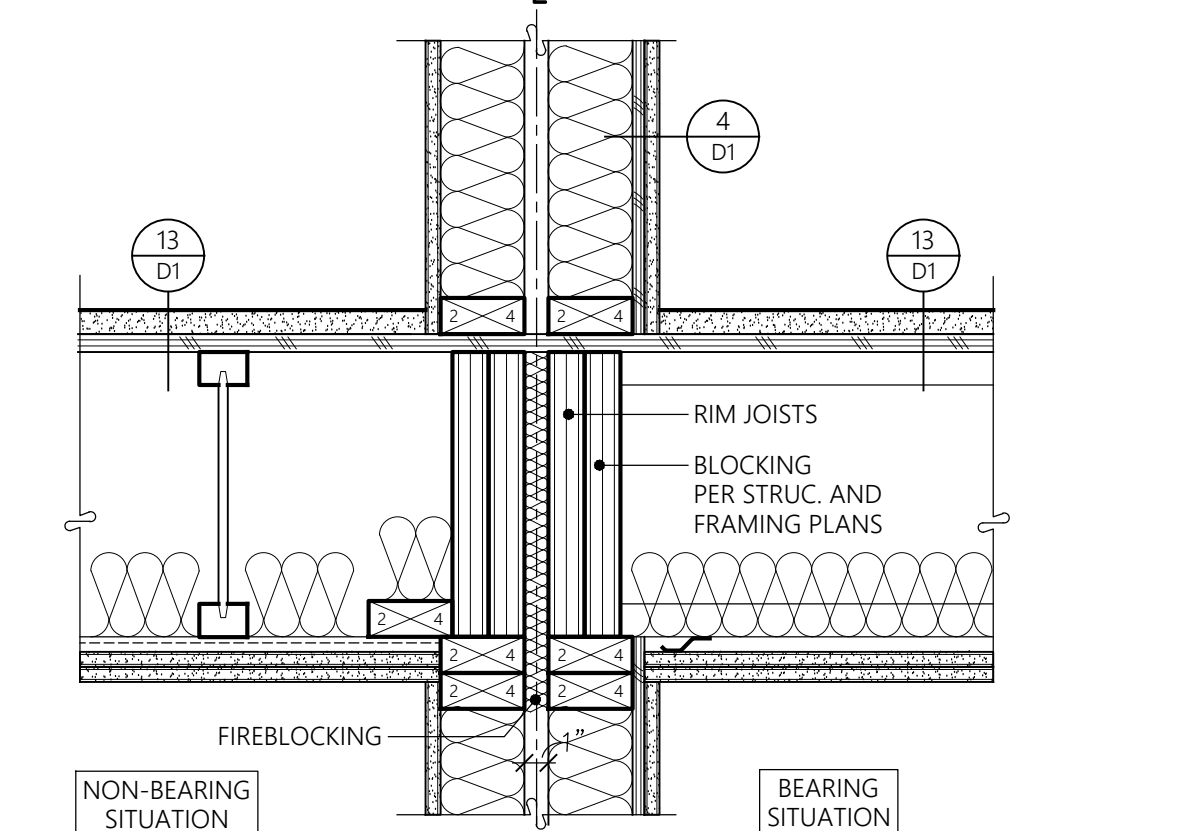
7 UNIT SEP. WALL AT STEPPED ROOF
1-1/2" = 1'-0"



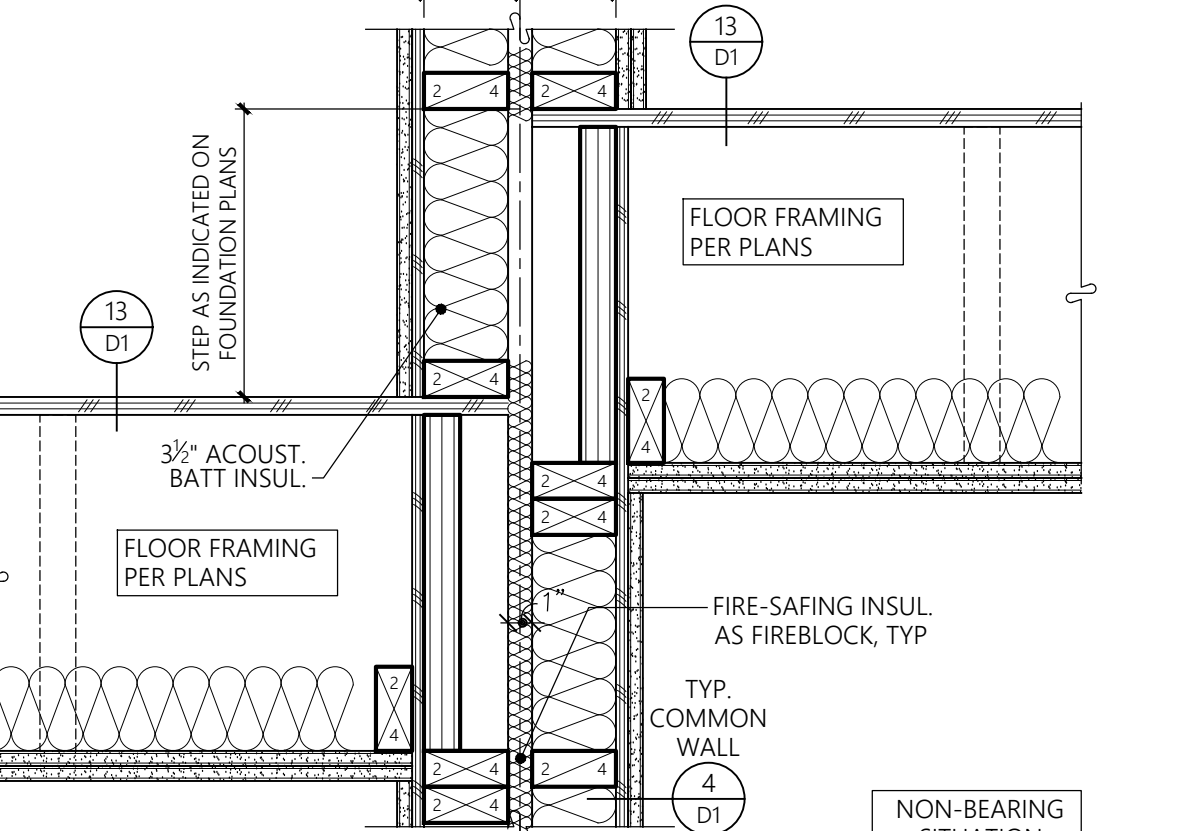
8 2-HR STAIR WALL AT ROOF
1-1/2" = 1'-0"



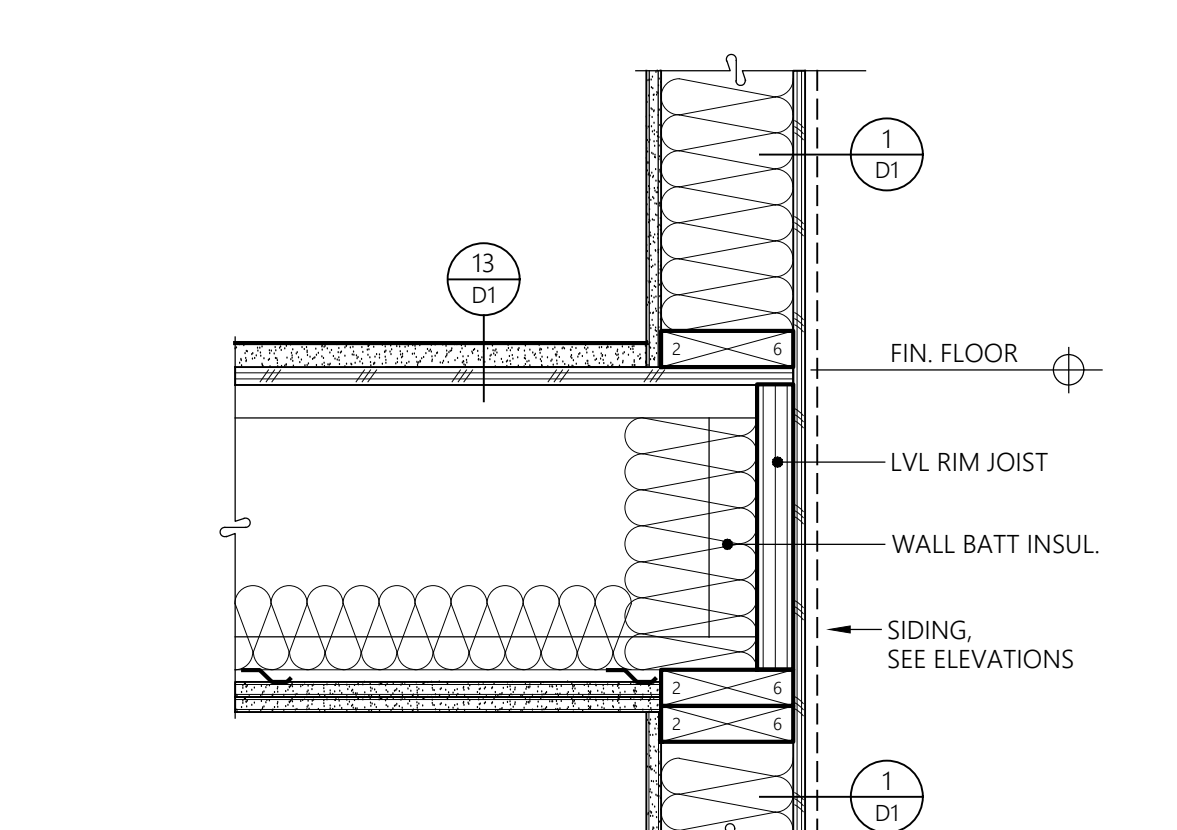
1 UNIT SEP. WALL AT ROOF TRUSSES
1-1/2" = 1'-0"



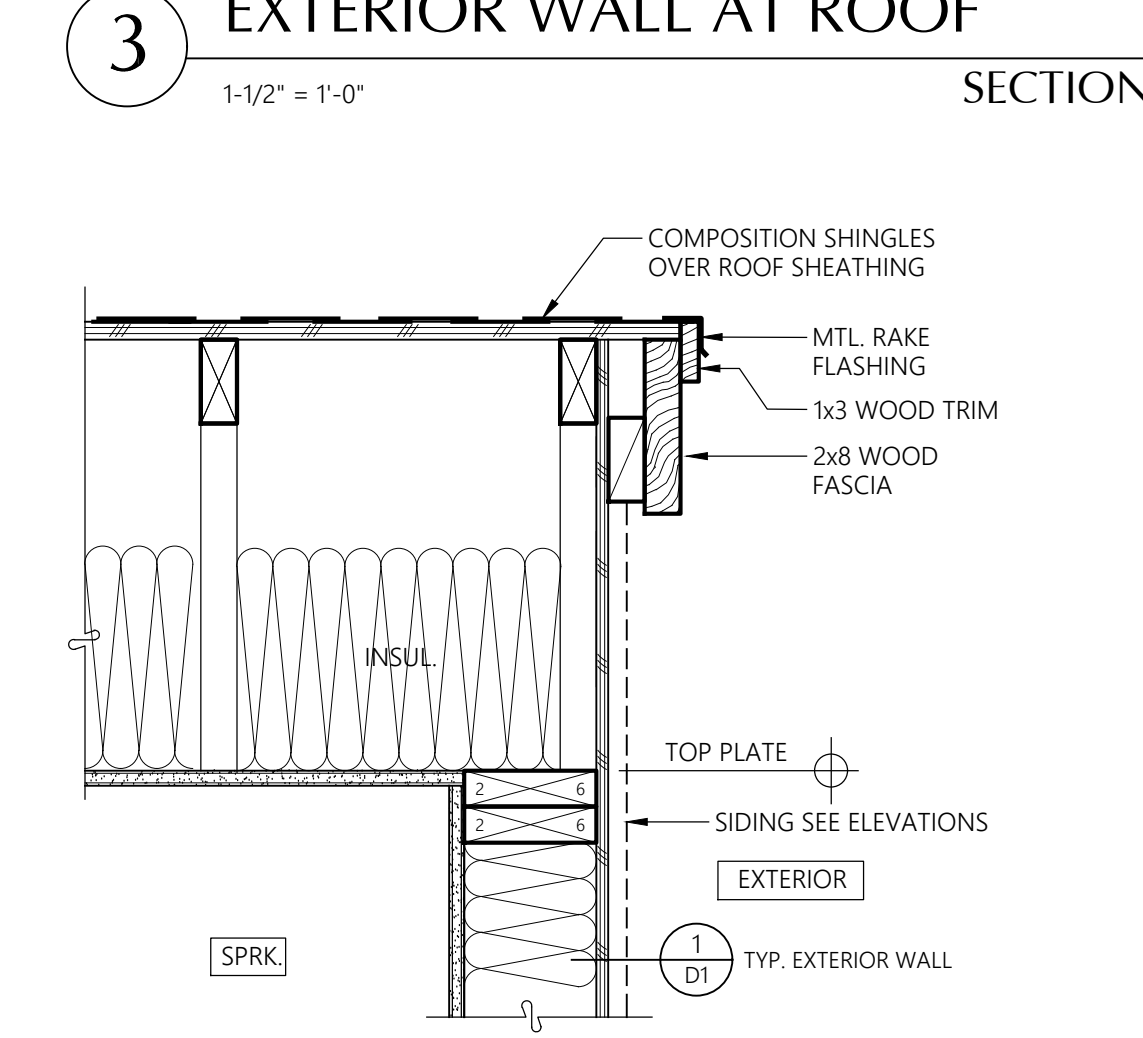
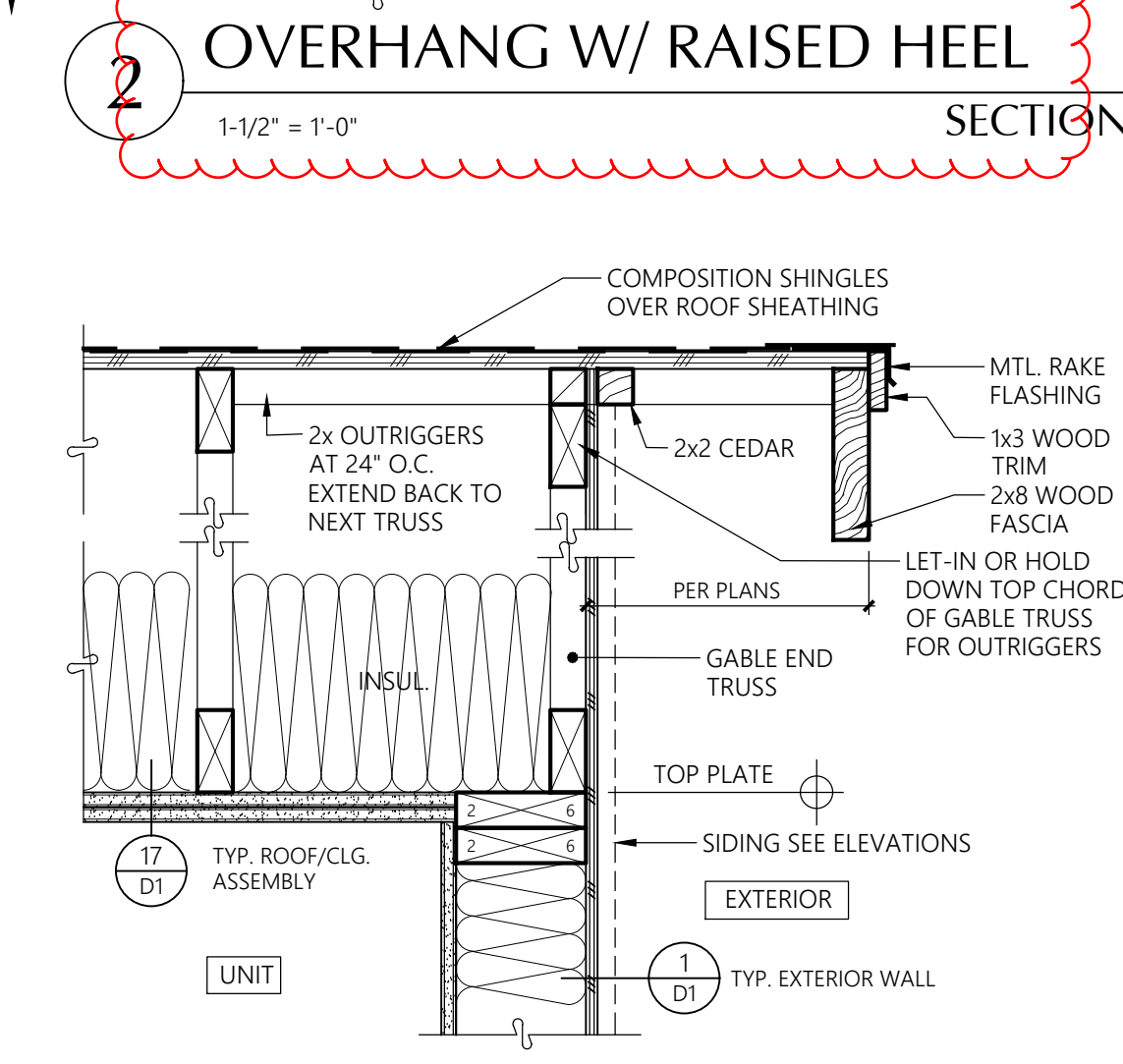
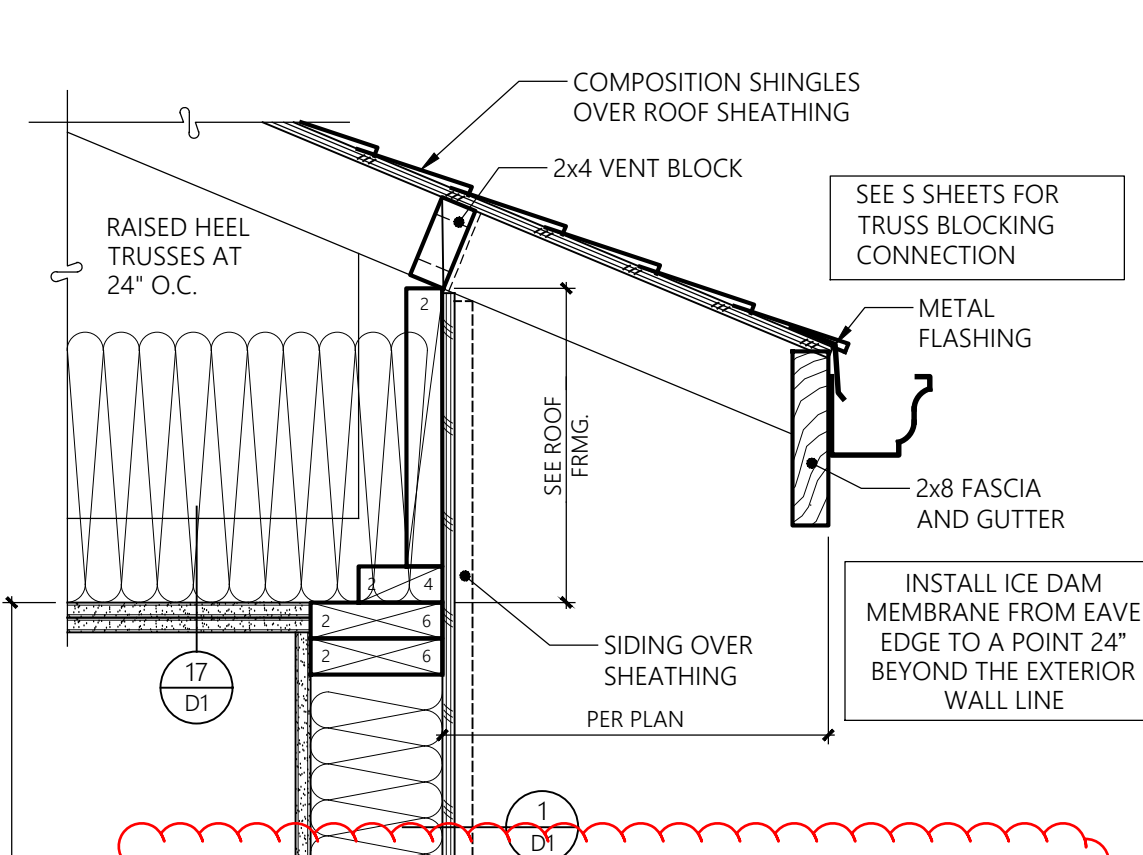
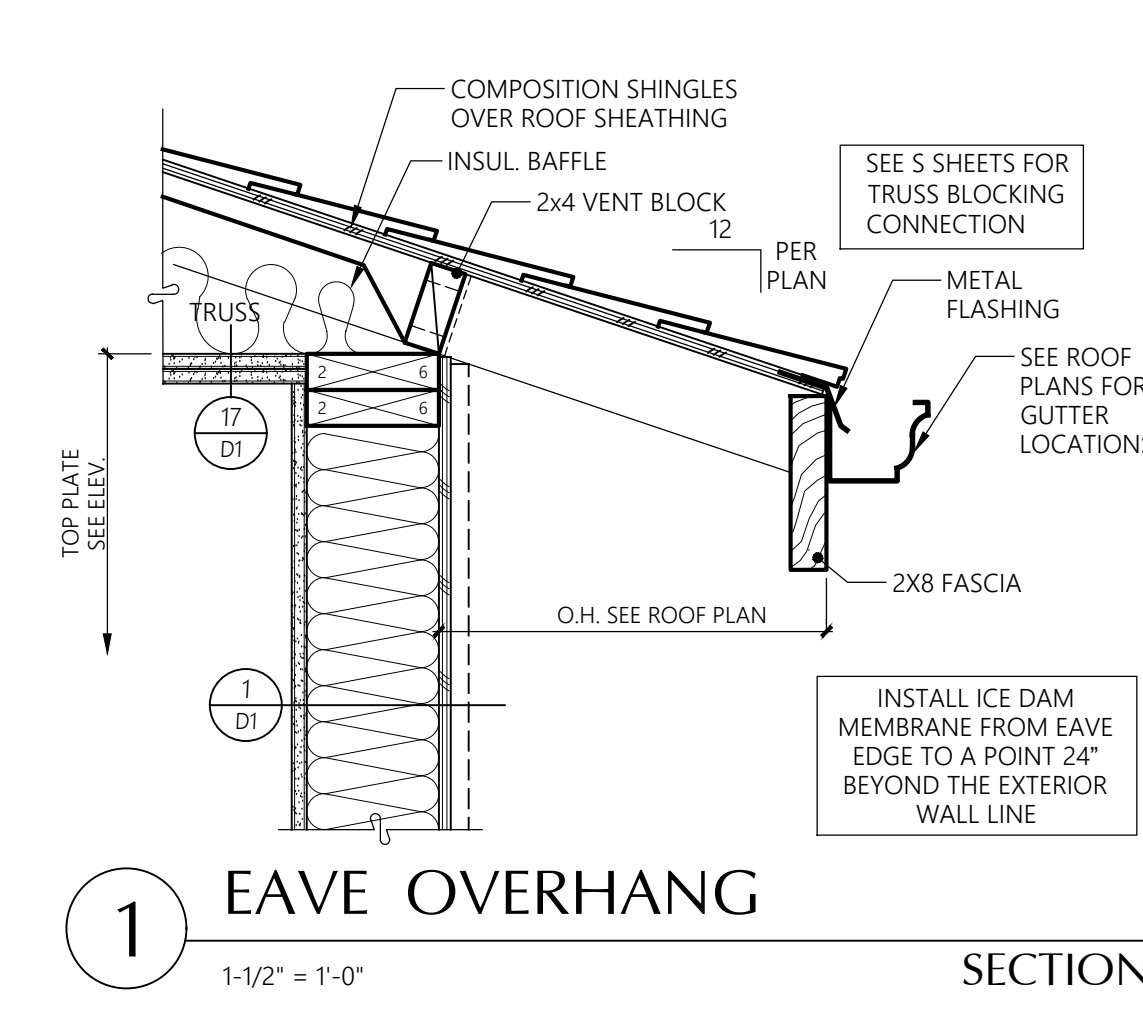
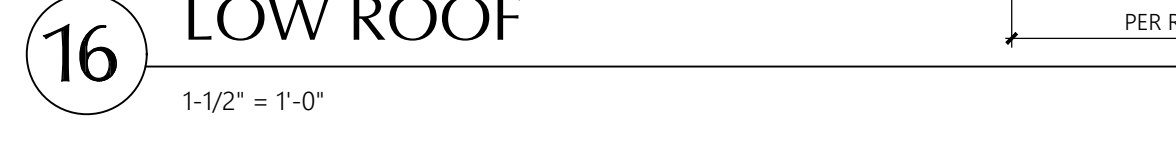
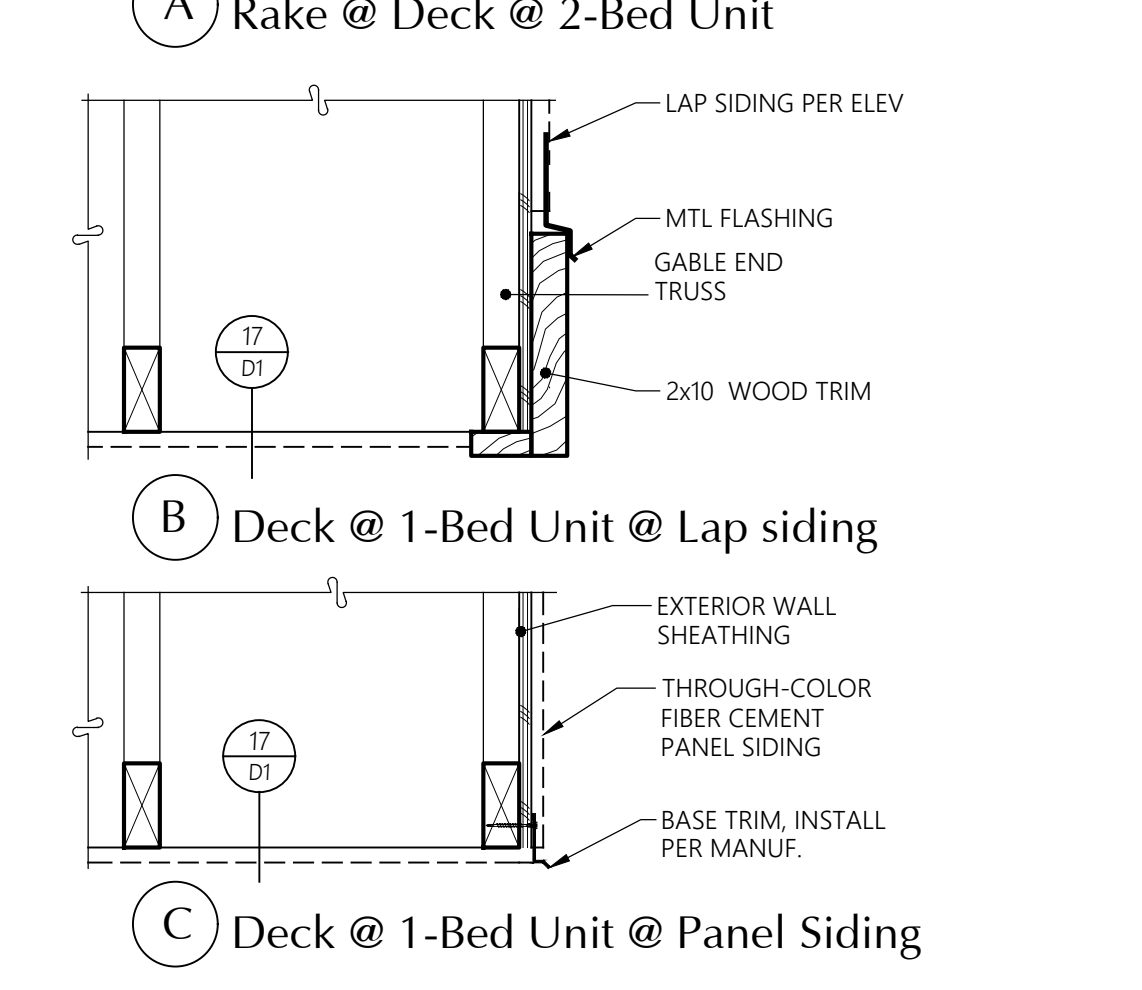
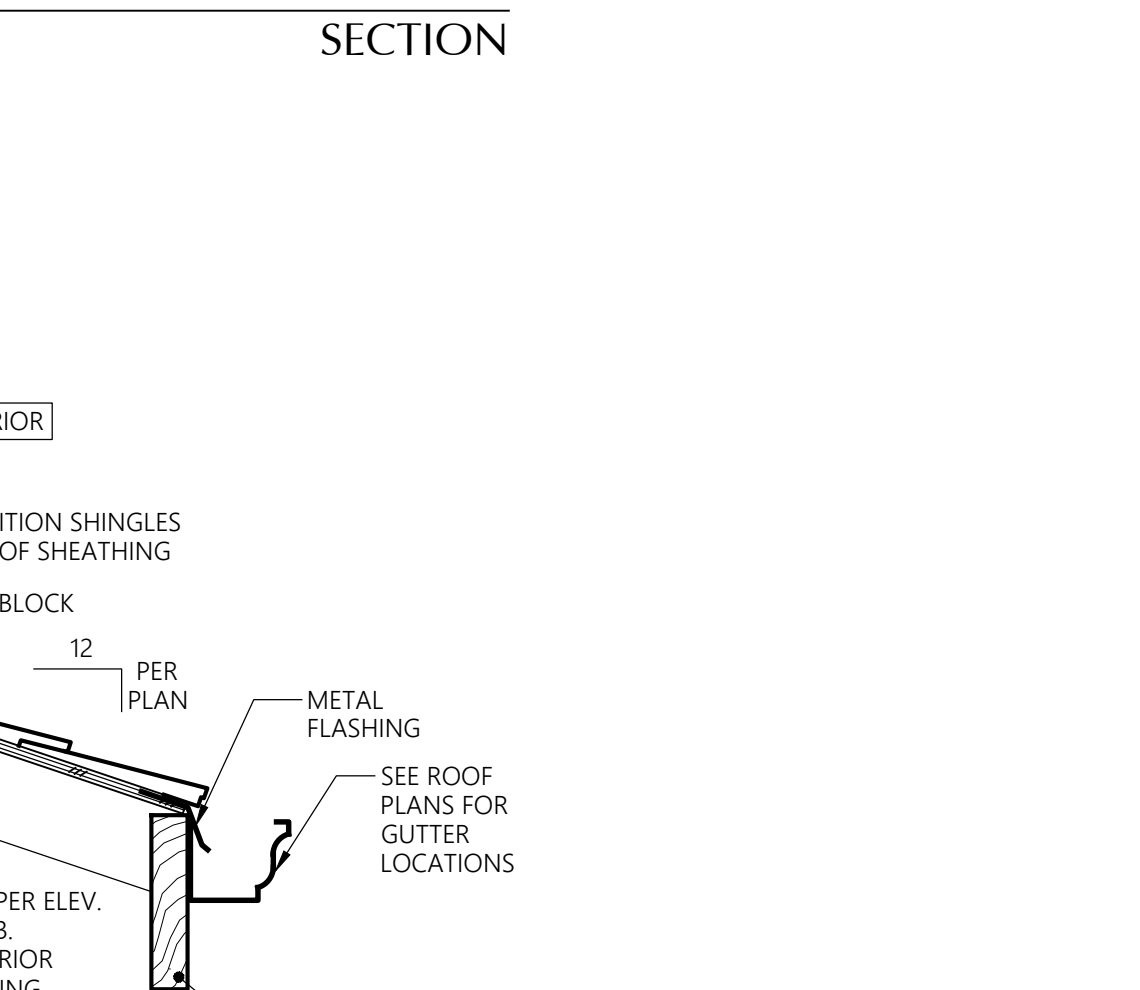
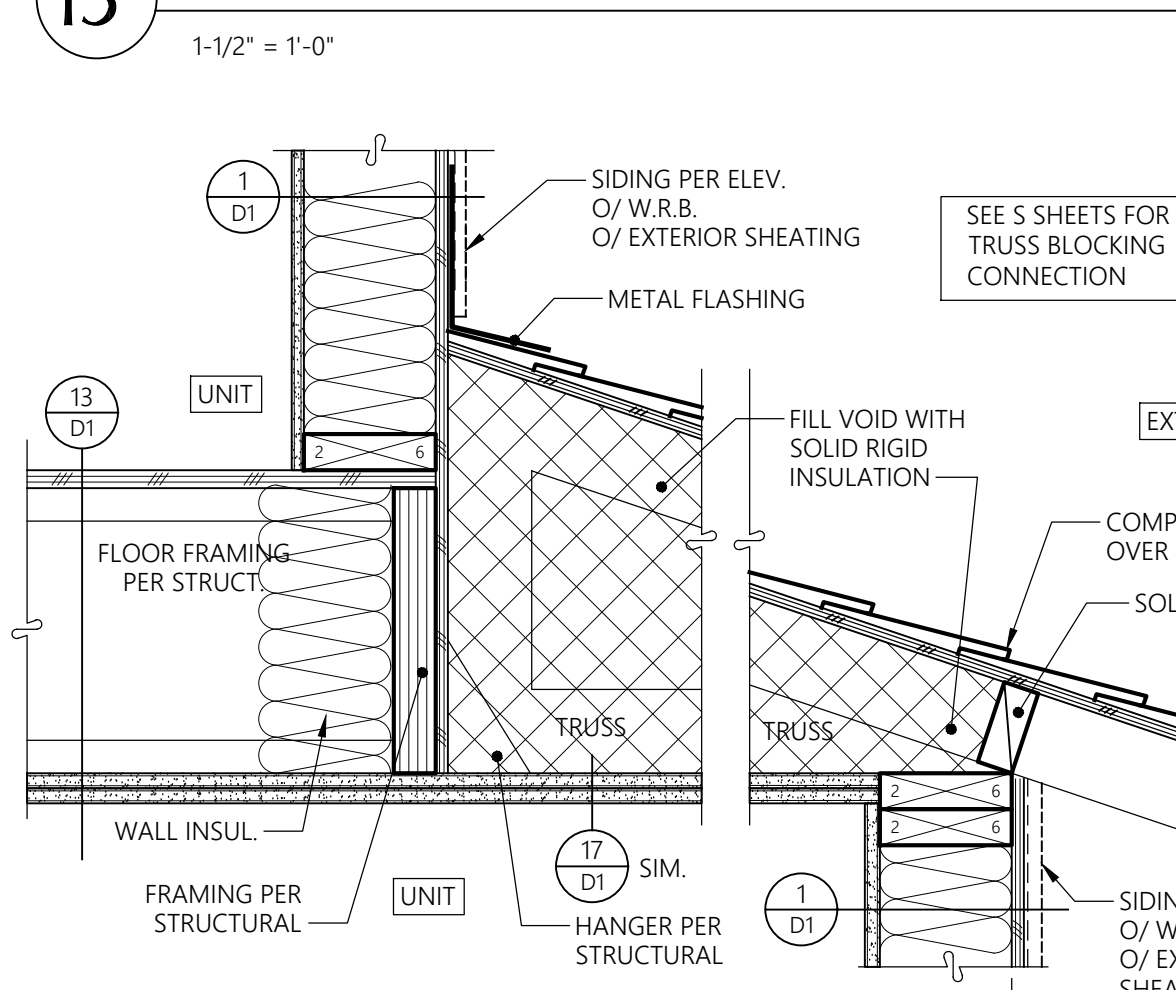
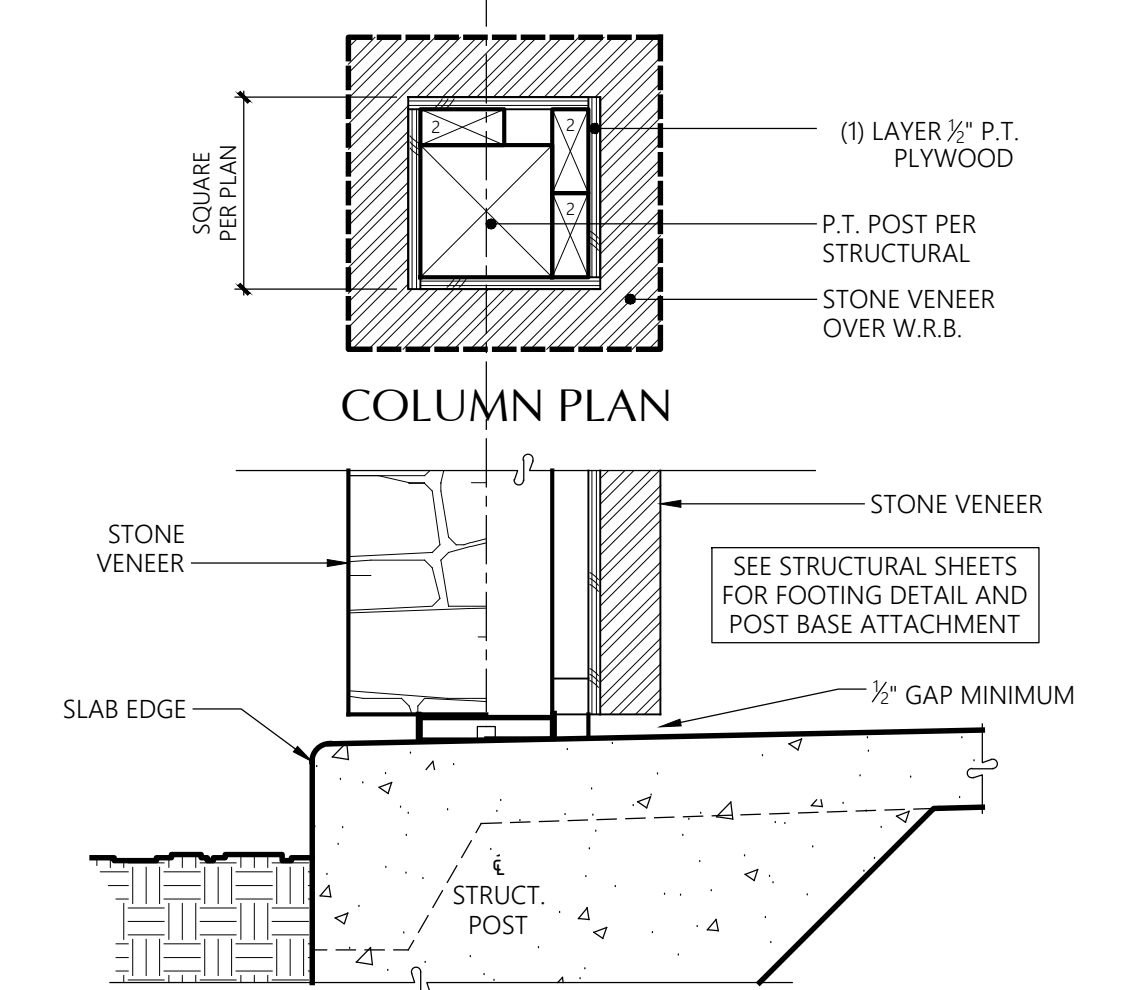
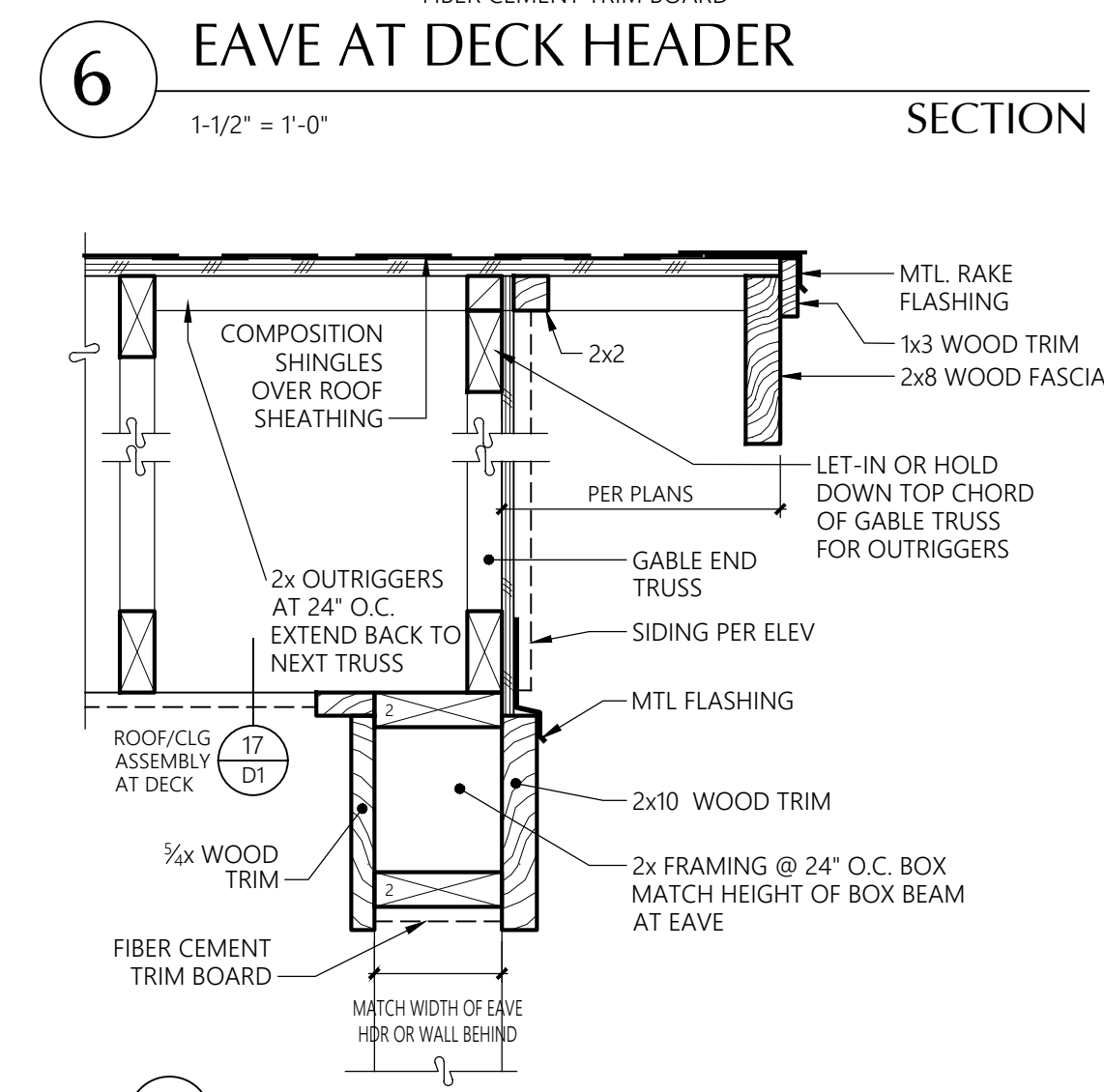
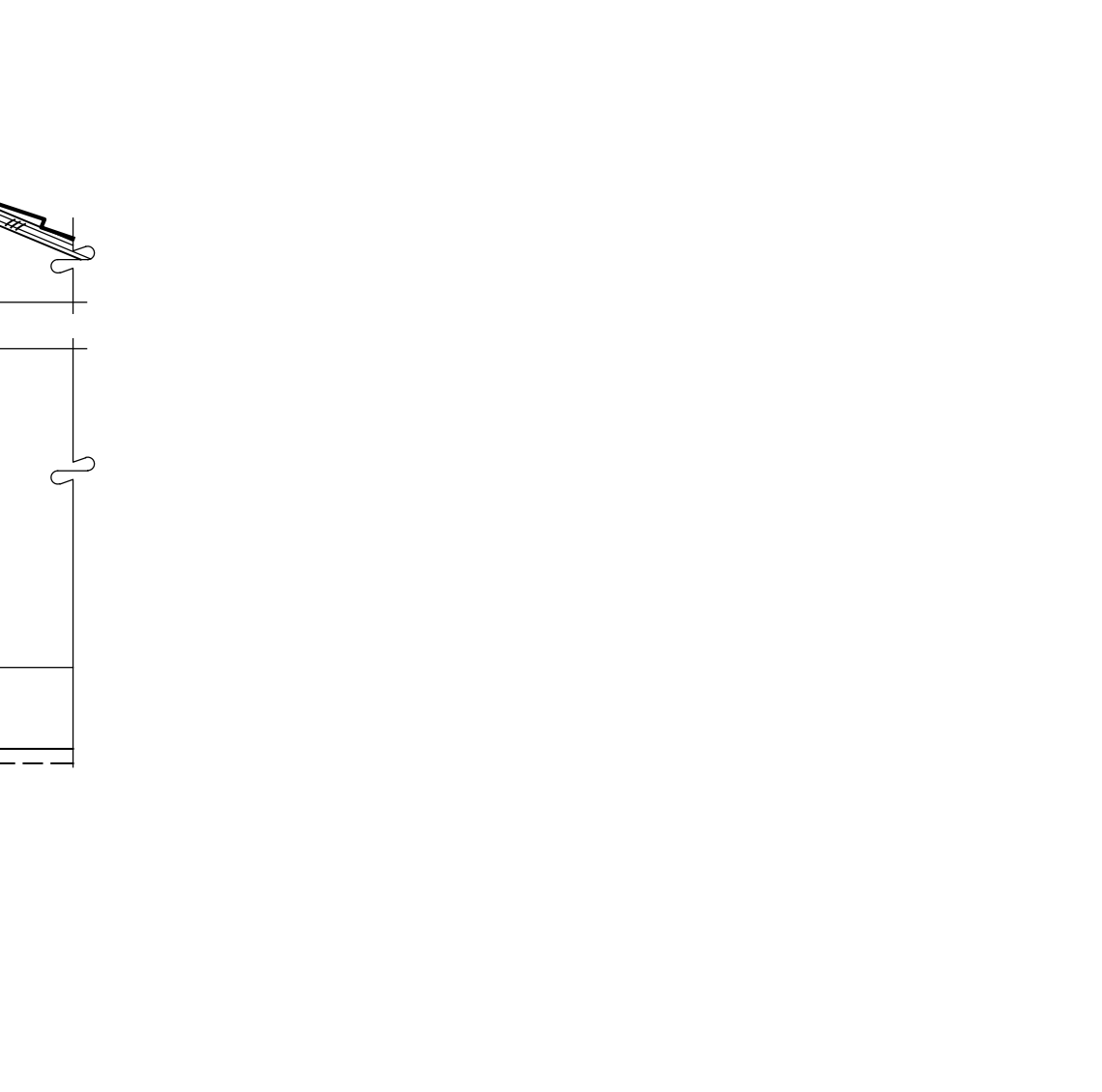
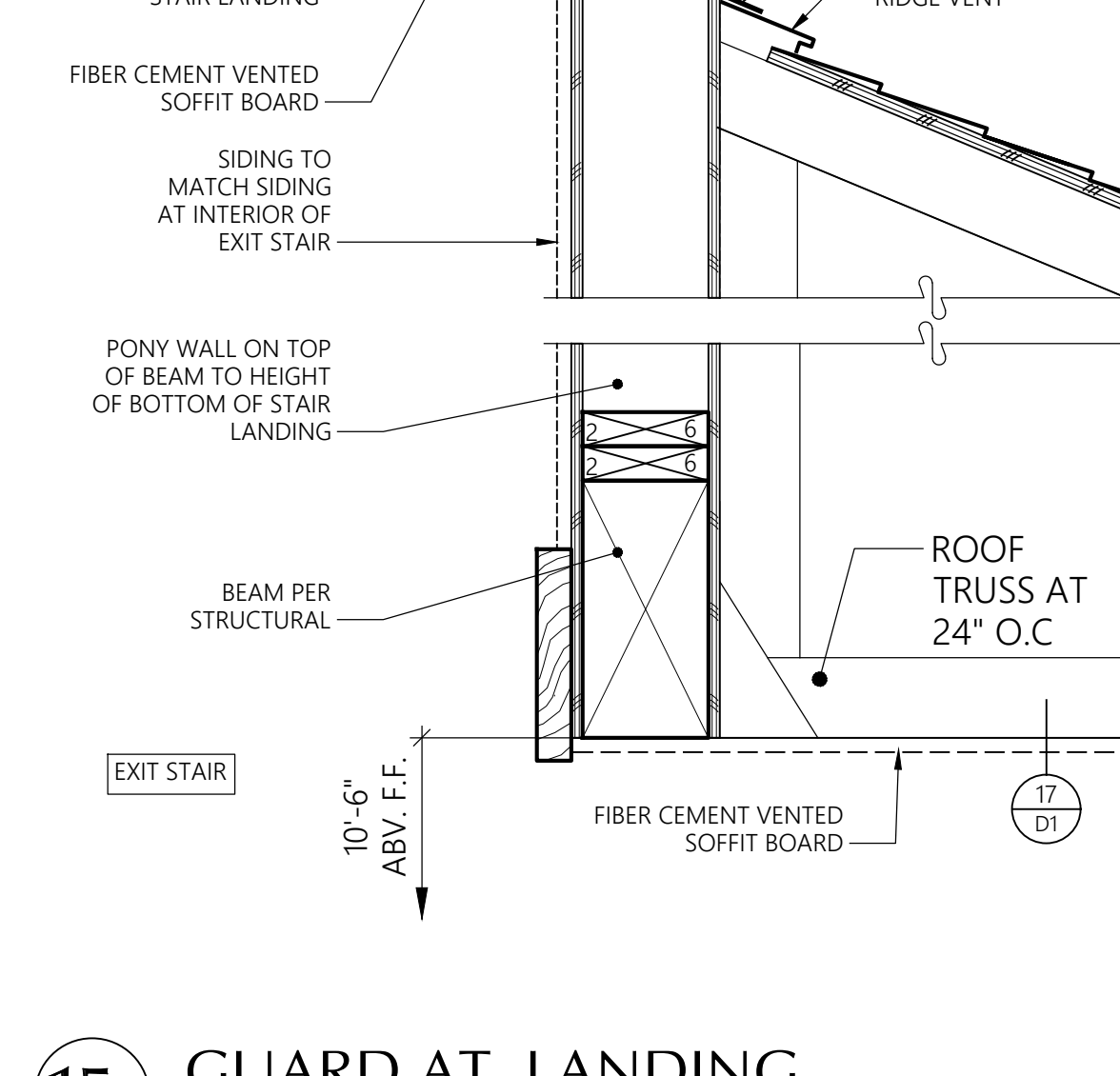
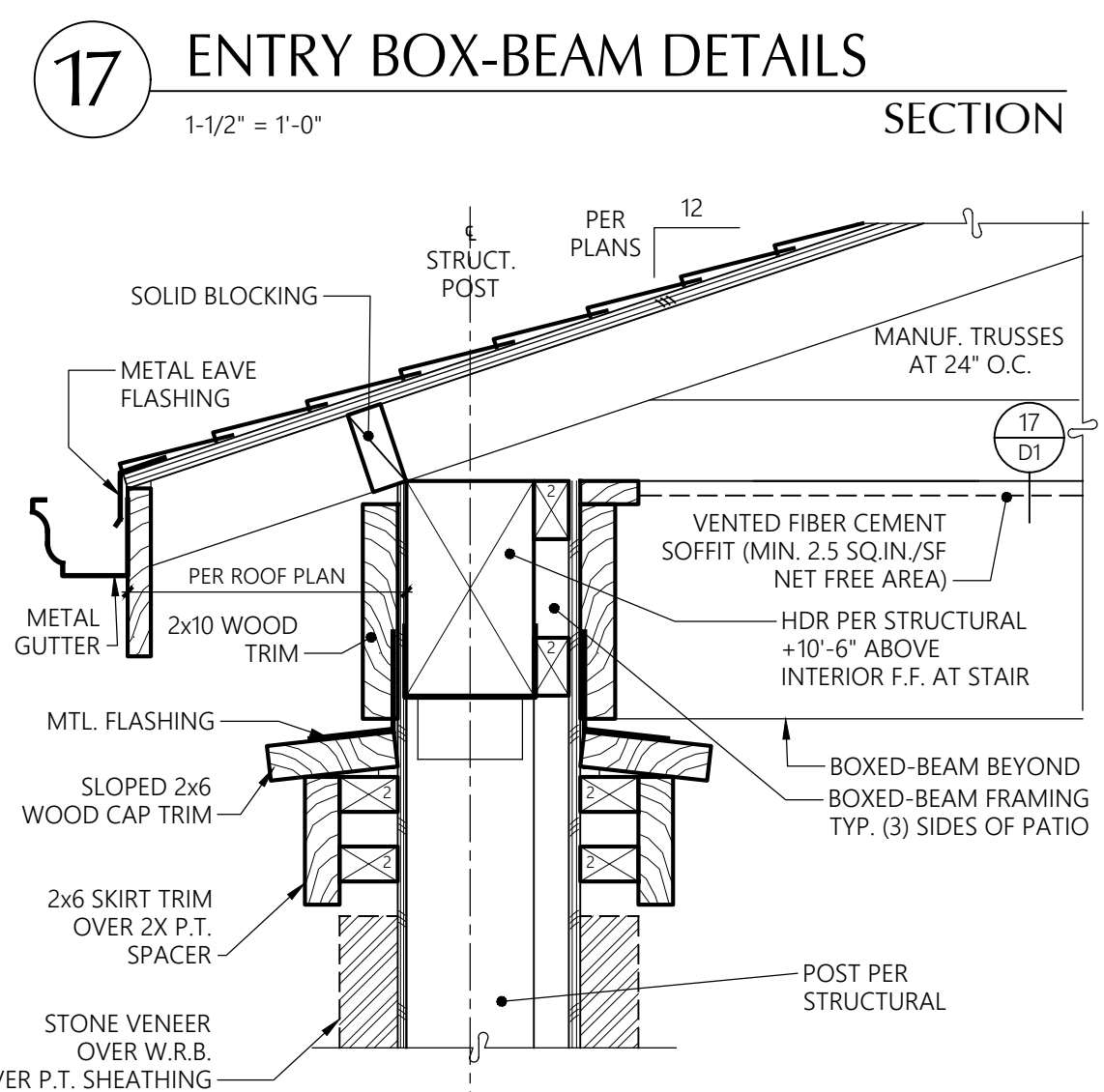
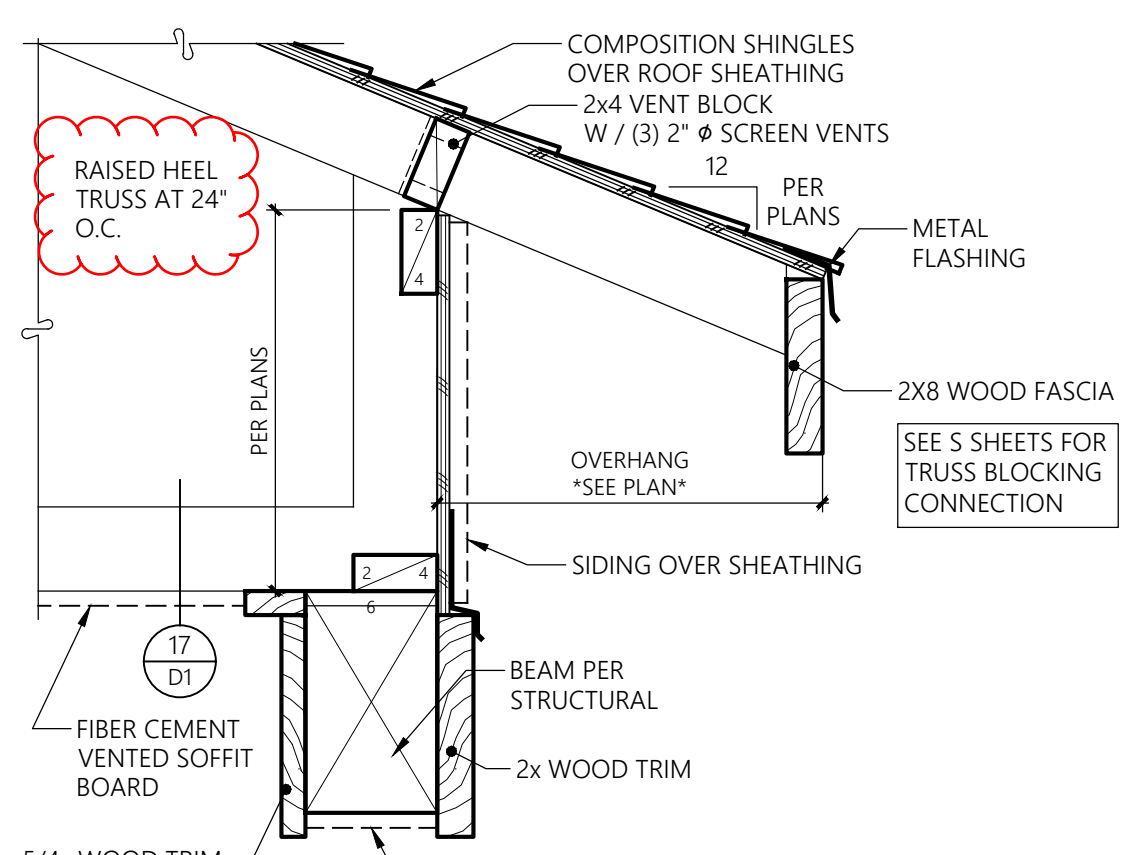
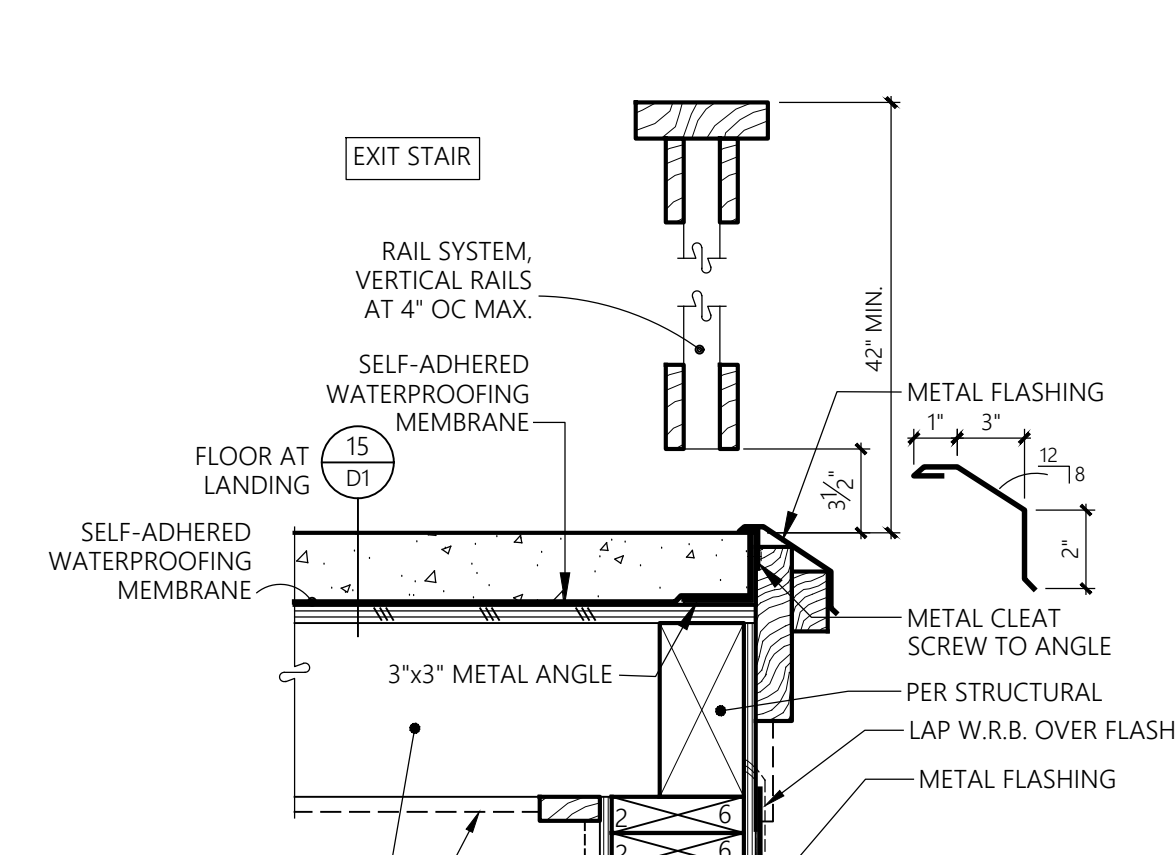
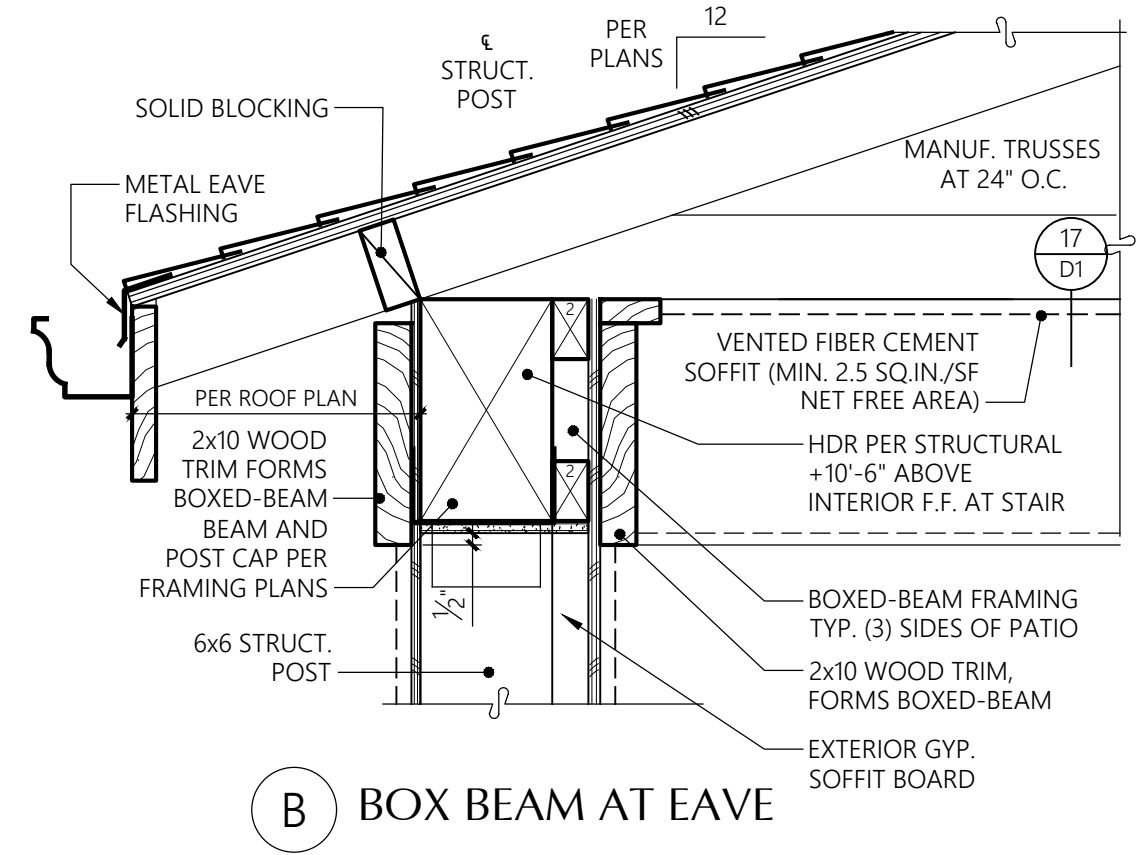
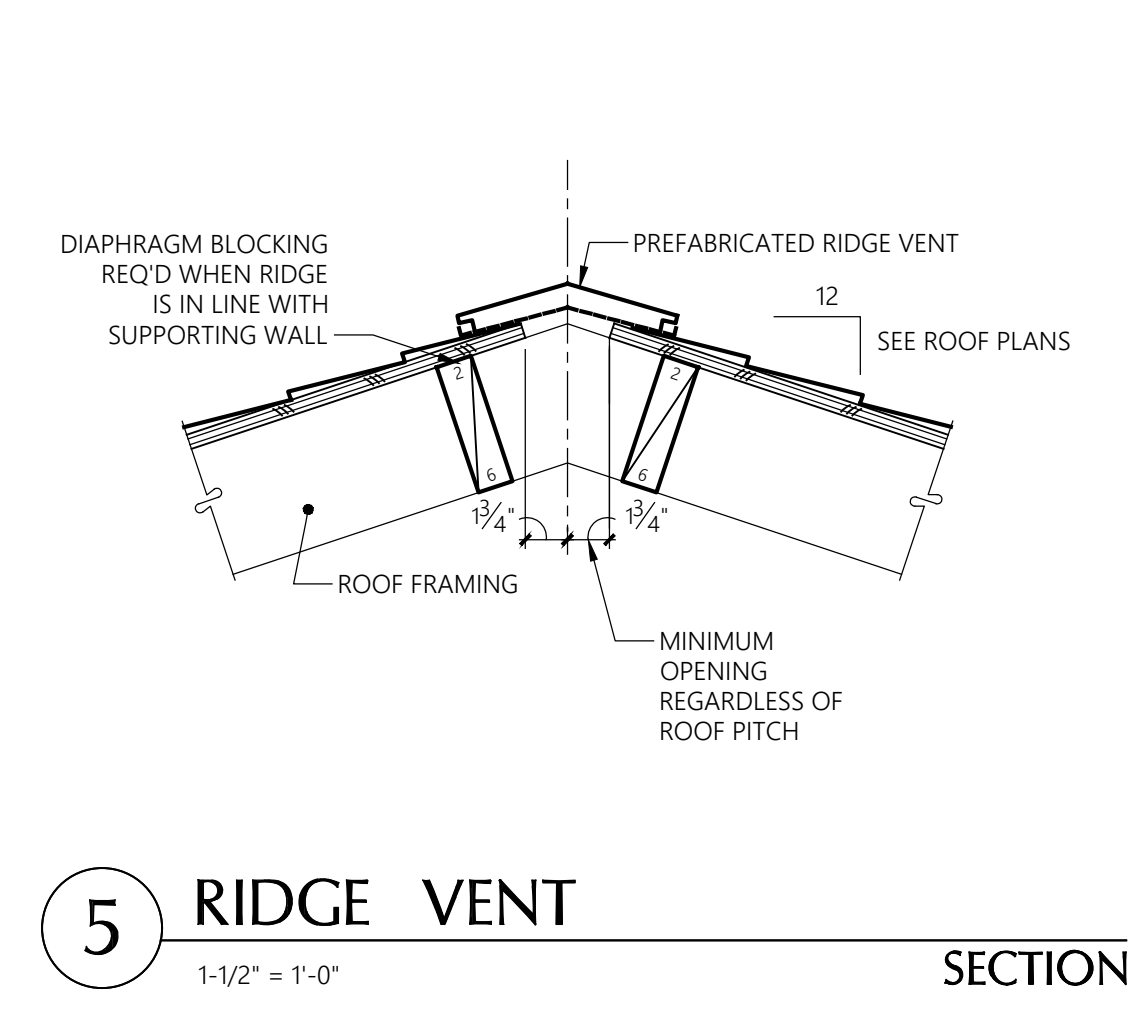
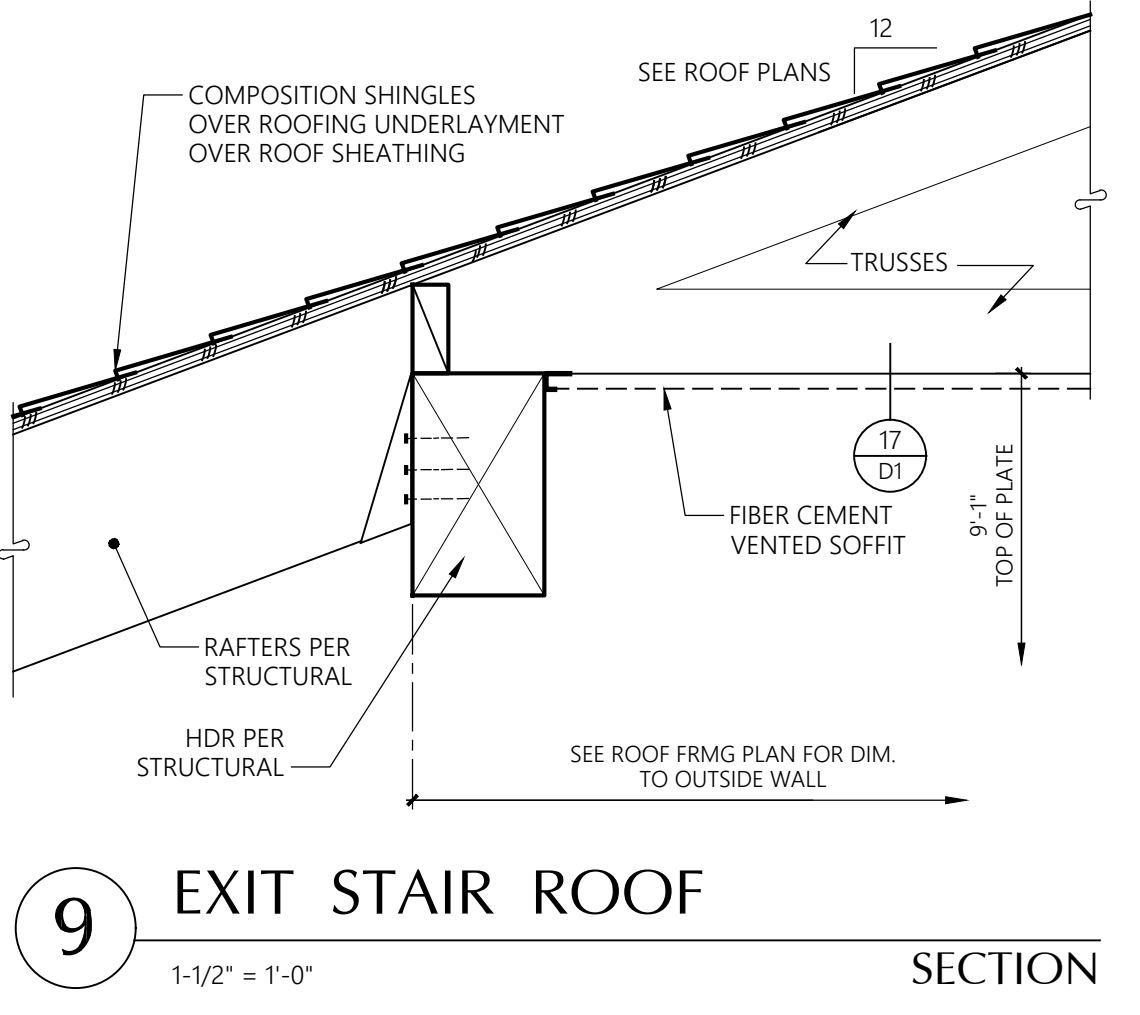
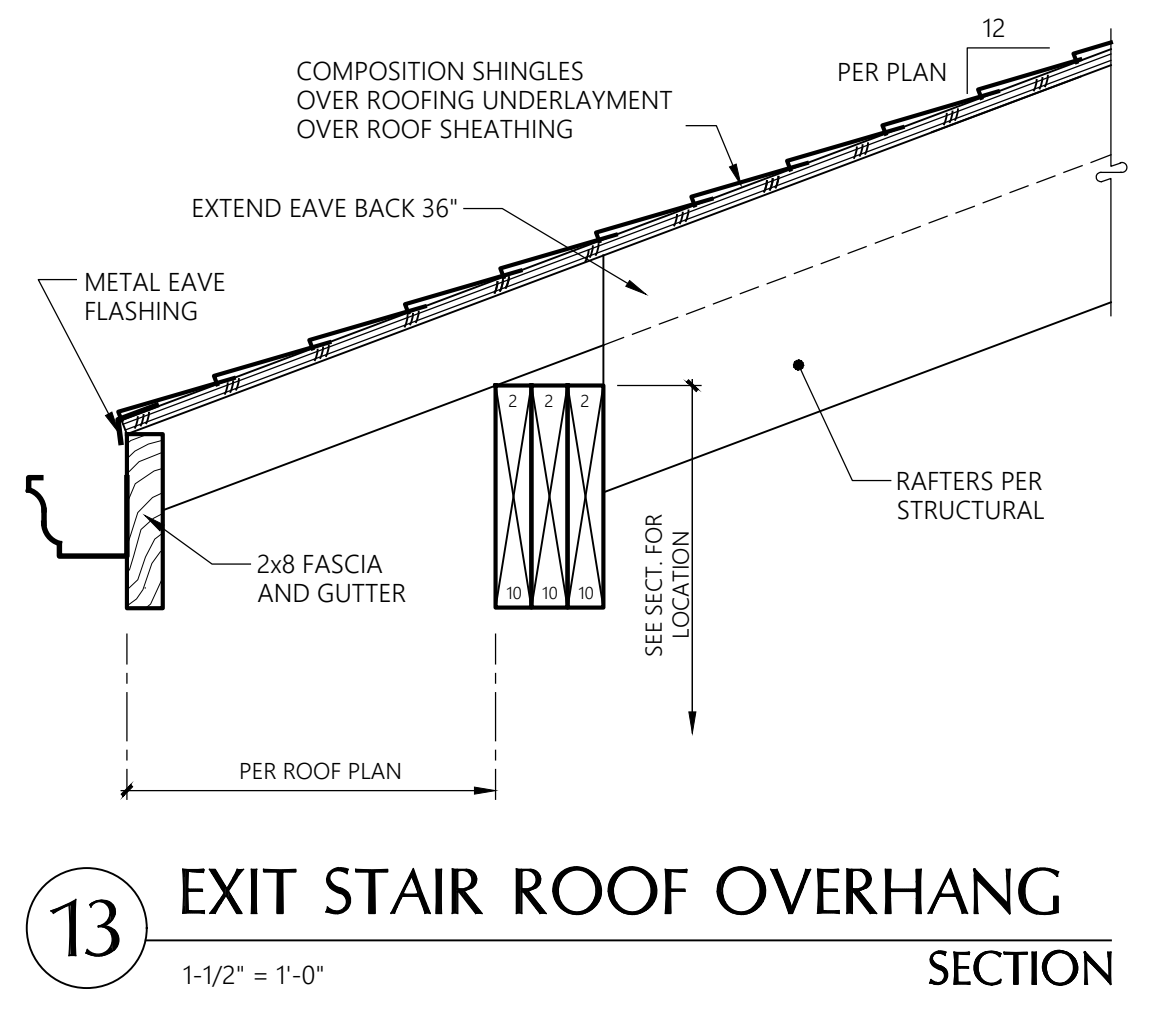
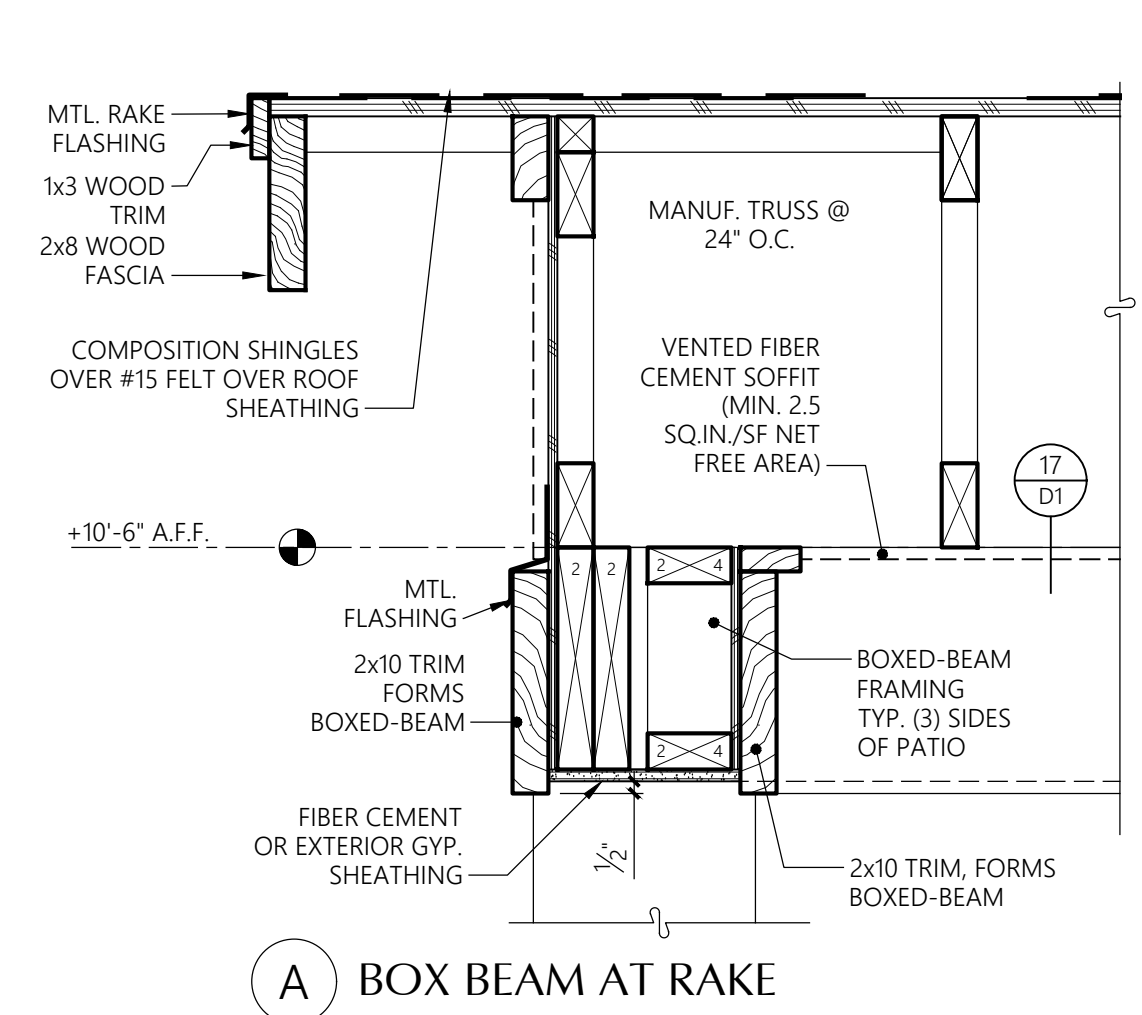
2 UNIT SEPAR. AT FLOOR
1-1/2" = 1'-0"



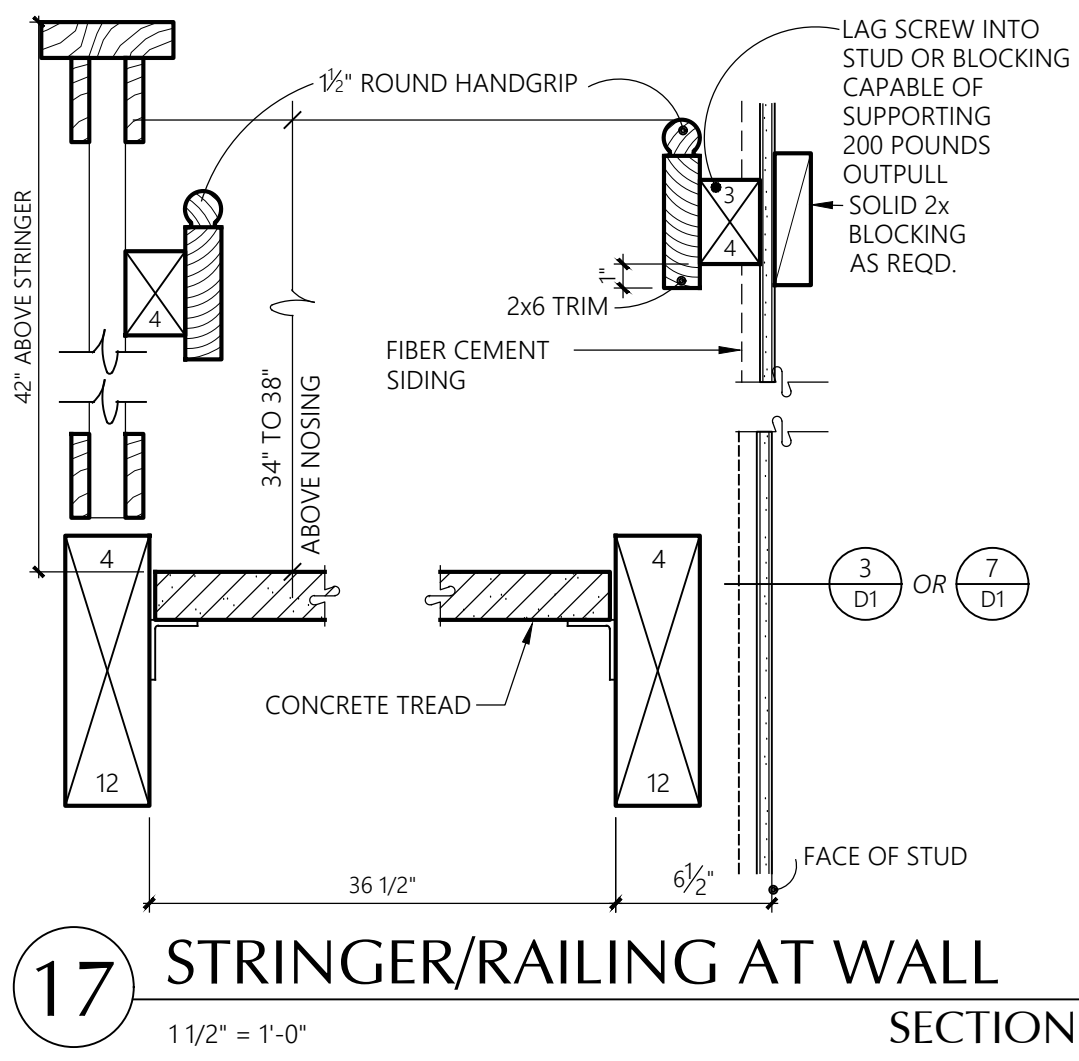
3 COMMON WALL AT STEPPED FLOOR
1-1/2" = 1'-0"



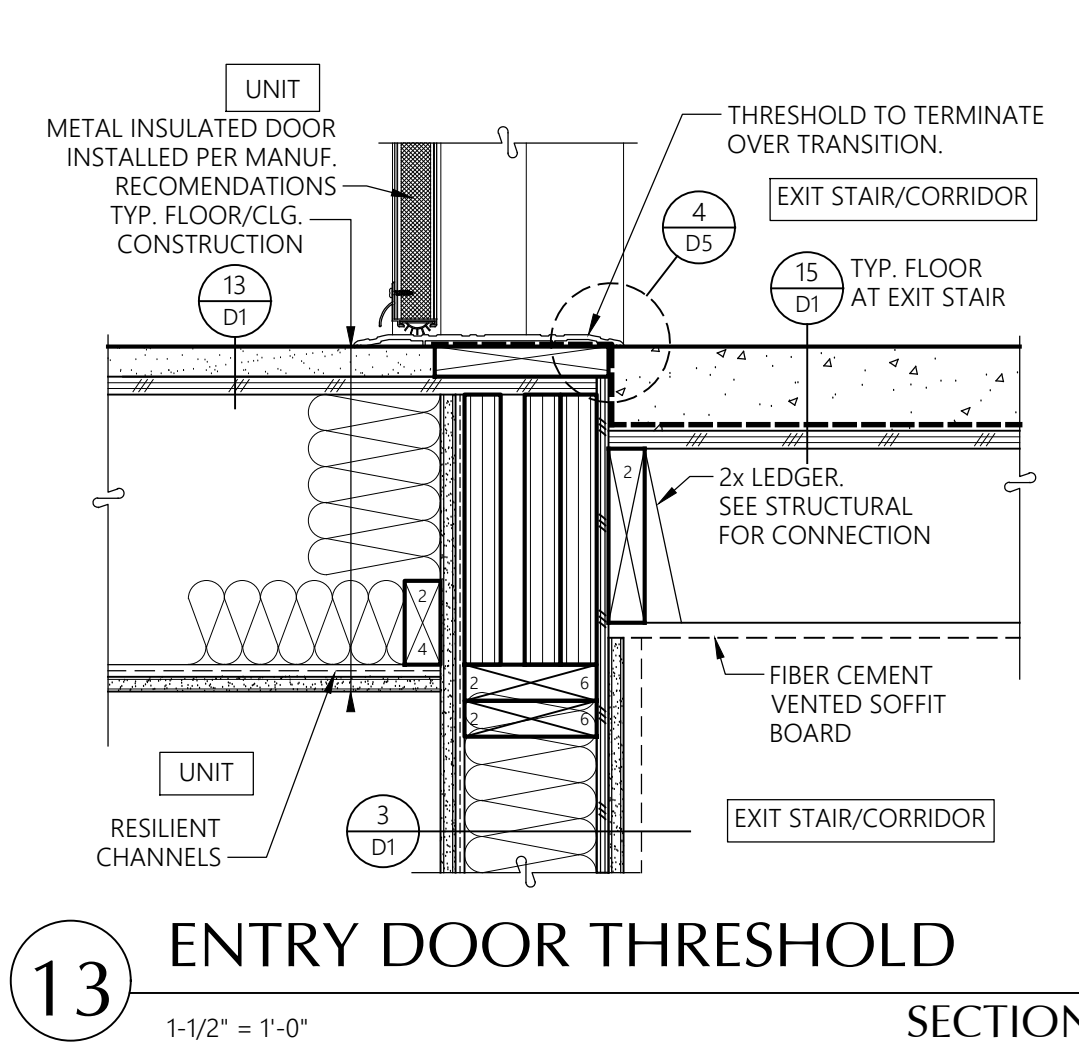
4 EXTERIOR WALL AT FLOOR
1-1/2" = 1'-0"



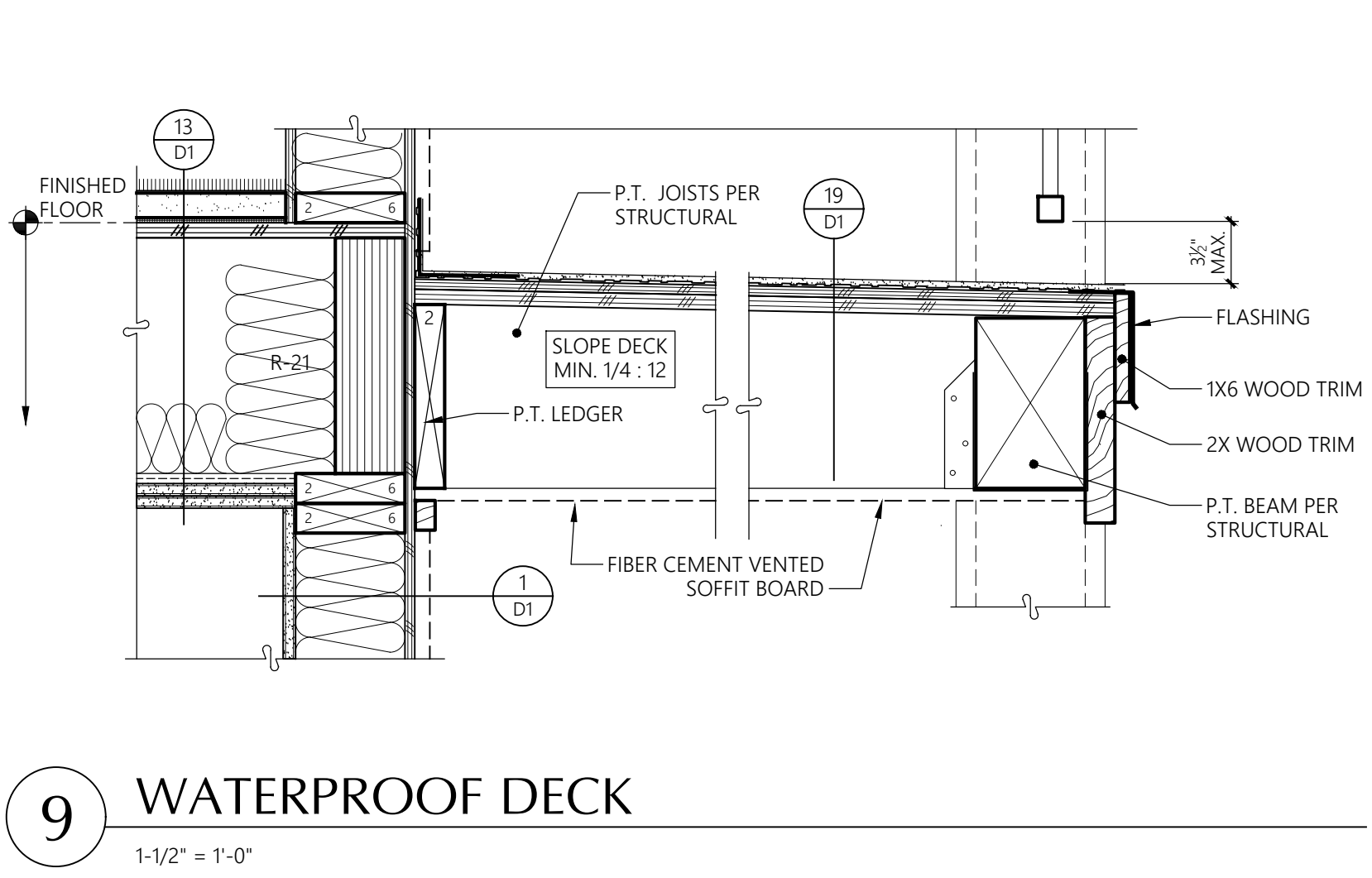
FR 2306 VENTALS (01-10) DWG



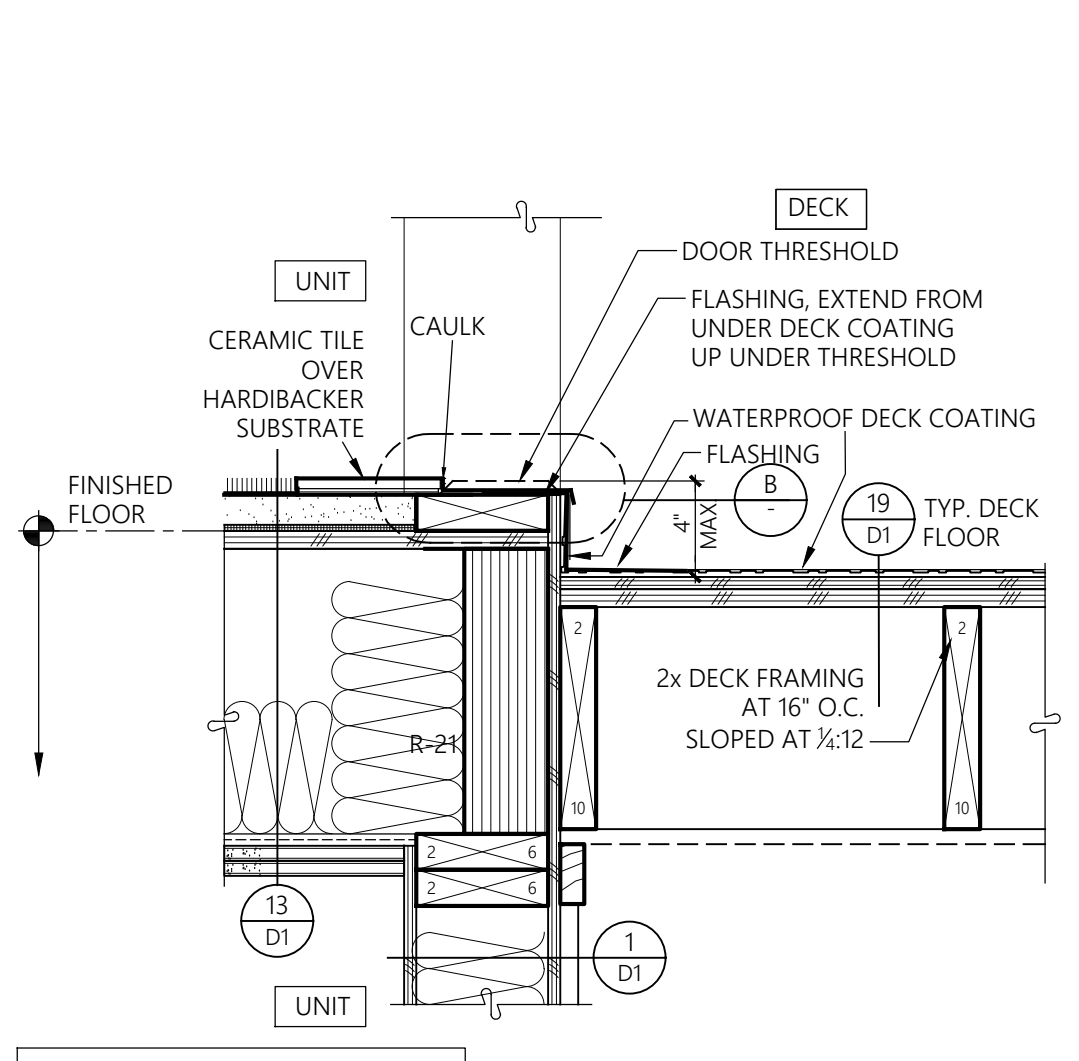
17 STRINGER/RAILING AT WALL
1 1/2" = 1'-0"
SECTION



13 ENTRY DOOR THRESHOLD
1-1/2" = 1'-0"
SECTION

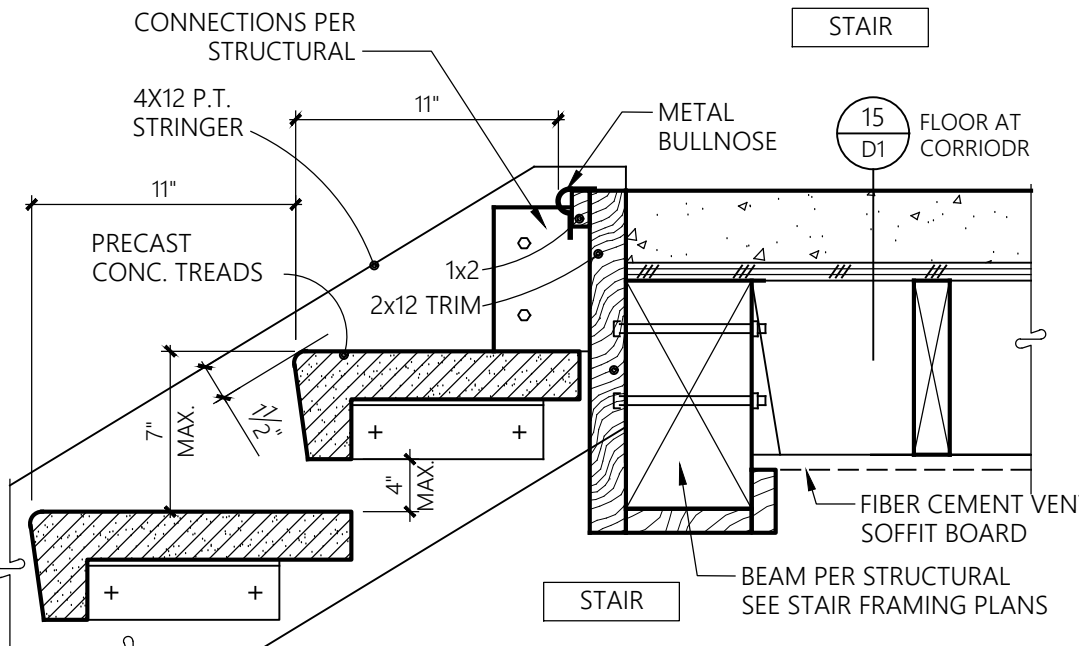


9 WATERPROOF DECK
1-1/2" = 1'-0"
SECTION

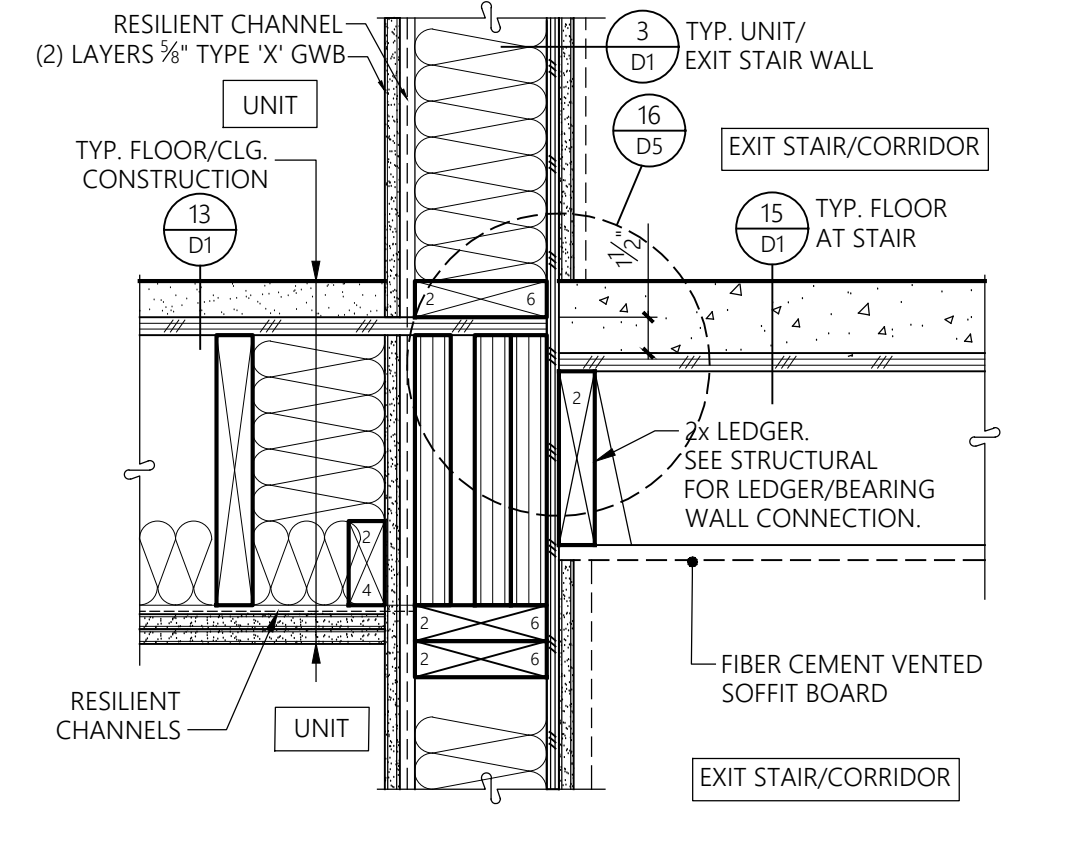


NOTE: SEE STRUCTURAL DETAIL SHEETS FOR ALL POST AND BEAM CONNECTIONS.

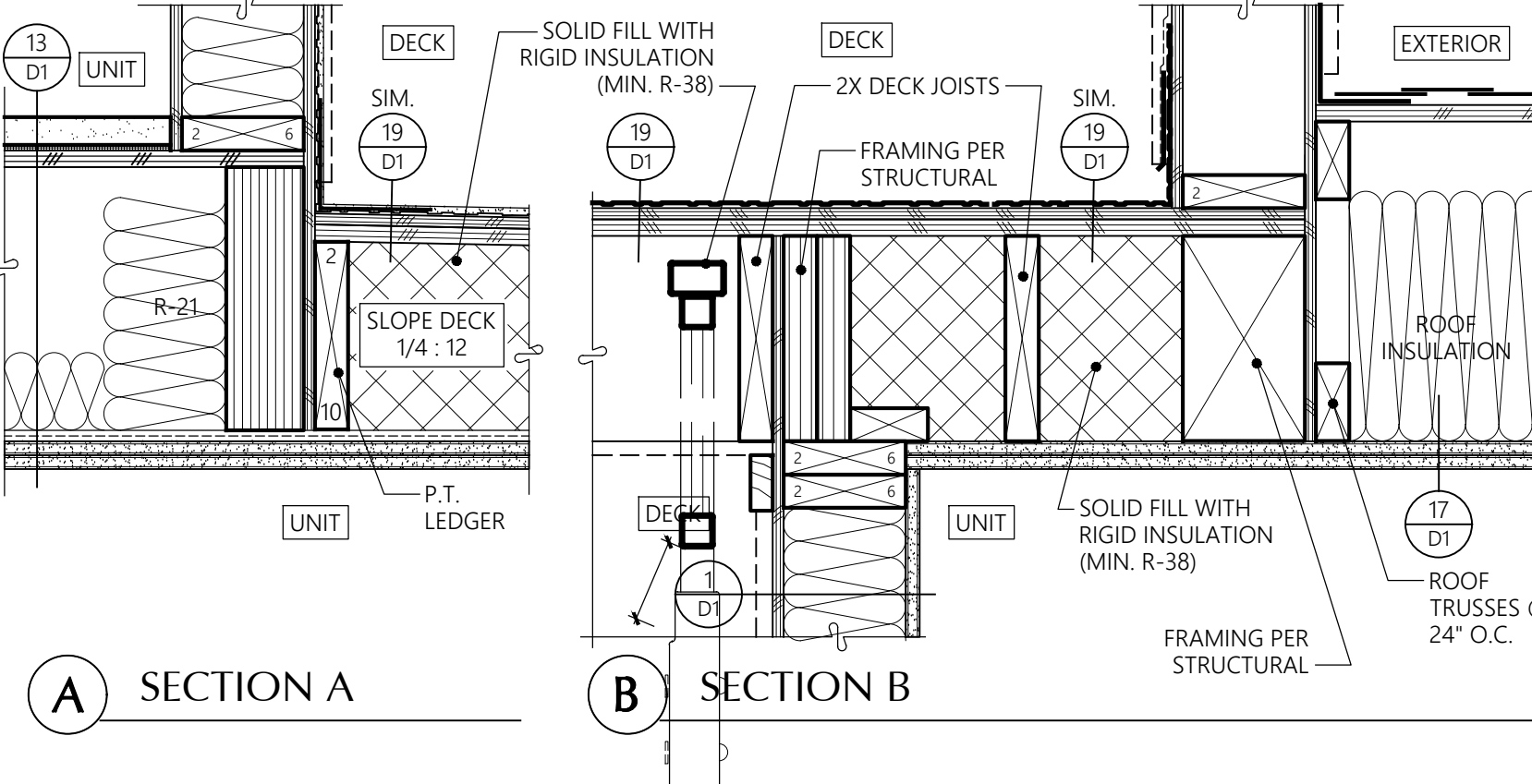
A PATIO SWING DOOR STANDARD THRESHOLD



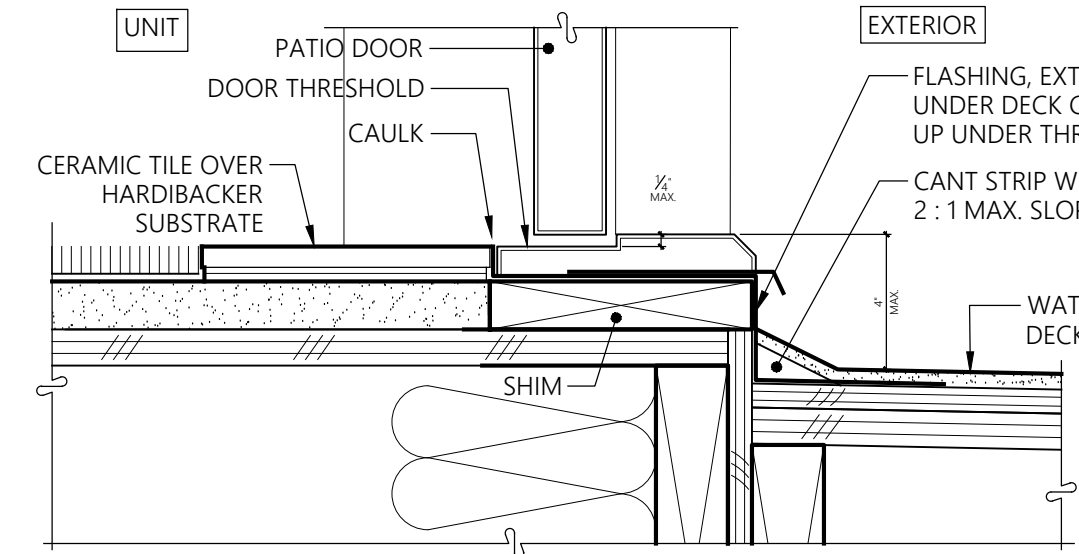
18 UPPER FLOOR STAIR DETAIL
1 1/2" = 1'-0"
SECTION



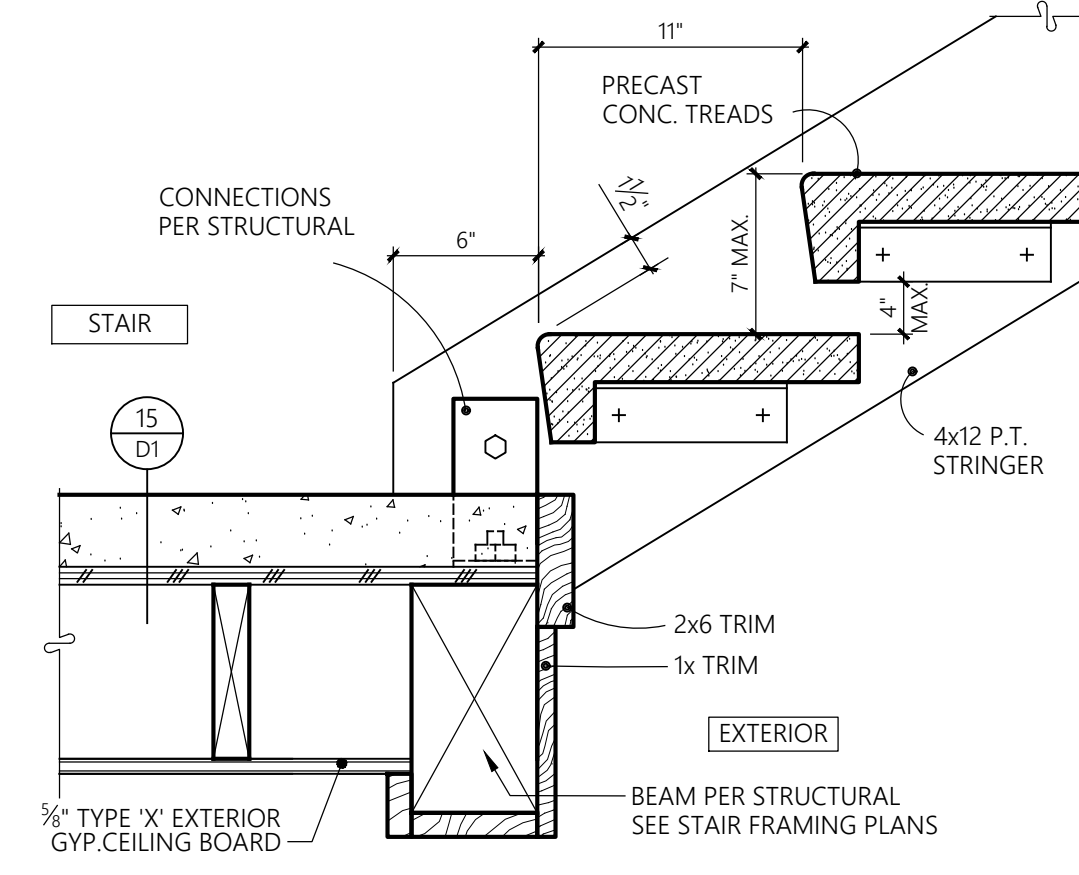
14 STAIR WALL AT FLOOR
1-1/2" = 1'-0"
SECTION



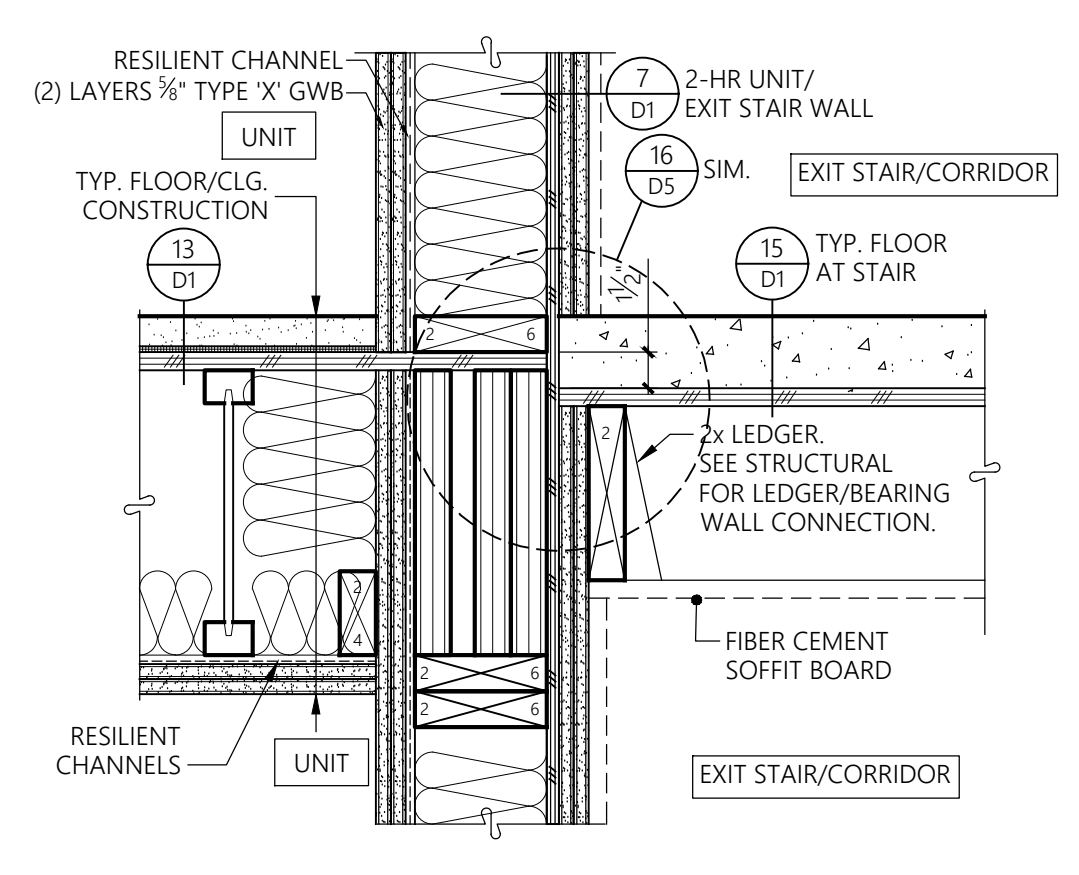
10 DECK OVER UNIT BELOW
1-1/2" = 1'-0"
SECTION



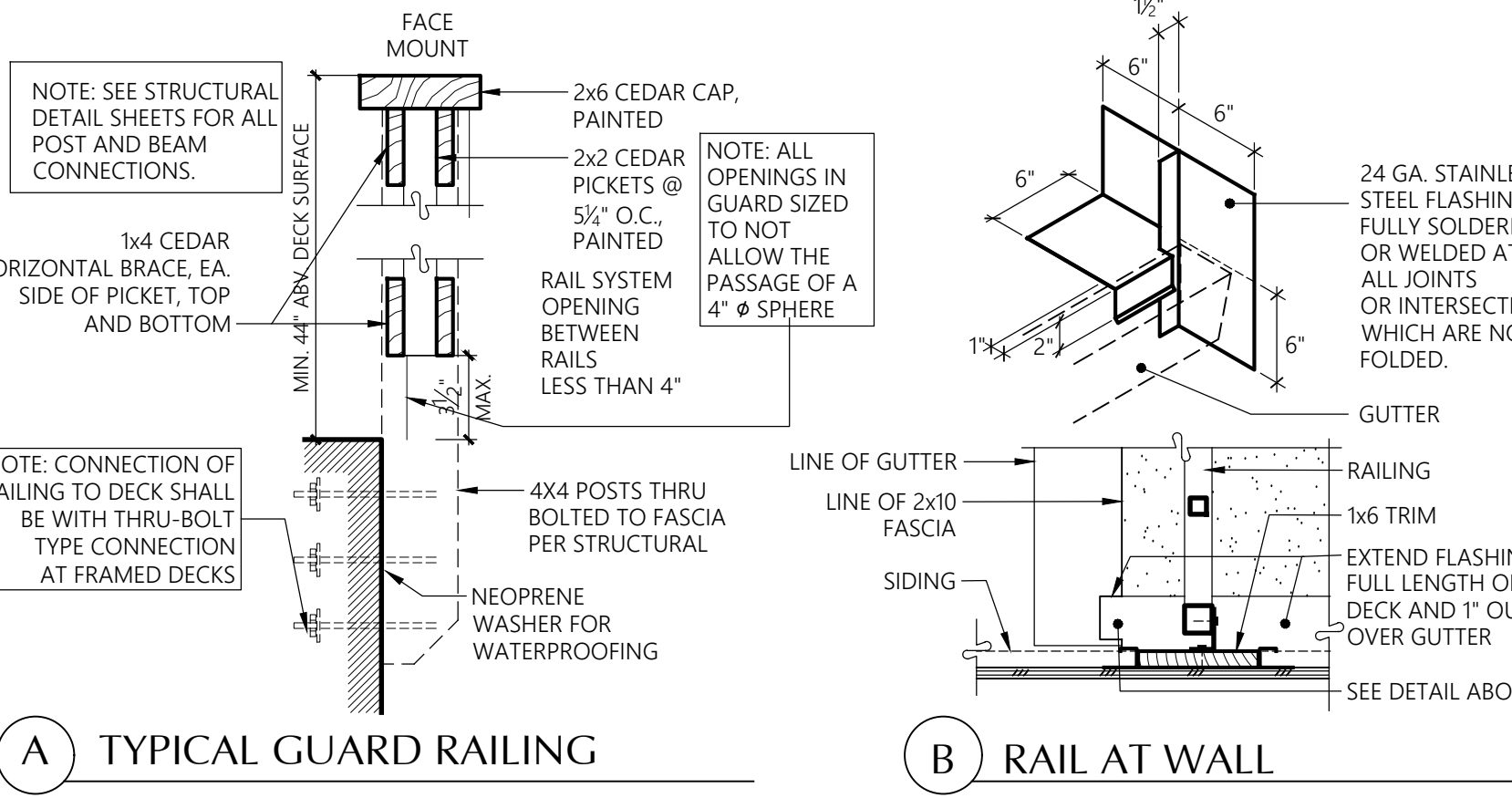
B PATIO SWING DOOR STANDARD THRESHOLD



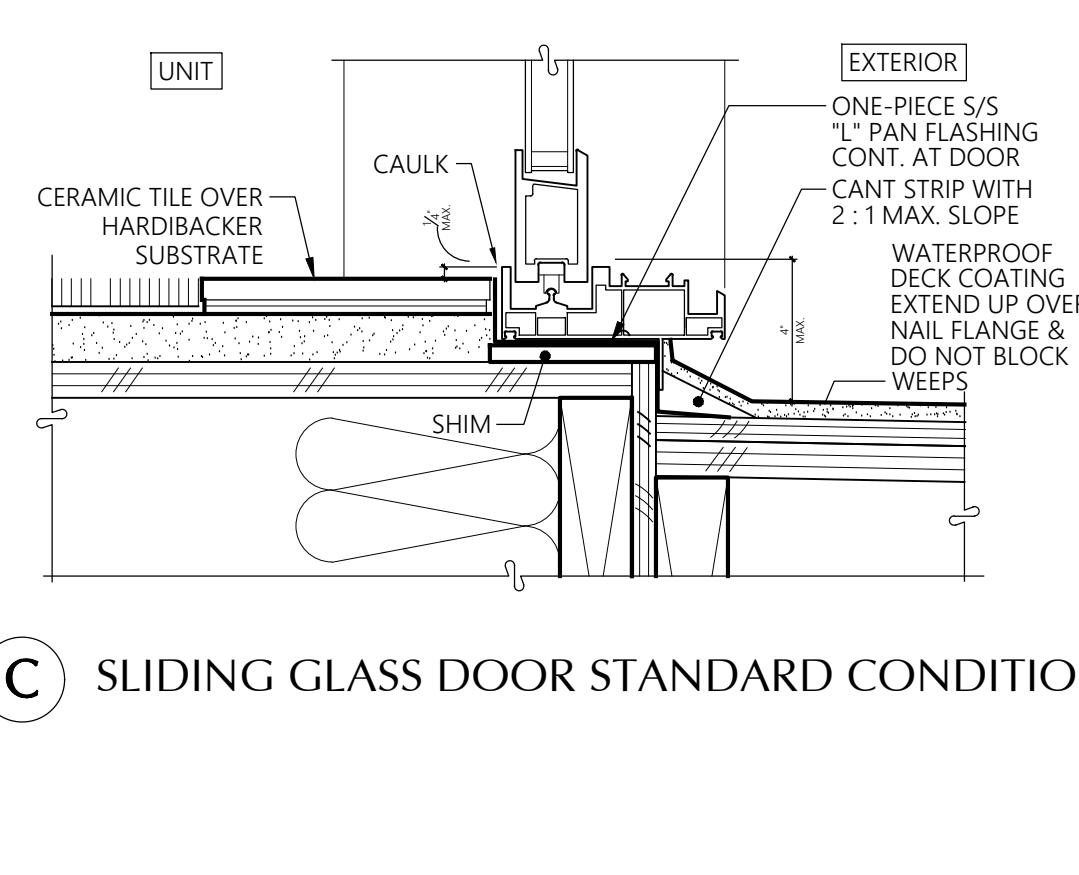
19 UPPER FLOOR STAIR DETAIL
1 1/2" = 1'-0"
SECTION



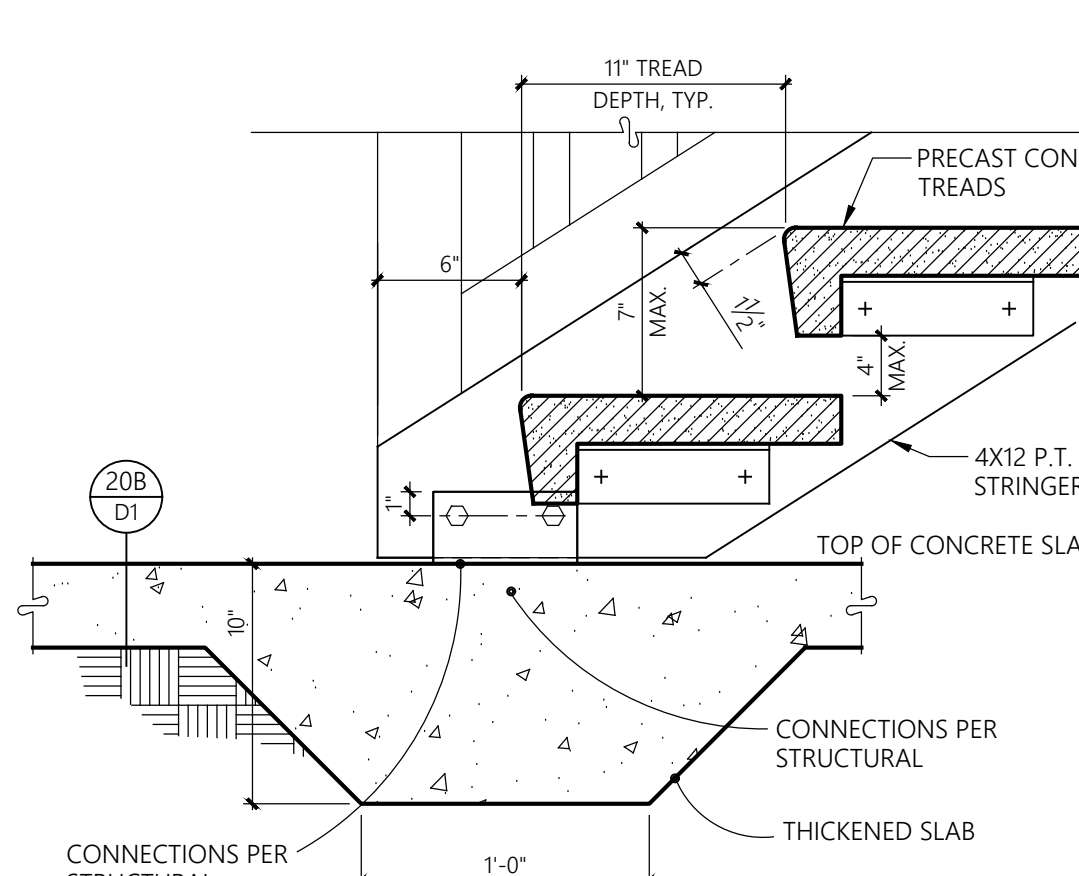
15 2-HR STAIR WALL AT FLOOR
1-1/2" = 1'-0"
SECTION



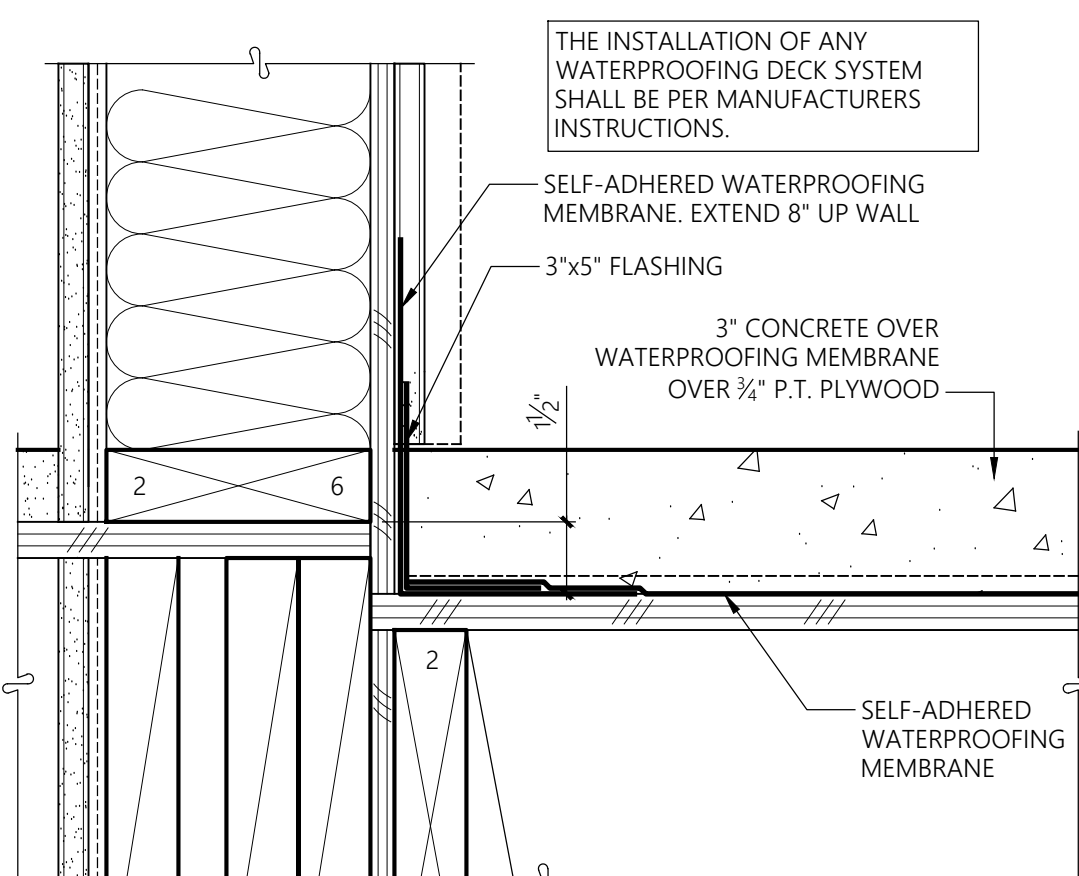
11 GUARD RAIL DETAILS
1-1/2" = 1'-0"
SECTION



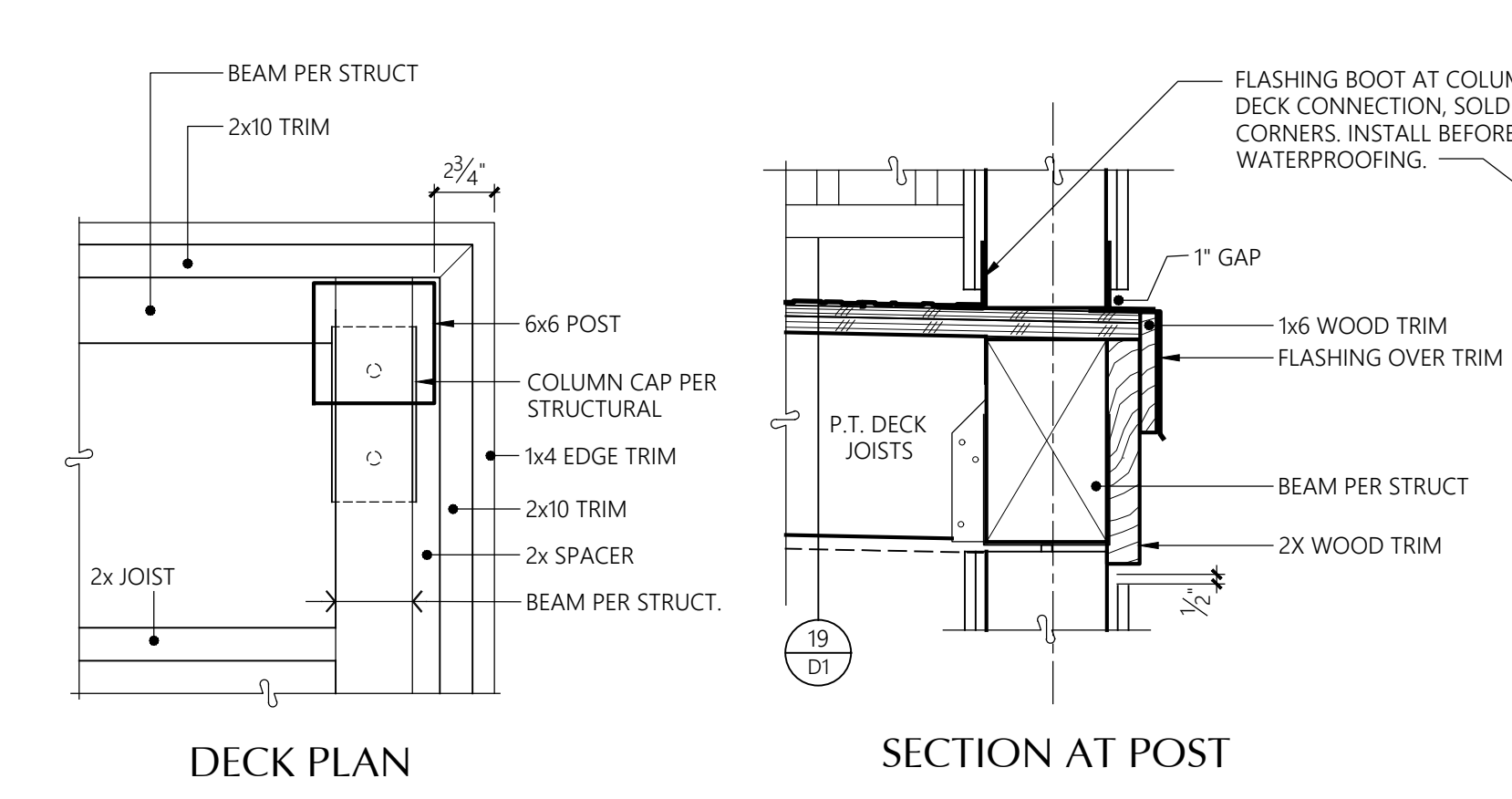
C SLIDING GLASS DOOR STANDARD CONDITION



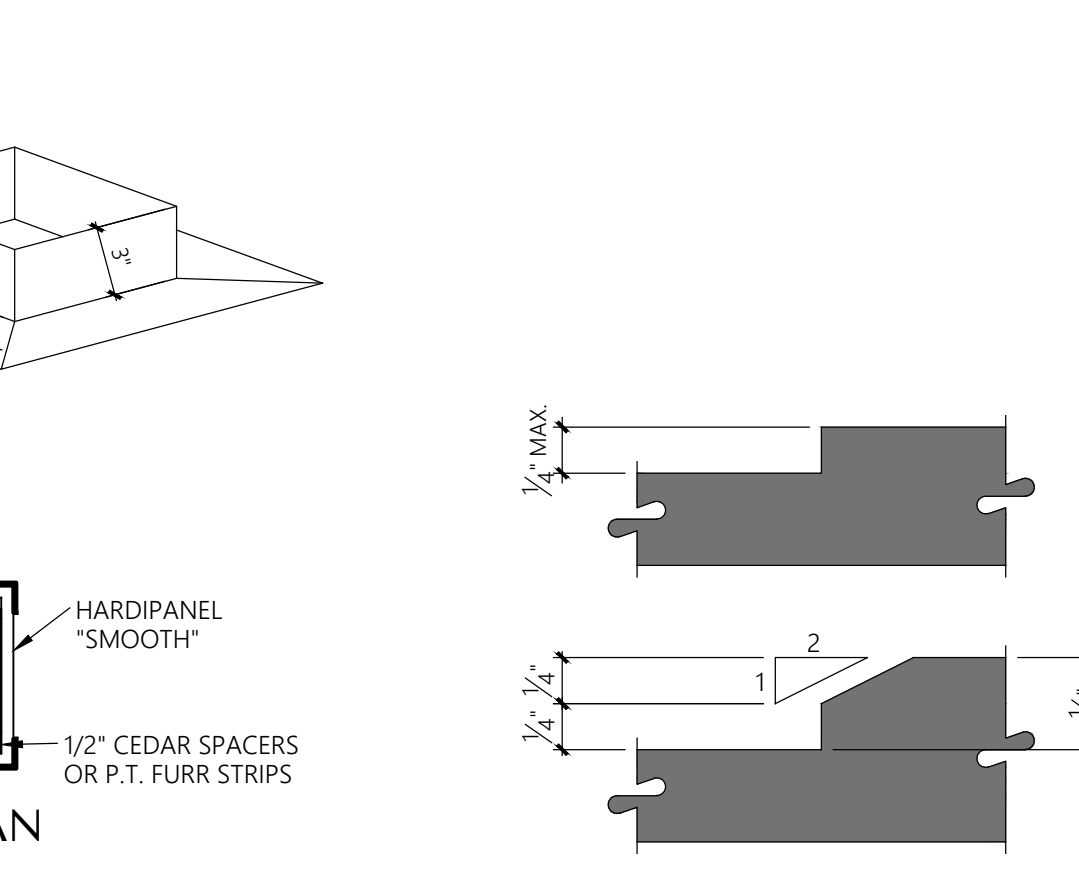
20 STAIR AT BASE
1-1/2" = 1'-0"
SECTION



16 STAIR FLOOR
3" = 1'-0"
SECTION



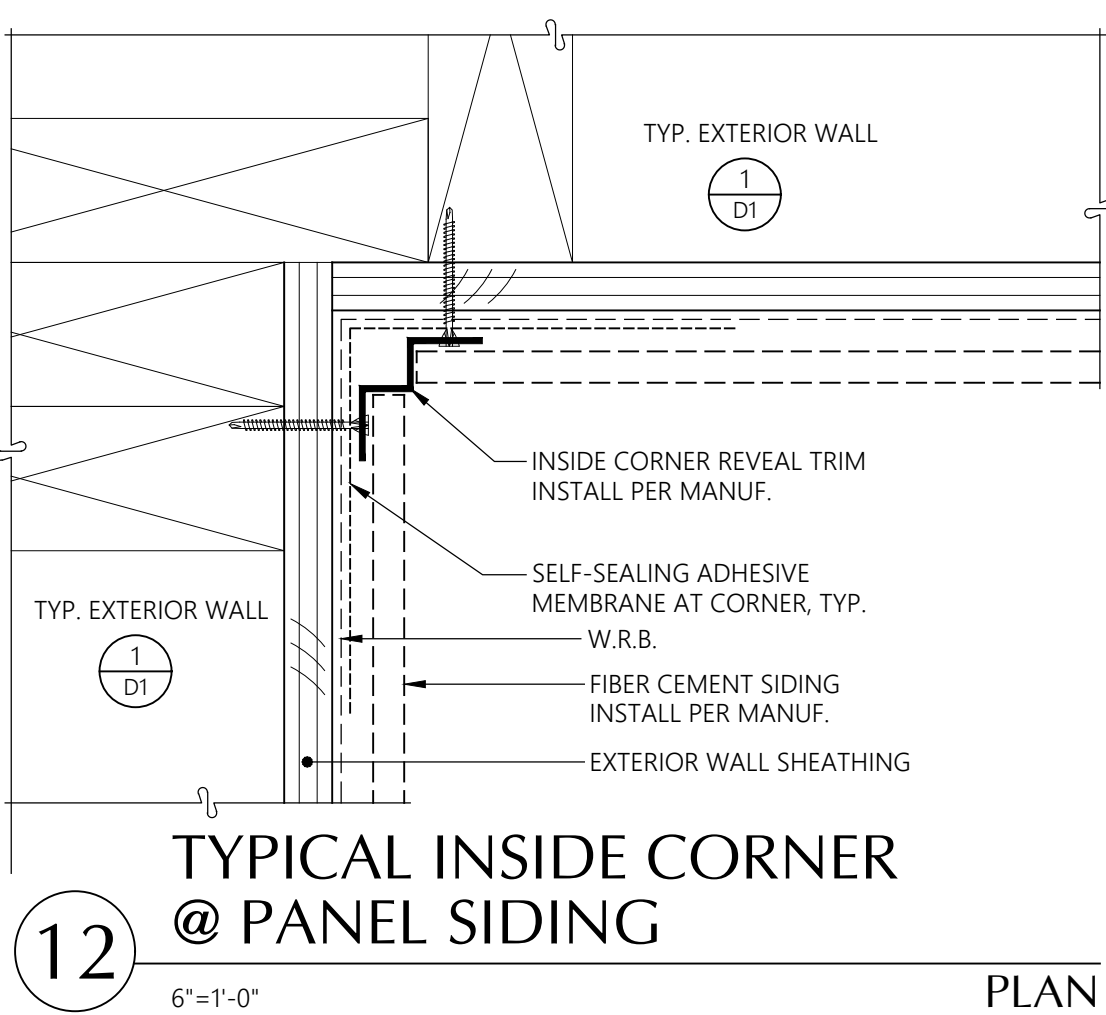
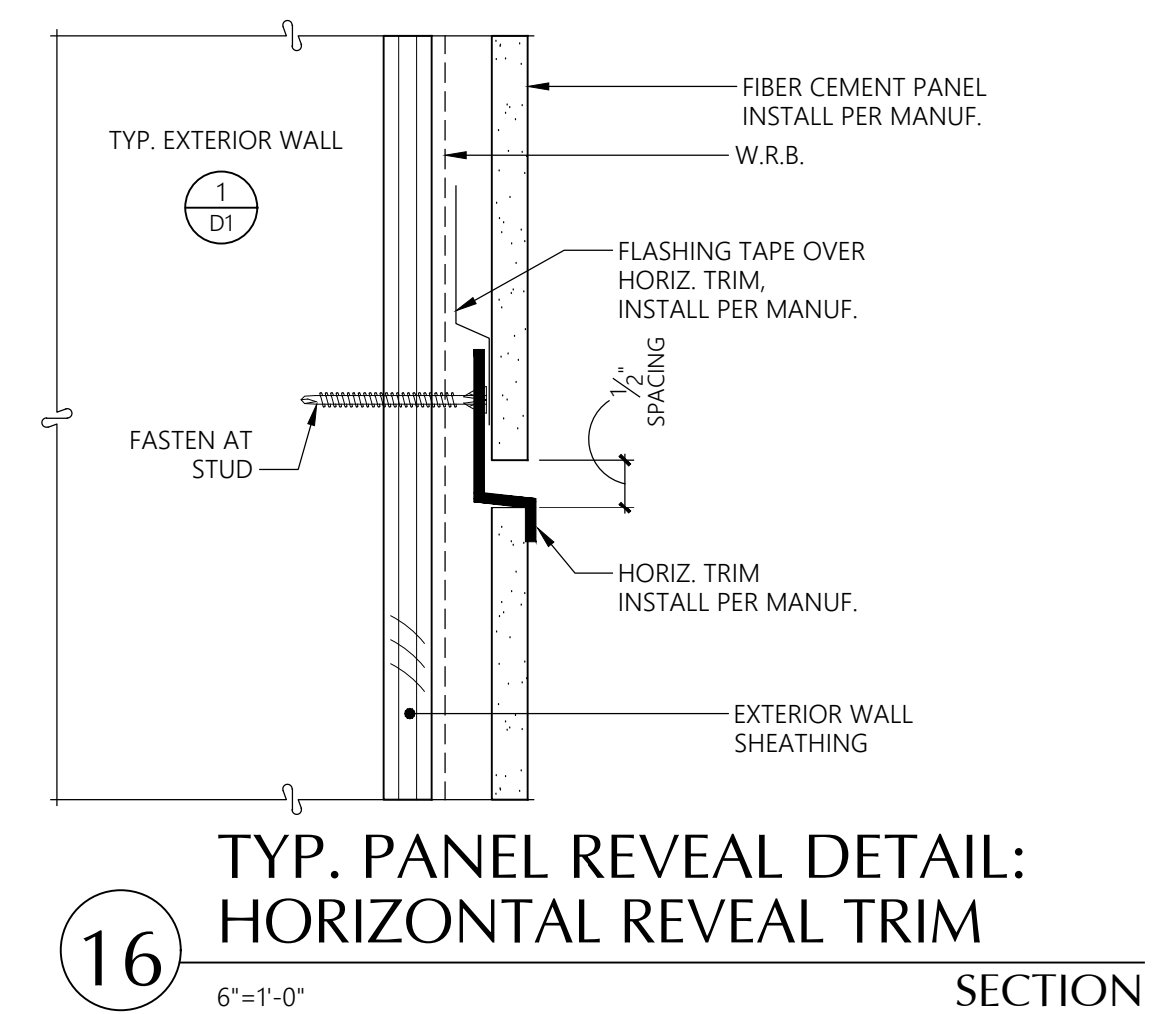
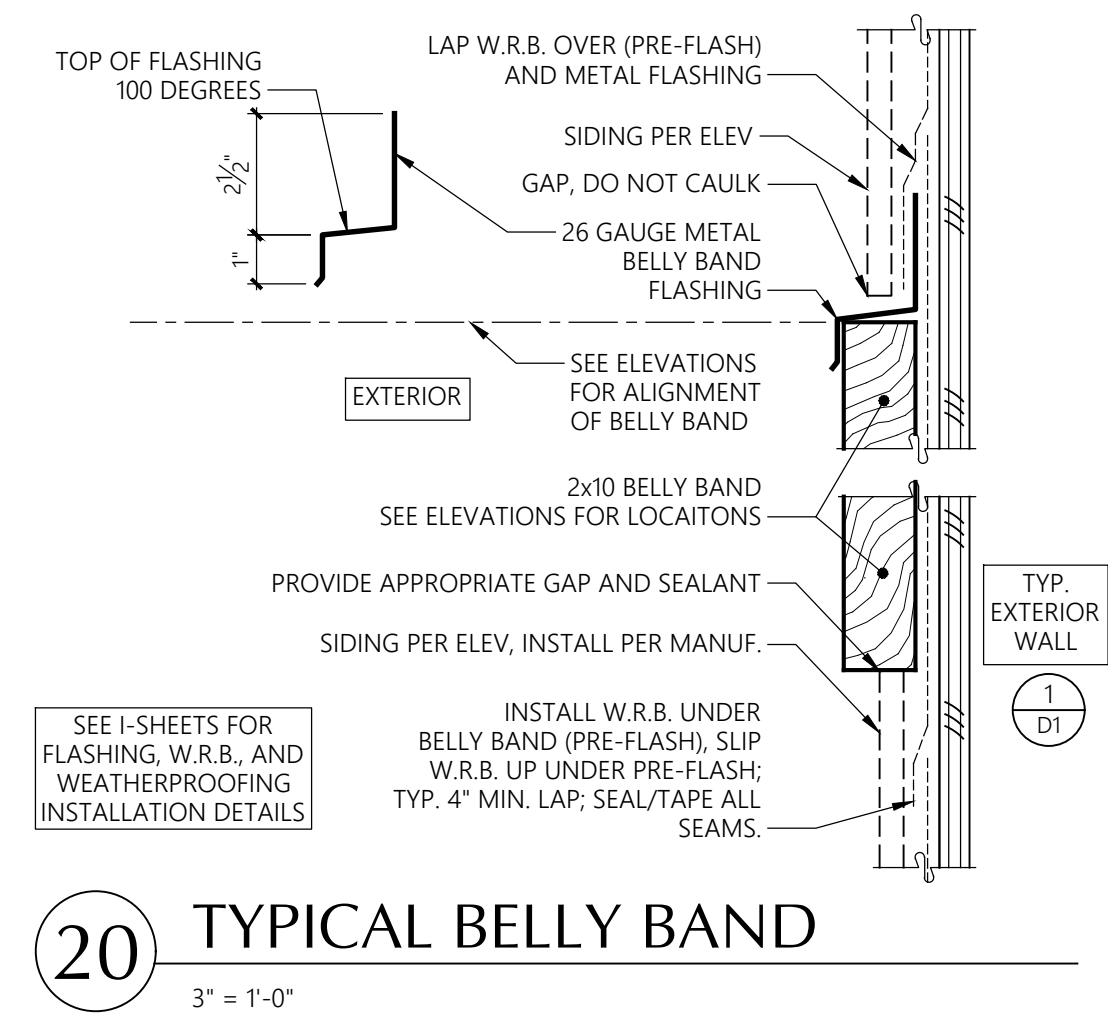
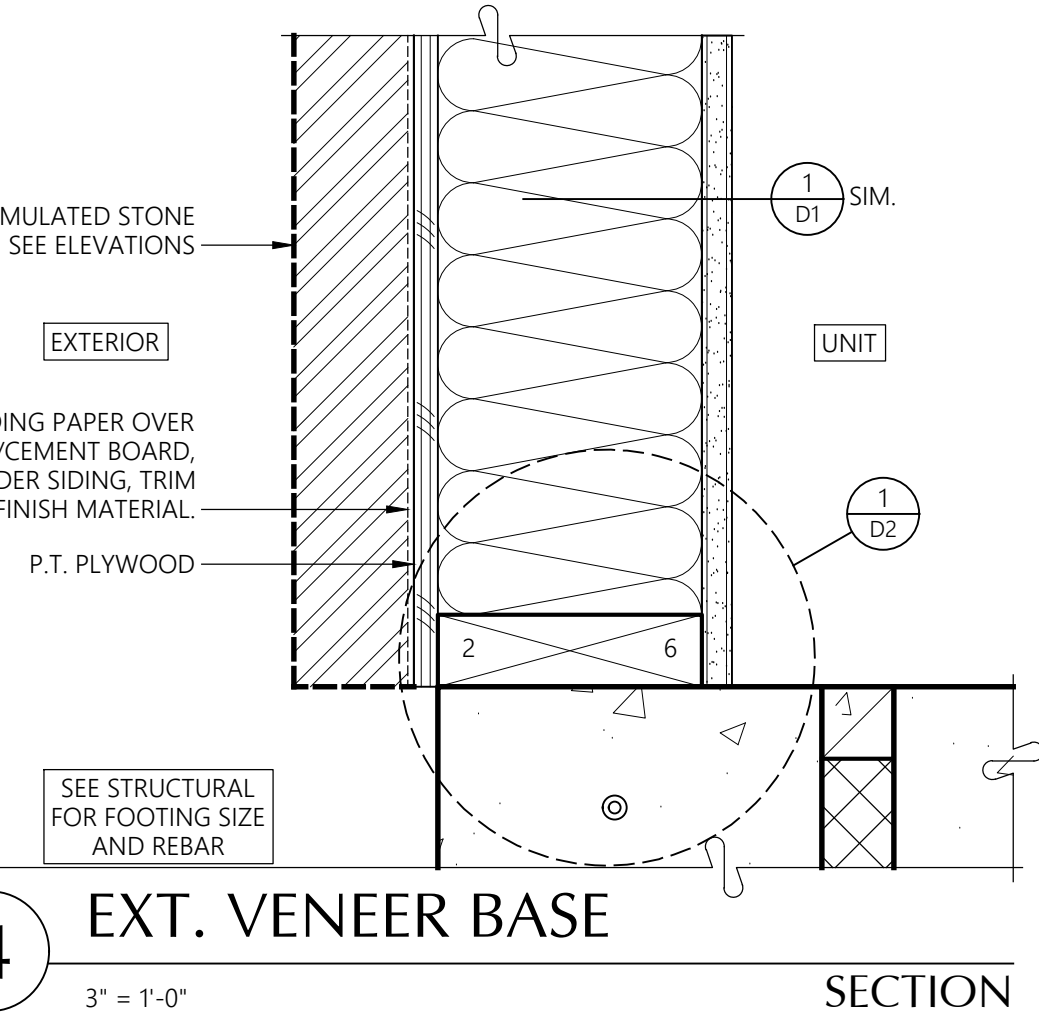
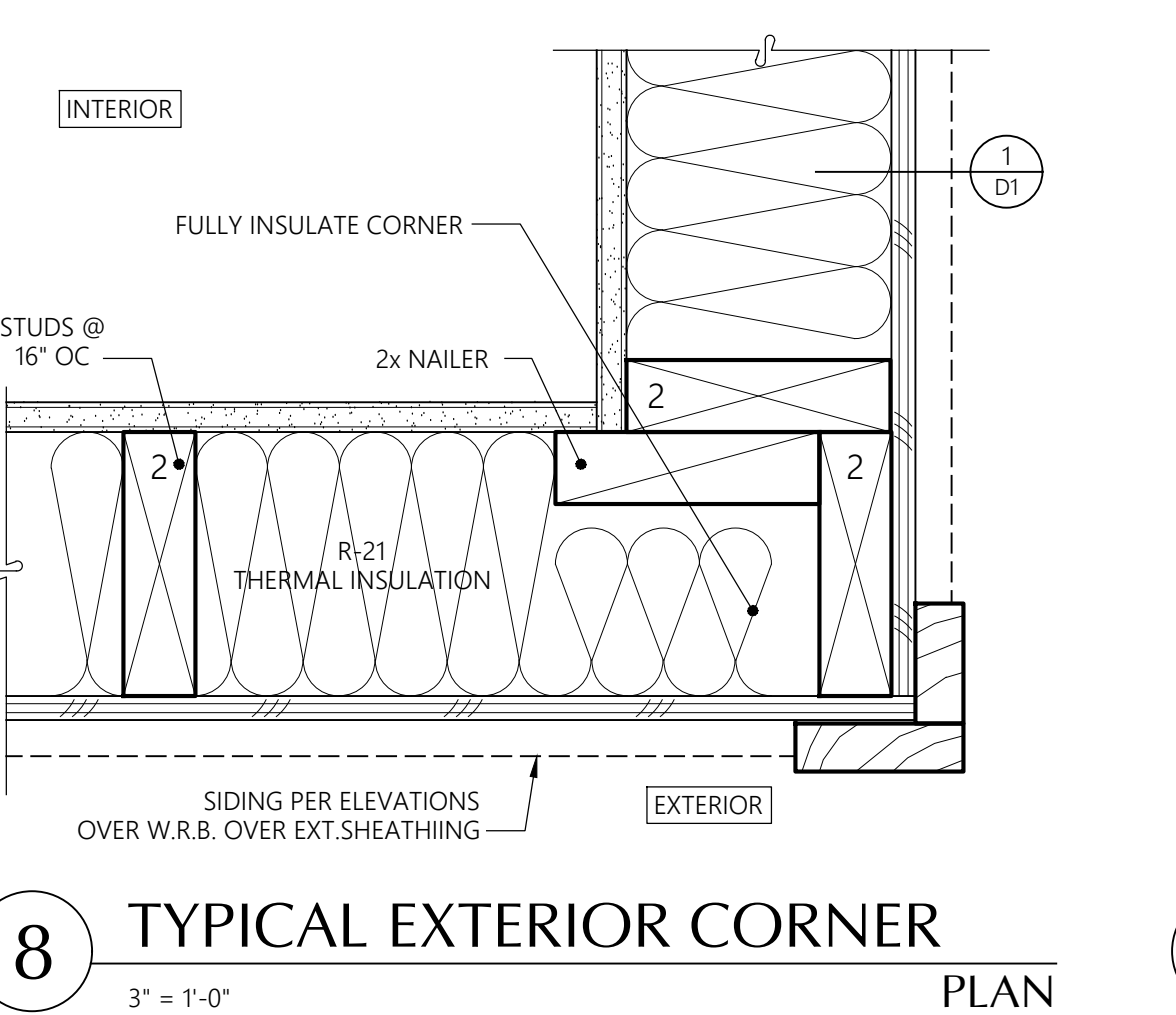
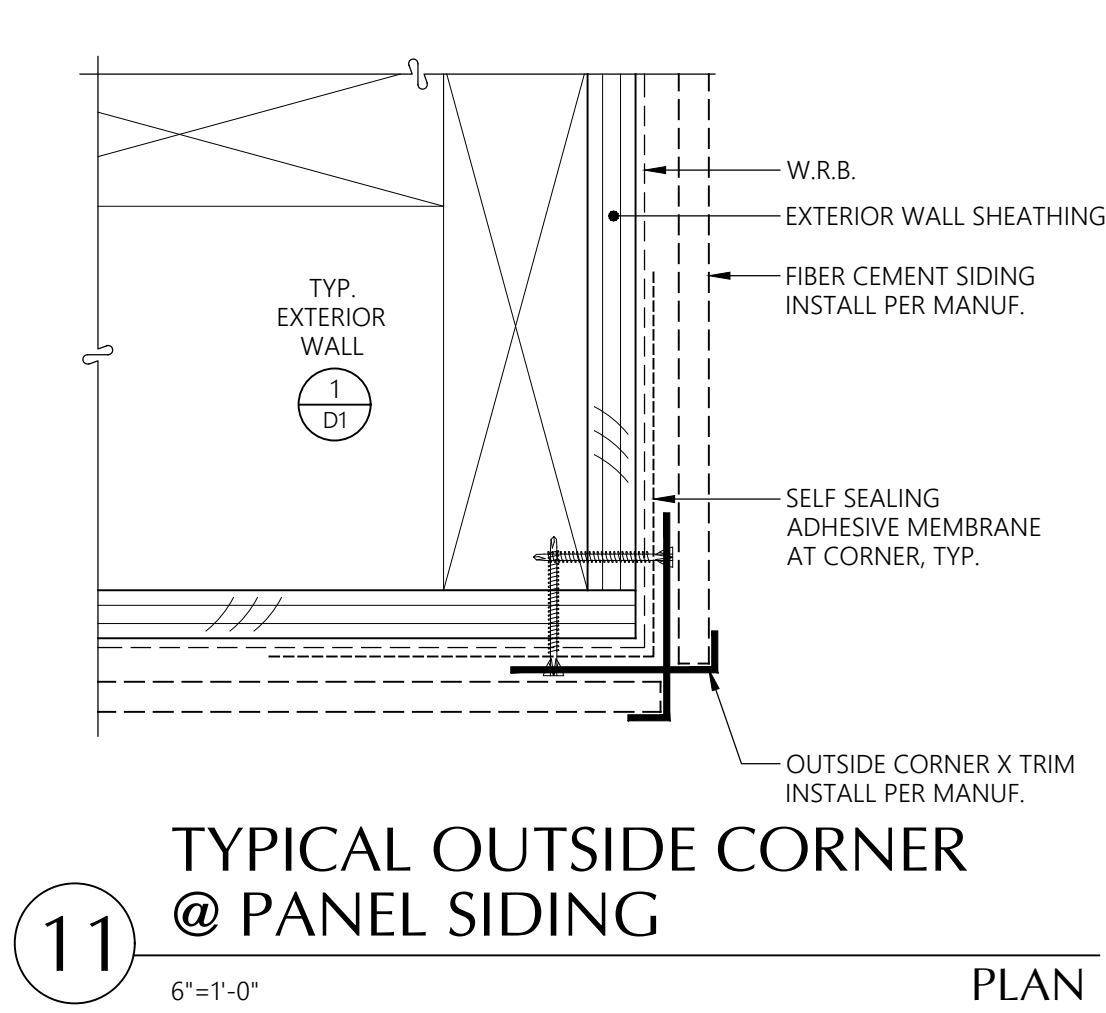
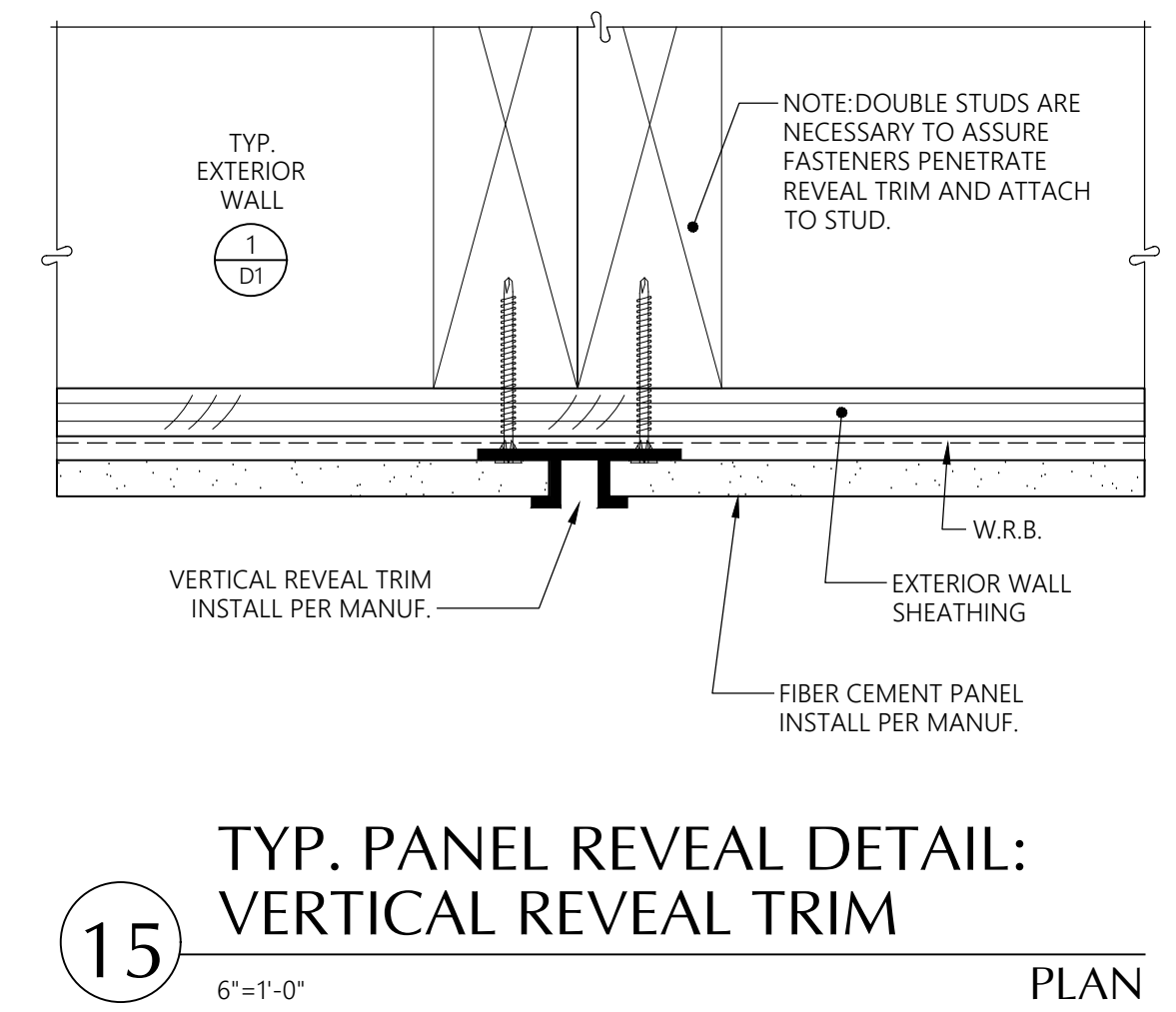
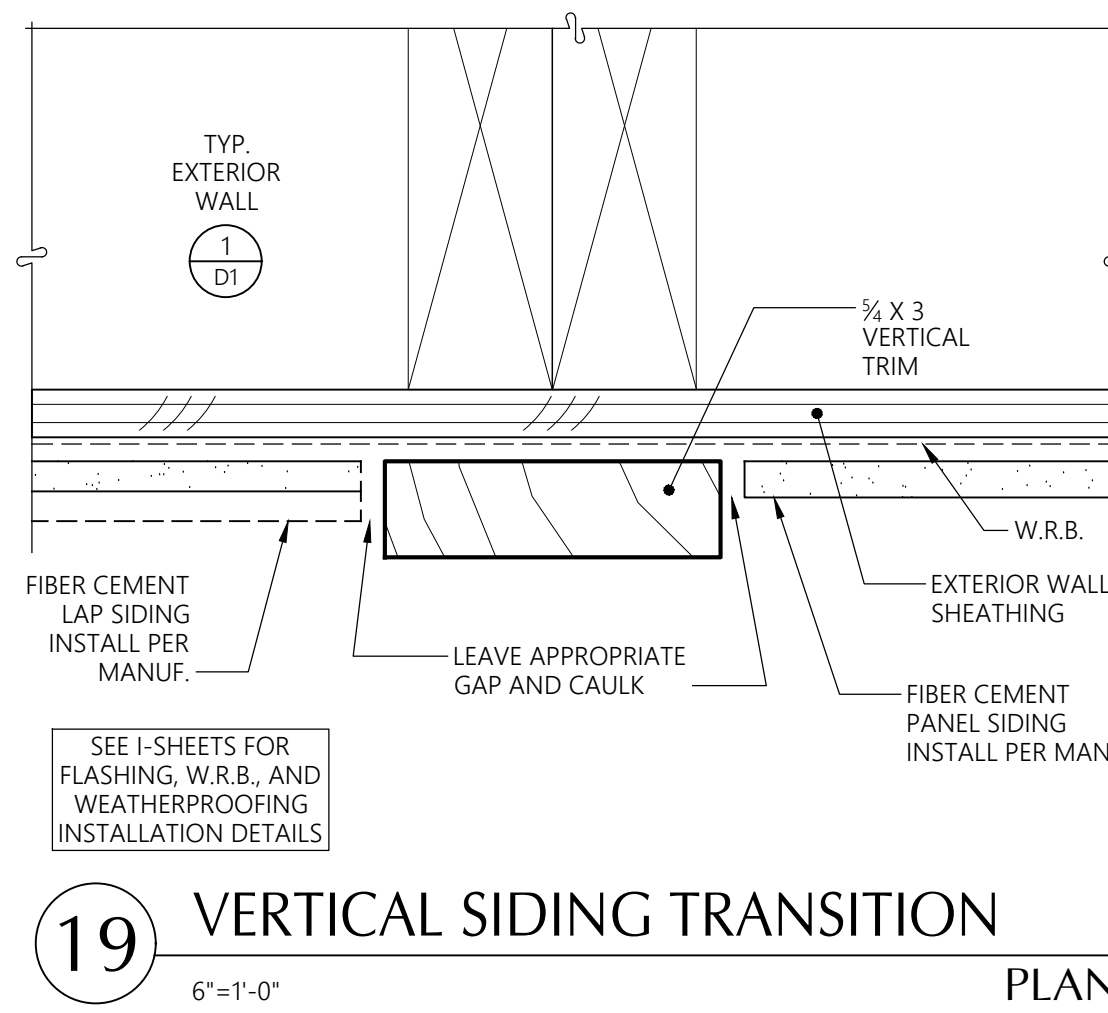
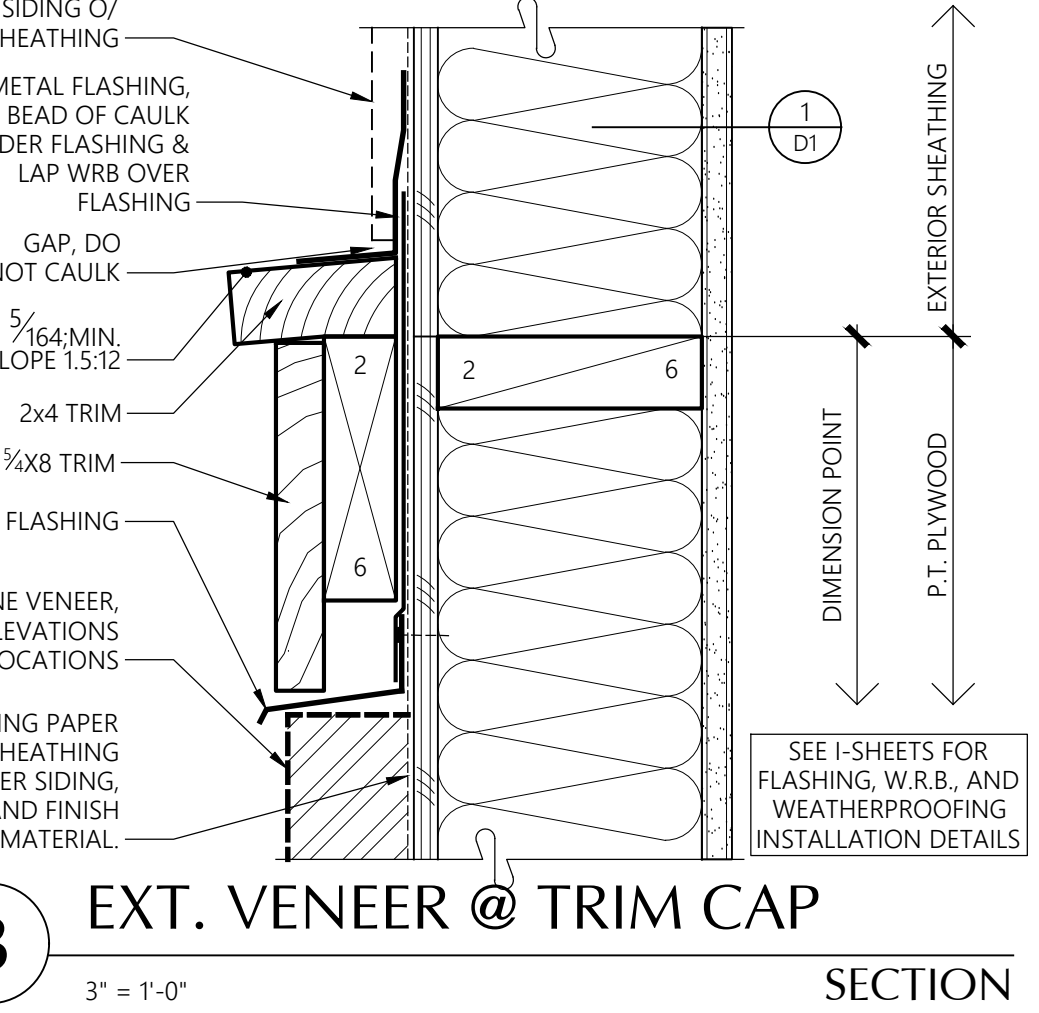
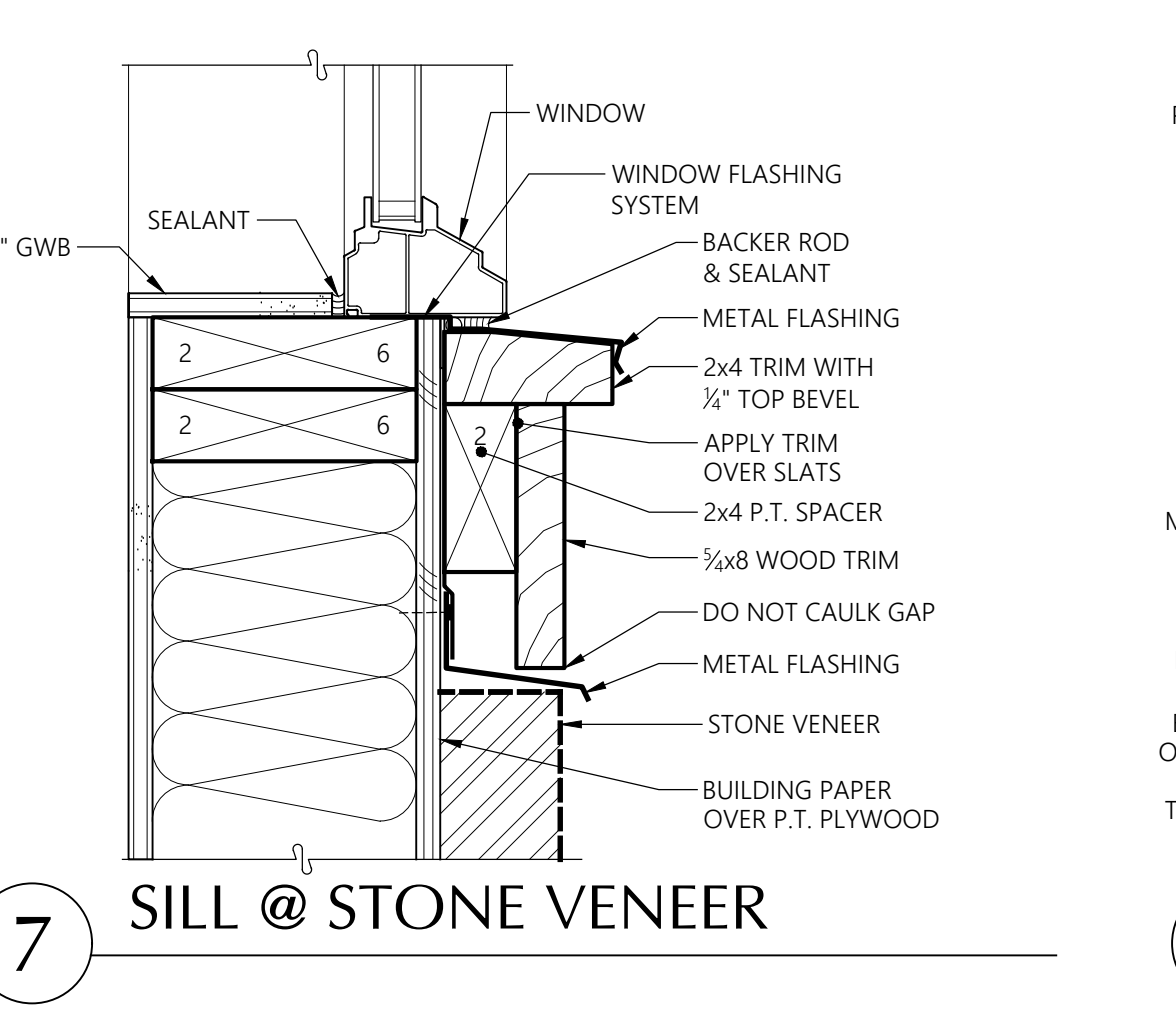
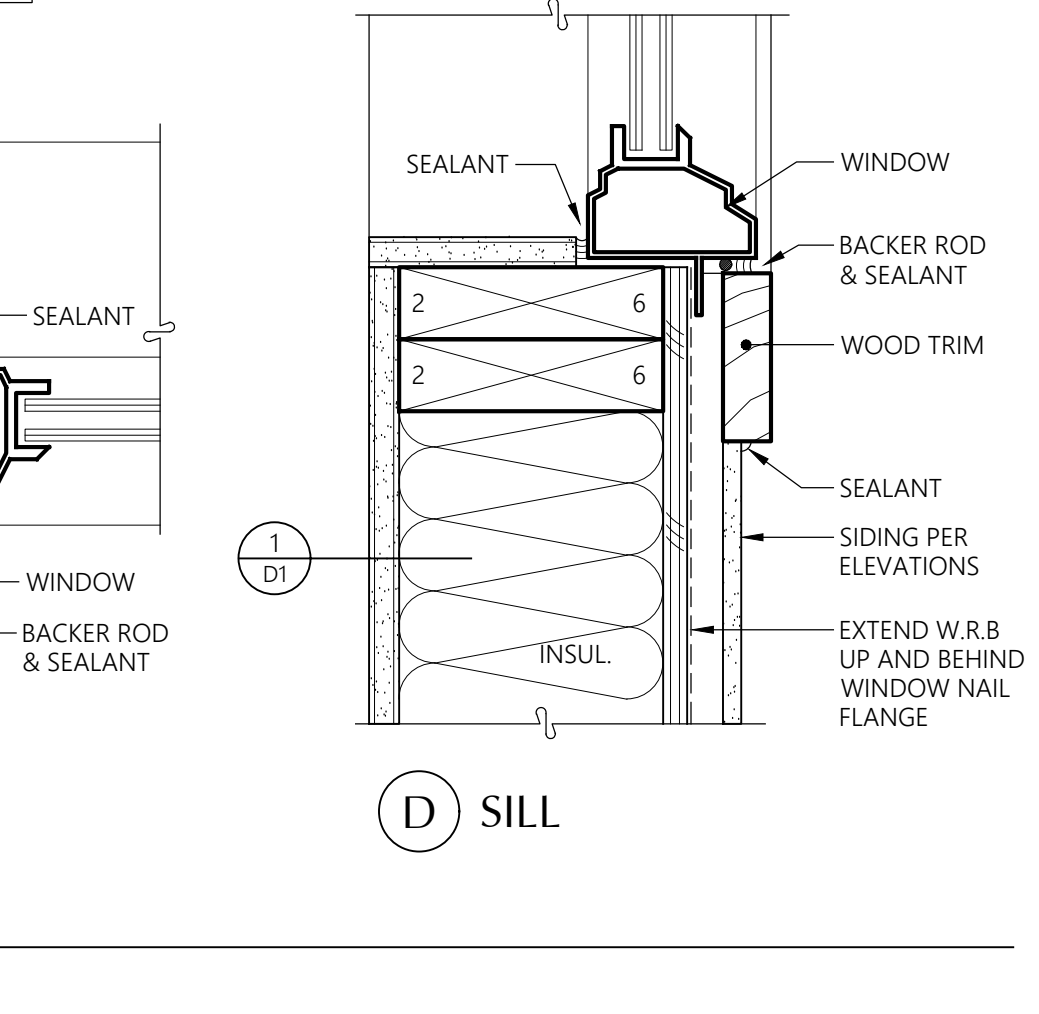
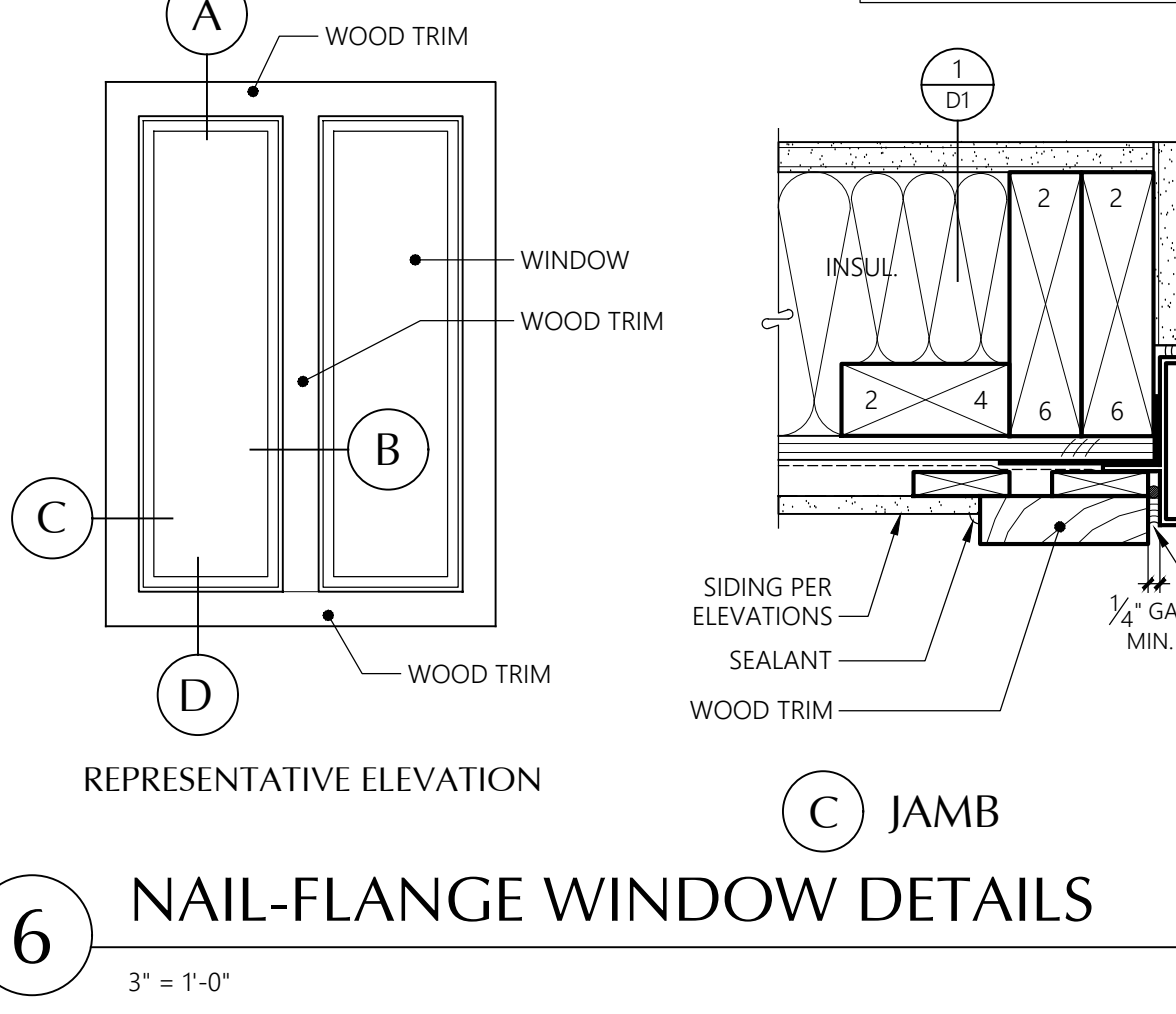
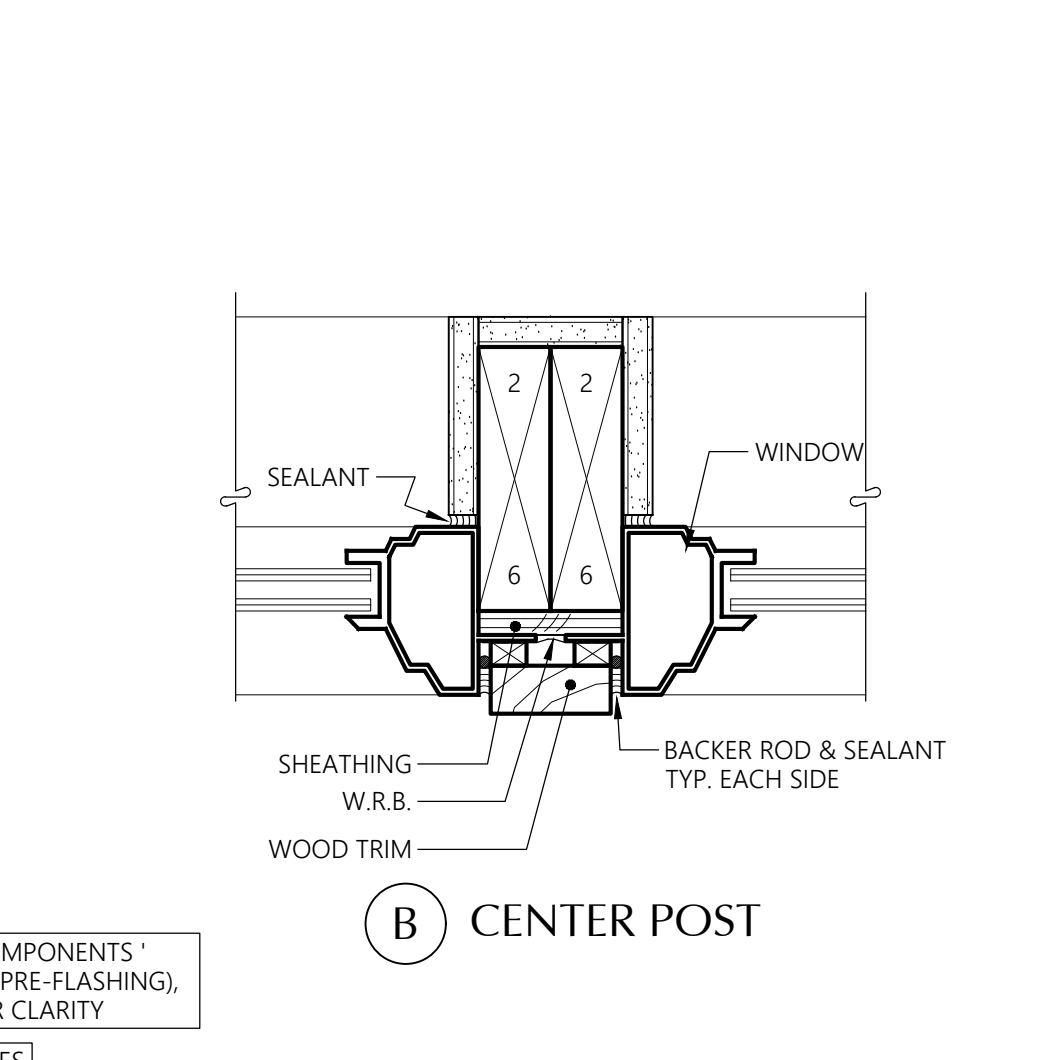
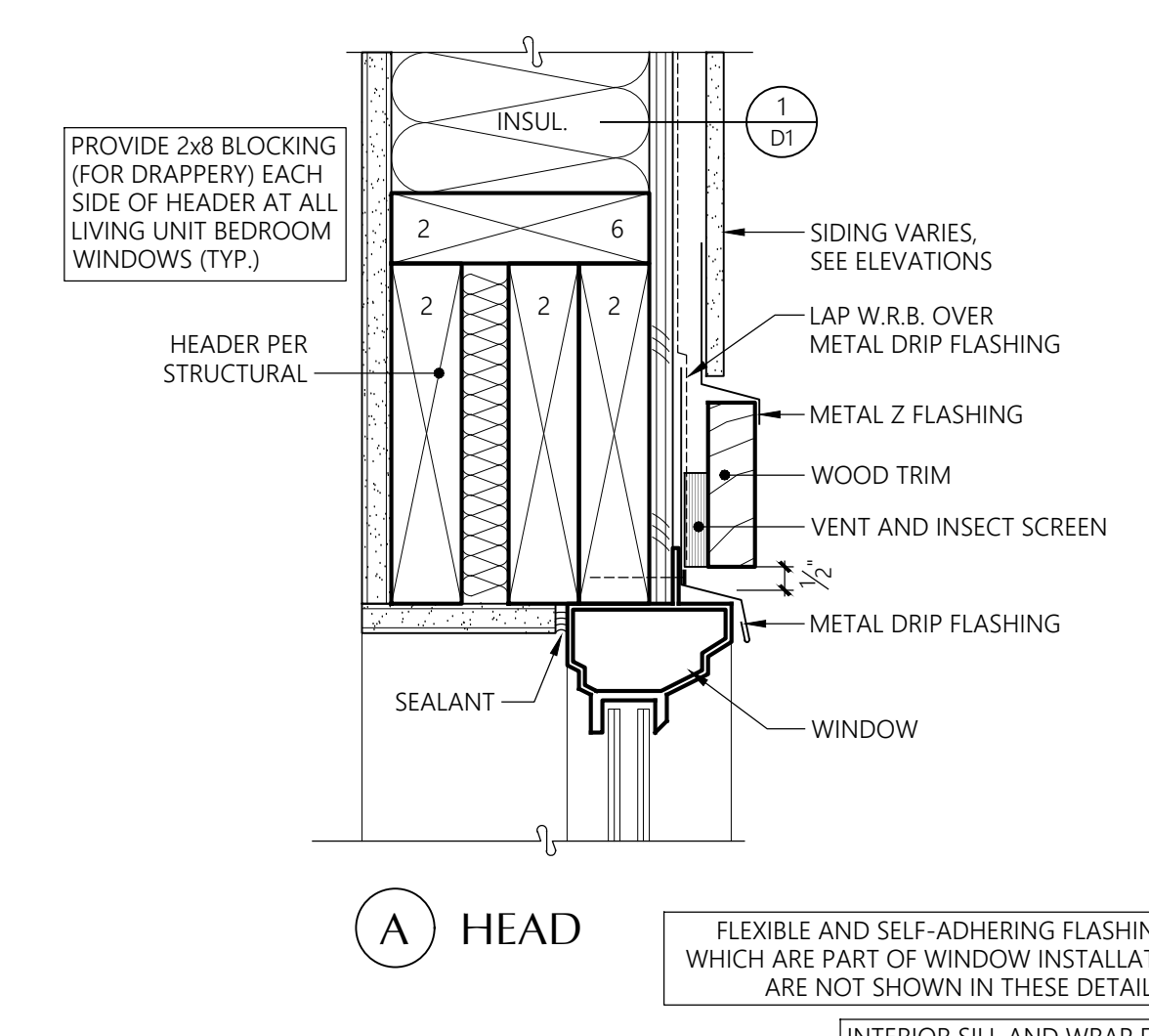
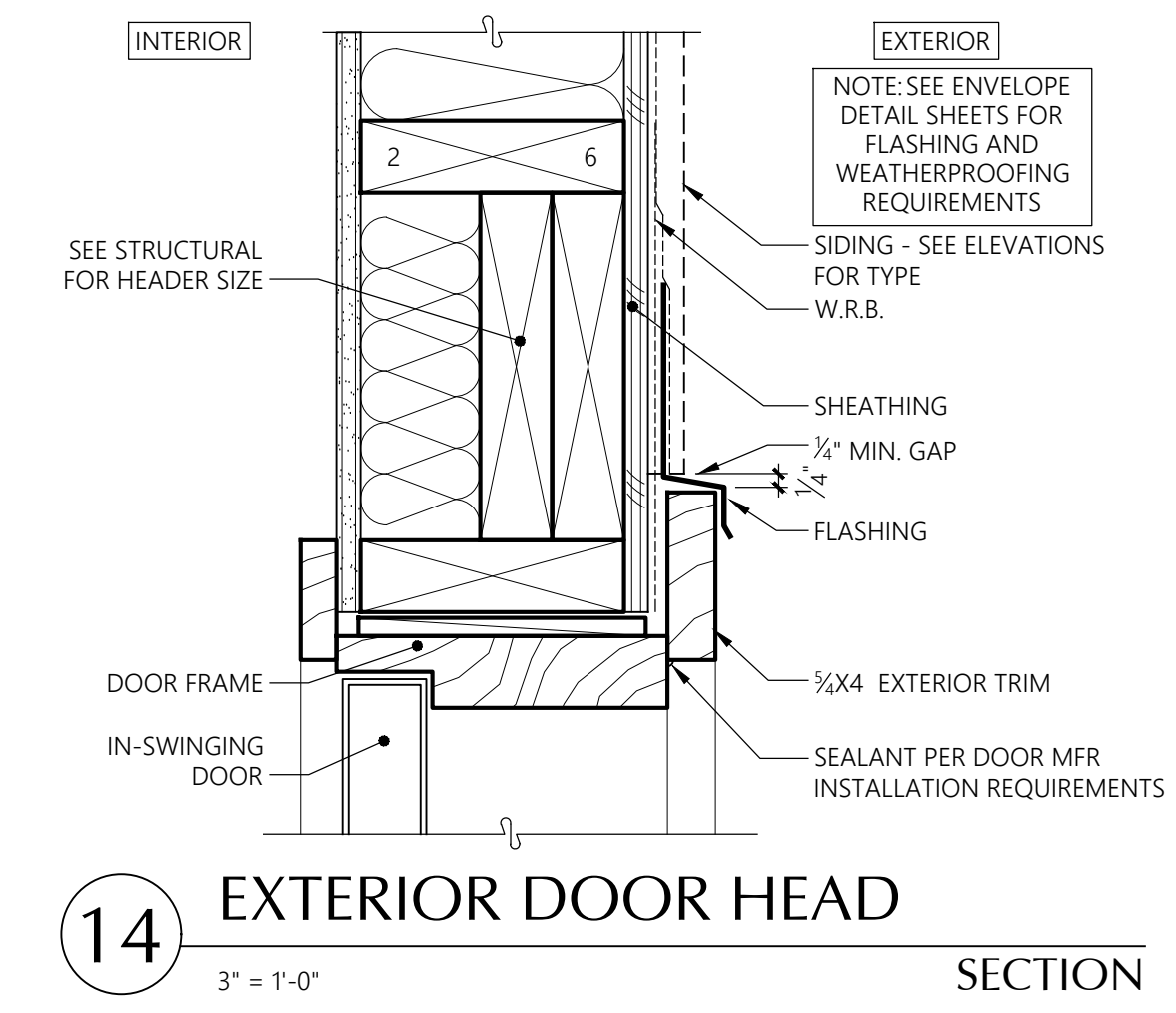
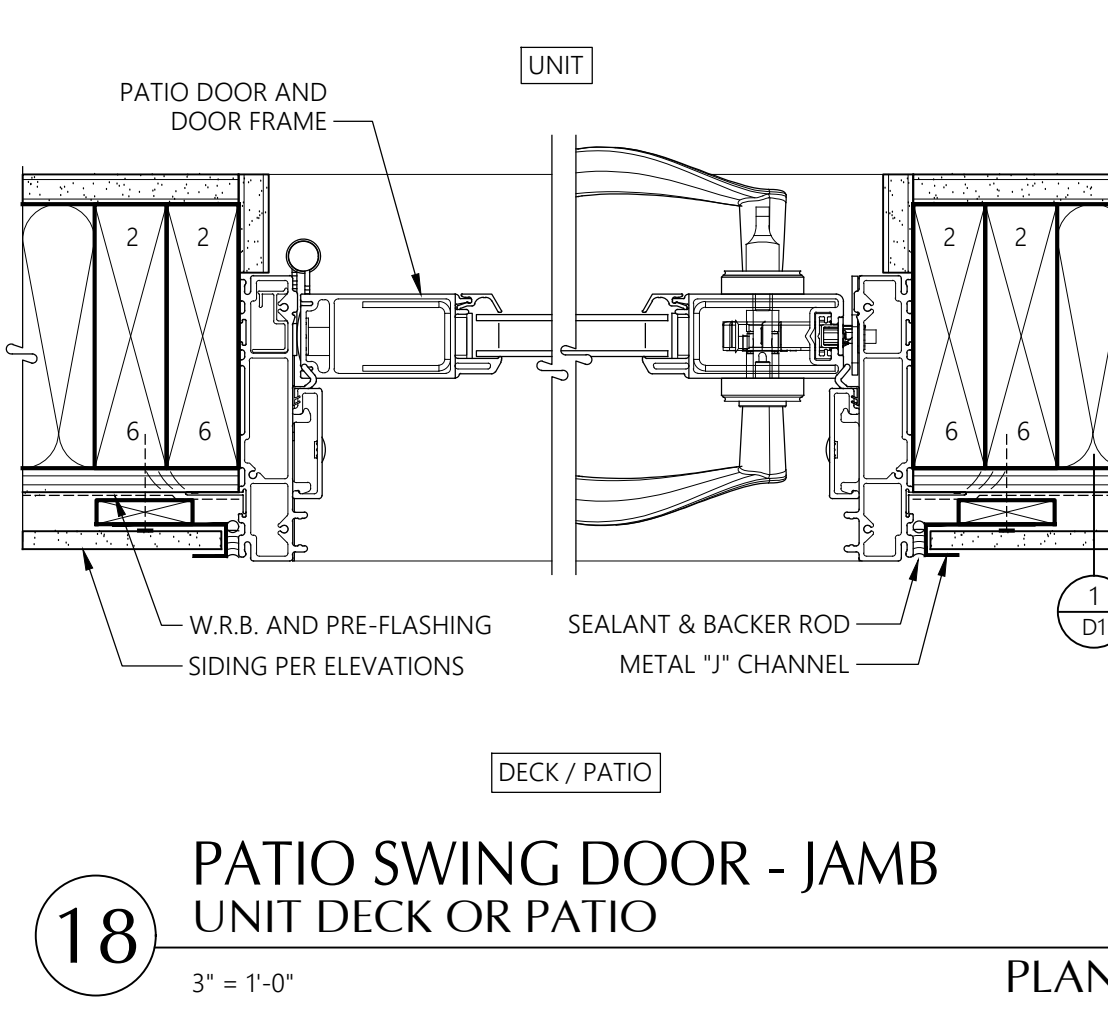
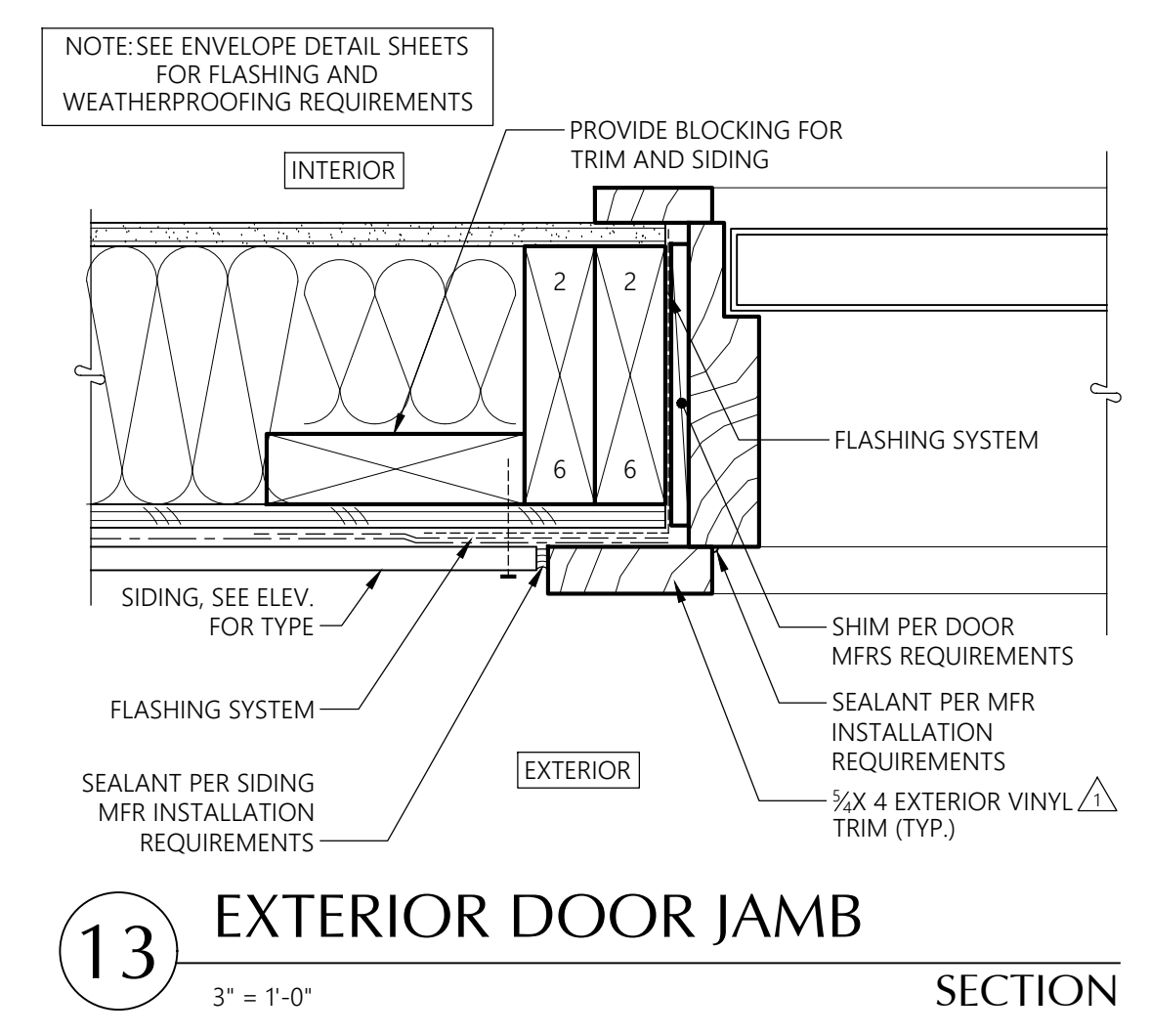
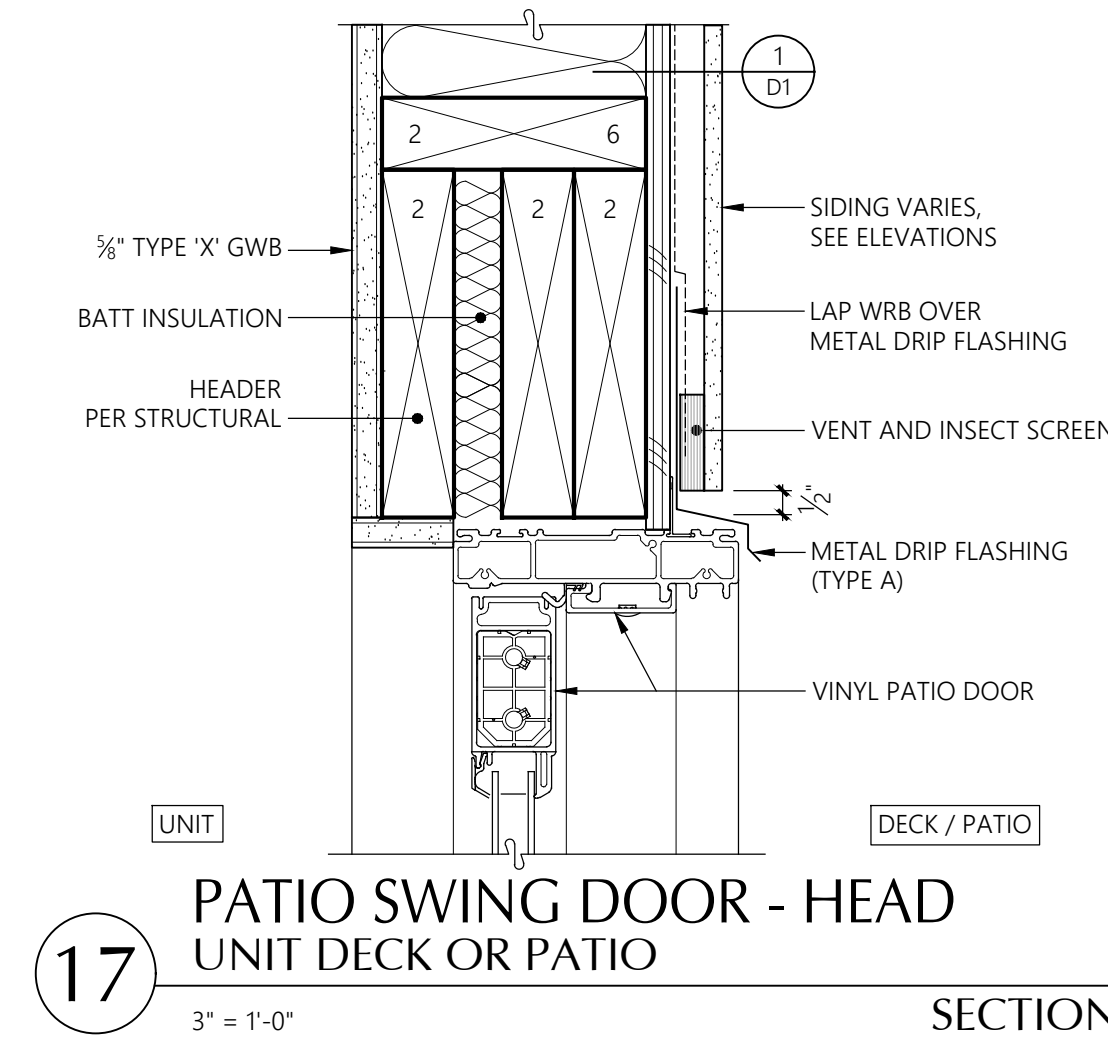
12 POST AT DECK
1-1/2" = 1'-0"
SECTION



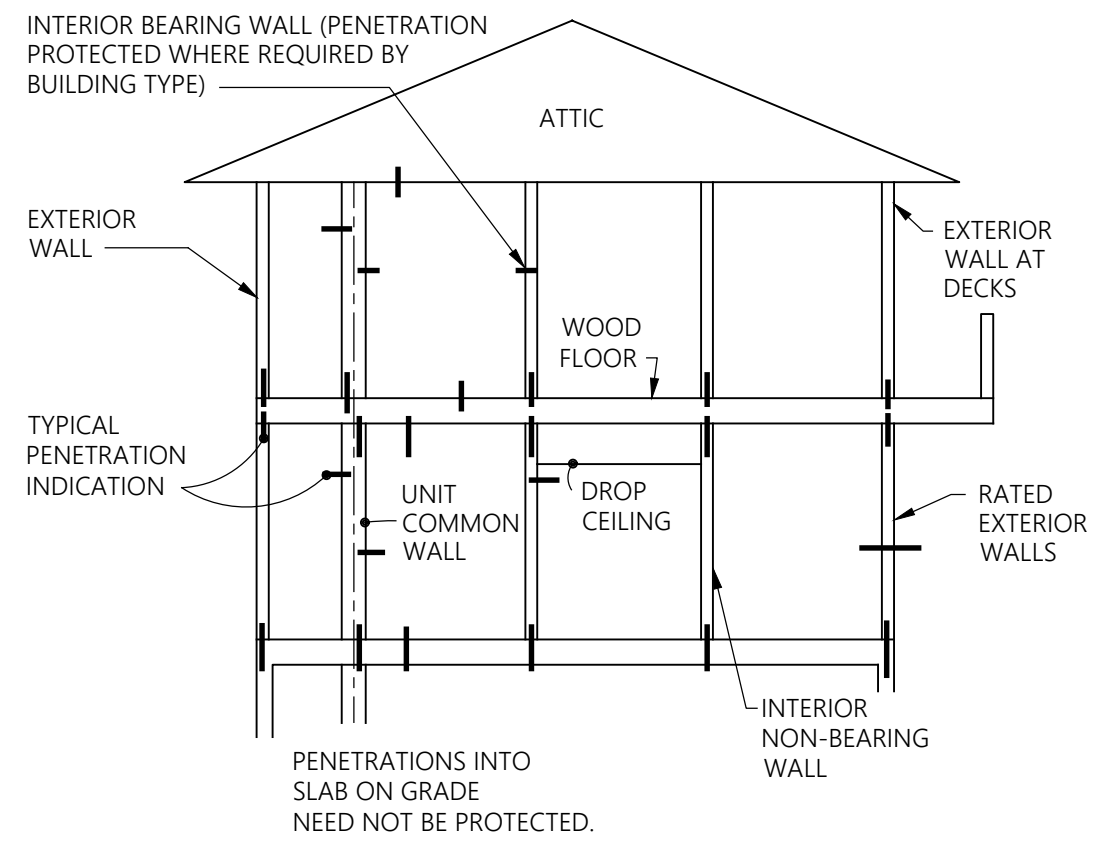
2 DECK THRESHOLD DETAILS
SECTION



4 DOOR CHANGES IN LEVEL
1" = 1'-0"
SECTION



FR: 2306_VENUE DETAILS (01-100).DWG



THE PURPOSE OF THIS DETAIL IS TO INDICATE TYPES OF LOCATIONS OF WALL, CEILING AND FLOOR PENETRATIONS THAT NEED TO BE FIRESTOPPED IN ACCORDANCE WITH 706, 708, 711, 713, 714 AND 717 OF THE 2018 INTERNATIONAL BUILDING CODE. THE THICK LINES IN THE DETAIL INDICATE A PENETRATION BY A PIPE, CONDUIT, VENT, ETC., WHETHER PLASTIC (COMBUSTIBLE) OR NON-COMBUSTIBLE. IN GENERAL THESE PENETRATIONS (OR THE ANNULAR SPACE AROUND THEM) WOULD COMPROMISE THE INTEGRITY OF THE FIRE-RATED ASSEMBLY UNLESS IT WERE CLOSED OFF AND PROTECTED DURING A FIRE. COMMON WALLS BETWEEN UNITS ARE FIRE-RATED WALLS. UNRATED WALLS WITHIN UNITS (EVEN THOUGH THEY MAY HAVE RATED WALLBOARD) NEED NOT BE PROTECTED. HOWEVER, PENETRATION OF THE TOP AND BOTTOM PLATES OF UNRATED WALLS INTO THE RATED FLOOR ASSEMBLY NEEDS TO BE FIRESTOPPED. THE CONTRACTOR SHALL DETERMINE FIRESTOPPING FOR EACH SITUATION, AND TESTED ASSEMBLIES SHALL BE SUBMITTED TO THE ARCHITECT AND THE CITY IN ACCORDANCE WITH THE "DEFERRED SUBMITTALS" SECTION ON THE COVER SHEET.

17 PENETRATION LOCATIONS FOR FIRESTOPPING SECTION
NO SCALE

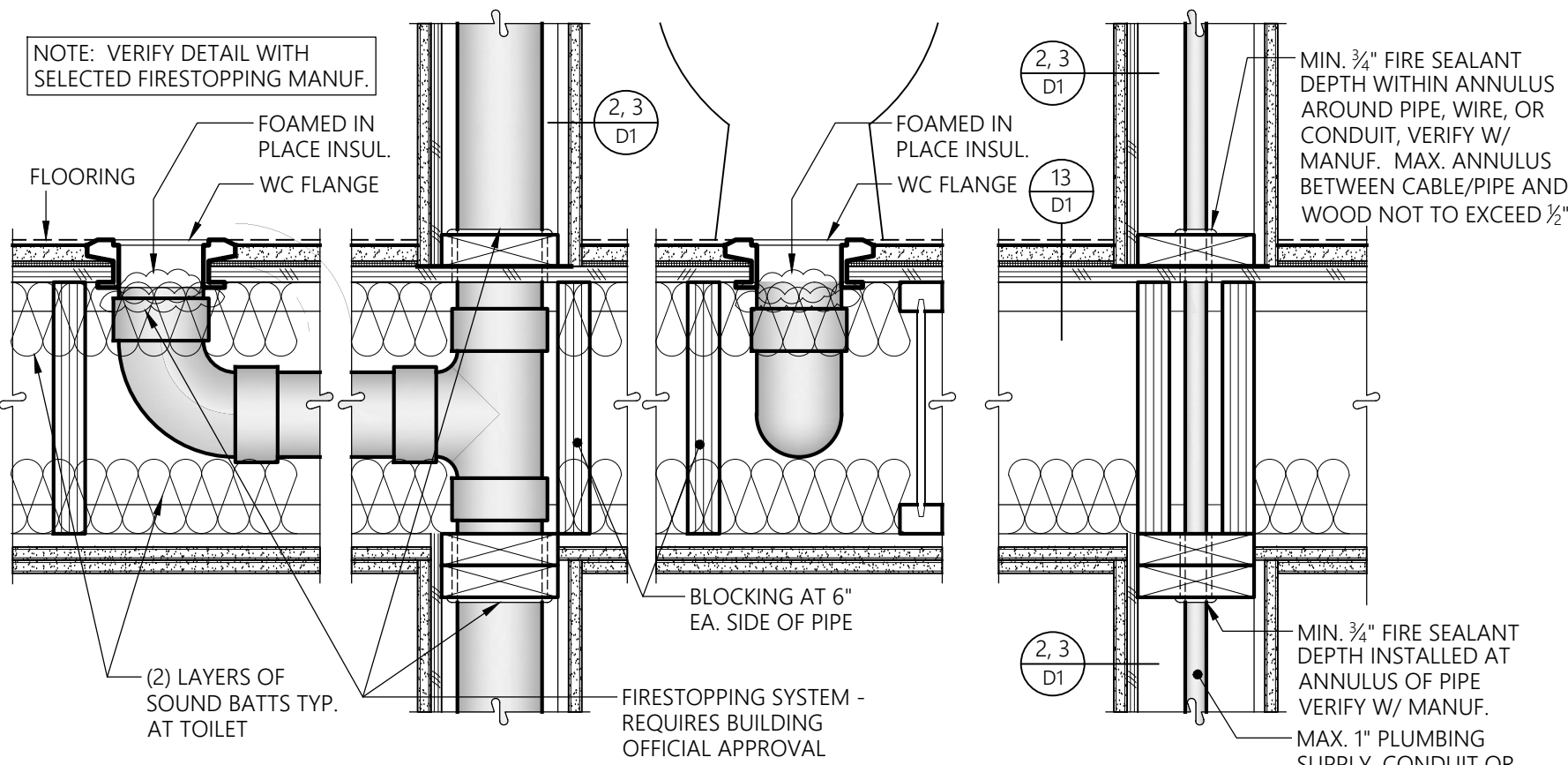
NOTE: THESE FIRESTOPPING DETAILS ARE REPRESENTATIVE OF TYPICAL SITUATIONS ONLY. FOR OTHER CONDITIONS REFER TO 3M MATRIX OF UL TESTED SYSTEMS BELOW. IF CONDITION IS NOT COVERED IN THIS MATRIX, CONTACT MANUFACTURER FOR TESTED ASSEMBLY RECOMMENDATION. ALL FIRESTOP DETAILS TO BE EXECUTED BY LICENSED AND/OR CERTIFIED INSTALLER.

FIRESTOPPING PENETRATIONS AND VOIDS IN RATED CONSTRUCTION: MATRIX OF UL TESTED SYSTEMS:

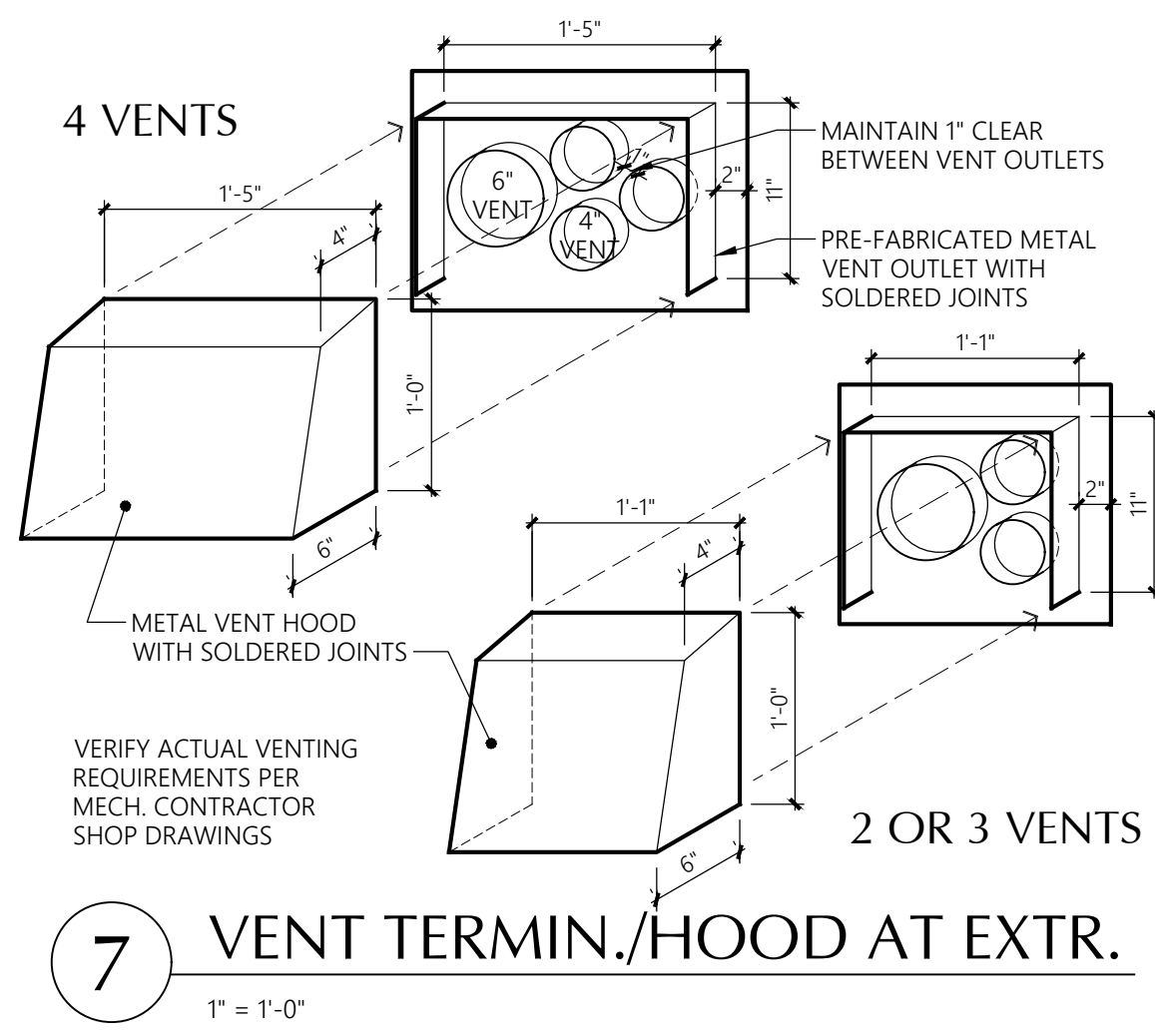
PENETRATING ITEM	ASSEMBLY	FIRE RATING	SYSTEM	PRODUCT	PENETRATING ITEM	ASSEMBLY	FIRE RATING	SYSTEM	PRODUCT
METAL PIPE/CONDUIT	CONC. WALLS/FLRS	2,3,8,4 HR	CAJ1044	CP25WB+	PLASTIC PIPE	CONC. WALLS/FLRS	182 HR	CAJ2001	*PPD
MULTIPLE METAL	CONC. WALLS/FLRS	2 HR	CAJ1092	CP25WB+	PLASTIC PIPE	GYP. WALLS	182 HR	WL2002	*PPD
METAL PIPE/CONDUIT	GYP. WALLS	1,283 HR	WL1001	CP25WB+	PLAS. JACKETED CABLE	CONC. WALLS/FLRS	2 HR	CAJ3021	MOLDABLE PUTTY
MULTIPLE METAL	GYP. WALLS	182 HR	WL1016	CP25WB+	PLAS. JACKETED CABLE	GYP. WALLS	182 HR	WL3031	MOLDABLE PUTTY
INSULATED PIPE	CONC. WALLS/FLRS	1,2,8,3 HR	CAJ5001	CP25WB+	CABLE TRAYS	CONC. WALLS/FLRS	2,8,3 HR	CAJ4003	CP25WB+ CS195+
INSULATED PIPE	GYP. WALLS	182 HR	WL5039	CP25WB+	CABLE TRAYS	GYP. WALLS	182 HR	WL4004	CP25WB+ CS195+
HVAC DUCTS (RECT.)	CONC. WALLS/FLRS	2 HR	CAJ7016	CP25WB+	BUS DUCT	CONC. WALLS/FLRS	2,8,3 HR	CAJ6001	CP25WB+ CS195+
HVAC DUCTS (ROUND)	CONC. WALLS/FLRS	2 HR	CAJ7003	CP25WB+	ELEC. OUTLET BOXES	GYP. WALLS	182 HR	ANSJ UL263	MOLDABLE PUTTY
HVAC DUCTS	GYP. WALLS	182 HR	WL7008	CP25WB+	CONSTRUCTION JOINTS:				
PVDF PLASTIC	CONC. WALLS/FLRS	2 HR	CAJ2121	F5195+ CP25WB+	GYP. WALL TO CONC. DECK	CONC. DECK	182 HR	HW0012	SILICONE 2300
PVDF PLASTIC	GYP. WALLS	182 HR	WL2092	F5195+ CP25WB+	CONC. FLOOR TO CONC. FLOOR	CONC. FLOOR	3 HR	FFD1002	SILICONE 2003

*PPD = 3M PLASTIC PIPE DEVICE

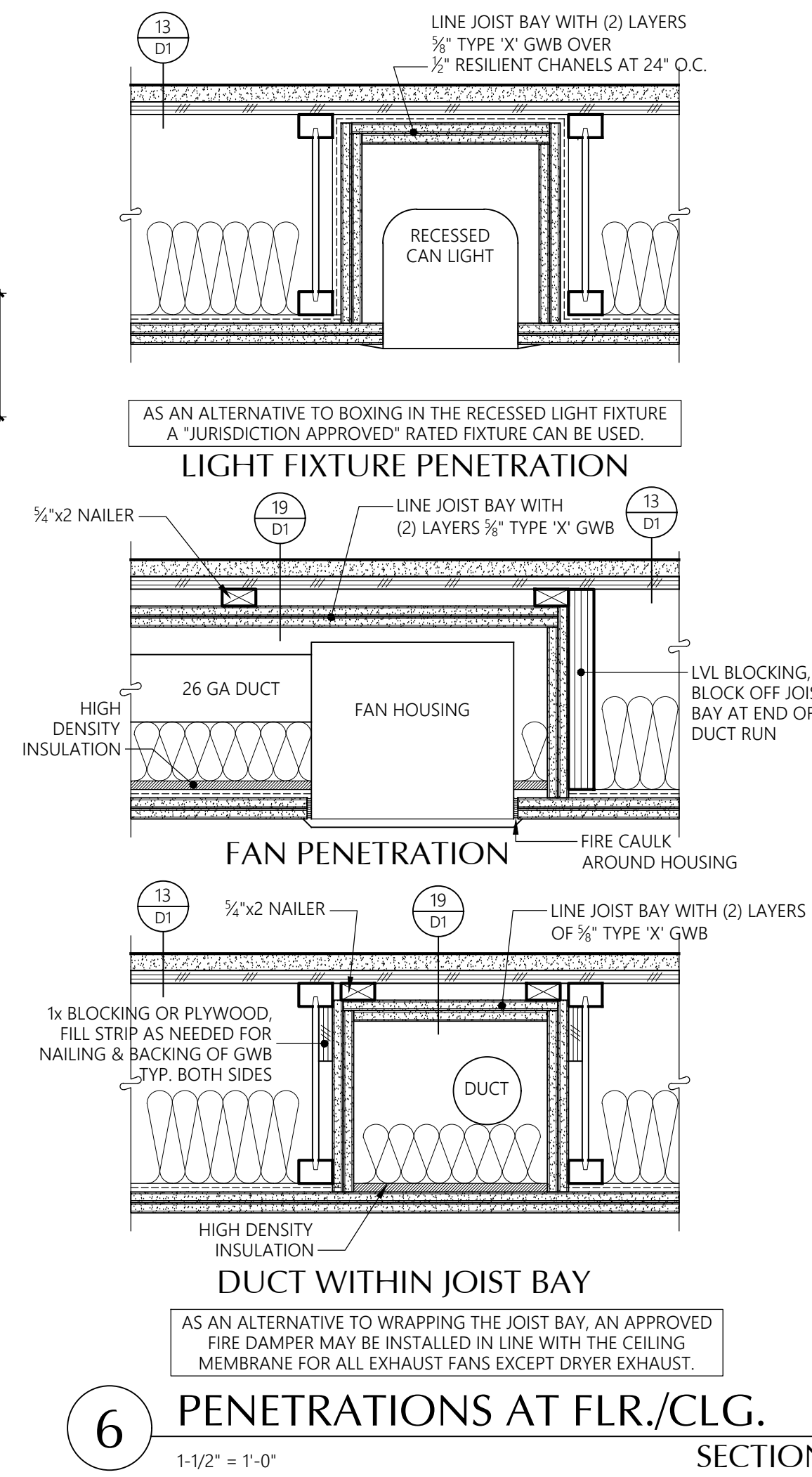
18 MATRIX OF UL TESTED SYSTEMS FOR FIRESTOPPING NTS



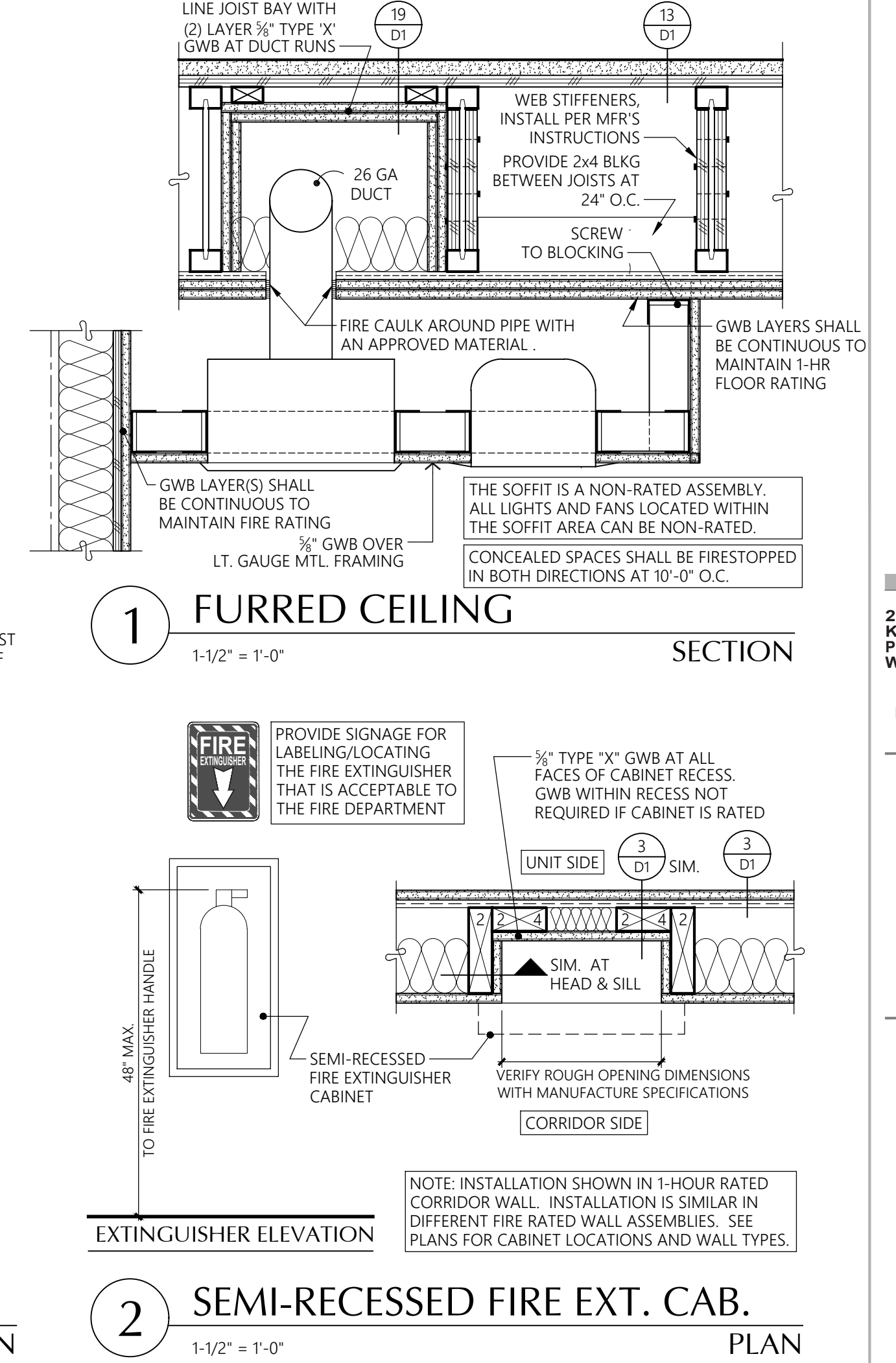
19 TYP. FIRESTOP AT PENETRATION SECTION
1-1/2" = 1'-0"



7 VENT TERMIN./HOOD AT EXTR. SECTION
1" = 1'-0"



6 PENETRATIONS AT FLR./CLG. SECTION
1-1/2" = 1'-0"



2 SEMI-RECESSED FIRE EXT. CAB. PLAN
1-1/2" = 1'-0"

INSULATION AND ENERGY NOTES

Insulation - General

All insulation materials shall be installed according to the manufacturer's instructions to achieve proper densities, and maintain uniform R-values. Substantial contact of the insulation with the surface being insulated is required.

Where required, insulation shall be installed with clearances according to manufacturer's specifications. Insulation shall be installed so that required ventilation is unobstructed. For blown or poured loose fill insulation clearances shall be maintained through installation of a permanent retainer.

Slab on Grade

R-10 slab on grade insulation shall be installed inside the foundation wall.

Insulated Floors

Floor insulation shall be installed in a permanent manner in substantial contact with the surface being insulated. Insulation supports shall be installed so spacing is no more than twenty-four inches on center.

Floors separating conditioned space from unconditioned space shall have a vapor barrier installed. Vapor barrier shall be installed on the warm side of the insulation. The vapor barrier shall have a one perm dry cup rating or less (i.e. four mil polyethylene or kraft faced material). The floor sheathing may be used as the vapor barrier if rated (and so stamped) at one perm (max). Otherwise place vapor barrier on top of joists before placing sheathing.

Exterior Walls

All wall insulation shall fill the entire cavity. Exterior wall cavities isolated during framing shall be fully insulated to the levels of the surrounding walls. All faced insulation shall be face stapled to avoid compression.

Walls separating conditioned space from unconditioned space shall have a vapor barrier installed. Faced batt insulation shall be face stapled. Vapor barrier shall be installed on the warm side of the insulation.

Air Leakage

These air leakage notes apply to those locations separating outdoor ambient conditions from interior spaces that are heated or mechanically cooled.

Exterior joints around windows and door frames, between wall cavities and window or door frames, openings between walls and foundation, between walls and roof and wall panels, openings of utility services through walls, floors and roof, and all other openings in the building envelope shall be sealed, caulked, gasketed, or weatherstripped to limit air leakage in a manner approved by the building official.

Doors

All exterior doors or doors serving as access to an enclosed unheated area shall be weatherstripped to limit leakage around their perimeter when in a closed position. The thermal transfer characteristics of insulated doors shall be determined per NFRC 100-91.

Windows:

Glazing U-values shall be determined in accordance with NFRC 100-91. Windows and SGD shall be double glazed vinyl type with the U-values indicated on the unit plans.

Windows shall be furnished with outdoor air inlets as indicated on the Unit Electrical plans. Inlets shall have a controllable and secure opening and be capable of a total opening area of not less than four (4) square inches and tested by a nationally recognized standard or approved agency and located to avoid drafts. Inlets shall be screened or otherwise protected from entry by insects, leaves, or other material.

Roof/Ceilings:

Roof/Ceiling insulation: Open-Blown or poured loose fill insulation may be used in attic spaces where the slope of the ceiling is more than 4 in 12 and there is at least 44 inches of clear distance from the top of the bottom chord of the truss or ceiling joist to the underside of the sheathing. When eave vents are installed, baffling of the vent openings shall be provided so as to deflect the incoming air above the surface of the insulation. Baffles shall be rigid material, resistant to wind driven moisture. When feasible, the baffles shall be installed from the top of the outside of the exterior wall, extending inward, to a point six inches vertically above the height of noncompressed insulation, and twelve inches vertically above loose fill insulation. Baffles shall be in place at the time of framing inspection.

Where the ventilation space above the insulation is less than an average of twelve inches roof ceiling assemblies shall be provided with a vapor barrier having a 0.5 perm cup rating or less. Faced batt insulation where used as a vapor barrier shall be face stapled.

Vapor barriers shall not be required in roof/ceiling assemblies where the ventilation space above the insulation averages twelve inches or greater.

Vapor barriers shall be installed on the warm side of the insulation.

GENERAL NOTES

GENERAL NOTES – MECHANICAL

- REFERENCE TO RELATED WORK: "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, LANDSCAPE, OR KITCHEN), OR ITEM BASED ON A SPECIFIC MANUFACTURER'S DIMENSIONS (VERIFY).
- ELECTRICAL CHARACTERISTICS: REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS (VOLTAGES, ETC. OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED).
- CODES: COMPLETE INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE PER THE APPLICABLE BUILDING, MECHANICAL, ENERGY, PLUMBING, FIRE, AND HEALTH CODES AND REGULATIONS AS ADOPTED BY THE LOCAL AHJ.
- PREPARE AND SUBMIT FOR REVIEW A SHOP DRAWING BASED ON FINAL STRUCTURAL SHOP DRAWINGS FOR LOCATING AND ROUTING ALL DUCTWORK, DAMPERS, EQUIPMENT, PIPING, ETC.
 - COORDINATE FLOOR AND BEAM PENETRATIONS WITH STRUCTURAL.
 - COORDINATE FINAL LOCATION AND ROUTING WITH CEILING, LIGHTS, WALLS, FIRE SPRINKLER PIPING, AND OTHER TRADES WORK.
 - INCLUDE ADDITIONAL OFFSETS, ELBOWS, ROUTING, EQUIVALENT DUCT SIZING EXCHANGE, RELOCATING, ETC. AS REQUIRED FOR A COMPLETE OPERATING MECHANICAL SYSTEM.
 - PROVIDE SHOP DRAWINGS AT NO ADDITIONAL COST TO THE OWNER.
- MECHANICAL CONTRACTOR SHALL LOCATE AND COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITHIN THE STRUCTURE.
- ACCESS DOORS: COORDINATE WITH ARCHITECT AND LOCATE ALL ACCESS DOORS ON SHOP DRAWINGS PRIOR TO BEGINNING OF CONSTRUCTION. ACCESS DOORS IN FIRE RATED STRUCTURE SHALL BE FIRE RATED. VERIFY ACCESS DOOR LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.
- RATED PENETRATION: DUCT PENETRATIONS THROUGH RATED ENCLOSURES SHALL BE FIRE/SMOKE DAMPERED PER THE LATEST EDITION OF THE UNDERWRITERS LABORATORIES(UL) FIRE RESISTANCE WITH HOURLY RATINGS FOR THROUGH-PENETRATION FIRE STOPS SYSTEM VOLUME #2, OR SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S UL LISTINGS (3M OR EQUIVALENT). DETERMINE REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO BID.
- EXHAUST OUTLETS: SOURCE-SPECIFIC FANS SHALL BE VENTED TO OUTDOORS WITH A MINIMUM 3' CLEARANCE BETWEEN VENT OUTLETS AND BUILDING OPENINGS, AND 10' MINIMUM BETWEEN VENT OUTLETS AND MECHANICAL AIR INTAKES.
- ROOF PENETRATIONS: SEE ARCHITECTURAL DRAWINGS FOR ROOF CAP, ROOF CURB, ROOF DRAIN, AND VTR DETAILS.
- EXPOSED PIPING: PROVIDE CHROME PLATING FOR EXPOSED PIPING IN FINISHED ROOMS.
- PENETRATIONS: PROVIDE ESCUTCHEON PLATES FOR EXPOSED PIPING PENETRATIONS AND SHEET METAL FLASHING FOR EXPOSED DUCTWORK PENETRATIONS.
- SHAFT AND PLENUM CONNECTIONS: SEAL CONNECTIONS TO AIR SHAFTS AIRTIGHT. PROVIDE AIRTIGHT SEAL AROUND PENETRATIONS IN AIR PLENUMS.
- LIGHT FIXTURE CLEARANCE: COORDINATE LOCATIONS OF MECHANICAL WORK TO PROVIDE CLEARANCES OVER LIGHTING FIXTURES FOR REMOVAL AND REPLACEMENT.
- MOTORS: COMPLY WITH ENERGY CODE ENFORCED BY AHJ FOR MINIMUM EFFICIENCIES UNDER FULL LOAD.
- ACCESS CLEARANCES FOR MAINTENANCE AND REPLACEMENT: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET. COORDINATE LOCATIONS OF MECHANICAL WORK AND WORK OF OTHER TRADES TO PROVIDE ACCESS CLEARANCES FOR SERVICE AND MAINTENANCE.

COORDINATION REQUIREMENTS

- PIPING: COORDINATE WITH STRUCTURAL FOR EXACT LOCATION OF ALL STRUCTURAL FRAMING AND FOOTINGS AND FINALIZE THE EXACT ROUTING OF ALL PIPES WITH STRUCTURAL AND AT THE SITE PRIOR AND DURING THE CONSTRUCTION.
- DUCTWORK: LOCATE AND COORDINATE THE EXACT LOCATION OF DUCTWORK WITH STRUCTURAL PLANS AND WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION OF ANY STRUCTURE OR EQUIPMENT. COORDINATE WITH FRAMING CONTRACTOR TO ASSURE JOIST SPACES LINE UP WHEN DUCTWORK MUST PASS THROUGH DIFFERENT JOIST SPACES.
- ADJUSTMENTS: ALL EQUIPMENT, MOTORS, FANS GAS BURNERS, IGNITION DEVICES, DRIVES, ETC. SHALL BE ADJUSTED AND BALANCED TO OPERATE AT SPECIFIED RATINGS AS REQUIRED FOR THIS PROJECT SITE AND ACCOUNTING FOR ELEVATION ABOVE SEA LEVEL.
- APPROVALS: MECHANICAL AND PLUMBING EQUIPMENT SHALL BE APPROVED FOR INSTALLATION IN THE PROJECT LOCATION AND SHALL HAVE ALL CERTIFICATIONS AND RATINGS TO MEET ALL ENERGY, POLLUTION, ENVIRONMENTAL, SEISMIC, ETC. CODES AND REGULATIONS. THE CONTRACTOR SHALL COORDINATE WITH HIS MANUFACTURE SUPPLIERS AND SHALL INCLUDE ALL COSTS REQUIRED TO MEET THESE REQUIREMENTS IN HIS BID.
- FIRE PROTECTION: CONTRACTOR SHALL PROVIDE A FULLY DESIGNED FIRE PROTECTION SPRINKLER SYSTEM IN COMPLIANCE WITH NFPA AND LOCAL CODES. PROVIDE DESIGN, PERMITS, MATERIALS, INSTALLATION, TESTING AND ALL OTHER FOR A FULLY OPERATIONAL SYSTEM. LOCATION OF ALL PIPING TO BE COORDINATED WITH OTHER TRADES.

PIPING NOTES

- DISASSEMBLY PROVISIONS: PROVIDE UNIONS OR FLANGES AT PIPING CONNECTIONS TO EQUIPMENT, COILS, TRAPS, CONTROL VALVES, AND OTHER COMPONENTS TO ALLOW DISASSEMBLY FOR MAINTENANCE.
- REDUCERS: PROVIDE AS REQUIRED FROM LINE PIPE SIZE TO EQUIPMENT, TRAP, COIL, AND CONTROL VALVE CONNECTION SIZES.
- OFFSETS: PROVIDE FOR BRANCH LINES TO EQUIPMENT.
- DILECTRIC UNIONS: PROVIDE AT CONNECTIONS OF DISSIMILAR PIPE.
- REFRIGERANT PIPING: PROVIDE SIZING & INSTALLATION IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- CONDENSATE DRAIN: PROVIDE A P-TRAP FOR EACH HVAC UNIT CONDENSATE PAN WITH PLUG TEES FOR CLEANING. CONDENSATE DRAINS SHALL BE DISCHARGED TO AN INDIRECT WASTE OR OUTSIDE.

INSULATION/LINING NOTES

- ENERGY CODE: AS A MINIMUM, COMPLY WITH THICKNESSES AND TYPES LISTED IN ENERGY CODE ENFORCED BY AHJ.
- EXTENT OF INTERNAL DUCT LINING:
 - GRILLE AND DIFFUSER BOXES AND BOOTS.
 - TRANSFER DUCTS.
 - THE FIRST 10 FEET OF SUPPLY AND RETURN DUCTWORK FROM THE AIR HANDLER.
- EXTENT OF EXTERNAL DUCT INSULATION:
 - SUPPLY AND RETURN AIR IN UNCONDITIONED SPACES, MECHANICAL ROOMS, ELECTRICAL ROOMS, AND EQUIPMENT ROOMS NOT SPECIFIED TO BE INTERNALLY LINED.
 - SUPPLY AIR ABOVE CEILINGS OR EXPOSED NOT SPECIFIED TO BE INTERNALLY LINED.
 - OUTDOOR AIR INTAKE.
- MISCELLANEOUS DUCT FITTINGS (CONICAL TAKEOFFS, ETC.): WRAP WITH INSULATION FOR CONDENSATION CONTROL.

PLAN NOTES

- DUCTWORK SHALL BE METALLIC DUCTWORK
- TEST AND BALANCE WORK SHALL BE PERFORMED BY AN INDEPENDENT TEST AND BALANCE AGENCY. PROVIDE (3) COPIES OF TEST AND BALANCE REPORT TO OWNER.
- COORDINATE DUCTWORK WITH MISCELLANEOUS OBSTRUCTIONS IN CEILING SPACE.
- RESTROOM EXHAUST SHALL BE A MINIMUM OF 10' FROM ANY MECHANICAL OUTSIDE AIR INTAKES.
- ROUTE DUCTWORK UNDERNEATH JOISTS UON.
- TRANSITION DUCT UNDER BEAMS AND DUCTS. FIELD VERIFY AVAILABLE CEILING CAVITY DIMENSIONS.
- COORDINATE MOUNTING HEIGHT OF DIFFUSERS WITH ARCHITECTURAL PLANS.

SHEET METAL NOTES

- REFERENCE: SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, CURRENT EDITION.
- CLEARANCE: COORDINATE DUCTWORK WITH MISCELLANEOUS OBSTRUCTIONS IN CEILING SPACE.
- ROUND ELBOWS AND OFFSETS: FULL RADIUS (R/D = 1.5), 5-PIECE SEGMENTED OR STAMPED. REFER TO SMACNA HVAC FIG 2-7, 3-3. DO NOT USE ANGLED OFFSET (TYPE 1). MITERED OFFSET (TYPE 2) MAY BE USED UP TO 30 DEGREE OFFSET ANGLE.
- ROUND TEES AND LATERALS: CONICAL TEE PER SMACNA HVAC FIG 3-5; DO NOT USE STRAIGHT TEE. DO NOT USE CONICAL SADDLE TAP FOR EXPOSED DUCTWORK IN FINISHED SPACES. 90-DEGREE TEE WITH OVAL TO ROUND TAP, LATERAL, AND 45-DEGREE RECTANGULAR LEAD-IN PER SMACNA HVAC FIG 3-4.
- RECTANGULAR ELBOWS AND OFFSETS: FULL RADIUS WHERE SPACE PERMITS, R/W = 1.5; OTHERWISE USE SQUARE CORNER ELBOW WITH TURNING VANES.
- RECTANGULAR DIVIDED FLOW FITTINGS: USE GENERALLY, EXCEPT BRANCHES TO TERMINALS; SMACNA HVAC FIG 2-5, TYPES 1, 2, 4A, AND 4B. DO NOT USE TYPE 3.
- TURNING VANES: H.E.P. MANUFACTURER OR APPROVED HIGH EFFICIENCY PROFILE AIRFOIL TYPE FOR RECTANGULAR SQUARE THROAT ELBOWS. ACOUSTICAL TYPE FOR RETURN AIR MITERED ELBOWS.
- TAKEOFFS TO OPENINGS: CONICAL TYPE WITH VOLUME DAMPER FOR ROUND DUCT BRANCHES PER SMACNA HVAC FIG 2-6, MINIMUM INLET DIAMETER 2 INCHES LARGER THAN DUCT SIZE. 45 DEGREE ENTRY FITTING FOR RECTANGULAR DUCT BRANCHES PER SMACNA HVAC FIG 2-6.
- FLEXIBLE CONNECTIONS: PROVIDE AT EACH DUCT CONNECTION TO FANS, PACKAGED HVAC EQUIPMENT, EXTERNALLY ISOLATED AIR HANDLING UNITS, FAN COIL UNITS, AND SIMILAR EQUIPMENT. EXCEPTION: EQUIPMENT IN CORRIDOR CEILING SPACES WHERE FIRE RATING IS REQUIRED.
- ALL DUCT WORK SHALL BE CLASSIFIED FOR LOW PRESSURE SYSTEMS PER IMC SECTION 603.
- ALL DUCTS AND JOINTS SHALL BE SEALED PER IMC SECTION 603.

HVAC NOTES

- ATTACHMENTS: AIR DISTRIBUTION OUTLETS AND LOUVERS

- SHALL HAVE ALL REQUIRED ACCESSORIES AND ATTACHMENTS FOR A COMPLETE CONNECTION TO THE SPECIFIC TYPE OF STRUCTURE THAT THEY ARE BEING ATTACHED TO. THIS INCLUDES, BUT IS NOT LIMITED TO, EXTERIOR BRICKS, GWB WALLS, GWB CEILING, ETC.
- DUCTWORK: DUCTWORK SHALL BE SMOOTH SHEET METAL (CLASS-1). DUCTWORK THROUGH FIRE RATED STRUCTURE AND FLOOR SHALL BE MIN. 26 GA. STEEL. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE 5'-0", UNLESS OTHERWISE NOTED ON DRAWINGS. DUCTWORK SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
 - SEISMIC: PROVIDE SEISMIC RESTRAINTS FOR MECHANICAL EQUIPMENT, PIPING, AND DUCTWORK PER SMACNA AND LOCAL REGULATIONS.
 - FILTER CLEARANCE: PROVIDE ADEQUATE CLEARANCE FOR CHANGING AIR FILTERS.
 - DUCTWORK AND PIPING OUTSIDE OF MECHANICAL ROOMS SHALL BE CONCEALED, COORDINATE WITH THE GENERAL CONTRACTOR TO FUR-OUT AS REQUIRED.
 - FIRE RATINGS: RATED FLOOR/CEILING JOINT SPACES HAVING DUCTWORK INSIDE THEM SHALL BE FIRE/SMOKE PROTECTED TO MAINTAIN THE 1-HOUR FLOOR/CEILING RATING PER LOCAL JURISDICTIONS. EXHAUST DUCTWORK PENETRATING THE 1-HOUR ROOF/CEILING OR FLOOR/CEILING ASSEMBLY SHALL HAVE ACCESSIBLE CEILING FIRE DAMPERS. ALTERNATIVELY, THE EXHAUST DUCTWORK SHALL BE ROUTED INSIDE A RATED SHAFT TO PROTECT THE CEILING/ROOF RATING PER THE LOCAL JURISDICTIONS.
 - FIRESTOP: PIPE, DUCT AND CONDUIT PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRE AND SMOKE STOPPED PER CODE.
 - DUCTWORK: DUCTWORK SHALL BE SMOOTH SHEET METAL (CLASS-1). DUCTWORK THROUGH FIRE RATED STRUCTURE AND FLOOR SHALL BE MIN. 26 GA. STEEL. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE 5'-0" UNLESS OTHERWISE NOTED ON DRAWINGS. DUCTWORK SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
 - VOLUME DAMPERS: PROVIDE AN ACCESSIBLE MANUAL VOLUME DAMPER FOR EACH SUPPLY, RETURN, OSA AND EXHAUST OPENING, LOCATED AS FAR UPSTREAM AS POSSIBLE FROM THE OPENING. PROVIDE A MANUAL VOLUME DAMPER FOR BRANCH MAINS SERVING MORE THAN ONE OPENING. VOLUME DAMPERS IN NON-ACCESSIBLE CEILING SHALL HAVE A CONTROL ARM EXTENDED TO AN ACCESSIBLE LOCATION. PROVIDE "YOUNG" REGULATOR OR EQUAL. EXACT LOCATION OF CONTROL DEVICES VISIBLE IN FINISHED SPACES SHALL BE COORDINATED WITH THE ARCHITECT.
 - CORRIDOR THERMOSTAT: PROVIDE TAMPERPROOF THERMOSTATS IN CORRIDORS. DO NOT PROVIDE PLASTIC GUARDS TO MAKE THE THERMOSTATS TAMPERPROOF. PROVIDE BLANK SECURABLE THERMOSTAT COVERS.

APPLICABLE CODE

BUILDING CODE:

2018 WASHINGTON STATE ENERGY CODE-RESIDENTIAL BY WASHINGTON ADMINISTRATIVE CODE CHAP 51-50 (WSEC)

2018 INTERNATIONAL RESIDENTIAL CODE WITH ADMINISTRATIVE CODE CHAP 51-51 (WSRC)

2018 INTERNATIONAL MECHANICAL CODE WITH ADMINISTRATIVE CODE CHAP 51-52 (WSMC)

DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

PRE-CON MEETING NOTES

CONTRACTORS SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WILL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS, AND ON-SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THROUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	4 HOURS
PLUMBING/PIPING	4 HOURS
ELECTRICAL	4 HOURS
SPRINKLER	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS

ANNOTATIONS

- ACU AIR CONDITIONING UNIT
- AFF ABOVE FINISHED FLOOR
- AHJ AUTHORITY HAVING JURISDICTION
- AHU AIR HANDLING UNIT
- BDD BACKDRAFT DAMPER
- BHP BRAKE HORSEPOWER
- BTUH BRITISH THERMAL UNIT PER HOUR
- C COMMON
- CAP CAPACITY
- CC COOLING COIL
- CD CEILING DIFFUSER
- CFM CUBIC FEET PER MINUTE
- CLG CEILING, COOLING
- CO CLEANOUT
- COMB COMBUSTION
- CONT CONTINUE, CONTROL
- CONTR CONTRACTOR
- COP COEFFICIENT OF PERFORMANCE
- CWS CHILLED WATER SUPPLY
- CWR CHILLED WATER RETURN
- D DIAMETER
- DB DRY BULB, DECIBEL
- DEG DEGREE
- DNM DIMENSION
- DISCH DISCHARGE
- DN DOWN
- EA EXHAUST AIR
- EAT ENTERING AIR TEMPERATURE
- EER ENERGY EFFICIENCY RATIO
- EF EXHAUST FAN
- EFF EFFICIENCY
- EG EXHAUST GRILLE, ENGINE GENERATOR
- ELEC ELECTRIC
- EQUIV EQUIVALENT
- ESP EXTERNAL STATIC PRESSURE
- EXH EXHAUST
- EXT EXTERIOR, EXTERNAL
- F FAHRENHEIT
- FU FIRE DAMPER
- FCU FAN COIL UNIT
- FLR FLOOR
- FPM FEET PER MINUTE
- FPS FEET PER SECOND
- FSD FIRE/SMOKE DAMPER
- G GAS
- GRD GRILLES, REGISTERS, AND DIFFUSERS
- GWB GYPSUM WALLBOARD
- HORIZ HORIZONTAL
- HP HORSEPOWER, HEAT PUMP
- HU HEAT RECOVERY UNIT
- HVAC HEATING, VENTILATING, AND AIR CONDITIONING
- HVU HEATING AND VENTILATION UNIT
- HWR HIGH WALL RETURN, HOT WATER RETURN
- HWS HIGH WALL SUPPLY, HOT WATER SUPPLY
- HX HEAT EXCHANGER
- ID INDIRECT DRAIN, INSIDE DIAMETER
- IN INCH
- KW KILOWATT
- L LONG, LENGTH
- LB POUND
- LWR LOW WALL RETURN
- LWS LOW WALL SUPPLY
- MBH THOUSAND BTU PER HOUR
- MECH MECHANICAL
- MCA MINIMUM CIRCUIT AMPACITY
- MOCP MAXIMUM OVER CURRENT PROTECTION
- MTD MOUNTED
- OSA OUTDOOR AIR
- OBD OPPOSED BLADE DAMPER
- OD OUTSIDE DIMENSION OR DIAMETER
- OPNG OPENING
- P PUMP
- PD PRESSURE DROP
- POC POINT OF CONNECTION
- PRV PRESSURE REDUCING VALVE
- PSIG POUNDS PER SQUARE INCH GAUGE
- RA RETURN AIR
- REF REFERENCE
- RF RELIEF FAN
- RG RETURN GRILLE
- RPM REVOLUTIONS PER MINUTE
- SA SUPPLY AIR
- SCH SCHEDULE
- SF SUPPLY FAN, SQUARE FOOT
- SENS SENSIBLE
- SG SUPPLY GRILLE
- SMACNA SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
- SO SCREENED OPENING
- SP STATIC PRESSURE
- SS STAINLESS STEEL, SANITARY
- SQ SQUARE
- TG TRANSFER GRILLE
- TP TYPICAL
- UH UNIT HEATER
- UON UNLESS OTHERWISE NOTED
- V VENT
- VENT VENTILATION, VENTILATOR
- VTR VENT THRU ROOF
- W WASTE, WATT, WIDE
- WB WET BULB (TEMPERATURE)

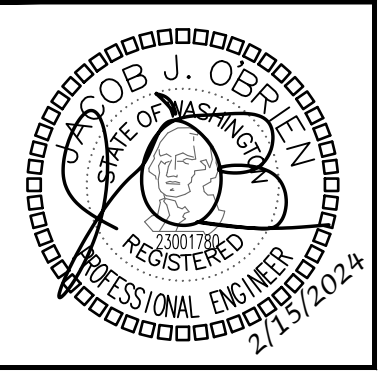
SYMBOLS

<p>DUCTWORK</p> <p>DUCT (1ST FIGURE = SIDE SHOWN, 2ND FIGURE = SIDE NOT SHOWN)</p> <p>DUCT SECTION, POSITIVE PRESSURE</p> <p>DUCT SECTION, NEGATIVE PRESSURE</p> <p>ROUND DUCT SECTION</p> <p>DUCT PENETRATION THRU FLOOR OR ROOF</p> <p>VOLUME DAMPER</p> <p>FIRE/SMOKE DAMPER (--- = HORIZ DUCT, --- = VERT DUCT), 2-HR RATED, UON</p> <p>FIRE DAMPER (--- = HORIZ DUCT, --- = VERT DUCT), 2-HR RATED, UON</p> <p>90° ELBOW, R/D OR R/W=1.5</p> <p>SQUARE CORNER ELBOW WITH TURNING VANES</p> <p>90° TAKE-OFF OR TEE</p> <p>90° CONICAL TAKE-OFF</p> <p>45° LATERAL TAKE-OFF</p> <p>TRANSITION OR REDUCER (FOT = FLAT ON TOP, FOB = FLAT ON BOTTOM)</p> <p>WYE FITTING</p> <p>90° RECTANGULAR TAKE-OFF WITH 45° TAPER</p> <p>90° DIVERGING RECTANGULAR TEE, EITHER RADIUS OR TURNING VANES</p> <p>PARALLEL FLOW BRANCH CONNECTION, EITHER RADIUS OR TURNING VANES</p> <p>FLEXIBLE DUCT</p> <p>ROUND DUCT INDICATOR</p>	<p>EQUIPMENT</p> <p>TYPICAL EQUIPMENT DESIGNATION (EXHAUST FAN SHOWN)</p> <p>DUCT SMOKE DETECTOR</p> <p>ROOM THERMOSTAT OR TEMPERATURE TRANSMITTER</p> <p>ROOM HUMIDISTAT OR HUMIDITY TRANSMITTER</p> <p>CARBON MONOXIDE SENSOR</p> <p>SMOKE DETECTOR</p> <p>TERMINALS</p> <p>DIFFUSER/GRILLE TYPE, AND NUMBER OR SIZE</p> <p>DESIGN CFM (WHERE APPLICABLE) CEILING DIFFUSER (FLOW ARROWS SHOWN FOR NON SYMMETRICAL AIRFLOW)</p> <p>CEILING RETURN/EXHAUST GRILLE</p> <p>LINEAR DIFFUSER, CEILING OR WALL MOUNTED (FLOW ARROWS SHOWN FOR NON SYMMETRICAL AIRFLOW)</p> <p>WALL SUPPLY GRILLE (SG)</p> <p>WALL RETURN/EXHAUST GRILLE (RG, EG)</p> <p>TRANSFER GRILLE (TG), DUCT CONNECTED, WALL MOUNTED W/ OPTIONAL CFM SHOWN</p> <p>TRANSFER GRILLE, CEILING MOUNTED WITH FULL-SIZED LINED DUCT CONNECTION</p>
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DRAWING INDEX

Sheet List Table		PERMIT SET			
Sheet Number	Sheet Title	02/15/2024			
M0.0	LEGEND, GENERAL NOTES, & DRAWING INDEX	X			
M0.1	PROJECT NOTES	X			
M0.2	TABLES & CALCULATIONS	X			
M0.3	MECHANICAL SCHEDULE & WSEC FORMS	X			
M2.0	HVAC PLAN - FLOOR PLANS	X			
M3.0	HVAC ENLARGED PLANS	X			

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: OP	DESIGNED: ABE	CHECKED: ABE	APPROVED: JOB
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PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
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 PHONE: (206)364-3343

ROBISON ENGINEERING, INC.

DATE: 02/15/2024

SHEET TITLE:
 LEGEND, GENERAL NOTES, & DRAWING INDEX

SHEET NO.
M0.0

ENERGY CODE NOTES

WASHINGTON STATE COMMISSIONING REQUIREMENTS

C408.1.1 CONSTRUCTION DOCUMENTS SHALL CLEARLY INDICATE PROVISIONS FOR COMMISSIONING PROCESS. THE CONSTRUCTION DOCUMENTS SHALL MINIMALLY INCLUDE THE FOLLOWING:

- 1. A NARRATIVE DESCRIPTION OF THE ACTIVITIES THAT WILL BE ACCOMPLISHED DURING THE COMMISSIONING PROCESS. AT A MINIMUM, THE COMMISSIONING PROCESS IS REQUIRED TO INCLUDE:
1.1. DEVELOPMENT AND EXECUTION OF THE COMMISSIONING PLAN, INCLUDING ALL SUBSECTIONS OF SECTION C408.1.2;
1.2. THE CERTIFIED COMMISSIONING PROFESSIONAL'S REVIEW OF THE BUILDING DOCUMENTATION AND CLOSE OUT SUBMITTALS IN ACCORDANCE WITH SECTION C103.6; AND
1.3. THE COMMISSIONING REPORT IN ACCORDANCE WITH SECTION C408.1.3.
2. ROLES, RESPONSIBILITIES AND REQUIRED QUALIFICATIONS OF THE CERTIFIED COMMISSIONING PROFESSIONAL.
3. A LISTING OF THE SPECIFIC EQUIPMENT, APPLIANCES OR SYSTEMS TO BE TESTED.

C408.1.2 A COMMISSIONING PLAN SHALL BE DEVELOPED BY THE PROJECT'S CERTIFIED COMMISSIONING PROFESSIONAL AND SHALL OUTLINE THE ORGANIZATION, SCHEDULE, ALLOCATION OF RESOURCES, AND DOCUMENTATION REQUIREMENTS OF THE COMMISSIONING PROCESS. THE PLAN SHALL ALSO INCLUDE THE FOLLOWING:

- 1. A NARRATIVE DESCRIPTION OF THE ACTIVITIES THAT WILL BE ACCOMPLISHED DURING EACH PHASE OF COMMISSIONING, INCLUDING THE PERSONNEL INTENDED TO ACCOMPLISH EACH OF THE ACTIVITIES, SYSTEMS TESTING AND BALANCING, FUNCTIONAL PERFORMANCE TESTING, AND VERIFICATION OF THE BUILDING DOCUMENTATION REQUIREMENTS IN SECTION C103.6.
2. ROLES AND RESPONSIBILITIES OF THE COMMISSIONING TEAM, INCLUDING THE NAME AND STATEMENT OF QUALIFICATIONS OF THE CERTIFIED COMMISSIONING PROFESSIONAL.
3. A LISTING OF THE SPECIFIC EQUIPMENT, APPLIANCES OR SYSTEMS TO BE TESTED AND A DESCRIPTION OF THE TESTS TO BE PERFORMED.

C408.1.2.1 WHERE THE CERTIFIED COMMISSIONING PROFESSIONAL'S CONTRACT OR EMPLOYMENT IS OTHER THAN DIRECTLY WITH THE BUILDING OWNER, AN IN-HOUSE COMMISSIONING DISCLOSURE AND CONFLICT MANAGEMENT PLAN SHALL BE A PART OF THE COMMISSIONING PROCESS. A COPY SHALL BE INCLUDED IN THE COMMISSIONING PLAN. THIS PLAN SHALL DISCLOSE THE CERTIFIED COMMISSIONING PROFESSIONAL'S CONTRACTUAL RELATIONSHIP WITH OTHER TEAM MEMBERS AND PROVIDE A CONFLICT MANAGEMENT PLAN DEMONSTRATING THAT THE CERTIFIED COMMISSIONING PROFESSIONAL IS FREE TO IDENTIFY ANY ISSUES DISCOVERED AND REPORT DIRECTLY TO THE OWNER.

C408.1.2.2 FUNCTIONAL PERFORMANCE TESTING SHALL BE CONDUCTED FOR MECHANICAL SYSTEMS IN SECTIONS C403; SERVICE WATER HEATING SYSTEMS IN SECTION C404; CONTROLLED RECEPTACLES AND LIGHTING CONTROL SYSTEMS IN SECTION C405; EQUIPMENT, APPLIANCES AND SYSTEMS INSTALLED TO COMPLY WITH SECTION C406 OR C407; ENERGY METERING IN SECTION C409; AND REFRIGERATION SYSTEMS IN SECTION C410. WRITTEN PROCEDURES WHICH CLEARLY DESCRIBE THE INDIVIDUAL SYSTEMATIC TEST PROCEDURES, THE EXPECTED SYSTEM RESPONSE OR ACCEPTANCE CRITERIA FOR EACH PROCEDURE, THE ACTUAL RESPONSE OR FINDINGS, AND ANY PERTINENT DISCUSSION SHALL BE FOLLOWED. THIS TESTING SHALL INCLUDE CONTROL SYSTEMS WHICH WILL BE TESTED TO DOCUMENT THAT CONTROL DEVICES, COMPONENTS, EQUIPMENT, AND SYSTEMS ARE CALIBRATED AND ADJUSTED TO OPERATE IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS. TESTING SHALL AFFIRM THE CONDITIONS REQUIRED WITHIN SECTIONS C408.2 THROUGH C408.7 UNDER SYSTEM TESTING.

C408.1.2.3 FOR PROJECTS WITH SEVEN OR FEWER SIMILAR SYSTEMS, EACH SYSTEM SHALL BE TESTED. FOR PROJECTS WITH MORE THAN SEVEN SYSTEMS, TESTING SHALL BE DONE FOR EACH UNIQUE COMBINATION OF CONTROLS TYPE. WHERE MULTIPLES OF EACH UNIQUE COMBINATION OF CONTROL TYPES EXIST, NO FEWER THAN 20 PERCENT OF EACH COMBINATION SHALL BE TESTED UNLESS THE CODE OFFICIAL OR DESIGN PROFESSIONAL REQUIRES A HIGHER PERCENTAGE TO BE TESTED. WHERE 30 PERCENT OR MORE OF THE TESTED SYSTEM FAIL, ALL REMAINING IDENTICAL COMBINATIONS SHALL BE TESTED.

C408.1.2.4 DEFICIENCIES FOUND DURING TESTING SHALL BE RESOLVED INCLUDING CORRECTIONS AND RETESTING.

C408.1.3 A FINAL COMMISSIONING REPORT SHALL BE COMPLETED AND CERTIFIED BY THE CERTIFIED COMMISSIONING PROFESSIONAL AND DELIVERED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT. THE REPORT SHALL BE ORGANIZED WITH MECHANICAL, SERVICE WATER HEATING, CONTROLLED RECEPTACLE AND LIGHTING CONTROL SYSTEMS, ENERGY METERING, AND REFRIGERATION FINDINGS IN SEPARATE SECTIONS TO ALLOW INDEPENDENT REVIEW. THE REPORT SHALL RECORD THE ACTIVITIES AND RESULTS OF THE COMMISSIONING PROCESS AND BE DEVELOPED FROM THE FINAL COMMISSIONING PLAN WITH ALL OF ITS ATTACHED APPENDICES. THE REPORT SHALL INCLUDE:

- 1. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.
2. DISPOSITION OF DEFICIENCIES FOUND DURING TESTING, INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED.
3. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE, PROVIDED HEREIN FOR REPEATABILITY.
4. COMMISSIONING PLAN.
5. TESTING, ADJUSTING AND BALANCING REPORT. EXCEPTION: DEFERRED TESTS WHICH CANNOT BE PERFORMED AT THE TIME OF REPORT PREPARATION DUE TO CLIMATIC CONDITIONS.

C408.1.4 PRIOR TO THE FINAL MECHANICAL, PLUMBING AND ELECTRICAL INSPECTIONS OR OBTAINING A CERTIFICATE OF OCCUPANCY, THE CERTIFIED COMMISSIONING PROFESSIONAL SHALL PROVIDE EVIDENCE OF BUILDING COMMISSIONING IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION.

C408.1.4.1 BUILDINGS, OR PORTIONS THEREOF, SHALL NOT BE CONSIDERED ACCEPTABLE FOR A FINAL INSPECTION PURSUANT TO SECTION C104.2.6 UNTIL THE CODE OFFICIAL HAS RECEIVED A LETTER OF TRANSMITTAL FROM THE BUILDING OWNER OR OWNER'S REPRESENTATIVE ACKNOWLEDGING THAT THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT HAS RECEIVED THE COMMISSIONING REPORT. COMPLETION OF COMMISSIONING COMPLIANCE CHECKLIST (FIGURE C408.1.4.1) IS DEEMED TO SATISFY THIS REQUIREMENT. PHASED ACCEPTANCE OF COMMISSIONING COMPLIANCE CHECKLIST FOR PORTIONS OF THE WORK SPECIFIC TO THE TRADE THAT IS BEING INSPECTED IS PERMISSIBLE WHERE ACCEPTED BY THE CODE OFFICIAL AND WHERE THE CERTIFIED COMMISSIONING PROFESSIONAL REMAINS RESPONSIBLE FOR COMPLETION OF THE COMMISSIONING PROCESS. IF THERE ARE UNRESOLVED DEFICIENCIES WHEN THE FINAL INSPECTION IS SCHEDULED, THE COMMISSIONING REPORT SHALL BE SUBMITTED AND SHALL DESCRIBE THE UNRESOLVED DEFICIENCIES.

C408.1.4.2 THE CODE OFFICIAL SHALL BE PERMITTED TO REQUIRE THAT A COPY OF THE COMMISSIONING REPORT BE MADE AVAILABLE FOR REVIEW BY THE CODE OFFICIAL.

C408.2 MECHANICAL EQUIPMENT AND CONTROLS SUBJECT TO SECTION C403 SHALL BE INCLUDED IN THE COMMISSIONING PROCESS REQUIRED BY SECTION C408.1. THE COMMISSIONING PROCESS SHALL MINIMALLY INCLUDE ALL ENERGY CODE REQUIREMENTS FOR WHICH THE CODE STATES THAT EQUIPMENT OR CONTROLS SHALL BE CAPABLE OF OR CONFIGURED TO PERFORM SPECIFIC FUNCTIONS. EXCEPTION: MECHANICAL SYSTEMS ARE EXEMPT FROM THE COMMISSIONING PROCESS WHERE THE INSTALLED TOTAL MECHANICAL EQUIPMENT CAPACITY IS LESS THAN 240,000 BTU/H COOLING CAPACITY AND LESS THAN 300,000 BTU/H HEATING CAPACITY.

C408.2.2 HVAC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS. AIR AND WATER FLOW RATES SHALL BE MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN THE TOLERANCES PROVIDED IN THE PROJECT SPECIFICATIONS. TEST AND BALANCE ACTIVITIES SHALL INCLUDE AIR SYSTEM AND HYDRONIC SYSTEM BALANCING.

C408.2.2.1 EACH SUPPLY AIR OUTLET AND ZONE TERMINAL DEVICE SHALL BE EQUIPPED WITH MEANS FOR AIR BALANCING IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 OF THE INTERNATIONAL MECHANICAL CODE. DISCHARGE DAMPERS USED FOR AIR SYSTEM BALANCING ARE PROHIBITED ON CONSTANT VOLUME FANS AND VARIABLE VOLUME FANS WITH MOTORS 10 HP (18.6 KW) AND LARGER. AIR SYSTEMS SHALL BE BALANCED IN A MANNER TO FIRST

MINIMIZE THROTTLING LOSSES THEN, FOR FANS WITH SYSTEM POWER OF GREATER THAN 1 HP (0.74 KW), FAN SPEED SHALL BE ADJUSTED TO MEET DESIGN FLOW CONDITIONS. EXCEPTION: FANS WITH FAN MOTORS OF 1 HP (0.74 KW) OR LESS.

C408.2.2.2 INDIVIDUAL HYDRONIC HEATING AND COOLING COILS SHALL BE EQUIPPED WITH MEANS FOR BALANCING AND MEASURING FLOW. HYDRONIC SYSTEMS SHALL BE PROPORTIONATELY BALANCED IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES, THEN THE PUMP IMPELLER SHALL BE TRIMMED OR PUMP SPEED SHALL BE ADJUSTED TO MEET DESIGN FLOW CONDITIONS. EACH HYDRONIC SYSTEM SHALL HAVE EITHER THE CAPABILITY TO MEASURE PRESSURE ACROSS THE PUMP, OR TEST PORTS AT EACH SIDE OF EACH PUMP. EXCEPTION: THE FOLLOWING EQUIPMENT IS NOT REQUIRED TO BE EQUIPPED WITH MEANS FOR BALANCING OR MEASURING FLOW:
1. PUMPS WITH PUMP MOTORS OF 5 HP (3.7 KW) OR LESS.
2. WHERE THROTTLING RESULTS IN NO GREATER THAN FIVE PERCENT OF THE NAMEPLATE HORSEPOWER DRAW ABOVE THAT REQUIRED IF THE IMPELLER WERE TRIMMED.

C408.2.3 FUNCTIONAL PERFORMANCE TESTING SHALL DEMONSTRATE THE COMPONENTS, SYSTEMS, AND SYSTEM-TO-SYSTEM INTERFACING RELATIONSHIPS ARE INSTALLED AND OPERATE IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS. TESTING SHALL INCLUDE THE SEQUENCE OF OPERATION, AND BE CONDUCTED UNDER FULL-LOAD, OART-LOAD AND THE FOLLOWING CONDITIONS:

- 1. ALL MODES AS DESCRIBED IN THE SEQUENCE OF OPERATION;
2. REDUNDANT OR AUTOMATIC BACK-UP MODE;
3. PERFORMANCE OF ALARMS; AND
4. MODE OF OPERATION UPON LOSS OF POWER AND RESTORATION OF POWER.

C408.3 SERVICE WATER HEATING EQUIPMENT AND CONTROLS SUBJECT TO SECTION C404 SHALL BE INCLUDED IN THE COMMISSIONING PROCESS REQUIRED BY SECTION C408.1. THE COMMISSIONING PROCESS SHALL MINIMALLY INCLUDE EQUIPMENT AND COMPONENTS INSTALLED TO MEET ALL ENERGY CODE REQUIREMENTS FOR DEVICES TO "START," "AUTOMATICALLY TURN OFF," "AUTOMATICALLY ADJUST," "LIMIT OPERATION," AND "LIMIT THE TEMPERATURE" AND "BE CONFIGURED TO."

C408.4 CONTROLLED RECEPTACLES AND LIGHTING CONTROL SYSTEMS SUBJECT TO SECTION C405 SHALL BE INCLUDED IN THE COMMISSIONING PROCESS REQUIRED BY SECTION C408.1. THE CONFIGURATION AND FUNCTION OF CONTROLLED RECEPTACLES AND LIGHTING CONTROL SYSTEMS REQUIRED BY THIS CODE SHALL BE TESTED AND SHALL COMPLY WITH SECTION C408.4.1 EXCEPTION: LIGHTING CONTROL SYSTEMS ARE EXEMPT FROM THE COMMISSIONING PROCESS IN BUILDINGS WHERE:
1. THE TOTAL INSTALLED LIGHTING LOAD IS LESS THAN 20 KW, AND
2. THE LIGHTING LOAD CONTROLLED BY OCCUPANCY SENSORS OR AUTOMATIC DAYLIGHTING CONTROLS IS LESS THAN 10 KW.

C408.5 EQUIPMENT, COMPONENTS, CONTROLS OR CONFIGURATION SETTINGS FOR SYSTEMS WHICH ARE INCLUDED IN THE PROJECT TO COMPLY WITH SECTION C406 OR C407 SHALL BE INCLUDED IN THE COMMISSIONING PROCESS REQUIRED BY SECTION C408.1.

C408.6 ENERGY METERING SYSTEMS REQUIRED BY SECTION C409 SHALL COMPLY WITH SECTION C408.6 AND BE INCLUDED IN THE COMMISSIONING PROCESS REQUIRED BY SECTION C408.1. THE COMMISSIONING PROCESS SHALL INCLUDE ALL ENERGY METERING EQUIPMENT AND CONTROLS REQUIRED BY SECTION C409.

C408.7 ALL INSTALLED REFRIGERATION SYSTEMS SUBJECT TO SECTION C410 SHALL BE INCLUDED IN THE COMMISSIONING PROCESS REQUIRED BY SECTION C408.1. EXCEPTIONS:
1. SELF-CONTAINED REFRIGERATION SYSTEMS ARE EXEMPT FROM THE COMMISSIONING PROCESS.
2. TOTAL INSTALLED CAPACITY FOR REFRIGERATION IS EQUAL TO OR LESS THAN 240,000 BTU/H.

WASHINGTON STATE CLOSE OUT DOCUMENTATION

C103.6 THE CONSTRUCTION DOCUMENTS SHALL SPECIFY THAT THE DOCUMENTS DESCRIBED IN THIS SECTION BE PROVIDED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT WITHIN A MAXIMUM 90 DAYS OF THE DATE OF RECEIPT OF THE CERTIFICATION OF OCCUPANCY. (C103.6.1 RECORD DOCUMENTS, C103.6.2 BUILDING OPERATIONS AND MAINTENANCE INFORMATION, C103.6.2.1 MANUALS, C103.6.3 COMPLIANCE DOCUMENTATION, C103.6.4 SYSTEMS OPERATION TRAINING)

WASHINGTON STATE ENERGY CODE

C403.4.1 THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE.

C403.4.1.1 UNITARY AIR COOLED HEAT PUMPS SHALL INCLUDE MICROPROCESSOR CONTROLS THAT MINIMIZE SUPPLEMENTAL HEAT USAGE DURING START-UP, SET-UP, AND DEFROST CONDITIONS. THESE CONTROLS SHALL ANTICIPATE NEED FOR HEAT AND USE COMPRESSION HEATING AS THE FIRST STAGE OF HEAT. CONTROLS SHALL INDICATE WHEN SUPPLEMENTAL HEATING IS BEING USED THROUGH VISUAL MEANS (E.G., LED INDICATORS). HEAT PUMPS EQUIPPED WITH SUPPLEMENTAL HEATERS SHALL BE INSTALLED WITH CONTROLS THAT PREVENT SUPPLEMENTAL HEATER OPERATION ABOVE 40F.

C403.4.1.2 WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

C403.7.8.1 OUTDOOR AIR SUPPLY, EXHAUST OPENINGS AND RELIEF OUTLETS AND STAIRWAY AND ELEVATOR HOISTWAY SHAFT VENTS SHALL BE PROVIDED WITH CLASS 1 MOTORIZED DAMPERS. SEE SECTIONS C403.10.1 AND C403.10.2 FOR DUCTWORK INSULATION REQUIREMENTS UPSTREAM AND DOWNSTREAM OF THE SHUTOFF DAMPER. EXCEPTION:

- 1. GRAVITY (NONMOTORIZED) DAMPERS SHALL BE PERMITTED IN LIEU OF MOTORIZED DAMPERS AS FOLLOWS:
1.1. RELIEF DAMPERS SERVING SYSTEMS LESS THAN 5,000 CFM TOTAL SUPPLY SHALL BE PERMITTED IN BUILDINGS LESS THAN THREE STORIES IN HEIGHT.
1.2. GRAVITY (NONMOTORIZED) DAMPERS WHERE THE DESIGN OUTDOOR AIR INTAKE OR EXHAUST CAPACITY DOES NOT EXCEED 400 CFM.
1.3. SYSTEMS SERVING AREAS WHICH REQUIRE CONTINUOUS OPERATION FOR 24/7 OCCUPANCY SCHEDULES.
2. SHUTOFF DAMPERS ARE NOT REQUIRED IN:
2.1. COMBUSTION AIR INTAKES.
2.2. SYSTEMS SERVING AREAS WHICH REQUIRE CONTINUOUS OPERATION IN ANIMAL HOSPITALS, KENNELS AND POUNDS, LABORATORIES, GROUP H, I AND R OCCUPANCIES.
2.3. SUBDUCT EXHAUST SYSTEMS OR OTHER SYSTEMS THAT ARE REQUIRED TO OPERATE CONTINUOUSLY BY THE INTERNATIONAL MECHANICAL CODE.
2.4. TYPE I GREASE EXHAUST SYSTEMS OR OTHER SYSTEMS WHERE DAMPERS ARE PROHIBITED BY THE INTERNATIONAL MECHANICAL CODE TO BE IN THE AIRSTREAM.
2.5. UNCONDITIONED STAIRWELLS OR UNCONDITIONED ELEVATOR HOISTWAY SHAFTS THAT ARE ONLY CONNECTED TO UNCONDITIONED SPACES.

C403.7.8.2 RETURN AIR OPENINGS USED FOR AIRSIDE ECONOMIZER OPERATION SHALL BE EQUIPPED WITH CLASS 1 MOTORIZED DAMPERS.

C403.7.8.3 CLASS 1 DAMPERS SHALL HAVE A MAXIMUM LEAKAGE RATE OF 4 CFM/SF WHEN TESTED IN ACCORDANCE WITH AMCA 500P AND SHALL BE LABELED BY AN APPROVED AGENCY FOR SUCH PURPOSE. GRAVITY (NONMOTORIZED) DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 20 CFM/SF WHERE NOT LESS THAN 24 INCHES IN EITHER DIMENSION AND 40 CFM/SF WHERE LESS THAN 24 INCHES IN EITHER DIMENSION. THE RATE OF AIR LEAKAGE SHALL BE DETERMINED AT 1.0 INCH W.G. WHEN TESTED IN ACCORDANCE WITH AMCA500P FOR SUCH PURPOSE. THE DAMPERS SHALL BE LABELED BY AN APPROVED AGENCY. GRAVITY DAMPERS FOR VENTILATION AIR INTAKES SHALL BE PROTECTED FROM DIRECT EXPOSURE TO

WIND. EXCEPTIONS:

- 1. GRAVITY (NONMOTORIZED) DAMPERS ARE NOT REQUIRED TO BE TESTED TO VERIFY THE AIR LEAKAGE RATING WHEN INSTALLED IN EXHAUST SYSTEMS WHERE THE EXHAUST CAPACITY DOES NOT EXCEED 400 CFM AND THE GRAVITY DAMPER IS PROVIDED WITH A GASKETED SEAL.
2. MOTORIZED DAMPERS ON RETURN AIR OPENINGS IN UNITARY PACKAGED EQUIPMENT THAT HAVE THE MINIMUM LEAKAGE RATE AVAILABLE FROM THE MANUFACTURER.

C403.7.8.4 OUTDOOR AIR INTAKE, RELIEF AND EXHAUST SHUTOFF DAMPERS SHALL BE INSTALLED WITH AUTOMATIC CONTROLS CONFIGURED TO CLOSE WHEN THE SYSTEMS OR SPACES SERVED ARE NOT IN USE OR DURING UNOCCUPIED PERIOD WARM-UP AND SETBACK OPERATION, UNLESS THE SYSTEMS SERVED REQUIRE OUTDOOR OR EXHAUST AIR IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE OR THE DAMPERS ARE OPENED TO PROVIDE INTENTIONAL ECONOMIZER COOLING. STAIRWAY AND ELEVATOR HOISTWAY SHAFT VENT DAMPERS SHALL BE INSTALLED WITH AUTOMATIC CONTROLS CONFIGURED TO OPEN UPON THE ACTIVATION OF ANY FIRE ALARM INITIATING DEVICE OF THE BUILDING'S FIRE ALARM SYSTEM OF THE INTERRUPTION OF POWER TO THE DAMPER.

C403.10.1.1 DUCTS, SHAFTS AND PLENUMS CONVEYING OUTSIDE AIR FROM THE EXTERIOR OF THE BUILDING TO THE MECHANICAL SYSTEM SHALL MEET ALL AIR LEAKAGE AND BUILDING ENVELOPE INSULATION REQUIREMENTS OF SECTION C402, PLUS BUILDING ENVELOPE VAPOR CONTROL REQUIREMENTS FROM THE INTERNATIONAL BUILDING CODE. EXTENDING CONTINUOUSLY FROM THE BUILDING EXTERIOR TO THE AUTOMATIC SHUTOFF DAMPER OR HEATING OR COOLING EQUIPMENT, FOR THE PURPOSES OF BUILDING ENVELOPE INSULATION REQUIREMENTS, DUCT SURFACES SHALL BE INSULATED WITH THE MINIMUM INSULATION VALUES IN TABLE C403.10.1.1. DUCT SURFACES INCLUDED AS PART OF THE BUILDING ENVELOPE SHALL NOT BE USED IN THE CALCULATION OF MAXIMUM GLAZING AREA AS DESCRIBED IN SECTION C402.4.1. EXCEPTIONS:

- 1. OUTDOOR AIR DUCTS SERVING INDIVIDUAL SUPPLY AIR UNITS WITH LESS THAN 2,800 CFM OF TOTAL SUPPLY AIR CAPACITY, PROVIDED THESE ARE INSULATED TO THE MINIMUM INSULATION VALUES IN TABLE C403.10.1.1.
2. UNHEATED EQUIPMENT ROOMS WITH COMBUSTION AIR LOUVERS, PROVIDED THEY ARE ISOLATED FROM CONDITIONED SPACE AT SIDES, TOP AND BOTTOM OF THE ROOM WITH R-11 NOMINAL INSULATION.

C403.10.1.2 ALL OTHER SUPPLY AND RETURN AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES, AND WHERE LOCATED OUTSIDE THE BUILDING WITH A MINIMUM OF R-8 INSULATION IN CLIMATE ZONE 4 AND R-12 INSULATION IN CLIMATE ZONE 5, WHERE LOCATED WITHIN A BUILDING ENVELOPE ASSEMBLY, THE DUCT OR PLENUM SHALL BE SEPARATED FROM THE BUILDING EXTERIOR OR UNCONDITIONED OR EXEMPT SPACES BY A MINIMUM INSULATION VALUE AS REQUIRED FOR EXTERIOR WALLS BY SECTION C402.1.3. EXCEPTIONS:

- 1. WHERE LOCATED WITHIN EQUIPMENT.
2. SUPPLY AND RETURN DUCTWORK LOCATED IN UNCONDITIONED SPACES WHERE THE DESIGN TEMPERATURE DIFFERENCE BETWEEN THE INTERIOR AND EXTERIOR OF THE DUCT OR PLENUM DOES NOT EXCEED 15F AND INSULATED IN ACCORDANCE WITH TABLE C403.10.1.2.

WHERE LOCATED WITHIN CONDITIONED SPACE, SUPPLY DUCTS WHICH CONVEY SUPPLY AIR AT TEMPERATURES LESS THAN 55F OR GREATER THAN 105F SHALL BE INSULATED WITH A MINIMUM INSULATION R-VALUE IN ACCORDANCE WITH TABLE C403.10.1.2. EXCEPTION: DUCTWORK EXPOSED TO VIEW WITHIN A ZONE THAT SERVES THAT ZONE IS NOT REQUIRED TO BE INSULATED.

WHERE LOCATED WITHIN CONDITIONED SPACE, RETURN OR EXHAUST AIR DUCTS THAT CONVEY RETURN OR EXHAUST AIR DOWNSTREAM OF AN ENERGY RECOVERY MEDIA SHALL BE INSULATED WITH A MINIMUM R-VALUE IN ACCORDANCE WITH TABLE C403.10.1.2.

ALL DUCTS, AIR HANDLERS, AND FILTER BOXES SHALL BE SEALED, JOINTS AND SEAMS SHALL COMPLY WITH SECTION 603.9 OF THE INTERNATIONAL MECHANICAL CODE.

C403.10.2 DUCTWORK SHALL BE CONSTRUCTED AND ERECTED IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE.

C403.10.3 ALL PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH TABLE C403.10.3. EXCEPTIONS:

- 1. FACTORY-INSTALLED PIPING WITHIN HVAC EQUIPMENT TESTED AND RATED IN ACCORDANCE WITH A TEST PROCEDURE REFERENCED BY THIS CODE.
2. FACTORY-INSTALLED PIPING WITHIN ROOM FAN-COILS AND UNIT VENTILATORS TESTED AND RATED ACCORDING TO AHRI 440 (EXCEPT THAT THE SAMPLING AND VARIATION PROVISIONS OF SECTION 6.5 SHALL NOT APPLY) AND 840, RESPECTIVELY.
3. PIPING THAT CONVEYS FLUIDS THAT HAVE A DESIGN OPERATING TEMPERATURE RANGE BETWEEN 60F AND 105F.
4. PIPING THAT CONVEYS FLUIDS THAT HAVE NOT BEEN HEATED OR COOLED THROUGH THE USE OF FOSSIL FUELS OR ELECTRIC POWER.
5. STRAINERS, CONTROL VALVES, AND BALANCING VALVES ASSOCIATED WITH PIPING 1 INCH OR LESS IN DIAMETER.
6. DIRECT BURIED PIPING THAT CONVEYS FLUIDS AT OR BELOW 60F.

C403.5 AIR ECONOMIZERS SHALL BE PROVIDED ON ALL NEW COOLING SYSTEMS INCLUDING THOSE SERVING COMPUTER SERVER ROOMS, ELECTRONIC EQUIPMENT, RADIO EQUIPMENT, AND TELEPHONE SWITCHGEAR. ECONOMIZERS SHALL COMPLY WITH SECTIONS C403.5.1 THROUGH C403.5.5. NOTE: ECONOMIZERS ARE NOT REQUIRED FOR SYSTEMS THAT MEET THE REQUIREMENTS OF SECTION C403.5, EXCEPTIONS 1 THROUGH 11.

C403.5.1 ECONOMIZER SYSTEMS SHALL BE INTEGRATED WITH THE MECHANICAL COOLING SYSTEM AND BE CONFIGURED TO PROVIDE PARTIAL COOLING EVEN WHEN ADDITIONAL MECHANICAL COOLING IS REQUIRED TO PROVIDE THE REMAINDER OF THE COOLING LOAD. CONTROLS SHALL NOT BE CAPABLE OF CREATING A FALSE LOAD IN THE MECHANICAL COOLING SYSTEM BY LIMITING OR DISABLING THE ECONOMIZER OR ANY OTHER MEANS, SUCH AS HOT GAS BYPASS, EXCEPT AT THE LOWEST STAGE OF MECHANICAL COOLING. UNITS THAT INCLUDE AN AIR ECONOMIZER SHALL COMPLY WITH THE FOLLOWING:

- 1. UNIT CONTROLS SHALL HAVE THE MECHANICAL COOLING CAPACITY CONTROL INTERLOCKED WITH THE AIR ECONOMIZER CONTROLS SUCH THAT THE OUTDOOR AIR DAMPER IS AT THE 100 PERCENT OPEN POSITION WHEN MECHANICAL COOLING IS ON AND THE OUTDOOR AIR DAMPER DOES NOT BEGIN TO CLOSE TO PREVENT COIL FREEZING DUE TO MINIMUM COMPRESSOR RUN TIME UNTIL THE LEAVING AIR TEMPERATURE IS LESS THAN 45F;
2. DIRECT EXPANSION (DX) UNITS WITH COOLING CAPACITY 65,000 BTU/H OR GREATER OF RATED CAPACITY SHALL COMPLY WITH THE FOLLOWING:
3.2.1 DX UNITS THAT CONTROL THE CAPACITY OF THE MECHANICAL COOLING DIRECTLY BASED ON OCCUPIED SPACE TEMPERATURE SHALL HAVE NOT FEWER THAN TWO STAGES OF MECHANICAL COOLING CAPACITY.
4.2.2 OTHER DX UNITS, INCLUDING THOSE THAT CONTROL SPACE TEMPERATURE BY MODULATING THE AIRFLOW TO THE SPACE, SHALL BE IN ACCORDANCE WITH TABLE C403.5.1.

C403.5.2 HVAC SYSTEM DESIGN AND ECONOMIZER CONTROLS SHALL BE SUCH THAT ECONOMIZER OPERATION DOES NOT INCREASE BUILDING HEATING ENERGY USE DURING NORMAL OPERATION. EXCEPTION: ECONOMIZERS ON VAV SYSTEMS THAT CAUSE ZONE LEVEL HEATING TO INCREASE DUE TO A REDUCTION IN SUPPLY AIR TEMPERATURE. C403.5.3.1 AIR ECONOMIZER SYSTEMS SHALL BE CONFIGURED TO MODULATE OUTDOOR AIR AND RETURN AIR DAMPERS TO PROVIDE UP TO 100 PERCENT OF THE DESIGN SUPPLY AIR QUANTITY AS OUTDOOR AIR FOR COOLING.

C403.5.3.2 ECONOMIZER CONTROLS AND DAMPERS SHALL BE CONFIGURED TO SEQUENCE THE DAMPERS WITH MECHANICAL COOLING EQUIPMENT AND SHALL NOT BE CONTROLLED BY ONLY MIXED AIR TEMPERATURE. AIR ECONOMIZERS ON SYSTEMS WITH COOLING CAPACITY GREATER THAN 65,000 BTU/H SHALL BE CONFIGURED TO PROVIDE PARTIAL COOLING EVEN WHEN ADDITIONAL MECHANICAL COOLING IS REQUIRED TO MEET THE REMAINDER OF THE COOLING LOAD. EXCEPTION: THE USE OF MIXED AIR TEMPERATURE LIMIT CONTROL SHALL BE PERMITTED FOR SYSTEMS THAT ARE BOTH CONTROLLED FROM SPACE TEMPERATURE (SUCH AS SINGLE ZONE SYSTEMS) AND HAVING COOLING CAPACITY LESS THAN 65,000 BTU/H.

C403.5.3.3 AIR ECONOMIZERS SHALL BE CONFIGURED TO AUTOMATICALLY REDUCE OUTDOOR AIR INTAKE TO THE DESIGN MINIMUM OUTDOOR AIR QUANTITY WHEN OUTDOOR AIR INTAKE WILL NO LONGER REDUCE COOLING ENERGY USAGE. HIGH-LIMIT SHUTOFF CONTROL TYPES SHALL BE CHOSEN FROM TABLE C403.5.3.3. HIGH-LIMIT SHUTOFF CONTROL SETTINGS FOR THESE CONTROL TYPES SHALL BE THOSE SPECIFIED TO TABLE C403.5.3.3.

C403.5.3.4 SYSTEMS SHALL BE CAPABLE OF RELIEVING EXCESS OUTDOOR AIR DURING AIR ECONOMIZER OPERATION TO PREVENT OVER-PRESSURIZING THE BUILDING. THE RELIEF AIR OUTLET SHALL BE LOCATED TO AVOID RECIRCULATION INTO THE BUILDING.

C403.5.3.5 RETURN, EXHAUST/RELIEF AND OUTDOOR AIR DAMPERS USED IN ECONOMIZERS SHALL COMPLY WITH SECTION C403.7.8.

C409.1 ALL NEW BUILDINGS AND ADDITIONS SHALL HAVE THE CAPABILITY OF METERING SOURCE ENERGY FOR ON-SITE RENEWABLE ENERGY PRODUCTION IN ACCORDANCE WITH SECTION C409.2.4 AND THE END-USE ENERGY USAGE FOR ELECTRIC VEHICLE CHARGING IN ACCORDANCE WITH SECTION C409.3.4. NEW BUILDINGS AND ADDITIONS WITH A GROSS CONDITIONED FLOOR AREA OVER 50,000 SQUARE FEET SHALL COMPLY WITH SECTION C409. BUILDINGS SHALL BE EQUIPPED TO MEASURE, MONITOR, RECORD AND DISPLAY ENERGY CONSUMPTION DATA FOR EACH ENERGY SOURCE AND END USE CATEGORY PER THE PROVISIONS OF THIS SECTION, TO ENABLE EFFECTIVE ENERGY MANAGEMENT. EXCEPTIONS:

- 1. TENANT SPACES SMALLER THAN 50,000 SQUARE FEET WITHIN BUILDINGS IF TENANT SPACE HAS ITS OWN UTILITY SERVICE AND UTILITY METERS.
2. BUILDINGS IN WHICH THERE IS NO GROSS CONDITIONED FLOOR AREA OVER 25,000 SQUARE FEET, INCLUDING BUILDING COMMON AREA, THAT IS SERVED BY ITS OWN UTILITY SERVICES AND METERS.

RESIDENTIAL ENERGY CODE

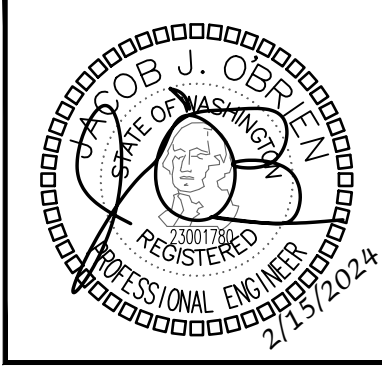
- 1. WHOLE-HOUSE FAN EFFICACY PER TABLE R403.6.1.
2. EQUIPMENT AND APPLIANCE SIZING PER R403.7, HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE SIZED IN ACCORDANCE WITH ACCA MANUAL S OR OTHER APPROVED SIZING METHODOLOGIES BASED ON BUILDING LOADS CALCULATED IN ACCORDANCE WITH ACCA MANUAL J OR OTHER APPROVED HEATING AND COOLING CALCULATION METHODOLOGIES
3. ELECTRIC RESISTANCE ZONE PER R403.7.1, ELECTRIC ZONAL HEATING AS PRIMARY HEAT SOURCE SHALL INSTALL DUCTLESS MINI-SPLIT HEAT PUMP IN THE LARGEST ZONE IN THE DWELLING UNLESS TOTAL INSTALLED HEATING CAPACITY OF 2 KW PER DWELLING OR LESS.
4. PROVIDED ONE THERMOSTAT FOR EACH HEATING AND COOLING SYSTEM PER R403.1.
5. PER R403.3.6, SUPPLY AND RETURN DUCTS IN CEILING INSULATION SHALL HAVE MIN R-8 INSULATION ALL AROUND. THE SUM OF THE CEILING INSULATION OF THE TOP AND BELOW OF THE DUCT SHALL BE MIN R-19, EXCLUDING THE R-VALUE OF THE DUCT INSULATION.
6. MECHANICAL SYSTEM PIPING CARRYING FLUIDS ABOVE 105F OR BELOW 55F SHALL BE INSULATED WITH MIN R-6 PER R403.4. INSULATION SHALL BE PROTECTED FROM DAMAGE AND SHALL PROVIDE SHIELDING FROM SOLAR RADIATION. ADHESIVE TAPE SHALL NOT BE PERMITTED.

	SERVICE (1)(3)(4)(5)	MATERIAL (6)	R-VALUE (MIN. INSTALLED)
	SUPPLY & RETURN AIR DUCTS IN UNCONDITIONED SPACE	MINERAL-WOOL BLANKET	6.0
	SUPPLY & RETURN AIR DUCTS LOCATED OUTSIDE THE BUILDING	MINERAL-WOOL BLANKET	8.0
	SUPPLY WITH SA TEMP <55F OR >105F WITHIN CONDITIONED SPACE	MINERAL-WOOL BLANKET	3.3
	SUPPLY DUCTS EXPOSED WITHIN CONDITIONED SPACE	MINERAL-WOOL BLANKET	0.0
WSEC	OUTSIDE AIR FROM EXTERIOR OF BUILDING TO AUTOMATIC SHUT-OFF DAMPER OR HEATING OR COOLING EQUIPMENT AND GREATER THAN 2,800 CFM	MINERAL-WOOL BLANKET	NOTE 2
	OUTSIDE AIR FROM EXTERIOR OF BUILDING TO AUTOMATIC SHUT-OFF DAMPER OR HEATING OR COOLING EQUIPMENT AND LESS THAN 2,800 CFM	MINERAL-WOOL BLANKET	7.0
	OUTSIDE AIR DUCT IN UNHEATED EQUIPMENT ROOMS WITH COMBUSTION AIR LOUVERS, ISOLATED FROM CONDITIONED SPACE AT SIDES, TOP AND BOTTOM WITH R-11 INSULATION	MINERAL-WOOL BLANKET	0.0
	OUTSIDE AIR DUCT IN CONDITION SPACE	MINERAL-WOOL BLANKET	4.0
WSMC	FOR HEAT OR ENERGY RECOVERY VENTILATION SYSTEM, DUCT UPSTREAM OF HEAT EXCHANGER	MINERAL-WOOL BLANKET	4.0
	EXHAUST DUCTS IN UNCONDITIONED SPACE	MINERAL-WOOL BLANKET	4.0

- NOTES
(1) DUCT INSULATION SHALL COMPLY WITH WSMC AND WSEC
(2) DUCT SHALL MEET THE REQUIREMENTS OF METAL FRAMED WALLS PER WSEC TABLE C402.1.4
(3) VAPOR RETARDER IS INSTALLED ON SUPPLY DUCT THAT DOES COOLING AND OUTSIDE AIR DUCT PER WSMC 604.11
(4) EXTERNAL DUCT INSULATION IS IDENTIFIABLE PER WSMC 604.7
(5) ALL DUCTWORK IS CONSTRUCTED AND SEALED PER WSMC
(6) INSULATION SHALL HAVE A MAXIMUM FLAME SPREAD INDEX OF 25 AND MAXIMUM SMOKE DEVELOPED INDEX OF 50 PER WSMC 604.3

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		ELECTRICAL				
	CONDUCTIVITY BTU·IN/(H·FT²·°F)	MEAN RATING TEMPERATURE, °F	< 1	1 TO < 1-1/2	1-1/2 TO < 4	4 TO < 8	≥ 8
> 350	0.32 - 0.34	250	4.5	5.0	5.0	5.0	5.0
251 - 350	0.29 - 0.32	200	3.0	4.0	4.5	4.5	4.5
201 - 250	0.27 - 0.30	150	2.5	2.5	2.5	3.0	3.0
141 - 200	0.25 - 0.29	125	1.5	1.5	2.0	2.0	2.0
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5	1.5
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0	1.0	1.0
< 40	0.20 - 0.26	75	0.5	1.0	1.0	1.0	1.5

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	OP
DESIGNED:	ABE
CHECKED:	ABE
APPROVED:	JOB

PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
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LYNNWOOD, WA 98036
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DATE: 02/15/2024

SHEET TITLE:
PROJECT NOTES

SHEET NO.
MO.1

WHOLE HOUSE VENTILATION NOTES

EACH DWELLING UNIT OR SLEEPING UNIT SHALL BE EQUIPPED WITH A WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM THAT COMPLIES WITH SECTIONS 403.4.1 THROUGH 403.4.6. EACH DWELLING UNIT OR SLEEPING UNIT SHALL BE EQUIPPED WITH LOCAL EXHAUST COMPLYING WITH SECTION 403.4.7. ALL OCCUPIED SPACES, INCLUDING PUBLIC CORRIDORS, OTHER THAN GROUP R DWELLING UNITS AND/OR SLEEPING UNITS, THAT SUPPORT THESE GROUP R OCCUPANCIES, SHALL MEET THE VENTILATION REQUIREMENTS OF SECTION 402 OR THE MECHANICAL VENTILATION REQUIREMENTS OF SECTIONS 403.1 THROUGH 403.3.

THE WHOLE HOUSE VENTILATION SYSTEM SHALL CONSIST OF ONE OR MORE SUPPLY FANS, ONE OR MORE EXHAUST FANS, OR AN ERV/HRV WITH INTEGRAL FANS; AND THE ASSOCIATED DUCTS AND CONTROLS. LOCAL EXHAUST FANS SHALL BE PERMITTED TO SERVE AS PART OF THE WHOLE-HOUSE VENTILATION SYSTEM WHEN PROVIDED WITH THE PROPER CONTROLS IN ACCORDANCE WITH SECTION 403.4.5. THE SYSTEMS SHALL BE DESIGNED AND INSTALLED TO SUPPLY AND EXHAUST THE MINIMUM OUTDOOR AIRFLOW RATES PER SECTION 403.4.2 AS CORRECTED BY THE BALANCED AND/OR DISTRIBUTED WHOLE-HOUSE VENTILATION SYSTEM COEFFICIENTS IN ACCORDANCE WITH SECTION 403.4.3 WHERE APPLICABLE.

THE DWELLING UNIT WHOLE-HOUSE MECHANICAL VENTILATION MINIMUM OUTDOOR AIRFLOW RATE SHALL BE DETERMINED IN ACCORDANCE WITH EQUATION 4-10 OR TABLE 403.4.2.

RESIDENTIAL DWELLING AND SLEEPING UNITS IN GROUP R-2 OCCUPANCIES SYSTEM SHALL INCLUDE SUPPLY AND EXHAUST FANS AND BE A BALANCED WHOLE-HOUSE VENTILATION SYSTEM IN ACCORDANCE WITH SECTION 403.4.6.3. THE SYSTEM SHALL INCLUDE A HEAT OR ENERGY RECOVERY VENTILATOR WITH A SENSIBLE HEAT RECOVERY EFFECTIVENESS AS PRESCRIBED IN SECTION C403.3.6 OF THE WASHINGTON STATE ENERGY CODE. THE WHOLE-HOUSE VENTILATION SYSTEM SHALL OPERATE CONTINUOUSLY AT THE MINIMUM VENTILATION RATE DETERMINED IN ACCORDANCE WITH SECTION 403.4. THE WHOLE-HOUSE SUPPLY FAN SHALL PROVIDE DUCTED OUTDOOR VENTILATION AIR TO EACH HABITABLE SPACE WITHIN THE RESIDENTIAL UNIT.

CONTROLS FOR THE WHOLE-HOUSE VENTILATION SYSTEM SHALL COMPLY WITH THE FOLLOWING:

1. THE WHOLE-HOUSE VENTILATION SYSTEM SHALL BE CONTROLLED WITH MANUAL SWITCHES, TIMERS OR OTHER MEANS THAT PROVIDE FOR AUTOMATIC OPERATION OF THE VENTILATION SYSTEM THAT HAVE READY ACCESS FOR THE OCCUPANT.
2. THE WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM SHALL BE PROVIDED WITH CONTROLS THAT ENABLE MANUAL OVERRIDE OFF OF THE SYSTEM BY THE OCCUPANT DURING PERIODS OF POOR OUTDOOR AIR QUALITY. CONTROLS SHALL INCLUDE PERMANENT TEXT OR A SYMBOL INDICATING THEIR FUNCTION. RECOMMENDED CONTROL PERMANENT LABELING TO INCLUDE TEXT SIMILAR TO THE FOLLOWING; "LEAVE ON UNLESS OUTDOOR AIR QUALITY IS VERY POOR."
3. WHOLE-HOUSE VENTILATION SYSTEMS SHALL BE CONFIGURED TO OPERATE CONTINUOUSLY EXCEPT WHERE INTERMITTENT OFF CONTROLS ARE PROVIDED IN ACCORDANCE WITH SECTION 403.4.6.5 AND ALLOWED BY SECTION 403.4.4.2.

WHOLE HOUSE VENTILATION SUPPLY AND EXHAUST FANS SPECIFIED IN THIS SECTION SHALL HAVE A MINIMUM EFFICACY AS PRESCRIBED IN THE WASHINGTON STATE ENERGY CODE. THE FANS SHALL BE RATED FOR SOUND AT A MAXIMUM OF 1.0 SONE AT DESIGN AIRFLOW AND STATIC PRESSURE CONDITIONS. DESIGN AND INSTALLATION OF THE SYSTEM OR EQUIPMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH MANUFACTURERS' INSTALLATION INSTRUCTIONS

A BALANCED WHOLE HOUSE VENTILATION SYSTEM SHALL INCLUDE BOTH SUPPLY AND EXHAUST FANS. THE SUPPLY AND EXHAUST FANS SHALL HAVE AIRFLOW THAT IS WITHIN 10 PERCENT OF EACH OTHER. THE TESTED AND BALANCED TOTAL MECHANICAL EXHAUST AIRFLOW RATE IS WITHIN 10 PERCENT OR 5 CFM, WHICHEVER IS GREATER, OF THE TOTAL MECHANICAL SUPPLY AIRFLOW RATE. THE FLOW RATE TEST RESULTS SHALL BE SUBMITTED AND POSTED IN ACCORDANCE WITH SECTION 403.4.6.6. THE EXHAUST FAN SHALL MEET THE REQUIREMENTS OF SECTION 403.4.6.2. THE SUPPLY FAN SHALL MEET THE REQUIREMENTS OF SECTION 403.4.6.3. FOR R-2 DWELLING AND SLEEPING UNITS, THE SYSTEM IS REQUIRED TO HAVE BALANCED WHOLE-HOUSE VENTILATION BUT IS NOT REQUIRED TO HAVE DISTRIBUTED WHOLE-HOUSE VENTILATION WHERE THE NOT DISTRIBUTED SYSTEM COEFFICIENT FROM TABLE 403.4.3 IS UTILIZED TO CORRECT THE WHOLE-HOUSE MECHANICAL VENTILATION RATE. THE SYSTEM SHALL BE DESIGNED AND BALANCED TO MEET THE PRESSURE EQUALIZATION REQUIREMENTS OF SECTION 501.4. INTERMITTENT DRYER EXHAUST, INTERMITTENT RANGE HOOD EXHAUST, AND INTERMITTENT TOILET ROOM EXHAUST AIRFLOW RATES ABOVE THE RESIDENTIAL DWELLING OR SLEEPING UNIT MINIMUM VENTILATION RATE ARE EXEMPT FROM THE BALANCED AIRFLOW CALCULATION.

FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATIONS

PER 2018 IMC 401.4.3, ITEM 3, EXCEPTION, SEPARATION IS NOT REQUIRED BETWEEN INTAKE AIR OPENINGS AND LIVING SPACE RELIEF AIR EXHAUST AIR OPENINGS OF AN INDIVIDUAL DWELLING UNIT OR SLEEPING UNIT, NOT TO INCLUDE COMMON AREAS OUTSIDE OF THE DWELLING OR SLEEPING UNIT, WHERE A FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATION FITTING, LISTED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, IS USED TO SEPARATE THE AIR STREAMS. A MINIMUM OF 5 FEET HORIZONTAL SEPARATION BETWEEN OTHER ENVIRONMENTAL AIR EXHAUST OUTLETS AND OTHER DWELLING OR SLEEPING UNIT FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATION FITTINGS SHALL BE MAINTAINED.

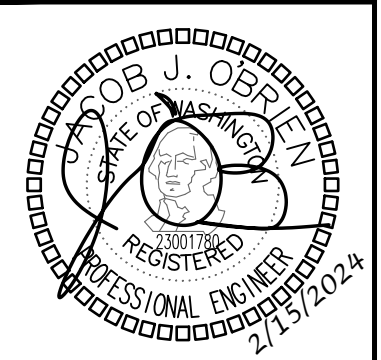
CALCULATIONS

RESIDENTIAL VENTILATION CALCULATIONS

UNIT TYPE	UNIT SQUARE FOOTAGE	NUMBER OF BEDROOMS	2018 IMC CRITERIA (1)			VENTILATION QUALITY ADJUSTMENT COEFFICIENT (3)	MINIMUM WHOLE HOUSE VENTILATION RATE, CFM	TOTAL CFM PROVIDED BY WHOLE HOUSE FAN SYSTEM
			FLOOR AREA, SQFT	NUMBER OF BEDROOMS	REQUIRED CFM (2)			
1 BEDROOM	660	1	500 - 1,000	1	30	1.5	45	55
2 BEDROOM	1000	2	500 - 1,000	2	35	1.5	53	55

- NOTE:
- (1) VENTILATION CRITERIA IS PER THE 2018 WA RESIDENTIAL CODE SECTION M1505.4.3
 - (2) MINIMUM OSA FOR CONTINUOUSLY OPERATING FAN(S).
 - (3) ADJUSTMENT COEFFICIENT IS PER 2018 WRC, TABLE M1505.4.3(2) FOR A NOT BALANCED, AND NOT DISTRIBUTED WHOLE HOUSE VENTILATION SYSTEM.

NO.	DATE	DESCRIPTION



DRAWN: OP	DESIGNED: ABE	CHECKED: ABE	APPROVED: JOB
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PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
 202 27TH AVE SE
 PUYALLUP, WA 98374

ROBISON ENGINEERING, INC.
 19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

DATE: 02/15/2024

SHEET TITLE:
TABLES & CALCULATIONS

SHEET NO.
M0.2

WSEC FORMS

6/16/23, 10:40 AM waenergycodes.com/print_project_summary_form.php?k=aWQ9MTkxMjZpPTE3JmN0aT00Ng==&print=1

MECHANICAL COMPLIANCE SUMMARY

2018 WSEC Compliance Forms for Commercial Buildings including Group R2, R3 & R4 over 3 stories and all R1 Administered by: ©2023 NEEA, All rights reserved

Project Title: Bradley Heights Apartments Building B - 2018 WSEC For Building Department Use: **Date: Jun 16, 2023**

Project Address: 202 27th Ave SE Puyallup, WA 98374

Applicant Name: Ark Equielli

Applicant Phone: 206-364-3343

Applicant Email: aequielli@robisonengineering.com

For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.technicalsupport@waenergycodes.com

General Occupancy	All Group R - R2, R3 & R4 over 3 stories and all R1	General Building Use Type	Multifamily/Residential	Building Cond. Floor Area	14,925		
General Project Types	New Building	New Building or Addition Mechanical Scope	Single Zone Systems & Equipment	Project Cond. Floor Area	14,925		
			Alteration Mechanical Scope	Floors Above Grade	3		
Mechanical Project Description	Full mechanical design for new 3 story residential building with basement.						
Mechanical Compliance Scope and Method	Project Type	Mechanical Scope	Economizer Exception(s) Applied?	DOAS Ventilation Provided?	Higher Equipment Efficiency Option Applied?	Equipment Efficiency Compliance Verification	
	New Building	Single Zone Systems & Equipment	No	Yes	NA	COMPLIES	
Additional Efficiency Credits Included (AEC)							
Does building include occupancy classifications requiring DOAS?	No	Does project include DOAS equipment?			Yes		
Based on project scope do TSPR requirements apply?	No	Do all systems comply with Appendix D standard reference design or qualify for an exception to TSPR?			No		
Scope & Space Conditioning	NEW BUILDING - SINGLE ZONE SYSTEMS & EQUIPMENT			Compliance Verification	COMPLIES		
Single Zone Air Systems Category - Unit heaters & duct heaters							
Air Systems Summary Information							
System/Equip ID	Quantity of Items	Ventilation Standard	Ventilation CFM (Total if Multiple Items)	Ventilation Air Source	Paired with DOAS		
EW1-1	14	IMC Ventilation		Other System			
EW1-2	28	IMC Ventilation		Other System			
Air Systems & Equipment - Heating							
System/Equip ID	Heating System/Equip Type	Specific Type	Heating Capacity	HC Units	Proposed Heating Efficiency	HE Units	Efficiency Compliance Verification
EW1-1	Unit heater	Electric resistance	1	Btu/h			COMPLIES
EW1-2	Unit heater	Electric resistance	2	Btu/h			COMPLIES
Air Systems & Equipment Details							
System/Equip ID	Area(s) Served	Location In Project Documents - Plan/Detail #					
EW1-1	APARTMENT UNITS	M0.3					
EW1-2	APARTMENT UNITS	M0.3					
System/Equip ID for a single or multiple items? Multiple items w/ identical heating & cooling capacity							
System/Equip ID for a single or multiple items? Multiple items w/ identical heating & cooling capacity							

https://waenergycodes.com/print_project_summary_form.php?k=aWQ9MTkxMjZpPTE3JmN0aT00Ng==&print=1

1/1

MECHANICAL SCHEDULES

ELECTRIC HEATERS					
EQUIP NO.	SERVICE	MOUNTING/ DISCHARGE	HEATING	ELECTRICAL	BASIS OF DESIGN (3)
			KW	VOLTAGE	
EW1-1	APARTMENT UNIT	WALL	1.0	208V/1P	(1)(2)
EW1-2	APARTMENT UNIT	WALL	1.5	208V/1P	(1)(2)

NOTES: (1) BROAN, KING, CADET OR EQUIVALENT.

(2) PROVIDE REMOTE THERMOSTAT. COORDINATE FINAL LOCATION WITH ELECTRICAL DRAWINGS.

(3) ALL ELECTRIC HEATERS TO BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.

FAN SCHEDULE									
EQUIP NO.	SERVICE	TYPE	AIRFLOW, CFM	ESP. IN WG	ELECTRICAL		OPERATION	WEIGHT, LBS	BASIS OF DESIGN (1)(2)(3)
					VOLTAGE	HP			
BEF-1	RESTROOM	CEILING MOUNTED	55/80	0.5	115V/1P	FHP	CONTINUOUS	10	GREENHECK SP-AP0511W (4)
BEF-2	RESTROOM	CEILING MOUNTED	50	0.5	115V/1P	FHP	(2)	10	GREENHECK SP-AP0511W

NOTES:

(1)

(2)

(3)

(4)

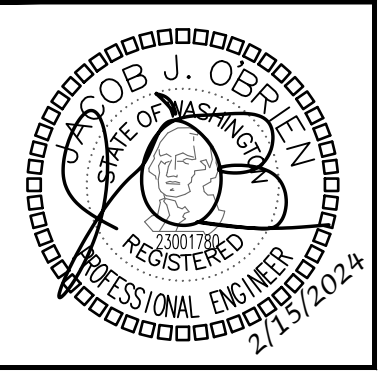
PROVIDE BACKDRAFT DAMPERS ON EXHAUST FANS.

1.0 SONES MAXIMUM.

VIBRATION ISOLATION: FANS < 125 LBS RUBBER ISOLATORS, FANS > 125 LBS SPRING ISOLATORS

FAN SHALL BE 2-SPEED: 35 CFM CONTINUOUS LOW SETTING AND 80 CFM HIGH SPEED ACTIVATED BY INTEGRAL OCCUPANCY SENSOR ON GRILLE.

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: OP	DESIGNED: ABE	CHECKED: ABE	APPROVED: JOB
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PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
 202 27TH AVE SE
 PUYALLUP, WA 98374

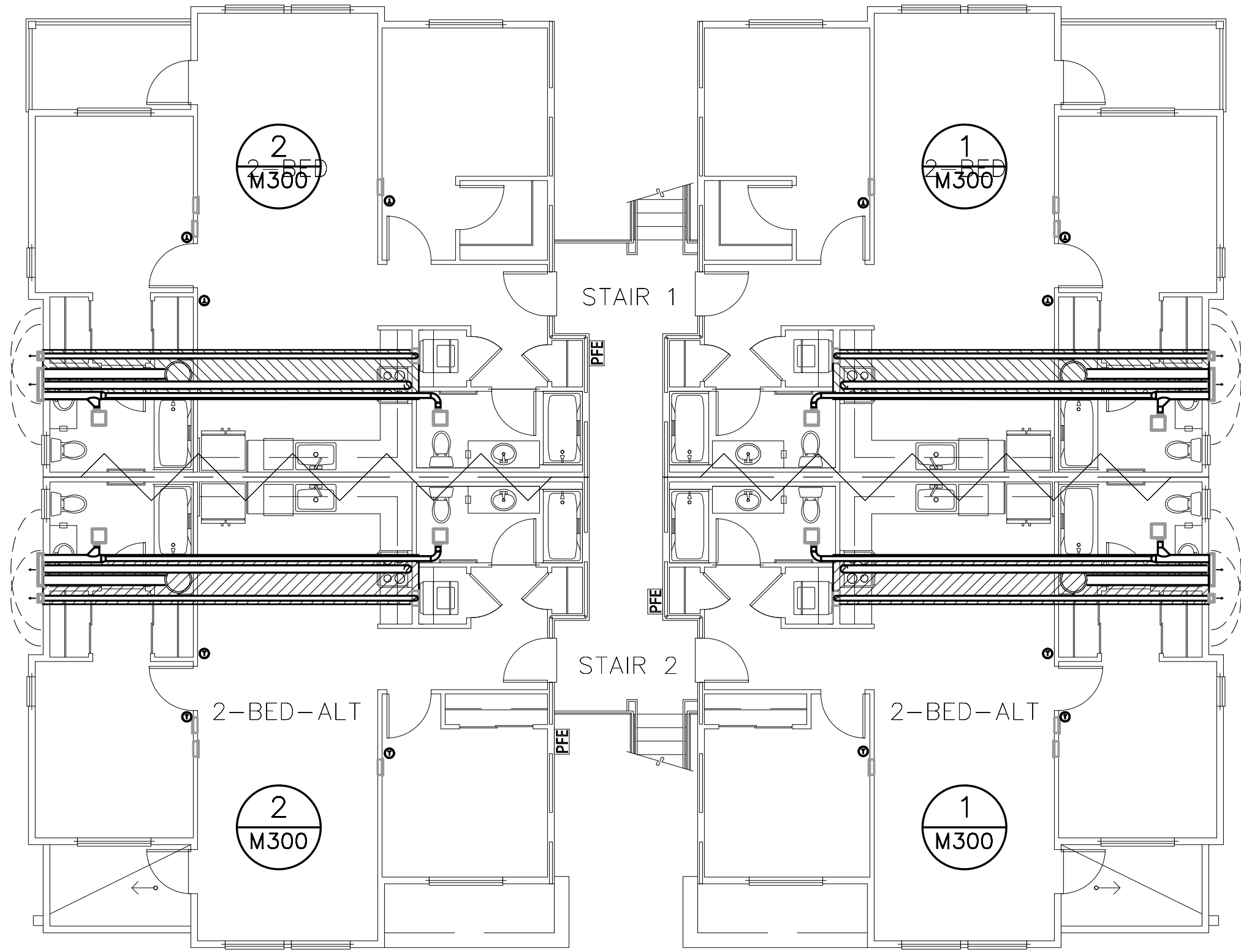
19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

ROBISON ENGINEERING, INC.

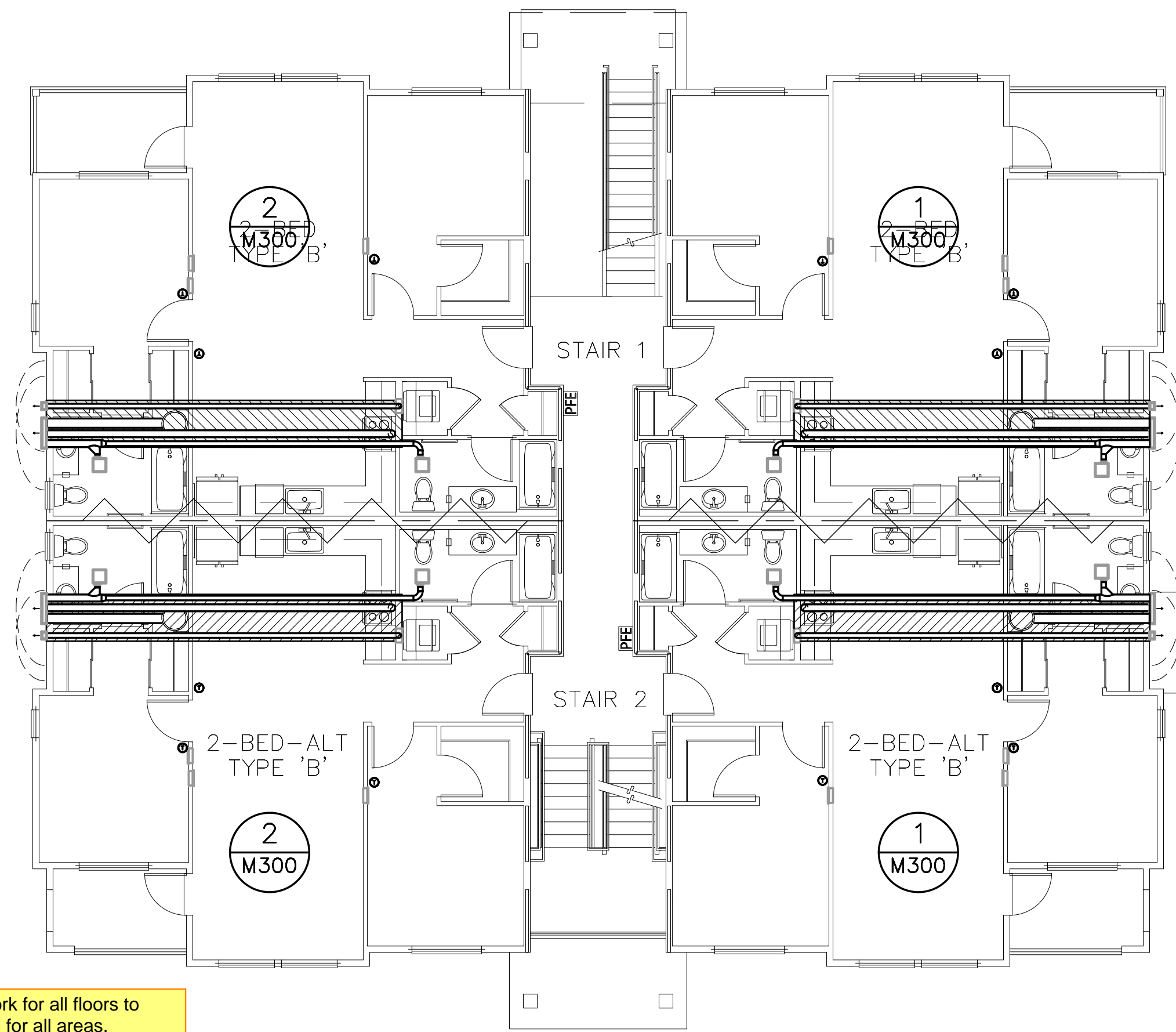
DATE: 02/15/2024

SHEET TITLE:
MECHANICAL SCHEDULE & WSEC FORMS

SHEET NO.
M0.3

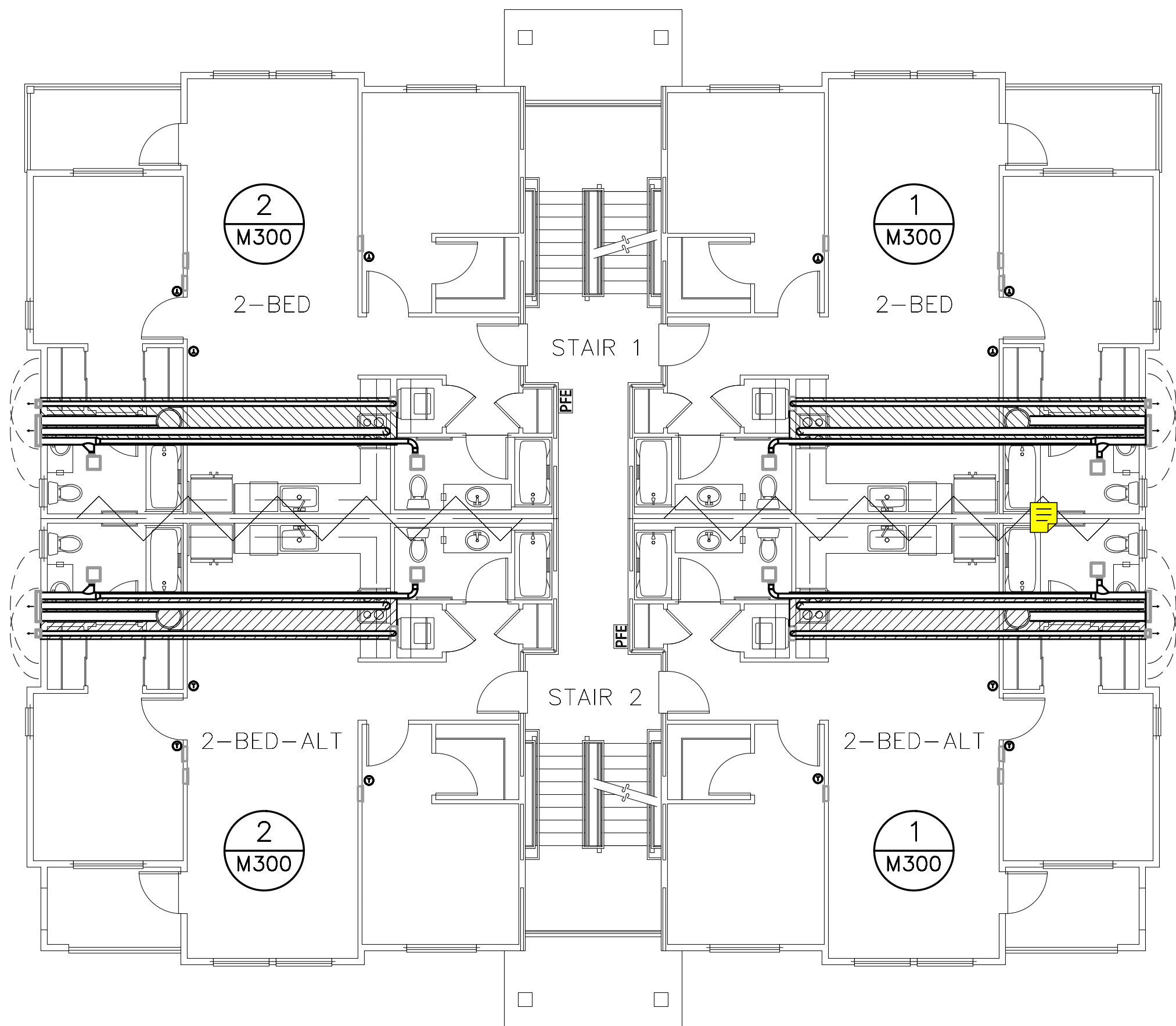


BUILDING B
1/8" = 1'-0"
3rd LEVEL PLAN
3/4 SPLIT LEVEL, 14-UNIT BUILDING

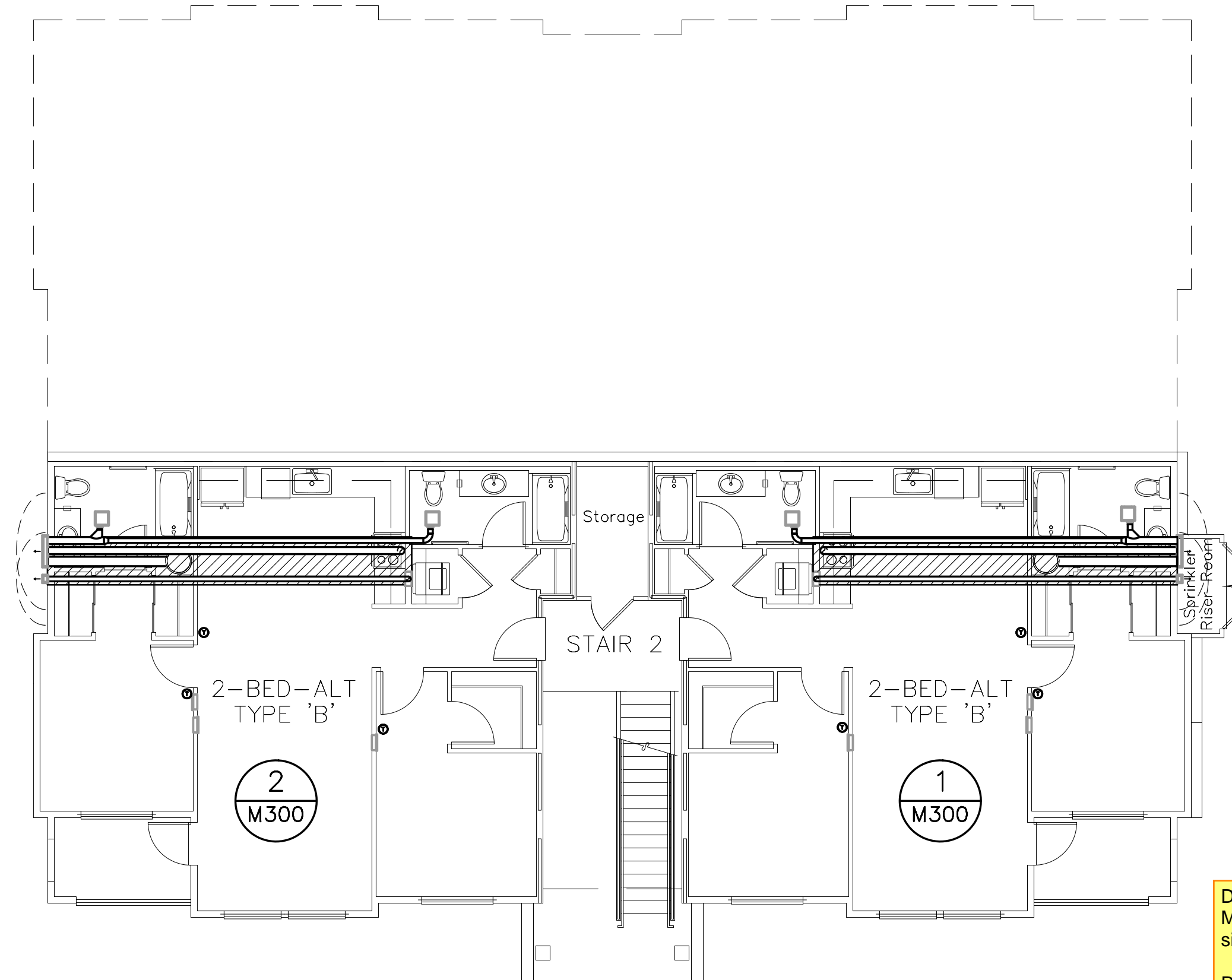


BUILDING B
1/8" = 1'-0"
1st LEVEL PLAN
3/4 SPLIT LEVEL, 14-UNIT BUILDING

Provide lengths to all duct work for all floors to identify maximum duct length for all areas.
Page M2.0



BUILDING B
1/8" = 1'-0"
2nd LEVEL PLAN
3/4 SPLIT LEVEL, 14-UNIT BUILDING



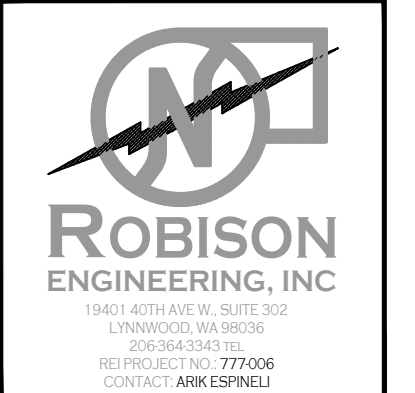
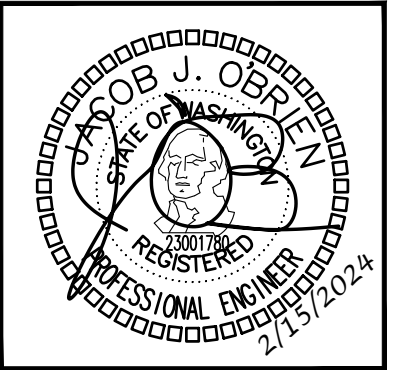
BUILDING B
1/8" = 1'-0"
BASEMENT LEVEL PLAN
3/4 SPLIT LEVEL, 14-UNIT BUILDING

Did not locate sheets M300-M303 duct sizes and length.
Page M2.0

RESIDENTIAL UNIT NOTES:
1 M300 = REFER TO DWG M300, DETAIL 1.

FOR DUCT SIZES WITHIN THE RESIDENTIAL UNITS, REFER TO THE ENLARGED UNIT PLANS ON DWGS M300-M303.

NO.	DATE	DESCRIPTION	REVISIONS



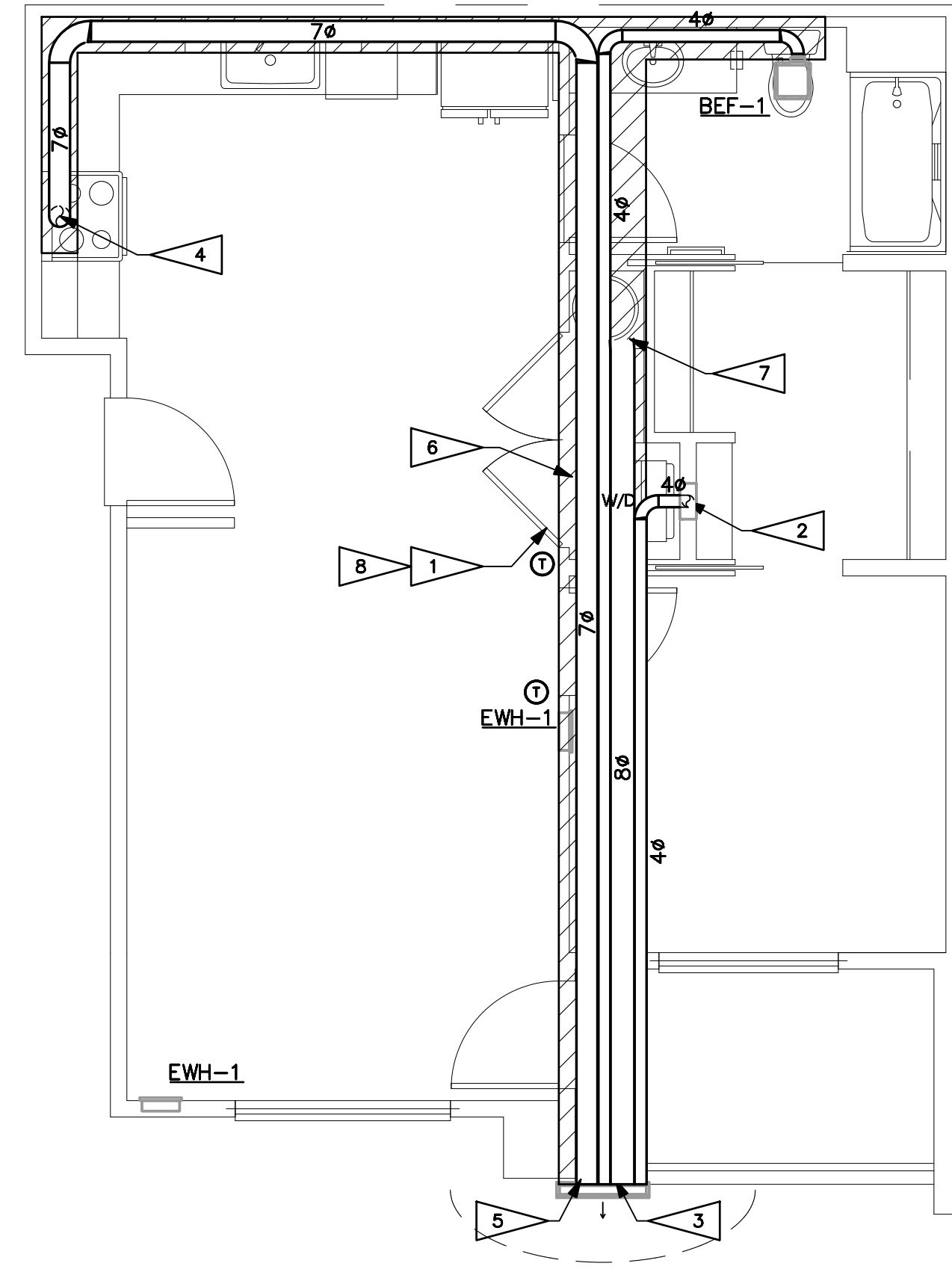
DRAWN:	OP
DESIGNED:	ABE
CHECKED:	ABE
APPROVED:	JOB

PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
202 27TH AVE SE
PUYALLUP, WA 98374
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 864-3343
ROBISON ENGINEERING, INC.

DATE: 02/15/2024

SHEET TITLE:
HVAC PLAN - FLOOR PLANS

SHEET NO.
M2.0

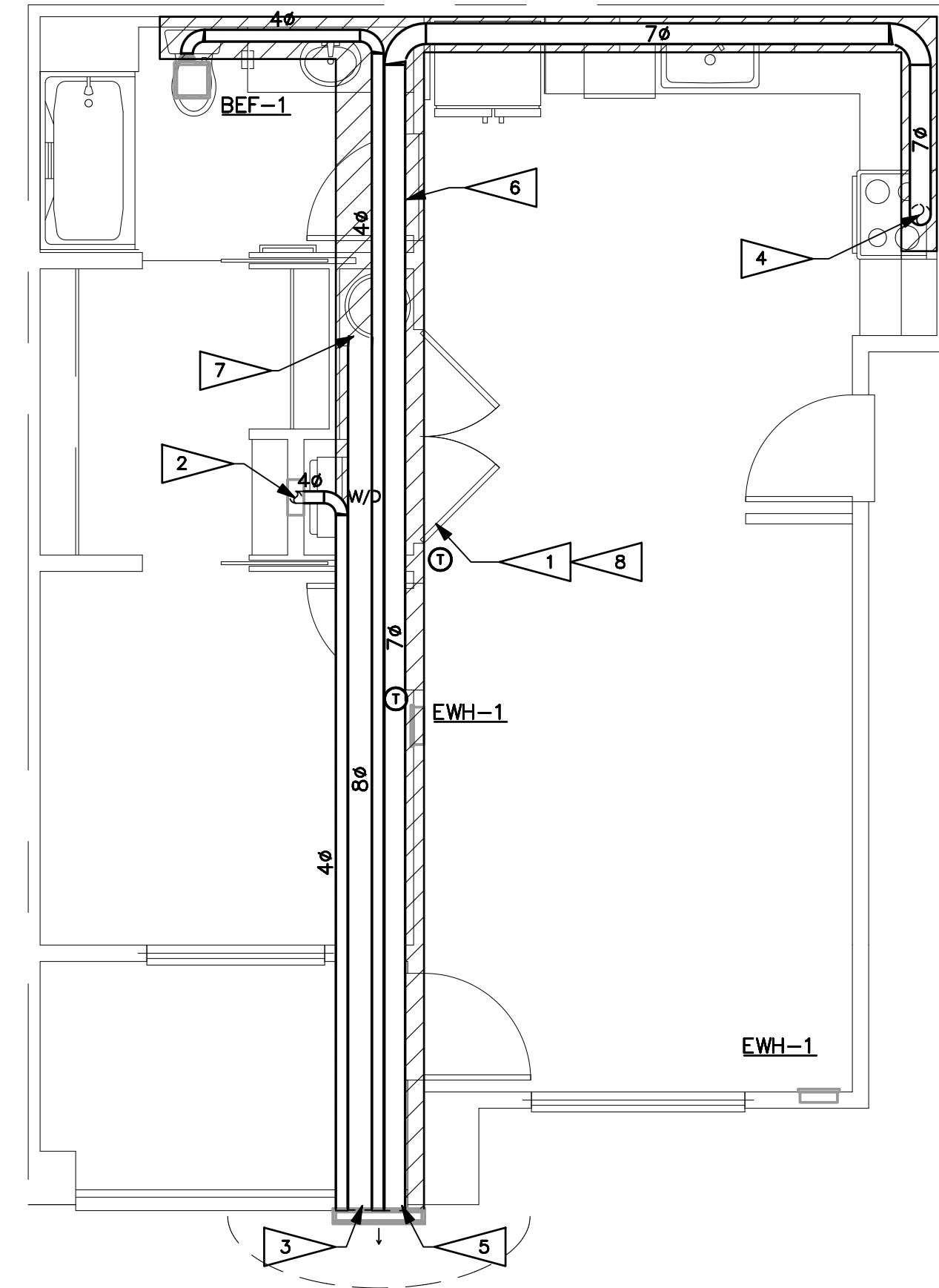


HVAC ENLARGED PLANS

1-BED-INT-1

SCALE: 1/4" = 1'-0"

1
M301

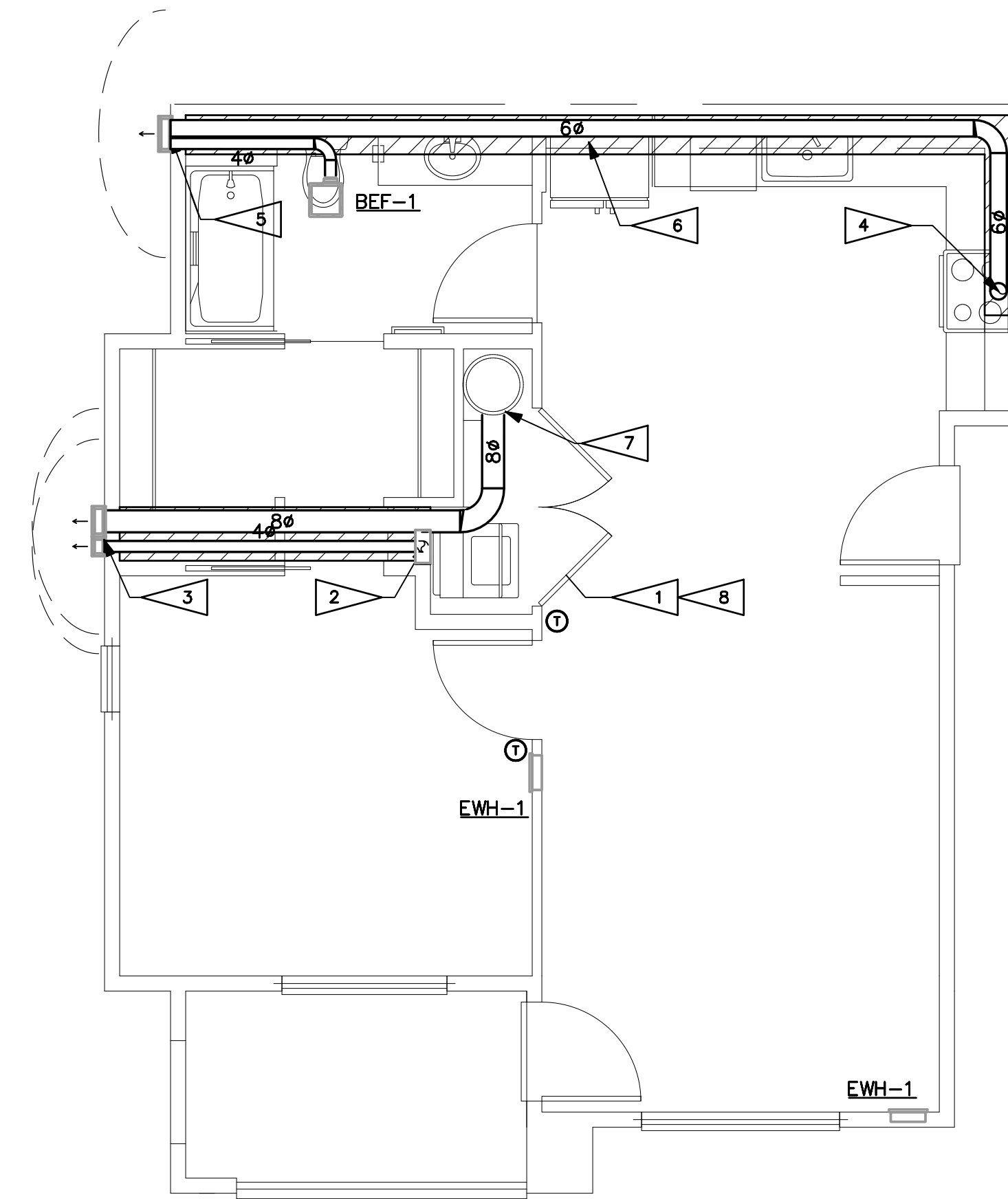


HVAC ENLARGED PLANS

1-BED-INT-2

SCALE: 1/4" = 1'-0"

2
M301



HVAC ENLARGED PLANS

1-BED-END

SCALE: 1/4" = 1'-0"

3
M301

GENERAL NOTES:

- ENVIRONMENTAL EXHAUST TERMINATIONS: MAINTAIN 3 FOOT SEPARATION FROM PROPERTY LINES AND OPERABLE OPENINGS INTO BUILDING, 10 FEET FROM MECHANICAL AIR INTAKES.
- MOUNT REMOTE THERMOSTATS 48" AFF. PER WSEC C403.4.9, AT LEAST ONE THERMOSTAT SHALL BE PROGRAMMABLE ON A 5-2 SCHEDULE.
- UNDERCUT ALL BATHROOM DOORS BY MINIMUM 1/2" TO ALLOW TRANSFER OF MAKEUP AIR FOR BATHROOM EXHAUST.
- ELECTRIC WALL HEATERS SHALL BE RECESSED IN WALL UNLESS FIRE RATED OR EXTERIOR WALL. FOR HEATERS MOUNTED ON SUCH WALL, PROVIDE SURFACE-MOUNT WALL CAN.
- PROVIDE ACCESSIBLE MANUAL VOLUME DAMPERS AT BRANCHES OR OPPOSED-BLADE DAMPERS AT GRILLES FOR AIR BALANCING PER VOLUME DAMPERS NOTE ON SHEET M0.00.

FLAG NOTES: #

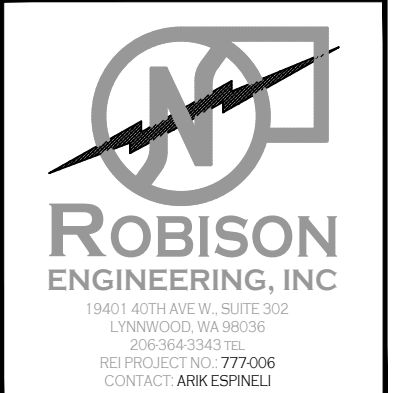
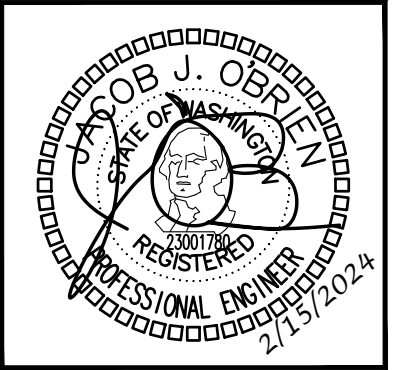
- CLOSETS CONTAINING DRYERS SHALL BE PROVIDED WITH LOUVERED DOOR OR 100 SQ. IN FREE-AREA OPENING ABOVE DOOR. OPENING PROVIDES PATH FOR EXHAUST AIR DURING WASHER OPERATION PER WSMC TABLE 403.3.1.1 NOTE (I) AND MAKEUP AIR DURING DRYER OPERATION PER 504.6.
- 4ø POC TO DRYER. PROVIDE METAL DRYER BOX WHERE DUCT IS ROUTED IN 2x6 FRAMED WALL. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WSMC 504.8.4.1 FOR THE MAXIMUM ALLOWED LENGTH OF THE DRYER VENT. PROVIDE PERMANENT PLACARD OF TYPE PLAC34 SHOWING NET EQUIVALENT LENGTH. DUCT SHALL REMAIN SEPARATE FROM OTHER EXHAUST SYSTEMS UP TO TERMINATION.
- 4" DRYER EXHAUST TERMINATION WALL CAP. PROVIDE BACKDRAFT DAMPER AT TERMINATION. DO NOT INSTALL SCREENS ON DRYER EXHAUST TERMINATIONS. CLEARANCES PER GENERAL NOTE 1.

Provide lengths to all duct work for all floors to identify and verify does not exceed Table 504.8.4.1 for allowable exhaust duct length.

Page M3.0

- POC TO DOMESTIC KITCHEN RANGE HOOD. SEE PLANS FOR SIZE. DUCT SHALL REMAIN SEPARATE FROM OTHER EXHAUST SYSTEMS UP TO TERMINATION.
- DOMESTIC KITCHEN RANGE HOOD EXHAUST TERMINATION WALL CAP WITH SCREEN. PROVIDE BACKDRAFT DAMPER AT TERMINATION. CLEARANCES PER GENERAL NOTE 1.
- LOWERED SOFFIT FOR MECHANICAL EQUIPMENT.
- 8ø POC FOR HEAT PUMP WATER HEATER EXHAUST.
- CLOSETS CONTAINING WATER HEATERS SHALL BE PROVIDED WITH MINIMUM 3/4" UNDERCUT.

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	OP
DESIGNED:	ABE
CHECKED:	ABE
APPROVED:	JOB

PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
202 27TH AVE SE
PUYALLUP, WA 98374

19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON
ENGINEERING, INC.

DATE: 02/15/2024

SHEET TITLE:
HVAC
ENLARGED
PLANS

SHEET NO.
M3.0

SYMBOLS

GENERAL	
	LIGHT LINE INDICATES NON-ELECTRICAL OR BACKGROUND (THIS IS NOT CONTRACTUAL DEFINITION OF WORK)
	HEAVY LINE INDICATES NEW WORK (THIS IS NOT CONTRACTUAL DEFINITION OF WORK)
DETAIL IDENTIFICATION	
	SYMBOL
	FLAG NOTE
	REVISION NOTE
	REVISION DEFINITION, AREA ENCIRCLED CONTAINS DRAWING CHANGES MADE SUBSEQUENT TO PREVIOUS ISSUE
SWITCHES	
	SWITCH, SINGLE POLE; WITH SWITCHING SUBSCRIPT
	OCCUPANCY SENSOR SWITCH
	SWITCH, SINGLE POLE; WITH SWITCHING SUBSCRIPT "D" INDICATES WALLBOX DIMMER
	CEILING MOUNTED OCCUPANCY SENSOR
	SWITCH, TIMER.
	SWITCH, THREE WAY.
RECEPTACLES	
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE: WALL MOUNTED, +18" AFF
	CONTROLLED AND NON CONTROLLED DUPLEX RECEPTACLE (SPLIT WIRED RECEPTACLE)
	DUPLEX RECEPTACLE - ABOVE COUNTER
	DUPLEX GFCI
	DUPLEX RECEPTACLE, WITH HEIGHT ABOVE FINISHED FLOOR INDICATED
	CEILING MOUNTED DUPLEX RECEPTACLE
	DOUBLE DUPLEX RECEPTACLE: WALL MOUNTED, +18" AFF
	FLOOR BOX ONE DUPLEX RECEPTACLE
	FLOOR BOX ONE DUPLEX RECEPTACLE + ONE DATA
	FLOOR BOX ONE DUPLEX RECEPTACLE + ONE DATA + ONE VOICE
	SPECIAL PURPOSE RECEPTACLE, AS NOTED
MISCELLANEOUS	
	JUNCTION BOX: 4SQ MOUNTED
	JUNCTION BOX: 4SQ WALL MOUNTED
	JUNCTION BOX: 4SQ TRACK
	CONNECTION FOR LIGHTED MIRROR COORDINATE LOCATION AND ELEVATION WITH ARCHITECT PRIOR TO ROUGH-IN
	THERMOSTAT
SIGNAL/COMMUNICATION	
	DATA OUTLET: WALL MOUNTED @ +18" AFF U.O.N.
	TELEPHONE/DATA OUTLET: WALL MOUNTED @ +18" AFF U.O.N.
	TELEVISION OUTLET: WALL MOUNTED @ +18" AFF U.O.N.
POWER	
	PANELBOARD
	NON-FUSED DISCONNECT SWITCH (WP = NEMA 3R WHERE APPROPRIATE)
	FUSED DISCONNECT SWITCH
	MOTOR CONNECTION (EQUIPMENT NAME, HORSEPOWER, VOLTAGE, AND PHASE INDICATED)
	EQUIPMENT CONNECTION (EQUIPMENT NAME, LOAD, VOLTAGE, AND PHASE INDICATED)
	TRANSFORMER, DRY TYPE, SHOWN TO SCALE
	KW METER AND BASE
FIRE ALARM SYSTEM	
	FIRE ALARM SYSTEM CONTROL PANEL
	FIRE ALARM SYSTEM PULL STATION
	FIRE ALARM SYSTEM STROBE/SPEAKER
	FIRE ALARM PHOTOELECTRIC SMOKE DETECTOR AND SPEAKER.
	FIRE ALARM COMBINATION PHOTOELECTRIC SMOKE DETECTOR, CARBON MONOXIDE DETECTOR, AND SPEAKER, GUESTROOM.
	CARBON MONOXIDE DETECTOR.
	ELECTRO-MAGNETIC DOOR HOLDER
	DUCT SMOKE DETECTOR

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT, ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
AIC	AMPS INTERRUPTING CAPACITY
AL	ALUMINUM
AMP	AMPERE
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BLDG	BUILDING
C	COIL or CONDUIT
CKT	CIRCUIT
CO	CONDUIT/RACEWAY ONLY
CT	CURRENT TRANSFORMER
Cu	COPPER
CW	COOL WHITE
D	DIMMER
DED	DEDICATED
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
EXIST	EXISTING
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FLUOR	FLUORESCENT
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
IG	ISOLATED GROUND
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERES
KW	KILOWATT
LTG	LIGHTING
LV	LOW VOLTAGE
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE (NFPA-70)
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NTS	NOT TO SCALE
PNL	PANEL
POC	POINT OF CONNECTION
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
RECEPT	RECEPTACLE
REF	REFERENCE
RI	ROUGH-IN
RM	ROOM
RO	RACEWAY ONLY
SHT	SHEET
SPEC	SPECIFICATIONS
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
V	VOLTS
W	WATTS
WW	WARM WHITE
WP	WEATHERPROOF
W/O	WITHOUT
XFMR	TRANSFORMER
XFR	TRANSFER
Z	IMPEDANCE OR ZONE

GENERAL NOTES

GENERAL

- PROVIDE ELECTRICAL INSTALLATION IN ACCORDANCE WITH THE GOVERNING ELECTRICAL CODE, LOCAL CODES, ORDINANCES AND REQUIREMENTS OF UTILITY COMPANIES FURNISHING SERVICES TO INSTALLATION.
- PROVIDE ALL WORK AND ITEMS NECESSARY FOR COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEMS. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY CONDUIT, BOX, CONDUCTOR OR SIMILAR ITEMS FOR A COMPLETE INSTALLATION.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID AND DETERMINE CONDITIONS WHICH MAY AFFECT BID. ANY ITEMS NOT FULLY UNDERSTOOD SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO BIDDING.
- "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, OR MECHANICAL).
- REFERENCE ARCHITECTURAL DRAWING FOR EXACT LOCATION OF DEVICES. QUESTIONS CONCERNING THE LOCATION OF DEVICES AND EQUIPMENT SHALL BE DIRECTED TO THE ARCHITECT. FAILURE TO COORDINATE REQUIREMENTS SHALL IN NO WAY RESULT IN ADDITIONAL COMPENSATION BEING PROVIDED TO THE CONTRACTOR.
- WHEREVER THE WORD "PROVIDE" IS USED, IT MEANS, "FURNISH AND INSTALL COMPLETE AND READY FOR USE."
- COORDINATE LOCATION OF ELECTRICAL WITH OTHER TRADES.
- REFER TO EQUIPMENT DRAWINGS FOR MECHANICAL CHARACTERISTICS (SIZE, LOCATION, ETC.) OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED. COORDINATE INSTALLATION AND LOCATION OF ALL EQUIPMENT WITH MECHANICAL CONTRACTOR. VERIFY ALL FUSE RATINGS, WIRE SIZES AND DISCONNECT SIZES PRIOR TO INSTALLATION.

MATERIALS AND METHODS

- PROVIDE RACEWAY AND WIRING ROUTED CONCEALED WITHIN BUILDING STRUCTURE WHERE POSSIBLE. WHERE RACEWAY CANNOT BE CONCEALED, IT SHALL BE INSTALLED PER PROJECT MANAGER'S DIRECTION. ALL CONDUIT SHALL BE INSTALLED IN NEAT SYMMETRICAL LINES HORIZONTAL OR PERPENDICULAR TO BUILDING COLUMNS AND ROOF LINES. CONDUITS SHALL BE GROUPED ON COMMON SUPPORTS WHEREVER POSSIBLE.
- EXPOSED CONDUIT ROUTING: CONDUITS MAY BE ROUTED EXPOSED IN MECHANICAL AND ELECTRICAL ROOMS ONLY. EXPOSED CONDUITS SHALL BE SECURED A MINIMUM OF 6" ABOVE FLOOR.
- OUTDOOR EXPOSED CONDUIT ROUTING: CONDUITS ROUTED ON ROOF OR EXPOSED TO WEATHER SHALL BE GRP, PVC OR LIQUID-TIGHT FLEX. PROVIDE WATER-TIGHT CONNECTIONS AND FITTINGS.
- CLEARANCES: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET.
- CONNECTIONS: PROVIDE GRP, METALLIC FLEX, OR LIQUIDTITE FLEX CONDUITS FOR CONNECTIONS TO MOTORS OR MOTORIZED EQUIPMENT.
- WIRING: PROVIDE MINIMUM #12 AWG WIRE SIZE. IF CONDUIT IS TO BE USED MINIMUM IS TO BE 1/2". FLEXIBLE CONDUIT AND FLEXIBLE CABLE IS PERMISSIBLE THROUGHOUT THE BUILDING.

SITE ELECTRICAL

- TRENCHING: COORDINATE ALL TRENCHING WORK WITH OTHER UTILITY LOCATIONS AND DRAINAGE TRENCHES.
- UNDERGROUND CONDUITS: PROVIDE PVC, SCHEDULE 40, 3/4" MINIMUM. PROVIDE GRP CONDUIT TRANSITION ELBOW WHEN TURNING UP TO ABOVE GRADE.
- DIRECT-BURIED CONDUITS: CONDUIT FOR BRANCH CIRCUITS OUTSIDE BUILDINGS NOT BENEATH DRIVEWAYS OR PARKING AREAS SHALL BE DIRECTLY BURIED WITHOUT CONCRETE ENCASEMENT. THE DEPTH TO THE TOP OF BURIED CONDUITS SHALL BE 36". PROVIDE MARKER TAPE 12" BELOW GRADE.
- BELOW SLAB: CONDUIT ROUTED BELOW ON-GRADE FLOOR SLABS SHALL BE INSTALLED PRIOR TO FLOOR SLAB POUR. ROUTE CONDUITS BELOW SLAB AS STRAIGHT AS POSSIBLE TO MINIMIZE BENDS.
- ALL CONDUITS PENETRATING THE BUILDING ENVELOPE BELOW GRADE SHALL FOLLOW WATERPROOFING REQUIREMENTS IN THE ARCHITECTURAL DRAWINGS.

NEUTRALS

- AT CONTRACTORS OPTION, NEUTRALS MAY BE SHARED ON COMBINED HOMERUNS UNLESS THE CIRCUIT HAS A GFCI BREAKER, AN ISOLATED GROUND, OR IS FROM A PANEL WITH TVSS PROTECTION. ANY NEUTRAL DOWNSTREAM FROM A DIMMER SHALL BE DEDICATED TO THE DIMMED LOAD.
- NEUTRAL WIRES SHOWN FOR TWO AND THREE POLE MECHANICAL AND KITCHEN EQUIPMENT MAY BE OMITTED UPON VERIFICATION THAT THEY ARE NOT REQUIRED EITHER FOR OPERATION OR CONTROL CIRCUITS PER MANUFACTURER'S SPECIFICATIONS.

LIGHTING

- PROVIDE LIGHT FIXTURES WITH PROPER FITTING FLANGES, MOUNTING SUPPORTS, AND ACCESSORY ITEMS, UL LISTED FOR CONDITIONS OF USE.

LOW VOLTAGE LIGHTING

- PROVIDE LOW VOLTAGE TRANSFORMERS IN NEARBY ACCESSIBLE CEILING SPACE.
- PROVIDE LOW VOLTAGE CONDUCTORS SIZED PER MANUFACTURER'S GUIDELINES TO MINIMIZE VOLTAGE DROP.

LIGHTING CONTROL

- THE MAXIMUM LIGHTING POWER THAT MAY BE CONTROLLED FROM A SINGLE SWITCH OR AUTOMATIC CONTROL SHALL NOT EXCEED THAT WHICH IS PROVIDED BY A TWENTY AMPERE CIRCUIT LOADED TO NOT MORE THAN EIGHTY PERCENT. A MASTER CONTROL MAY BE INSTALLED PROVIDED THE INDIVIDUAL SWITCHES RETAIN THEIR CAPABILITY TO FUNCTION INDEPENDENTLY.
- EMERGENCY FIXTURES: EMERGENCY BATTERY/CHARGER SHALL BE CONNECTED TO AN UNSWITCHED LEG OF THE DESIGNATED CIRCUIT.

GENERAL REQUIREMENTS

- DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED.
- THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT.
- REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
- REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS.
- PROVIDE CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

CONTRACTOR SUBSTITUTIONS & REVISIONS

- PLEASE SUBMIT PROPOSALS FOR SUBSTITUTIONS OR REVISIONS FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL OR DOING WORK.
- FOR EQUIPMENT THAT IS SCHEDULED BY MANUFACTURER'S NAME AND CATALOG DESIGNATIONS, THE MANUFACTURER'S PUBLISHED DATA AND/OR SPECIFICATION FOR THAT ITEM ARE CONSIDERED PART OF SPECIFICATION.
- ENGINEERING COSTS FOR REVISING MEP PLANS SHALL BE ADDRESSED IN THE COST ANALYSIS OF THE SUBSTITUTION PROPOSAL.
- CONTRACTOR TO COORDINATE WITH ENGINEER AND DETERMINE ASSOCIATED DESIGN AND PERMITTING COSTS. CONTRACTOR SHALL BE RESPONSIBLE FOR OTHER COSTS ASSOCIATED WITH UNFORESEEN ISSUES RESULTING FROM SUBSTITUTIONS OR REVISIONS.

PRE-CON MEETING NOTES

CONTRACTORS SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WILL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS, AND ON-SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THROUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	4 HOURS
PLUMBING/PIPING	4 HOURS
ELECTRICAL	4 HOURS
SPRINKLER	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS

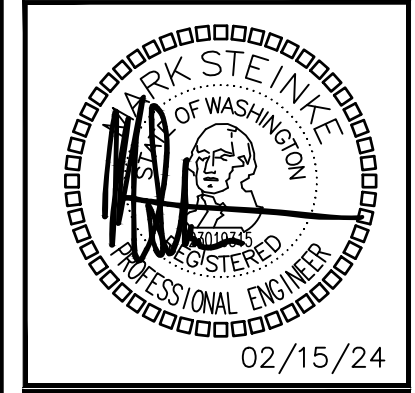
DRAWING INDEX

DWG	DESCRIPTION	INCLUDED IN SET			
		DD SET 04/10/23	PERMIT REVIEW SET 10/06/23	PERMIT SET 02/15/24	
E0.00	LEGEND, GENERAL NOTES, DRAWING INDEX	X	X	X	
E0.01	PROJECT NOTES	X	X	X	
E0.10	SITE POWER PLAN - EAST	X	X	X	
E0.11	SITE LIGHTING PLAN - EAST	X	X	X	
E1.00	LIGHTING & PHOTOMETRIC PLAN-BASEMENT	X	X	X	
E1.01	LIGHTING & PHOTOMETRIC PLAN-1ST FLOOR	X	X	X	
E1.02	LIGHTING PLAN - 2ND & 3RD FLOOR	X	X	X	
E1.50	LIGHTING NOTES & LUMINAIRE SCHEDULES	X	X	X	
E3.00	POWER PLAN - BASEMENT & 1ST FLOOR	X	X	X	
E3.01	POWER PLAN - 2ND & 3RD FLOOR	X	X	X	
E3.02	POWER PLAN - ROOF	X	X	X	
E5.00	UNIT PLANS NOTES	X	X	X	
E5.01	UNIT PLANS & SCHEDULES	X	X	X	
E5.02	UNIT PLANS & SCHEDULES	X	X	X	
E6.00	ONE-LINE DIAGRAM & NOTES	X	X	X	
E6.00	PANELS SCHEDULES	X	X	X	

Separate electrical permit is required with Washington State Department of Labor & Industries.

<https://lni.wa.gov/licensing-permits/electrical/electrical-perm-its-fees-and-inspections> or Licensing information: Call 1-800-647-0982

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
27TH AVE SE AND 5TH ST BELLEVUE WA

19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206)364-3343

ROBISON ENGINEERING, INC

DATE: 02/15/24

SHEET TITLE:
LEGEND, GENERAL NOTES, DRAWING INDEX

SHEET NO.
E0.00

APPLICABLE CODES

THE FOLLOWING PROJECT DESIGN IS BASED ON THE FOLLOWING CODES:

- 2020 NATIONAL ELECTRICAL CODE (NEC)
- 2018 WASHINGTON STATE ENERGY CODE (WSEC)
- 2018 INTERNATIONAL BUILDING CODE (IBC) & WASHINGTON STATE AMENDMENTS
- 2018 INTERNATIONAL FIRE CODE (IFC) & WASHINGTON STATE AMENDMENTS
- 2018 INTERNATIONAL MECHANICAL CODE (IMC) & WASHINGTON STATE AMENDMENTS
- 2018 UNIFORM PLUMBING CODE (UPC) & WASHINGTON STATE AMENDMENTS

VIBRATION AND ACOUSTICAL ISOLATION

THE FOLLOWING MEASURES SHALL BE TAKEN TO MINIMIZE VIBRATION AND NOISE TRANSMISSION FROM MECHANICAL AND ELECTRICAL EQUIPMENT TO THE INTERIOR SPACES:

TRANSFORMERS:

- A) PROVIDE FLEXIBLE CONDUIT OR MC CABLE AT EQUIPMENT CONNECTION.
- B) MOUNT TRANSFORMERS ON NEOPRENE GROMMET ISOLATORS.

SUBDUCT EXHAUST FANS:

- A) PROVIDE FLEXIBLE CONDUIT OR MC CABLE AT EQUIPMENT CONNECTION.

ENCLOSED GARAGE EXHAUST FANS:

- A) PROVIDE FLEXIBLE CONDUIT OR MC CABLE AT EQUIPMENT CONNECTION.

ROOFTOP AIR HANDLERS:

- A) PROVIDE FLEXIBLE CONDUIT OR MC CABLE AT EQUIPMENT CONNECTION.

FAN COIL UNITS:

- A) PROVIDE FLEXIBLE CONDUIT OR MC CABLE AT EQUIPMENT CONNECTION.

ROOF MOUNTED CONDENSERS:

- A) PROVIDE FLEXIBLE CONDUIT OR MC CABLE AT EQUIPMENT CONNECTION.

FLEXIBLE CONDUIT OR MC CABLE CONNECTIONS FOR VIBRATION ISOLATION SHALL BE A MINIMUM OF TWO FEET LONG.

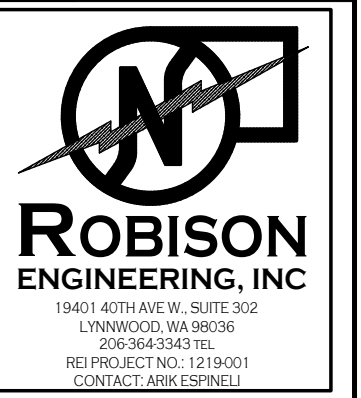
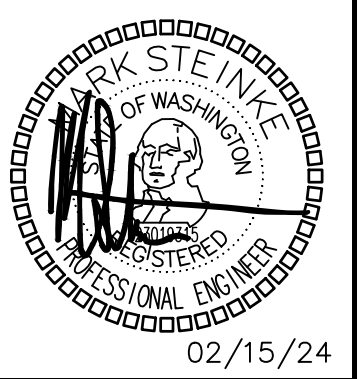
TEMPERATURE LIMITATION OF CONDUCTORS

ADDITIONAL ADJUSTMENTS FOR CONDUITS EXPOSED TO SUNLIGHT ON OR ABOVE ROOFTOPS SHALL BE FACTORED PER NEC TABLE 310.15(B)(2)(C)

CONDUIT & CONDUCTOR FIRE RATING

1. CONDUIT FOR ELECTRICAL CONDUCTORS BY THE FACP OR FIRE ALARM SYSTEM SHALL BE IN 2 HOUR RATED ENCLOSURES OR ENCASED IN 2-INCH OF CONCRETE AND RATED CABLE ASSEMBLIES, OR BE CONDUCTORS IN 2 HOUR-RATED RACEWAYS PER NFPA 72.
2. THE EQUIPMENT AND CONTROL WIRING SHALL BE ENCLOSED BY FIRE BARRIERS CONSTRUCTED IN ACCORDANCE WITH IBC SECTION 707 OR HORIZONTAL ASSEMBLIES CONSTRUCTED IN ACCORDANCE WITH IBC SECTION 711, OR USING A 2 HR RATED CABLE SYSTEM OR ENCLOSED WITHIN 2" OF CONCRETE.
3. FIRE ALARM WIRING SHALL COMPLY WITH IBC 907.6.1. WIRING SHALL COMPLY WITH THE REQUIREMENTS OF NFPA 70.
4. RACEWAYS FOR THE DEDICATED BRANCH CIRCUIT(S) REQUIRED FOR PRIMARY POWER TO THE FIRE ALARM CONTROL PANEL (FACP) SHALL BE IN 2 HOUR RATED ENCLOSURES OR ENCASED IN 2-INCH OF CONCRETE AND RATED CABLE ASSEMBLIES, OR BE CONDUCTORS IN 2 HOUR-RATED RACEWAYS PER IBC 907 AND NFPA 72 SECTION 10.6.11.3.1.3

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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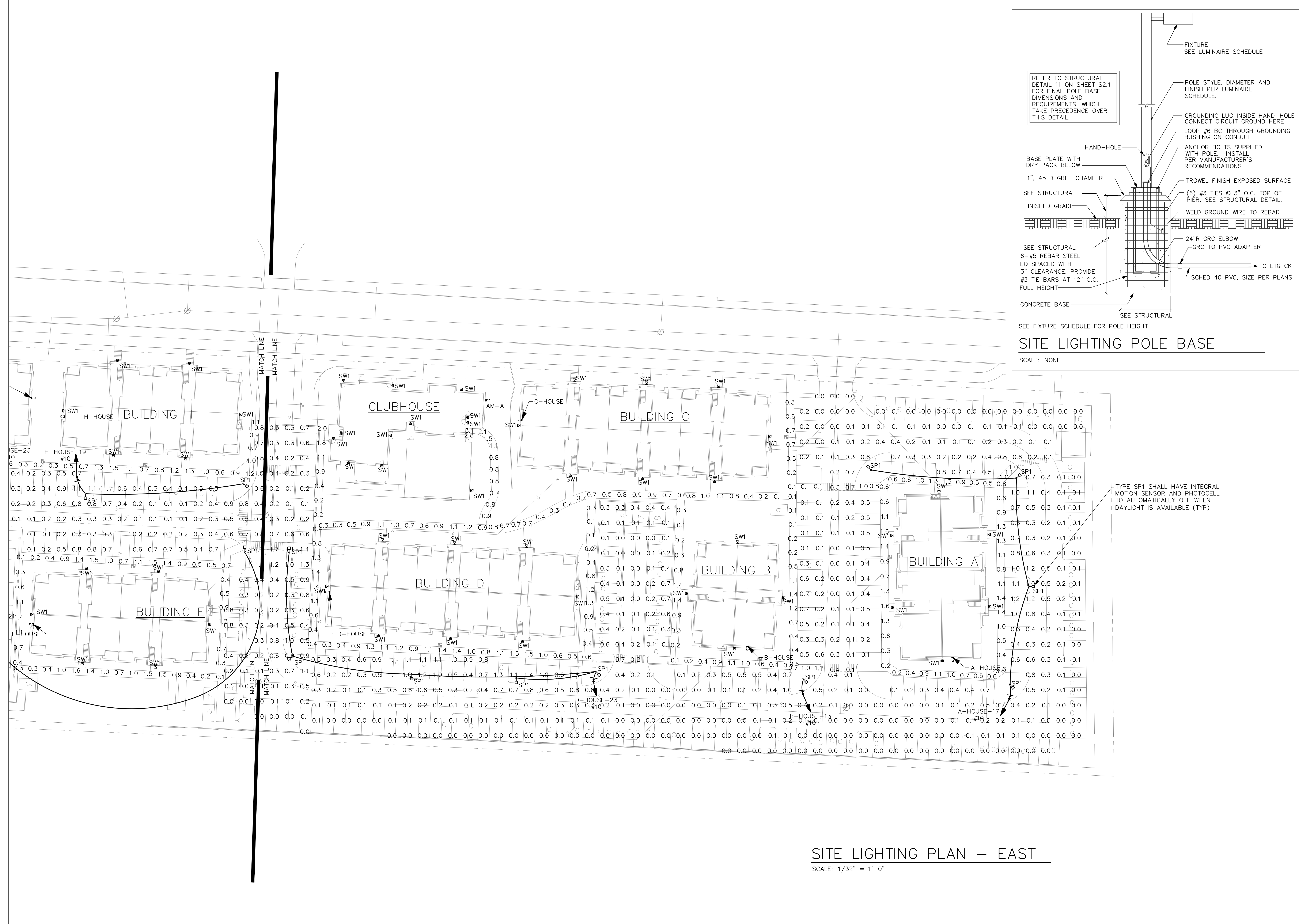
PROJECT: BRADLEY HEIGHTS APARTMENTS
 27TH AVE SE AND 5TH ST BELLEVUE, WA

ROBISON ENGINEERING, INC
 19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

DATE: 02/15/24

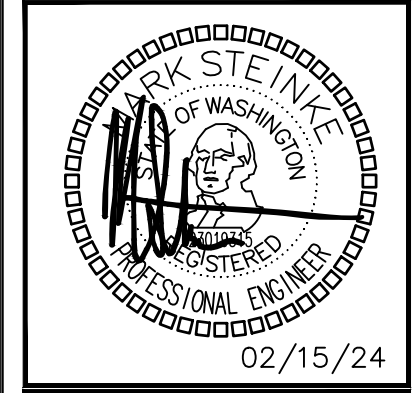
SHEET TITLE:
LEGEND, GENERAL NOTES, DRAWING INDEX

SHEET NO.
E0.01



SITE LIGHTING PLAN – EAST
SCALE: 1/32" = 1'-0"

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
27TH AVE SE AND 5TH ST SE, BELLEVUE, WA

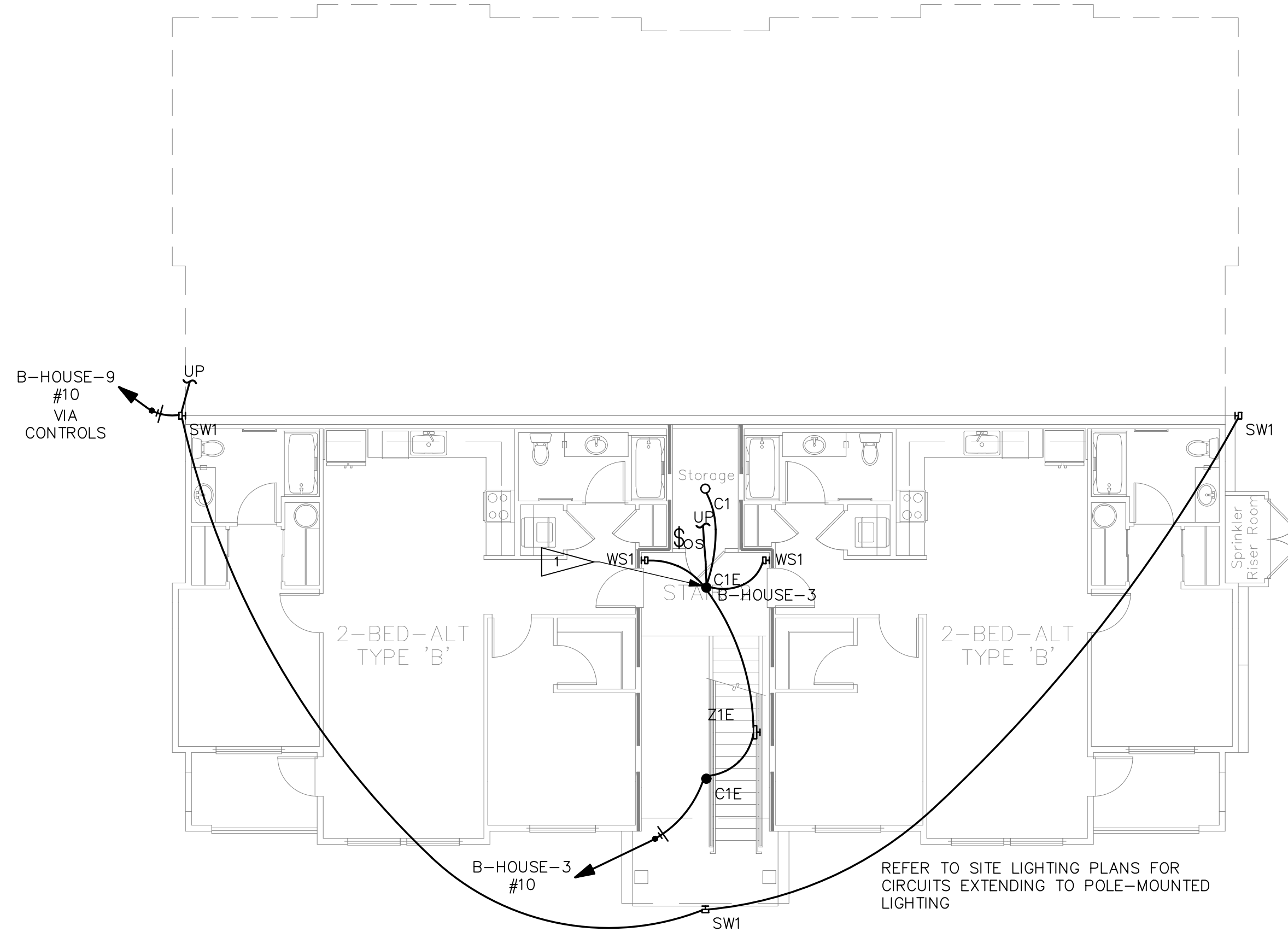
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC

DATE: 02/15/24

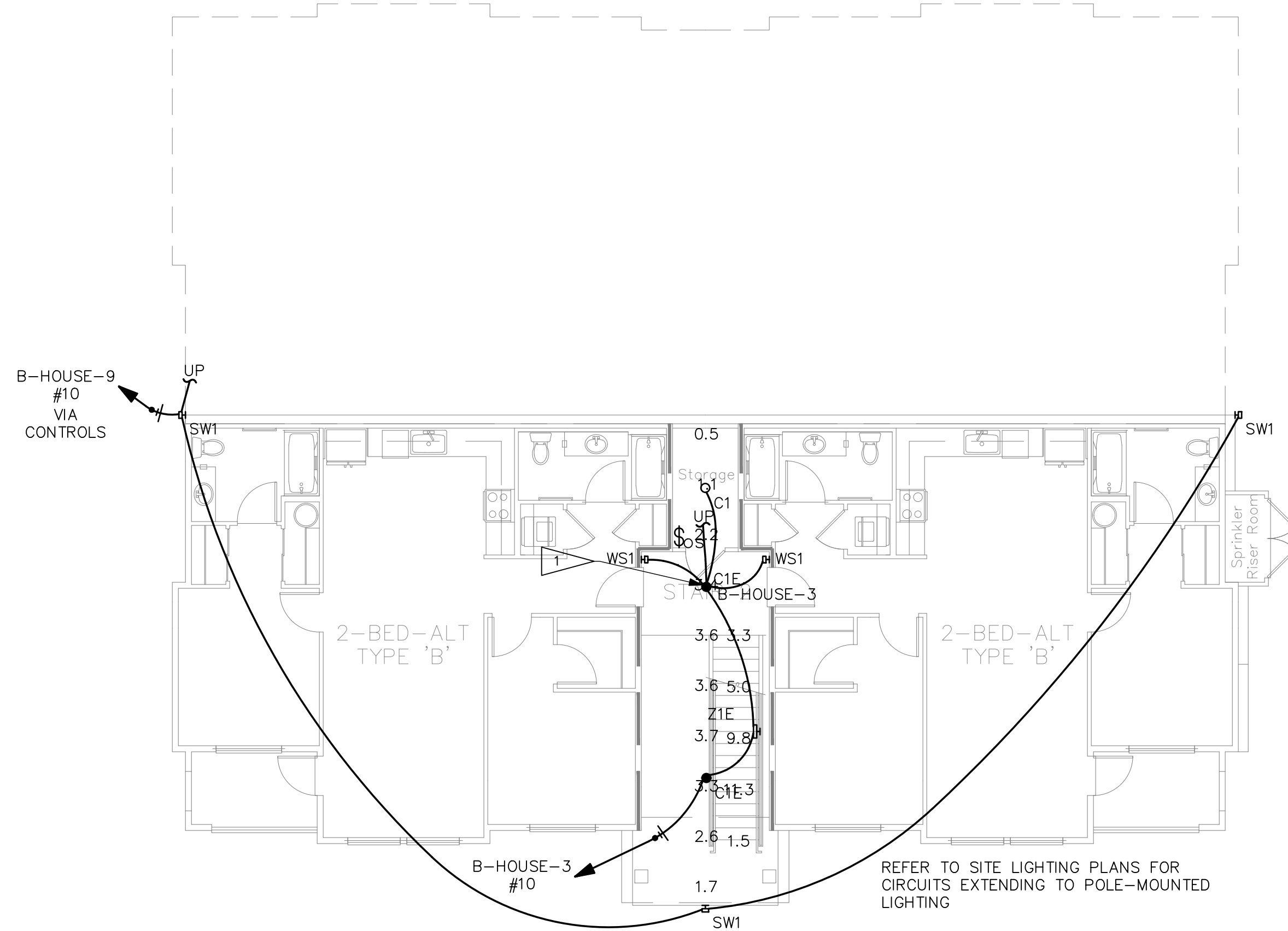
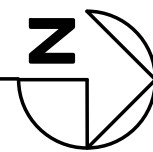
SHEET TITLE:
SITE LIGHTING - EAST SITE PLAN

SHEET NO.
E0.11



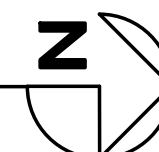
LIGHTING PLAN – BASEMENT

SCALE: 1/8" = 1'-0"



PHOTOMETRIC PLAN – BASEMENT

SCALE: 1/8" = 1'-0"



GENERAL NOTES	
1.	EMERGENCY EGRESS LIGHTING: EMERGENCY LUMINAIRES WITH 90 MINUTE BATTERY BACKUP.
2.	REFER TO SERIES E500 DRAWINGS FOR TYPICAL UNIT PLANS SHOWING ELECTRICAL AND LIGHTING LAYOUT.
3.	SEE SHEET E1.50 FOR LUMINAIRE SCHEDULE AND LIGHTING NOTES.
FLAG NOTES	
1.	CIRCUIT STAIRS VERTICALLY. LUMINAIRE(S) IN STAIRWELL
2.	EXIT SIGNS: PROVIDE UNSWITCHED HOT.

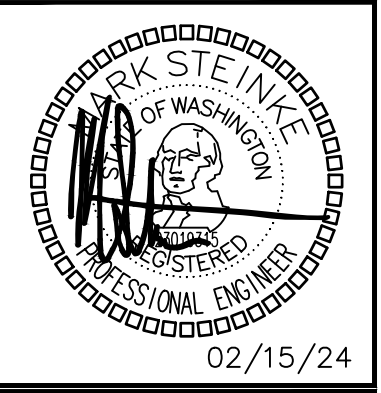
Egress Photometric Schedule

AVERAGE FOOT-CANDLES	3.95
MAXIMUM FOOT-CANDLES	6.5
MINIMUM FOOT-CANDLES	1.6
MINIMUM TO MAXIMUM FC RATIO	0.25
MAXIMUM TO MINIMUM FC RATIO	4.03
AVERAGE TO MINIMUM FC RATIO	2.43

Egress Stairs Photometric Schedule

AVERAGE FOOT-CANDLES	6.18
MAXIMUM FOOT-CANDLES	11.3
MINIMUM FOOT-CANDLES	1.5
MINIMUM TO MAXIMUM FC RATIO	0.13
MAXIMUM TO MINIMUM FC RATIO	7.74
AVERAGE TO MINIMUM FC RATIO	4.22

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	KL
DESIGNED:	MHS
CHECKED:	PSR
APPROVED:	JAY

PROJECT: BRADLEY HEIGHTS APARTMENTS
 27TH AVE SE AND 5TH ST BELLEVUE, WA

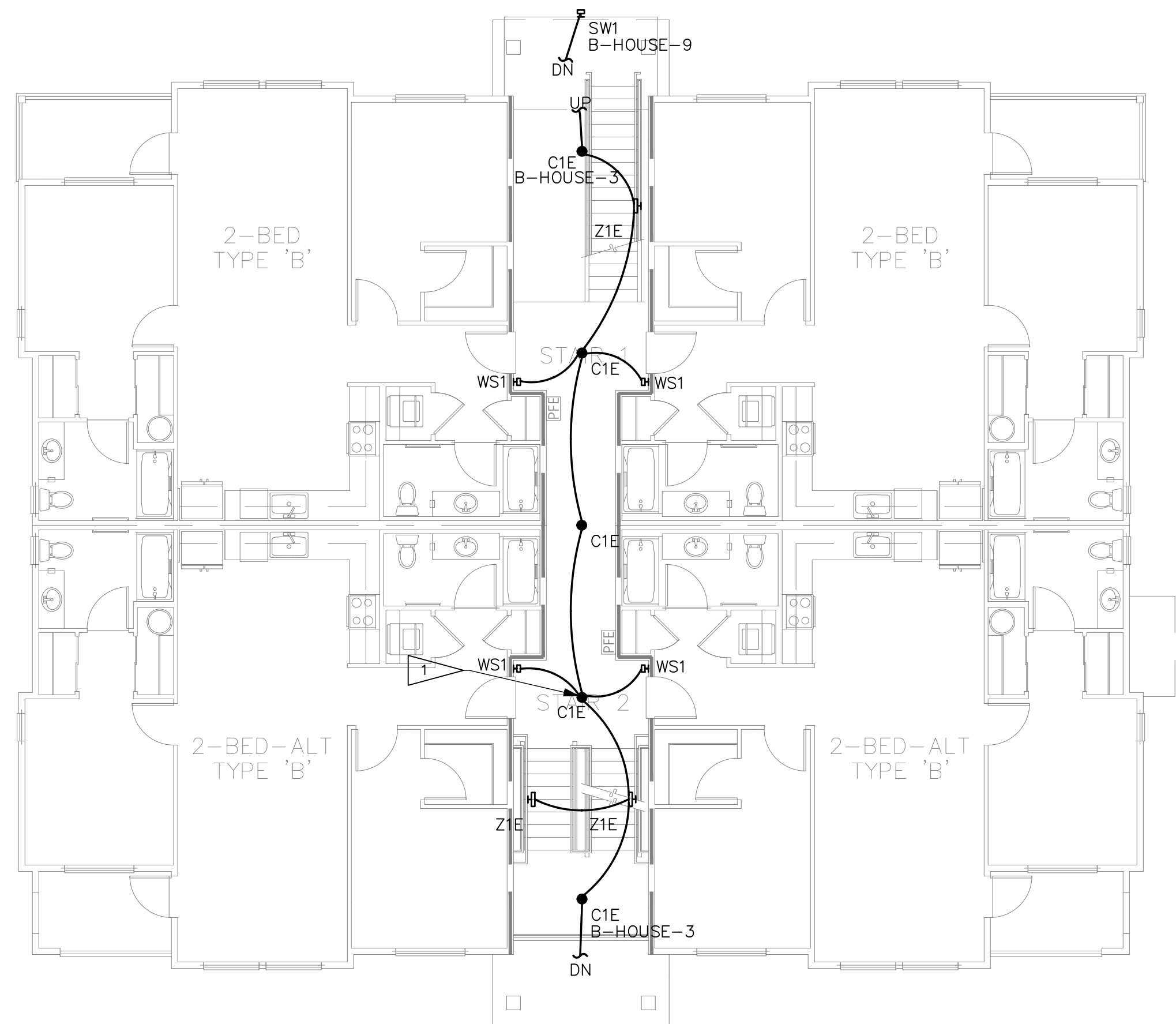
19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

ROBISON ENGINEERING, INC.

DATE: 02/15/24

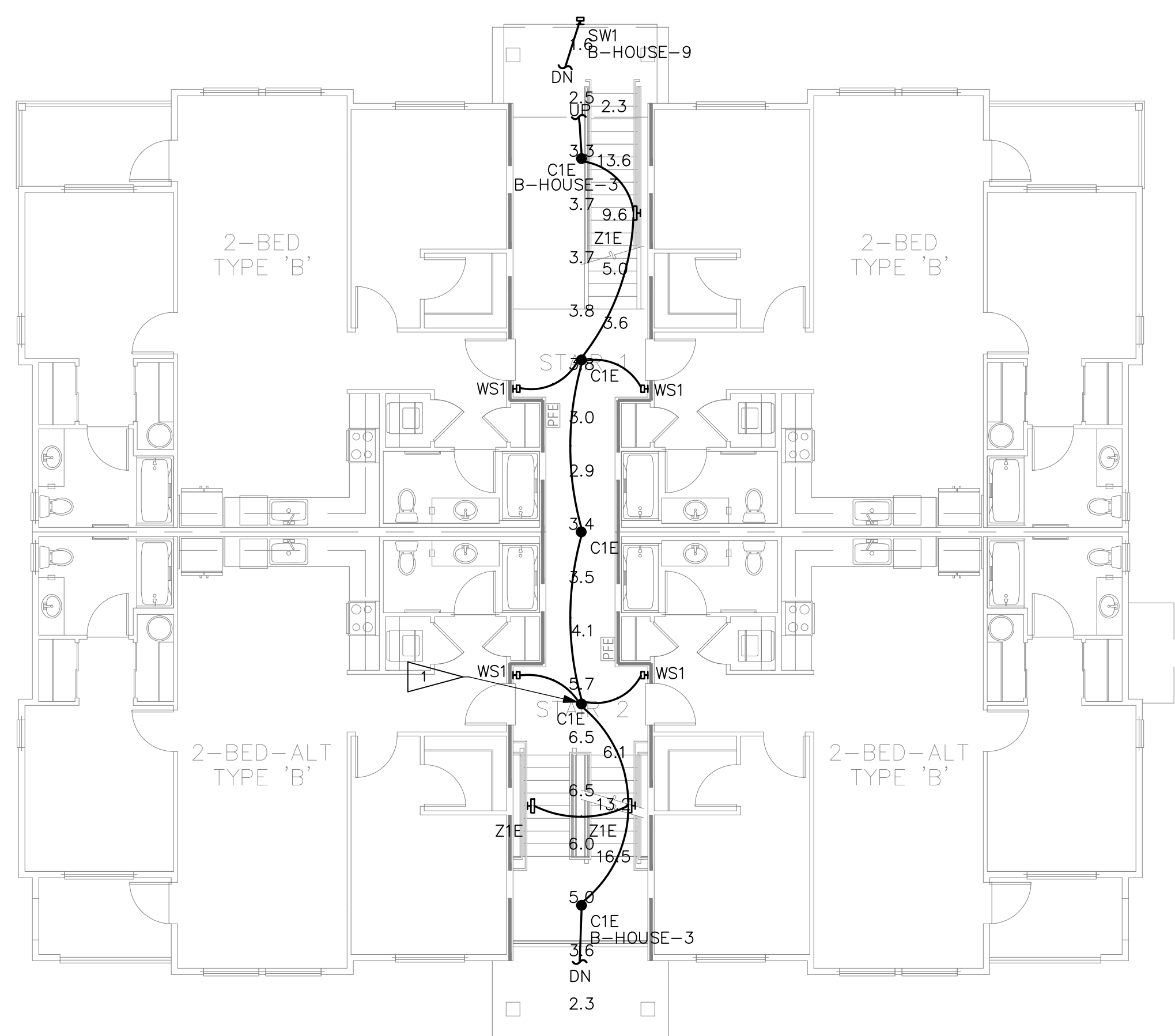
SHEET TITLE:
LIGHTING & PHOTOMETRIC PLAN - BASEMENT

SHEET NO.
E1.00



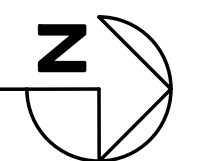
LIGHTING PLAN – 1ST FLOOR

SCALE: 1/8" = 1'-0"



PHOTOMETRIC PLAN – 1ST FLOOR

SCALE: 1/8" = 1'-0"



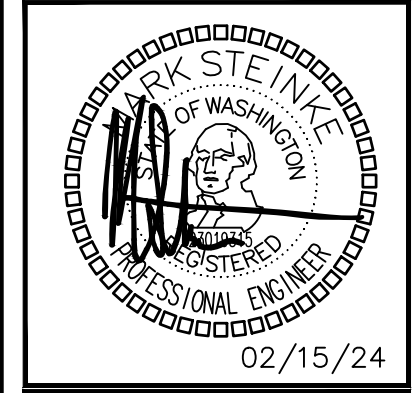
GENERAL NOTES	
1.	EMERGENCY EGRESS LIGHTING: EMERGENCY LUMINAIRE(S) WITH 90 MINUTE BATTERY BACKUP.
2.	REFER TO SERIES E500 DRAWINGS FOR TYPICAL UNIT PLANS SHOWING ELECTRICAL AND LIGHTING LAYOUT.
3.	SEE SHEET E1.50 FOR LUMINAIRE SCHEDULE AND LIGHTING NOTES.
FLAG NOTES	
1.	CIRCUIT STAIRS VERTICALLY. LUMINAIRE(S) IN STAIRWELL
2.	EXIT SIGNS: PROVIDE UNSWITCHED HOT.

Egress Photometric Schedule	
AVERAGE FOOT-CANDLES	3.95
MAXIMUM FOOT-CANDLES	6.5
MINIMUM FOOT-CANDLES	1.6
MINIMUM TO MAXIMUM FC RATIO	0.25
MAXIMUM TO MINIMUM FC RATIO	4.03
AVERAGE TO MINIMUM FC RATIO	2.43

Egress Stairs #1 Photometric Schedule	
AVERAGE FOOT-CANDLES	11.93
MAXIMUM FOOT-CANDLES	16.5
MINIMUM FOOT-CANDLES	6.1
MINIMUM TO MAXIMUM FC RATIO	0.37
MAXIMUM TO MINIMUM FC RATIO	2.71
AVERAGE TO MINIMUM FC RATIO	1.96

Egress Stairs #2 Photometric Schedule	
AVERAGE FOOT-CANDLES	6.81
MAXIMUM FOOT-CANDLES	13.6
MINIMUM FOOT-CANDLES	2.3
MINIMUM TO MAXIMUM FC RATIO	0.17
MAXIMUM TO MINIMUM FC RATIO	5.84
AVERAGE TO MINIMUM FC RATIO	2.94

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
 27TH AVE SE AND 5TH ST BELLEVUE, WA

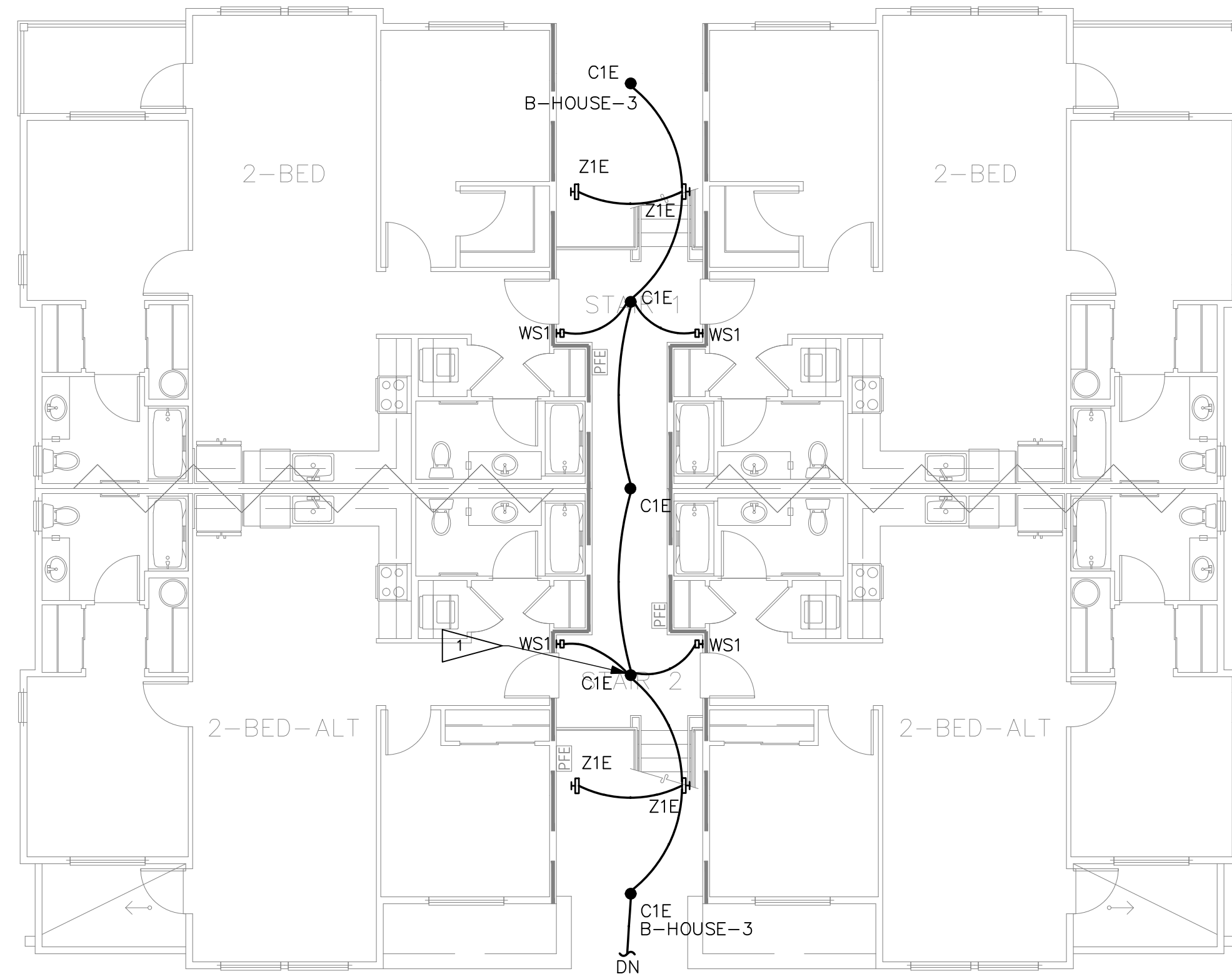
19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

ROBISON ENGINEERING, INC.

DATE: 02/15/24

SHEET TITLE:
LIGHTING & PHOTOMETRIC PLAN - 1ST FLOOR

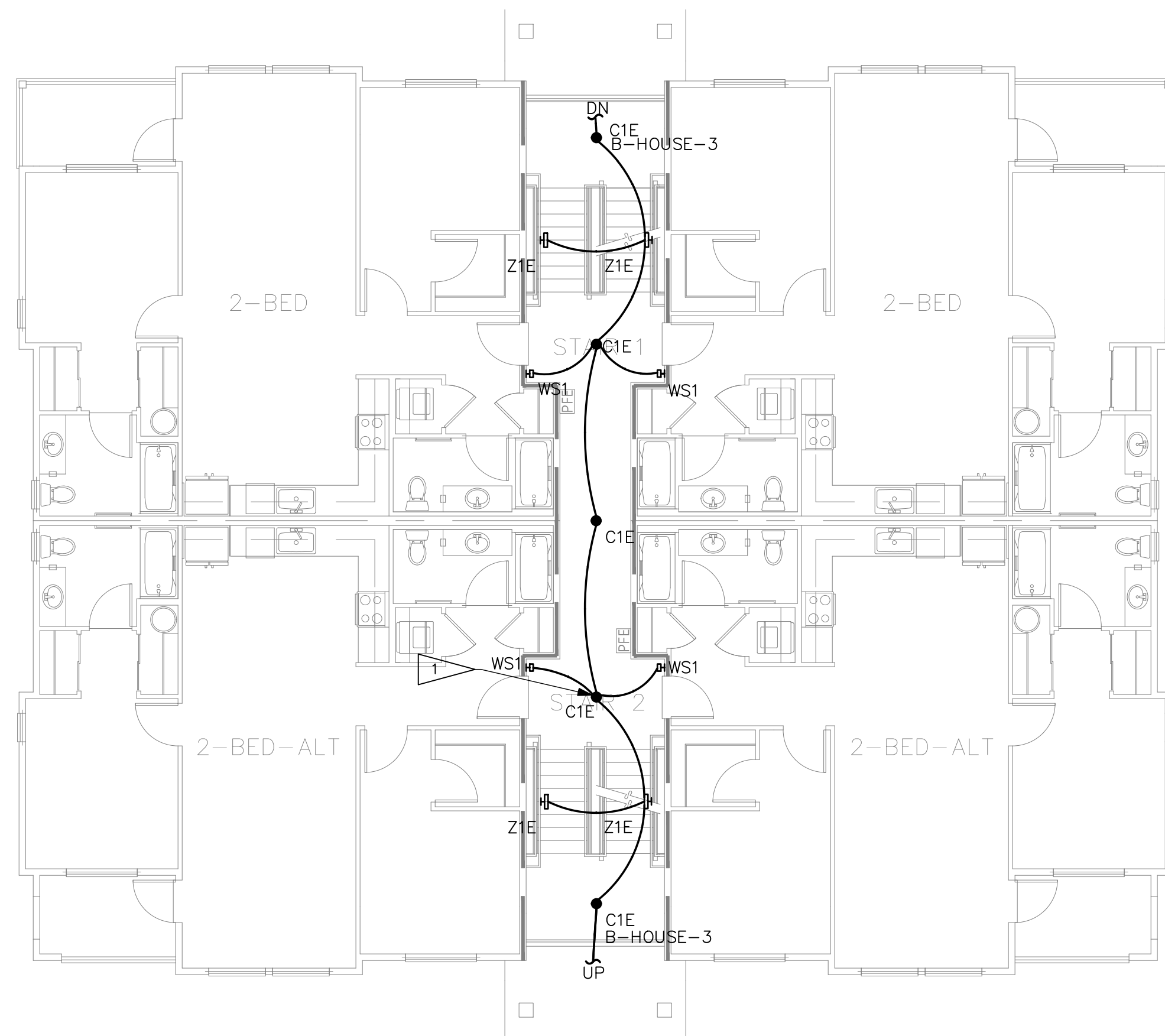
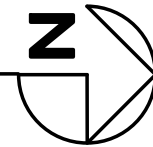
SHEET NO.
E1.01



BUILDING B 3RD FLOOR PLAN

LIGHTING PLAN – 3RD FLOOR

SCALE: 1/8" = 1'-0"



LIGHTING PLAN – 2ND FLOOR

SCALE: 1/8" = 1'-0"



GENERAL NOTES

- EMERGENCY EGRESS LIGHTING: EMERGENCY LUMINAIRES WITH 90 MINUTE BATTERY BACKUP.
- REFER TO SERIES E500 DRAWINGS FOR TYPICAL UNIT PLANS SHOWING ELECTRICAL AND LIGHTING LAYOUT.
- SEE SHEET E1.50 FOR LUMINAIRE SCHEDULE AND LIGHTING NOTES.

FLAG NOTES

- CIRCUIT STAIRS VERTICALLY. LUMINAIRE(S) IN STAIRWELL
- EXIT SIGNS: PROVIDE UNSWITCHED HOT.



02/15/24



DRAWN:	KL
DESIGNED:	MHS
CHECKED:	PSR
APPROVED:	JAY

PROJECT: BRADLEY HEIGHTS APARTMENTS
 27TH AVE SE AND 5TH ST BELLEVUE, WA

19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

ROBISON ENGINEERING, INC

DATE: 02/15/24

SHEET TITLE:
 LIGHTING PLAN - 2ND & 3RD FLOOR

SHEET NO.
E1.02

EXTERIOR LUMINAIRE SCHEDULE									
CALLOUT	SYMBOL	MOUNTING	DESCRIPTION	MODEL	VOLTAGE	TYPE	CRI / CCT	LAMPING	WATTAGE
SP1		16' POLE	POLE LIGHT – PARKING & DRIVE AISLE – COMFORT OPTICS – B2 U0 G2	GARDCO: P20 C A02 830 T1S AR1 120 BL30-MW PCB	MULTIPLE	INTEGRAL CONTROLS	80 / 3000K	(1) 36W LED	36
SW1		SURFACE – 12' AFF	WALL SCONCE – AREA LIGHT – B1 U0 G1	GARDCO: GWM A06 830 T3M 120 MW30 PCB	120	INTEGRAL CONTROLS	80 / 3000K	(1) 16W LED	16

- NOTES:
- CONTRACTOR TO FURNISH AND INSTALL ALL FIXTURES.
 - LUMINAIRE SCHEDULE IS BOD ONLY. CONTRACTOR TO SUBMIT FIXTURE MODEL OR EQUIVALENT. CONTRACTOR TO COORDINATE FIXTURE FINISHES WITH ARCHITECT/OWNER.
 - FIXTURE CATALOG NUMBERS DO NOT NECESSARILY DENOTE SPECIFIC MOUNTING ACCESSORIES. CONTRACTOR TO PROVIDE ALL NECESSARY ACCESSORIES TO SUCCESSFULLY COMPLETE THE INSTALLATION.
 - "BUG" RATING ON EXTERIOR FIXTURES INDICATES 'BACKLIGHT', 'UPLIGHT', AND 'GLARE' AS STANDARDS IN CLASSIFYING OUTDOOR LIGHT FIXTURES.

GENERAL LUMINAIRE SCHEDULE									
CALLOUT	SYMBOL	MOUNTING	DESCRIPTION	MODEL	VOLTAGE	TYPE	CRI / CCT	LAMPING	WATTAGE
B1		SURFACE	4" NARROW WRAP – BOH	DAY-BRITE CF: FSW440L835 UNV DIM	120	0-10V DIMMING	80 / 3000K	(1) 31.4W LED	31.4
C1E		SURFACE	4" SURFACE DOWNLIGHT	DMF: DRDH N JO 70S EM / DRD5S 4 R 07 9 30 EM	120	0-10V DIMMING	90 / 3000K	(1) 9W LED	9
D1		RECESSED	RECESSED DOWNLIGHT – SLOPED CEILING	DMF: DRD4M 10 9 30 FL X 0 / DRDH N JS 1004	120	0-10V DIMMING	90 / 3000K	(1) 12W LED	12
P1		PENDANT	STEM MOUNT DOWNLIGHT – SLOPED CEILING – 4" STEM	DMF: DCR T4 S X A 30 FL 0 00 30 XX 0 00 [FINISH]	120	0-10V DIMMING	90 / 3000K	(1) 40W LED	40
WS1		SURFACE	WALL SCONCE – EM BATTERY BACKUP	TBD	120	TBD DIMMING	TBD / TBD	(1) 5W LED	5
X1		SURFACE	EXIT SIGN – EMERGENCY BATTERY BACKUP – HATCH INDICATES LIT FACE	LSI: EMS WB SERIES (OR EQUAL)	MULTIPLE	EM	EM / EM	(1) 5W EM	5
X2		SURFACE	COMBO EXIT SIGN	LSI: CEC (OR EQUAL)	MULTIPLE	EM	EM / EM	(1) 5W EM	5
X3		SURFACE	EMERGENCY LIGHT – EMERGENCY BATTERY BACKUP – DAMP LOCATION RATED – MAX 35' SPACING	LITHONIA: ELM2LF (OR EQUAL)	120	EM	EM / EM	(1) 5W EM	5
X4		WALL	EXTERIOR EMERGENCY LIGHT – EMERGENCY ON ONLY – MAX SPACING 35'	NORA LIGHTING: NE-902LED	120	EM	35' MAX SPACING	(1) 5W LED	5
Z1E		WALL	WALL PACK	LITHONIA: WPX1 LED P1 30K MVOLT	120	EM	70 / 3000K	(1) 11W LED	11

- NOTES:
- CONTRACTOR TO FURNISH AND INSTALL ALL FIXTURES.
 - LUMINAIRE SCHEDULE IS BOD ONLY. CONTRACTOR TO SUBMIT FIXTURE MODEL OR EQUIVALENT. CONTRACTOR TO COORDINATE FIXTURE FINISHES WITH ARCHITECT/OWNER.
 - FIXTURE CATALOG NUMBERS DO NOT NECESSARILY DENOTE SPECIFIC MOUNTING ACCESSORIES. CONTRACTOR TO PROVIDE ALL NECESSARY ACCESSORIES TO SUCCESSFULLY COMPLETE THE INSTALLATION.

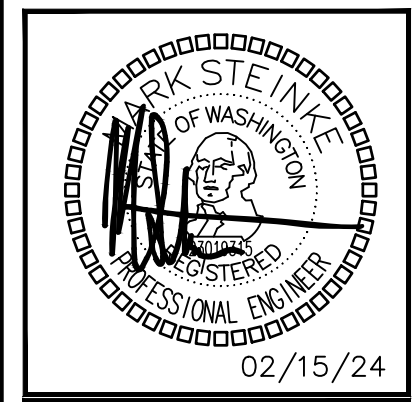
LIGHTING CONTROLS LEGEND		
SYMBOL	CONTROL TYPE	CONTROL FUNCTION
	TOGGLE SWITCH	MANUAL ON/OFF LIGHTING CONTROL. SUBSCRIPT INDICATES WHICH FIXTURES ARE TO BE CONTROLLED BY WHICH SWITCH (WSEC C405.2.3). SUBSCRIPT 'k' INDICATES TAMPER RESISTANT KEYED SWITCH FOR USE BY AUTHORIZED PERSONNEL ONLY.
	DIMMER SWITCH	MANUAL MULTI-LEVEL LIGHTING CONTROL. SWITCH SHALL ALSO HAVE MANUAL ON/OFF FUNCTIONALITY. SUBSCRIPT INDICATES WHICH FIXTURES ARE TO BE CONTROLLED BY WHICH DIMMER. (C405.2.3)
	TOGGLE/DIMMER SWITCH WITH OCCUPANCY SENSOR	SWITCHES LABELED 'os' OR 'vs' SHALL TURN OFF ALL CONNECTED LUMINAIRES WITHIN 20 MINUTES OF SPACE BEING VACANT. (C405.2.1.1)
	CONTROL STATION; SEE LIGHTING CONTROL ZONE TABLE ON PLANS.	MANUAL LOCAL LIGHTING CONTROL (C405.2.1.1). CONTROL STATION SHALL HAVE CAPACITY TO CONTROL MULTIPLE ZONES AND MULTIPLE SCENES AS NEEDED. SUBSCRIPT CORRESPONDS TO 'LIGHTING CONTROLS' TABLE ON PLANS.
	SURFACE MOUNTED OCCUPANCY SENSOR	AUTOMATIC LIGHTING CONTROL SHALL TURN OFF ALL CONNECTED LUMINAIRES WITHIN 20 MINUTES OF SPACE BEING VACANT. (C404.2.1.1)
	MULTIZONE PHOTOSENSOR	AUTOMATIC LIGHTING CONTROL SHALL AUTOMATICALLY ADJUST THE LIGHT OUTPUT OF ALL CONNECTED LUMINAIRES BASED ON THE DAYLIGHT LEVEL IN THE PRIMARY AND SECONDARY ZONES (C405.2.4). SUBSCRIPT INDICATES WHICH FIXTURES ARE TO BE CONTROLLED BY ZONE; 'x' INDICATES MULTIPLE ZONE CONTROL.

- ### GENERAL LIGHTING NOTES
- LIGHTING CONTROLS SHALL BE INSTALLED WHICH MEET ALL REQUIREMENTS OF LOCAL ENERGY CODES.
 - EMERGENCY LIGHT FIXTURES: IN ADDITION TO SWITCH-LEG, PROVIDE UNSWITCHED HOT TO SERVE INTERNAL BATTERY AND CHARGER.
 - LOCATIONS OF OCCUPANCY SENSORS, PHOTO SENSORS, DIMMERS, AND SWITCHES ARE DIAGRAMMATIC. CONTRACTOR TO COORDINATE QUANTITIES AND OPTIMAL LOCATIONS WITH LIGHTING CONTROL MANUFACTURER AND ARCH/OWNER.
 - AUTOMATIC LIGHTING SHUT-OFF CONTROLS SHALL BE PROVIDED BY LOCAL OCCUPANCY SENSORS UNLESS OTHERWISE NOTED. PUBLIC SPACES ARE ACTIVE 24/7 AND THEREFORE EXEMPT FROM AUTOMATIC LIGHTING SHUT-OFF REQUIREMENTS FOR SECURITY. (WSEC C405.2)
 - DAYLIGHT ZONES ARE SHOWN ON PLANS AS DEFINED BY WASHINGTON STATE ENERGY CODE (WSEC) C405.2.4.2. SIDELIGHT DAYLIGHT ZONES ARE REFERRED TO AS 'PRIMARY' AND 'SECONDARY' ON PLANS AND DENOTED BY DASHED LINES.
 - FOR CUSTOM FF&E FIXTURES, IT IS THE MANUFACTURER'S RESPONSIBILITY TO FURNISH PRODUCTS WHICH ARE COMPLIANT WITH ALL REQUIREMENTS OF LOCAL ENERGY CODES, AS WELL AS MATCH THE ELECTRICAL SPECIFICATIONS PROVIDED IN THE LUMINAIRE SCHEDULES. PROVIDE SUBMITTAL SHOP DRAWINGS WITHIN 30 DAYS OF RECEIVING FIXTURE ORDER. SUBMITTALS SHALL CLEARLY INDICATE LAMPING AND MAXIMUM WATTAGE RATING OF LAMP SOCKETS. NON-COMPLIANT FIXTURES REJECTED BY ELECTRICAL INSPECTOR SHALL BE RETURNED TO THE MANUFACTURER FOR REWORKING AND/OR RE-LABELING.
 - ALL FIXTURES SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
 - CONTRACTOR SHALL BE RESPONSIBLE TO ORDER ALL NECESSARY HARDWARE, ELECTRICAL CABLE, TIMERS, TRANSFORMERS, ETC., AS REQUIRED FOR COMPLETION OF INSTALLATION OF A FULLY FUNCTIONING SYSTEM.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR EQUIPPING ALL FIXTURES WITH THE EXACT LAMPS SPECIFIED IN THE FIXTURE SCHEDULE.
 - WHERE FIXTURES REQUIRE REMOTE TRANSFORMERS OR BALLASTS, THE CONTRACTOR SHALL DETERMINE LOCATIONS AS REQUIRED FOR EVEN LOAD DISTRIBUTION, SERVICE ACCESS, AND VENTILATION.
 - THE CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL ENGINEER FOR EXACT LOCATIONS OF TIMERS AND/OR PHOTO CELLS, IF ANY.
 - WHERE APPLICABLE, THE CONTRACTOR SHALL AIM AND ADJUST LIGHTING FIXTURES AS DIRECTED BY THE LIGHTING DESIGNER UPON COMPLETION OF THE INSTALLATION.
- SPECIAL NOTE TO THE CONTRACTOR:**
- FIXTURE SUBMITTALS THAT DO NOT INCLUDE LAMP SPECIFICATIONS WILL BE CONSIDERED INCOMPLETE AND WILL NOT BE REVIEWED.

- ### LIGHTING CONTROL SYSTEM REQUIREMENTS
- CONTRACTOR TO PROVIDE A FULLY OPERATIONAL LIGHTING CONTROL SYSTEM.
 - CONTRACTOR SHALL VERIFY THE COMPATIBILITY OF DIMMING AND CONTROL MODULES WITH FIXTURE TYPES PRIOR TO INSTALLATION.
 - ELECTRICAL CONTRACTOR SHALL COORDINATE WITH A LIGHTING CONTROLS VENDOR TO OBTAIN LIGHTING CONTROL SYSTEM PACKAGE COMPLETE WITH DEVICES, WIRING DIAGRAMS, ANNOTATED PLANS INDICATING WHICH DEVICE TO BE USED IN EACH LOCATION, CONNECTION REQUIREMENTS, SET UP INSTRUCTIONS, COMMISSIONING AND CHECK-OUT FOLLOWING COMPLETION. PROVIDE ALL LOW VOLTAGE WIRING AS REQUIRED FOR CONTROL DEVICE INTERCONNECTIONS.
 - INSTALLER QUALIFICATIONS: TECHNICIAN INSTALLING AND WIRING THE LIGHTING CONTROL SYSTEM SHALL HAVE INSTALLED THIS SAME SYSTEM AT LEAST ONCE PREVIOUSLY. TECHNICIAN SHALL HAVE RECEIVED TRAINING BY FACTORY REPRESENTATIVE ON THE SYSTEM BEING INSTALLED.
 - PROVIDE LIGHTING CONTROL SYSTEM TO PERFORM THE FUNCTIONS DESCRIBED BELOW:
 - LIGHTING CONTROL SCHEDULE: PROVIDE SEPARATE SWITCHING AND DIMMING CONTROL FOR LIGHTING ZONES AS INDICATED.
 - AUTOMATIC LIGHTING CONTROLS:
 - UNLESS OTHERWISE NOTED ON PLANS, OCCUPANCY SENSORS SHALL AUTOMATICALLY TURN OFF ALL CONNECTED LIGHTING WITHIN 20 MINUTES OF SPACE BEING UNOCCUPIED. OCCUPANCY SENSORS SHALL EITHER BE MANUAL ON OR SHALL BE CONTROLLED TO AUTOMATICALLY TURN THE LIGHTING ON TO NOT MORE THAN 50 PERCENT POWER EXCEPT WHERE MANUAL ON WOULD ENDANGER THE SAFETY OR SECURITY OF THE ROOM OR BUILDING OCCUPANTS. (C405.2.1.1)
 - MULTI-ZONE PHOTO-SENSORS SHALL PROVIDE SEPARATE CONTROL FOR LUMINAIRES IN EACH TYPE OF DAYLIGHT ZONE. (C405.2.4.1)
 - EXTERIOR LIGHTING CONTROLS SHALL AUTOMATICALLY TURN OFF ALL EXTERIOR LIGHTING AS A FUNCTION OF AVAILABLE DAYLIGHT. BUILDING FACADE AND LANDSCAPE LIGHTING SHALL HAVE CONTROLS THAT AUTOMATICALLY SHUT OFF THE LIGHTING FOR A MINIMUM OF 6 HOURS PER NIGHT OR NOT LATER THAN ONE HOUR AFTER BUSINESS CLOSING TO NOT EARLIER THAN ONE HOUR BEFORE BUSINESS OPENING, WHICHEVER IS LESS. OTHER LIGHTING SHALL HAVE CONTROLS CONFIGURED TO AUTOMATICALLY REDUCE THE CONNECTED LIGHTING POWER BY AT LEAST 30 PERCENT FROM NO LATER THAN 12 MIDNIGHT TO 6 AM OR FROM ON HOUR AFTER BUSINESS CLOSING TO ONE HOUR BEFORE BUSINESS OPENING OR DURING ANY PERIOD WHEN NO ACTIVITY HAS BEEN DETECTED FOR A TIME OF NO LONGER THAN 15 MINUTES. (C405.2.6)
 - MEANS OF EGRESS ILLUMINATION: AT ANY TIME THE BUILDING IS OCCUPIED, THE MEANS OF EGRESS SHALL BE ILLUMINATED AT AN INTENSITY OF NOT LESS THAN 1 FOOTCANDLE AT FLOOR LEVEL. (IBC 1008.2.1)
 - DURING EMERGENCY CONDITIONS EMERGENCY LIGHTING CIRCUITS SHALL BYPASS ALL LIGHTING CONTROLS IN ORDER TO ENERGIZE ALL CONNECTED LUMINAIRES AT FULL CAPACITY. PROVIDE UL924 RELAYS AS REQUIRED TO BYPASS AREA CONTROLS.
 - EMERGENCY PATHWAY EGRESS LIGHTING: ILLUMINATION PROVIDED ALONG THE EGRESS PATH AT FLOOR LEVEL SHALL AVERAGE AT LEAST 1 FOOT CANDLE. (IBC 1008.3.5)
 - EMERGENCY LIGHTING SHALL BE SUPPLIED BY: ELECTRICAL CONTRACTOR

- ### EXIT SIGN NOTES
- DURING CONSTRUCTION UPON COMPLETION OF A TYPICAL FLOOR FRAMING AND BEFORE WALL COVER, ELECTRICAL CONTRACTOR SHALL WALK THE EGRESS PATHS WITH THE LOCAL INSPECTOR (AHJ) TO CONFIRM THAT ALL THE EXIT SIGNS ARE LOCATED PER THE AHJ'S SATISFACTION AND IDENTIFY ANY ADDITIONAL EXIT SIGNS THAT THE AHJ WISHES TO BE INSTALLED (IBC 1013.1). CONTRACTOR SHALL PROVIDE UP TO 10% ADDITIONAL EXIT SIGNS AT NO ADDITIONAL COST.

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
27TH AVE SE AND 5TH ST BELLEVUE WA

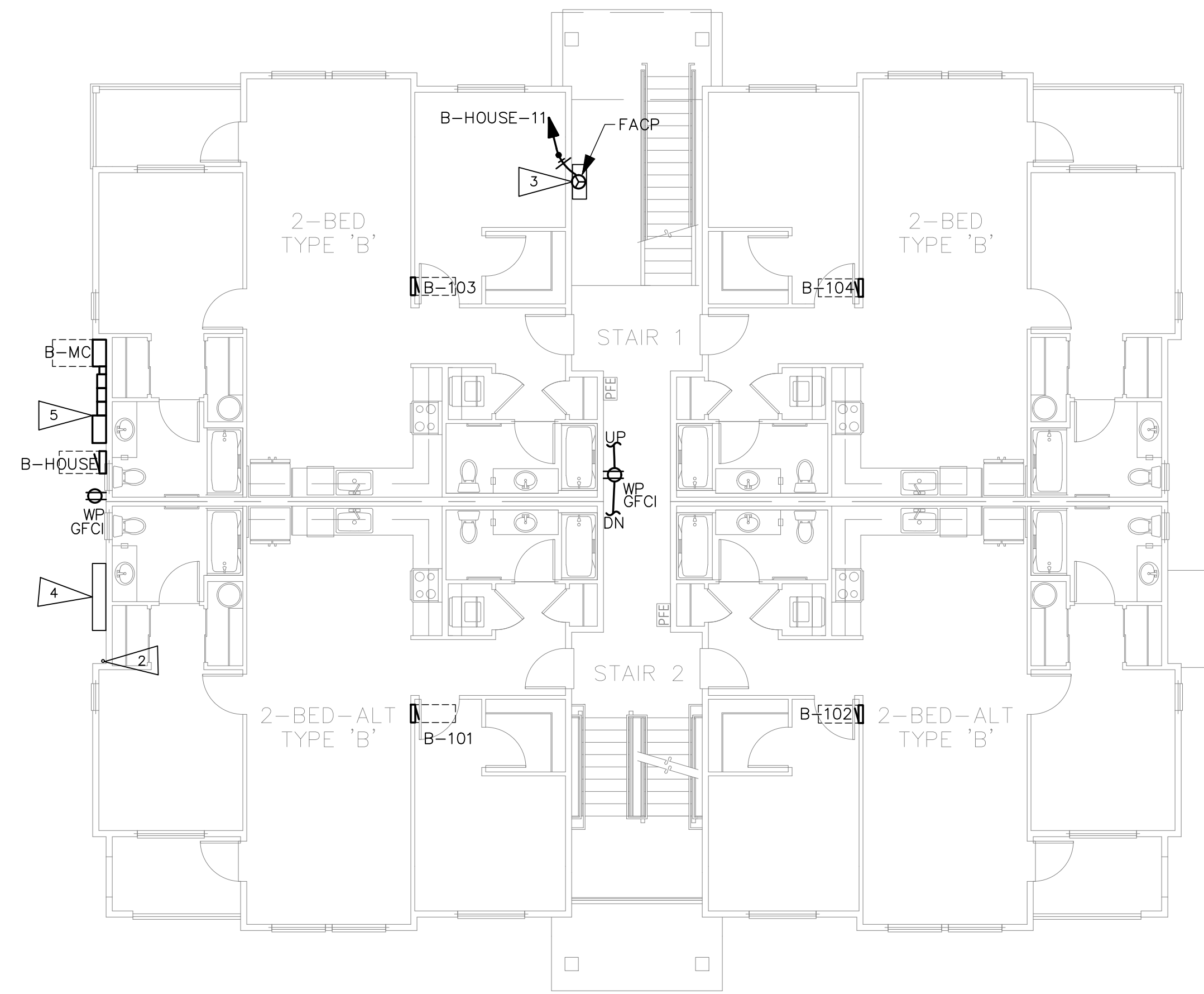
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC

DATE: 02/15/24

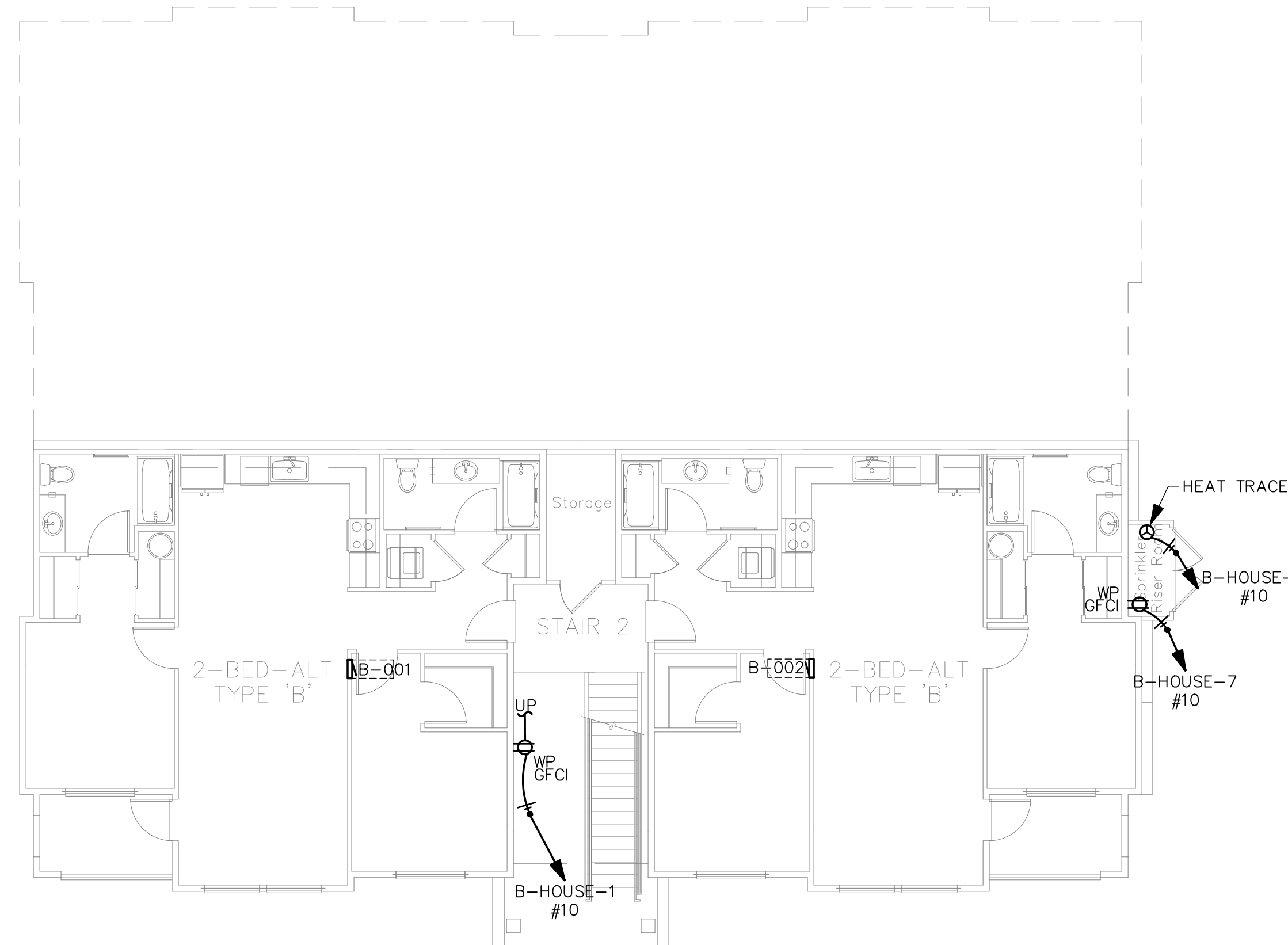
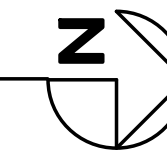
SHEET TITLE:
LIGHTING NOTES & LUMINAIRE

SHEET NO.
E1.50



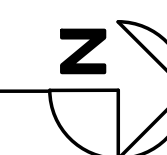
POWER PLAN - 1ST FLOOR

SCALE: 1/8" = 1'-0"



POWER PLAN - BASEMENT

SCALE: 1/8" = 1'-0"



SHEET NOTES:

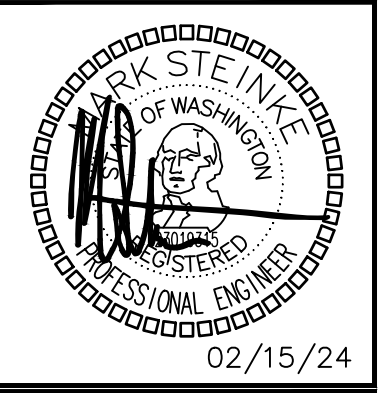
1. WIRING METHOD FOR APARTMENT FEEDERS MUST BE SUITABLE FOR THE TYPE OF CONSTRUCTION. SEE NEC 334.10

FLAG NOTES:

(NOT EVERY FLAG IS USED ON EVERY SHEET)

1. FUTURE EV CHARGING STATIONS: PROVIDE 1-1/4" CONDUIT WITH PULL WIRE FROM EV PANEL(S) IN MAIN ELECTRICAL ROOM. TERMINATE CONDUIT IN A J-BOX ON WALL FOR FUTURE USE.
2. PROVIDE 2 1/2" C WITH PULL STRING WEATHER CAP TO ROOF FOR FUTURE SOLAR PATHWAY. COORDINATE RISER LOCATION WITH ARCHITECT.
3. LOCATION OF FIRE ALARM PANEL TO BE COORDINATED BY FIRE ALARM CONTRACTOR WITH FIRE AUTHORITIES.
4. SPACE FOR FUTURE SOLAR EQUIPMENT.
5. PROVIDE LEVEL ACCESS SURFACE IN FRONT OF ELECTRICAL EQUIPMENT.

NO.	DATE	DESCRIPTION	REVISIONS



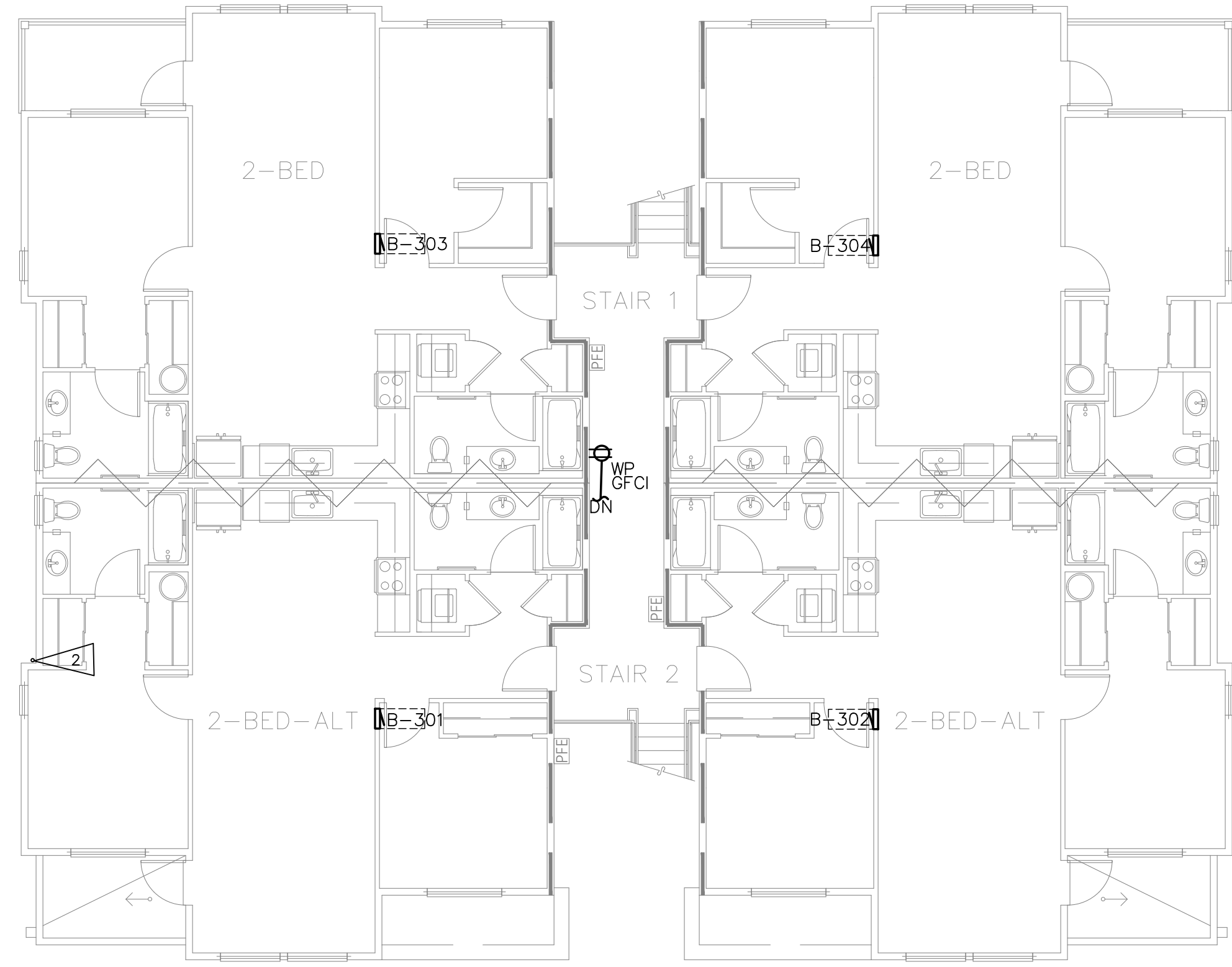
DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
 27TH AVE SE AND 5TH ST BELLEVUE WA
 19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343
ROBISON ENGINEERING, INC.

DATE: 02/15/24

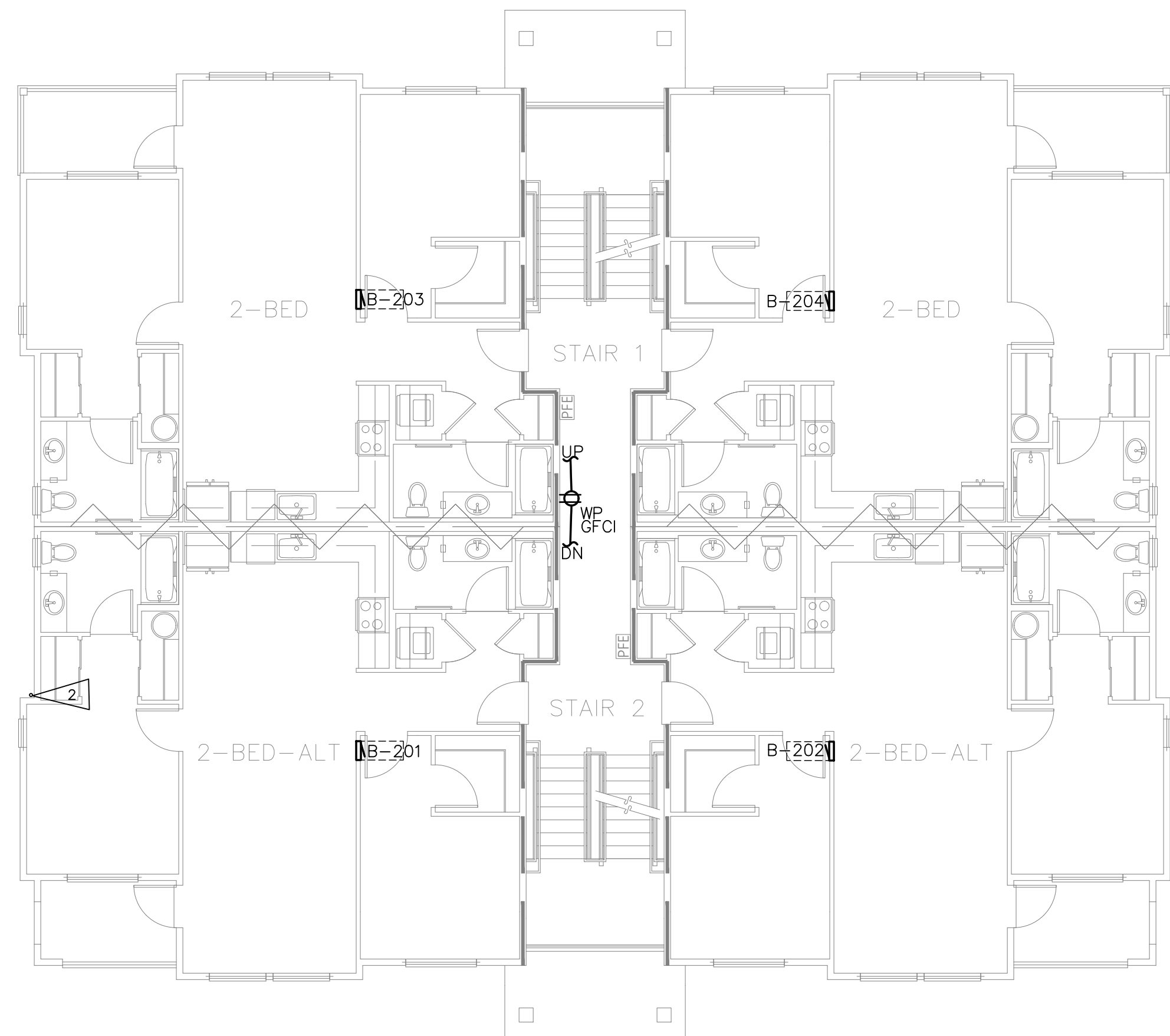
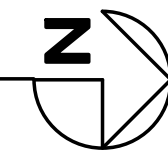
SHEET TITLE:
**POWER PLAN
 - BASEMENT &
 1ST FLOOR**

SHEET NO.
E3.00



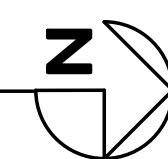
POWER PLAN – 3RD FLOOR

SCALE: 1/8" = 1'-0"



POWER PLAN – 2ND FLOOR

SCALE: 1/8" = 1'-0"



SHEET NOTES:

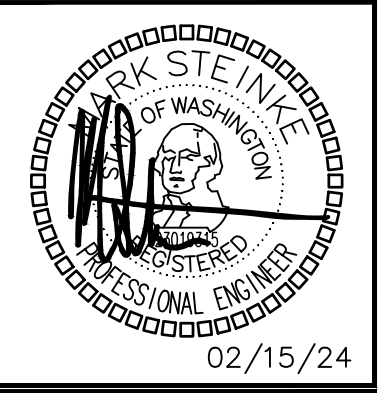
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NO.	DATE	DESCRIPTION	REVISIONS



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PROJECT: BRADLEY HEIGHTS APARTMENTS
27TH AVE SE AND 5TH ST BELLEVUE, WA

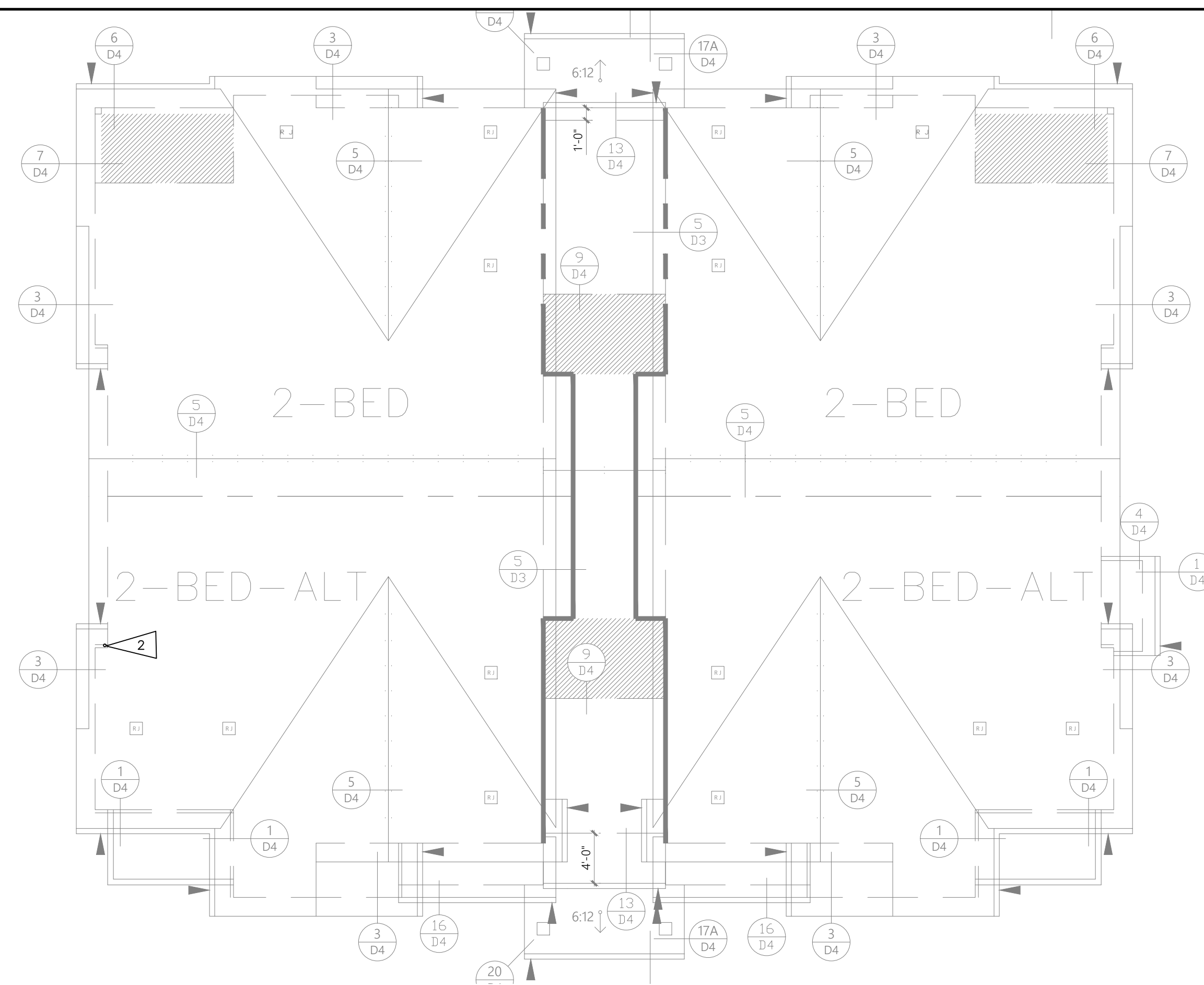
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC

DATE: 02/15/24

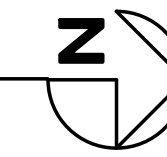
SHEET TITLE:
POWER PLAN
- 2ND & 3RD
FLOOR

SHEET NO.
E3.01



POWER PLAN – ROOF

SCALE: 1/8" = 1'-0"



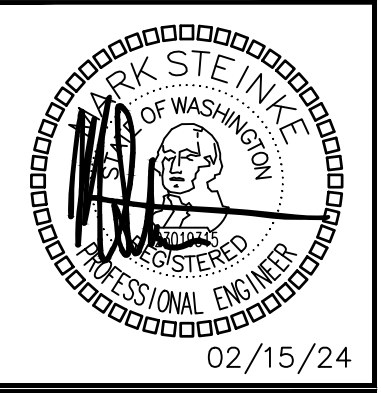
SHEET NOTES:

1. WIRING METHOD FOR APARTMENT FEEDERS MUST BE SUITABLE FOR THE TYPE OF CONSTRUCTION. SEE NEC 334.10

FLAG NOTES: (NOT EVERY FLAG IS USED ON EVERY SHEET)

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PROVIDE 1-1/4" CONDUIT WITH PULL WIRE FROM EV PANEL(S) IN MAIN ELECTRICAL ROOM. TERMINATE CONDUIT IN A J-BOX ON WALL FOR FUTURE USE.
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4. SPACE FOR FUTURE SOLAR EQUIPMENT.
5. PROVIDE LEVEL ACCESS SURFACE IN FRONT OF ELECTRICAL EQUIPMENT.

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
27TH AVE SE AND 5TH ST BELLEVUE WA

19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC

DATE: 02/15/24

SHEET TITLE:
**POWER PLAN
- ROOF**

SHEET NO.
E3.02

UNIT LUMINAIRE SCHEDULE

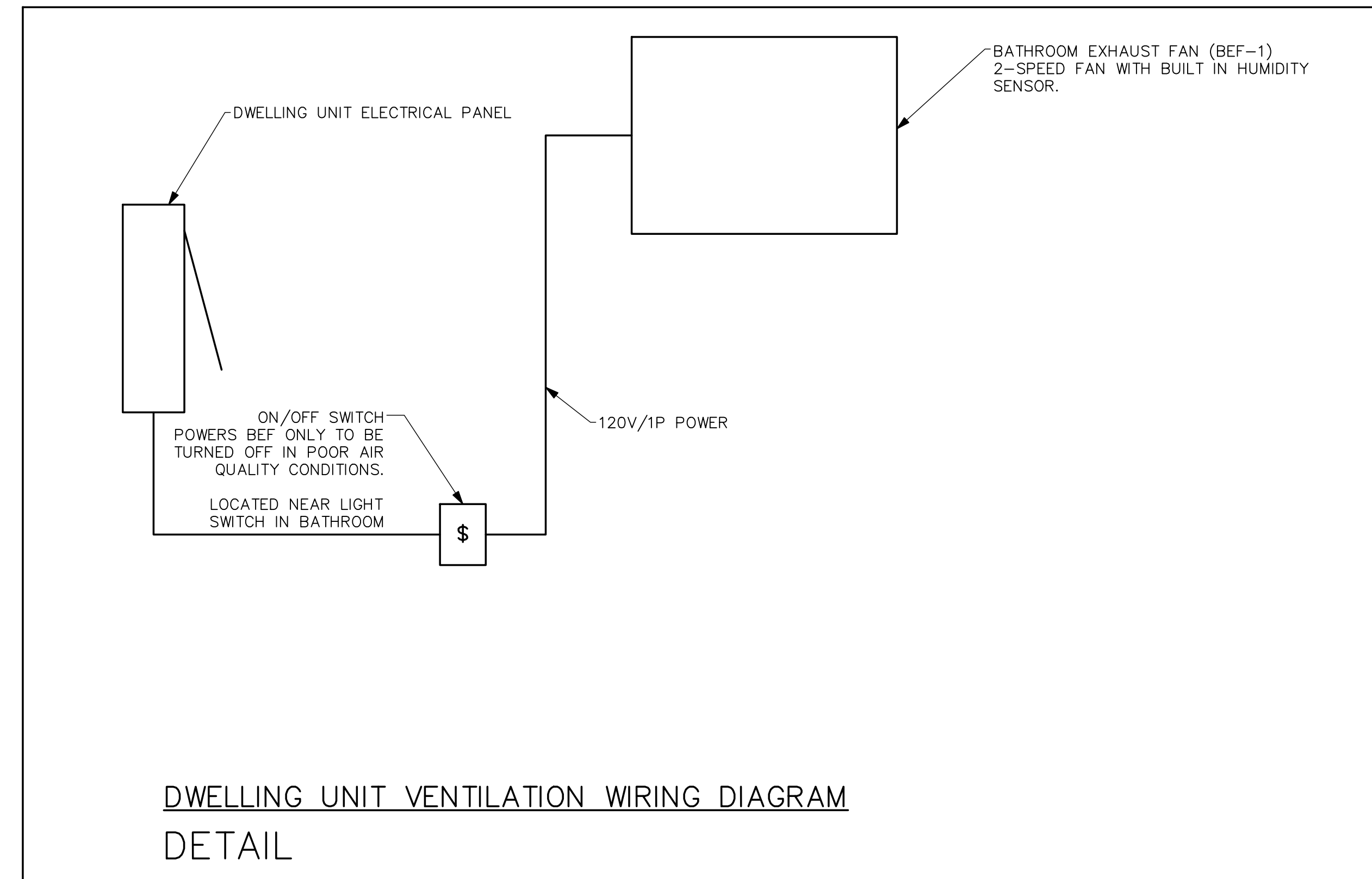
CALLOUT	SYMBOL	MOUNTING	DESCRIPTION	MODEL	VOLTAGE	TYPE	LAMPING	WATTAGE	NOTES
U1	○	CEILING	4" DOWNLIGHT	DMF: DRD5S-4-R-10-9-30-0	120	0-10V DIMMING	(1) 12W LED 3000K	12	
U2	○	CEILING	4" DOWNLIGHT WET RATED	DMF: DRD5S-4-S-10-9-30-0	120	0-10V DIMMING	(1) 12W LED 3000K	12	
U3	⏏	WALL	24" VANITY LIGHT	MAXIM - 52102	120	ELV DIMMING	(1) 16W LED 3000K	16	
U4	⏏	WALL	SLIM BALCONY LIGHT	MAXIM - 26106BK	120	NON DIMMING	(1) 10W LED 3000K	10	
U5	○	SURFACE	6" FLUSH MOUNT DOWNLIGHT	MAXIM - 57413WTWT	120	0-10V DIMMING	(1) 11W LED 3000K	11	

ACCESSIBILITY NOTES:

1. ALL SWITCHES AND CONTROLS - 15" MIN; 48" MAX TO CONTROL.
2. GENERAL OUTLETS MIN 18" AFF.
3. ALL SWITCHES/CONTROLS ABOVE COUNTERTOPS 48" MAX.
4. ELECTRICAL SUB-PANELS IN UNITS MUST COMPLY WITH ABOVE REACH RANGES.
5. SWITCHES FOR EXHAUST HOODS AND GARBAGE DISPOSALS MUST COMPLY WITH ABOVE REACH RANGES. INSTALL SWITCHES ON FACE OF CABINETS IF REQUIRED TO COMPLY.

APARTMENT NOTES:

1. ALL ELECTRICAL WORK SHALL COMPLY WITH ALL LOCAL AND NATIONAL CODES.
2. DEVICE BOXES ON OPPOSITE SIDES OF DEMISING WALLS SHALL BE IN SEPARATE STUD BAYS. PROVIDE BACKING EQUIVALENT TO LOWRY'S OUTLET BOX PADS. CONDUIT FROM ONE UNIT SHALL NOT PASS THROUGH STUDS OF A SHARED WALL(DOUBLE STUDS) FROM AN ADJACENT UNIT(BRIDGING).
3. PROVIDE ARC-FAULT PROTECTION, TAMPER PROOF AND GFCI RECEPTACLES AS REQUIRED BY CODE AND LOCAL AHJ. ARC-FAULT PROTECTION MUST BE PROVIDED FOR CIRCUITS IN THE AREAS LISTED IN NEC 210.12(A).
4. PROVIDE SUFFICIENT DUPLEX RECEPTACLES TO MEET NEC 210.52.
5. THERMOSTATS SHALL NOT INTERFERE WITH DOOR SWINGS.
6. ELECTRICAL CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS FOR KITCHEN APPLIANCES. COORDINATE ALL J-BOX LOCATIONS WITH APPLIANCE INSTALLATION INSTRUCTIONS PRIOR TO ROUGH-IN.
7. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL CORD AND PLUG ASSEMBLY FOR EACH DISPOSER.
8. PROVIDE A DEDICATED 20 AMP CIRCUIT TO EACH UNIT BATHROOM RECEPTACLE. BATHROOM LIGHTS, FAN TO BE ON SAME CIRCUIT PER 210.11(C)(3) EXCEPTION.
9. HOME RUNS AND LOOPS CONNECTING LIGHT FIXTURES, WIRING DEVICES, AND HVAC EQUIPMENT ON PLANS INDICATE CIRCUITING SCHEME. SEE TYPICAL PANEL SCHEDULES FOR ACTUAL CIRCUIT NUMBERS FOR TYPICAL APARTMENT.
10. LIGHTS WITHIN 3' HORIZONTAL OF SHOWER OR TUB TO BE WET LOCATION RATED AND HAVE FULLY ENCLOSED TRIMS. PROVIDE GFCI PROTECTION IF THE LUMINAIRE INSTALLATION MANUAL STATES IT IS REQUIRED.
11. PROVIDE SMOKE DETECTORS AND CO ALARMS AS REQUIRED. DETECTORS AND ALARMS TO BE HARDWIRED AND PROVIDED WITH BATTERY BACKUP.
12. ELECTRICAL CONTRACTOR SHALL INSTALL RECEPTACLES AND TV, DATA/PHONE OUTLETS UNDER COMMON COVER PLATE WHERE POSSIBLE. PROVIDE AND INSTALL DIVIDERS AS REQUIRED FOR CABLE/POWER SEPARATION.
13. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND LAYOUTS OF ALL DEVICES.
14. ALL WALL PENETRATIONS SHALL BE CAULKED WITH APPROVED MATERIAL TO MAINTAIN THE FIRE RATING OF ALL WALLS AND FLOORS.
15. ALL CONDUIT SHALL BE INSTALLED IN NEAT SYMMETRICAL LINES HORIZONTAL OR PERPENDICULAR TO BUILDING COLUMNS AND ROOF LINES. CONDUITS SHALL BE GROUPED ON COMMON SUPPORTS WHEREVER POSSIBLE.
16. REFERENCE MECHANICAL DRAWINGS FOR EXACT LOCATION OF ALL MECHANICAL EQUIPMENT.
17. ELECTRICAL CONTRACTOR SHALL VERIFY ALL FUSE RATING WIRE SIZES AND DISCONNECT SIZES WITH EQUIPMENT SERVED ON THE JOB PRIOR TO INSTALLATION.
18. SEE ARCHITECTURAL DRAWINGS AND ELEVATIONS FOR ADDITIONAL DETAILS AND CASEWORK DIMENSIONS.
19. DEVICE LOCATIONS IN 1ST DWELLING/RESIDENT UNIT SHALL BE REVIEWED AND APPROVED BY OWNER PRIOR TO ROUGH-IN OF REMAINING UNITS
20. CONFIRM FINAL LOCATION OF HEATERS AND THERMOSTATS IN FIELD PRIOR TO ROUGH-IN

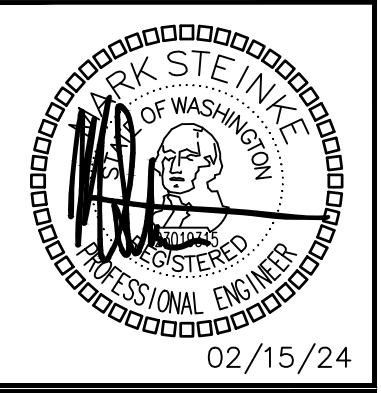


DWELLING UNIT VENTILATION WIRING DIAGRAM DETAIL

ELECTRIC HEATERS					
EQUIP NO.	SERVICE	MOUNTING/DISCHARGE	HEATING	ELECTRICAL	BASIS OF DESIGN
			KW	VOLTAGE	
EWH-1	BEDROOM	WALL	1	208V/1P	(1)
EWH-2	LIVING ROOM	WALL	1.5	208V/1P	(1)

- NOTES:
- (1) BROAN, CADET OR EQUIVALENT.
 - (2) PROVIDE REMOTE THERMOSTAT.

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
 27TH AVE SE AND 5TH ST BELLEVUE, WA

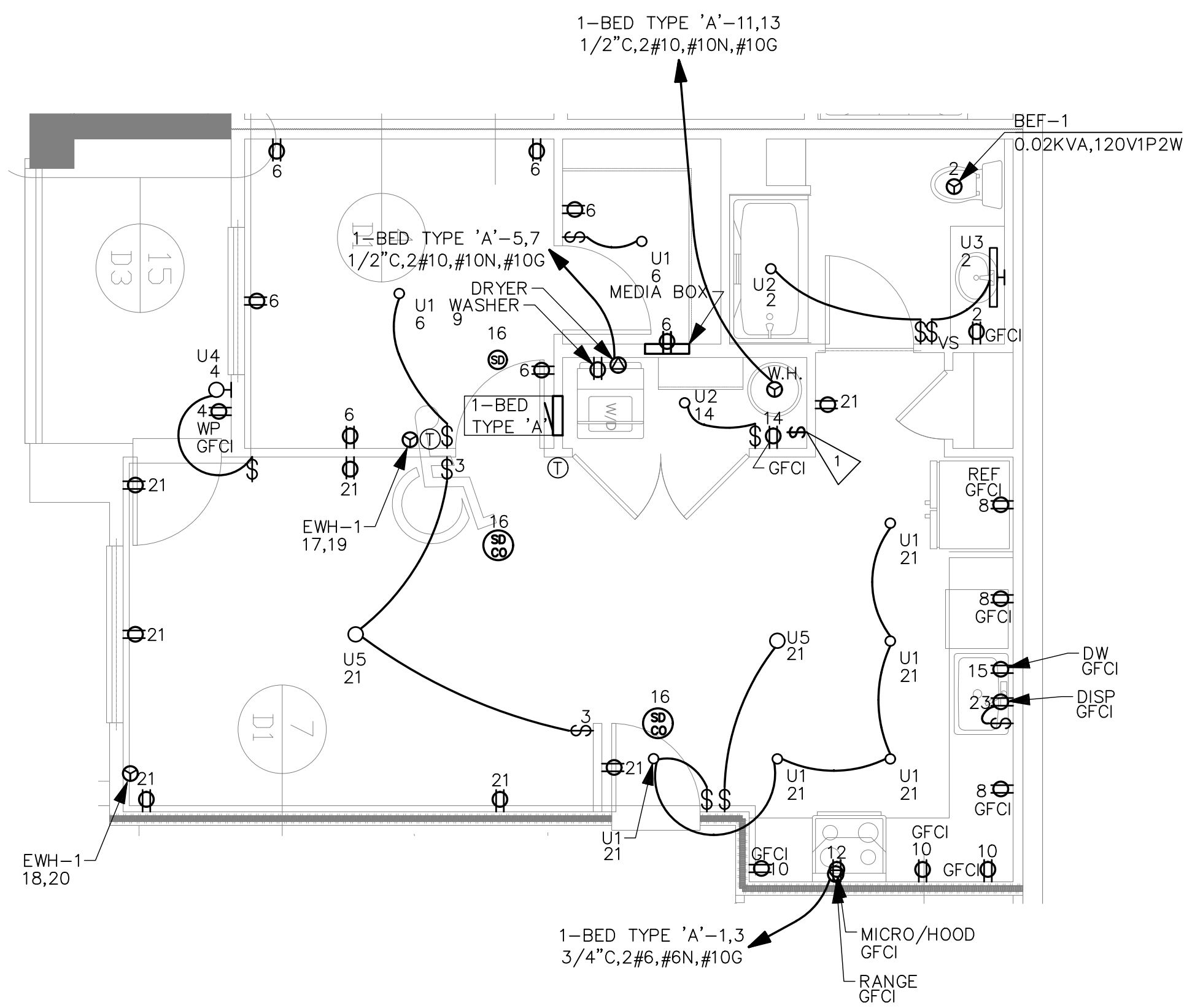
19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

ROBISON ENGINEERING, INC

DATE: 02/15/24

SHEET TITLE:
UNIT PLANS NOTES

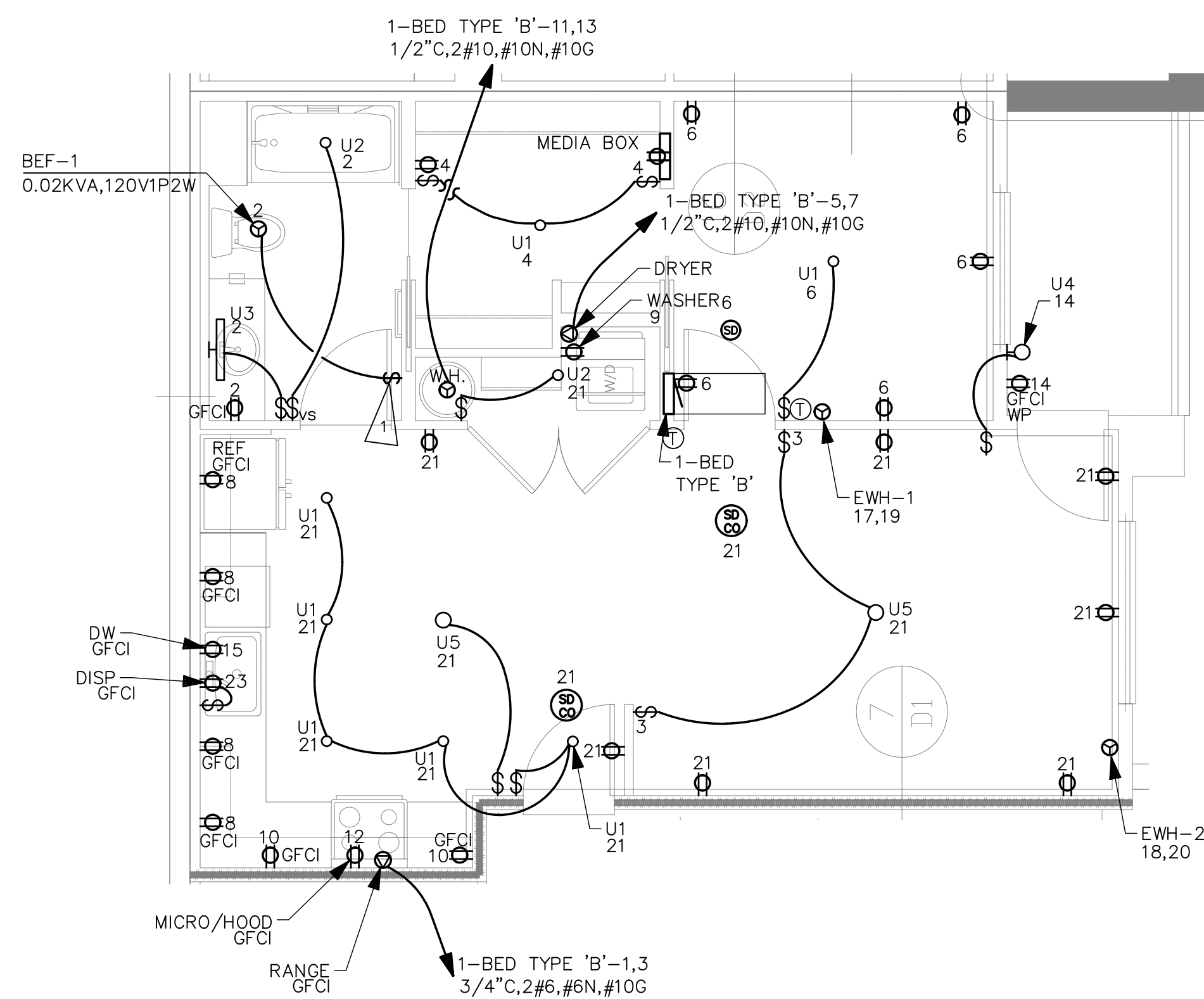
SHEET NO.
E5.00



UNIT TYPICALS

1-BED-INT-2 TYPE 'A'

SCALE: 1/4" = 1'-0"



UNIT TYPICALS

1-BED-INT-1 TYPE 'B'

SCALE: 1/4" = 1'-0"

Panel		ROOM		VOLTS		AIC	
1-BED INT-2 TYPE 'A'		FLUSH 'A'		208/120V 2P 3W		22,000	
		MOUNTING		BUS AMPS		MAIN BKR	
		FED FROM		125		MLO	
		NOTE		NEUTRAL 100%		LUGS STANDARD	
CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION	CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	50/2	8	RANGE	a 2	20/1	0.23	ERV, LIGHTING, RECEPTACLE
3				b 4	20/1	0.19	LIGHTING, RECEPTACLE
5	30/2	4.99	DRYER	a 6	20/1	1.28	LIGHTING, MEDIA BOX, RECEPTACLE
7				b 8	20/1	1.5	SMALL APPLIANCE
9	20/1	1.5	WASHER	a 10	20/1	1.5	SMALL APPLIANCE
11	30/2	4.4	WATER HEATER	b 12	20/1	1.58	MICRO/HOOD
13				a 14	20/1	0.192	LIGHTING, RECEPTACLE
15	20/1	1.2	DISHWASHER	b 16	20/1	0.15	SDCO
17	20/2	0.75	WALL HEATER	a 18	20/1	0	SPARE
19				b 20	20/1	0	SPARE
21	20/1	1.34	LIGHTING, RECEPTACLE	a 22	20/1	0	SPARE
23	20/1	0.7	DISPOSAL	b 24	20/1	0	SPARE

OPTIONAL DWELLING UNIT CALCULATION (NEC 220.82)				
	CONN KVA		CONN KVA	CALC KVA
LIGHTING AND RECEPTACLES	2.61	871 SF (3 VA/SF)	GENERAL LOAD UP TO 10 KVA	10 (100%)
SMALL-APPLIANCE	3		OVER 10 KVA	5.43 (40%)
LAUNDRY	1.5		MAX HEATING OR COOLING	3.35 (220.82(C)(4))
APPLIANCES	8.47		TOTAL LOAD	18.8
ELECTRIC COOKING	8		BALANCED LOAD	90.3 A
TOTAL GENERAL LOAD	23.6		PHASE A	102%
			PHASE B	97.8%

Panel		ROOM		VOLTS		AIC	
1-BED INT-1 TYPE 'B'		FLUSH 'B'		208/120V 2P 3W		22,000	
		MOUNTING		BUS AMPS		MAIN BKR	
		FED FROM		125		MLO	
		NOTE		NEUTRAL 100%		LUGS STANDARD	
CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION	CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	50/2	8	RANGE	a 2	20/1	0.23	ERV, LIGHTING, RECEPTACLE
3				b 4	20/1	0.372	LIGHTING, MEDIA BOX, RECEPTACLE
5	30/2	4.99	DRYER	a 6	20/1	0.912	LIGHTING, RECEPTACLE
7				b 8	20/1	1.5	SMALL APPLIANCE
9	20/1	1.5	WASHER	a 10	20/1	1.5	SMALL APPLIANCE
11	30/2	4.4	WATER HEATER	b 12	20/1	1.58	MICRO/HOOD
13				a 14	20/1	0.19	LIGHTING, RECEPTACLE
15	20/1	1.2	DISHWASHER	b 16	20/1	0.53	RECEPTACLE, SDCO
17	20/2	0.75	WALL HEATER	a 18	20/1	0	SPARE
19				b 20	20/1	0	SPARE
21	20/1	1.35	LIGHTING, RECEPTACLE	a 22	20/1	0	SPARE
23	20/1	0.7	DISPOSAL	b 24	20/1	0	SPARE

OPTIONAL DWELLING UNIT CALCULATION (NEC 220.82)				
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APPLIANCES	8.47		TOTAL LOAD	18.8
ELECTRIC COOKING	8		BALANCED LOAD	90.3 A
TOTAL GENERAL LOAD	23.6		PHASE A	99.4%
			PHASE B	101%

GENERAL NOTES:

- COORDINATE FINAL LOCATION OF THERMOSTATS, SWITCHES, RECEPTACLES, DATA, PHONE, LIGHT FIXTURES AND J-BOXES WITH ARCHITECTURAL ELEVATIONS AND INTERIOR DESIGN PLANS PRIOR TO ROUGH-IN.
- ADA UNITS SHALL HAVE HOOD CONTROLS INSTALLED IN THE FACE OF THE LOWER CABINET WORK.
- PROVIDE TAMPER RESISTANT RECEPTACLES PER NEC 406.12.
- ALL UNITS: PROVIDE SWITCH CONTROLLING GARBAGE DISPOSAL TO BE LOCATED ABOVE BACKSPLASH NEXT TO SINK OR ON COUNTER. SEE ARCHITECTURE.
- BATHROOM GFCI RECEPTACLES TO HAVE INTEGRAL NIGHTLIGHT.
- RECESSED CEILING LIGHT IN BATHROOM SHALL BE LED RATED FOR WET LOCATIONS W/ SHATTER PROOF LENS.
- ALL RECEPTACLES SHALL MEET REQUIREMENTS OF NEC ARTICLE 210.
- PROVIDE TELEPHONE & CABLE T.V. MEDIA TERMINATION ENCLOSURE (MEDIA BOX): PROVIDE LEVITON COMPACT MEDIA ENCLOSURE OR EQUIVALENT IN WALL WITH TOP NO HIGHTER THAN 60" AFF WITH 120V RECEPTACLE ADJACENT.
- PROVIDE COMBINATION HARDWIRED 120VAC PHOTOELECTRIC SMOKE DETECTOR AND CARBON MONOXIDE DETECTOR WITH BATTERY-BACKUP
 - DETECTOR SHALL BE MINIMUM 6' HORIZONTAL DISTANCE FROM PERMANENT COOKING APPLIANCE PER CFC 90.2.11.8.
 - DETECTOR SHALL BE MINIMUM 3' HORIZONTAL DISTANCE FROM THE DOOR OF A BATHROOM THAT CONTAINS A BATHTUB OR SHOWER PER CFC 90.2.11.8.
 - PROVIDE INTERCONNECTION WIRING SUCH THAT ACTUATION OF ONE ALARM WILL ACTIVATE ALL ALARMS IN THE DWELLING UNIT.
 - COORDINATE WITH AHJ ON INTERCONNECTING EACH DWELLING UNIT INTO THE FIRE ALARM SYSTEM FOR THE BUILDING.
 - COORDINATE WITH AHJ AS TO THE NUMBER AND LOCATION OF DEVICES PRIOR TO ROUGH-IN. DEVICES SHOWN ARE DIAGRAMMATIC.
- DISHWASHER OUTLET SHALL BE ACCESSIBLE. RECEPTACLE SHALL BE LOCATED IN SPACE ADJACENT TO THE DISHWASHER.
- PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT FOR THE LIVING ROOM.

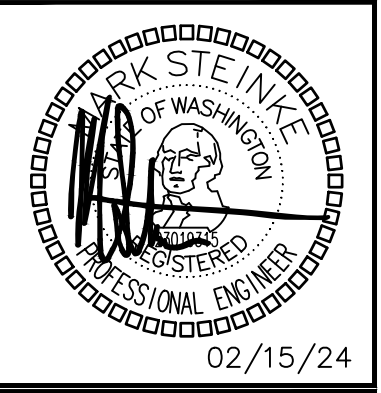
FLAG NOTES

- INTERLOCK ERV/BEF TO ON/OFF SWITCH. PROVIDE PERMANENT LABEL SAYING, "WHOLE HOUSE VENTILATION. LEAVE ON UNLESS OUTDOOR AIR QUALITY IS VERY POOR." ADHERE PERMANENT LABEL TO WALL ABOVE WALL SWITCH.

AFCI/GFCI REQUIREMENTS FOR DWELLING UNITS:

- ALL 15 AND 20A, 120V SINGLE PHASE CIRCUITS NOT INCLUDING THE BATHROOM SHALL BE AFCI PROTECTED (210.12).
- ALL DWELLING UNIT CIRCUITS IN BATHROOMS, GARAGES, OUTDOORS, KITCHENS, LAUNDRY AREAS, AND AREAS WITHIN 6' OF A SINK SHALL BE GFCI PROTECTED (210.8).
 - BATHROOM CIRCUIT TO BE GFCI PROTECTED VIA A GFCI RECEPTACLE, WHILE OTHER CIRCUITS SHALL BE PROTECTED AT THE BREAKER.
- UTILIZE "DUAL FUNCTION" BREAKER WHEN BOTH AFCI AND GFCI PROTECTION IS REQUIRED.

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
27TH AVE SE AND 5TH ST BELLEVUE, WA

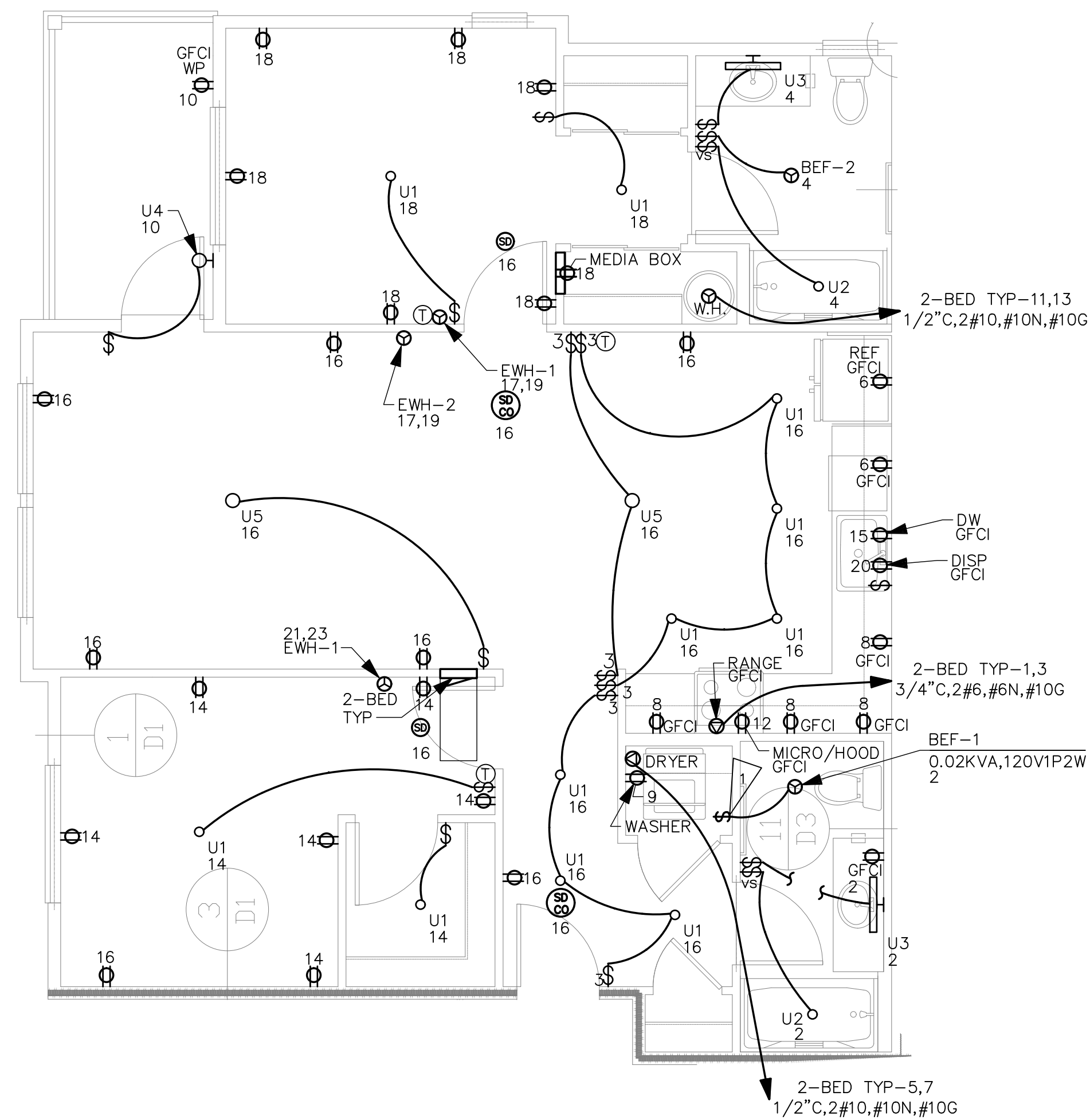
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC.

DATE: 02/15/24

SHEET TITLE:
UNIT PLANS & SCHEDULES

SHEET NO.
E5.01



UNIT TYPICALS

2-BED TYP

SCALE: 1/4" = 1'-0"

Panel		ROOM		VOLTS		AIC	
2-BED TYP		LIVING DRYER		208/120V 2P 3W		22,000	
MOUNTING		FLUSH		BUS AMPS		MAIN BKR	
FED FROM		NOTE		125		MLO	
				NEUTRAL		LUGS	
				100%		STANDARD	
CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION	CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	50/2	8	RANGE	a 2	20/1	0.23	ERV, LIGHTING, RECEPTACLE
3				b 4	20/1	0.128	BATH EX FAN, LIGHTING
5	30/2	4.99	DRYER	a 6	20/1	1.5	SMALL APPLIANCE
7				b 8	20/1	1.5	SMALL APPLIANCE
9	20/1	1.5	WASHER	a 10	20/1	0.19	LIGHTING, RECEPTACLE
11	30/2	4.4	WATER HEATER	b 12	20/1	1.58	MICRO/HOOD
13				a 14	20/1	1.28	LIGHTING, RECEPTACLE
15	20/1	1.2	DISHWASHER	b 16	20/1	1.19	LIGHTING, RECEPTACLE
17	20/2	0.75	WALL HEATER	a 18	20/1	1.28	LIGHTING, MEDIA BOX, RECEPTACLE
19				b 20	20/1	0.7	DISPOSAL
21	20/2	1	WALL HEATER	a 22	20/1	0.2	SDCO
23				b 24	20/1	0	SPARE
OPTIONAL DWELLING UNIT CALCULATION (NEC 220.82)							
		CONN KVA		CONN KVA	CALC KVA		
LIGHTING AND RECEPTACLES		3.52	1,173 SF (3 VA/SF)	GENERAL LOAD UP TO 10 KVA	10	10	(100%)
SMALL-APPLIANCE		3		OVER 10 KVA	14.5	5.8	(40%)
LAUNDRY APPLIANCES		1.5		MAX HEATING OR COOLING		4	(220.82(C)(4))
ELECTRIC COOKING		8		TOTAL LOAD		19.8	
TOTAL GENERAL LOAD		24.5		BALANCED LOAD		95.2 A	
				PHASE A		99.7%	
				PHASE B		100%	

GENERAL NOTES:

- COORDINATE FINAL LOCATION OF THERMOSTATS, SWITCHES, RECEPTACLES, DATA, PHONE, LIGHT FIXTURES AND J-BOXES WITH ARCHITECTURAL ELEVATIONS AND INTERIOR DESIGN PLANS PRIOR TO ROUGH-IN.
- ADA UNITS SHALL HAVE HOOD CONTROLS INSTALLED IN THE FACE OF THE LOWER CABINET WORK.
- PROVIDE TAMPER RESISTANT RECEPTACLES PER NEC 406.12.
- ALL UNITS: PROVIDE SWITCH CONTROLLING GARBAGE DISPOSAL TO BE LOCATED ABOVE BACKSPLASH NEXT TO SINK OR ON COUNTER. SEE ARCHITECTURE.
- BATHROOM GFCI RECEPTACLES TO HAVE INTEGRAL NIGHTLIGHT.
- RECESSED CEILING LIGHT IN BATHROOM SHALL BE LED RATED FOR WET LOCATIONS W/ SHATTER PROOF LENS.
- ALL RECEPTACLES SHALL MEET REQUIREMENTS OF NEC ARTICLE 210.
- PROVIDE TELEPHONE & CABLE T.V. MEDIA TERMINATION ENCLOSURE (MEDIA BOX): PROVIDE LEVITON COMPACT MEDIA ENCLOSURE OR EQUIVALENT IN WALL WITH TOP NO HIGHTER THAN 60" AFF WITH 120V RECEPTACLE ADJACENT.
- PROVIDE COMBINATION HARDWIRED 120VAC PHOTOELECTRIC SMOKE DETECTOR AND CARBON MONOXIDE DETECTOR WITH BATTERY-BACKUP
 - DETECTOR SHALL BE MINIMUM 6' HORIZONTAL DISTANCE FROM PERMANENT COOKING APPLIANCE PER CFC 90.2.11.8.
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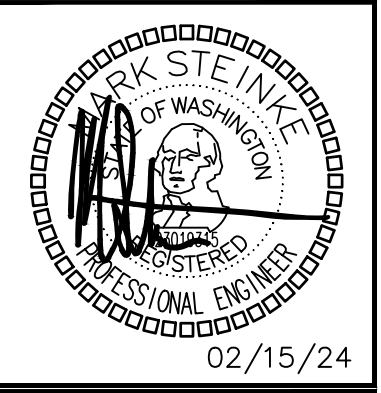
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PROJECT: BRADLEY HEIGHTS APARTMENTS
27TH AVE SE AND 5TH ST BELLEVUE WA

19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC

DATE: 02/15/24

SHEET TITLE:
UNIT PLANS & SCHEDULES

SHEET NO.
E5.02

REQUIRED ELECTRIC VEHICLE CHARGING INFRASTRUCTURE WAC 427:

- WHERE PARKING IS PROVIDED, TEN PERCENT OF PARKING SPACES SHALL BE PROVIDED WITH ELECTRIC VEHICLE CHARGING INFRASTRUCTURE.
- ELECTRICAL ROOM(S) SERVING PARKING AREAS SHALL BE DESIGNED TO ACCOMMODATE THE ELECTRICAL EQUIPMENT AND DISTRIBUTION REQUIRED TO SERVE A MINIMUM OF 20 PERCENT OF THE TOTAL PARKING SPACES WITH 208/240 V 40-AMP ELECTRIC VEHICLE CHARGING INFRASTRUCTURE.
- MINIMUM ONE ACCESSIBLE PARKING SPACE SHALL BE SERVED BY ELECTRIC VEHICLE CHARGING INFRASTRUCTURE.

TOTAL NUMBER OF PARKING SPACES = 354
 AVERAGE NUMBER OF PARKING SPACES PER BUILDING = $354/8 = 44.25$
 $44.25 \times 0.2 = 8.85$
 5 OUTDOOR EV CHARGERS WITH INFRASTRUCTURE
 4 CONDUITS TO FUTURE EV CHARGING LOCATIONS

CAPACITY FOR 9 CHARGERS $\times 208V/1PH \times 40A = 74.9 \text{ kVA} = (208)A \ 3$
 PHASE POWER @ 120/208V
 UTILIZING LOAD MANAGEMENT INFRASTRUCTURE, EV LOAD CAN BE REDUCED BY 50%. $208A/2 = 37.5 \text{ kVA} \ (104)A \ @ \ 208V \ 3 \text{ PHASE}$

PER WAC 427, ELECTRICAL INFRASTRUCTURE FOR EACH BUILDING SHALL BE DESIGNED TO ACCOMMODATE 104 AMPS OF EV ELECTRICAL LOAD.

GROUNDING NOTES AND REQUIREMENTS:

THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR, POWER COMPANY, PHONE COMPANY, INTERNET COMPANY, CABLE TV COMPANY, AND THE SATELLITE TV COMPANY TO ENSURE REQUIRED GROUNDING IS INSTALLED FOR EACH SYSTEM.

THIS SHALL BE DONE PRIOR TO AND DURING INSTALLATION OF FOUNDATION RE-BAR AND CONTINUE DURING THE CONSTRUCTION PHASES, TO ENSURE EACH SYSTEM HAS ITS REQUIRED GROUNDING INSTALLED FOR PROPER OPERATION OF THE SYSTEM.

- THE ELECTRICAL CONTRACTOR SHALL COORDINATE AND PROVIDE WHAT IS REQUIRED TO DO THE FOLLOWING:
- FOOTING GROUND RE-BAR COMES UP IN THE ELECTRICAL ROOM AND THE RE-BAR IS SNUGLY SECURED TO THE FOOTING RE-BAR.
- THE MSB GROUNDING TIES TO THE FOOTING RE-BAR, COUNTERPOISE, BUILDING STEEL, AND WATER PIPING.
- THE GROUND WIRE FOR THE COUNTERPOISE SHALL BE STRANDED, INSULATED WIRE IN CONDUIT UNTIL IT REACHES THE FIRST BAR OF THE COUNTERPOISE. BETWEEN THE COUNTERPOISE BARS IT SHALL BE A STRANDED BARE COPPER WIRE.

GENERAL FEEDER SCHEDULE

ID	FEEDER AMPS	CONDUIT AND FEEDER	FEEDING THESE DEVICES
①	125	1-1/2" C, 2#2/0 AL, #2/0 AL N, #4 AL G	A-001, A-002, A-003, A-004, A-101, A-102, A-103, A-104, A-105, A-106, A-107, A-108, A-201, A-202, A-203, A-204, A-205, A-206, A-207, A-208, A-301, A-302, A-303, A-304, A-305, A-306, A-307, A-308, B-001, B-002, B-101, B-102, B-103, B-104, B-201, B-202, B-203, B-204, B-301, B-302, B-303, B-304, C-101, C-102, C-103, C-104, C-105, C-106, C-107, C-108, C-109, C-110, C-111, C-112, C-201, C-202, C-203, C-204, C-205, C-206, C-207, C-208, C-209, C-210, C-211, C-212, C-301, C-302, C-303, C-304, C-305, C-306, C-307, C-308, C-309, C-310, C-311, C-312
②	100	1-1/2" C, 3#1/0 AL, #1/0 AL N, #6 AL G	AM-B, POOL
⑤	1200	(4) 3-1/2" C, 3#500kcmil AL, #500kcmil AL N, #250kcmil AL G	A-MC, C-MC, E-MC, F-MC, G-MC
⑥	800	(3) 3" C, 3#400kcmil AL, #400kcmil AL N, #4/0 AL G	B-MC
⑦	1600	(5) 4" C, 3#600kcmil AL, #600kcmil AL N, #500kcmil AL G	D-MC
⑬	400	(2) 2-1/2" C, 3#250kcmil AL, #250kcmil AL N, #1/0 AL G	AM-CT
⑮	1000	(4) 3" C, 3#350kcmil AL, #350kcmil AL N, #4/0 AL G	H-MC
⑰	400	3-1/2" C, 3#500kcmil, #500kcmil N, #2G	AM-A
⑱	200	2" C, 3#3/0, #3/0N, #6G	A-HOUSE, B-HOUSE, C-HOUSE, D-HOUSE, E-HOUSE, F-HOUSE, G-HOUSE, H-HOUSE

SIZING METHOD: COPPER, 60°C #12 THROUGH #1, 75°C 1/0 AND ABOVE

FEEDER SCHEDULE NOTES:

CONDUIT FILL:

- FOR CONDUIT SIZES 1-1/2" AND BELOW, FILL IS BASED ON EMT.
- FOR CONDUIT SIZES 2" AND ABOVE, FILL IS BASED ON SCHEDULE 40 PVC.

IN LOCATIONS APPROVED FOR THE PURPOSE, CONTRACTOR MAY USE MC CABLE. IN LOCATIONS APPROVED FOR THE PURPOSE, CONTRACTOR MAY USE OTHER CONDUIT TYPES, INCLUDING RMC, FMC AND LFMC. CONTRACTOR REQUIRED TO ENSURE CONDUIT FILL DOES NOT EXCEED 40%.

CONTRACTOR RESPONSIBLE TO ENSURE TERMINATION/LUG CAPACITY FOR ALL SCHEDULED FEEDERS.

XHHW/THHN/THWN SHALL BE USED FOR INSULATION OF THE CONDUCTOR.

COORDINATION AND ARC FLASH STUDIES:

IMMEDIATELY UPON SELECTION OF ACTUAL EQUIPMENT BEING PROVIDED FOR THE PROJECT, THE ELECTRICAL CONTRACTOR SHALL PERFORM AN ARC FLASH ANALYSIS AND COORDINATION STUDY ON THE STANDBY DISTRIBUTION BASED ON ACTUAL EQUIPMENT TO BE PROVIDED, CONDUCTOR TYPES/SIZES/LENGTHS, ETC. COORDINATION SHALL BE CONFIRMED BASED ON FAULT NUMBERS SHOWN ON THIS DRAWING.

STUDIES SUBMITTED SHALL BE STAMPED BY A PROFESSIONAL ELECTRICAL ENGINEER HOLDING A CURRENT LICENSE FROM THE STATE OF WA.

PRELIMINARY ARC FLASH AND COORDINATION STUDIES ARE TO BE SUBMITTED WITH THE SUBMITTALS FOR THE PROTECTIVE DEVICES, PANELBOARDS, SWITCHBOARDS, AND OTHER ELECTRICAL EQPT.

THE ELECTRICAL CONTRACTOR SHALL SUBMIT THE STAMPED AND SIGNED ARC FLASH AND COORDINATION STUDY TO THE AHJ AS REQUIRED.

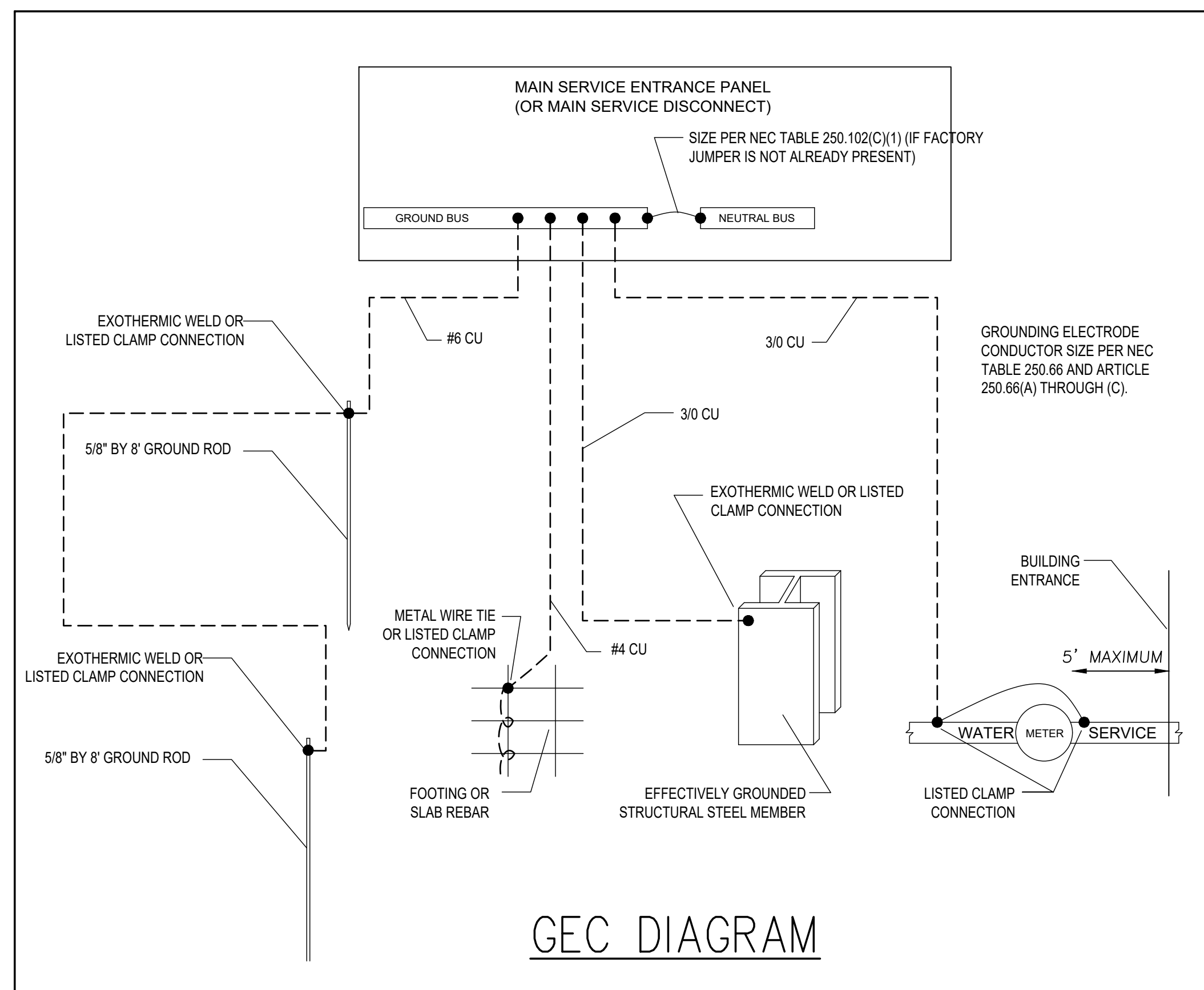
THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL PERMANENT LABELS INDICATING ARC FLASH HAZARD RISK CATEGORIES ON ALL DISTRIBUTION POINTS (SWITCHBOARDS, PANELBOARDS, VFDS, DISCONNECT SWITCHES, ETC). LABELS SHALL COMPLY WITH NFPA 70E.

SHEET NOTES:

- CONTRACTOR TO OBTAIN UTILITY APPROVAL OF ALL SERVICE AND METERING EQUIPMENT PRIOR TO ORDERING.
- DISTRIBUTION SYSTEM AS DESIGNED IS FULLY RATED. CONTRACTOR WILL BE RESPONSIBLE FOR ENGINEERING IF SERIES RATED SYSTEMS ARE SUBMITTED, THE SUBMITTED SYSTEM SHALL MEET NEC 240.86(B) REQUIREMENTS FOR TESTED COMBINATIONS, AND SHALL NOT BE USED IF MOTOR CONTRIBUTION EXCEEDS LIMITS PER 240.86(C). NEC 110.22 MARKING REQUIREMENTS MUST BE MET.
- PROVIDE PERMANENT WARNING LABELS FOR ARC FLASH AND PPE REQUIREMENTS FOR THE SERVICE EQUIPMENT AND PANELS.

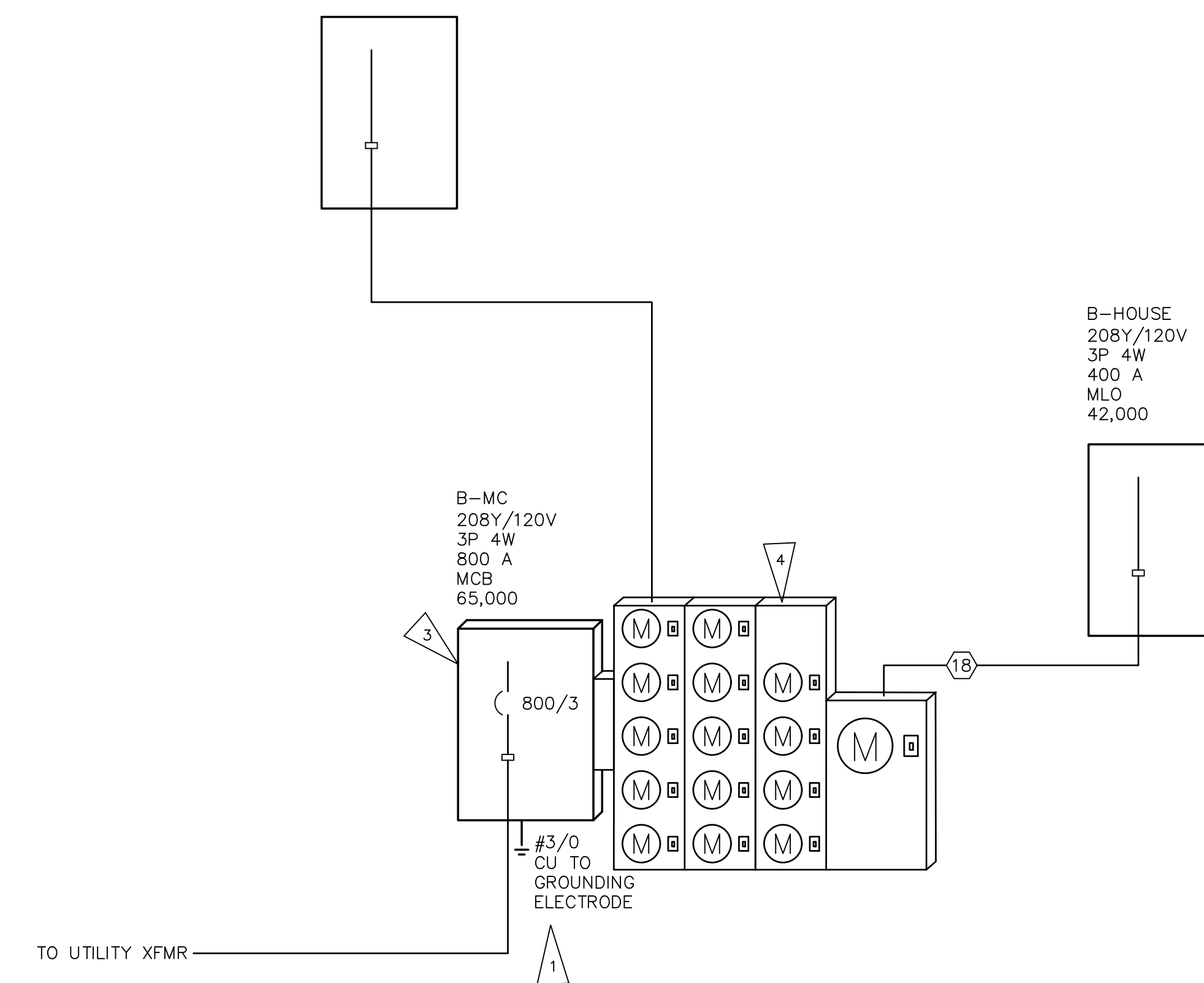
FLAG NOTES:

- GROUNDING ELECTRODE CONDUCTOR AND SYSTEM GROUNDING SIZED PER N.E.C. 250
- PROVIDE ARC ENERGY REDUCTION: ENERGY REDUCING MAINTENANCE SWITCH PER NEC 240.87(B)(3)
- PROVIDE A LISTED SURGE PROTECTIVE DEVICE FOR DWELLING UNITS AS REQUIRED BY NEC 230.67. CONTRACTOR TO CONFIRM LOCATION IS ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. OBTAIN PRICING FOR OPTION TO HAVE SPDs LOCATED IN UNIT PANELS VS UPSTREAM.
- METER ELEVATIONS AND METERS PER STACK SHALL BE INSTALLED PER UTILITY ELECTRICAL PROVIDER REQUIREMENTS. METER SOCKET IN ELECTRICAL ROOM. VERIFY EXACT LOCATION AND REQUIREMENTS WITH ELECTRIC UTILITY (TYPICAL)
- PROVIDE (1) 2 1/2" CONDUITS FOR SOLAR READY PATHWAY AND RESERVE SPACE IN THE MAIN ELECTRIC ROOM FOR FUTURE SOLAR EQUIPMENT. RESERVE SPACE FOR INSTALLATION OF FUTURE SOLAR CIRCUIT BREAKER AND PERMANENTLY MARK THIS LOCATION AS "FOR FUTURE SOLAR ELECTRIC".



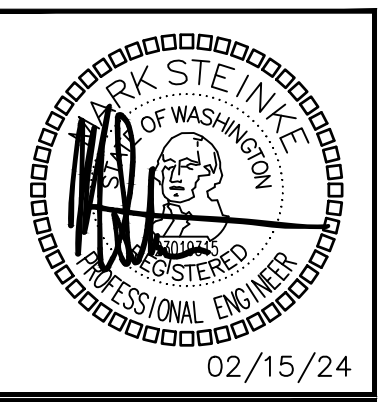
GEC DIAGRAM

TYPICAL PANEL FOR 14 UNITS
 208Y/120V
 3P 4W
 125 A
 MLO
 22,000



ONE-LINE DIAGRAM

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: KL	DESIGNED: MHS	CHECKED: PSR	APPROVED: JAY
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PROJECT: BRADLEY HEIGHTS APARTMENTS
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 LYNNWOOD, WA 98036
 PHONE: (206)364-3343

ROBISON ENGINEERING, INC.

DATE: 02/15/24

SHEET TITLE:
ONE-LINE DIAGRAM & NOTES

SHEET NO.
E6.00

Panel		ROOM	VOLTS	208Y/120V 3P 4W	AIC	42,000	
MOUNTING SURFACE		FROM	BUS AMPS	200	MAIN BKR	MLO	
NOTE			NEUTRAL	100%	LUGS	STANDARD	
CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION	CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	20/1	0.9	RECEPTACLE LIGHTING	a 2	40/2	6.6	EV CHARGER
3	20/1	0.369	HEAT TRACE	b 4			
5	20/1	0.5	RECEPTACLE LIGHTING	c 6	40/2	6.6	EV CHARGER
7	20/1	0.18	RECEPTACLE LIGHTING	d 8			
9	20/1	0.064	RECEPTACLE LIGHTING	b 10	40/2	6.6	EV CHARGER
11	20/1	0.5	FACP	a 14	40/2	6.6	EV CHARGER
13	20/1	0.036	SITE LIGHTING	b 16			
15	-/1	0	SPACE	c 18	40/2	6.6	EV CHARGER
17	-/1	0	SPACE	a 20			
19	-/1	0	SPACE	b 22	40/2	6.6	(F) EV CHARGER
21	-/1	0	SPACE	c 24			
23	-/1	0	SPACE	a 26	40/2	6.6	(F) EV CHARGER
25	-/1	0	SPACE	b 28			
27	-/1	0	SPACE	c 30	40/2	6.6	(F) EV CHARGER
29	-/1	0	SPACE	d 32			
31	-/1	0	SPACE	b 34	40/2	6.6	(F) EV CHARGER
33	-/1	0	SPACE	c 36			
35	-/1	0	SPACE	d 38	-/3	0	SOLAR BREAKER
37	-/1	0	SPACE	b 40			
39	-/1	0	SPACE	c 42			
41	-/1	0	SPACE	d 42			

	CONN KVA	CALC KVA		CONN KVA	CALC KVA	
LIGHTING RECEPTACLES	0.469	0.586	(125%)	59.4	37.1	(63%)
	1.08	1.08	(50%>10)	0.5	0.625	(125%)
				0.5	0.5	(100%)
TOTAL LOAD				39.9		
BALANCED 3-PHASE LOAD				111 A		
PHASE A				101%		
PHASE B				98%		
PHASE C				101%		

Panel		ROOM	VOLTS	208Y/120V 3P 4W	AIC	65,000
MOUNTING SURFACE		FROM	BUS AMPS	800	MAIN BKR	MLO
NOTE			NEUTRAL	100%	LUGS	STANDARD
CKT #	BREAKER TRIP/POLES	CIRCUIT DESCRIPTION	LOAD KVA			FEEDER RACEWAY AND CONDUCTORS
			A	B	C	
1	125/2	PANEL B-001	16.5	16.7		1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
2	125/2	PANEL B-002		16.5	16.7	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
3	125/2	PANEL B-101	16.7		16.5	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
4	125/2	PANEL B-102	16.5	16.7		1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
5	125/2	PANEL B-103		16.5	16.7	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
6	125/2	PANEL B-104	16.7		16.5	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
7	125/2	PANEL B-201	16.5	16.7		1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
8	125/2	PANEL B-202		16.5	16.7	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
9	125/2	PANEL B-203	16.7		16.5	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
10	125/2	PANEL B-204	16.5	16.7		1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
11	125/2	PANEL B-301		16.5	16.7	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
12	125/2	PANEL B-302	16.7		16.5	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
13	125/2	PANEL B-303	16.5	16.7		1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
14	125/2	PANEL B-304	16.5	16.7	16.7	1-1/2"C,2#2/0 AL,#2/0 AL N,#4 AL G
15	200/3	PANEL B-HOUSE	20.2	20.8	20.9	2"C,3#3/0,#3/0N,#6G

TOTAL CONNECTED KVA BY PHASE		
A	169	
B	187	
C	170	

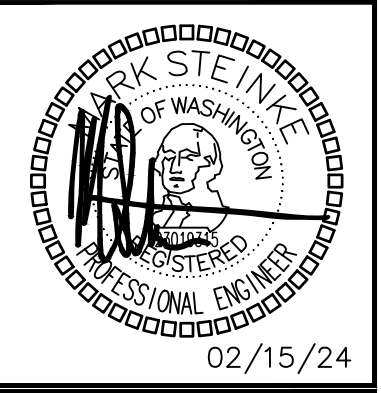
OPTIONAL MULTIFAMILY DWELLING CALCULATION (NEC 220.84)

DWELLING UNIT LOADS			
	KVA		KVA
LIGHTING AND RECEPTACLES	49.3	16,417 SF (3 VA/SF)	453
SMALL-APPLIANCE	42		14
LAUNDRY	21		(40%)
APPLIANCES	119		181
ELECTRIC COOKING	112		
HEATING	111	(100%)	

HOUSE LOADS					
	CONN KVA	CALC KVA		CONN KVA	CALC KVA
LIGHTING RECEPTACLES	0.388	0.485	(125%)	59.4	37.1
	1.08	1.08	(50%>10)	0.5	0.625
				0.5	0.5
TOTAL HOUSE LOAD				39.8	

TOTAL LOAD		
	KVA	KVA
TOTAL DWELLING UNIT LOAD	181	221
TOTAL HOUSE LOAD	39.8	614 A

NO.	DATE	DESCRIPTION	REVISIONS



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SHEET TITLE:
PANELS SCHEDULES

SHEET NO.
E6.01

GENERAL NOTES

- REFERENCE TO RELATED WORK: "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, LANDSCAPE, OR KITCHEN), OR ITEM BASED ON A SPECIFIC MANUFACTURER'S DIMENSIONS (VERIFY).
- ELECTRICAL CHARACTERISTICS: REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS (VOLTAGES, ETC. OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED).
- CODES: COMPLETE INSTALLATION OF THE PLUMBING SYSTEM SHALL BE PER THE APPLICABLE BUILDING, MECHANICAL, ENERGY, PLUMBING, FIRE, AND HEALTH CODES AND REGULATIONS AS ADOPTED BY THE LOCAL AHJ.
- PREPARE AND SUBMIT FOR REVIEW A SHOP DRAWING BASED ON FINAL STRUCTURAL SHOP DRAWINGS FOR LOCATING AND ROUTING ALL EQUIPMENT, PIPING, ETC.
 - COORDINATE FLOOR AND BEAM PENETRATIONS WITH STRUCTURAL.
 - COORDINATE FINAL LOCATION AND ROUTING WITH CEILING, LIGHTS, WALLS, FIRE SPRINKLER PIPING, AND OTHER TRADES WORK.
 - INCLUDE ADDITIONAL OFFSETS, ELBOWS, ROUTING, EQUIVALENT DUCT SIZING EXCHANGE, RELOCATING, ETC. AS REQUIRED FOR A COMPLETE OPERATING MECHANICAL SYSTEM.
 - PROVIDE SHOP DRAWINGS AT NO ADDITIONAL COST TO THE OWNER.
- PLUMBING CONTRACTOR SHALL LOCATE AND COORDINATE EXACT LOCATION OF ALL PLUMBING EQUIPMENT WITHIN THE STRUCTURE.
- ACCESS DOORS: COORDINATE WITH ARCHITECT AND LOCATE ALL ACCESS DOORS ON SHOP DRAWINGS PRIOR TO BEGINNING OF CONSTRUCTION. ACCESS DOORS IN FIRE RATED STRUCTURE SHALL BE FIRE RATED. VERIFY ACCESS DOOR LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.
- ROOF PENETRATIONS: SEE ARCHITECTURAL DRAWINGS FOR ROOF CAP, ROOF CURB, ROOF DRAIN, OVERFLOW DRAINS AND VTR DETAILS.
- EXPOSED PIPING: PROVIDE CHROME PLATING FOR EXPOSED PIPING IN FINISHED ROOMS.
- PENETRATIONS: PROVIDE ESCUTCHEON PLATES FOR EXPOSED PIPING PENETRATIONS AND SHEET METAL FLASHING FOR EXPOSED DUCTWORK PENETRATIONS.
- SHAFT AND PLENUM CONNECTIONS: SEAL CONNECTIONS TO AIR SHAFTS AIRTIGHT. PROVIDE AIRTIGHT SEAL AROUND PENETRATIONS IN AIR PLENUMS.
- LIGHT FIXTURE CLEARANCE: COORDINATE LOCATIONS OF MECHANICAL WORK TO PROVIDE CLEARANCES OVER LIGHTING FIXTURES FOR REMOVAL AND REPLACEMENT.
- CABLE TRAYS: PIPING INSTALLED ADJACENT TO ELECTRICAL CABLE TRAYS SHALL ALLOW MINIMUM ACCESS OF 6" ABOVE AND TO THE SIDE OF CABLE TRAYS.
- MOTORS: COMPLY WITH ENERGY CODE ENFORCED BY AHJ FOR MINIMUM EFFICIENCIES UNDER FULL LOAD.
- ACCESS CLEARANCES FOR MAINTENANCE AND REPLACEMENT: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET. COORDINATE LOCATIONS OF MECHANICAL WORK AND WORK OF OTHER TRADES TO PROVIDE ACCESS CLEARANCES FOR SERVICE AND MAINTENANCE.

COORDINATION REQUIREMENTS

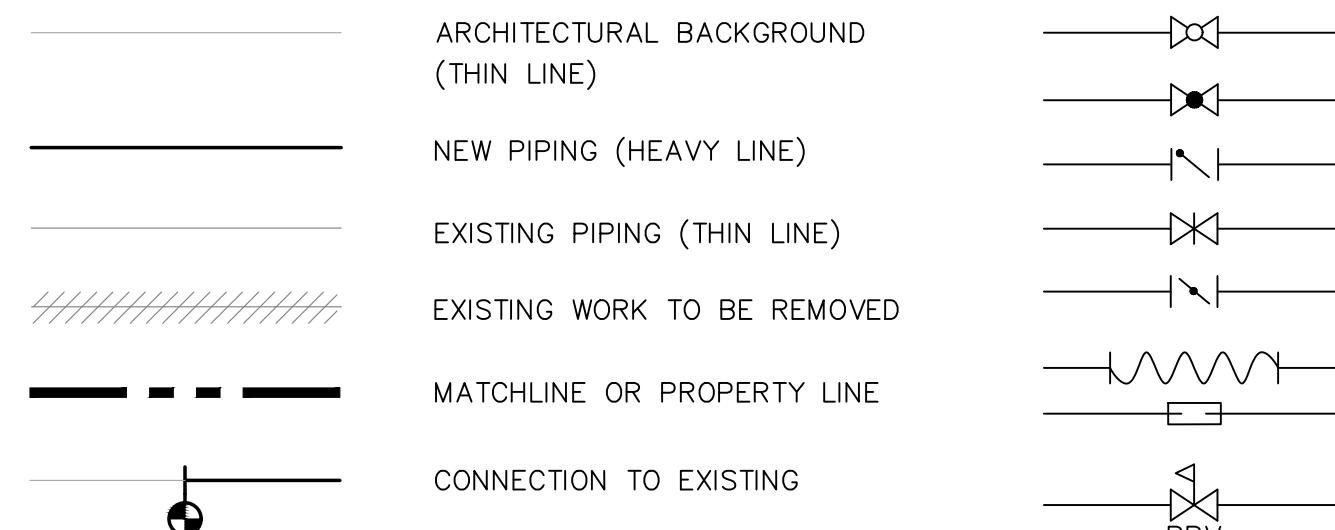
- IRRIGATION SYSTEM: COORDINATE IRRIGATION WATER DEMAND, MINIMUM WATER PRESSURE REQUIREMENTS & CONTROL CABINET LOCATIONS WITH IRRIGATION CONTRACTOR.
- GAS: CONTRACTOR/GAS COMPANY SHALL FINALIZE GAS METER AND GAS SERVICE LOCATIONS. INSTALL SEISMIC GAS SHUT OFF VALVE PER GAS COMPANY REGULATIONS.
- UTILITIES: COORDINATE WITH SITE UTILITY CONTRACTOR AND CIVIL DRAWINGS FOR UTILITY CONNECTIONS AND EXTENSIONS.
- ROOF DRAINAGE: COORDINATE WITH GENERAL CONTRACTOR FOR ROOF DRAIN AND OVERFLOWS, SCUPPER DRAINS, AND CONDENSATE DRAINS.
- PLUMBING FIXTURES & EQUIPMENT: COORDINATE EXACT LOCATION OF ALL PLUMBING FIXTURES & EQUIPMENT WITH ARCHITECTURAL AND OTHER TRADES DOCUMENTS.
- PIPING: COORDINATE EXACT LOCATION OF ALL STRUCTURAL FRAMING & FOOTINGS AND FINALIZE THE EXACT ROUTING OF ALL PIPES WITH STRUCTURAL ENGINEER AT THE SITE PRIOR TO AND DURING THE CONSTRUCTION. COORDINATE UNDER GRADE PIPING & FOUNDATION DRAINAGE PIPING WITH CIVIL ENGINEER.
- ADJUSTMENTS: ALL EQUIPMENT, MOTORS, FANS GAS BURNERS, IGNITION DEVICES, DRIVES, ETC. SHALL BE ADJUSTED AND BALANCED TO OPERATE AT SPECIFIED RATINGS AS REQUIRED FOR THIS PROJECT SITE AND ACCOUNTING FOR ELEVATION ABOVE SEA LEVEL.
- APPROVALS: MECHANICAL AND PLUMBING EQUIPMENT SHALL BE APPROVED FOR INSTALLATION IN THE PROJECT LOCATION AND SHALL HAVE ALL CERTIFICATIONS AND RATINGS TO MEET ALL ENERGY, POLLUTION, ENVIRONMENTAL, SEISMIC, APPLICABLE CODES AND REGULATIONS. THE CONTRACTOR SHALL COORDINATE WITH MANUFACTURE SUPPLIERS AND SHALL INCLUDE ALL COSTS REQUIRED TO MEET THE BID DOCUMENTS.
- FIRE PROTECTION: CONTRACTOR SHALL PROVIDE A FULLY DESIGNED FIRE PROTECTION SPRINKLER SYSTEM IN COMPLIANCE WITH NFPA AND LOCAL CODES. PROVIDE DESIGN, PERMITS, MATERIALS, INSTALLATION, TESTING AND ALL OTHER FOR A FULLY OPERATIONAL SYSTEM. LOCATION OF ALL PIPING TO BE COORDINATED WITH OTHER TRADES.
- PRIOR TO PIPING INSTALLATION: PLUMBING CONTRACTOR TO COORDINATE PIPING LAYOUT WITH ALL OTHER TRADES.
- ACCESS: COORDINATE ALL ACCESS LOCATIONS WITH GENERAL CONTRACTOR AND ARCHITECT TO ENSURE ALL REQUIRED ACCESS HATCHES, ACCESS PANELS & ACCESS COVERS ARE PROVIDED.
- PROVIDE WATER TIGHT SEALS FOR ANY PIPING PENETRATING THE EXTERIOR FOUNDATION WALLS OR SLABS.
- ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT IMMEDIATELY.
- PROVIDE FIRE PROOFING FOR ALL PIPING PENETRATING FIRE BARRIER WALLS OR FLOOR SLABS.

DISINFECTION OF POTABLE WATER SYSTEM REQUIREMENTS

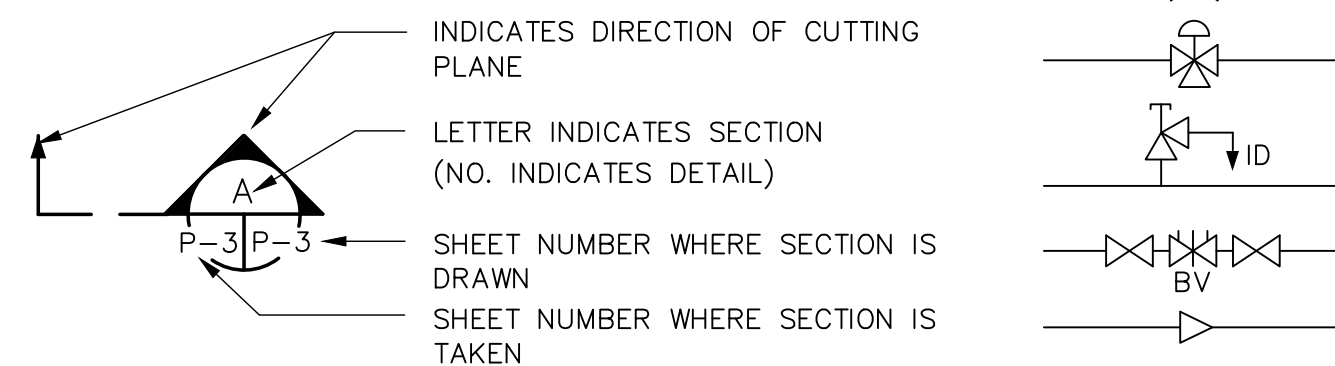
- NEW OR REPAIRED POTABLE WATER SUPPLY SYSTEMS SHALL BE DISINFECTED PRIOR TO USE.
- INITIAL COLIFORM SAMPLE IS REQUIRED PRIOR TO ADMINISTERING WATER-CHLORINE SOLUTION.
- SECTION 609.9 ITEMS #2 OR #3 CAN BE USED PRECEDED BY AND FOLLOWED BY ITEM #1.
- NOTE: FILL PORT TO ADD CHLORINE MUST BE WHERE WATER SUPPLY ENTERS BUILDING AND A FLOW METER TO MEASURE SOLUTION.
- AFTER WATERCHLORINE SOLUTION IS INCORPORATED INTO THE NEW OR REPAIRED WATER SUPPLY SYSTEM A 48 HOUR WAITING PERIOD MUST BE OBSERVED PRIOR TO BACTERIOLOGICAL TEST.
- BACTERIOLOGICAL TEST SHALL BE CONDUCTED BY A LABORATORY CERTIFIED FOR DRINKING WATER IN WASHINGTON STATE AFFIRMING WATER QUALITY CONTAINS NO COLIFORM BY SAMPLE TESTING THE FURTHEST FIXTURE FROM PUBLIC WATER SOURCE AND NOT LESS THAN TWO OTHER LOCATIONS PART OF THE WATER SUPPLY SYSTEM.
- CHLORINE LEVEL IN THE NEW OR REPAIRED WATER SUPPLY SYSTEM SHALL NOT BE LESS THAN THE MEAN AVERAGE OF THE AREA IN RELATIONSHIP FROM THE WATER PURVEYOR SOURCE.
- WARNING: IN CASE A WATER SOFTENER IS PART OF THE COLD WATER SYSTEM, CONTRACTOR TO ENSURE THE WATER SOFTENER IS CONNECTED AND OPERATIONAL BEFORE STARTING THE DISINFECTION PROCESS. FAILURE TO FOLLOW THE INSTRUCTIONS WILL VOID THE WATER HEATER OR HEAT PUMP WARRANTY.

SYMBOLS

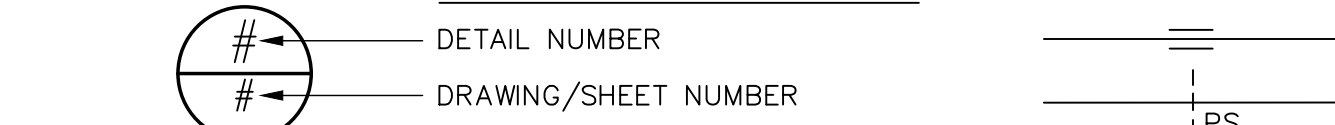
GENERAL



SECTION IDENTIFICATION



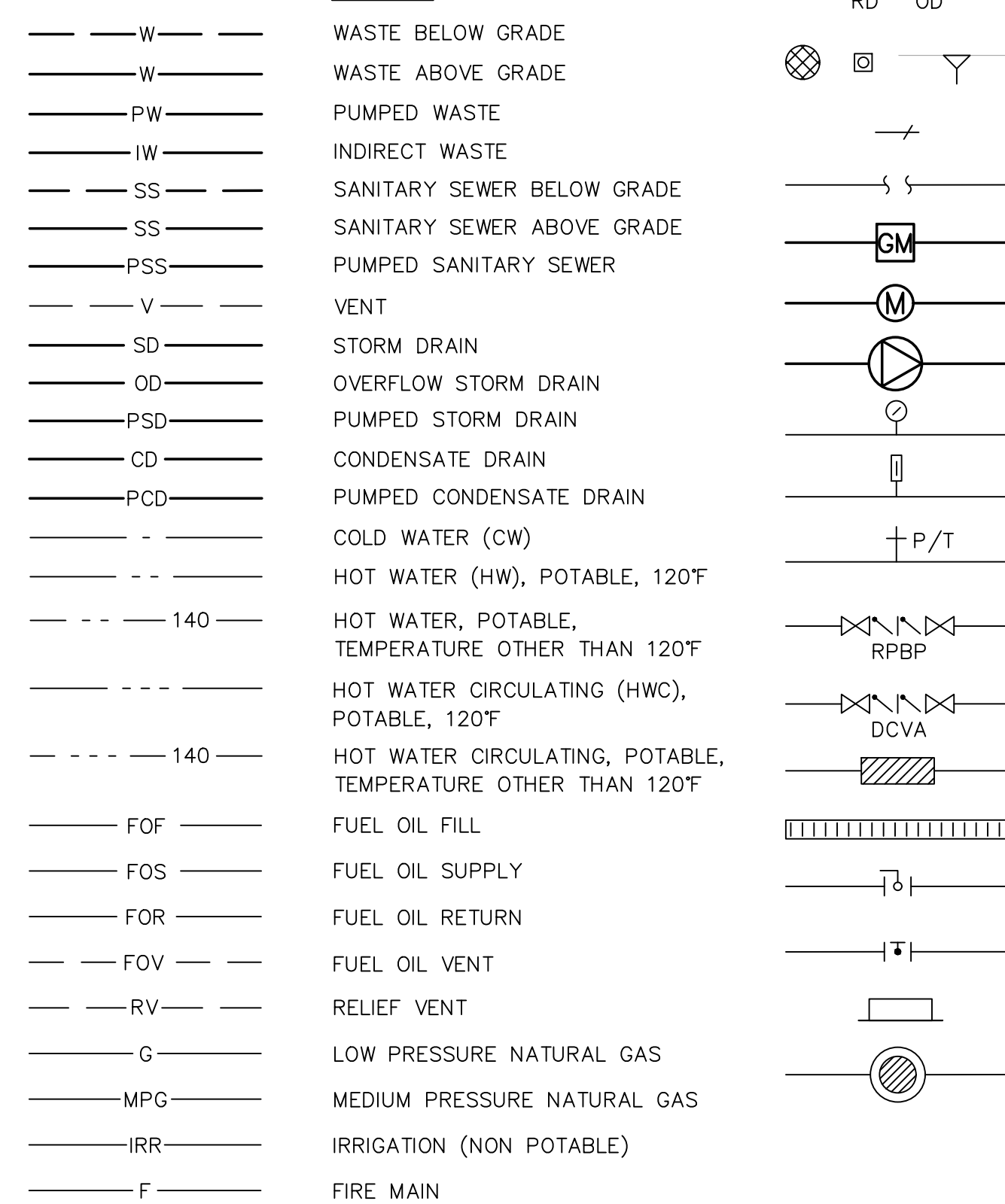
DETAIL IDENTIFICATION



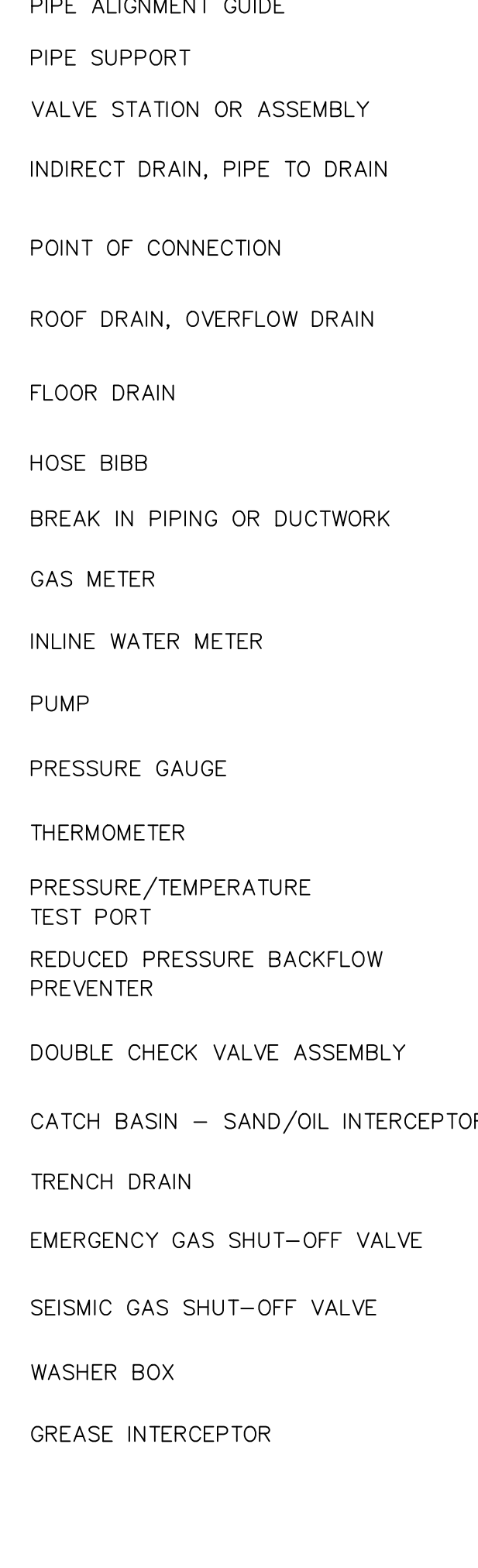
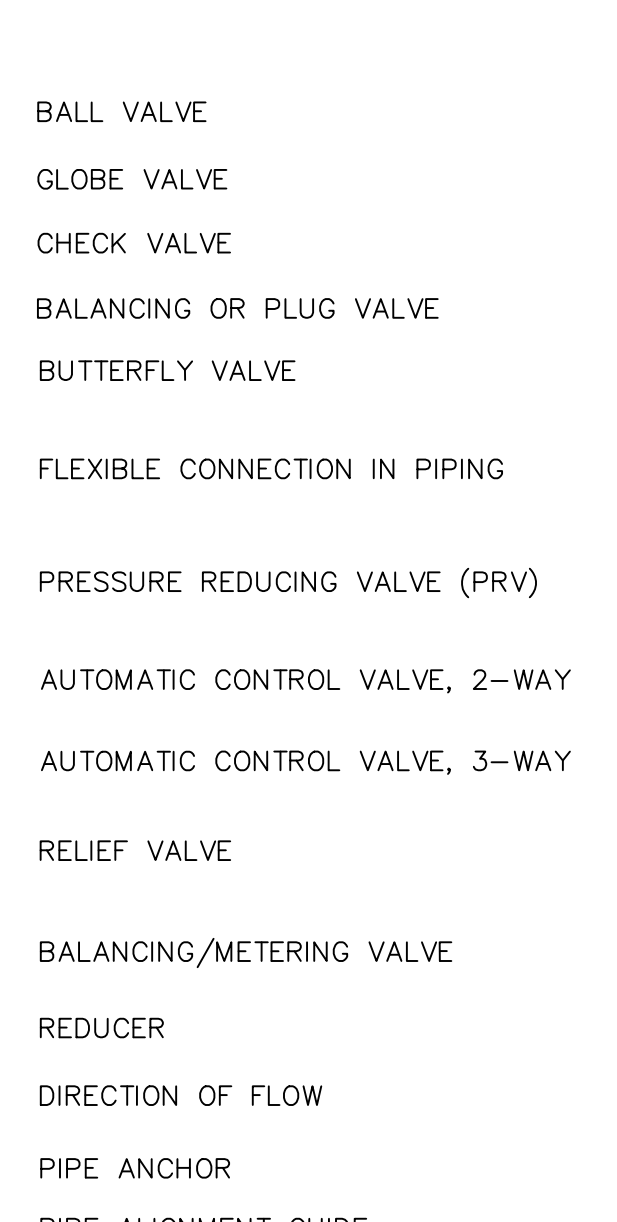
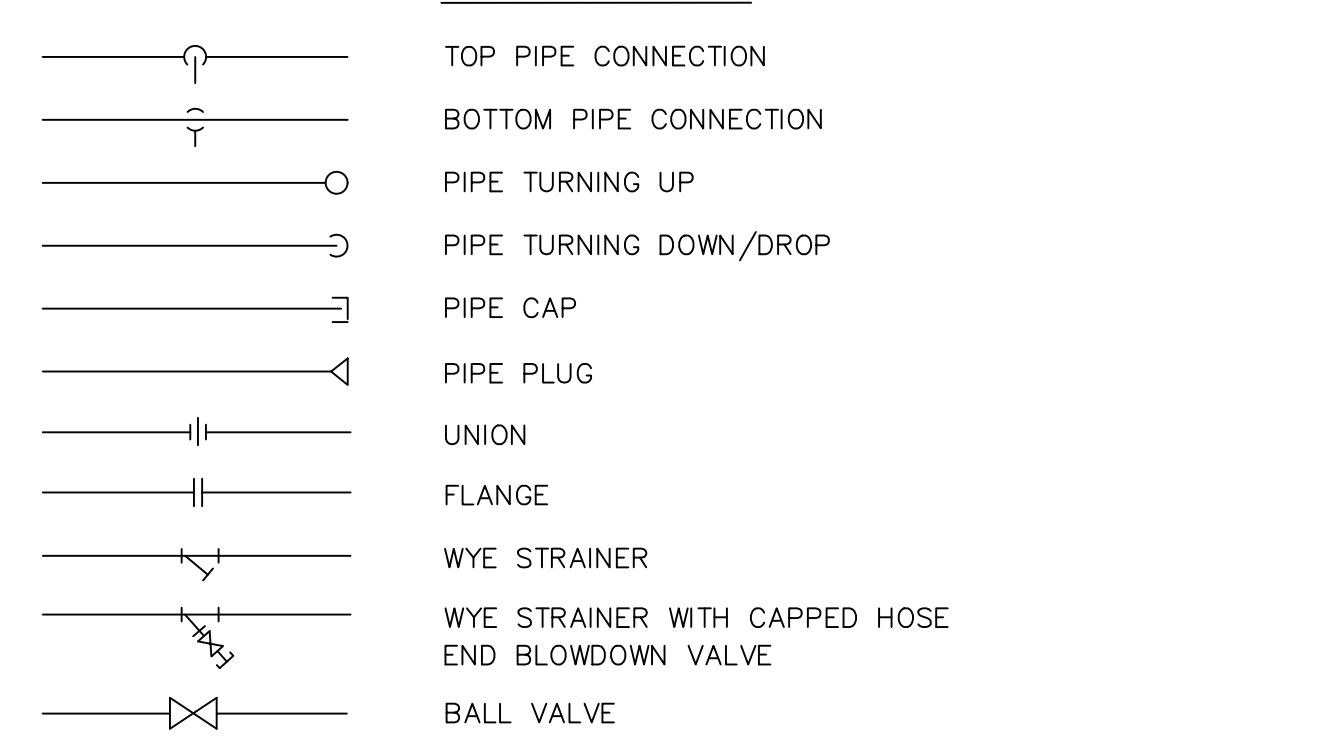
EQUIPMENT



PIPING



PIPE SYMBOLS

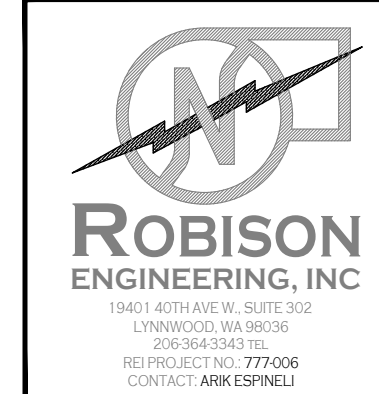
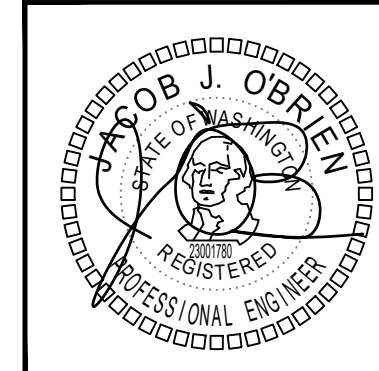


ABBREVIATIONS

ABV	ABOVE	FLR	FLOOR	OPD	OVERFLOW DRAIN/DECK DRAIN
AD	AREA DRAIN	FFM	FEET PER MINUTE	OPNG	OVER PRESSURE DEVICE
AFF	ABOVE FINISHED FLOOR	FPS	FEET PER SECOND	P	PUMP
AHJ	AUTHORITY HAVING JURISDICTION	FS	FLOOR SINK	PD	PRESSURE DROP, PLANTER DRAIN
BFF	BELOW FINISHED FLOOR	FT	FEET	POC	POINT OF CONNECTION
BFP	BACKFLOW PREVENTER	FU	FIXTURE UNITS	PRV	PRESSURE REDUCING VALVE
BOH	BACK OF HOUSE	G	GAS (LOW PRESSURE)	PS	PUMPED STORM DRAINAGE
BP	BOOSTER PUMP	GAL	GALLONS	PSIG	POUNDS PER SQUARE INCH GAUGE
BT	BATHTUB	GM	GARAGE DRAIN	PSD	PUMPED STORM DRAINAGE
BTUH	BRITISH THERMAL UNIT PER HOUR	GD	GAS DRAIN	PSG	PUMPED SANITARY SEWER
BV	BALANCING VALVE	OPC	GAS METER	PSW	PUMPED SANITARY WASTE
C	COMMON	OPM	GRAINS PER GALLON	PW	PUMPED WASTE
CAP	CAPACITY	OV	GALLONS PER MINUTE	RD	ROOF DRAIN
CB	CATCH BASIN	OV	GATE VALVE	REF	REFERENCE
CD	CONDENSATE DRAIN	OWB	GYPSPUM WALLBOARD	RBPB	REDUCED PRESSURE BACKFLOW PREVENTER
CF	CAPPED FOR FUTURE	OWH	GAS WATER HEATER	RPM	REVOLUTIONS PER MINUTE
CFM	CUBIC FEET PER MINUTE	HD	HEAD	S	SCHEDULE
CI	CAST IRON	HDR	HUB DRAIN	SCW	SOFTENED COLD WATER
CLG	CEILING, COOLING	HDV	HOSE END DRAIN VALVE	SD	STORM DRAIN
CLW	CLOTHES WASHER	H	HORIZONTAL	SEP	SEWAGE EJECTOR PUMP
CO	CLEANOUTS	HP	HORSEPOWER	SF	SQUARE FOOT
COMB	COMBUSTION	HPCW	HIGH PRESSURE COLD WATER	SGSV	SEISMIC GAS SHUT-OFF VALVE
CONT	CONTINUE, CONTROL	HW	HOT WATER	SH	SHOWER
CONTR	CONTRACTOR	HWC	HOT WATER RE-CIRCULATION	SO	STORM OVERFLOW
COTG	CLEANOUTS TO GRADE	HWP	HOT WATER CIRCULATION PUMP	SP	STATIC PRESSURE/SUMP PUMP
CP	CIRCULATING PUMP	HWR	HOT WATER RETURN	SR	SUDS RELIEF
CV	CHECK VALVE	HWST	HOT WATER STORAGE TANK	SS	STAINLESS STEEL/SANITARY SEWER
CW	COLD WATER	HX	HEAT EXCHANGER	SSS	SIDE SANITARY SEWER
D	DIAMETER	ICW	INDUSTRIAL COLD WATER	STD	STANDARD
DB	DRY BULB, DECIBEL	ID	INDIRECT DRAIN, INSIDE DIAMETER	SQ	SQUARE
DF	DRINKING FOUNTAIN	IE	INVERT ELEVATION	TD	TRENCH DRAIN
DFU	DRAIN FIXTURE UNITS	IHW	INDUSTRIAL HOT WATER	TMV	THERMOSTATIC MIXING VALVE
DI	DUCTILE IRON	IN	INCH	UON	UNIT HEATER
DI	DIMENSION	KS	KITCHEN SINK	UR	URNAL
DN	DOWN	KW	KILOWATT	V	VENT
DS	DOWN SPOUT	L	LONG, LENGTH	VTR	VENT THRU ROOF
DWG	DRAWING	LAV	LAVATORY	W	WASTE, WATT, WIDE
(E)	EXISTING	LB	LB FOUND	WC	WATER CLOSET
EFF	EFFICIENCY	M	WATER METER	WCO	WALL CLEANOUTS
ELEC	ELECTRIC	MBH	THOUSAND BTU PER HOUR	WHD	WALL HYDRANT
EQUIV	EQUIVALENT	MECH	MECHANICAL	WM	WASHING MACHINE
EWC	ELECTRIC WATER COOLER	MCA	MIN. CIRCUIT AMPACITY	WSFU	WATER SUPPLY FIXTURE UNITS
EW	ELECTRIC WATER HEATER	MOCP	MAX. OVER CURRENT PROTECTION		
EXT	EXTERIOR, EXTERNAL	MFG	MEDIUM PRESSURE GAS		
F	FAHRENHEIT	MTD	MOUNTED		
FCO	FLOOR CLEANOUTS	(N)	NEW		
FD	FLOOR DRAIN	NC	NORMALLY CLOSED		
FDC	FIRE DEPARTMENT CONNECTION	NO	NORMALLY OPEN		
FF	FINISHED FLOOR	OD	OUTSIDE DIMENSION/DIAMETER		

DRAWING INDEX

DWG	DESCRIPTION	INCLUDED IN SET
		PERMIT SET 2/14/2024
POB.00	LEGEND, GENERAL NOTES, AND DRAWING INDEX	x
POB.01	PLUMBING NOTES AND TABLES	x
POB.02	PLUMBING CALCULATIONS	x
POB.03	PLUMBING SCHEDULES	x
P2B.00	UNDERSLAB WASTE & VENT PLAN	x
P2B.01	BASEMENT WASTE & VENT PLAN	x
P2B.02	LEVEL 1 WASTE & VENT PLAN	x
P2B.03	LEVEL 2 WASTE & VENT PLAN	x
P2B.04	LEVEL 3 WASTE & VENT PLAN	x
P2B.05	ROOF WASTE & VENT PLAN	x
P3B.01	BASEMENT PLUMBING SUPPLY PLAN	x
P3B.02	LEVEL 1 PLUMBING SUPPLY PLAN	x
P3B.03	LEVEL 2 PLUMBING SUPPLY PLAN	x
P3B.04	LEVEL 3 PLUMBING SUPPLY PLAN	x
P4B.00	WASTE & VENT RISER DIAGRAMS	x
P4B.01	WASTE & VENT RISER DIAGRAMS	x
P7B.00	DETAILS	x
P7B.01	DETAILS	x



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DRAWN:	DESIGNED:	CHECKED:	APPROVED:

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ROBISON ENGINEERING, INC.

DATE: 10/11/2023

SHEET TITLE:
LEGEND GENERAL NOTES AND DRAWING INDEX

SHEET NO.
POB.00

PLUMBING TABLES

PIPE INSULATION SCHEDULE

SERVICE	OPTION 1		OPTION 2		VAPOR RETARDER REQUIRED	NOTES
	MATERIAL	THICKNESS	MATERIAL	THICKNESS		
DOMESTIC COLD WATER, IRRIGATION WATER, CONDENSATE DRAINS, STORM DRAIN (IN CONDITIONED SPACE)	MINERAL-FIBER WITH JACKET	ALL SIZES: 1/2"	PVC/NBR	ALL SIZES: 3/8"	YES	12,13
DOMESTIC COLD WATER, IRRIGATION WATER, CONDENSATE DRAINS, WASTE (OUTSIDE THE CONDITIONED SPACE)	MINERAL-FIBER WITH JACKET	(R-3) 1/2" PIPE: 1/2" ALL OTHER SIZES: 1"	PVC/NBR	(R-3) 1/2" PIPE: 1/2" ALL OTHER SIZES: 3/4"	YES	7,8,10
ROOF DRAIN BODIES	MINERAL-FIBER OR CELLULAR GLASS WITH JACKET	1"	PVC/NBR	1"	YES	12
DOMESTIC HOT WATER AND RECIRCULATED HOT WATER (RESIDENTIAL)	MINERAL-FIBER WITH JACKET	(R-3) 1/2" PIPE: 1/2" ALL OTHER SIZES: 1"	PVC/NBR	(R-3) 1/2" PIPE: 1/2" ALL OTHER SIZES: 3/4"	NO	2,10
DOMESTIC HOT WATER AND RECIRCULATED HOT WATER (NONRESIDENTIAL)	MINERAL-FIBER WITH JACKET	1/2"-1 1/4" PIPE: 1" 1 1/2"-4" PIPE: 1.5"	PVC/NBR	1/2"-1 1/4" PIPE: 1" 1 1/2"-4" PIPE: 1.5"	NO	3,9
EXPOSED SANITARY DRAINS AND DOMESTIC WATER SUPPLIES AND STOPS FOR ADA FIXTURES.	TRUEBRO LAV-GUARD	N/A	N/A	N/A	NO	11

NOTES:

- PIPING INSULATION EXPOSED TO THE WEATHER SHALL BE PROTECTED FROM DAMAGE. CONTRACTOR SHALL PROVIDE SHIELDING FROM SOLAR RADIATION THAT CAN CAUSE DEGRADATION OF THE MATERIAL. ADHESIVE TAPE SHALL NOT BE PERMITTED.
- PER 2019 CEC SECTION R403.5.3 (RESIDENTIAL) INSULATION FOR HOT WATER PIPE SHALL HAVE A MINIMUM R-VALUE OF R-3.
- PIPING FROM WATER HEATER TO THE TERMINATION OF HEATED WATER SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE C403.2.9.
- ON BOTH THE INLET AND OUTLET PIPING OF A STORAGE HOT WATER HEATER, THE FIRST 8 FEET OF PIPING OR PIPING FROM WATER HEATER TO HEAT TRAP SHALL BE INSULATED.
- HEAT TRACED PIPING SHALL BE INSULATED IN THE SAME MANNER AS NON HEAT TRACED PIPING OR PER THE HEAT TRACE MANUFACTURER'S INSTRUCTIONS.
- TUBULAR PIPING INSULATION SHALL NOT BE REQUIRED FOR THE FOLLOWING:
 - THE TUBING FROM THE CONNECTION AT THE TERMINATION OF THE FIXTURE SUPPLY PIPING TO A PLUMBING FIXTURE OR PLUMBING APPLIANCE.
 - VALVES, PUMPS, STRAINERS, AND THREADED UNIONS IN PIPING THAT IS 1 INCH OR LESS IN NOMINAL DIAMETER.
 - PIPING FROM USER-CONTROLLED SHOWER AND BATH MIXING VALVES TO THE WATER OUTLETS.
 - COLD WATER PIPING OF A DEMAND RECIRCULATION WATER SYSTEM.
 - TUBING FROM A HOT DRINKING-WATER HEATING UNIT TO THE WATER OUTLET.
 - PIPING AT LOCATIONS WHERE A VERTICAL SUPPORT OF THE PIPING IS INSTALLED.
 - PIPING SURROUNDED BY BUILDING INSULATION WITH A THERMAL RESISTANCE (R-VALUE) OF NOT LESS THAN R-3.
 - HOT WATER PIPING THAT IS PART OF THE FINAL PIPE RUN TO THE PLUMBING FIXTURE AND IS NOT PART OF THE HEATED-WATER CIRCULATION SYSTEM CIRCULATION PATH IS NOT REQUIRED TO MEET THE MINIMUM INSULATION REQUIREMENTS OF C404.6.
- PER 2018 UPC SECTION 312.6 NO WATER, SOIL, OR WASTE PIPE SHALL BE INSTALLED OR PERMITTED OUTSIDE OF A BUILDING, IN ATTICS OR CRAWL SPACES, OR IN AN EXTERIOR WALL UNLESS, WHERE NECESSARY, ADEQUATE PROVISION IS MADE TO PROTECT SUCH PIPE FROM FREEZING. ALL HOT AND COLD WATER PIPES OUTSIDE THE CONDITIONED SPACE SHALL BE PROVIDED WITH INSULATION WITH A MINIMUM R-VALUE OF R-3.
- HEAT TRACING SHALL BE PROVIDED FOR COLD WATER AND IRRIGATION WATER IN UNCONDITIONED SPACES. CONTACT ENGINEERING IF NECESSARY. PER 2019 CEC SECTION C403.12.3 FREEZE PROTECTION SYSTEMS, SUCH AS HEAT TRACING OF OUTDOOR PIPING, SHALL INCLUDE AUTOMATIC CONTROLS CONFIGURED TO SHUT OFF THE SYSTEMS WHEN OUTDOOR AIR TEMPERATURES ARE ABOVE 40°F.
- PER 2019 CEC TABLE C403.2.9 INSULATION FOR HOT WATER AND HOT WATER RECIRCULATION SHALL HAVE A THERMAL CONDUCTIVITY OF 0.21-0.28 (BTU·IN/·H·FT²·°F) AT OPERATING TEMPERATURE.
- INSULATION R-VALUE SHALL MEET THE MINIMUM REQUIREMENT. THICKNESS IS BASED ON GRAINGER SAMPLE DATA FOR K-FLEX(PVC/NBR) AND OWENS CORNING(FIBER GLASS).
- ALL ADA P-TRAPS, HOT WATER SUPPLY TUBING, AND SHUT-OFF COCKS SHALL BE PROTECTED WITH APPROVED COVERS TO PREVENT SCALDING.
- REQUIRED BY ENGINEERING BASED ON BEST PRACTICE.
- INSULATION IS NOT REQUIRED ON PLASTIC COLD WATER PIPING.

HANGER SPACING FOR WATER PIPING			
ALL SUSPENDED WATER SUPPLY PIPE SHALL BE SUPPORTED AS FOLLOWS PER 2018 UPC TABLE 313.3:			
	MAX. HORIZONTAL SPACING	MAX. VERTICAL SPACING	
COPPER PIPE ≤1 1/2"	6 FT.	10 FT.	
COPPER PIPE >2"	10 FT.	10 FT.	
COPPER TUBING ≤1 1/2"	6 FT.	10 FT.	
COPPER TUBING >2"	10 FT.	10 FT.	
CPVC ≤ 1"	3 FT.	10 FT.	
CPVC > 1 1/4"	4 FT.	10 FT.	

HANGER SPACING FOR WASTE AND VENT PIPING			
ALL SUSPENDED SANITARY AND VENT PIPE SHALL BE SUPPORTED AS FOLLOWS PER 2018 UPC TABLE 313.3:			
	MAX. HORIZ. SPACING	MAX. VERT. SPACING	
ABS	4 FT.	10 FT.	
PVC (TYPE DWV)	4 FT.	10 FT.	
CAST-IRON HUBLESS*	EVERY	15 FT.	
	OTHER JOINT		
*CAST-IRON OVER 4" SHALL BE SUPPORTED AT EVERY JOINT			

PLUMBING FIXTURE FLOW RATES PER 2018 UPC CH. 4			
FIXTURE TYPE	FLOW RATE	NOTES	
SHOWERHEADS	1.8 GPM @ 80 PSI		
LAVATORY FAUCETS, RESIDENTIAL	1.2 GPM @ 60 PSI	1	
LAVATORY FAUCETS, NON-RESIDENTIAL	0.5 GPM @ 60 PSI	2	
KITCHEN FAUCETS	1.8 GPM @ 60 PSI	3	
GRAVITY TANK-TYPE WATER CLOSETS	1.28 GALLONS/FLUSH	4	
FLUSHOMETER TANK WATER CLOSETS	1.28 GALLONS/FLUSH	4	
FLUSHOMETER VALVE WATER CLOSETS	1.28 GALLONS/FLUSH	4	
ELECTROMECHANICAL HYDRAULIC WATER CLOSETS	1.28 GALLONS/FLUSH	4	
URINALS	0.5 GALLONS/FLUSH		

NOTES:

- LAVATORY FAUCETS SHALL NOT HAVE A FLOW RATE LESS THAN 0.8 GPM AT 20 PSI.
- WHERE COMPLYING FAUCETS ARE UNAVAILABLE, AERATORS RATED AT 0.35 GPM OR OTHER MEANS MAY BE USED TO ACHIEVE REDUCTION.
- KITCHEN FAUCETS MAY TEMPORARILY INCREASE FLOW ABOVE THE MAXIMUM RATE, BUT NOT ABOVE 2.2 GPM @ 60 PSI AND MUST DEFAULT TO A MAXIMUM FLOW RATE OF 1.8 GPM @ 60 PSI.
- INCLUDES SINGLE AND DUAL FLUSH WATER CLOSETS WITH AN EFFECTIVE FLUSH OF 1.6 GALLONS OR LESS. SINGLE FLUSH TOILETS - THE EFFECTIVE FLUSH VOLUME SHALL NOT EXCEED 1.6 GALLONS. THE EFFECTIVE FLUSH VOLUME IS THE AVERAGE FLUSH VOLUME WHEN TESTED IN ACCORDANCE WITH ASME A112.19.2 DUAL FLUSH TOILETS - THE EFFECTIVE FLUSH VOLUME SHALL NOT EXCEED 1.6 GALLONS. THE EFFECTIVE FLUSH VOLUME IS DEFINED AS THE COMPOSITE, AVERAGE FLUSH VOLUME OF TWO REDUCED FLUSHES AND ONE FULL FLUSH. FLUSH VOLUMES WILL BE TESTED IN ACCORDANCE WITH ASME A112.19.2 AND ASME A112.19.14.

PLUMBING NOTES

- CONNECTIONS: PROVIDE PLUMBING FIXTURE CONNECTIONS TO BUILDING WASTE, VENT, COLD WATER, AND HOT WATER SYSTEM IN ACCORDANCE WITH DRAWINGS, MANUFACTURER'S RECOMMENDATIONS, AND LOCAL CODES. CONNECT TO EACH FIXTURE, EQUIPMENT, ETC. WITH ALL ACCESSORIES, VALVES, VACUUM BREAKERS, REGULATORS, UNIONS, ETC. AS REQUIRED AND AS RECOMMENDED BY THE MANUFACTURERS. REFER TO PLUMBING FIXTURE CONNECTION SCHEDULE ON PLANS.
- HOT AND COLD: WATER PIPING CONNECTION TO EACH FIXTURE SHALL BE COLD WATER ON THE RIGHT HAND SIDE AND HOT WATER ON THE LEFT HAND SIDE.
- HOT WATER: NON-CIRCULATING HOT WATER PIPE SHALL NOT EXCEED 10' UNLESS OTHERWISE SHOWN ON DRAWINGS.
- VENT STACKS: COORDINATE VENT STACK WITH HVAC EQUIPMENT TO MAINTAIN MINIMUM 10' CLEARANCE FROM OUTSIDE AIR INTAKES.
- CLEANOUTS: PROVIDE CLEANOUTS PER CURRENT UPC AND AS REQUIRED BY LOCAL JURISDICTIONS. CLEANOUTS SHALL BE LOCATED IN WALLS/FLOORS WHERE THEY ARE NOT HIGHLY VISIBLE. FLOOR CLEANOUTS IN CARPETED AREAS TO BE FITTED WITH CARPET INSERTS. LOCATIONS SHALL BE SUBMITTED TO ARCHITECT FOR APPROVAL. NOTE: NOT ALL CLEANOUTS ARE SHOWN ON THE PLUMBING DRAWINGS.
- SUDS RELIEF: PROVIDE SUDS RELIEF IN ACCORDANCE WITH 2018 UPC SECTION 711.0, STATE AND LOCAL CODES.
- SHUT-OFFS: PROVIDE 1/4 TURN BALL VALVE ANGLE STOP SHUT-OFF VALVES AND BRAIDED STAINLESS STEEL FLEX CONNECTORS AT HOT AND COLD WATER SUPPLY TO EACH FIXTURE. EXCEPTION: PROVIDE SCREWDRIVER STOPS AT BATH/SHOWERS.
- TUB SPOUTS SHALL BE THREADED (NO PUSH-ON FITTINGS).
- TRAP ARMS: PROVIDE TRAP ARMS SUCH THAT THE MAXIMUM LENGTH WILL NOT EXCEED CODE REQUIREMENTS.
- ADA INSULATION: AT PLUMBING PIPING EXPOSED UNDER LAVATORIES, INSULATE THE EXPOSED PIPING AND TRAPS WITH PRODUCT SPECIFICALLY DESIGNED FOR THIS APPLICATION MEETING ADA REQUIREMENTS. PROVIDE HANDI-LAV GUARD OR EQUIVALENT. OFFSET P-TRAPS TO CLEAR WHEELCHAIR ACCESS.
- GAS EQUIPMENT: GAS EQUIPMENT SHALL BE INSTALLED PER EQUIPMENT LISTINGS, APPLICABLE SFGC, SPC, LOCAL CODES & NFPA STANDARDS.
- GAS CONNECTIONS: INSTALL FLEXIBLE QUICK DISCONNECT ASSEMBLIES FOR ALL GAS FIRED KITCHEN EQUIPMENT PER APPLICABLE SFGC, SPC, LOCAL CODES & NFPA STANDARDS. PROVIDE LOCKABLE GAS SHUT-OFF VALVES FOR FIREPLACES & BBQS IN UNATTENDED PUBLIC LOCATIONS IN THE BUILDING.
- GAS PIPING CONNECTIONS TO WATER HEATERS, BOILERS AND FURNACES SHALL HAVE DIRT LEGS AND UNIONS PROVIDED ON APPLIANCE SIDE OF SHUTOFF VALVE.
- GAS PIPING INSTALLATION: STEEL OR MALLEABLE IRON FUEL LINES 2" OR SMALLER SHALL BE ASSEMBLED USING THREAD SEALANT SUITABLE FOR NATURAL GAS. GAS PIPING LARGER THAN 2" SHALL HAVE WELDED FITTINGS.
- GAS PIPING UNDERGROUND: WHERE INSTALLED BELOW GRADE THROUGH THE OUTER FOUNDATION OR BASEMENT WALL OF A BUILDING, SHALL BE ENCASED IN A PROTECTIVE PIPE SLEEVE. THE ANNULAR SPACE BETWEEN THE GAS PIPING AND THE SLEEVE SHALL BE SEALED.
- GAS PIPING ABOVE GROUND: WHERE PASSING THROUGH AN OUTSIDE WALL, GAS PIPING SHALL BE PROTECTED AGAINST CORROSION BY COATING OR WRAPPING WITH AN INERT MATERIAL. WHERE PIPING IS ENCASED IN A PROTECTIVE PIPE SLEEVE, THE ANNULAR SPACE BETWEEN THE PIPING AND THE SLEEVE SHALL BE SEALED.
- GAS PIPE SUPPORT: FUEL LINES SHALL BE SUPPORTED OR STRAPPED, AND SHALL BE PLUMB AND SQUARE.
- GAS PIPING ON ROOFTOPS SHALL BE SUPPORTED AND ANCHORED TO THE ROOF.
- GAS PIPING SHALL NOT BE BURIED UNDER A BUILDING, SLAB OR OTHER STRUCTURE.
- GAS PIPING PROTECTIVE COATING: PAINT ALL EXTERIOR EXPOSED GAS PIPING WITH TWO COATS OF RUST INHIBITIVE PAINT. COLOR: GRAY.
- WATER HAMMER ARRESTORS: PROVIDE AT THE END OF HOT AND COLD WATER LINES SERVING TWO OR MORE FIXTURES; SIZE IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE (PDI) REQUIREMENTS. WATER HAMMER ARRESTORS ARE REQUIRED FOR QUICK CLOSING VALVES, SUCH AS LAUNDRY WASHERS, FLUSH VALVES (PUBLIC TOILETS), ETC.
- TRAP PRIMERS AS SPECIFIED: PROVIDE TRAP PRIMERS AND PIPING FOR FLOOR DRAINS, FLOOR SINKS, AREA DRAINS & HUB DRAINS. ARRANGE PIPING TO ACHIEVE EQUAL FLOW TO EACH DRAIN AND FLOOR SINK FOR TRAP PRIMERS SERVING MULTIPLE DRAINS AND FLOOR SINKS. COORDINATE EXACT LOCATIONS WITH ARCHITECT & ELECTRICAL ENGINEER.
- P-TRAPS: ALL EXPOSED P-TRAPS SHALL BE CHROME-PLATED BRASS. P-TRAPS SERVING HANDICAPPED COUNTER TOP LAVATORIES SHALL BE INSULATED.
- THROUGHOUT THE PROJECT PROVIDE BALL VALVES. GATE VALVES SHALL NOT BE USED. NO EXCEPTIONS.
- HOT WATER RECIRCULATING BALANCING VALVES SHOULD BE BELL & GOSSETT CIRCUIT SETTER (WATTS OR EQUAL) WITH INTEGRAL READOUT PORTS, ADJUSTMENT KNOB, DRAIN CONNECTION, AND POSITIVE SHUTOFF.
 - a. ICE MACHINES AND ICE MAKERS
 - b. CARBONATED BEVERAGE DISPENSING SYSTEMS
 - c. COFFEE BREWERS
 - d. ESPRESSO MACHINES
 - e. WATER FILTERS
 - f. STEAM OR HOT WATER BOILERS
 - g. IRRIGATION SYSTEM
 - h. FIRE PROTECTION SYSTEM
 - i. CHEMICAL TREATMENT SYSTEM
 - j. SOAP/CHEMICAL DISPENSER SYSTEM
 - k. COMMERCIAL WASHER
- DISASSEMBLY PROVISIONS: PROVIDE UNIONS OR FLANGES AT PIPING CONNECTIONS TO EQUIPMENT, COILS, TRAPS, CONTROL VALVES, AND OTHER COMPONENTS TO ALLOW DISASSEMBLY FOR MAINTENANCE.
- REDUCERS: PROVIDE AS REQUIRED FROM LINE PIPE SIZE TO EQUIPMENT, TRAP, COIL, AND CONTROL VALVE CONNECTION SIZES.
- VALVE TAGS: PROVIDE VALVE TAGS PER SPECIFICATIONS TO IDENTIFY VALVE AND THE AREA IT SERVES.
- OFFSETS: PROVIDE FOR BRANCH LINES TO EQUIPMENT.
- ALL TEMPERATURE MIXING VALVES SHALL COMPLY WITH ASSE-1070 SAFETY STANDARDS.
- PROVIDE PIPE MARKER WITH DIRECTION OF FLOW. LABEL "NON-POTABLE WATER DO NOT DRINK" CLEARLY ON NON-POTABLE WATER PIPING.
- PROVIDE EXPANSION LOOPS/EXPANSION JOINTS IN PIPING PER 2018 UPC TABLE 313.3 AND MANUFACTURER INSTALLATION INSTRUCTIONS.
- PROVIDE APPROVED PIPE HANGERS & PIPE SUPPORTS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND 2018 UPC TABLES 313.3 & 313.6. SUBMIT FOR APPROVAL.
- DIELECTRIC UNIONS: PROVIDE AT CONNECTIONS OF DISSIMILAR PIPE.
- REFRIGERANT PIPING: PROVIDE SIZING & INSTALLATION IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- CONDENSATE DRAIN: PROVIDE A P-TRAP FOR EACH HVAC UNIT CONDENSATE PAN WITH PLUG TEES FOR CLEANING. CONDENSATE DRAINS SHALL BE DISCHARGED TO AN INDIRECT WASTE OR OUTSIDE.
- PIPING & EQUIPMENT SUPPORTS/HANGERS & SEISMIC RESTRAINTS TO BE DESIGNED BY DESIGN BUILT CONTRACTOR.
- IF NEEDED, PROVIDE VACUUM BREAKERS AT ALL HOSE BIBBS.
- FLOOR DRAINS OR SIMILAR TRAPS DIRECTLY CONNECTED TO THE DRAINAGE AND SUBJECT TO INFREQUENT USE SHALL BE PROVIDED WITH AN APPROVED AUTOMATIC MEANS OF MAINTAINING THEIR WATER SEALS IN ACCORDANCE WITH 2018 UPC 1007.0.
- INSULATION MATERIAL SHALL MEET CITY OF FERDALE QUALITY STANDARDS.
- ALL PIPING AND DUCTWORK SHALL BE INSULATED CONSISTENT WITH THE 2018 WASHINGTON STATE ENERGY CODE.
- BUILDING DRAIN AND VENT PIPING MATERIALS SHALL COMPLY WITH 2018 UPC 701.0 AND 903.0.
- ALL SANITARY SYSTEM MATERIAL SHALL BE LISTED BY AN APPROVED LISTING AGENCY.
- ALL STORAGE WATER HEATING EQUIPMENT SHALL BE PROVIDED WITH AN APPROVED, LISTED EXPANSION TANK OR OTHER DEVICE DESIGNED FOR INTERMITTENT OPERATION FOR THERMAL EXPANSION CONTROL PER 2018 UPC 608.3.
- WATER HEATERS SHALL BE ANCHORED OR STRAPPED TO RESIST HORIZONTAL DISPLACEMENTS DUE TO SEISMIC MOTION PER 2018 UPC 507.2.
- MATERIAL EXPOSED WITHIN A DUCT OR PLENUM SHALL COMPLY WITH 2018 IMC 602.2.1.
- HVAC EQUIPMENT AND WATER HEATERS SHALL COMPLY WITH 2018 IMC CHAPTER 3.
- BOILERS SHALL COMPLY WITH ALL THE REQUIREMENTS OF 2018 IMC CHAPTER 10.
- PROVIDE EXPANSION TANKS FOR BOILERS PER 2018 IMC SECTION 1009.0.
- SHOWERS AND TUB/SHOWER COMBINATIONS SHALL BE PROVIDED WITH MIXING VALVES PER 2018 UPC 408.0.
- PLUMBING FIXTURES AND FITTINGS SHALL COMPLY WITH CITY OF FERDALE WATER CONSERVATION STANDARDS.
- CONTRACTOR SHALL PROVIDE FIRESTOPPING AT PENETRATIONS AS NECESSARY TO RETAIN THE FIRE RATING OF ALL ASSEMBLIES. ALL WORK SHALL BE IN COMPLIANCE WITH CODE REQUIREMENTS FOR THE BUILDING CONSTRUCTION TYPE.
- ALL GARAGE DRAINS, TRASH ROOMS DRAINS & GARAGE TRENCH DRAINS SHALL BE TAKEN TO SAND/OIL INTERCEPTOR(S) BEFORE CONNECTING TO THE SANITARY SEWER SYSTEM.
- PLUMBING CONTRACTOR SHALL PROVIDE REDUCED PRESSURE BACKFLOW PREVENTERS OR OTHER APPROVED BACKFLOW PREVENTION DEVICE WHERE REQUIRED BY HEALTH AUTHORITIES, FOOD SERVICE DRAWINGS, APPLIANCE MANUFACTURER INSTRUCTIONS AND BY CODE.

APPLICABLE CODES

- THE FOLLOWING PROJECT DESIGN IS BASED ON THE FOLLOWING CODES:
- 2018 INTERNATIONAL BUILDING CODE (IBC)
 - 2018 INTERNATIONAL MECHANICAL CODE (IMC)
 - 2018 UNIVERSAL PLUMBING CODE (UPC)
 - 2018 WASHINGTON STATE ENERGY CODE (WSEC) - COMMERCIAL PROVISIONS

NOTE TO CONTRACTOR

DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS, REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

CONTRACTOR SUBSTITUTIONS & REVISIONS

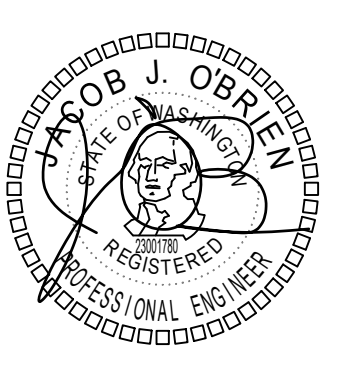
PLEASE SUBMIT PROPOSALS FOR SUBSTITUTIONS OR REVISIONS FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL OR DOING WORK. FOR EQUIPMENT THAT IS SCHEDULED BY MANUFACTURER'S NAME AND CATALOG DESIGNATIONS, THE MANUFACTURER'S PUBLISHED DATA AND/OR SPECIFICATION FOR THAT ITEM ARE CONSIDERED PART OF SPECIFICATION. ENGINEERING COSTS FOR REVISING MEP PLANS SHALL BE ADDRESSED IN THE COST ANALYSIS OF THE SUBSTITUTION PROPOSAL. CONTRACTOR TO COORDINATE WITH ENGINEER AND DETERMINE ASSOCIATED DESIGN AND PERMITTING COSTS. CONTRACTOR SHALL BE RESPONSIBLE FOR OTHER COSTS ASSOCIATED WITH UNFORESEEN ISSUES RESULTING FROM SUBSTITUTIONS OR REVISIONS.

PRE-CONSTRUCTION MEETING NOTES

CONTRACTORS SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WILL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS, AND ON-SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THROUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	4 HOURS
PLUMBING/PIPING	4 HOURS
ELECTRICAL	4 HOURS
SPRINKLER	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS



JM	JM	RJ	JR
DRAWN:	DESIGNED:	CHECKED:	APPROVED:

PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
202 27TH AVE SE
PUYALLUP, WA 98374

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PHONE: (206) 364-3343

ROBISON ENGINEERING, INC.

DATE: 10/11/2023

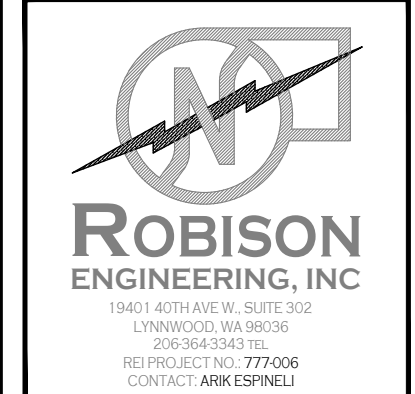
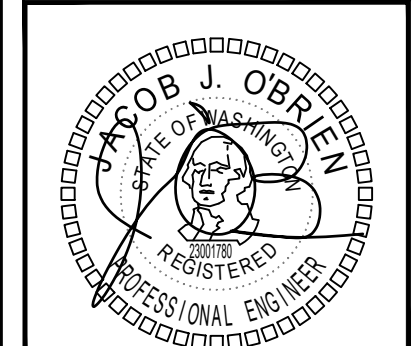
SHEET TITLE:
PLUMBING NOTES
AND TABLES

SHEET NO.
POB.01

PLUMBING CALCULATIONS

CALCULATIONS BASED ON 2018 UPC															
2 Bedroom Unit (2 Bath)															
FIXTURE	FIXTURE UNITS				B	1	2	3	R	# OF FIXTURES PER UNIT	TOTAL QTY OF FIXTURES	TOTAL FIXTURE UNITS			
	TOTAL	CW	HW	WV								SERVICE	CW ONLY	HW ONLY	WV ONLY
WATER CLOSET	2.5	2.5	0	3	2	4	4	4	0	2	28	70	70	0	84
LAVATORY	1	0.75	0.75	1	2	4	4	4	0	2	28	28	21	21	28
BATHTUB	4	3	3	2	2	4	4	4	0	2	28	112	84	84	56
CLOTHES WASHER	4	3	3	3	2	4	4	4	0	1	14	56	42	42	42
KITCHEN SINK W/ DISHWASHER	3	2.25	2.25	2	2	4	4	4	0	1	14	42	31.5	31.5	28
TOTAL:											308	246.5	178.5	238	
Public Fixtures															
FIXTURE	FIXTURE UNITS				B	1	2	3	R	# OF FIXTURES PER UNIT	TOTAL QTY OF FIXTURES	TOTAL FIXTURE UNITS			
	TOTAL	CW	HW	WV								SERVICE	CW ONLY	HW ONLY	WV ONLY
HOSE BIB	2.5/1	2.5/1	0	0	2	0	0	0	0		2	3.5	3.5	0	0
4" FLOOR DRAIN	0	0	0	8	1	0	0	0	0		1	0	0	0	8
TOTAL:											3.5	3.5	0	8	
TOTAL FIXTURE UNITS:	311.5	282	178.5	246											
PEAK FLOW:	87.5GPM														
SUPPLY															
WASTE															
REQUIRED SERVICE SIZE IN BUILDING:	3"	6"													

BRADLEY HEIGHTS APARTMENTS - WATER SUPPLY PRESSURE CALCULATIONS ARE BASED ON 2018 UPC APPENDIX A	
FROM STREET TO RPBP	
STREET PRESSURE, PSI	75
MINIMUM STREET PRESSURE, PSI	75
<i>ASSUME +/- 5 PSI FLUCTUATION</i>	
EQUIPMENT LOSSES, PSI	
WATER METER LOSS	4
BACKFLOW PREVENTER	10
SITE SERVICE LINE (ESTIMATE)	
PIPING SYSTEM LENGTH, FEET	50
FITTING ALLOWANCE, FEET	12.5
<i>FROM STREET TO RPBP</i>	
ZONE FRICTION LOSS FACTOR, PSI/100'	7.0
TOTAL ZONE FRICTION LOSS, PSI	4.38
MINIMUM PRESSURE AT RPBP, PSI	56.63
FROM RPBP TO FURTHEST APARTMENT UNIT	
MINIMUM PRESSURE AT END PREVIOUS ZONE, PSI	56.6
EQUIPMENT LOSSES, PSI	
THERMOSTATIC MIXING VALVE LOSS	4
STATIC HEAD, PSI	
TOTAL ELEVATION GAIN, FT	30
PIPING FRICTION LOSSES	
PIPING SYSTEM LENGTH, FEET	150
FITTING ALLOWANCE, FEET	22.5
ZONE FRICTION LOSS FACTOR, PSI/100'	7.0
TOTAL ZONE FRICTION LOSS, PSI	12.075
MINIMUM PRESSURE AT FURTHEST APARTMENT UNIT, PSI	27.6
FROM FURTHEST APARTMENT UNIT TO FURTHEST FIXTURE	
MINIMUM PRESSURE AT FURTHEST APARTMENT UNIT, PSI	27.6
PIPING FRICTION LOSSES	
RISER TO MANIFOLD, FEET	4
FITTING ALLOWANCE, FEET	6
<i>FROM MANIFOLD TO FURTHEST FIXTURE</i>	
ZONE FRICTION LOSS FACTOR, PSI/100'	14.0
TOTAL ZONE FRICTION LOSS, PSI	6.3
MINIMUM PRESSURE AT FURTHEST FIXTURE, PSI	21.3



DRAWN: JM	DESIGNED: JM	CHECKED: RJ	APPROVED: JR
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PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
 202 27TH AVE SE
 PUYALLUP, WA 98374
 19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343
ROBISON ENGINEERING, INC.

DATE: 10/11/2023

SHEET TITLE:
PLUMBING CALCULATIONS

SHEET NO.
POB.02

NO.	DATE	DESCRIPTION	REVISIONS

PLUMBING SCHEDULES

PIPE MATERIALS

PIPE TYPE	MATERIAL	JOINT	NOTES
WATER DISTRIBUTION PIPING	COPPER, TYPE L.	SOLDERED	2
APARTMENT WATER PIPING	PEX-A	EXPANSION OR PUSH-FIT FITTINGS	2
WASTE AND VENT PIPING	SCHEDULE 40 SOLID CORE PVC	SOLVENT CEMENT	1,3
CONDENSATE DRAIN PIPING	COPPER, TYPE M.	SOLDERED OR PROPPRESS FITTINGS	

NOTES:

1. ALL SANITARY SYSTEM MATERIALS SHALL BE LISTED BY AN APPROVED LISTING AGENCY.
2. PROVIDE THERMAL EXPANSION LOOPS FOR ALL WATER PIPING IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
3. PROVIDE CAST IRON PIPING FOR WASTE DISCHARGE EXCEEDING 110 DEGREES FAHRENHEIT.

PIPE SIZING SCHEDULE - COPPER TYPE L AT 7.0 PSI/100 FEET

PIPE SIZE	COLD WATER, FLUSH TANK			HOT WATER			COLD WATER, FLUSH VALVE		
	FIXTURE UNITS	FLOW, GPM	VELOCITY, FPS	FIXTURE UNITS	FLOW, GPM	VELOCITY, FPS	FIXTURE UNITS	FLOW, GPM	VELOCITY, FPS
1/2"	3.0	2.8	4.0	3.0	2.8	4.0	---	---	---
3/4"	9.0	7.5	5.2	8.5	7.0	4.9	---	---	---
1"	22.0	16.0	6.4	16.0	12.2	5.0	---	---	---
1-1/4"	45.0	27.0	7.3	27.0	18.5	5.0	9	27	7.3
1-1/2"	100.0	43.0	8.0	43.0	26.0	5.0	30	42.5	8
2"	230.0	75.0	8.0	112.0	45.0	5.0	125.0	74.0	8.0
2-1/2"	440.0	116.0	8.0	215.0	72.0	5.0	340.0	116.0	8.0
3"	750.0	160.0	8.0	350.0	100.0	5.0	680.0	160.0	8.0
4"	1600.0	280.0	8.0	800.0	175.0	5.0	1600.0	280.0	8.0
6"	5250.0	650.0	8.0	2750.0	400.0	5.0	5250.0	650.0	8.0

PIPE SIZING SCHEDULE - PEX AT 14.0 PSI/100 FEET

PIPE SIZE	COLD WATER, FLUSH TANK			HOT WATER			COLD WATER, FLUSH VALVE		
	FIXTURE UNITS	FLOW, GPM	VELOCITY, FPS	FIXTURE UNITS	FLOW, GPM	VELOCITY, FPS	FIXTURE UNITS	FLOW, GPM	VELOCITY, FPS
1/2"	3.0	3.0	5.5	3.0	3.4	6.1	---	---	---
3/4"	9.0	7.8	7.1	11.0	8.5	7.7	1.0	7.8	7.1
1"	21.0	15.3	8.4	20.0	14.6	8.0	2.0	15.3	8.4
1-1/4"	44.0	26.1	9.6	33.0	21.8	8.0	9.0	26.1	9.6
1-1/2"	77.0	37.9	10.0	54.0	30.3	8.0	24.0	37.9	10.0
2"	199.0	65.0	10.0	134.0	52.0	8.0	91.0	65.0	10.0
2-1/2"	375.0	99.0	10.0	270.0	79.2	8.0	239.0	99.0	10.0
3"	589.0	140.8	10.0	443.0	112.6	8.0	494.0	140.8	10.0

REDUCED PRESSURE BACKFLOW ASSEMBLY

EQUIP NO.	QTY	SERVICE	INLET/OUTLET SIZE	BASIS OF DESIGN	NOTES
RPBP-1	1	DOMESTIC WATER	3"	ZURN WILKINS 375	1,2

NOTES:

1. INSTALL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
2. ALL DOMESTIC WATER EQUIPMENT SHALL BE NSF-61 LISTED.

HYBRID ELECTRIC HEAT PUMP WATER HEATER

EQUIP NO.	SERVICE	UNIFORM ENERGY FACTOR	GPH RECOVERY AT 90F TR	STORAGE (GAL)	INLET/OUTLET CONNECTION	OPERATING WEIGHT (LBS)	ELECTRICAL	BASIS OF DESIGN	NOTES
HPWH-1	APARTMENT UNITS	4.00	27	80	3/4"	912	208V/1P/21A	RHEEM PROPH80	1,2,3,4

NOTES:

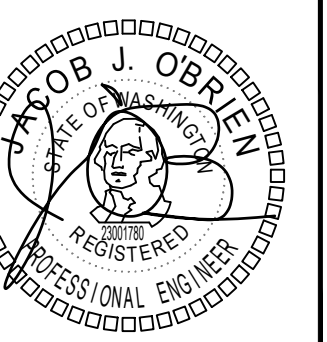
1. ELECTRICAL REQUIREMENTS ARE BASED ON NON-SIMULTANEOUS OPERATION.
2. FOR WATER HEATER PIPING DIAGRAM SEE DETAIL 1/P7.00.
3. ALL DOMESTIC WATER EQUIPMENT SHALL BE NSF-61 LISTED.
4. PROVIDE INLET AND OUTLET DUCTS FOR HEAT PUMP WATER HEATERS. SEE MECHANICAL DRAWINGS FOR ROUTING AND TERMINATION.

EXPANSION TANK

EQUIP NO.	SERVICE	CAPACITY GAL.	PRE-CHARGE PRESSURE, PSI	TANK SIZE		OPERATING WEIGHT, LBS	BASIS OF DESIGN	NOTES
				DIAMETER	HEIGHT			
ET-1	DOMESTIC HOT WATER	4.5	50	11	15	9	THERM-X-TROL ST-12	1

NOTES:

1. INSTALL PER MANUFACTURER'S RECOMMENDATIONS



JM	JM	RJ	JR
DRAWN:	DESIGNED:	CHECKED:	APPROVED:

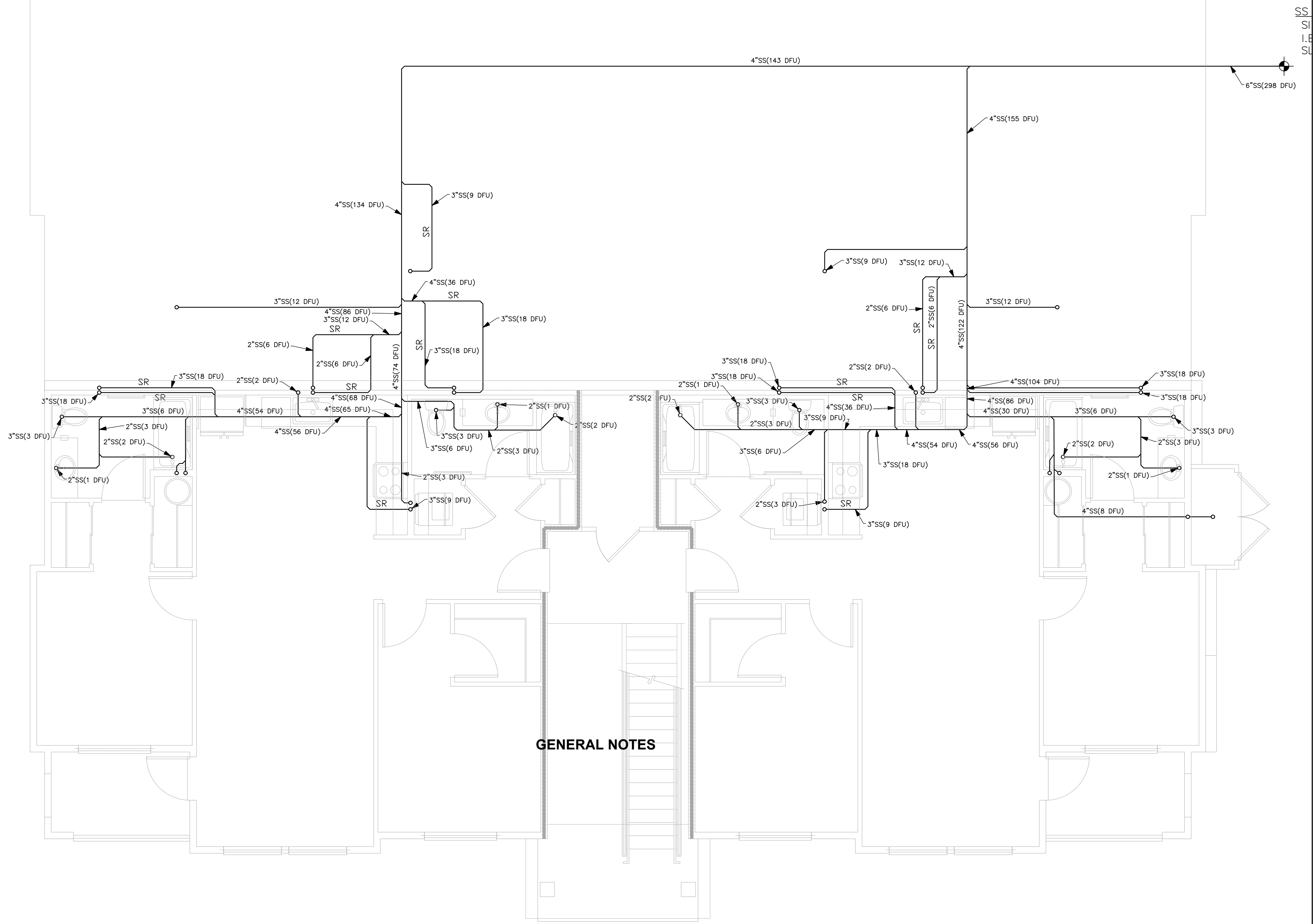
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ROBISON ENGINEERING, INC.
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 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

DATE: 10/11/2023

SHEET TITLE:
PLUMBING SCHEDULES

SHEET NO.
POB.03

NO.	DATE	DESCRIPTION	REVISIONS



GENERAL NOTES

GENERAL NOTES

1. PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS PER 2018 UPC 1007.1. SEE DETAIL 5/P7.01.
2. WASTE & VENT SIZING: WASTE & VENT PIPING IS SIZED PER 2018 UPC TABLE 703.2. DRAINAGE PIPING SHALL BE SLOPED AT 1/4" PER FOOT OR 2%. WHERE IT IS IMPRACTICAL TO OBTAIN A SLOPE OF 2% DUE TO THE DEPTH OF THE STREET SEWER OR TO STRUCTURAL FEATURES OF THE BUILDING, DRAINAGE PIPING 4" AND LARGER MAY BE SLOPED AT 1/8" PER FOOT OR 1% WITH APPROVAL FROM THE AHJ.

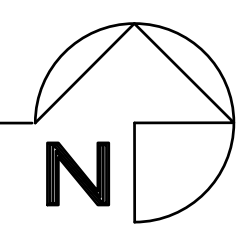
PIPE SIZE	VERTICAL	HORIZONTAL	VENT
1 1/2"	2 DFU	1 DFU	8 DFU
2"	16 DFU	8 DFU	24 DFU
3"	48 DFU	35 DFU	84 DFU
4"	256 DFU	172 DFU	256 DFU
6"	1,380 DFU	576 DFU	1,380 DFU
8"	3,600 DFU	2,112 DFU	3,600 DFU

FLAG NOTES

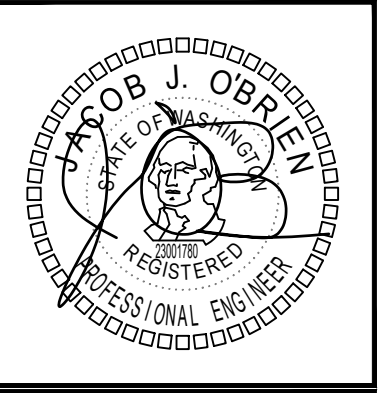
NOT USED

BACKWATER VALVE ANALYSIS - SS POC:
 IF UPSTREAM MANHOLE RIM ELEVATION IS HIGHER THAN FINISH FLOOR ELEVATION CONTACT ENGINEER FOR FURTHER EVALUATION.

UNDERSLAB WASTE & VENT PLAN
 SCALE: 1/4" = 1'-0"



NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	JM	DESIGNED:	JM	CHECKED:	RJ	APPROVED:	JR
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PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
 202 27TH AVE SE
 PUYALLUP, WA 98374

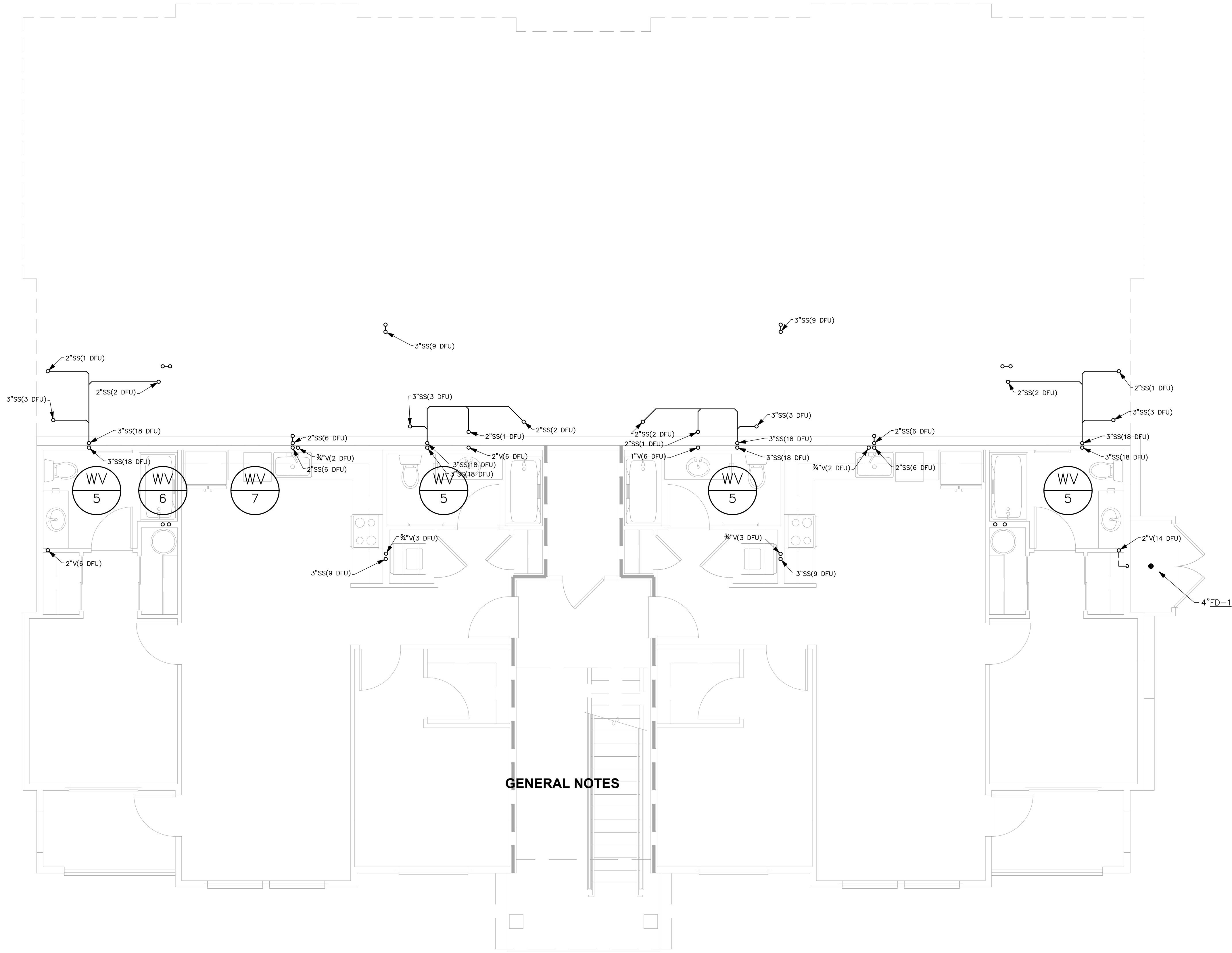
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ROBISON ENGINEERING, INC.

DATE: 10/11/2023

SHEET TITLE:
UNDERSLAB WASTE & VENT PLAN

SHEET NO.
P2B.00



GENERAL NOTES

GENERAL NOTES

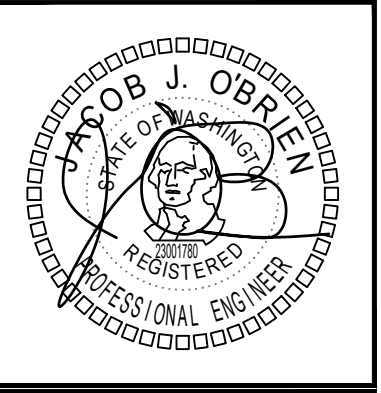
1. PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS PER 2018 UPC 1007.1. SEE DETAIL 5/P7.01.
2. WASTE & VENT SIZING: WASTE & VENT PIPING IS SIZED PER 2018 UPC TABLE 703.2. DRAINAGE PIPING SHALL BE SLOPED AT 1/4" PER FOOT OR 2%. WHERE IT IS IMPRACTICAL TO OBTAIN A SLOPE OF 2% DUE TO THE DEPTH OF THE STREET SEWER OR TO STRUCTURAL FEATURES OF THE BUILDING, DRAINAGE PIPING 4" AND LARGER MAY BE SLOPED AT 1/8" PER FOOT OR 1% WITH APPROVAL FROM THE AHJ.

PIPE SIZE	VERTICAL	HORIZONTAL	VENT
1 1/2"	2 DFU	1 DFU	8 DFU
2"	16 DFU	8 DFU	24 DFU
3"	48 DFU	35 DFU	84 DFU
4"	256 DFU	172 DFU	256 DFU
6"	1,380 DFU	576 DFU	1,380 DFU
8"	3,600 DFU	2,112 DFU	3,600 DFU

FLAG NOTES

NOT USED

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: JM	DESIGNED: JM	CHECKED: RJ	APPROVED: JR
-----------	--------------	-------------	--------------

PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
 202 27TH AVE SE
 PUYALLUP, WA 98374

19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

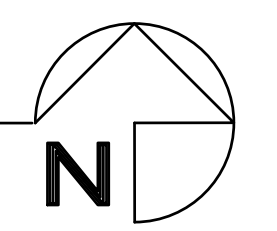
ROBISON ENGINEERING, INC.

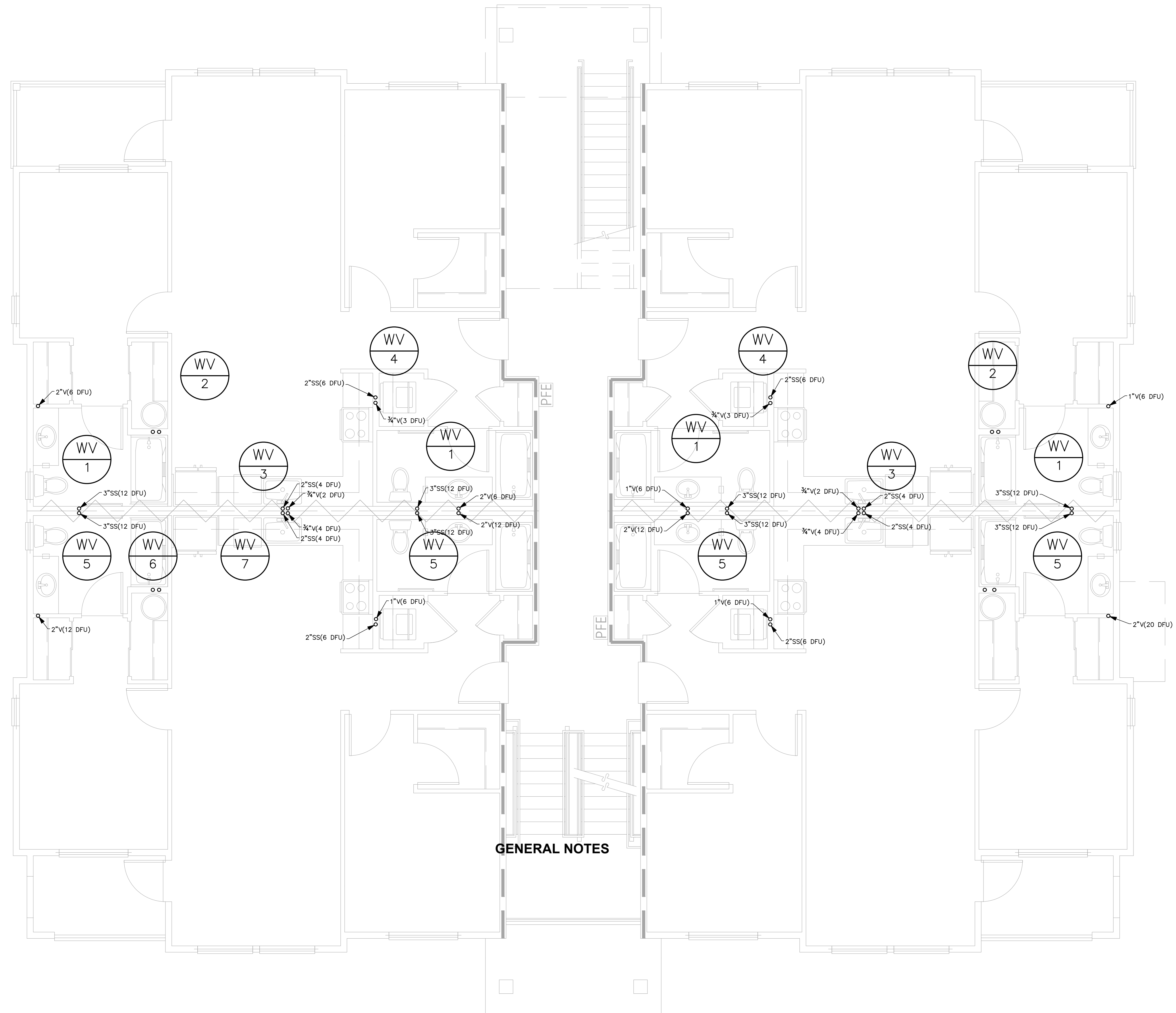
DATE: 10/11/2023

SHEET TITLE:
BASEMENT WASTE & VENT PLAN

SHEET NO.
P2B.01

BASEMENT WASTE & VENT PLAN
 SCALE: 1/4" = 1'-0"





GENERAL NOTES

GENERAL NOTES

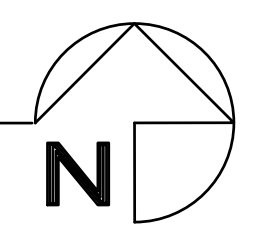
1. PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS PER 2018 UPC 1007.1. SEE DETAIL 5/P7.01.
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PIPE SIZE	VERTICAL	HORIZONTAL	VENT
1/2"	2 DFU	1 DFU	8 DFU
2"	16 DFU	8 DFU	24 DFU
3"	48 DFU	35 DFU	84 DFU
4"	256 DFU	172 DFU	256 DFU
6"	1,380 DFU	576 DFU	1,380 DFU
8"	3,600 DFU	2,112 DFU	3,600 DFU

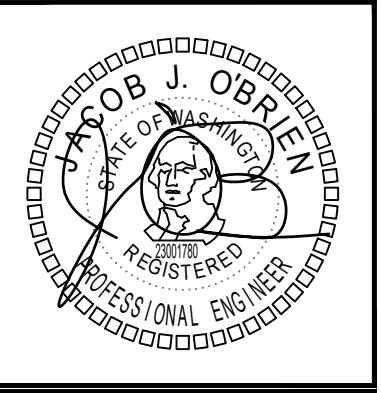
FLAG NOTES

NOT USED

LEVEL 1 WASTE & VENT PLAN
SCALE: 1/4" = 1'-0"



NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: JM	DESIGNED: JM	CHECKED: RJ	APPROVED: JR
-----------	--------------	-------------	--------------

PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
202 27TH AVE SE
PUYALLUP, WA 98374

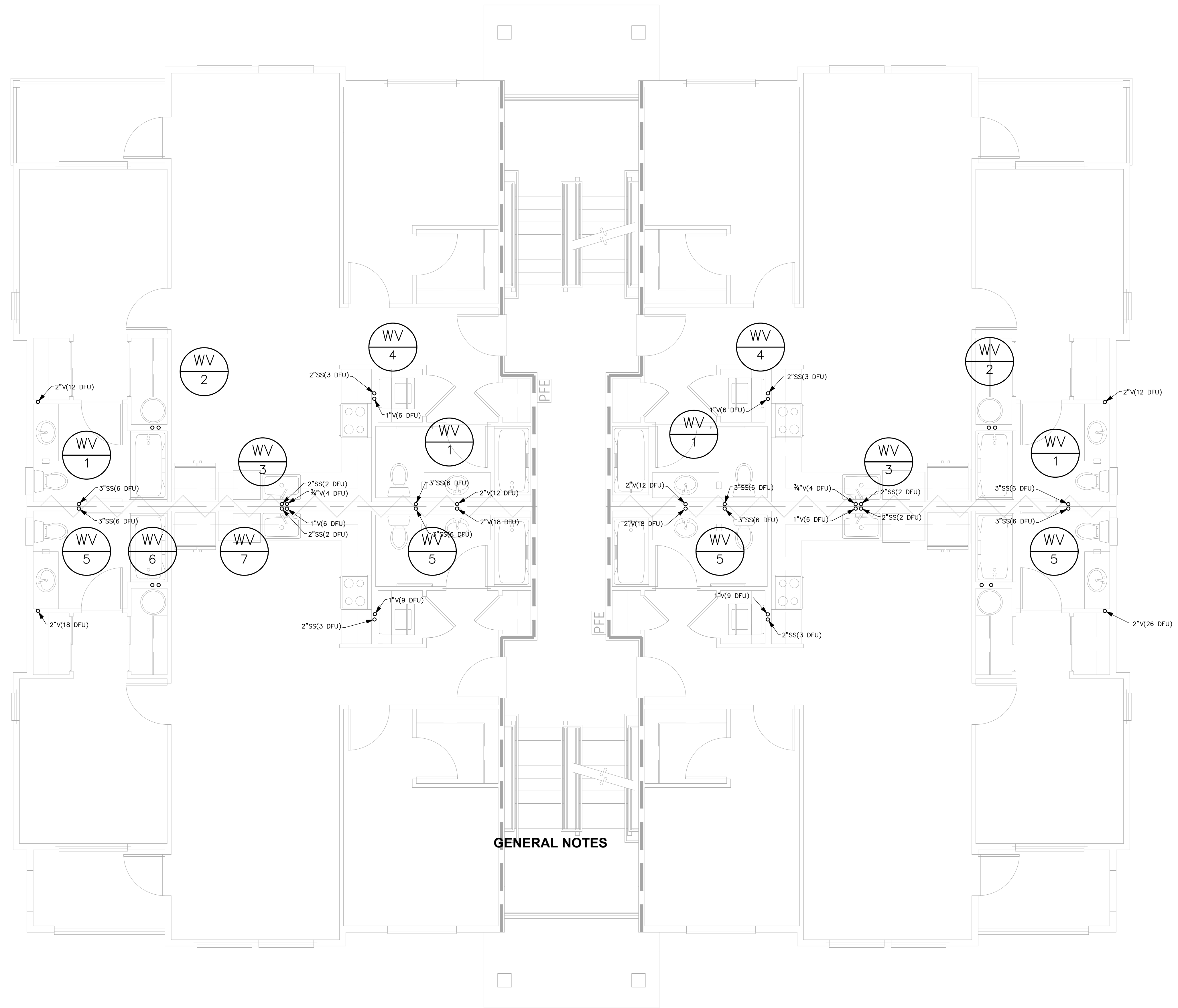
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC.

DATE: 10/11/2023

SHEET TITLE:
LEVEL 1 WASTE & VENT PLAN

SHEET NO.
P2B.02



GENERAL NOTES

GENERAL NOTES

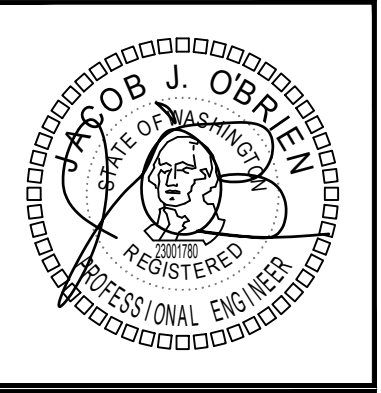
1. PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS PER 2018 UPC 1007.1. SEE DETAIL 5/P7.01.
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4"	256 DFU	172 DFU	256 DFU
6"	1,380 DFU	576 DFU	1,380 DFU
8"	3,600 DFU	2,112 DFU	3,600 DFU

FLAG NOTES

NOT USED

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	JM
DESIGNED:	JM
CHECKED:	RJ
APPROVED:	JR

PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
 202 27TH AVE SE
 PUYALLUP, WA 98374

19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

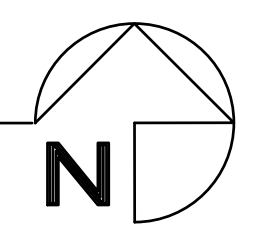
ROBISON ENGINEERING, INC.

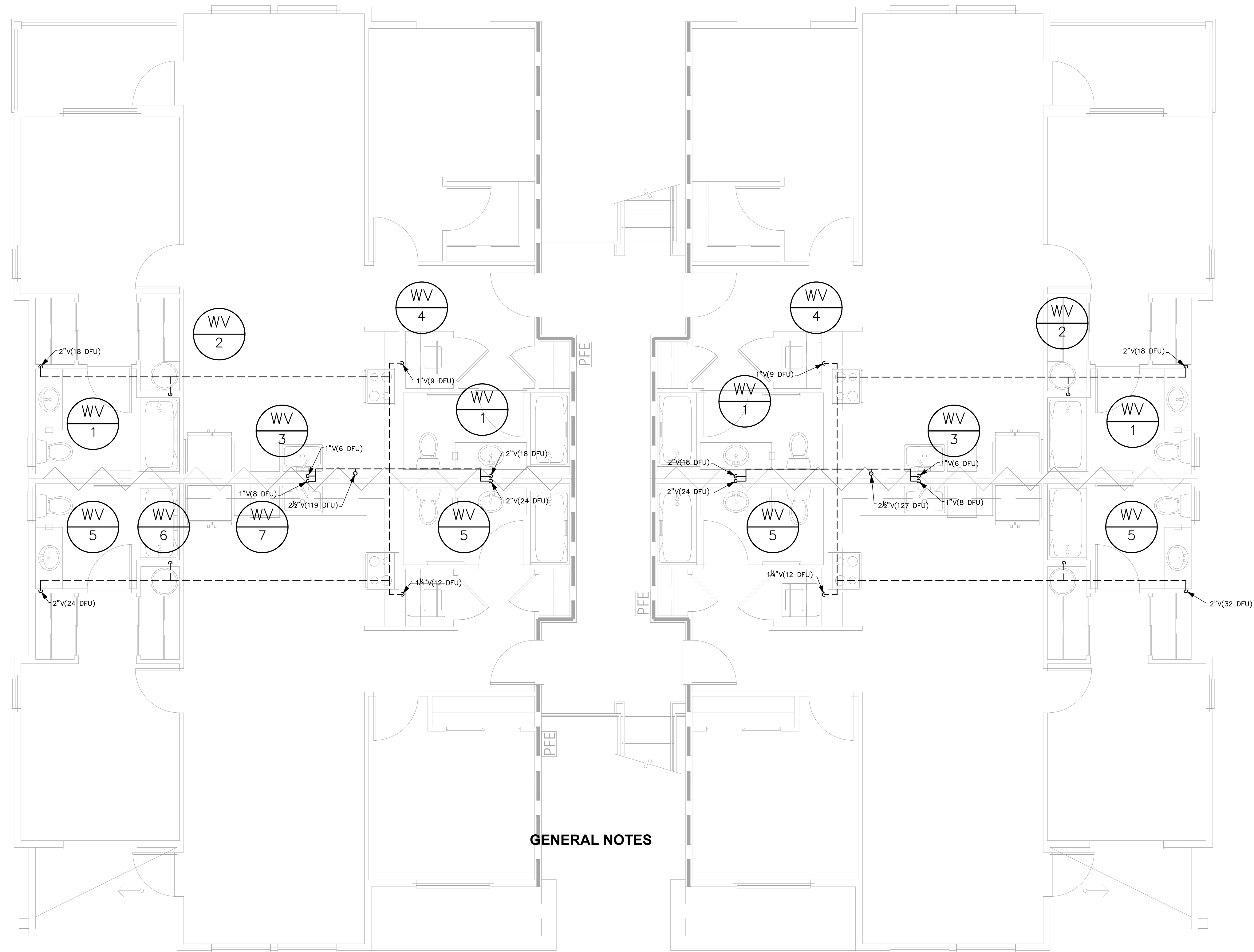
DATE: 10/11/2023

SHEET TITLE:
LEVEL 2 WASTE & VENT PLAN

SHEET NO.
P2B.03

LEVEL 2 WASTE & VENT PLAN
 SCALE: 1/4" = 1'-0"





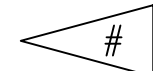
GENERAL NOTES

GENERAL NOTES

1. PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS PER 2018 UPC 1007.1. SEE DETAIL 5/P7.01.
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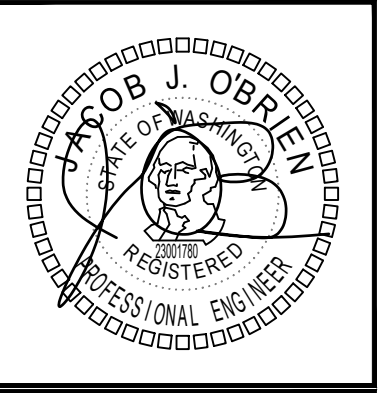
PIPE SIZE	VERTICAL	HORIZONTAL	VENT
1 1/2"	2 DFU	1 DFU	8 DFU
2"	16 DFU	8 DFU	24 DFU
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6"	1,380 DFU	576 DFU	1,380 DFU
8"	3,600 DFU	2,112 DFU	3,600 DFU

FLAG NOTES



NOT USED

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	JM	DESIGNED:	JM	CHECKED:	RJ	APPROVED:	JR
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PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
 202 27TH AVE SE
 PUYALLUP, WA 98374

19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

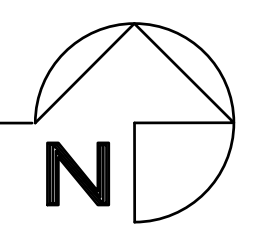
ROBISON ENGINEERING, INC.

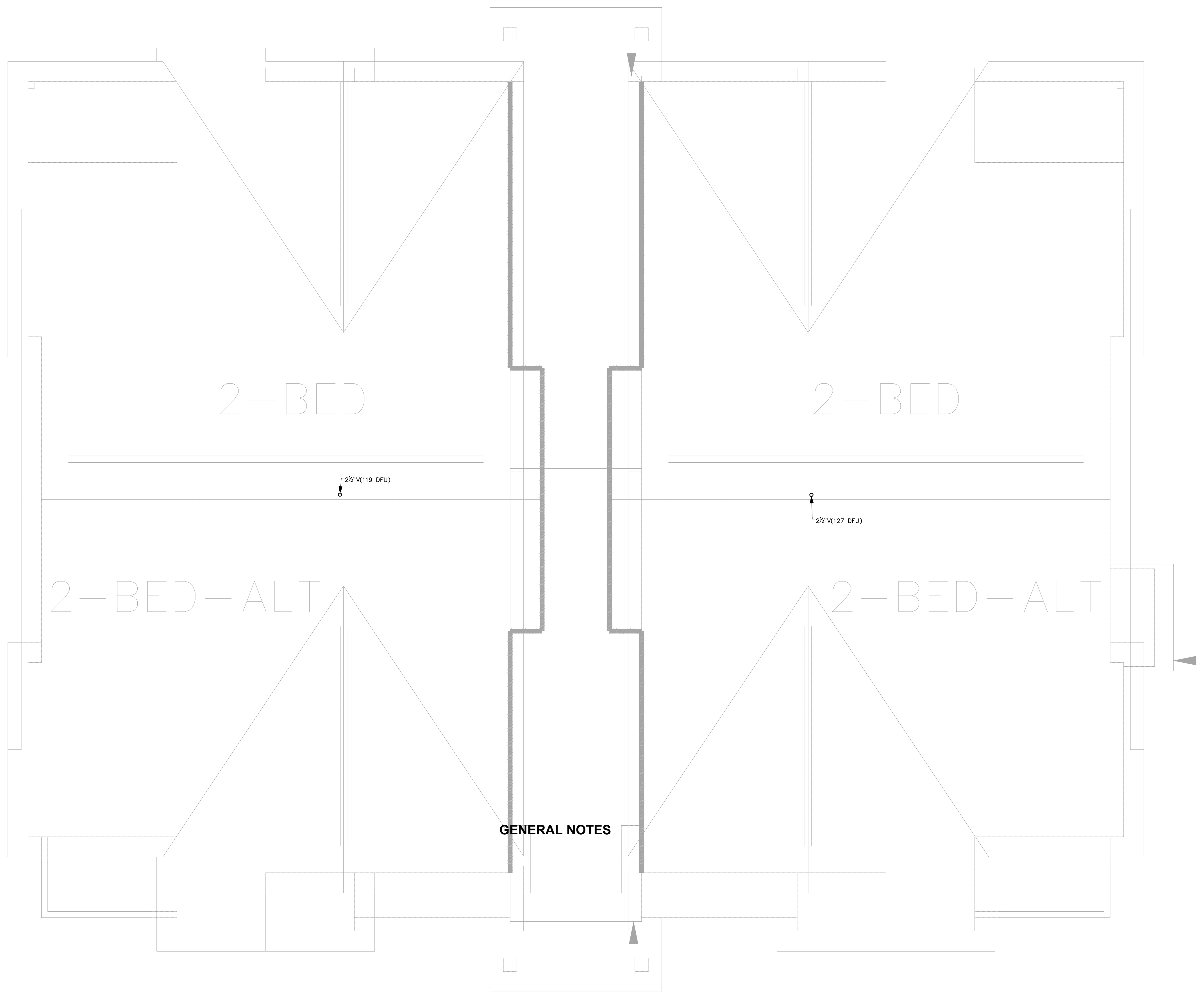
DATE: 10/11/2023

SHEET TITLE:
LEVEL 3 WASTE & VENT PLAN

SHEET NO.
P2B.04

LEVEL 3 WASTE & VENT PLAN
 SCALE: 1/4" = 1'-0"





GENERAL NOTES

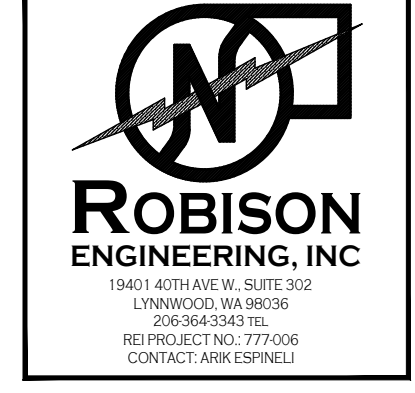
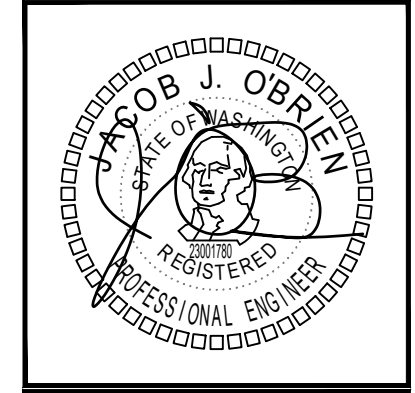
1. PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS PER 2018 UPC 1007.1. SEE DETAIL 5/P7.01.
2. WASTE & VENT SIZING: WASTE & VENT PIPING IS SIZED PER 2018 UPC TABLE 703.2. DRAINAGE PIPING SHALL BE SLOPED AT 1/4" PER FOOT OR 2%. WHERE IT IS IMPRACTICAL TO OBTAIN A SLOPE OF 2% DUE TO THE DEPTH OF THE STREET SEWER OR TO STRUCTURAL FEATURES OF THE BUILDING, DRAINAGE PIPING 4" AND LARGER MAY BE SLOPED AT 1/8" PER FOOT OR 1% WITH APPROVAL FROM THE AHJ.

PIPE SIZE	VERTICAL	HORIZONTAL	VENT
1 1/2"	2 DFU	1 DFU	8 DFU
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4"	256 DFU	172 DFU	256 DFU
6"	1,380 DFU	576 DFU	1,380 DFU
8"	3,600 DFU	2,112 DFU	3,600 DFU

FLAG NOTES

NOT USED

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: JM	DESIGNED: JM	CHECKED: RJ	APPROVED: JR
-----------	--------------	-------------	--------------

PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
 202 27TH AVE SE
 PUYALLUP, WA 98374

19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: (206) 364-3343

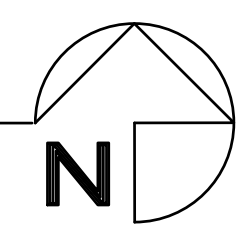
ROBISON ENGINEERING, INC.

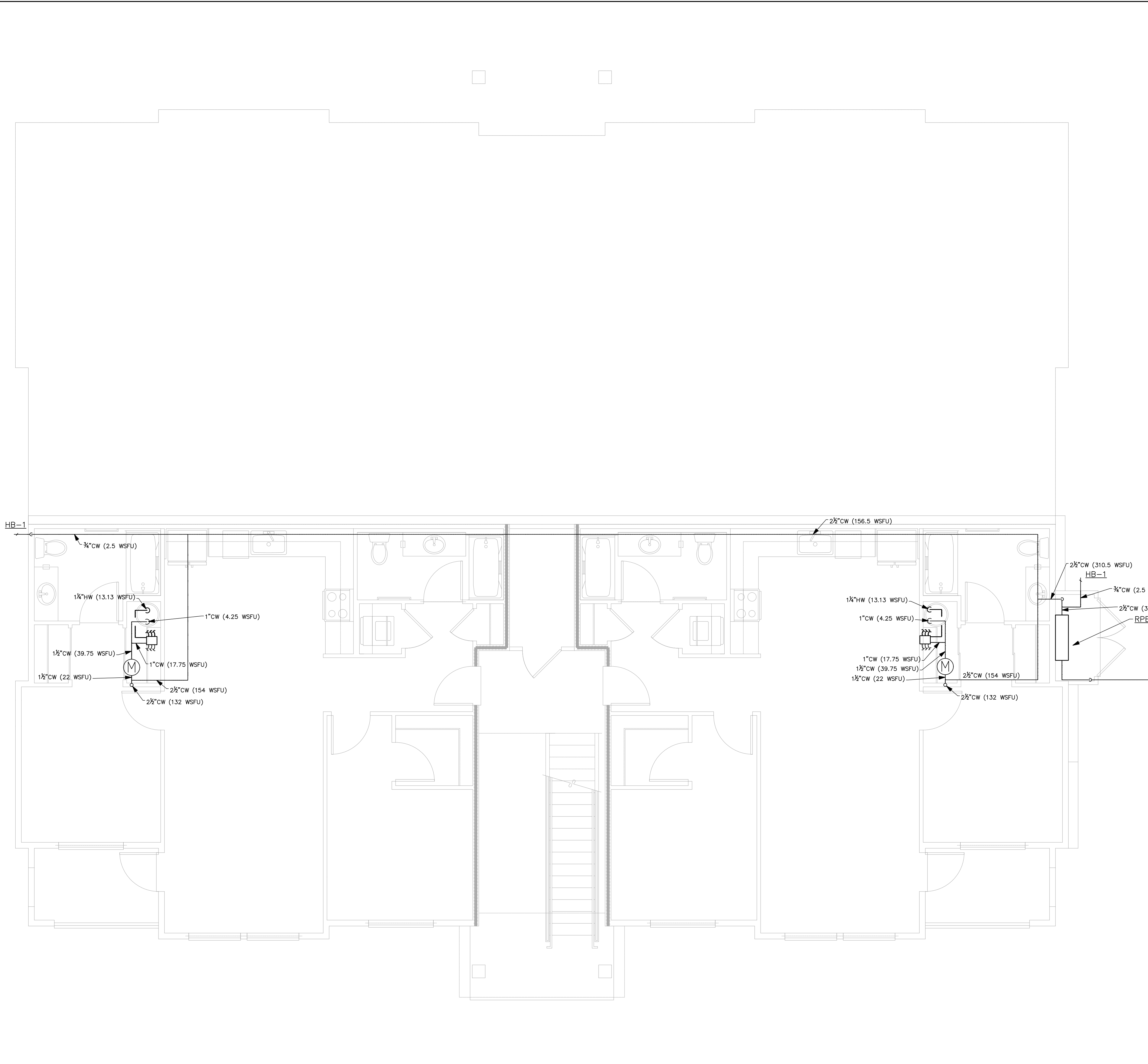
DATE: 10/11/2023

SHEET TITLE:
ROOF WASTE & VENT PLAN

SHEET NO.
P2B.05

ROOF WASTE & VENT PLAN
 SCALE: 1/4" = 1'-0"





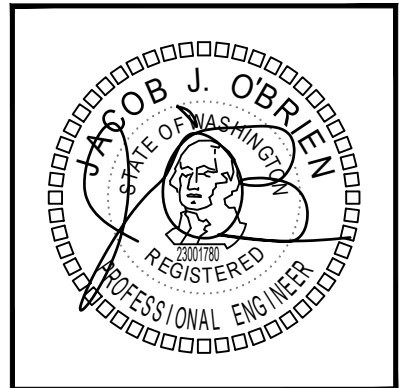
GENERAL NOTES

1. PROVIDE EXPANSION LOOPS FOR ALL WATER PIPING PER THE MANUFACTURER'S INSTRUCTIONS. SEE DETAIL 3/P7.01.
2. INSTALL HEAT TRACE ON SUPPLY PIPE IN NON CONDITIONED SPACES.

FLAG NOTES #

NOT USED

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	JIM
DESIGNED:	JIM
CHECKED:	RU
APPROVED:	JR

PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
 202 27TH AVE SE
 PUYALLUP, WA 98374

19401 40TH AVE W. SUITE 302
 LYNNWOOD, WA 98036
 PHONE: 206/868-3343

ROBISON
ENGINEERING, INC.

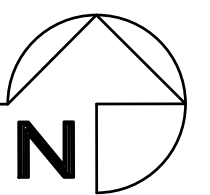
DATE: 10/11/2023

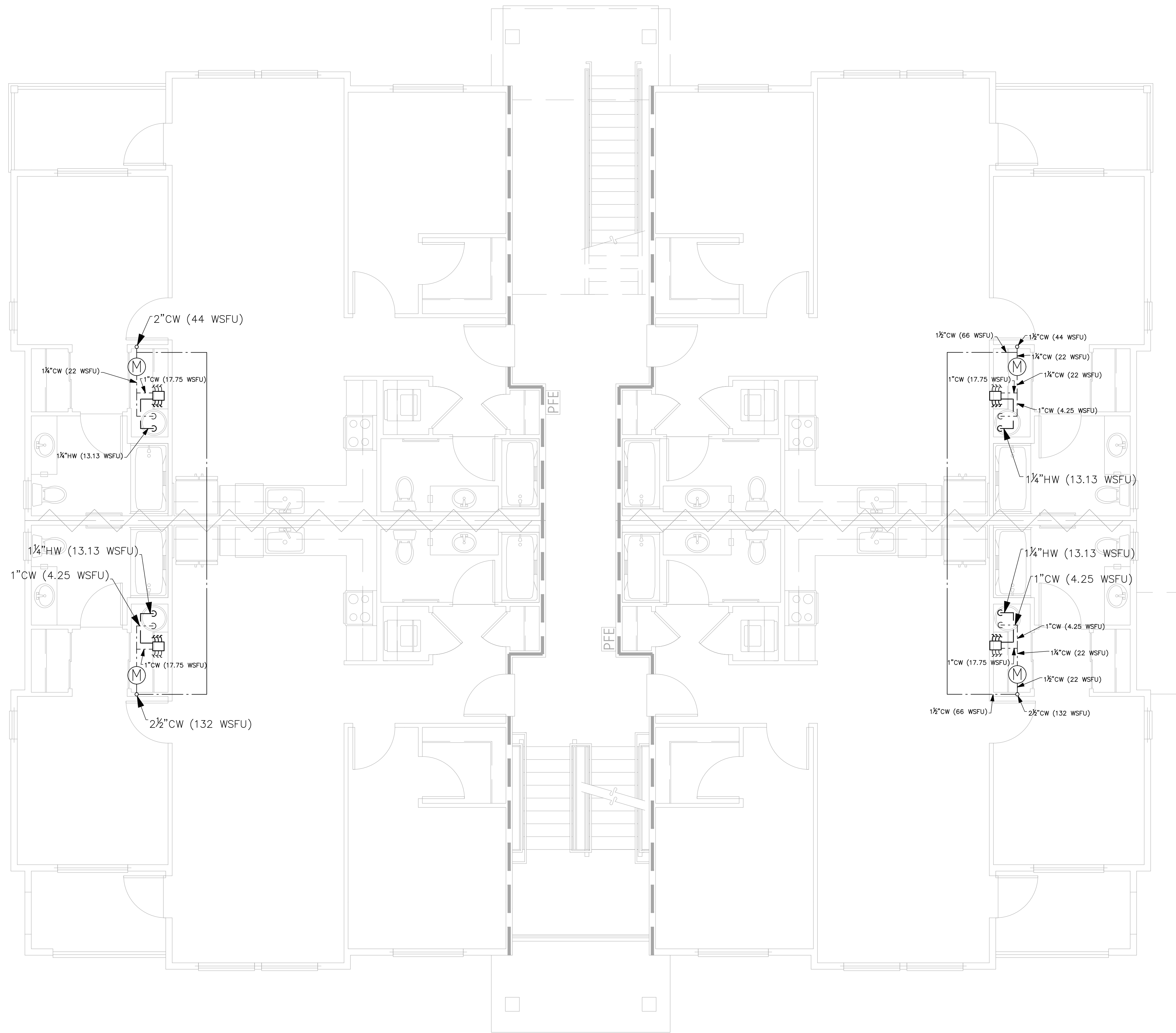
SHEET TITLE:
**BASEMENT
 PLUMBING
 SUPPLY PLAN**

SHEET NO.
P3B.01

BASEMENT PLUMBING SUPPLY PLAN

SCALE: 3/16" = 1'-0"





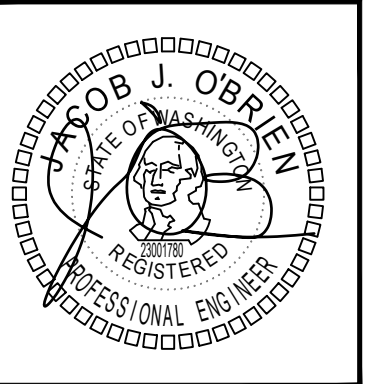
GENERAL NOTES

1. PROVIDE EXPANSION LOOPS FOR ALL WATER PIPING PER THE MANUFACTURER'S INSTRUCTIONS. SEE DETAIL 3/P7.01.
2. INSTALL HEAT TRACE ON SUPPLY PIPE IN NON CONDITIONED SPACES.

FLAG NOTES 

NOT USED

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	JM
DESIGNED:	JM
CHECKED:	RJ
APPROVED:	JR

PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
 202 27TH AVE SE
 PUYALLUP, WA 98374

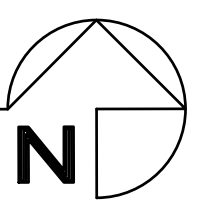
19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: 206-864-3343

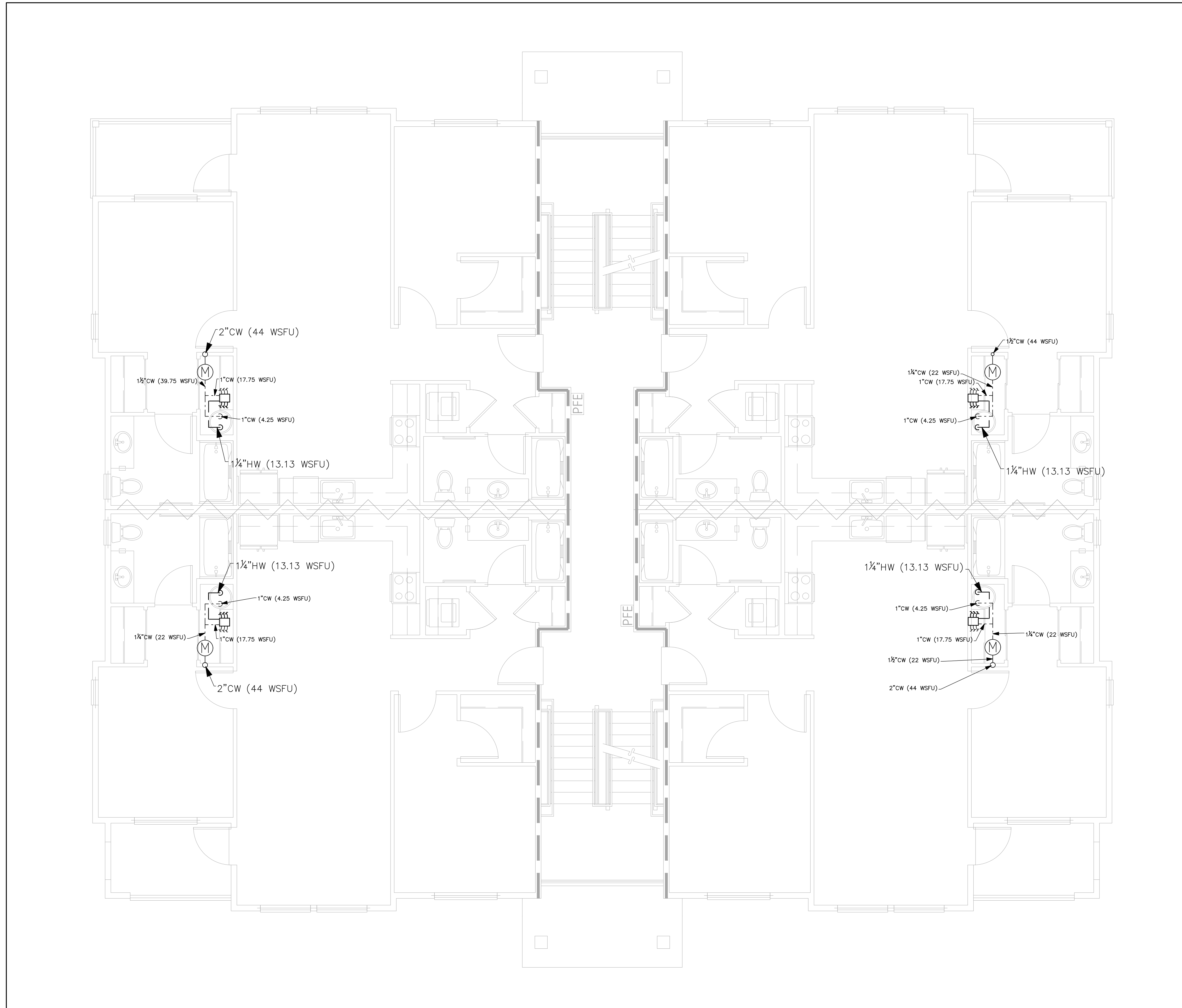
ROBISON
 ENGINEERING, INC

DATE: 10/11/2023

SHEET TITLE:
LEVEL 1
PLUMBING
SUPPLY PLAN

SHEET NO.
P3B.02





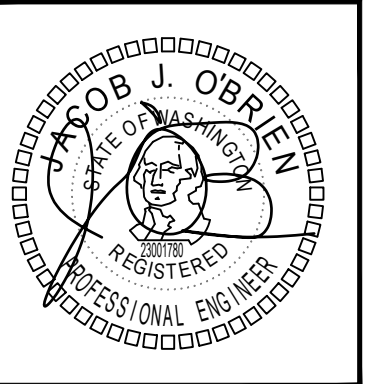
GENERAL NOTES

1. PROVIDE EXPANSION LOOPS FOR ALL WATER PIPING PER THE MANUFACTURER'S INSTRUCTIONS. SEE DETAIL 3/P7.01.
2. INSTALL HEAT TRACE ON SUPPLY PIPE IN NON CONDITIONED SPACES.

FLAG NOTES #

NOT USED

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	JM
DESIGNED:	JM
CHECKED:	RJ
APPROVED:	JR

PROJECT: BRADLEY HEIGHT APARTMENTS - BUILDING B
 202 27TH AVE SE
 PUYALLUP, WA 98374

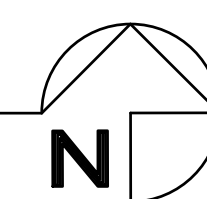
19401 40TH AVE W, SUITE 302
 LYNNWOOD, WA 98036
 PHONE: 206/864-3343

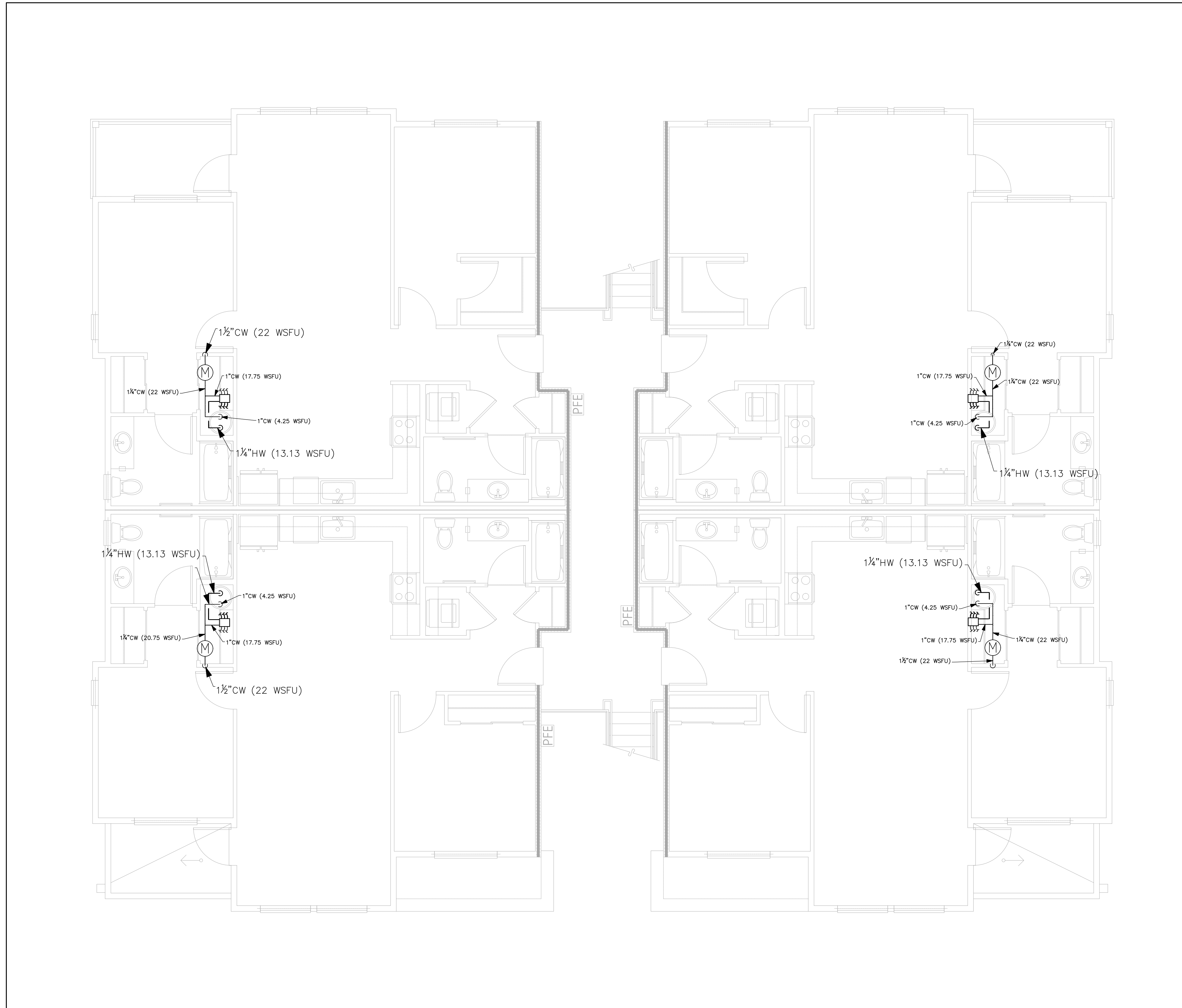
ROBISON
ENGINEERING, INC

DATE: 10/11/2023

SHEET TITLE:
**LEVEL 2
 PLUMBING
 SUPPLY PLAN**

SHEET NO.
P3B.03





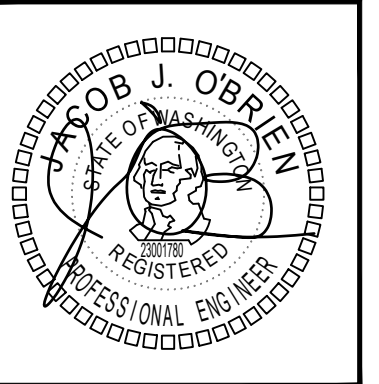
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2. INSTALL HEAT TRACE ON SUPPLY PIPE IN NON CONDITIONED SPACES.

FLAG NOTES #

NOT USED

NO.	DATE	DESCRIPTION	REVISIONS



DRAWN:	JM
DESIGNED:	JM
CHECKED:	RJ
APPROVED:	JR

PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
 202 27TH AVE SE
 PUYALLUP, WA 98374

19401 40TH AVE W. SUITE 302
 LYNNWOOD, WA 98036
 PHONE: 206-863-3343

ROBISON ENGINEERING, INC.

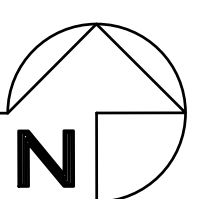
DATE: 10/11/2023

SHEET TITLE:
LEVEL 3 PLUMBING SUPPLY PLAN

SHEET NO.
P3B.04

LEVEL 3 PLUMBING SUPPLY PLAN

SCALE: 3/16" = 1'-0"



GENERAL NOTES

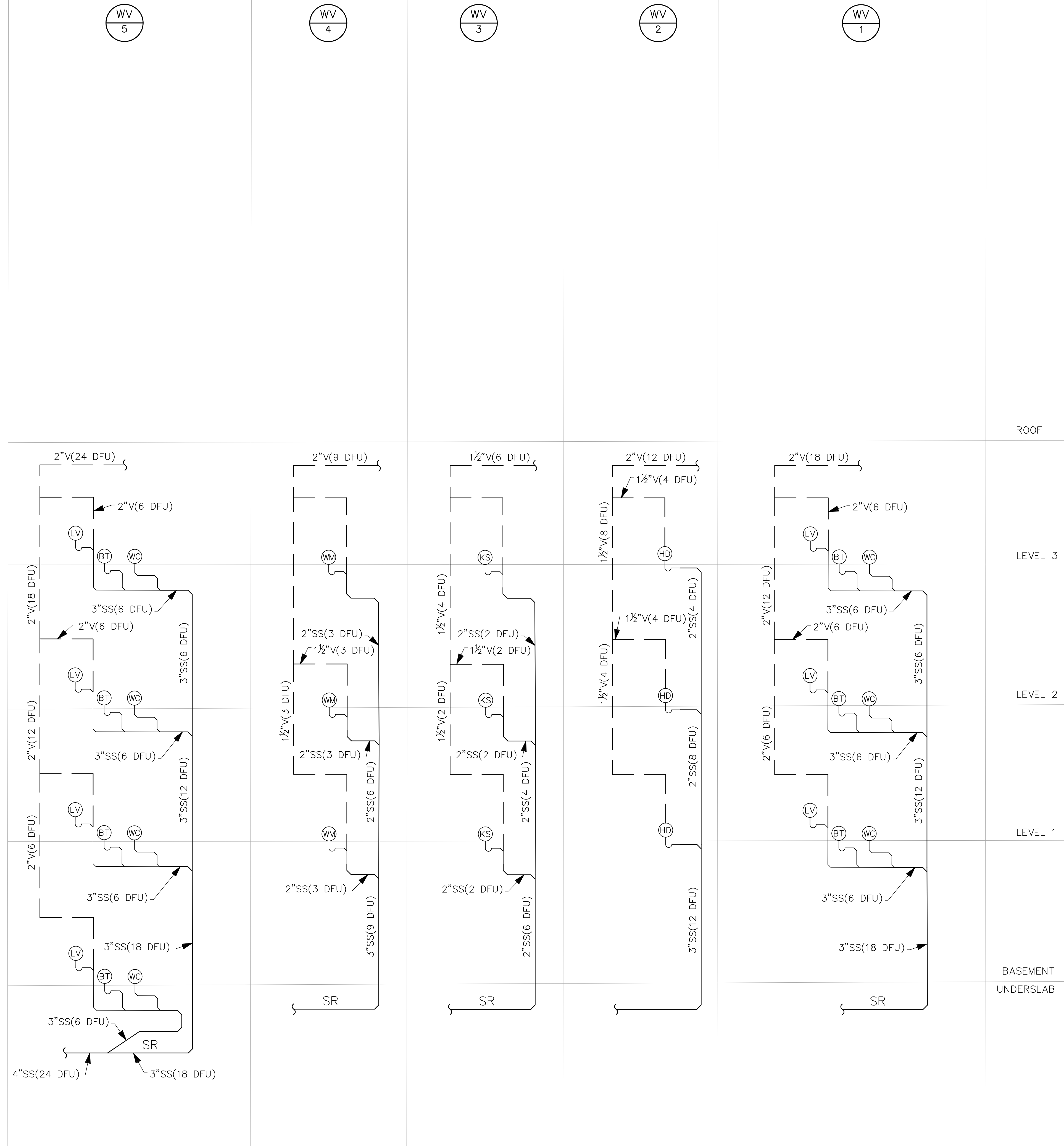
 = WASTE & VENT RISER IDENTIFICATION (I.E. RISER "#"). REFER TO P200 SERIES FOR RISER DIAGRAMS.

- SUD RELIEF PIPING WITH LENGTH OF 8FT WILL BE USED.
- WASTE & VENT SIZING: WASTE & VENT PIPING IS SIZED PER 2018 UPC TABLE 703.2. DRAINAGE PIPING SHALL BE SLOPED AT 1/4" PER FOOT OR 2%. WHERE IT IS IMPRACTICAL TO OBTAIN A SLOPE OF 2% DUE TO THE DEPTH OF THE STREET SEWER OR TO STRUCTURAL FEATURES OF THE BUILDING, DRAINAGE PIPING 4" AND LARGER MAY BE SLOPED AT 1/8" PER FOOT OR 1% WITH APPROVAL FROM THE AHJ.

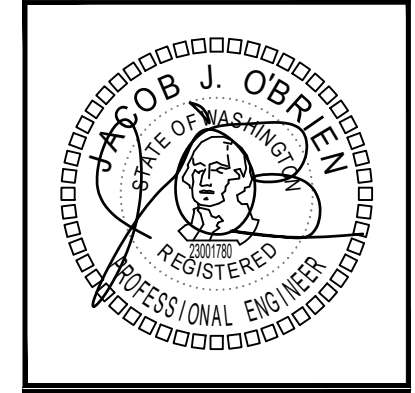
PIPE SIZE	VERTICAL	HORIZONTAL	VENT
1 1/2"	2 DFU	1 DFU	8 DFU
2"	16 DFU	8 DFU	24 DFU
3"	48 DFU	35 DFU	84 DFU
4"	256 DFU	216 DFU	256 DFU
6"	1,380 DFU	720 DFU	1,380 DFU
8"	3,600 DFU	2,640 DFU	3,600 DFU

ABBREVIATION LEGEND:

LV = LAVATORY	(1 DFU)
BT = BATHTUB	(2 DFU)
SH = SHOWER	(2 DFU)
KS = KITCHEN SINK WITH DISHWASHER	(2 DFU)
WM = WASHING MACHINE	(3 DFU)
WC = WATER CLOSET	(3 DFU)
UR = URINAL	(2 DFU)
FD = FLOOR DRAIN	(2 DFU)
FS = FLOOR SINK	(4 DFU)
HD = HUB DRAIN	(4 DFU)



NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: JM	DESIGNED: JM	CHECKED: RJ	APPROVED: JR
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BRADLEY HEIGHT APARTMENTS - BUILDING B

PROJECT: 202 27TH AVE SE
PUYALLUP, WA 98374

19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC.

DATE: 10/11/2023

SHEET TITLE:
WASTE RISER
DIAGRAMS

SHEET NO.
P4B.00

GENERAL NOTES

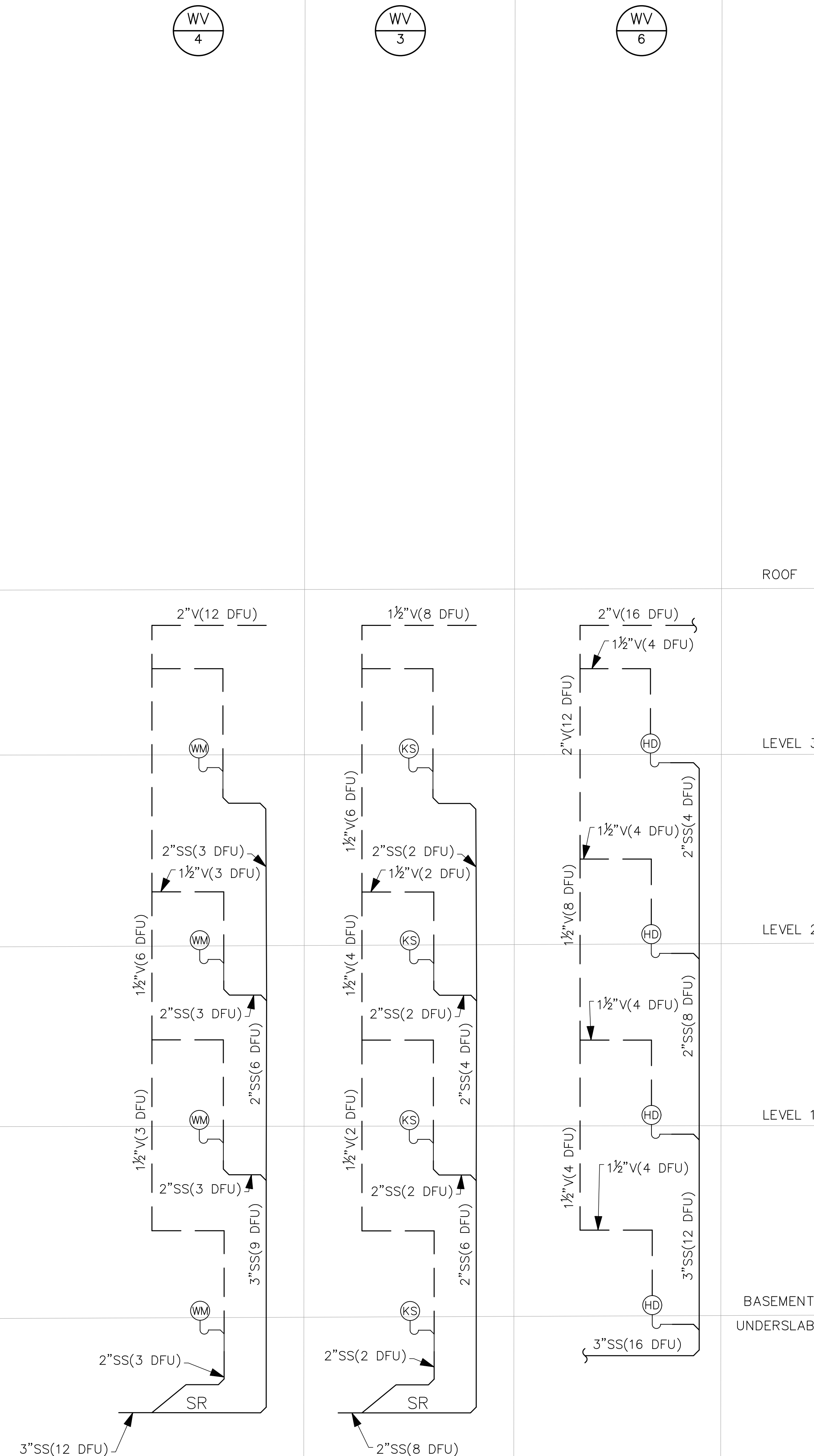
 = WASTE & VENT RISER IDENTIFICATION (I.E. RISER "#"). REFER TO P200 SERIES FOR RISER DIAGRAMS.

- SUD RELIEF PIPING WITH LENGTH OF 8FT WILL BE USED.
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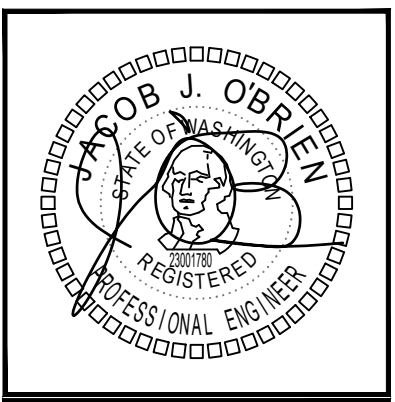
PIPE SIZE	VERTICAL	HORIZONTAL	VENT
1 1/2"	2 DFU	1 DFU	8 DFU
2"	16 DFU	8 DFU	24 DFU
3"	48 DFU	35 DFU	84 DFU
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LV = LAVATORY	(1 DFU)
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WC = WATER CLOSET	(3 DFU)
UR = URINAL	(2 DFU)
FD = FLOOR DRAIN	(2 DFU)
FS = FLOOR SINK	(4 DFU)
HD = HUB DRAIN	(4 DFU)



NO.	DATE	DESCRIPTION	REVISIONS



DRAWN: JM	DESIGNED: JM	CHECKED: RJ	APPROVED: JR
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BRADLEY HEIGHT APARTMENTS - BUILDING B

PROJECT: 202 27TH AVE SE
PUYALLUP, WA 98374

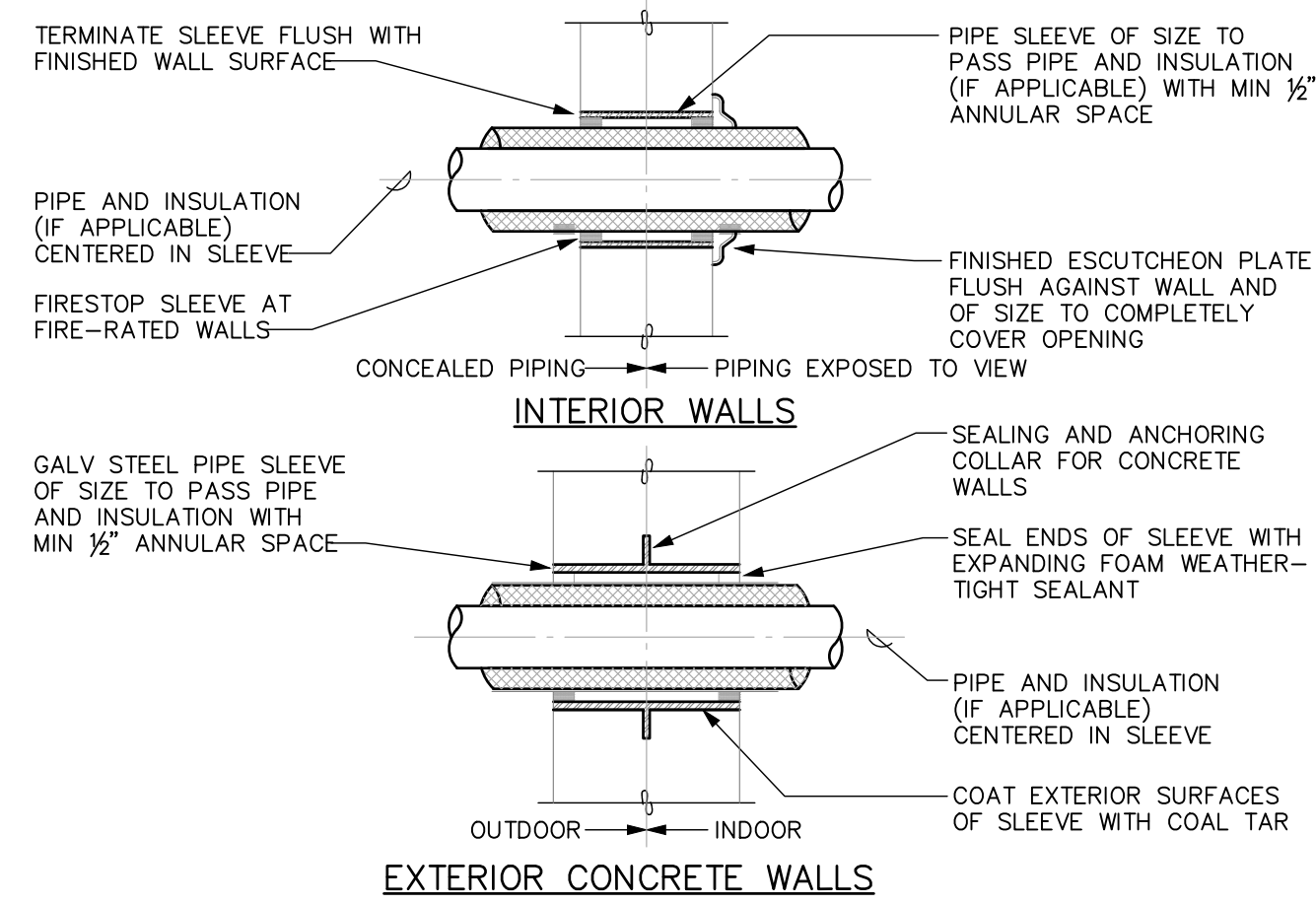
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 364-3343

ROBISON ENGINEERING, INC.

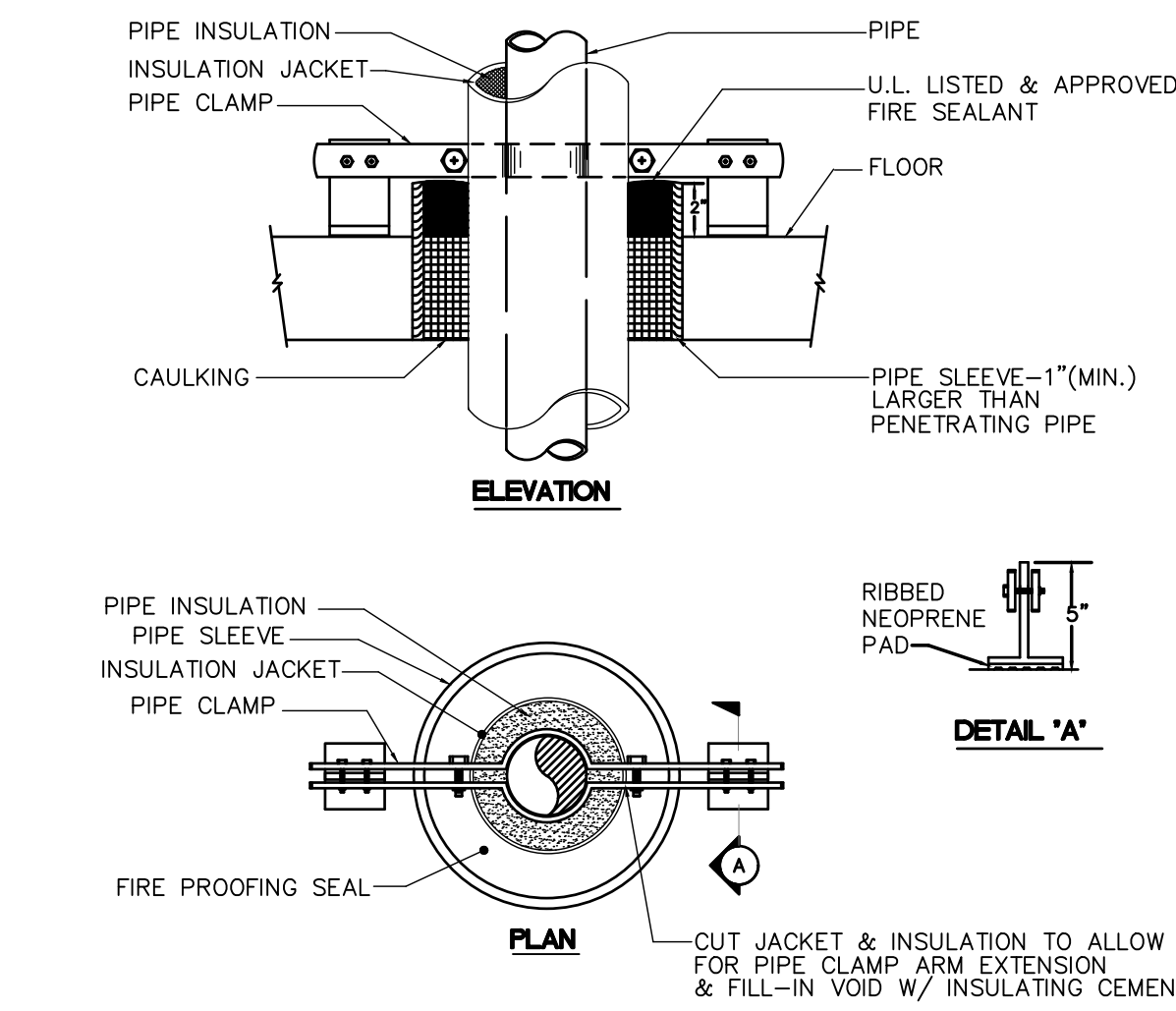
DATE: 10/11/2023

SHEET TITLE:
WASTE RISER DIAGRAMS

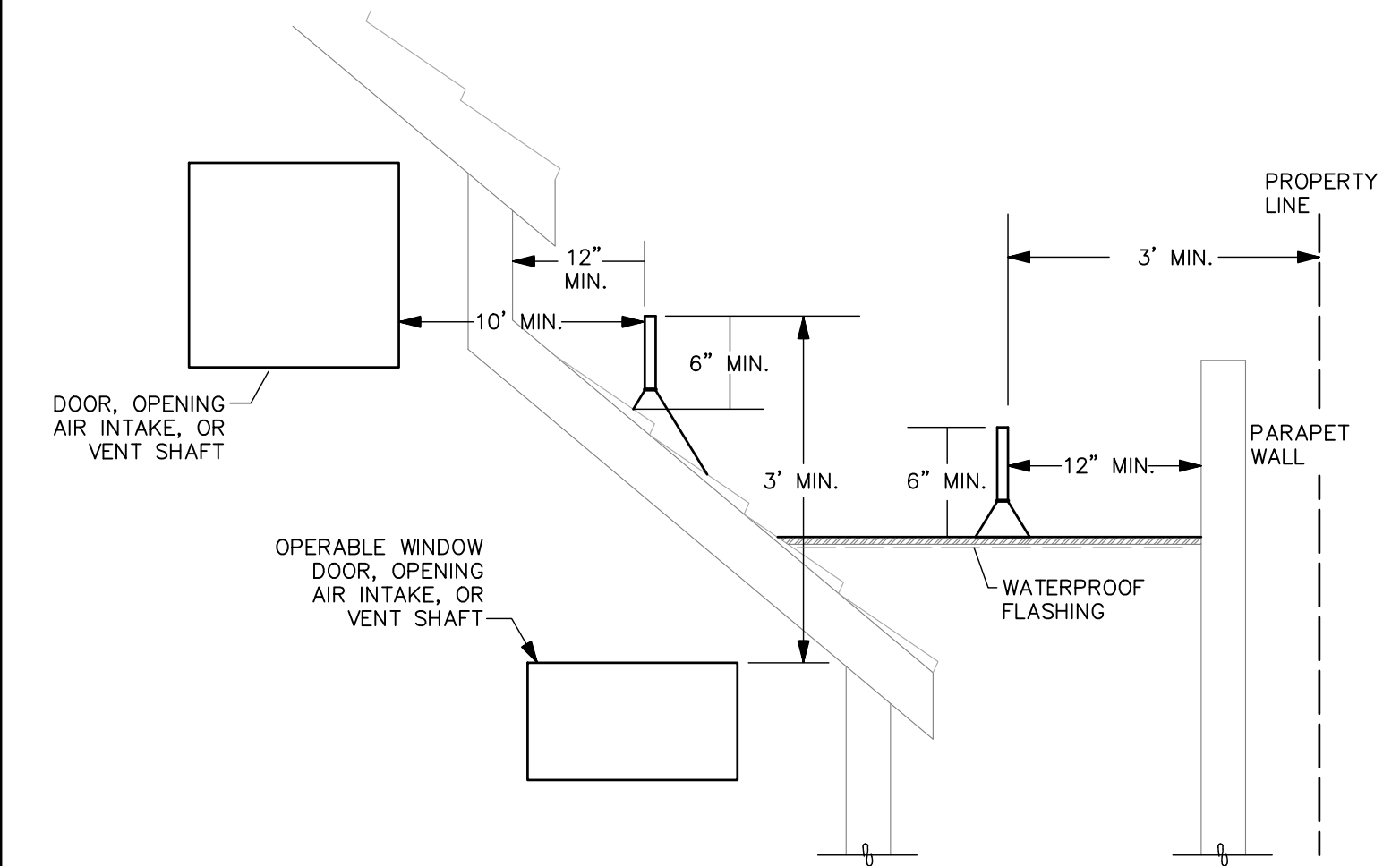
SHEET NO.
P4B.01



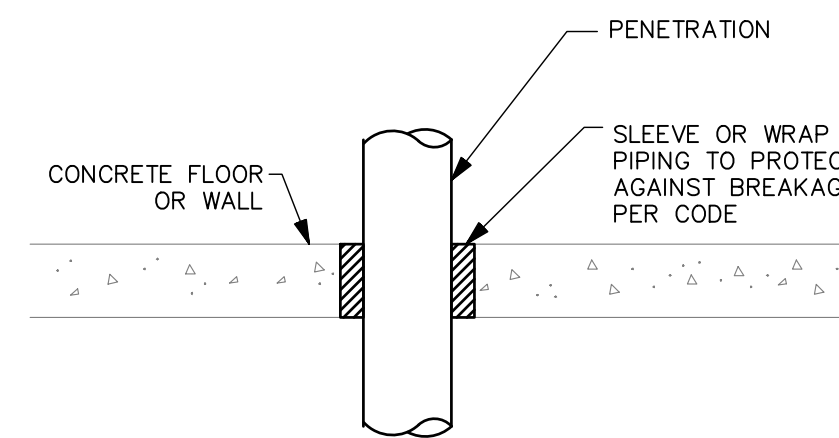
PIPE SLEEVES THROUGH WALLS (8)
SCALE: NONE



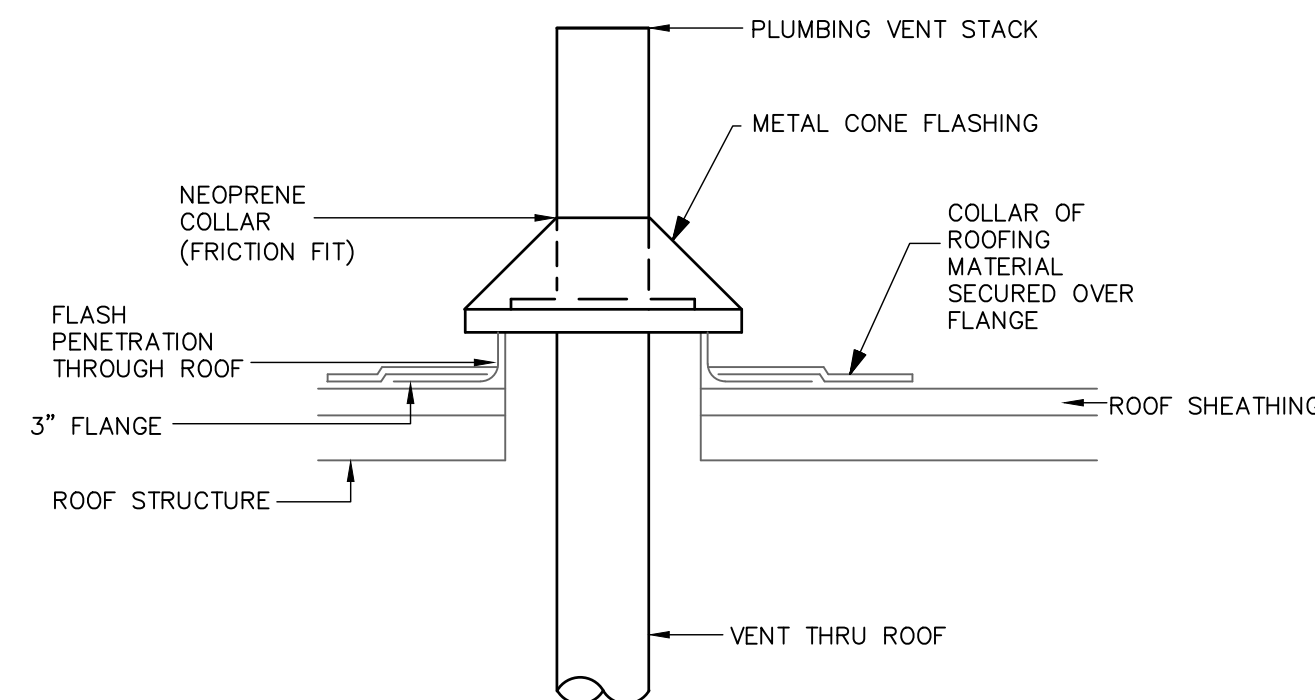
RISER PIPE SUPPORT (7)
SCALE: NONE



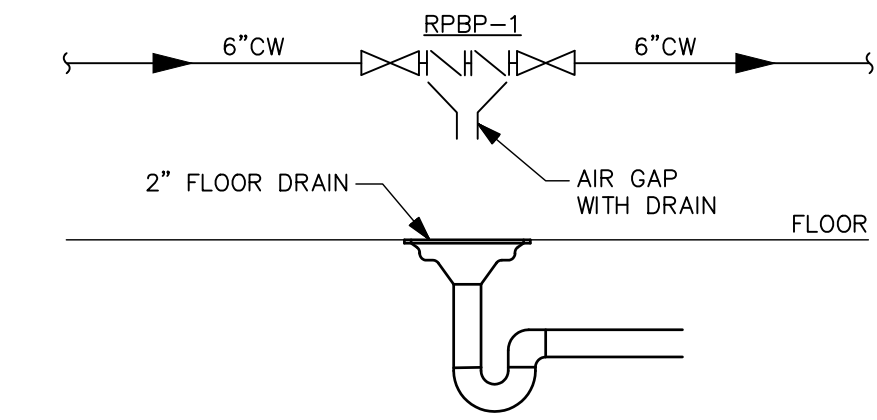
VENT TERMINATION CLEARANCE (6)
SCALE: NONE



PIPE SLAB PENETRATION (5)
SCALE: NONE



VENT THROUGH ROOF (4)
SCALE: NONE



REDUCED PRESSURE BACKFLOW PREVENTER (3)
SCALE: NONE

EQUIPMENT SCHEDULE

WATER METERS (NEXT CENTURY MULTI-JET WATER METER MODEL M201CH, 3/4")

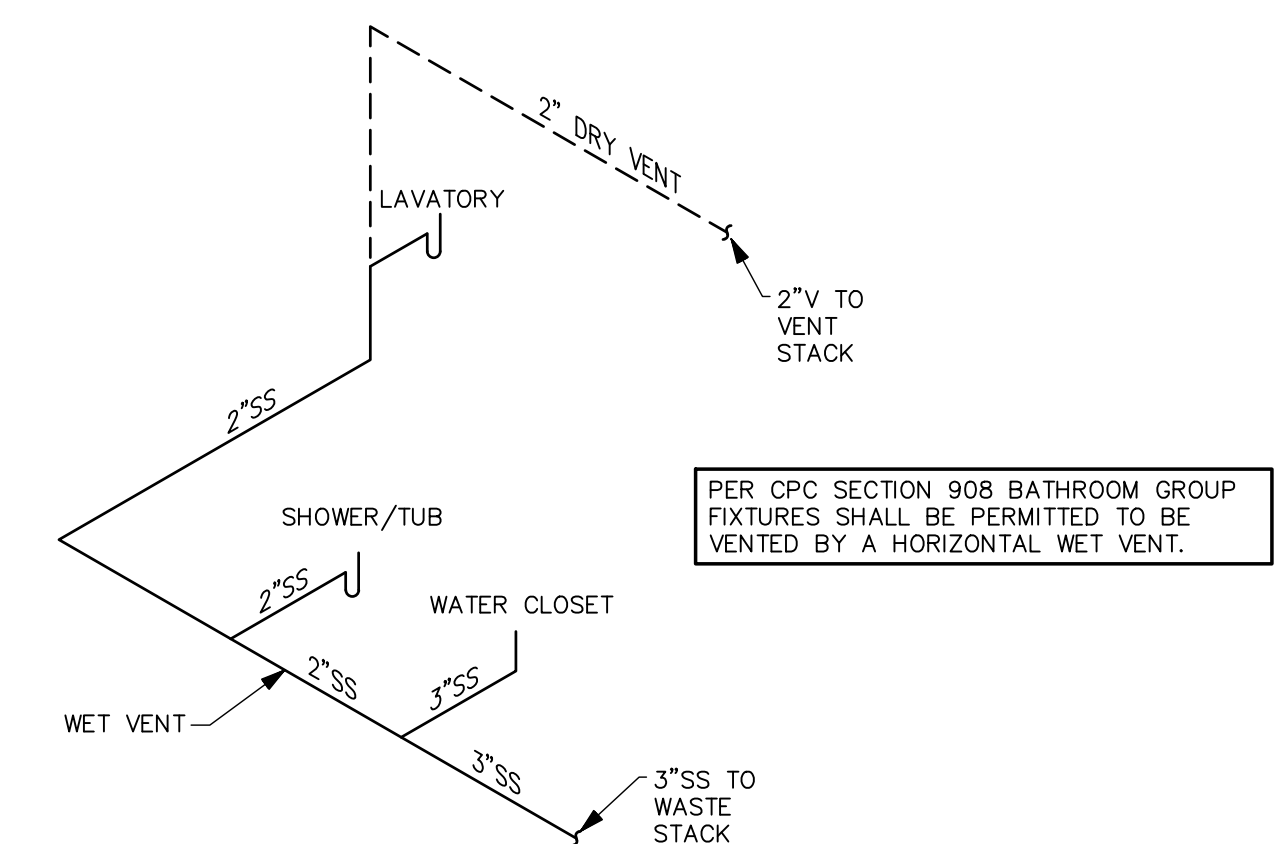
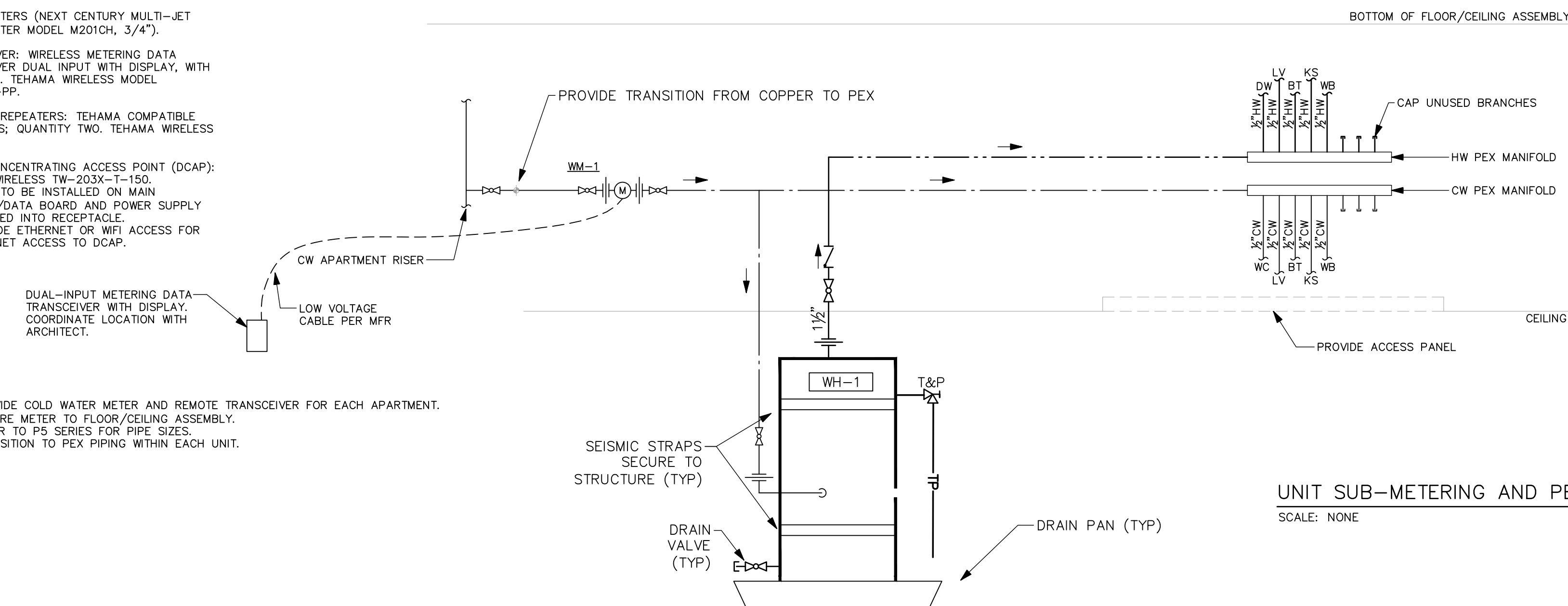
TRANSCIVER: WIRELESS METERING DATA TRANSCIVER DUAL INPUT WITH DISPLAY, WITH BATTERIES, TEHAMA WIRELESS MODEL TW-165A-PP.

WIRELESS REPEATERS: TEHAMA COMPATIBLE REPEATERS; QUANTITY TWO, TEHAMA WIRELESS TW-191X.

UDATA CONCENTRATING ACCESS POINT (DCAP):
• TEHAMA WIRELESS TW-203X-T-150.
• DCAP TO BE INSTALLED ON MAIN COMM/DATA BOARD AND POWER SUPPLY PLUGGED INTO RECEPTACLE.
• PROVIDE ETHERNET OR WIFI ACCESS FOR INTERNET ACCESS TO DCAP.

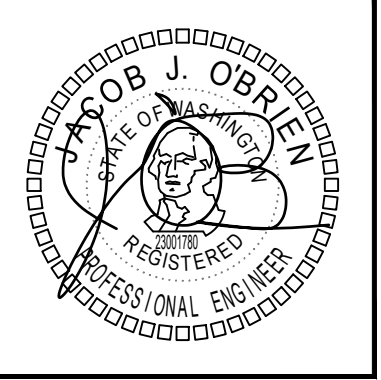
NOTES:

1. PROVIDE COLD WATER METER AND REMOTE TRANSCIVER FOR EACH APARTMENT.
2. SECURE METER TO FLOOR/CEILING ASSEMBLY.
3. REFER TO P5 SERIES FOR PIPE SIZES.
4. TRANSITION TO PEX PIPING WITHIN EACH UNIT.



HORIZONTAL WET VENTING (1)
SCALE: NONE

NO.	DATE	DESCRIPTION	REVISIONS



ROBISON ENGINEERING, INC.
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
206-864-8181
REG. PROJECT NO. 777-006
CONTACT: AIME ESPINELLI

JM	JM	RJ	JR
DRAWN:	DESIGNED:	CHECKED:	APPROVED:

PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
202 27TH AVE SE
PUYALLUP, WA 98374

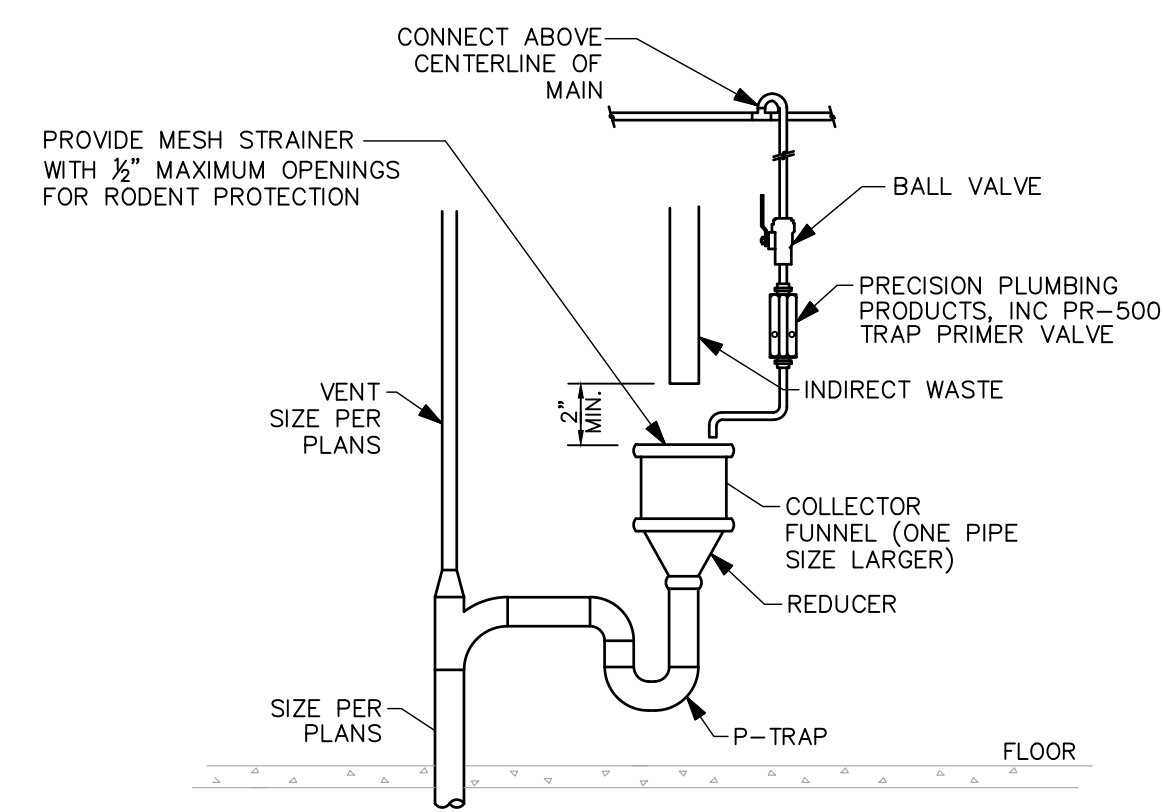
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
PHONE: (206) 864-8181

ROBISON ENGINEERING, INC.

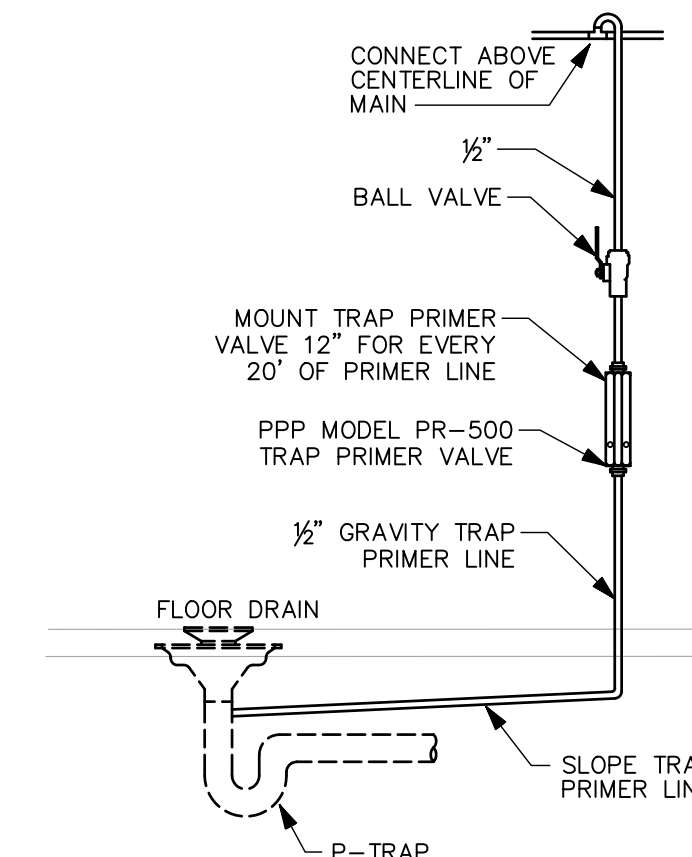
DATE: 10/11/2023

SHEET TITLE: **DETAILS**

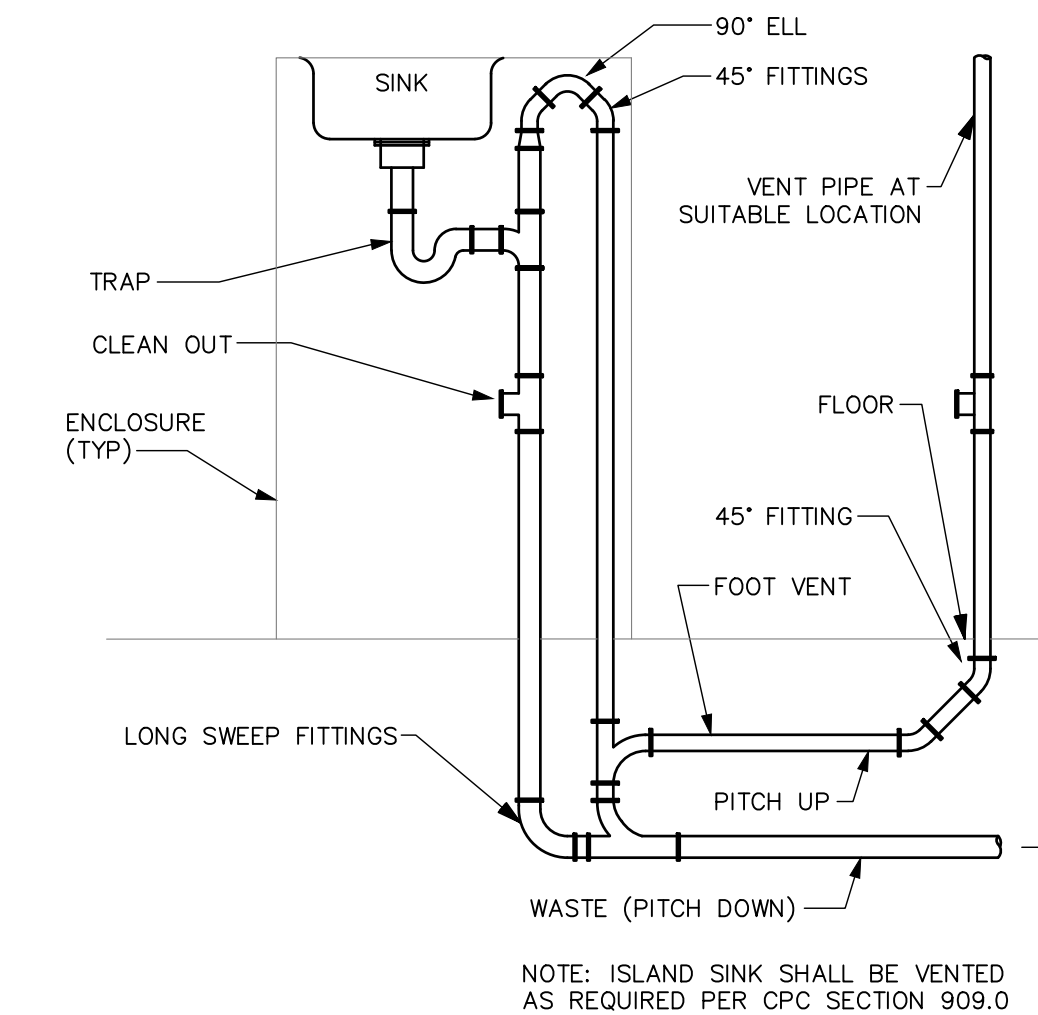
SHEET NO. **P7B.00**



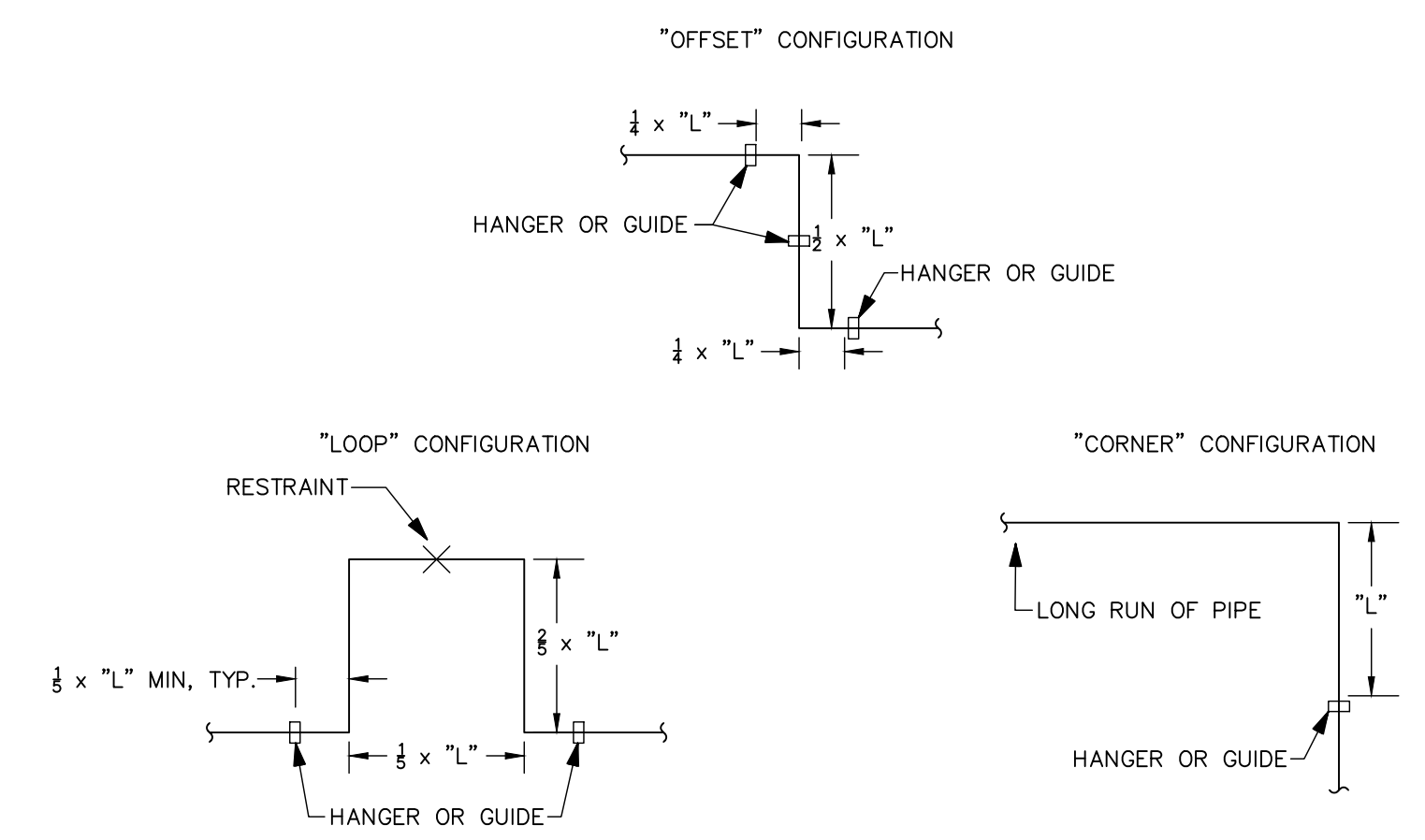
HUB DRAIN
SCALE: NONE



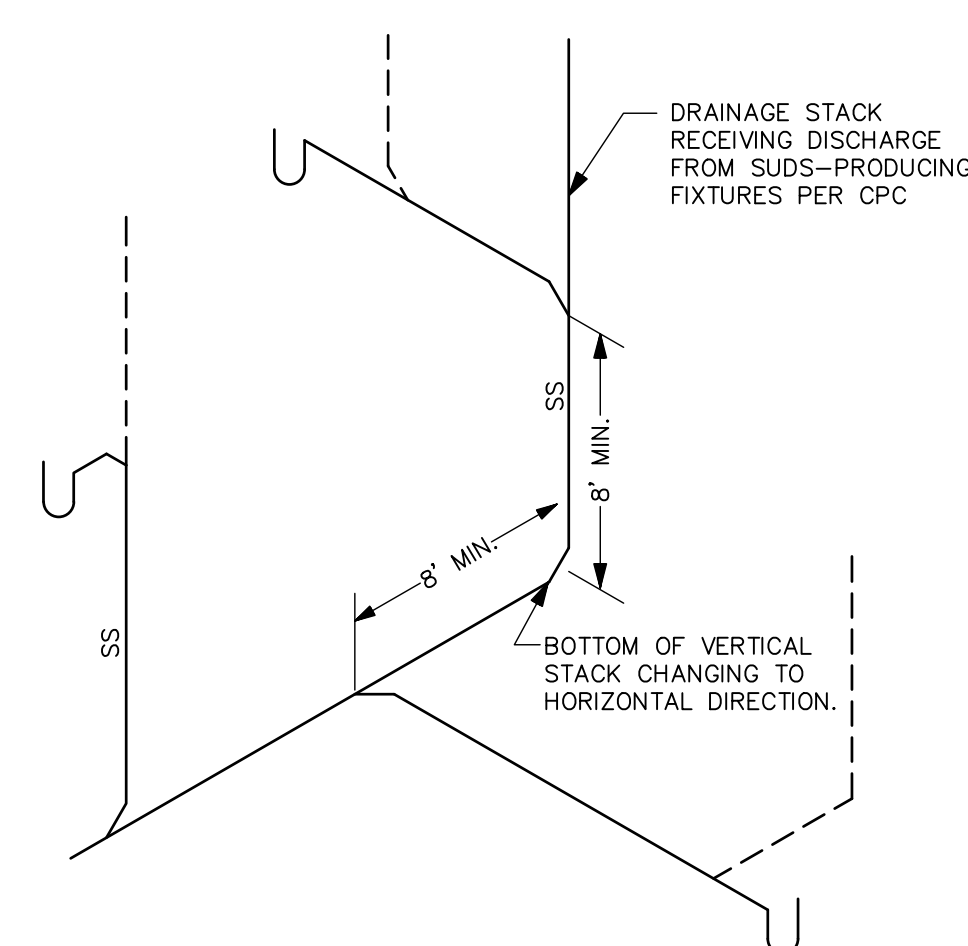
TRAP PRIMER
SCALE: NONE



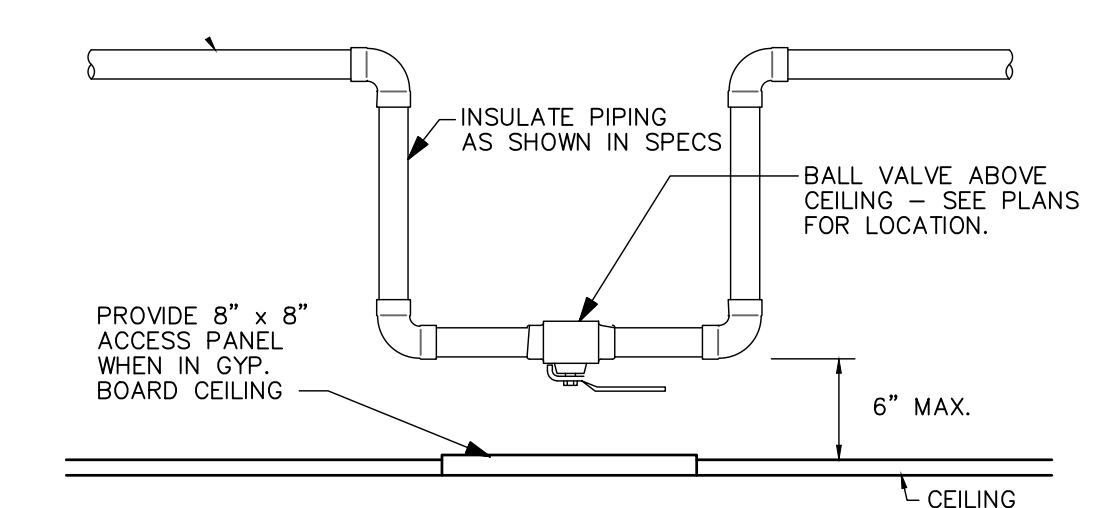
ISLAND SINK INSTALLATION
SCALE: NONE



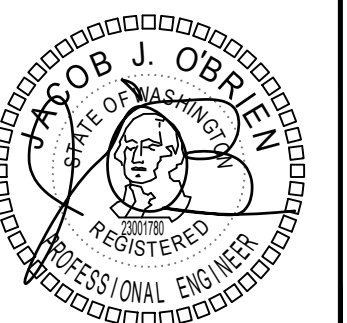
EXPANSION LOOP CONFIGURATIONS
SCALE: NONE



SUDS RELIEF
SCALE: NONE



TYPICAL VALVE PLACEMENT
SCALE: NONE



DRAWN:	JM	DESIGNED:	JM	CHECKED:	RJ	APPROVED:	JR
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PROJECT: **BRADLEY HEIGHT APARTMENTS - BUILDING B**
 19401 40TH AVE W, SUITE 302
 LYNWOOD, WA 98036
 202 27TH AVE SE
 PUYALLUP, WA 98374
ROBISON ENGINEERING, INC.
 19401 40TH AVE W, SUITE 302
 LYNWOOD, WA 98036
 PHONE: (206) 364-3343

DATE: 10/11/2023

SHEET TITLE: **DETAILS**

SHEET NO. **P7B.01**

NO.	DATE	DESCRIPTION	REVISIONS