Jones Gillam Renz Architects

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730 N 9th St.
Salina, KS 67401

1881 Main St., Suite 301
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Contact
jgr@jgrarchitects.com
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Web
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9-30-24

Lucas Whitt
Chief Building Official
City of Laramie, Building Department
PO Box C
Laramie, WY 82073

RE: The Reserves at Grand View Heights Plan Review Comments - #24-11441

Dear Mr. Whitt,

This letter is in response to the Plan Review Comments received via email on September 24, 2024 regarding the Reserves at Grand View Heights, a new apartment complex located on Bill Nye Avenue.

Building Department

1. See attached Industrial Waste Water Survey.
2. Comments from City are red-lined on Permit Drawing Set (Dated 7-17-24). Revisions, Corrections and Comments below. Some additional changes and revisions were made to the structural and electrical since the Permit set was submitted on 7-17. Those revisions are also included below.
    a. Sheets CFP1 & CFP2 (attached)
        i. Building A & Building B Information:
            1. Occupancy Basic has been corrected to R-2 Apartments
            2. Occupancy Load Factors has been corrected to Tables 1004.5 & 1006.2.1
        ii. Project Information:
            1. Facility Address has been corrected to (Unassigned) Bill Nye Avenue
            2. Codes/Regulations have been corrected to the 2023 National Electric Code and the 2017 ICC A117.1 Accessible and Usable Buildings and Facilities.
    b. Sheet A1.4 – Carport by Baja has been specified in the Project Manual, Section 133419 Metal Carport System. (attached for reference) The system's design and engineering to be submitted to architect and structural engineer for review and approval prior to installation.
    c. Sheet A2.1 (attached)

i. Stairs on south side of Building A – Yes, these are leading up to the building from the public sidewalk. Sheet A3.1 has been revised to show this.
ii. Restrooms: Men #C05 and Women #C06 - Sink and turning radius clearances have been corrected. For enlarged detail and dimensions, reference Sheets A2.10 & A2.11

d. Sheet A2.3 (attached)
   i. Toilet and Sink clearances at Accessible Unit have been corrected. For enlarged detail and dimensions, reference Sheet A2.5
e. Sheet A2.4 (attached)
   i. Toilet and Sink clearances at Accessible Unit have been corrected. For enlarged detail and dimensions, reference Sheet A2.5
   ii. Note has been added to reference Specifications/Project Manual for UL Listing Assemblies and Attachment Details and Notes. The attached sheets will be added to the specifications. Included are: UL listings L501, L528, P522, U303 and U341.
   iii. Penetration details – Please reference attached Sheet A4.9. This sheet was accidentally left out of the set. This sheet shows all our details for both fire-rated and non-rated penetrations.
f. Sheet A2.5 (attached)
   i. Details A & D (Bath #103) toilet and sink clearances have been corrected.
   ii. Detail C (Bath #118) toilet and sink clearances have been corrected. Sink has been relocated to adjacent wall and toilet has been shifted 1" towards the wall.
g. Sheet A2.10 (attached)
   i. Restrooms: Men #C05 and Women #C06 - Sink and turning radius clearances have been corrected.
   ii. Window Schedule shown on this sheet is for Clubhouse space only. Window locations are shown on this sheet on Detail A: Clubhouse Plan. Designated by the letter associated with the window type, inside of a diamond shape.
h. Sheet A2.11 (attached)
   i. Restrooms: Men #C05 and Women #C06 - Sink and turning radius clearances have been corrected.
i. Sheet A3.1 (attached)
   i. Stairs on south side of Building have been added to the elevation.
j. Sheet A4.9 (attached)
   i. This sheet was accidentally left out of the set. This sheet shows all our details for both fire-rated and non-rated penetrations.
k. Sheet A6.1 (attached)
   i. Dimension line has been corrected. All guardrails will be at least 42" tall.
l. Sheet S001 (attached)
   i. The frost depth has been noted as part of the General Notes for the Building. The General Notes have also bee updated to clarify City Bulletin references as well as references to the Geotechnical Report for this building.
m. Sheet S004 (attached)

i. A new header type was added for girder truss support and (2) beam sizes were revised due to availability of lumber sizes.

n. Sheet S110 (attached)
    i. Foundations were added for girder truss column supports.
o. Sheet S111 (attached)
    i. Columns and the new opening type were added for girder truss support
p. Sheet S112 (attached)
    i. Columns and the new opening type were added for girder truss support
q. Sheet S120 (attached)
    i. Foundations were added for girder truss column supports.
r. Sheet S121 (attached)
    i. Columns and the new opening type were added for girder truss support
s. Sheet S122 (attached)
    i. Columns and the new opening type were added for girder truss support
t. Sheet S500 (attached)
    i. An unused typical detail was removed.
u. Sheet S501 (attached)
    i. The footing depth below finished grade was revised per City Comments
v. Sheet S510 (attached)
    i. The beam-column connection was revised to simplify construction.
w. Sheet S511 (attached)
    i. A ledger board was added to details with joists or roof truss bearing to simplify construction
x. Sheet S520 (attached)
    i. A truss bracing diagram was added for clarity of roof truss bracing.
y. Sheet E1.0 (attached)
    i. Meter center has been updated
z. Sheet E6.2 (attached)
    i. Changed service voltage to 208V-3psh and revised risers and schedules
aa. Sheet E6.4 (attached)
    i. Added electrical one-line diagrams
bb. Sheet ME1.2 (attached)
    i. Meter center has been updated
cc. Sheet M4.1 (attached)
    i. Revised Note 11
        1. All penetrations of rated floor ceiling assembly are protected with a ceiling radiation damper.
        2. CRD not required where ductwork is routed below floor/ceiling assembly inside soffit.
dd. Sheet M6.1 (attached)
    i. Added ceiling radiation damper detail
    ii. Revised electric heat and voltage for VTAC units
ee. Sheet P1.1 (Attached)
    i. Revised lavatory location in Primary Bath 118 (Accessible unit)
ff. Sheet P4.1 (attached)
    i. Added detail for revised lavatory location in Primary Bath 118 (Accessible Unit)

The Office of Fire Prevention and Life Safety

1. Noted

Planning Division

1. Comments were previously addressed in the Site Plan Review Responses from SP-24-33

Engineering Department

1. Noted

Sincerely,

Maggie Gillam
Project Architect, NCARB
Jones Gillam Renz Architects

CITY OF LARAMIE INDUSTRIAL WASTE SURVEY

This is an apartment complex with 42 total units, a community room and leasing office.

All industrial users of the Laramie wastewater utility who have the potential to significantly impact the treatment plant are required by City Ordinance to submit a complete Industrial Waste Survey. The user is required to update the survey whenever significant changes are made in an industrial process or operation. Please review the survey and if there are questions call the Industrial Pretreatment Coordinator at 307-721-5204. Upon completion of the survey (due 10 business days after receipt) please mail it to:

City of Laramie Wastewater Treatment Plant
ATTN: Pretreatment Coordinator
PO Box C
Laramie, WY 82070

RESTAURANTS/FOOD SERVICES FILL IN SECTIONS A-F ONLY

SECTION A-GENERAL INFORMATION

1. Company Name: Overland Property Group
   Mailing Address: 5345 W. 151st Terrace, Leawood, Kansas 66224
   Telephone Number: 785-201-4046

2. Facility address if different from above:
   The Reserves at Grand View Heights
   Unassigned (Grand View Estates, Lot 1 Block 2)

3. Contact person(s) concerning this survey:
   Printed Name: Maggie Gillam
   Title: Architect Telephone: 785-827-0386

   Printed Name: _____
   Title: _____ Telephone: _____

4. Check One: _____Existing discharge ____X____Proposed discharge
   If proposed discharge, state anticipated date of initial discharge: Fall 2025

SECTION B-BUSINESS ACTIVITIES OR SERVICES: Check appropriate categories

Agricultural Chemicals	[ ]	Equipment Repair/Service	[ ]	Pesticide Use	[ ]
Assembly	[ ]	Flammables/Explosives Use	[ ]	Photo/Film Processing	[ ]
Auto Body Shop	[ ]	Funeral Services	[ ]	Printed Wiring/Circuit Board Repair	[ ]
Automotive Dealer	[ ]	Health Services/Hospitals	[ ]	Printing	[ ]
Biotechnology	[ ]	Industrial Equipment Use/Build/Repair	[ ]	Publishing	[ ]
Build/Repair	[ ]	Industrial Laundry	[ ]	Radiator Repair	[ ]
Car Wash	[ ]	Instrument Repair	[ ]	Research	[ ]
Carpets and Rugs	[ ]	Laboratory	[ ]	Restaurant/Food Preparation	[ ]
Construction	[ ]	Machine Shop	[ ]	Taxidermy	[ ]
Diesel Truck Wash	[ ]	Metal Products and Machinery	[ ]	Wood Preserving	[ ]
Dry Cleaning	[ ]	Motor Freight Transportation	[ ]	X-ray/Film Developing	[ ]
Electronic Equipment	[ ]	Office Unit	[ ]		[ ]
Engine Build/Repair	[ ]	Other: Residences	[X]		[ ]
Engraving/Coating	[ ]	Painting, Stripping, Finishing	[ ]		[ ]

1. Provide a brief narrative of the operations at this facility including primary products or services.
This is an apartment complex with 42 total units, a community space and leasing office.
Typical residential-use activity is anticipated on site.

SECTION C- FACILITY OPERATION CHARACTERISTICS

1. Hours and days of operation: 24/367 - these are residences.
2. Number of employee shifts per 24-hour day: 1-2 anticipated
3. Average number of employees per shift: 1-2 1st:_____2nd:_____3rd:
4. Total Number of employees: 2-3
5. Will your operation be subject to seasonal variation? [ ]Yes [X] No
   If yes, when is peak operation? _____
6. Operational process(es) will be: [ ] Batch [ ] Continuous [ ] Both N/A
   _____% Batch _____% Continuous Average number of batches per day: _____
7. Are there any process changes or expansions planned for your facility? [ ] YES [X] NO
   If yes, please describe the nature of the planned expansions and provide expected date:

SECTION D- WATER CONSUMPTION

Please provide approximate water consumption at your facility by either an actual metered water reading, or providing an estimate based on 15 gallons per day for each employee.

Building A - 44 occupants x 15 GPD = 660 gallons
Building - 60 occupants x 15 GPD = 900 gallons

			Average Gallons Per Day (Est. or Actual)	Methods Used to Determine Flow
1.	[x]	Domestic Wastes		
2.	[ ]	Contained in product	n/a	
3.	[ ]	Boiler blow down	n/a	
4.	[ ]	Cooling water	n/a	
5.	[ ]	Process water	n/a	
6.	[ ]	Equip/Facility Wash down	n/a	
7.	[ ]	Other (describe)		
		Total Daily Water Use:	1560 gallons	

SECTION E- WASTEWATER PRETREATMENT

1. Will any form of wastewater pretreatment be practiced at this facility? [ ] Yes [x] No
2. For each waste stream treated prior to discharge, check the appropriate boxes for types of pretreatment to be used and indicate which process waste streams will receive the specified pretreatment application.

[ ] Grease trap/interceptor _____
[ ] Oil and grease separator (pump) _____
[ ] Solvent recovery _____
[ ] Silver recovery _____
[ ] Chemical addition _____
[ ] pH adjustment _____
[ ] Biological _____
[ ] Other _____

SECTION F - NON-DISCHARGE WASTES

1. Will there be any liquid wastes or sludge generated at this facility that will be stored for disposal?
[ ] Yes [x] No

If yes to the above, specify type of waste:

[ ]	Grease/Oil	[ ]	Waste Solvent	[ ]	Inks/Dyes
[ ]	Paints/Thinners	[ ]	Acids/Alkalis	[ ]	Plating Wastes
[ ]	Other Wastes	[ ]	Fry oils		

2. How will the above checked wastes be removed from your facility?
[ ] Placed with trash for City disposal
[ ] Treated, stored, disposed on-site
Specify: _____
[ ] Removed by an outside hazardous waste hauler to a waste management facility

State the name and address of your waste haulers:

Name:	City of Laramie Solid Waste Division	Wastes picked up:	Household trash/recycling collection
Address:	4373 N. 3rd Street	Frequency of pickup:	TBD
Name:		Wastes picked up:	
Address:		Frequency of pickup:	
Name:		Wastes picked up:	
Address:		Frequency of pickup:	

2. Does your facility a have an EPA identification number? [ ] Yes [X] No
IF yes, provide # _____

3. Does your facility have a plan for controlling accidental chemical spills? [ ] Yes [ ] No [X] NA

If you are a restaurant please skip Sections G and H and proceed to the Signature page at the end

SECTION G- WASTEWATER DISCHARGE and GENERATION

Please provide to the City a diagram of the facility, indicating each area where wastewater is generated and disposed.

1. Identify floor drains and sinks:___(provided on drawing)__Reference Mechanical Sheets_____

2. Will you discharge your process wastewater intermittently or continuously? ____n/a_____

3. Will this facility generate wastewater other than from restrooms, cafeterias, or other food preparation areas? [ ] Yes [X] No

4. Briefly describe each industrial process that generates wastewater (excluding boiler and cooling water). Indicate approximate quantity of wastewater to be generated per day in gallons per day (gpd). Methods of disposal usually include discharge to the sewer, evaporation, and storage for waste handler:

a. _____ Volume gpd: _____
_____ Method of Disposal: _____

b. _____ Volume gpd: _____
_____ Method of Disposal: _____

c. _____ Volume gpd: _____
_____ Method of Disposal: _____

5. For the processes that generate wastewater mentioned above, indicate the type of wastes that could be present in the wastewater: N/A

[ ]	Ammonia	[ ]	Chlorides	[ ]	Cyanide	[ ]	Disinfectant
[ ]	Heavy Metals	[ ]	Flammables	[ ]	High pH	[ ]	Low pH(acids)
[ ]	High Temp.	[ ]	Heavy Metals	[ ]	Phenols	[ ]	Solvents
[ ]	Pesticides	[ ]	PCBs			[ ]	Radioactive
[ ]	Salt Brines	[ ]	Petroleum Hydrocarbons			[ ]	Oil or Grease

6. Indentify any solutions, chemicals, or solvents used that have not been covered above:
N/A

SECTION H- EPA PRIORITY POLLUTANT INFORMATION

The following is a list of priority pollutants. Indicate by circling each chemical that is used or generated in your process, and check appropriate box whether the pollutant is discharged to the sewer or collected for separate disposal.

N/A

		Discharged	Separate Disposal			Discharged	Separate Disposal
1	Asbestos (fibrous)	[ ]	[ ]	43	Chlorodibromomethane	[ ]	[ ]
2	Cyanide (total)	[ ]	[ ]	44	Chloroethane	[ ]	[ ]
3	Antimony (total)	[ ]	[ ]	45	2-chloroethylvinyl ether	[ ]	[ ]
4	Arsenic (total)	[ ]	[ ]	46	Chloroform	[ ]	[ ]
5	Beryllium (total)	[ ]	[ ]	47	2-chloronapthalene	[ ]	[ ]
6	Cadmium (total)	[ ]	[ ]	48	2-chlorophenol	[ ]	[ ]
7	Chromium (total)	[ ]	[ ]	49	4-chlorophenylphenly ether	[ ]	[ ]
8	Copper (total)	[ ]	[ ]	50	Chrysene	[ ]	[ ]
9	Lead (total)	[ ]	[ ]	51	4,4' DDD	[ ]	[ ]
10	Mercury (total)	[ ]	[ ]	52	4,4' DDE	[ ]	[ ]
11	Nickel (total)	[ ]	[ ]	53	4,4' DDT	[ ]	[ ]
12	Selenium (total)	[ ]	[ ]	54	Dibenzo (a,h) anthracene	[ ]	[ ]
13	Silver (total)	[ ]	[ ]	55	Dichlorobromomethane	[ ]	[ ]
14	Thallium (total)	[ ]	[ ]	56	1,2-dichlorobenzene	[ ]	[ ]
15	Zinc (total)	[ ]	[ ]	57	1,3-dichlorobenzene	[ ]	[ ]
16	Acenaphthene	[ ]	[ ]	58	1,4-dichlorobenzene	[ ]	[ ]
17	Acenaphlen	[ ]	[ ]	59	3,3'-dichlorobenzidene	[ ]	[ ]
18	Acrolein	[ ]	[ ]	60	1,1-dichloroethane	[ ]	[ ]
19	Acrylonitrile	[ ]	[ ]	61	1,2-dichloroethane	[ ]	[ ]
20	Aldrin	[ ]	[ ]	62	1,1-dichloroethylene	[ ]	[ ]
21	Anthracene	[ ]	[ ]	63	1,2-trans-dichloroethylene	[ ]	[ ]
22	Benzene	[ ]	[ ]	64	2,4-dichlorophenol	[ ]	[ ]
23	Bensidene	[ ]	[ ]	65	1,2-dichloropropane	[ ]	[ ]
24	Benzo (a) anthracene	[ ]	[ ]	66	1, 3-dichloropropylene	[ ]	[ ]
25	Benzo (a) pyrene	[ ]	[ ]	67	Dieldrin	[ ]	[ ]
26	Benzene (b) fluoranthene	[ ]	[ ]	68	Diethylphthalate	[ ]	[ ]
27	Benzo (g.h.i.) perylene	[ ]	[ ]	69	2, 4-dimethyphenol	[ ]	[ ]
28	Benzo (k) Fluoranthene	[ ]	[ ]	70	Dimethyl phthalate	[ ]	[ ]
29	a-BHC (alpha)	[ ]	[ ]	71	di-n-butyl phthalate	[ ]	[ ]
30	b-BHC (beta)	[ ]	[ ]	72	di-n-octyl-phthalate	[ ]	[ ]
31	d-BHC (delta)	[ ]	[ ]	73	4, 6-dinitro-o-cresol	[ ]	[ ]
32	g-BHC (gamma)	[ ]	[ ]	74	2, 4-dinitrotoluene	[ ]	[ ]
33	Bis (2-chloroethyl) ether	[ ]	[ ]	75	2, 4-dinitrophenol	[ ]	[ ]
34	Bis (2-chloroethoxy) methane	[ ]	[ ]	76	2, 6-dinitrotoluene	[ ]	[ ]
35	Bis (2-chloroisopropyl) ether	[ ]	[ ]	77	1, 2-diphenylhydrazine	[ ]	[ ]
36	Bis (2-ethylhexyl) phthalate	[ ]	[ ]	78	Alpha-endosulphan	[ ]	[ ]
37	Bromoform	[ ]	[ ]	79	Beta-endosulfan	[ ]	[ ]
38	4-bromophenylphenyl ether	[ ]	[ ]	80	Endosulfan sulfate	[ ]	[ ]
39	Butylbenzyl	[ ]	[ ]	81	Endrin	[ ]	[ ]
40	Carbon tetrachloride	[ ]	[ ]	82	Endrin aldyhyde	[ ]	[ ]
41	Chlodane	[ ]	[ ]	83	Ethylbenzene	[ ]	[ ]
42	Chlorobenzene	[ ]	[ ]	84	Fluorathene	[ ]	[ ]

		Discharged	Separate Disposal			Discharged	Separate Disposal
85	Fluorine	[ ]	[ ]	106	PCB-1232	[ ]	[ ]
86	Heptachlor	[ ]	[ ]	107	PCB-1242	[ ]	[ ]
87	Heptachlor epoxide	[ ]	[ ]	108	PCB-1248	[ ]	[ ]
88	Hexachlorobenzene	[ ]	[ ]	109	PCB-1254	[ ]	[ ]
89	Hexachlorobutadiene	[ ]	[ ]	110	PCB-1260	[ ]	[ ]
90	Hexachlorocyclopentadiene	[ ]	[ ]	111	p-chloro-m-cresol	[ ]	[ ]
91	Hexachlorethane	[ ]	[ ]	112	Pentachlorophenol	[ ]	[ ]
92	Indeno (1,2,3-cd) pyrene	[ ]	[ ]	113	Phenanthrene	[ ]	[ ]
93	Isophorone	[ ]	[ ]	114	Phenol	[ ]	[ ]
94	Methyl bromide	[ ]	[ ]	115	Pyrene	[ ]	[ ]
95	methyl chloride	[ ]	[ ]	116	1,1,2,2-tetrachloroethane	[ ]	[ ]
96	Methylene chloride	[ ]	[ ]	117	Tetrachloroethylene	[ ]	[ ]
97	Naphthalene	[ ]	[ ]	118	Toluene	[ ]	[ ]
98	Nitrobenzene	[ ]	[ ]	119	Toxaphene	[ ]	[ ]
99	2-nitrophenol	[ ]	[ ]	120	1,2,4-trichlorobenzene	[ ]	[ ]
100	4-nitrophenol	[ ]	[ ]	121	1,1,1-trichloroethane	[ ]	[ ]
101	n-nitrosodimethylamine	[ ]	[ ]	122	1,1,2-trichloroethane	[ ]	[ ]
102	n-nitrosodi-n-propylamine	[ ]	[ ]	123	Trichloroethylene	[ ]	[ ]
103	n-nitrosodiphenylamine	[ ]	[ ]	124	2,4,6-trichlorophenol	[ ]	[ ]
104	PCB-1016	[ ]	[ ]	125	Vinyl chloride	[ ]	[ ]
105	PCB-1221	[ ]	[ ]				

State the name and address of disposal Company: If indicated above

Name: N/A
Address: _____
Wastes picked up: _____
Frequency of pickup: _____

Name: _____
Address: _____
Wastes picked up: _____
Frequency of pickup: _____

Name: _____
Address: _____
Wastes picked up: _____
Frequency of pickup: _____

This survey must be signed by an authorized official of your firm after adequate completion and review of the information.

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of these individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and/ or imprisonment.

Signature:

9-30-24

Date:

Maggie Gillam

Printed Name:

SECTION 133419

METAL CARPORT SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. **BAJA Construction, Co., Inc**. (925) 229-0161, or as approved equal. Full Cantilever Tapered type Carports, as indicated or implied on the construction documents.
2. Metal Carport Structural-steel framing, Metal roof panels, Trim and Flashings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of metal carport system component.

B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details, and attachments to other work. Signed and sealed by a qualified professional engineer Licensed in the State of Wyoming.

1.3 INFORMATIONAL SUBMITTALS

A. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

1. Name and location of Project.
2. Order number.
3. Name of manufacturer.
4. Name of Contractor.
5. Building dimensions including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
7. Governing building code and year of edition.
8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.

B. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

1. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings stamped and sealed by a professional engineer who is legally qualified to practice in Arlington Texas, where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

1.6 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: **25** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. **BAJA Construction, Co., Inc**. (925) 229-0161, or as approved equal. Full Cantilever Tapered type Carports, as indicated or implied on the construction documents.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Metal carport systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to IBC 2009 Design Loads and Local regulations for Arlington, Texas.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

C. Structural Performance for Metal Roof Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

2.3 STRUCTURAL-STEEL FRAMING

A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."

B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters and rake beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

2.4 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

PART 3 - EXECUTION

3.1 ERECTION OF STRUCTURAL FRAMING

A. Erect metal carport system according to manufacturer's written instructions and drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal carport system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

3.2 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Install ridge caps as metal roof panel work proceeds.
2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports with exposed fasteners at each lapped joint, at location and spacing recommended by manufacturer.

1. Provide metal-backed sealing washers under heads of exposed fasteners bearing on weather side of metal roof panels.
2. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.
3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels, on side laps of ribbed or fluted metal panels, and elsewhere as needed to make metal panels weatherproof to driving rains.
4. At metal panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

3.3 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

END OF SECTION 133419

UL Product iQ®

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States

Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

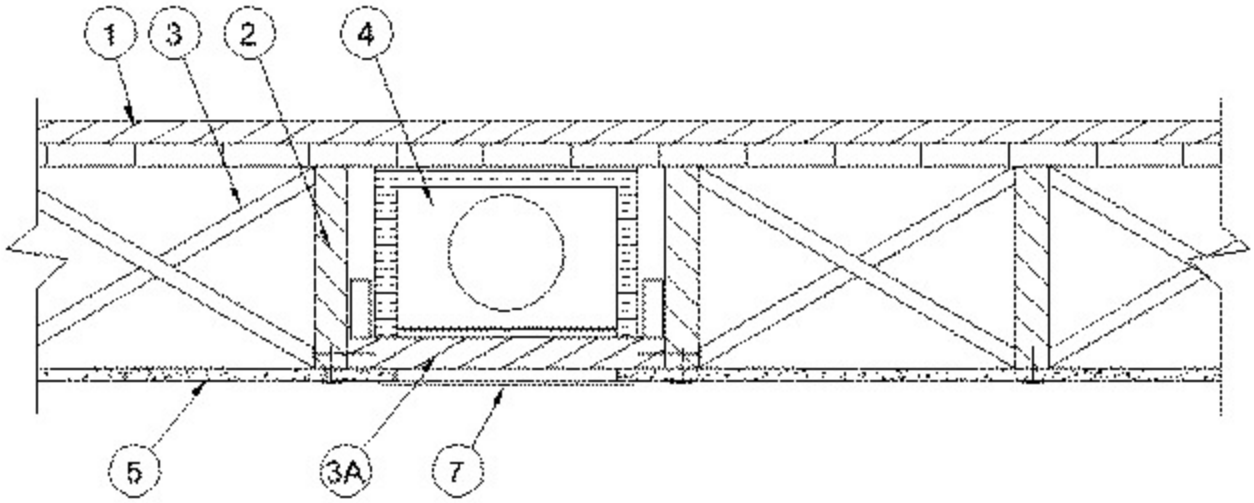
Design Criteria and Allowable Variances

Design No. **L501**

September 24, 2024

Unrestrained Assembly Rating — 1 Hr.
Finish Rating — (See Items 5 and 5A)
This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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



1. **Flooring Systems —** The flooring system shall consist of one of the following:

System No. 1

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered. Panels secured to joists with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each joist. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier — Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring — Min 1 by 4 in. T & G lumber installed perpendicular to joists, or min 19/32 in. thick wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to joists with joints staggered.

System No. 2

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered, secured as described in System No. 1

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

Alternate Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor.Refer to manufacturer's instructions regarding minimum thickness of floor topping over floor mat.
GRASSWORX L L C — SC Types

Finish Flooring — Floor Topping Mixture* — Min 3/4 having a min compressive strength of 1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.
UNITED STATES GYPSUM CO — Type C, SD, LRK, HSLRK

LATICRETE SUPERCAP L L C — Types LRK, HSLRK

USG MEXICO S A DE C V — Types LRK, HSLRK, CSD

System No. 3

Subflooring — Min 19/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Floor Mat Materials* — (Optional) — Floor mat material nom 5/64 in. (2 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of floor-topping mixture. Floor topping thickness a min 1 in. over the floor mat.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/4 in. (6 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1-1/4 in. (32 mm) of floor-topping mixture.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat II

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/8 in. (3 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 3/4 in. (19 mm).

HACKER INDUSTRIES INC — FIRM-FILL SCM 125

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/4 in. (6 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1 in. (25 mm).

HACKER INDUSTRIES INC — Type FIRM-FILL SCM 250, Quiet Qurl 55/025

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 3/8 in. (10 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/4 in. (32 mm)

HACKER INDUSTRIES INC — FIRM-FILL SCM 400, Quiet Qurl 60/040

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 3/4 in. (19 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38 mm).

HACKER INDUSTRIES INC — Type FIRM-FILL SCM 750, Quiet Qurl 65/075

Metal Lath (Optional) — For use with 3/8 in. (10 mm) floor mat materials, 3/8 in. expanded steel diamond mesh, 3.4 lbs/sq yd placed over the floor mat material. Hacker Floor Primer to be applied prior to the placement of the metal lath. When metal lath is used, floor topping thickness a nom 1-1/4 in. over the floor mat.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1100 psi. Mixture shall consist of 6.8 gal of water to 80 lbs of floor topping mixture to 1.9 cu ft of sand.

HACKER INDUSTRIES INC — Firm-Fill Gypsum Concrete, Firm-Fill 2010, Firm-Fill 3310, Firm-Fill 4010, Firm-Fill High Strength, Gyp-Span Radiant

System No. 4

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) — Nom 0.030 in thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 1-1/2 in. thickness of floor topping mixture having a min compressive strength of 1000 psi and a cast density of 100 plus or minus 5 pcf. Foam concentrate mixed 40:1 by volume with water and expanded at 100 psi through nozzle. Mixture shall consist of 1.4 cu feet of preformed foam concentrate to 94 lbs Type I Portland cement, 300 lbs of sand with 5-1/2 gal of water.

ELASTIZELL CORP OF AMERICA — Type FF

System No. 5

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) — Nom 0.030 in thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 1-1/2 in. thickness of floor topping mixture having a min compressive strength of 1000 psi and a cast density of 100 plus or minus 5 pcf. Foam concentrate mixed 40:1 by volume with water and expanded at 100 psi through nozzle. Mixture shall consist of 1.2 cu feet of preformed foam concentrate to 94 lbs Type I Portland cement, 300 lbs of sand with 5-1/2 gal of water.

AERIX INDUSTRIES — Floor Topping Mixture

System No. 6

Deleted.

System No. 7

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Finish Flooring — Floor Topping Mixture* — Min 3/4 or 1 in. thickness of floor topping mixture for 19/32 or 15/32 in. thick wood structural panels respectively, having a min compressive strength of 1000 psi. Mixture shall consist of 5 to 8 gal of water to 80 lbs of floor topping mixture to 2.1 cu ft of sand.

ULTRA QUIET FLOORS — UQF-A, UQF-Super Blend, UQF-Plus 200

System No. 8

Subflooring — Min 15/32 in. wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) — Nom 0.030 in thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

MAXXON CORP — Type Maxxon Standard and Maxxon High Strength

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Type Encapsulated Sound Mat.

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement - (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

System No. 9

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered, secured as described in System No. 1.

Finish Floor — Mineral and Fiber Board* — Min 1/2 in. thick, supplied in sizes ranging from 3 ft by 4 ft to 8 ft by 12 ft. All joints to be staggered a min of 12 in. with adjacent sub-floor joints.

HOMASOTE CO — Type 440-32 Mineral and Fiber Board

System No. 10

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 3/4 or 1 in. thickness of floor topping mixture for 19/32 or 15/32 in. thick wood structural panels respectively, having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ARCOSA SPECIALTY MATERIALS — AccuCrete® Types NexGen, Green, Prime and PrePour, AccuRadiant®, AccuLevel® Types G40, G50 and SD30

Alternate Floor Mat Material* — (Optional) - Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping shall be a min of 3/4 in. or 1 in. thick for 19/32 or 15/32 in. thick wood structural panels respecitively.

ARCOSA SPECIALTY MATERIALS — AccuQuiet® D13, D-18, D25, DX38, EM.125, EM.125S, EM.250, EM.250S, EM.375, EM.375S, EM.750, and EM.750S.

System No. 11

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

FORMULATED MATERIALS LLC — Types FR-25, FR-30, SiteMix, and Treadstone Advantage

Alternate Floor Mat Material* — (Optional) — Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

FORMULATED MATERIALS LLC — Types M1, M2, M3, Elite, Duo, R1, and R2.

System No. 12

Deleted.

System No. 13

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — (Optional) — Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional) — Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 65/075, Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

System No. 14

Subflooring — Min 23/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the joists with end joints staggered, secured as described in System No. 1.

Gypsum Board* — One layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1 in. long No. 6 Type W bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

Floor Mat Materials* — (As an alternate to the single layer gypsum board) — Floor mat material loose laid over the subfloor.

MAXXON CORP — Type Encapsulated Sound Mat.

Gypsum Board* — (For use when floor mat is used) Two layers of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists on top of the floor mat material. Gypsum board secured to each other with 1 in. long No. 6 Type G bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches in between layers and from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

System No. 15

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered, secured as described in System No. 1.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture for min 15/32 in. thick wood structural panels, having a min compressive strength of 2150 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

MAPEI CORP — Type Planitex SL 35

System No. 16

Subflooring — Min. 15/32 in. thick wood structural panels, min. grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture for 15/32 in. thick wood structural panels respectively, having a min compressive strength of 2100 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

THE STRONG CO INC — Type UltraLevel

System No. 17

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Finish Flooring — Floor Topping Mixture*— Min 3/4 or 1 in. thickness of floor topping mixture for 19/32 or 15/32 in. thick wood structural panels respectively, having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

DEPENDABLE LLC — GSL M3.4, GSL K2.6, GSL-CSD and GSL RH

Floor Mat Materials* — (Optional) — Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 65/075, Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

System No. 18

Subflooring — Building Units* — Nom 3/4 in. thick, tongue and grooved boards. Long dimension of boards to be perpendicular to joists with end joints staggered a min of 4 ft. and centered over the joists. Boards secured to joists with 2 in. long self-drilling, self-tapping screws or 2 in. x 0.113 in. Ring Shank nails spaced a max of 12 in. OC in the field with screws/nails located 1 in. from long edge, and max 8 in. OC along the end joints with screws/nails located 1/2 in. from end joint.
ECTEK INTERNATIONAL INC — Type MegaBoard

Vapor Barrier — Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring — Min 1 by 4 in. T & G lumber installed perpendicular to joists, or min 19/32 in. thick wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to joists with joints staggered

System No. 19

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Finish Flooring* — Floor Topping Materials — Min 3/4 in. to 1-1/2 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance with a minimum compressive strength of 1500 psi.
See **Floor- and Roof-Topping Mixtures** (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional) — Floor mat material nom 1/8 in. to 3/4 in. thick. Loose laid over the subfloor. When used, Acousti-flor CSM (Crack Suppression Mat) is loose laid over the floor mat material. Floor topping material thickness is dependent on thickness of floor mat used.
WALFLOR INDUSTRIES INC — Type Acousti-flor, Acousti-flor CSM. Floor topping thickness depends on products used as follows:

Acousti-flor (1/8 in. thick) - Floor topping thickness shall be a minimum of 3/4 in.

Acousti-flor (1/4 in. thick) - Floor topping thickness shall be a minimum of 1 in.

Acousti-flor (3/8 in. thick) - Floor topping thickness shall be a minimum of 1 in.

Acousti-flor (3/4 in. thick) - Floor topping thickness shall be a minimum of 1-1/2 in.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 20

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Finish Flooring - Floor Topping Mixture* — Min 1 in. thickness of floor topping mixture having a min compressive strength of 4500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.
SIKA DEUTSCHLAND GMBH — Type SCHONOX AP Rapid Plus

System No. 21

Subflooring - Building Units* — Nom. 1-1/2 in. thick T & G laminated composite plywood sub-floor panels to be perpendicular to the trusses with end joints staggered 4 ft. End joints centered over top chord of trusses. Subfloor panels secured to trusses with construction adhesive and #8 by 3 in. wood screws spaced 12 in. OC in the field and 6 in. OC at the end joints.
RSP INDUSTRIES INC — SAP board

System No. 22

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Vapor Barrier — (Optional) - Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — Optional) - Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional, Not Shown) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.
Freudenberg Performance Materials LP — EnkaSonic® by Colbond a member of the Low & Bonar group Types 125, 250, 250 Plus, 400, 400 Plus, 750, and 750 Plus.

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 23

Subflooring — Subflooring — Min 23/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the joists with end joints staggered secured as described in System No. 1.

Finish Floor - Building Units* — Min 1/2 in. thick magnesium oxide panels installed parallel, perpendicular, or diagonally to trusses with panel edges offset a min of 4 in. between subfloor and magnesium oxide panels. Panels secured to subfloor with construction adhesive and corrosion resistant fasteners, spaced 12 in. OC around the perimeter and in the field of the panel. Fasteners must be placed no closer than 1/2 in. from all panel edges and no closer than 2 in. from panel corners.

HUBER ENGINEERED WOODS L L C — Type 1/2 in. Square Edge Exacor™ Board

System No. 24

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

GRASSWORX L L C — SC Types

Finish Flooring* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

System No. 25

Subflooring - Building Units* — Nom. 1-3/16 in. thick T & G laminated composite plywood sub-floor panels to be perpendicular to the joist with end joints staggered 4 ft. End joints centered over top chord of joist. Subfloor panels secured to joist with construction adhesive and #8 by 2-3/8 in. wood screws spaced 12 in. OC in the field and 6 in. OC at the end joints.

RSP INDUSTRIES INC — SAP 1.0

System No. 26

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to joists, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to joists with joints staggered, secured as described in System No. 1.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ALPHAGYP, LLC — Type AG3000

2. **Wood Joists —** Min 2 by 10, spaced 16 in. OC and effectively fireblocked in accordance with local codes.

3. **Cross Bridging —** Min 1 by 3 in. or min 2 by 10 solid blocking.

3A. **Horizontal Bridging —** Used in lieu of Item 3 in same joist bay as ceiling damper (Item 4), when ceiling damper is employed. Wood 2 by 4 in. secured between joists with nails.

4. **Ceiling Damper* — (Optional) —** Max nom area shall be 198 sq in. Max rectangular size shall be 12 in. wide by 16-1/2 in. long. Max height of damper shall be 9-3/8 in. Aggregate damper openings shall not exceed 99 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 7) shall be installed in accordance with installation instructions.
AIR BALANCE INC — Type 299 (See Item 5A)

AIR KING VENTILATION PRODUCTS — Series FRAS, Series FRAK, Series FRAKV

CENTRAL VENTILATION SYSTEMS CO L L C — Models C-S/R-HC(-A), C-RD-HC(-A)

JAMIL ALI NASSER AL-ZADJALI FOR INDUSTRY— Models C-S/R-HC(-A), C-RD-HC(-A)

BADR & ASFOUR COMPANY FOR ENGINEERING AND METAL INDUSTRIES — Models C-S/R-HC(-A), C-RD-HC(-A)

GREENHECK FAN CORP — Model CRD-1WJ

METAL-FAB INC — Models MSCDHC, MRCDHC

BRISK MFG INC — Model BMI-50-CRD-S/R-WT

PRICE INDUSTRIES LTD — Models CD-S/R-HC, CD-RD-HC

RUSKIN COMPANY — Model CFD7

UNITED ENERTECH CORP — Models C-S/R-HC(-A), C-RD-HC(-A)

5. **Gypsum Board* —** — Nom 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1-7/8 in. long, 6d cement coated nails spaced 6 in. OC.
AMERICAN GYPSUM CO — Types AGX-1, AG-C, LightRoc

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO — Type DBX-1

CABOT MANUFACTURING ULC — Type X, 5/8 Type X, Type Blueglass Exterior Sheathing

CERTAINTEED GYPSUM INC — Type C, Type X-1, Types LGFC6A, LGFC-C/A, LWTX

CGC INC — Types C, IP-X1, IP-X2, IPC-AR, SCX, WRX

GEORGIA-PACIFIC GYPSUM L L C — Types 5, 9, C, GPFS1, GPFS6, DA, DAP, DAPC, DGG, DS, Type X, Veneer Plaster Base-Type X, Water Rated-Type X, Sheathing Type-X, Soffit-Type X, TG-C, GreenGlass Type X, Type LWX (finish rating 22 min), Veneer Plaster Base-Type LWX (finish rating 22 min), Water Rated-Type LWX (finish rating 22 min), Sheathing Type-LWX (finish rating 22 min), Soffit-Type LWX (finish rating 22 min), Type LWX (finish rating 22 min), Type LW2X (finish rating 20 min), Veneer Plaster Base - Type LW2X (finish rating 20 min), Water Rated - Type LW2X (finish rating 20 min), Sheathing - Type LW2X (finish rating 20 min), Soffit - Type LW2X (finish rating 20 min)

NATIONAL GYPSUM CO — eXP-C, FSK, FSK-C, FSK-G, FSL, FSLX, FSMR-C, FSW-2, FSW-3, FSW-C, FSW-G, FSW-8, RSX

NATIONAL GYPSUM CO — Riyadh, Saudi Arabia — Type FR or WR.

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Types C, PG-3, PG-4, PG-5, PG-6, PG-9, PG-C, PG-11, Type PGI (Finish Rating 26 minutes).

PANEL REY S A — Types PRC, PRC2

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1

THAI GYPSUM PRODUCTS PCL — Type C, Type X

UNITED STATES GYPSUM CO — Types C, IP-X1, IP-X2, IPC-AR, SCX, WRX

USG BORAL DRYWALL SFZ LLC — Types C, SCX

USG MEXICO S A DE C V — Types C, IP-X1, IP-X2, IPC-AR, SCX, WRX

5A. **Gypsum Board* —** (Finish Rating - 16 min.) Required when Air Balance Inc. Type 299 ceiling damper (Item 4) is installed. Nom 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1-7/8 in. long, 6d cement coated nails spaced 6 in. OC with the first nails located 1/2 in. and 3 in. from the board edges.
UNITED STATES GYPSUM CO — Type C

USG BORAL DRYWALL SFZ LLC — Types C, SCX

USG MEXICO S A DE C V — Type C

5B. **Gypsum Board* —** Nom 3/4 in. thick, 48 in. wide gypsum board, installed as described in Item 5 with nails length increased to 2 in.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-13

5C. **Gypsum Board* (As an alternative to Item 5) —** Nom 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1 in. long Type S screws spaced 6 in. OC.
UNITED STATES GYPSUM CO — ULIX

5D. **Gypsum Board* (As an alternative to Item 5A) —** Required when Air Balance Inc. Type 299 ceiling damper (Item 4) is installed. Nom 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1-7/8 in. long Type S screws spaced 6 in. OC with the first screws located 1/2 in. and 3 in. from the board edges.
UNITED STATES GYPSUM CO — ULIX

5E. **Gypsum Board* (As an alternative to Item 5) —** Nom 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 2 in. long, No. 6 screws spaced 6 in. OC.

NATIONAL GYPSUM CO — FSW, FSW-6

6. **Finishing System — (Not Shown) —** Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum board.

7. **Grille —** Steel grille, installed in accordance with the installation instructions provided with the ceiling damper.

8. **Steel Corner Fasteners —** (Optional, Not Shown) — Used to attach ends of gypsum board at wall intersection where joists run parallel to wall. Channel shaped, 2 in. long by 1 in. high on the back side with two 1/8 in. wide cleats protruding into the 5/8 in. wide channel, fabricated from 24 gauge galvanized steel. Fasteners nailed to face of wall bearing plate through fastener tab with one No. 6d cement coated nail, spaced not greater than 16 in. OC and 2 in. from edge of gypsum board. Fasteners covered with gypsum board facing applied to intersecting wall.

9. **Discrete Products Installed in Air-handling Spaces* —** Automatic Balancing Valve/Damper — (Not Shown - Optional) — For use with item 4, Ruskin Company's Model CFD7 damper (CABS). Ceiling damper to be provided with plenum box per damper manufacturer's instructions with side outlet only. Entire assembly to be installed into any UL Class 0 or Class 1 flexible air duct in accordance with the instructions provided by the automatic balancing valve/damper manufacturer.
METAL INDUSTRIES INC — Model ABV-4, ABV-5, ABV-6

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

Last Updated on 2024-09-24

UL Product iQ®

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

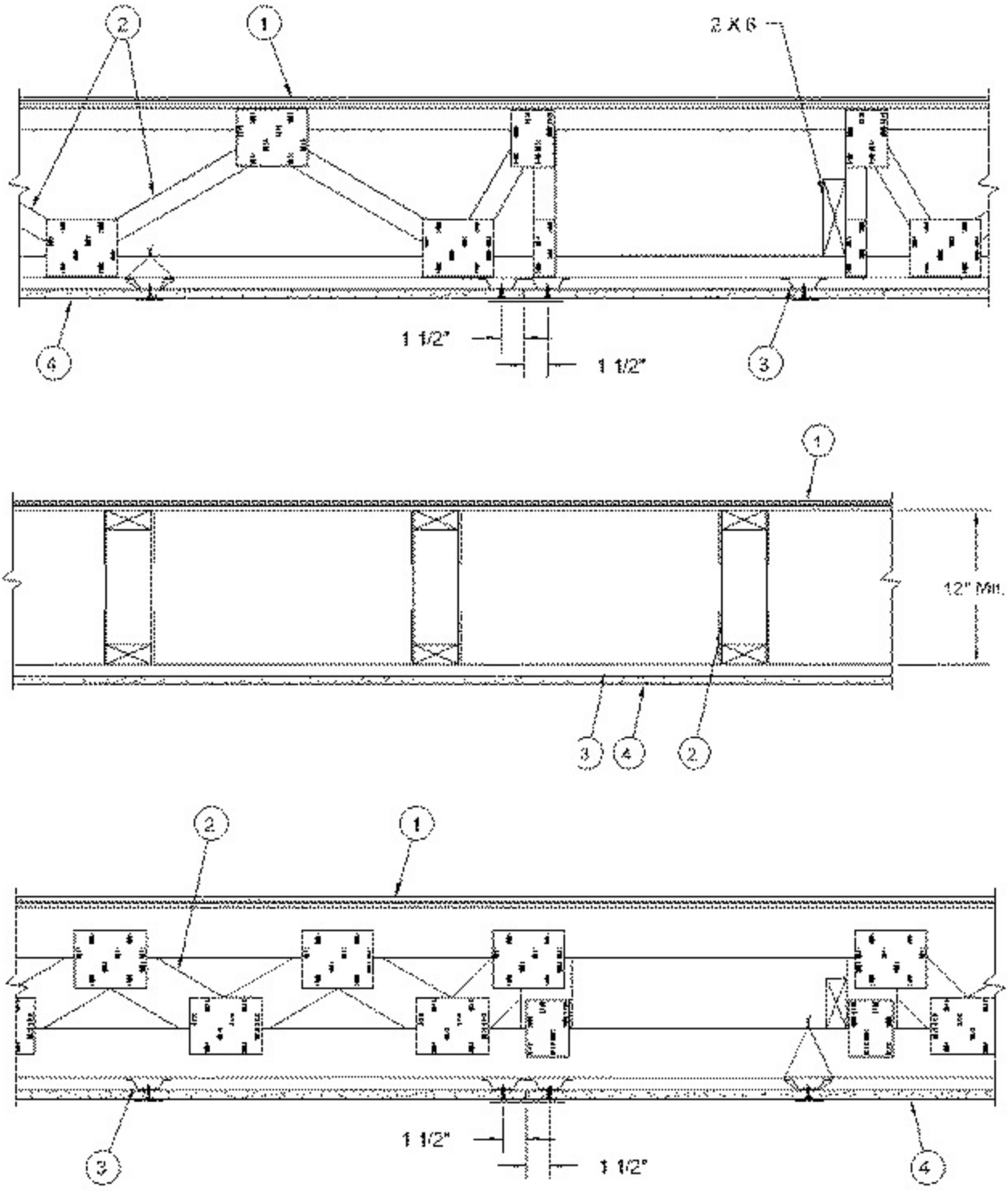
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. **L528**

September 2, 2024

Unrestrained Assembly Rating - 1 Hr.
Finish Rating - 22 Min.
This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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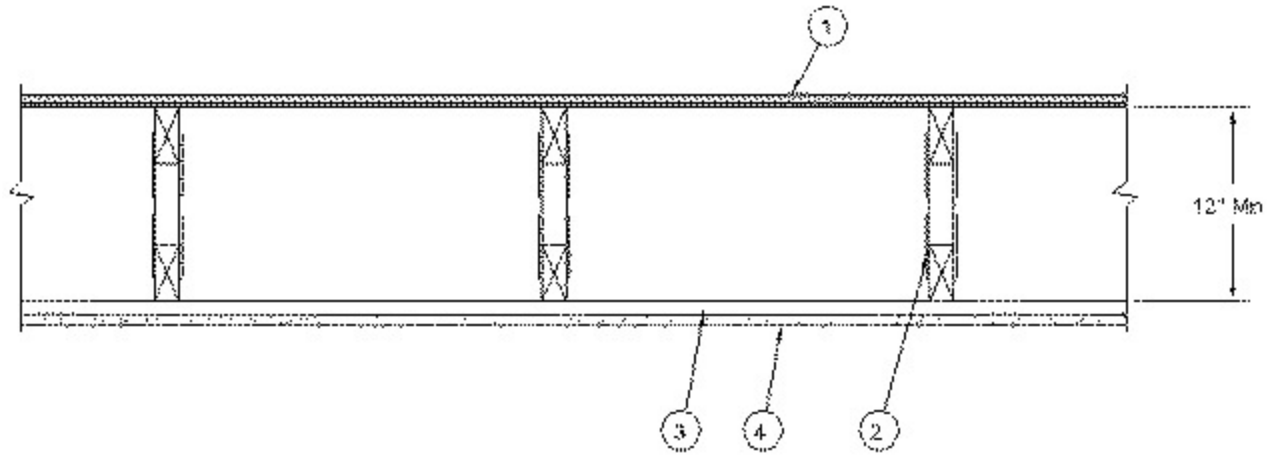
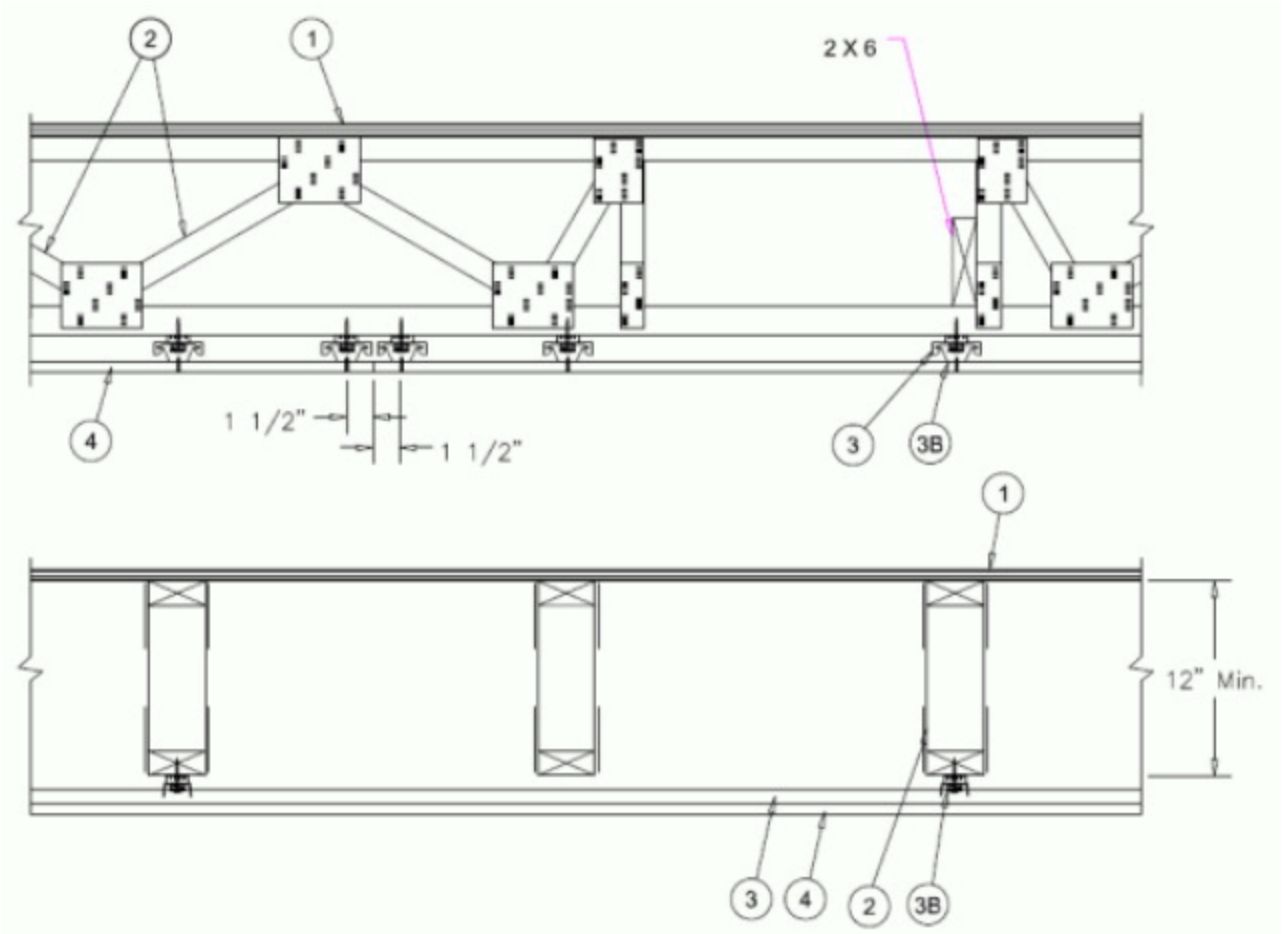




1. **Flooring System —** The flooring system shall consist of one of the following:

System No. 1

Subflooring — Min 23/32 in. thick T & G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. TetraGRIP™ nails measuring 2-3/8 in. long, 0.113 in. diameter, 0.272 in. round head, and helically threaded shank with barbed features on the helix meeting ASTM F1667 and having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

System No. 2

Subflooring — Min 23/32 in. thick T & G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. TetraGRIP™ nails measuring 2-3/8 in. long, 0.113 in. diameter, 0.272 in. round head, and helically threaded shank with barbed features on the helix meeting ASTM F1667 and having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — (Optional) — Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring — Min 3/4 in. thickness of lightweight insulating concrete with **Perlite Aggregate*** or **Vermiculite Aggregate***, or gypsum concrete.

See **Perlite Aggregate** (CFFX) and **Vermiculite Aggregate** (CJZZ) categories for names of manufacturers.

System No. 3

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Floor Mat Materials* — (Optional)— Floor mat material nom 5/64 in. (2 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1 in. of floor-topping mixture.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat.

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/4 in. (6 mm) thick adhered to subfloor with Hacker Floor Primer. Primer to be applied to the surface of the mat prior to the placement of a min 1-1/4 in. (32 mm) of floor-topping mixture.

HACKER INDUSTRIES INC — Type Hacker Sound-Mat II.

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/8 in. (3 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 3/4 in. (19 mm)

HACKER INDUSTRIES INC — FIRM-FILL SCM 125

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 1/4 in. (6 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1 in. (25 mm)

HACKER INDUSTRIES INC — Type FIRM-FILL SCM 250, Quiet Qurl 55/025

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 3/8 in. (10 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/4 in. (32 mm)

HACKER INDUSTRIES INC — FIRM-FILL SCM 400, Quiet Qurl 60/040

Alternate Floor Mat Materials — (Optional) — Floor mat material nom 3/4 in. (19 mm) thick loose laid over the subfloor. Floor topping thickness shall be a min of 1-1/2 in. (38 mm)

HACKER INDUSTRIES INC — Type FIRM-FILL SCM 750, Quiet Qurl 65/075

Metal Lath — (Optional) — For use with 3/8 in. (10 mm) floor mat materials, 3/8 in. expanded steel diamond mesh, 3.4 lbs/sq yd placed over the floor mat material. Hacker Floor Primer to be applied prior to the placement of the metal lath. When metal lath is used, floor topping thickness a nom 1-1/4 in. over the floor mat.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1100 psi. Mixture shall consist of 6.8 gal of water to 80 lbs of floor topping mixture to 1.9 cu ft of sand.

HACKER INDUSTRIES INC — Firm-Fill Gypsum Concrete, Firm-Fill 2010, Firm-Fill 3310, Firm-Fill 4010, Firm-Fill High Strength, Gyp-Span Radiant

System No. 4

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.010 in. thick.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1800 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

UNITED STATES GYPSUM CO — Types LRK, HSLRK, CSD

LATICRETE SUPERCAP L L C — Types LRK, HSLRK

USG MEXICO S A DE C V — Types LRK, HSLRK, CSD

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

UNITED STATES GYPSUM CO — Types SAM, LEVELROCK® Brand Sound Reduction Board, LEVELROCK® Brand Floor Underlayment SRM-25

Alternate Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding minimum thickness of floor topping over floor mat.

GRASSWORX L L C — SC Types

Alternate Floor Mat Material* — (Optional) - Floor mat material nominal 3/8 in. thick loose laid over the subfloor. Floor topping shall be a min 3/4 in. thick.

System No. 5

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring — Floor Topping Mixture* — Min 1-1/2 in. thickness of floor topping mixture having a min compressive strength of 1000 psi and a cast density of 100 plus or minus 5 pcf. Foam concentrate mixed 40:1 by volume with water and expanded at 100 psi through nozzle. Mixture shall consist of 1.4 cu feet of preformed foam concentrate to 94 lbs Type I Portland cement, 300 lbs of sand with 5-1/2 gal of water.

ELASTIZELL CORP OF AMERICA — Type FF

System No. 6

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring — Floor Topping Mixture* — Min 1-1/2 in. thickness of floor topping mixture having a min compressive strength of 1000 psi and a cast density of 100 plus or minus 5 pcf. Foam concentrate mixed 40:1 by volume with water and expanded at 100 psi through nozzle. Mixture shall consist of 1.2 cu feet of preformed foam concentrate to 94 lbs Type I Portland cement, 300 lbs of sand with 5-1/2 gal of water.

AERIX INDUSTRIES — Floor Topping Mixture

System No. 7

Deleted.

System No. 8

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a minimum compressive strength of 1500 psi. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Types Maxxon Standard and Maxxon High Strength

Floor Mat Materials* — (Optional) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

MAXXON CORP — Type Encapsulated Sound Mat.

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) - 3/8 in. expanded galvanized steel diamond mesh, 3.4 lbs/sq yd loose laid over the floor mat material.

Fiber Glass Reinforcement - (Optional, Not Shown) - 0.015 in. thick PVC coated non-woven fiberglass mesh, 0.368 lbs/sq yd loose laid over the floor mat material.

System No. 9

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 1000 psi. Mixture shall consist of 5 to 8 gal of water to 80 lbs of floor topping mixture to 2.1 cu ft of sand. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

ULTRA QUIET FLOORS — UQF-A, UQF-Super Blend, UQF-Plus 200

System No. 10

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

FORMULATED MATERIALS LLC — Types FR-25, FR-30, SiteMix, and Treadstone Advantage

Alternate Floor Mat Material* — (Optional) Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping shall be a min of 3/4 in.

FORMULATED MATERIALS LLC — Types M1, M2, M3, Elite, Duo, R1, and R2

System No. 11

Subflooring — Min 1 by 6 in. T & G lumber fastened diagonally to trusses, or min 15/32 in. thick plywood or min 7/16 in. thick oriented strand board (OSB) wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panel to be perpendicular to trusses with joints staggered.

Finish Floor - Mineral and Fiber Board* — Min 1/2 in. thick, supplied in sizes ranging from 3 ft by 4 ft to 8 ft by 12 ft. All joints to be staggered a min of 12 in. with adjacent sub-floor joints.

HOMASOTE CO — Type 440-32 Mineral and Fiber Board

System No. 12

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring — Floor Topping Mixture* — Min 3/4 in. thickness of floor topping having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

ARCOSA SPECIALTY MATERIALS — AccuCrete® Types NexGen, Green, Prime and PrePour, AccuRadiant®, AccuLevel® Types G40, G50 and SD30

Alternate Floor Mat Material* — (Optional) — Floor mat material nominal 2 - 9.5 mm thick loose laid over the subfloor. Floor topping shall be a min of 3/4 in.

ARCOSA SPECIALTY MATERIALS — AccuQuiet® Types D13, D-18, D25, DX38, EM.125, EM.125S, EM.250, EM.250S, EM.375, EM.375S, EM.750, and EM.750S.

System No. 13

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — (Optional) — Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See **Floor- and Roof-Topping Mixtures** (CCOX) category for names of Classified Companies.

Floor Mat Materials* — (Optional) — Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 65/075, Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

System No. 14

Subflooring — Min 23/32 in. thick T&G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. TetraGRIP™ nails measuring 2-3/8 in. long, 0.113 in. diameter, 0.272 in. round head, and helically threaded shank with barbed features on the helix meeting ASTM F1667 and having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Gypsum Board* — One layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists. Gypsum board secured with 1 in. long No. 6 Type W bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

Floor Mat Materials* — (As an alternate to the single layer gypsum board) — Floor mat material loose laid over the subfloor.

MAXXON CORP — Type Encapsulated Sound Mat.

Gypsum Board* — (For use when floor mat is used) Two layers of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to joists on top of the floor mat material. Gypsum board secured to each other with 1 in. long No. 6 Type G bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. The joints of the gypsum board are to be staggered a minimum of 12 inches in between layers and from the joints of the subfloor.

GEORGIA-PACIFIC GYPSUM L L C — Type DS

System No. 15

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping having a min compressive strength of 1000 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

DEPENDABLE LLC — GSL M3.4, GSL K2.6, GSL-CSD, GSL RH and SKIMFLOW

Floor Mat Materials* — (Optional) — Nom. 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 55/025 and Quiet Qurl 55/025 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 60/040 and Quiet Qurl 60/040 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 65/075, Quiet Qurl 65/075 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

KEENE BUILDING PRODUCTS CO INC — Type Quiet Qurl 52/013 and Quiet Qurl 52/013 N

Alternate Floor Mat Materials* — (Optional) — Floor mat material Nom. 1/4 in. entangled net core with a compressible fabric attached to the bottom loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

KEENE BUILDING PRODUCTS CO INC — Quiet Qurl 55/025 MT and Quiet Qurl 55/025 N MT

System No. 16

Subflooring — Min 23/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the joists with joints staggered.

Vapor Barrier — (Optional) — Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — (Optional) — Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See **Floor- and Roof-Topping Mixtures** (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional) — Nom 3/32 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

PLITEQ INC — Type GenieMat RST02

Floor Mat Materials* — (Optional) — Nom 3/16 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

PLITEQ INC — Type GenieMat FF03NP

Floor Mat Materials* — (Optional) — Nom 1/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 3/4 in.

PLITEQ INC — Type GenieMat FF06

Floor Mat Materials* — (Optional) — Nom 3/8 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1 in.

PLITEQ INC — Type GenieMat FF10

Floor Mat Materials* — (Optional) — Nom 3/4 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

PLITEQ INC — Type GenieMat FF17

Floor Mat Materials* — (Optional) — Nom 1 in. thick loose laid over the subfloor. Floor topping thickness shall be a minimum of 1-1/2 in.

PLITEQ INC — Type GenieMat FF25

System No. 17

Subflooring — Nom. 1-1/2 in. thick T & G laminated composite plywood sub-floor panels to be perpendicular to the trusses with end joints staggered 4 ft. End joints centered over top chord of trusses. Subfloor panels secured to trusses with construction adhesive and #8 by 3 in. wood screws spaced 12 in. OC in the field and 6 in. OC at the end joints.
RSP INDUSTRIES INC — SAP board

System No. 18

Subflooring — Min 15/32 in. thick wood structural panels, min grade "Underlayment" or "Single-Floor". Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss.

Wall and Partition Facings and Accessories* - Sound Barrier (Optional) — Acoustic Sleeper pads stapled to the top of the subfloor, the bottom of the finish floor, or to 5/16 in. thick by 1-1/2 in. wide wood strips and centered over wood trusses. Acoustic Sleeper pads are to be spaced appropriately so that the finish floor panels are fastened through Acoustic Sleeper pads to the trusses.
STC ARCHITECTURAL PRODUCTS L L C DBA STC SOUND CONTROL — Acoustic Sleeper

Finish Floor — Min 23/32 in. thick T & G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Butt joints of panels have the option of being sealed with any UL Classified caulk or sealant found under - Fill, Void or Cavity Materials* (XHHW).

System No. 19

Structural Cement-Fiber Units* — For use with **UNITED STATES GYPSUM CO** Types C, IP-X2, IPC-AR and ULIX or AMERICAN GYPSUM CO Type AG-C. gypsum boards only. Nom 3/4 in. thick, with long edges tongue and grooved. Long dimension of panels to be perpendicular to wood trusses with end joints staggered a min of 2 ft and centered over the trusses. Panels secured to wood trusses with 1-5/8 in. long, No. 8, self- countersinking wood screw spaced a max of 12 in. OC in the field with a screw located 1 in. and 2 in. from each edge, and 8 in. OC on the perimeter with a screw located 2 in. from each edge, located 1/2 in. from the end edges of the panel.
UNITED STATES GYPSUM CO — Types STRUCTO-CRETE, USGSP

System No. 20

Subflooring — Min 23/32 in. thick T & G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. TetraGRIP™ nails measuring 2-3/8 in. long, 0.113 in. diameter, 0.272 in. round head, and helically threaded shank with barbed features on the helix meeting ASTM F1667 and having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Finish Flooring - Floor Topping Mixture* — Min 1 in. thickness of floor topping mixture having a min compressive strength of 4500 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.
SIKA DEUTSCHLAND GMBH — Type SCHONOX AP Rapid Plus

System No. 21

Subflooring — Min 23/32 in. thick T & G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. TetraGRIP™ nails measuring 2-3/8 in. long, 0.113 in.

diameter, 0.272 in. round head, and helically threaded shank with barbed features on the helix meeting ASTM F1667 and having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier — (Optional) - Commercial asphalt saturated felt, 0.030 in. thick.

Vapor Barrier — (Optional) - Nom 0.010 in. thick commercial rosin-sized building paper.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Materials* — (Optional, Not Shown) - Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.
Freudenberg Performance Materials LP — EnkaSonic® by Colbond a member of the Low & Bonar group Types 125, 250, 250 Plus, 400, 400 Plus, 750, and 750 Plus.

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 22

Subflooring — Min 23/32 in. thick T & G wood structural panels described and installed as shown in System No. 1.

Finish Floor - Building Units* — Min 1/2 in. thick magnesium oxide panels installed parallel, perpendicular, or diagonally to trusses with panel edges offset a min of 4 in. between subfloor and magnesium oxide panels. Panels secured to subfloor with construction adhesive and corrosion resistant fasteners, spaced 12 in. OC around the perimeter and in the field of the panel. Fasteners must be placed no closer than 1/2 in. from all panel edges and no closer than 2 in. from panel corners
HUBER ENGINEERED WOODS L L C — Type 1/2 in. Square Edge Exacor™ Board

System No. 23

Subflooring — Min 15/32 in. thick wood structural panels, min grade "C-D" or "Sheathing". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with joints staggered. Fastened with 8d ringed shank nails spaced 12 in. OC along each truss.

Finish Floor - Building Units* — Min 1/2 in. thick, supplied in 4 by 8 ft panels, fastened to trusses through subfloor with 8d ringed shank nails spaced a max of 12 in. OC. All joints to be staggered a min of 12 in. with adjacent sub-floor joints.
ECTEK INTERNATIONAL INC — Type MegaBoard, 1/2 in. thick

System No. 24

Subflooring — Building Units* — Nom 3/4 in. thick, tongue and grooved boards. Long dimension of boards to be perpendicular to wood trusses with end joints staggered a min of 4 ft. and centered over the trusses. Boards secured to trusses with min 2 in. long screws or 2 in. x 0.113 in. Ring Shank nails spaced a max of 12 in. OC in the field with screws/nails located 1 in. from long edge, and max 8 in. OC along the end joints with screws/nails located 1/2 in. from end joint.

ECTEK INTERNATIONAL INC — Type MegaBoard, 3/4 in. thick

Finish Floor (optional) — Building Units* — Min 1/2 in. thick, supplied in 4 by 8 ft panels, fastened to trusses through subfloor with 2-3/8 in. long 8d ringed shank nails spaced a max of 12 in. OC. All joints to be staggered a min of 12 in. with adjacent sub-floor joints.

ECTEK INTERNATIONAL INC — Type MegaBoard, 1/2 in. thick

System No. 25

Subflooring — Min 23/32 in. thick T & G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. TetraGRIP™ nails measuring 2-3/8 in. long, 0.113 in. diameter, 0.272 in. round head, and helically threaded shank with barbed features on the helix meeting ASTM F1667 and having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Vapor Barrier — (Optional) — Nom 0.030 in. thick commercial asphalt saturated felt.

Floor Mat Materials* — (Optional) — Floor mat material loose laid over the subfloor. Refer to manufacturer's instructions regarding the minimum thickness of floor topping over each floor mat material.

GRASSWORX L L C — SC Types

Finish Flooring* — Min 3/4 in. thickness of any Floor Topping Mixture bearing the UL Classification Marking as to Fire Resistance. See Floor- and Roof-Topping Mixtures (CCOX) category for names of Classified Companies. Refer to the manufacturer's instructions accompanying the material and/or contact the manufacturer's technical support for specific mix design and minimum thickness recommended for use with eligible floor mat(s).

Floor Mat Reinforcement — (Optional) - Refer to manufacturer's instructions regarding minimum thickness of floor topping for use with floor mat reinforcement.

Metal Lath — (Optional) — Expanded steel diamond mesh, 2.5 lb / sq yd loose laid over floor mat material.

Fiberglass Mesh Reinforcement — (Optional) — Coated non-woven glass fiber mesh grid loose laid over floor mat material.

System No. 26

Subflooring – Building Units* — Nom 3/4 in. thick, ship-lap or tongue-in-groove edge detail. Long dimension of boards to be perpendicular to trusses with end joints staggered a min of 4 ft. and centered over the trusses. Boards secured to trusses with #8 x 2 in. long screws or 2 in. long by 0.113 in. ring shank nails spaced a max of 12 in. OC in the field and 8 in. OC along butt ends. Fasteners located 1/2 in. from butt edges and 2 in. from long edges of the board. When Finish Floor (see below) is not used, must be used with Item 7I).

AMERIFORM L L C — Type Nocom

Finish floor – (Optional) - Min 1/2 in. thick, supplied in 4 ft by 8 ft panels, installed perpendicular or parallel to trusses with panel edges offset a min of 24 in. with adjacent sub-floor joints. Panels secured to subfloor with construction adhesive and corrosion resistant fasteners spaced a max of 12 in. OC. around perimeter and in the field of the panel. Fasteners located 1/2 in. at butt edges and 2 in. from long edge of the boards.

MULTI-PANELS – Type M4 Panel

System No. 27

Subflooring Min 23/32 in. thick T & G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. TetraGRIP™ nails measuring 2-3/8 in. long, 0.113 in. diameter, 0.272 in. round head, and helically threaded shank with barbed features on the helix meeting ASTM F1667 and having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Finish Floor – Building Units* - (Optional) - Min 1/2 in. thick, supplied in 4 ft by 8 ft panels, installed perpendicular or parallel to trusses with panel edges offset a min of 24 in. with adjacent sub-floor joints. Panels secured to subfloor with construction adhesive and corrosion resistant fasteners s spaced a max of 12 in. OC. around perimeter and in the field of the panel. Fasteners located 1/2 in. at butt edges and 2 in. from long edges of the board.

MULTI-PANELS – Type M4 Panel

System No. 28

Subflooring — Min 23/32 in. thick T & G wood structural panels, min grade "Underlayment" or "Single-Floor". Face grain of plywood or strength axis of panels to be perpendicular to the trusses with end joints staggered 4 ft. Panels secured to trusses with construction adhesive and No. 6d ringed shank nails spaced 12 in. OC along each truss. TetraGRIP™ nails measuring 2-3/8 in. long, 0.113 in. diameter, 0.272 in. round head, and helically threaded shank with barbed features on the helix meeting ASTM F1667 and having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails.

Finish Flooring - Floor Topping Mixture* — Min 3/4 in. thickness of floor topping mixture having a min compressive strength of 900 psi. Refer to manufacturer's instructions accompanying the material for specific mix design.

TECNODRY SA DE CV – Type SURFACE GYP

2. **Trusses —** Parallel chord trusses, spaced a max 24 in. OC, fabricated from nom 2 by 4 in. lumber with lumber oriented vertically or horizontally. Min truss depth is 12 in. when item 9 is not employed. Min truss depth is 18 in. when item 9 is employed. Truss members secured together with min No. 20 MSG galv steel truss plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split-tooth-type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on approx 7/8 in. centers with four rows of teeth per in. of plate width.

3. **Furring Channels —** Hat channels, 7/8 in. deep by 2-9/16 in. or 2-11/16 in. or 2-23/32 in. wide at the base and 1-7/16 in. wide at the face, formed from No. 25 ga galv steel, spaced 24 in. OC perpendicular to trusses. Channels secured to trusses with double strand of No. 18 SWG galv steel wire spaced 48 in. OC. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. Two furring channels used at end joints of gypsum board (Item 4), each extending a min of 6 in. beyond both side edges of the board.

3A. **Resilient Channels —** (Not Shown) — As an alternate to Item 3, resilient channel formed from No. 26 MSG galv steel, spaced 16 in. OC perpendicular to trusses. Channels secured to each truss with 1-1/4 in. long No. 6 Type S bugle head steel screw. Channels overlapped at splices 4 in. Two resilient channels used at end joints of gypsum board (Item 4), each extending a min of 6 in. beyond both side edges of the board.

3B. **Steel Framing Members* —** (Optional)— Used as an alternate method to attach furring channels to trusses (Item 2). Clips spaced 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to the bottom chord of alternating trusses with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to the bottom chord of alternating trusses with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels. Adjoining channels are overlapped as described in Item 3. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two min 7/16 in. long No. 6 self-tapping framing screws, at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 4. When Fiber, Sprayed (Item 6) is used, furring channel spacing reduced to 16 in. OC and two layers of nom 5/8 in. thick, 4 ft wide gypsum board shall be installed as described in Item 4.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75)

3C. **Steel Framing Members* —** (Optional, Not Shown) — Used as an alternate method to attach furring channels to trusses. Clips spaced 48 in. OC., and secured to the bottom chord to alternating trusses with two No. 8 x 2-1/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 4. Two layers of gypsum board required as described in Item 4. Not evaluated for use with Item 6. When Item 3C is used and Batts and Blankets* are added per Section III Item 18 Blanket Insulation in the General Information of this Directory (BXUV), clips spaced 48 in. OC, furring channels spaced 16 in. OC max, 3-1/2 in. max. Batts and Blankets* secured to plywood subfloor with staples spaced 12 in. OC or to the trusses with 0.090 in. diam galv steel wires spaced 12 in. OC, and two layers of gypsum board required as described in Item 4A. When the Batts and Blankets* are draped over the furring channel/gypsum panel ceiling membrane, the clip spacing shall be reduced to 24 in. OC and secured to consecutive trusses, the furring channel spacing shall be reduced to 12 in. OC, and two layers of gypsum board required as described in Item 4A.
KINETICS NOISE CONTROL INC — Type Isomax.

3D. **Steel Framing Members* —** (Optional, Not Shown) — For Use with Item 7- Used as an alternate method to attach furring channels to trusses. Clips spaced 48 in. OC. and secured to the bottom chord to alternating trusses with one No. 8 x 2-1/2 in. coarse

drywall screw through the center hole. Furring channels are friction fitted into clips. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 4. Not evaluated for use with Item 6.
PLITEQ INC — Type Genie Clip

3E. **Steel Framing Members* —** (Optional, Not Shown) — For use with Item 7B - Used as an alternate method to attach furring channels to trusses. Clips spaced at 48" OC and secured to the bottom of the trusses with one 2 in. Coarse Drywall Screw with 1 in. diam. washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire .Additional clips are required to hold the Gypsum Butt joints as described in item 4. Not evaluated for use with Item 6.
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

3F. **Resilient Channels —** For use with Item 4B and 7A - Resilient channels, formed from No. 25 MSG galv steel and shaped as shown, spaced 12 in. OC perpendicular to joist. Channels overlapped 4 in. at splices and secured to each joist with 1-1/4 in. Type S screws. Min end clearance of channels to wall to be 1/2 in. Additional resilient channels positioned so as to coincide with end joints of gypsum board.

3G. **Resilient Channels —** For Use With Item 4C and 7C. Formed from min 25 MSG galv steel installed perpendicular to trusses and spaced 16 in. OC. Channels secured to each truss with 1-5/8 in. long Type S bugle head steel screws. Channels overlapped 4 in. at splices. Two channels, spaced 6 in. OC, oriented opposite each gypsum panel end joint. Additional channels shall extend min 6 in. beyond each side edge of panel. Insulation, Item 7C is applied over the resilient channel/gypsum panel ceiling membrane.

3H. **Steel Framing Members* —** (Optional, Not Shown) — Used as an alternate method to attach furring channels to trusses. Clips spaced at 48" OC and secured to the bottom of the trusses with one 2-1/2 in. Coarse Drywall Screw with 1 in. diam. washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire .Additional clips are required to hold the Gypsum Butt joints as described in item 4. Not evaluated for use with Item 6.
REGUPOL AMERICA — Type SonusClip

3I. **Steel Framing Members —** (Not Shown) — For use with Items 4C and 7F, As an alternate to Item 3, main runners, cross tees, cross channels and wall angle as listed below.

a. **Main Runners —** Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft. OC. Main runners suspended by min 12 SWG galv. steel hanger wires spaced 48 in. OC. Hanger wires to be located adjacent to main runner/cross tee intersections. Hanger wires wrapped and twist-tied on 16d nails driven in to side of trusses at least 5 in. above the bottom face.

b. **Cross Tees or Channels —** Nom 4 ft long cross tees, with 15/16 in. or 1-1/2 in. wide face, or nom 4 ft long cross channels, with 1-1/2 in. wide face, spaced 16 in. OC, installed perpendicular to the main runners. Additional cross tees or channels used 8 in. from each side of butted gypsum board end joints. The cross tees or channels may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.

c. **Wall Angle or Channel —** Painted or galv. steel angle with 1 in. legs or channel with 1 in. legs, 1-9/16 in. deep attached to walls at perimeter of ceiling with fasteners 16 in. OC. To support steel framing member ends and for screw-attachment of the gypsum panel.
USG INTERIORS LLC — Type DGL or RX

3J. **Steel Framing Members* —** (Optional, Not Shown) — Used to attach resilient channels (Item 3A) to trusses (Item 2). Clips spaced 48 in. OC on adjacent trusses, and secured to trusses with one No. 8 x 2-1/2 in. coarse drywall screw through center grommet hole. Channels secured to clips with one #10 x 1/2 in. pan-head self-drilling screw. Ends of adjoining channels overlapped 6 in. and secured together with two #8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board butt joints require additional resilient channels spaced 1-1/2 in. from the butt joint on either side. One edge of the extra channels will extend to an adjacent truss where it is secured with a clip.
KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

3K. **Resilient Channels —** For use with items 3L, 4F, and 7G — Formed from min 26 MSG galv steel installed perpendicular to trusses. When Item 7G is draped over channels, channels spaced a maximum 12 in. OC. Channels secured to each truss as described in Item 3L.

Channel ends butted and centered under the joists and attached to the joists with one screw at each end. Additional resilient channels positioned so as to coincide with end joints of gypsum board as shown in the above illustration. Additional channels shall extend min 3 in. beyond each side edge of board.

3L. **Steel Framing Members* —** (Optional, Not Shown) — Used as an alternate method to attach resilient channelsto joists (Item 2). For use with items 3K, 4F and 7G. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 24 in. O.C. Channel ends butted and centered under the joists and attached to the joists with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum board end joints, as described in Item 3K. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the joists with the screws supplied with the accessory and per the accessory manufacturer's installation instructions.
PAC INTERNATIONAL L L C — Types RC-1 Boost

3M. **Steel Framing Members* —** (Optional, Not Shown) — As an alternate to Item 3.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 24 in. OC, perpendicular to trusses. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels used at end joints of gypsum board (Item 4), each extending a min of 6 in. beyond both side edges of the board.

b. **Cold Rolled Channels —** 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses, friction-fitted into the channel caddy on the Steel Framing Members (Item 3Md) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking —** Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 3Md) location with 16d nails or minimum 2-1/2 in. screws.

d. **Steel Framing Members* —** Spaced 48 in. OC. max along truss, and secured to the truss on alternating trusses with two, #10 x 1-1/2 in. screws through mounting holes on the hanger bracket.
PAC INTERNATIONAL L L C — Type RSIC-SI-CRC EZ Clip

3N. **Steel Framing Members* —** (Optional, Not Shown) — As an alternate to Item 3.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to trusses and friction fit into Steel Framing Members (Item 3Nc). Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap or with two TEK screws along each leg of the 6 in. overlap. Two furring channels used at end joints of gypsum board (Item 4). Butt joint channels held in place by strong back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run perpendicular to strong back channels and shall be minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels.

b. **Blocking —** Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 3Nc) location with 16d nails or minimum 2-1/2 in. screws.

c. **Steel Framing Members* —** Used to attach furring channels (Item 3Na) to trusses. Clips spaced 48 in. OC and secured along truss webs at each furring channel intersection with min. 3/4 in. long self-drilling #10 x 1-1/2 in. screws through each of the provided hole locations. Furring channels are friction fitted into clips.
PAC INTERNATIONAL L L C — Type RSIC-S1-1 Ultra

3O. **Resilient Channels —** For Use With Item 4G and 7C. Formed from min 25 MSG galv steel installed perpendicular to trusses and spaced 16 in. OC. Channels secured to each truss with 1-1/4 in. long Type S bugle head steel screws. Channels overlapped 4 in. at

splices. Two channels, spaced 6 in. OC, oriented opposite each gypsum panel end joint. Additional channels shall extend min 6 in. beyond each side edge of panel. Insulation, Item 7C is applied over the resilient channel/gypsum panel ceiling membrane.

3P. **Steel Framing Members* —** (Optional, Not Shown, As an alternate to Item 3) — Furring channels and Steel Framing Members as described below:

A. **Furring Channels —** Formed of No. 25 MSG galv steel. 2-23/32 in. wide by 7/8 in., spaced 24 in. OC max perpendicular to trusses. Channels secured to trusses as described in Item 3Pb. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the wallboard butt joints, as described in Item 4.

B. **Steel Framing Members* —** Used to attach furring channels (Item 3Pa) to trusses (Item 2). Clips spaced 48 in. OC max with No. 8 x 2-1/2 in. course drywall screw through the center grommet. Furring channels are friction fitted into clips.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clips

3Q. **Steel Framing Members* —** (Optional, Not Shown) — Used as an alternate method to attach resilient channels (items 3 and 3G) to joists (Item 2). For use with items 3K, 4F and 7G. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels and spaced max 24 in. O.C. Channel ends butted and centered under the joists and attached to the joists with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum board end joints, as described in Item 3K. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the joists with the 2in. screws supplied with the accessory and per the accessory manufacturer's installation instructions.

PAC INTERNATIONAL L L C — Types RC-1 Boost

3R. **Steel Framing Members*** — (Optional) — As an alternate to Item 3G — Used as an alternate method to attach furring channels to trusses (Item 2). Clips spaced 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to the bottom chord of alternating trusses with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clips for use with 2-23/32 in. wide furring channels. Adjoining channels are overlapped as described in Item 3. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two min 7/16 in. long No. 6 self-tapping framing screws, at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 4. When Fiber, Sprayed (Item 6) is used, furring channel spacing reduced to 16 in. OC and two layers of nom 5/8 in. thick, 4 ft wide gypsum board shall be installed as described in Item 4.

PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75), RSIC-SI-X.

3S. **Steel Framing Members*** — (Optional, Not Shown) — As an alternate to Item 3G.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 24 in. OC, perpendicular to trusses. Channels secured to Cold Rolled Channels at every intersection with a 3/4 in. TEK screw through each furring channel leg. Ends of adjoining channels overlapped 12 in. and fastened together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap, or with two 3/4 in. TEK screws in each leg of the overlap section. Two furring channels used at end joints of gypsum board (Item 4), each extending a min of 6 in. beyond both side edges of the board.

b. **Cold Rolled Channels** — 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses, friction-fitted into the channel caddy on the Steel Framing Members (Item 3Md) and secured with two 3/4 in. TEK screws. Adjoining lengths of cold rolled channels lapped min. 12 in. and secured along bottom legs with four 3/4 in. TEK screws and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking** — Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 3Md) location with 16d nails or minimum 2-1/2 in. screws.

d. **Steel Framing Members*** — Spaced 48 in. OC. max along truss, and secured to the truss on alternating trusses with two, #10 x 2in. screws through mounting holes on the hanger bracket.

PAC INTERNATIONAL L L C — Type RSIC-SI-CRC EZ Clip

3T. **Steel Framing Members*** — (Optional, Not Shown) — As an alternate to Item 3G.

a. **Furring Channels** — Formed of No. 25 MSG galv steel, nominal 2-1/2 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to trusses and friction fit into Steel Framing Members (Item 3Nc). Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap or with two TEK screws along each leg of the 6 in. overlap. Two furring channels used at end joints of gypsum board (Item 4). Butt joint channels held in place by strong back channels placed upside down, on top of, and running perpendicular to primary furring channels, extending 6 in. longer than length of gypsum side joint. Strong back channels spaced maximum 48 in. OC. Strong back channels secured to every intersection of primary furring channels with four 7/16 in. pan head screws, two along each of the legs at intersections. Butt joint channels run perpendicular to strong back channels and shall be minimum 6 in. longer than length of joint, secured to strong back channels with 7/16 in. pan head screws, two along each of the legs at intersection with strong back channels.

b. **Blocking** — Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 12 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the trusses at the top and bottom of the blocking at each Steel Framing Member (Item 3Nc) location with 16d nails or minimum 2-1/2 in. screws.

c. **Steel Framing Members*** — Used to attach furring channels (Item 3Na) to trusses. Clips spaced 48 in. OC and secured along truss webs at each furring channel intersection with min. 3/4 in. long self-drilling #10 x 2in. screws through each of the provided hole locations. Furring channels are friction fitted into clips.

PAC INTERNATIONAL L L C — Type RSIC-S1-1 Ultra

3U. **Steel Framing Members* —** (Optional, Not Shown) — For Use with Item 7G- Used as an alternate method to attach furring channels to trusses. Clips spaced 48 in. OC. and secured to the bottom chord to alternating trusses with one No. 8 x 2-1/2 in. screw and washer through the center hole. Furring channels are friction fitted into clips. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap or screw attached with two pan head screws on each leg of overlap. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 4. Not evaluated for use with Item 6.

ISOTECH INDUSTRIES INC. — Type ISOWALL

4. **Gypsum Board* —** One layer of nom 5/8 in. thick, 4 ft wide gypsum board, installed with long dimension perpendicular to furring or resilient channels. Gypsum board secured with 1 in. long No. 6 Type S bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. End joints secured to both resilient channels as shown in the end joint detail. When **Steel Framing Members** (Item 3B and 3P) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimension perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long No. 6 Type S bugle head screws spaced 12 in. OC in the field of the board. Gypsum board butt joints shall be staggered 2 ft within the assembly, and shall occur between the main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. The two furring channels at each butt joint shall be spaced approximately 3-1/2 in. OC, and be attached to the bottom chord of the truss with one clip at each end of the channel. Screw spacing along the gypsum board butt joint shall be 8 in. OC. When both **Steel Framing Members** (Item 3B) and **Fiber, Sprayed** (Items 6 or 6A) are used, furring channel spacing reduced to 16 in. OC and two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimension perpendicular to furring channels. Base layer secured to furring channels with nom 1 in. long No. 6 Type S bugle head screws spaced 12 in. OC in the field of the board. Gypsum board butt joints shall be staggered 2 ft within the assembly, and shall occur between the main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. The two furring channels at each butt joint shall be spaced approximately 3-1/2 in. OC, and be attached to the bottom chord of the truss with one RSIC-1 clip at each end of the channel. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Outer layer secured to furring channels using 1-5/8 in. long No. 6 Type S screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min. of 8 in. from base layer end joints. Butted side joints of outer layer to be offset min. 18 in. from butted side joints of base layer. When **Steel Framing Members** (Item 3C) are used, two layers of nom 5/8 in. thick, 4 ft wide are installed with long dimensions perpendicular to furring channels. Base layer attached to the furring channels using 1 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field of the board. Butted end joints shall be staggered min 2 ft. within the assembly, and occur midway between the continuous furring channels. Each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. The two furring channels shall be spaced approximately 4 in. OC, and be attached to underside of the truss with one Isomax clip at each end of the channel. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Outer layer attached to the furring channels using 1-5/8 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field. The end of the outer layer boards at the butt joint shall be attached to the base layer boards with 1-5/8 in. long Type G screws spaced 8 in. OC and 1-1/2 in. from the end joint. Butted end joints to be offset a min of 8 in. from base layer end joints. Butted side joints of outer layer to be offset min 18 in. from butted side joints of base layer. When **Steel Framing Members** (Item 3D)

are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long No. 6 Type S bugle-head steel screws spaced 12 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 16 in. within the assembly. . At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 6 in. on each end. These additional furring channels shall be attached to underside of the truss with Genie clips as described in Item 3D. Screw spacing along the gypsum board butt joint shall be 6 in. OC. When **Steel Framing Members** (Item 3E) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the aforementioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between . Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel. When **Fiber, Sprayed** (Items 6 or 6A) is used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels. Base layer gypsum board secured with 1 in. long No. 6 Type S bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. End joints secured to both resilient channels as shown in the end joint detail. Outer layer gypsum board secured with 1-5/8 in. long No. 6 Type S bugle head steel screws spaced 12 in. OC and located a min of 1-1/2 in. from side and end joints. Outer layer shall be finished as described in Item 5. When **Foamed Plastic** insulation (Item 7E) is applied to the underside of the subflooring, screw spacing shall be reduced to 8 in. OC with minimum 1-1/4 in. long Type S screws to install gypsum to the resilient channels (Item 3A). Resilient channels (Item 3A) to be spaced maximum 12 in. OC. Butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. End joints secured to both resilient channels as shown in end joint detail.

When **Steel Framing Members** (Item 3E) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, an additional single length of furring channel shall be installed and be spaced approximately 3 in. from the butt joint (6 in. from the continuous furring channels) to support the floating end of the gypsum board. Each of these shorter sections of furring channel shall extend one truss beyond the width of the gypsum panel and be attached to the adjacent trusses with one SonusClip at every truss involved with the butt joint.

When **Steel Framing Members*** (Item 3I) are used, one layer of 5/8 in. thick, 48 in. wide gypsum board, installed with long dimension perpendicular to cross channels with side joints centered along main runners. Gypsum board fastened to cross channels with 1 in. long No. 8 Type S bugle head steel screws located 1/2 in. from end joints and 1-3/4 in. from side joints and spaced 8 in. OC along the end joints and in the field. Panels fastened to cross tees with 1 in. long, Type S bugle-head screws spaced in the field and 8 in. OC along end joints. Panels fastened to main runners with 1 in. long. Type S bugle-head screws spaced midway between cross tees. Screws along sides and ends of panels spaced 3/8 to 1/2 in. from panel edge. Gypsum board sheets screw attached to leg of wall angle with 1 in. long No. 8 Type S bugle head steel screws spaced 12 in. OC. End joints of panels shall be staggered with spacing between joints on adjacent panels not less than 4 ft OC.

When **Steel Framing Members** (Item 3J) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to resilient channels. Gypsum board secured to resilient channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board and located 3/4 in. from side joints and 1-1/2 in. from end joints. Gypsum board joints are to be staggered by a minimum of 24 in.

When **Steel Framing Members** (Item 3M) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 4. Adjacent butt joints staggered minimum 48 in. OC.

When **Steel Framing Members** (Item 3N) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 4. Butt joints staggered minimum 24 in. OC.

When **Steel Framing Members** (Item 3U) are used, nom 5/8 in. thick, 4 ft wide gypsum board, installed as described in Item 4. Butt joints staggered minimum 48 in. OC.

AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type C

CGC INC — Types C, IP-X2, IPC-AR

CERTAINTEED GYPSUM INC — Type LGFC-C/A

GEORGIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C

NATIONAL GYPSUM CO — Types eXP-C, FSK-C, FSW-C, FSW-G

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type C

THAI GYPSUM PRODUCTS PCL — Type C

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

4A. **Gypsum Board —** For use when Item 3C is used and **Batts and Blankets*** are secured to the plywood subfloor, to the trusses or draped over the furring channel/gypsum panel ceiling membrane as described in Item 3C. For method of gypsum board installation, see Item 4.
CGC INC — Types C, IP-X2, IPC-AR

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

4B. **Gypsum Board* —** For use when **Batts and Blankets*** (Item 7A) and Resilient Channels (Item 3F) are used. Nom 5/8 in. thick, 4 ft wide gypsum board installed with long dimension perpendicular to resilient channels. Nom 1 in. long No. Type S bugle head screws are driven through channel spaced 8 in. OC. End joints of gypsum board similarly fastened to additional resilient channels positioned at end joint locations.
AMERICAN GYPSUM CO — Type AG-C.

CERTAINTEED GYPSUM INC — Type LGFC-C/A

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type C

4C. **Gypsum Board* —** For use with Items 3G and 7C or 3I and 7F, or 3I and 7C. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. Finish Rating with this ceiling system is 20 min.
CGC INC — Type ULIX

UNITED STATES GYPSUM CO — Type ULIX

4D. **Gypsum Board* —** For use when Flooring System (Item 1) consists of both System No. 1 and min 15/32 in. plywood, min grade "Underlayment" or "Sturd-I-Floor" with T & G edges and conforming with PS1-83 specifications, or min 3/4 in. thickness of any Floor Topping Mixture (CCOX) bearing the UL Classification Marking as to Fire Resistance, min Truss depth (Item 2) is 18 in. and Batts and Blankets (Item 7D) and Resilient Channels (Item 3A) are used. One layer of nom 5/8 in. thick, 48 in. wide gypsum board installed with

long dimension perpendicular to resilient channels. Gypsum board secured with 1 in. long Type S bugle head steel screws. Screws spaced 1 in. from side joints, and 12 in. OC in the rest of the field. Screws spaced 1-1/2 in. from the end joints. End joints secured to both resilient channels as shown in end joint detail. When batt insulation (Item 7D) is draped over the resilient channel/gypsum board ceiling membrane, the resilient channel (Item 3A) spacing shall be reduced to 12 in. OC., and gypsum board screws spaced 1 in. from side joints, and 8 in. OC in the rest of the field. For use only with Ceiling Damper described in Item 9R.
PANEL REY S A — Type PRC2

4F. **Gypsum Board* —** For use with Items 3K, 3L, and 7G— One layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to resilient channels. Gypsum board secured to resilient channels with min nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board and located 3/4 in. from side joints and 1-1/2 in. from end joints. Gypsum board butt joints are to be staggered by a minimum of 24 in.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type C

4G. **Gypsum Board* —** For use with Items 3G and 7C. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints.
AMERICAN GYPSUM CO — Type AG-C.

5. **Finishing System —** (Not Shown) — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads. Nom 2 in. wide paper tape embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum board.

6. **Fiber, Sprayed* —** (Dry Dense Packed 100% Borate Formulation) — (Not Shown, Optional) — The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft^3, in accordance with the application instructions supplied with the product. When Item 6 (Fiber, Sprayed, Dry Dense Packed) is used, Furring Channels (Item 3F) or Resilient Channels (Item 3A) spacing shall be reduced to 12 in. OC. When Item 6 (Fiber, Sprayed, Dry Dense Packed) is used, two layers of gypsum board required as described in Item 4. Not evaluated for use with Item 3C.
APPLEGATE GREENFIBER ACQUISITION LLC — Insulmax and SANCTUARY to be used with dry application only.

6A. **Fiber, Sprayed* —** (Loose Fill 100% Borate Formulation) — (Not Shown, Optional) — The finished rating when Fiber, Sprayed is used has not been determined. The fiber is applied without water or adhesive at a minimum dry density of 0.5 lb/ft^3 and at a max thickness of 3-1/2 in., in accordance with the application instructions supplied with the product. When Item 6A (Fiber, Sprayed, Loose Fill) is used, Furring Channels (Item 3F) or Resilient Channels (Item 3A) spacing shall be reduced to 12 in. OC. When Item 6A (Fiber Sprayed, Loose Fill) is used, two layers of gypsum board required as described in Item 4. Not evaluated for use with Item 3C.
APPLEGATE GREENFIBER ACQUISITION LLC — Insulmax & SANCTUARY to be used with dry application only.

7. **Batts and Blankets* —** (Not Shown) — For use with Item 3D — Nom 3 in. thick mineral wool insulation held suspended in the concealed space with 0.090 in. diam galv steel wires attached to the wood trusses at 18 in. OC.

7A. **Batts and Blankets* —** For Use With Items 3F and 4B — Glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance having a min. density of 0.5 pcf, draped over the resilient channel/gypsum panel ceiling membrane. No limit on overall thickness.

7B. **Batts and Blankets* —** (Not Shown) — For use with Item 3E — Nom 3-1/2 in. thick, min. 2 pcf fiber glass insulation held suspended in the concealed space with nominal 0.090 in. diam galv steel wires attached to the wood trusses at nominally 16 in. OC.

7C. **Batts and Blankets* or Fiber, Sprayed* —** For Use with Item 4C (Not Shown) — Min. 3-1/2 in thick with no limit on maximum thickness fitted in the concealed space, draped over the resilient channel (Item 3G)/gypsum board (Item 4C or 4G) ceiling membrane.

7D. **Batts and Blankets* —** For Use With Item 4D — Insulation may be secured to plywood subfloor with staples spaced 12 in. OC or to the trusses with 0.090 in. diam galv steel wires spaced 12 in. OC. Insulation may alternatively be draped over the resilient channels and gypsum board ceiling membrane, and the resilient channels and gypsum board attachment shall be modified as specified in Item 4D. Any glass fiber insulation bearing the UL Classification Marking for Surface Burning Characteristics and/or Fire Resistance, and having a min density of 0.5 pcf and max thickness of 3-1/2 in. may be used.

7E. **Foamed Plastic* —** (As alternate to Item 6 and 6A, Not Shown) — Spray foam insulation applied directly to the underside of the plywood subflooring. Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft^3 or 2.0 lb/ft^3 density, depending on the product installed. Spray foam insulation is limited to use with minimum 18 in. deep trusses (Item 2). When spray foam insulation is installed, resilient channels (Item 3A) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 4) spaced maximum 3 in. away from gypsum butt joints. Gypsum board (Item 4) to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Item 9) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Not evaluated for use with Items 3, 3B through 3F, 3G, 6, 6A, 7 through 7D. Not evaluated with Flooring System (Item 1) Configuration No. 1.
BASF CORP — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, Walltite® HP+, Walltite® MAX, Walltite® v.5, Walltite® LWP, Walltite® Plus and Enertite® Max.

7F. **Batts and Blankets* —** (Not Shown) For Use with Item 3I and 4C — Glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. There is no limit in the overall thickness of insulation, and the insulation can be secured against the subflooring, held suspended in the concealed space or draped over the Steel Framing Members and gypsum panel membrane.

7G. **Batts and Blankets* —** (Not Shown) For Use with Item 3L, 3K, 3U, and 4F — Glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. There is no limit in the overall thickness of insulation, and the insulation can be secured against the subflooring, held suspended in the concealed space or draped over the Steel Framing Members and gypsum panel membrane.

7H. **Foamed Plastic* —** (As alternate to Items 6 and 7) — Spray foam insulation applied directly to the underside of the plywood subflooring. Spray foam insulation installed to a maximum thickness of 11 in. at a nominal 1.0 lb/ft^3 - 2.5 lb/ft^3 density, while maintaining a minimum 7 in. clearance between the spray foam insulation and the gypsum board (Item 4). Spray foam insulation is limited for use with minimum 18 in. deep trusses (Item 2). When spray foam insulation is installed, resilient channels (Item 3A) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board spaced maximum 3 in. away from gypsum butt joints. Gypsum board to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a ceiling damper (Item 9) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Only for use with item 3A not evaluated for use with alternates to item 3A.
CARLISLE SPRAY FOAM INSULATION — Types SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No Trim 21, SealTite Pro One Zero, SealTite PRO HFO, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, Foamsulate HFO, and Foamsulate HFO 2.0.

7I. **Batts and Blankets* —** (Not Shown - Required as indicated with Flooring System No. 26) - Glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. Min. 3-1/2 in. thick, 0.92 pcf density, draped over the resilient or furring channels and gypsum panel membrane. Resilient or furring channels to be spaced 12 in. OC with extra channels installed at butt joints as indicated above.

8. **Air Duct* —** (Optional) — Any UL Class 0 or Class 1 flexible air duct installed in accordance with the instructions provided by the damper manufacturer.

9. **Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max. nom area shall be 349 sq in. Max. overall length and width shall not exceed 18-11/16 in. by 18-11/16 in. with max. 16 in. by 16 in. register opening. Aggregate damper openings shall not exceed 175 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. An aluminum or steel grille (Item 10) shall be installed in accordance with installation instructions.
MIAMI TECH INC — Model Series RxCRD, RxCRDS or RxCRPD

9A. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max damper assembly size nom 18 in. long by 18 in. wide and 4-1/4 in. high, or 8 in. diam. fabricated from galv steel. Aggregate damper openings shall not exceed 162 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.
RUSKIN COMPANY — Model CFD7T, CFD7T-END-BT, CFD7T-90-BT, CFD7T-ST-BT, CFD7T-SB, CFD7T-R6-DB, CFD-7T-IB6 or CFDR7T

9B. Deleted.

9C. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 12 in. diameter damper with insulated register box assembly. The maximum size of the register box assembly is nom. 20 in. long by 20 in. wide and 4 in. high fabricated from galv steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.
AIRE TECHNOLOGIES INC — Series 57

9D. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 20 in. long by 16 in. wide by 4 in. high rectangular damper with duct board plenum box assembly. The maximum outer dimensions of the plenum box assembly are 23-1/2 in. long by 19-1/2 in. wide and 17 in. high fabricated from 6pcf, 1-1/2 to 2 in. thick Knauf Air Duct Board M*. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 160 sq in. per 100 sq ft ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.
AIRE TECHNOLOGIES INC — Series 58

9E. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 14 in. long by 14 in.wide by rectangular damper with 90° boot. The maximum size of damper/boot assembly is 14 in. long by 14 in. wide and 18 in. high fabricated from galv steel. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 98 sq in. per 100 sq ft ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.
AIRE TECHNOLOGIES INC — Models 50 w/ Boot, 50EA w/ Boot, 51 w/Boot, 50 w/ Box, 50EA w/ Box or 51 w/Box

9F. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8). — For use with min 18 in. deep trusses Not for use with flooring system 1 or 17. Max plenum box size nom 19 in. long by 19 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.
LLOYD INDUSTRIES INC — Model CRD 50-BT, CRD 50-EA-BT, CRD 55-BT, CRD 55 EA-BT

UNITED ENERTECH CORP — Model C-S/R-WT-L, C-S/R-EA-L, C-S/R-BT, C-S/R-EA-BL

9G. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8). For use with min 18 in. deep trusses Not for use with flooring system 1 or 17. Max plenum box size nom 13 in. long by 13 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 50 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.
LLOYD INDUSTRIES INC — Model CRD 50-BT-6, CRD 50-EA-BT-6, CRD 55-BT-6, CRD 55 EA-BT-6

9H. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8). Ceiling damper & fan assembly for use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 103 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 10-1/8 in. Aggregate damper openings shall not exceed 52 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 10) shall be installed in accordance with installation instructions.
PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA — Model PC-RD05C5

9I. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8). Ceiling damper & fan assembly for use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 113 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 11-1/8 in. Aggregate damper openings shall not exceed 57 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 10) shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDFUWT

9J. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8). Ceiling damper & fan assembly for use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 79 sq in. with the length not to exceed 10 in. and the width not to exceed 7-15/16 in. Aggregate damper openings shall not exceed 40 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A metallic grille (Item 10) shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Models RDJ1 and RDH

9K. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8). For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max plenum box size nom 19 in. long by 19 in. wide and 11-7/8 in. high fabricated from galv steel. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper.
METAL-FAB INC — Models MSCD-HC and MRCD-HC

9L. **Alternate Ceiling Damper* —** (Optional, To be used with Air Duct Item 8). Ceiling damper & fan assembly for use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 10) shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDMWT

9M. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly for use with min 18 in. deep trusses. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille (Item 10) shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDMWT2

9N. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8) — For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom 21 in. long by 18 in. wide, fabricated from galvanized steel. Plenum box max size nom 21 in. long by 18 in. wide by 14 in. high (inner dimension) fabricated from either galvanized steel or min 1 in. thick Listed Duct Board bearing the UL Listing Marking having a min R-Value of 4.3. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 180 sq in. per 100 sq ft of ceiling area.
GREENHECK FAN CORP — Model CRD-1WT

9O. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8) — For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom 12 in. long by 12 in. wide with an 8 in. diameter damper, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 72 sq in. per 100 sq ft of ceiling area.
GREENHECK FAN CORP — Model CRD-2WT

9P. **Alternate Ceiling Damper* —** For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 324 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 14 in. Aggregate damper openings shall not exceed 162 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 10) shall be installed in accordance with installation instructions.
C&S AIR PRODUCTS — Model RD-521

POTTORFF — Model CFD-521

9Q. **Alternate Ceiling Damper* —** For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 196 sq in. with the length not to exceed 26 in. and the width not to exceed 14 in. Max height of damper shall be 7 in. Aggregate damper openings shall not exceed 98 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 10) not to exceed 144 $in.^2$ shall be installed in accordance with installation instructions.
C&S AIR PRODUCTS — Model RD-521-BT

POTTORFF — Model CFD-521-BT

9R. **Alternate Ceiling Damper* —** For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 256 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 17 in. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 10) shall be installed in accordance with installation instructions.
C&S AIR PRODUCTS — Models RD-521-IP, RD-521-NP

POTTORFF — Models CFD-521-IP, CFD-521-NP

9S. **Alternate Ceiling Damper* —** For use with min 18 in. deep trusses. Not for use with flooring system 1 or 17. Max nom area shall be 144 sq in. with the length not to exceed 14 in. and the width not to exceed 12 in. Max height of damper shall be 17-7/8 in. Aggregate damper openings shall not exceed 74 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille (Item 10) shall be installed in accordance with installation instructions.
C&S AIR PRODUCTS — Models RD-521-90, RD-521-NP90

POTTORFF — Models CFD-521-90, CFD-521-90NP

9T. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min 18 in. deep trusses. For use with Item 4D only. Not for use with flooring system 1. Maximum 20 in. long by 18 in. wide by 2-1/8 in. high, fabricated from galvanized steel. Plenum box maximum size nom. 21 in. long by 18 in. wide by 16 in. high fabricated from either galvanized steel or Classified Air Duct Materials bearing the UL Class 0 or Class 1 rigid air duct material. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 180 sq in. per 100 sq ft of ceiling area.
NAILOR INDUSTRIES INC — Types 0755, 0755A, 0756, 0756D, 0757, 0757D, 0757FP, 0757DFP, 0763

SAFE AIR DOWCO — 0455, 0455A, 0456, 0456D, 0457, 0457D, 0457-DB, 0457-CB, 0463-FB, 0457-EB, 0463-GB, 0463

9U. **Alternate Ceiling Damper* —** (Optional, to be used with Air Duct Item 8) For use with min 18 in. deep trusses. Max nom 11-1/8 in. long by 13-5/8 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 76 sq in. per 100 sq ft of ceiling area.
GREENHECK FAN CORP — Model CRD-310WT

9V. **Alternate Ceiling Damper* —** (Optional, to be used with Air Duct Item 8) For use with min 18 in. deep trusses. Max nom 12-3/8 in. long by 14-1/2 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 90 sq in. per 100 sq ft of ceiling area.
GREENHECK FAN CORP — Model CRD-320WT

9W. **Alternate Ceiling Damper* —** — (Optional, to be used with Air Duct Item 8) For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 12 in. diameter damper within max 15 in. by 15 in. register box with max 12 in. by 12 in. register opening fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 72 sq. in. per 100 sq. ft. of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.
RUSKIN COMPANY — Model CFD7T-SR

9X **Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 12 in. diameter damper and insulated register box assembly. The maximum size of the register box assembly is nom. 20 in. long by 20 in. wide and 4 in. high fabricated from galv steel. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.
SOUTHWARK METAL MFG CO — Model 800 w/Box

9Y **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 20 in. long by 16 in. wide by 4 in. high rectangular damper with plenum box assembly. The maximum outer dimensions of the plenum box assembly are 23-1/2 in. long by 19-1/2 in. wide and 17 in. high fabricated from 6pcf, 1-1/2 to 2 in. thick Knauf Air Duct Board M*. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 160 sq in. per 100 sq ft ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.
SOUTHWARK METAL MFG CO — CRD w/DB Box

9Z **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 14 in. long by 14 in. wide and 18 in. high ceiling damper with boot or box assembly, fabricated from galv steel. The aggregate area of the register opening(s) through the ceiling membrane shall not exceed 98 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturers installation instructions.
SOUTHWARK METAL MFG CO — Model 500 w/Boot, 510 w/Boot, 500 w/Box or 510 w/Box

9AA. **Alternate Ceiling Damper* —** (Optional, to be used with Air Duct Item 8) For use with min 18 in. deep trusses. Max nom 10-3/8 in. long by 10-3/8 in. wide, fabricated from galvanized steel. Installed in accordance with the instructions provided by the manufacturer. Max damper openings not to exceed 54 sq in. per 100 sq ft of ceiling area.

GREENHECK FAN CORP — Model CRD-300WT

9AB. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 7-11/32 in. long by 7-11/16 in. wide fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 28.5 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.

AIRE TECHNOLOGIES INC — Models ITG-CRD2.

9AC. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 9-11/16 in long by 9-1/16 in. wide fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 44.5 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.

AIRE TECHNOLOGIES INC — Models SIG-CRD2

9AD. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 10-13/32 in. long by 10-22/32 in. wide fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 56 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.

AIRE TECHNOLOGIES INC — Models SMT-CRD2

9AE. **Alternate Ceiling Damper* —** (Optional. To be used with Air Duct Item 8.) — For use with min. 18 in. deep trusses. Not for use with flooring system 1 or 17. Max 8-13/16 in. wide and 8-1/2 in. long fabricated from galvanized steel. Aggregate area of the register opening(s) through the ceiling membrane shall not exceed 37.5 sq in. per 100 sq ft of ceiling area. Damper assembly installed in accordance with the manufacturer's installation instructions.

AIRE TECHNOLOGIES INC — Models GBR-CRD2

10. **Grille —** Aluminum or Steel grille, installed in accordance with the installation instructions provided with the ceiling damper.

11. **Discrete Products Installed in Air-handling Spaces* —** Automatic Balancing Valve/Damper — (Not Shown - Optional) — For use with item 9A, Ruskin Company's Model CFD7T damper (CABS). Ceiling damper to be provided with plenum box per damper manufacturer's instructions with side outlet only. Entire assembly to be installed into any UL Class 0 or Class 1 flexible air duct in accordance with the instructions provided by the automatic balancing valve/damper manufacturer.
NAILOR INDUSTRIES INC — Model ABV-4, ABV-5, ABV-6

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

Last Updated on 2024-09-02

UL Product iQ®

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

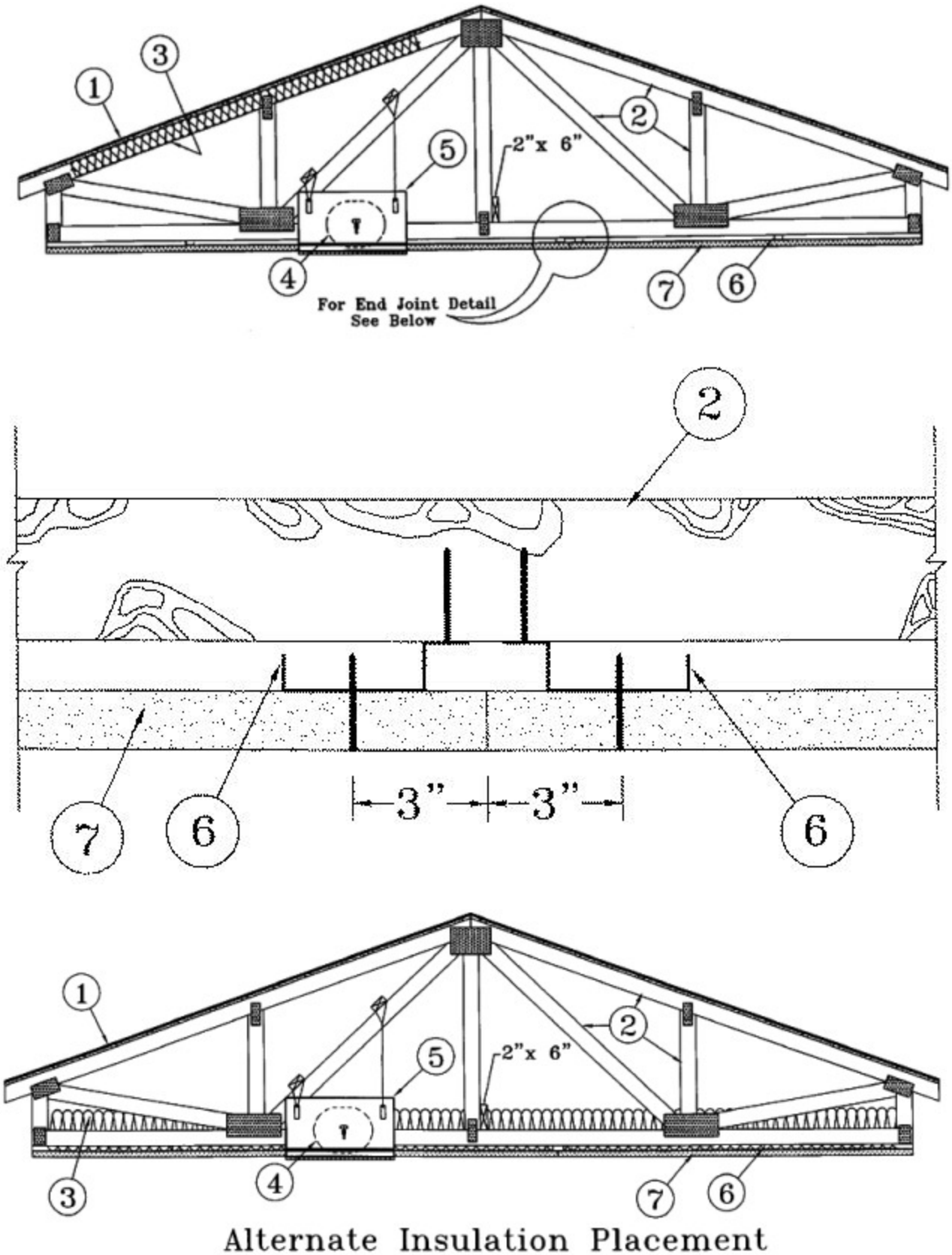
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. P522

June 14, 2024

Unrestrained Assembly Rating — 1 Hr
Finish Rating — 25 Min (See Items 3 or 3A)
This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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



Alternate Insulation Placement

1. **Roofing System* —** Any UL Class A, B or C Roofing System (TGFU) or Prepared Roof Covering (TFWZ) acceptable for use over nom 15/32 in. thick wood structural panels, min. grade "C-D" or "Sheathing". Nom 15/32 in. thick wood structural panels secured to trusses with No. 6d ringed shank nails spaced 12 in. OC along each truss. Staples having equal or greater withdrawal and lateral resistance strength may be substituted for the 6d nails. Construction adhesive may be used with either the nails or staples.

2. **Trusses —** Pitched or parallel chord wood trusses, spaced a max of 24 in. OC, fabricated from nom 2 by 4 lumber, with lumber oriented vertically or horizontally. Truss members secured together with min. 0.0356 in. thick galv steel plates. Plates have 5/16 in. long teeth projecting perpendicular to the plane of the plate. The teeth are in pairs facing each other (made by the same punch), forming a split tooth type plate. Each tooth has a chisel point on its outside edge. These points are diagonally opposite each other for each pair. The top half of each tooth has a twist for stiffness. The pairs are repeated on approximately 7/8 in. centers with four rows of teeth per inch of plate width. Minimum parallel chord truss depth shall be 18 in. Where pitched truss intersects with the interior face of the exterior walls, the min truss depth shall be 5-1/4 in. with a min roof slope of 3/12 and a min. average depth of 18 in.. Where the truss intersects with the interior face of the exterior walls, the min truss depth may be reduced to 3 in. if the batts and blankets (Item 3) are used as shown in the above illustration (Alternate Insulation Placement) and are firmly packed against the intersection of the bottom chords and the plywood sheathing.

3. **Batts and Blankets* —** (Optional) — Required when Item 6B is used — Glass fiber insulation, secured to the wood structural panels with staples spaced 12 in. OC or to the trusses with 0.090 in. diam galv steel wires spaced 12 in. OC. Any glass fiber insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance, having a min density of 0.5 pcf. As an option, the insulation may be fitted in the concealed space, draped over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. When **Steel Framing Members** (Item 6B) are used, max 3-1/2 in. thick insulation shall be draped over the furring channels (Item 6Ba) and gypsum board ceiling membrane, and friction-fitted between trusses and Steel Framing Members (Item 6Bd). The finished rating has only been determined when the insulation is secured to the decking.

3A. **Fiber, Sprayed* —** As an alternate to Item 3 (not evaluated for use with Item 6B) — Any thickness of spray-applied cellulose insulation material, having a min density of 0.5 lb/ft^3, applied with water, over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. Fiber, Sprayed is applied with moisture in accordance with the application instructions supplied with the product. The finish rating when Fiber Sprayed is used has not been determined. Alternate application method: The fiber is applied without water or adhesive in accordance with the application instructions supplied with a minimum density of 0.5 lb/ft^3 over the resilient channel/gypsum board ceiling membrane when resilient channels and gypsum board attachment is modified as specified in Items 6 and 7. Alternate application method: The fiber is applied without water or adhesive to a nominal density of 3.5 lb/ft^3 behind netting (Item 9) stapled to the rafters. The netting is stapled at both lower edges of the rafters creating a cavity to accept the cellulose fiber.
APPLEGATE GREENFIBER ACQUISITION LLC — SANCTUARY for use with wet or dry application. Insulmax are to be used for dry application only.

3B. **Foamed Plastic* —** (As an alternate to Item 3 or 3A, Not Shown) — Spray foam insulation applied directly to the underside of the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft^3 density, while maintaining a minimum 8-1/2 in. clearance between the spray foam insulation and the gypsum board (Item 7). When spray foam insulation is used, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) installed at 6 in. OC to allow for maximum 3 in. spacing off ends of the gypsum board joints. Gypsum board (Item 7) to be installed using 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire damper (Items 5 through 5K) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Not evaluated for use with Items 6A through 6F.
Holcim Solutions and Products US, LLC — Sucraseal

3C. **Cavity Insulation - Batts and Blankets* or Fiber, Sprayed* —** (As described above) in Items 3 and 3A — (For Use with Item 7B, Not Shown) — Min. 3-1/2 in thick with no limit on maximum thickness fitted in the concealed space, draped over the resilient channel (Item 6G)/gypsum board (Item 7B) ceiling membrane.

3D. **Foamed Plastic* —** (As alternate to Item 3, 3A, or 3B, Not Shown) — Spray foam insulation applied directly to the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 10 in. at a nominal 0.5 lb/ft^3 or 2.0 lb/ft^3 density, depending on the product installed. When spray foam insulation is installed, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) spaced maximum 3 in. away from gypsum butt joints. Gypsum board (Item 7) to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire

damper (Items 5 through 5H) in the concealed space, minimum 1 in. clearance to be maintained between damper housing and spray foam insulation. Not evaluated for use with Items 6A through 6F.

BASF CORP — Enertite® NM, Enertite® G, FE178®, Spraytite® 178, Spraytite® 81206, Walltite® 200, Walltite® US, Walltite® US-N, Walltite® HP+, Walltite® MAX,Walltite® v.5, Walltite® LWP, Walltite® Plus and Enertite® Max

3E. **Foamed Plastic* —** (As an alternate to Item 3, 3A, 3B, 3C, or 3D, Not Shown) — Spray foam insulation applied directly to the underside of the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 17 in. at a nominal 0.5 lb/ft^3 density, while maintaining a minimum 1-1/2 in. clearance between the spray foam insulation and the gypsum board (Item 7). When spray foam insulation is used, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) installed at 6 in. OC to allow for maximum 3 in. spacing off ends of the gypsum board joints. Gypsum board (Item 7) to be installed using 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire damper (Items 5 through 5K) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Not evaluated for use with Items 6A through 6F.

Holcim Solutions and Products US, LLC — EasySeal.5, EasySeal ULD

3F. **Foamed Plastic* —** (As alternate to Item 3) — Spray foam insulation applied directly to the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 11 in. at a nominal 0.5 lb/ft^3 - 2.5 lb/ft^3 density, while maintaining a minimum 7 in. clearance between the spray foam insulation and the gypsum board (Item 7). When spray foam insulation is installed, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board spaced maximum 3 in. away from gypsum butt joints. Gypsum board to be installed using minimum 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire damper (Items 5 through 5K) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Only for use with item 6 not evaluated for use with alternates to item 6.

CARLISLE SPRAY FOAM INSULATION — Types SealTite Pro Closed Cell (CC), SealTite Pro Open Cell (OC), SealTite Pro OCX, SealTite Pro No Trim 21, SealTite Pro One Zero, SealTite PRO HFO, Foamsulate Closed Cell, Foamsulate OCX, Foamsulate 70, Foamsulate HFO, and Foamsulate HFO 2.0.

3G. **Foamed Plastic* —** (As an alternate to Item 3, 3A, 3B, 3C, or 3D, Not Shown) — Spray foam insulation applied directly to the underside of the underside of the roofing system (Item 1). Spray foam insulation installed to a maximum thickness of 17 in. at a nominal 0.5 lb/ft^3 density, while maintaining a minimum 1-1/2 in. clearance between the spray foam insulation and the gypsum board (Item 7). When spray foam insulation is used, resilient channels (Item 6) shall be installed maximum 12 in. OC, with channels adjacent to butt joints of gypsum board (Item 7) installed at 6 in. OC to allow for maximum 3 in. spacing off ends of the gypsum board joints. Gypsum board (Item 7) to be installed using 1-1/4 in. long Type S screws, spaced maximum 8 in. OC, and butted end joints shall be staggered min. 2 ft within the assembly, and occur midway between the continuous furring channels. If used with a fire damper (Items 5 through 5K) in the concealed space, no clearance is necessary between damper housing and spray foam insulation. Not evaluated for use with Items 6A through 6F.

EVEREST SYSTEMS LLC — Opticell 0.5

4. **Air Duct* —** For use with **Ceiling Dampers*** - Any UL Class 0 or Class 1 flexible air duct installed in accordance with the instructions provided by the damper manufacturer.

5. **Ceiling Damper* —** Max nom area, 324 sq in. Max square size, 18 in. by 18 in. rectangular sizes not to exceed 324 sq in. with a max width of 18 in. Max damper height is 14 in. Installed in accordance with manufacturers installation instructions provided with the damper. Max damper openings not to exceed 162 sq in. per 100 sq ft of ceiling area.

C&S AIR PRODUCTS — Model RD-521

POTTORFF — Model CFD-521

5A. **Alternate Ceiling Damper* —** Max nom area, 196 sq in. Max square size, 14 in. by 14 in. Rectangular sizes not to exceed 196 sq in. with a max width of 26 in. Max overall damper height is 7 in. Installed in accordance with the manufacturers installation instructions provided with the damper. Max damper openings not to exceed 98 sq in. per 100 sq ft of ceiling area.
C&S AIR PRODUCTS — Model RD-521-BT

POTTORFF — Model CFD-521-BT.

5B. **Alternate Ceiling Damper* —** Max nom area shall be 256 sq in. with the length not to exceed 24 in. and the width not to exceed 20 in. Max height of damper shall be 17 in. Aggregate damper openings shall not exceed 128 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille shall be installed in accordance with installation instructions.
C&S AIR PRODUCTS — Model RD-521-IP, RD-521-NP

POTTORFF — Models CFD-521-IP, CFD-521-NP

5C. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly. Max nom area shall be 75 sq in. with the length not to exceed 8-9/16 in. and the width not to exceed 8-3/4 in. Max height of damper shall be 9-7/8 in. Aggregate damper openings shall not exceed 38 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturers installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.
DELTA ELECTRONICS INC — Models CRD2, GBR-CRD, ITG-CRD

5D. **Alternate Ceiling Damper* —** Ceiling damper & fan. Max nom area shall be 75 sq in. with the length not to exceed 9-1/4 in. and the width not to exceed 9-3/4 in. Max height of damper shall be 9-7/8 in. Aggregate damper openings shall not exceed 45 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.
DELTA ELECTRONICS INC — Model SIG-CRD

5E. **Alternate Ceiling Damper* —** Max nom area shall be 144 sq in. with the length not to exceed 14 in. and the width not to exceed 12 in. Max height of damper shall be 17-7/8 in. Aggregate damper openings shall not exceed 74 sq in. per 100 sq ft of ceiling area. Damper installed in accordance with the manufacturers installation instructions provided with the damper. A steel grille shall be installed in accordance with installation instructions.
C&S AIR PRODUCTS — Model RD-521-90, RD-521-NP90

POTTORFF — Models CFD-521-90, CFD-521-90NP

5F. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly. Max nom area shall be 131 sq in. with the length not to exceed 11-1/16 in. and the width not to exceed 11-7/8 in. Aggregate damper openings shall not exceed 66 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.
DELTA ELECTRONICS INC — Model SMT-CRD

5G. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly. Max nom area shall be 103 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 10-1/8 in. Aggregate damper openings shall not exceed 52 sq in. per 100 sq ft of ceiling area.

Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.
PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA — Model PC-RD05C5

5H. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly. Max nom area shall be 113 sq in. with the length not to exceed 10-1/8 in. and the width not to exceed 11-1/8 in. Aggregate damper openings shall not exceed 57 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDFUWT

5I. **Alternate Ceiling Damper* —** Ceiling damper & fan. Max nom area shall be 79 sq in. with the length not to exceed 10 in. and the width not to exceed 7-15/16 in. Aggregate damper openings shall not exceed 40 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A metallic grille shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Models RDJ1 and RDH

5J. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDMWT

5K. **Alternate Ceiling Damper* —** Ceiling damper & fan assembly. Max nom area shall be 87 sq in. with the length not to exceed 9 in. and the width not to exceed 9-11/16 in. Aggregate damper openings shall not exceed 44 sq in. per 100 sq ft of ceiling area. Damper shall be installed in combination with one of the fan models described in, and in accordance with, the manufacturer's installation instructions provided with the damper. A plastic grille shall be installed in accordance with installation instructions.
BROAN-NUTONE L L C — Model RDMWT2

6. **Furring Channels —** Resilient channels formed of 25 MSG thick galv steel. Installed perpendicular to the trusses (Item 2), spaced a max of 16 in. OC when no insulation (Item 3 or 3A) is fitted in the concealed spaced, or a max of 12 in. OC when insulation (Item 3 or 3A) is fitted in the concealed space, draped over the resilient channel/gypsum board ceiling membrane, or when insulation (Item 3B, 3D or 3E) is applied to the underside of the roofing system (Item 1). Two courses of resilient channel positioned 6 in. OC at wallboard butt-joints (3 in. from each end of wallboard). Channels oriented opposite at wallboard butt-joints. Channel splices overlapped 4 in. beneath wood trusses. Channels secured to each truss with 1-1/4 in. long Type S screws.

6A. **Steel Framing Members* —** (Not Shown) — As an alternate to Item 6, furring channels and Steel Framing Members as described below:
a. **Furring Channels —** Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 16 in. OC perpendicular to trusses when no insulation (Items 3 or 3A) is fitted in the concealed space or 12 in. OC when insulation (Items 3 or 3A) is fitted in the concealed space, draped over the furring channel/gypsum board ceiling membrane or 24 in. OC when insulation (Items 3 or 3A) is fitted in the concealed space, draped over the furring channel/gypsum board ceiling membrane and a second layer of gypsum board is attached as described in Item 7 for steel framing members. Channels secured to trusses as described in Item 6Ab. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap.

b. **Steel Framing Members —** Used to attach furring channels (Item a) to trusses (Item 2). Clips spaced 48 in. OC. RSIC-1 and RSIC-1 (2.75) clips secured to alternating trusses with No. 8 by 2-1/2 in. coarse drywall screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to alternating trusses with No. 8 by 1-1/2 in. coarse drywall screw through the center hole. Furring channels are

friction fitted into clips. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels. Adjoining channels are overlapped as described in Item 6Aa. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75).

6B. **Steel Framing Members* —** (Not Shown) — As an alternate to Items 6 and 6A.
a. **Furring Channels —** Hat-shaped furring channels, 7/8 in. deep by 2-5/8 in. wide at the base and 1-1/4 in. wide at the face, formed from No. 25 ga. galv steel, spaced max 16 in. OC perpendicular to trusses and Cold Rolled Channels (Item 6Bb). Furring channels secured to Cold Rolled Channels at every intersection with a 1/2 in. pan head self-drilling screw through each furring channel leg. Ends of adjoining channels overlapped 4 in. and tied together with two double strand No. 18 SWG galv steel wire ties, one at each end of overlap. Supplemental furring channels at base layer and outer layer gypsum board butt joints are not required. Batts and Blankets draped over furring channels as described in Item 3. Two layers of gypsum board attached to furring channels as described in Item 7.

b. **Cold Rolled Channels —** 1-1/2 in. by 1/2 in., formed from No. 16 ga. galv steel, positioned vertically and parallel to trusses, friction-fitted into the channel caddy on the Steel Framing Members (Item 6Bd). Adjoining lengths of cold rolled channels lapped min. 6 in. and wire-tied together with two double strand 18 SWG galv steel wire ties, one at each end of overlap.

c. **Blocking —** Where truss design does not permit direct, full contact of the hanger bracket, a piece of nominal 2 by 4 in. lumber (blocking), min. 6 in. long to permit full contact of the hanger bracket, to be secured vertically to the side of the truss (Item 2) at the top and bottom of the blocking at each Steel Framing Member (Item 6Bd) location.

d. **Steel Framing Members* —** Hangers spaced 48 in. OC. max along truss, and secured to the Blocking (Item 6Bc) on alternating trusses with a single 5/16 in. by 2 in. hex head lag bolt or four #6 1-1/4 in. drywall screws through mounting hole(s) on the hanger bracket. The two 1/4 in. long steel teeth on the hanger are embedded in the side of the blocking. Hanger positioned on blocking and leveling bolt height adjusted such that furring channels are flush with bottom of trusses before gypsum board installation. Spring gauge of hanger chosen per manufacturer's instructions.
KINETICS NOISE CONTROL INC — Type ICW.

6C. **Steel Framing Members* —** (Not Shown) — As an alternate to Items 6, 6A and 6B.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, 2-3/8 in. wide by 7/8 in. deep installed perpendicular to wood structural members. Channels spaced a max of 16 in. OC when no insulation (Item 3 or 3A) is fitted in the concealed space or a max of 12 in. OC when insulation (Item 3 or 3A) is fitted in the concealed space. Channels secured to trusses as described in Item 6Cb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire near each end of overlap.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Ca) to trusses (Item 2). Clips secured to the bottom chord of each truss (48 in. OC) with one No. 8 by 2-1/2 in. long coarse drywall screw through center grommet. Furring channels are friction fitted into clips. Adjoining channels are overlapped as described in Item 6Ca. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping No. 6 framing screws, min 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Additional clips required to hold furring channel that supports the gypsum board butt joints, as described in Item 7.
PLITEQ INC — Type Genie Clip

6D. **Steel Framing Members* —** (Not Shown) — As an alternate to Items 6, 6A, 6B and 6C.
a. **Main runners —** Installed perpendicular to trusses — Nom 10 or 12 ft long, 15/16 in. or 1-1/2 in. wide face, spaced 4 ft OC. Main runners hung a min of 2 in. from bottom chord of trusses with 12 SWG galv steel wire. Wires located a max of 48 in. OC.

b. **Cross tees or channels —** Nom 4 ft long, 15/16 in. or 1-1/2 in. wide face or cross channels, nom 4 ft long, 1-1/2 wide face, installed perpendicular to the main runners, spaced 16 in. OC. Additional cross tees or channels used at 8 in. from each side of butted gypsum

board end joints. The cross tees or channels may be riveted or screw-attached to the wall angle or channel to facilitate the ceiling installation.

c. **Wall angles or channels —** Used to support steel framing member ends and for screw-attachment of the gypsum wallboard — Min 0.016 in. thick painted or galvanized steel angle with 1 in. legs or min. 0.016 in. thick painted or galvanized steel channel with a 1 by 1-1/2 by 1 in. profile, attached to walls at perimeter of ceiling with fasteners 16 in. OC.
CGC INC — Type DGL or RX

USG INTERIORS LLC — Type DGL or RX

6E. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to items 6, 6A, 6B, and 6C, furring channels and Steel Framing Members as described below.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, 2-5/8 in. wide by 7/8 in deep, spaced 16 in OC, perpendicular to trusses. When insulation, Items 3 or 3A is used, the furring channel spacing shall be reduced to 12 in. OC. Channels secured to joists as described in Item b.

b. **Steel Framing Members* —** Used to attach furring channels (Item a) to the wood trusses (Item 2). Clips spaced at 48" OC and secured to the bottom of the trusses with one 2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in Item 7.
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237 or A237R

6F. **Steel Framing Members* —** (Not Shown) — As an alternate to Items 6 through 6E- Not for use with Items 3 or 3A. Main runners nom 12 ft long, spaced 72 in. OC. Main runners suspended by min 12 SWG galv steel hanger wires spaced 48 in. OC. Cross tees, nom 6 ft long, installed perpendicular to main runners and spaced 24 in. OC. Additional 6 ft long cross tees required at each gypsum board end joint with butted gypsum board end joints centered between cross tees spaced 8 in. OC. The main runners and cross tees may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.
USG INTERIORS LLC — Type DGL or RX

6G. **Resilient Channels —** For Use With Item 7B - Formed from min 25 MSG galv steel installed perpendicular to trusses and spaced 16 in. OC. Channels secured to each truss with 1-5/8 in. long Type S bugle head steel screws. Channels overlapped 4 in. at splices. Two channels, spaced 6 in. OC, oriented opposite each gypsum panel end joint. Additional channels shall extend min 6 in. beyond each side edge of panel. Insulation, Item 3C is applied over the resilient channel/gypsum panel ceiling membrane.

6H. **Alternate Steel Framing Members* —** (Not Shown) — As an alternate to items 6 through 6G, furring channels and Steel Framing Members as described below.
a. **Furring Channels —** Formed of No. 25 MSG galv steel, 2-1/2 in. wide by 7/8 in deep, spaced 16 in OC, perpendicular to trusses. When insulation, Items 3 or 3A is used, the furring channel spacing shall be reduced to 12 in. OC. Channels secured to joists as described in Item b.

b. **Steel Framing Members* —** Used to attach furring channels (Item a) to the wood trusses (Item 2). Clips spaced at 48" OC and secured to the bottom of the trusses with one 2-1/2 in. Coarse Drywall Screw with 1 in. diam washer through the center hole. Furring channels are then friction fitted into clips. Ends of channels are overlapped 6" and tied together with double strand of No. 18 AWG galvanized steel wire. Additional clips are required to hold the Gypsum Butt joints as described in Item 7.
REGUPOL AMERICA — Type SonusClip

7. **Gypsum Board* —** One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to trusses. Attached to the resilient channels using 1 in. long Type S bugle-head screws. Screws spaced a max of 12 in. OC along butted end-joints and in the field when no insulation (Item 3 or 3A) is fitted in the concealed spaced, or a max of 8 in. OC along butted end-joints and in the

field when insulation (Item 3 or 3A) is fitted in the concealed space, draped over the resilient channel/gypsum board ceiling membrane. When insulation (Item 3B, 3D or 3E) is installed in the concealed space, spray-applied to the underside of the roofing system (Item 1), screws are spaced a max of 8 in. OC along resilient channels, fasteners are increased in length to 1-1/4 in, and gypsum board butt joints shall be staggered min. 2 ft within the assembly, and occur between the main furring channels.

When **Steel Framing Members*** (Item 6A or 6C) are used, sheets installed with long dimension perpendicular to furring channels and side joints of sheet located beneath trusses. Gypsum board screws are driven through channel spaced 12 in. OC in the field when no insulation (Item 3 or 3A) is fitted in the concealed space, or 8 in. OC in the field when insulation (Item 3 or 3A) is fitted in the concealed space, draped over the furring channel/gypsum board ceiling membrane. Gypsum board butt joints shall be staggered min. 2 ft within the assembly, and occur between the main furring channels. At the gypsum board butt joints, each end of the gypsum board shall be supported by a single length of furring channel equal to the width of the wallboard plus 6 in. on each end. The furring channels shall be spaced approximately 3-1/2 in. OC, and be attached to the trusses with one clip at each end of the channel. Screw spacing along the butt joint to attach the gypsum board to the furring channels shall be 8 in. OC. Second (outer) layer of gypsum board required when furring channels (Item 6A, a) are spaced 24 in. OC and insulation is fitted in the concealed space, draped over the furring channel/gypsum board ceiling membrane. Outer layer of gypsum board attached to the furring channels using 1-5/8 in. long Type S bugle-head screws spaced 8 in. OC at butted joints and 12 in. OC in the field. Butted end joints of outer layer to be offset a minimum of 8 in. from base layer end joints. Butted side joints of outer layer to be offset minimum 18 in. from butted side joints of base layer.

When **Steel Framing Members** (Item 6B) are used, two layers of nom 5/8 in. thick, 4 ft wide gypsum board are installed with long dimensions perpendicular to furring channels (Item 6Ba). Base layer attached to the furring channels using 1 in. long Type S bugle head steel screws spaced 8 in. OC along butted end joints and 12 in. OC in the field of the board. Butted end joints centered on the continuous furring channels. Butted base layer end joints to be offset a min of 16 in. in adjacent courses. Outer layer attached to the furring channels using 1-5/8 in. long Type S bugle head steel screws spaced 8 in. OC at butted end joints and 12 in. OC in the field. Butted end joints centered on the continuous furring channels and offset a min of 16 in. from butted end joints of base layer. Butted side joints of outer layer to be offset min 16 in. from butted side joints of base layer.

When **Steel Framing Members** (Item 6C) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 72 in. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end, spaced approximately 2 in. in from joint. Screw spacing along the gypsum board butt joint shall be 8 in. OC. Butt joint furring channels shall be attached with a RESILMOUNT Sound Isolation Clip secured to underside of every truss that is located over the butt joint. Over all Gypsum Board side joints, approximately 20 in. lengths of furring channel shall be installed parallel to trusses (Item 2) between main furring channels. Side joint furring channels shall be attached to underside of the joist with RESILMOUNT Sound Isolation Clips - located approximately 2 in. from each end of the approximate 20 in. length of channel. Both Gypsum Boards at side joints fastened into channel with screws spaced 8 in. OC, approximately 1/2 in. from joint edge.

When **Steel Framing Members** (Item 6E) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, each end of each gypsum board shall be supported by a single length of furring channel equal to the width of the gypsum board plus 3 in. on each end. The two support furring channels shall be spaced approximately 3 in. in from end joint. Screw spacing along the gypsum board butt joint and along both additional channels shall be 8 in. OC. Additional screws shall be placed in the adjacent section of gypsum board into the aforementioned 3 in. extension of the extra butt joint channels as well as into the main channel that runs between. Butt joint furring channels shall be attached with one RESILMOUNT Sound Isolation Clip at each end of the channel.

When alternate **Steel Framing Members*** (Item 6F) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board sheets installed with long dimension (side joints) perpendicular to the 6 ft long cross tees with the end joints staggered min 4 ft and centered between cross tees which are spaced 8 in. OC. Gypsum board side joints may occur beneath or between main runners. Prior to installation of the gypsum board sheets, backer strips consisting of nom 7-3/4 in. wide pieces of gypsum board are to be laid atop the cross tee flanges and centered over each butted end joint location. The backer strips are to be secured to the flanges of the cross tees at opposite corners of the backer strip with hold down clips to prevent the backer strips from being uplifted during screw-attachment of the gypsum board sheets. Gypsum board fastened to cross tees with 1 in. drywall screws spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board. The butted end joints are to be secured to the backer strip with No. 10 by 1-1/2 in. long Type G laminating screws located 1 in. from each side of the butted end joint and spaced 1 in. and 4 in. from the side joints and max 8 in. OC in the field of the board.

When **Steel Framing Members** (Item 6H) are used, one layer of nom 5/8 in. thick, 4 ft wide gypsum board is installed with long dimensions perpendicular to furring channels. Gypsum board secured to furring channels with nom 1 in. long Type S bugle-head steel screws spaced 8 in. OC in the field of the board. Gypsum board butted end joints shall be staggered minimum 48 in. and centered over main furring channels. At the gypsum board butt joints, an additional single length of furring channel shall be installed and be spaced approximately 3 in. from the butt joint (6 in. from the continuous furring channels) to support the floating end of the gypsum board. Each of these shorter sections of furring channel shall extend one truss beyond the width of the gypsum panel and be attached to the adjacent trusses with one SonusClip at every truss involved with the butt joint.

CGC INC — Types C, IP-X2, IPC-AR

UNITED STATES GYPSUM CO — Types C, IP-X2, IPC-AR

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

7A. **Gypsum Board* —** For use with Steel Framing Members (Item 6D) when Batts and Blankets* (Item 3) are not used - One layer of nom 5/8 in. thick by 48 in. wide boards, installed with long dimension parallel to the main runners. Gypsum board fastened to each cross tee or channel with five wallboard screws, with one screw located at the midspan of the cross tee or channel, one screw located 12 in. from and on each side of the cross tee or channel mid span and one screw located 1-1/2 in. from each gypsum board side joint. Except at wallboard end joints, wallboard screws shall be located on alternating sides of cross tee flange. At gypsum board end joints, gypsum board screws shall be located 1/2 in. from the joint. Gypsum board fastened to main runners with wallboard screws 1/2 in. from side joints, midway between intersections with cross tees or channels (16 in. OC). End joints of adjacent gypsum board sheets shall be staggered not less than 32 in. Gypsum board sheets screw attached to leg of wall angle with wallboard screws spaced 12 in. OC. Joints treated as described in Item 7. For use with **Steel Framing Members*** (Item 6D) when **Batts and Blankets*** (Item 3) are used - Ratings limited to 1 Hour - 5/8 in. thick, 4 ft wide; installed with long dimension perpendicular to cross tees with side joints centered along main runners and end joints centered along cross tees. Fastened to cross tees with 1 in. long steel gypsum board screws spaced 8 in. OC in the field and 8 in. OC along end joints. Fastened to main runners with 1 in. long gypsum board screws spaced midway between cross tees. Screws along sides and ends of boards spaced 3/8 to 1/2 in. from board edge. End joints of the sheets shall be staggered with spacing between joints on adjacent boards not less than 4 ft OC.
CGC INC — Type C or IP-X2

UNITED STATES GYPSUM CO — Type C or IP-X2

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Type C or IP-X2

7B. **Gypsum Board* —** For use with Items 3C and 6G. Nom 5/8 in. thick, 48 in. wide gypsum panels installed with long dimension perpendicular to resilient channels. Gypsum panels secured with 1 in. long Type S bugle head steel screws spaced 8 in. OC and located a min of 1/2 in. from side joints and 3 in. from the end joints. Finish Rating with this ceiling system is 20 min.
CGC INC — Type ULIX

UNITED STATES GYPSUM CO — Type ULIX

8. **Finishing System —** (Not Shown) — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw-heads; paper tape, 2 in. wide, embedded in first layer of compound over all joints. As an alternate, nom 3/32 in. thick veneer plaster may be applied to the entire surface of gypsum board. **Alternate Ceiling Membrane** — Not Shown.

9. **Netting —** Fibrous, woven netting material fastened to underside of each joist with staples, with side joints overlapped.

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

Last Updated on 2024-06-14

UL Product iQ®

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

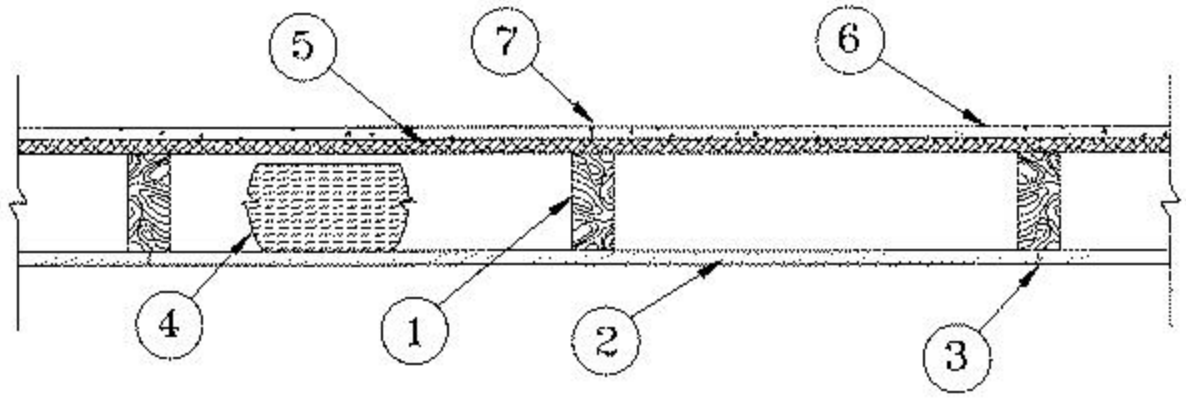
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. U303

February 8, 2024

Bearing Wall Rating — 1 Hr
This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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



1. **Wood Studs —** Nom 2 by 4 in. spaced 16 in. OC, effectively cross-braced.

2. **Gypsum Board* —** 5/8 in. thick, with square or tapered edges, applied vertically or horizontally with vertical joints centered over studs. Horizontal joints need not be backed by framing. Fastened to studs and plates with 1-7/8 in. long 6d cement coated nails spaced 7 in. OC or with 1-7/8 in. long Type S screws spaced 8 in. OC, or 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last srcrew 1 in. from edge of board. 54 in. widths applied horizontally.
CGC INC — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, ULIX, ULX,WRC, WRX.

UNITED STATES GYPSUM CO — Types AR, C, FRX-G, IP-AR, SCX, IP-X1, IP-X2, IPC-AR, ULIX, ULX, WRC or WRX.

USG BORAL DRYWALL SFZ LLC — Types C, SCX

USG MEXICO S A DE C V — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, ULX, WRC or WRX.

3. **Joints —** When tapered edge gypsum board is used, joints covered with joint compound and paper tape. As an alternate, gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard with joints reinforced with paper tape. When square-edge gypsum board is used, treatment of joints is optional.

4. **Batts and Blankets* —** Min 3 in. thick mineral wool batts, friction fit between studs.
THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

ROCKWOOL — Type SAFEnSOUND, min. 1.8 pcf.

5. **Sheathing —** Min 15/32 in. thick, 4 ft wide, wood structural panels, min grade "sheathing" applied vertically, with vertical joints centered over studs. Attached to studs with 10d galv nails 6 in. OC at the perimeter and 12 in. OC in the field. Sheathing fully covered with a weather resistive barrier.

6. **Cementitious Backer Units* —** 1/2 or 5/8 in. thick, installed vertically or horizontally over the sheathing with vertical joints centered over studs. All joints offset min 12 in. from underlying sheathing joints. Fastened to studs and plates with corrosion resistant 2-1/4 in. long chamfered, ribbed wafer head screws with a minimum head diameter of .400 inches or 2-1/4 in. hot-dipped galvanized roofing nails spaced 8 in. OC.
UNITED STATES GYPSUM CO — Type DCB.

USG MEXICO S A DE C V — Type DCB.

7. **Joints —** Cement board joints need not be treated.

8. **Vapor Retarder , Water Barrier or Weather Resistive Barrier —** (Optional, not shown) — As required

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

Last Updated on 2024-02-08

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- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
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BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States
BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

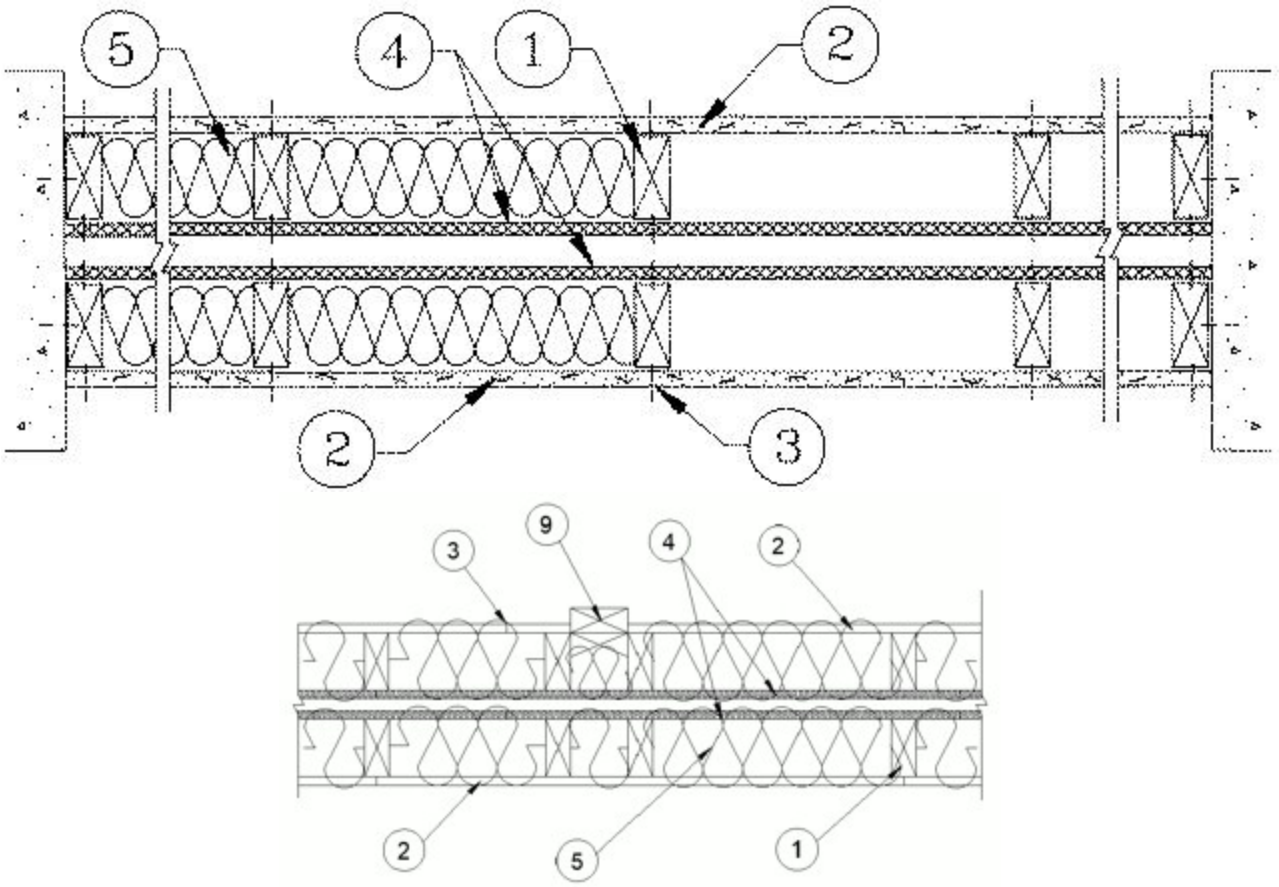
See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. **U341**

January 31, 2024

Bearing Wall Rating — 1 Hr.
Finish Rating — Min 20 min.
This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

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



HORIZONTAL SECTION

1. **Wood Studs —** Nom 2 by 4 in., spaced 24 in. OC max. Cross braced at mid-height and effectively firestopped at top and bottom of wall. No min. air space between stud rows except to accommodate attachment of sheathing, where required. See items 4 and 5.

2. **Gypsum Board* — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305.** Nom 5/8 in. thick 4 ft wide. Gypsum board applied horizontally or vertically, unless specified below, and nailed to studs and bearing plates 7 in. OC with 6d cement coated nails, 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam head. As an alternate, No. 6 bugle head drywall screws, 1-7/8 in. long, may be substituted for the 6d cement coated nails.
When **Steel Framing Members*** (Item 6 or any alternate clips) are used, wallboard attached to furring channels with 1 in. long Type S bugle-head steel screws spaced 12 in. OC.

When used in widths other than 48 in., gypsum board to be installed horizontally.

AMERICAN GYPSUM CO (View Classification) — CKNX.R14196

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) — CKNX.R19374

CABOT MANUFACTURING ULC (View Classification) — CKNX.R25370

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R3660

CGC INC (View Classification) — CKNX.R19751

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R18482

GEORGIA-PACIFIC GYPSUM L L C (View Classification) — CKNX.R2717

NATIONAL GYPSUM CO (View Classification) — CKNX.R3501

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) — CKNX.R7094

PANEL REY S A (View Classification) — CKNX.R21796

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) — CKNX.R19262

THAI GYPSUM PRODUCTS PCL (View Classification) — CKNX.R27517

UNITED STATES GYPSUM CO (View Classification) — CKNX.R1319

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG MEXICO S A DE C V (View Classification) — CKNX.R16089

2A. **Gypsum Board* —** (As an alternate to Item 2, not shown) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically to studs and bearing plates on one side of the assembly with 1-5/8 in. long Type S screws spaced 12 in. OC at perimeter of panels and 8 in. OC in the field. Horizontal joints of vertically applied panels need not be backed by studs. Panel joints covered with paper tape and two layers of joint compound. Screwheads covered with two layers of joint compound. Batts and Blankets placed in stud cavity as described in Item 5C. Not evaluated for use with Steel Framing Members, Furring Channels or Fiber, Sprayed.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-530 (finish rating 23 min).

2B. **Gypsum Board* —** (As an alternate to Item 2, not shown) — Any 5/8 in. thick gypsum panels that are eligible for use in Design Nos. L501, G512 or U305, supplied by the Classified companies listed below shown in the **Gypsum Board*** (CKNX) category. Applied horizontally or vertically and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths other than 48 in., gypsum board to be installed horizontally.
UNITED STATES GYPSUM CO

USG BORAL DRYWALL SFZ LLC

USG MEXICO S A DE C V

2C. **Gypsum Board* —** (As an alternate to Item 2, Not Shown) — 5/8 in. thick gypsum panels applied horizontally or vertically and attached to studs and bearing plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. When used in widths other than 48 in., gypsum board to be installed horizontally.
AMERICAN GYPSUM CO — Types AGX-1, M-Glass, AG-C, LightRoc

CERTAINTEED GYPSUM INC — Type C or Type X-1

NATIONAL GYPSUM CO — Type FSK, Type FSK-G, Type FSW, Type FSW-3, Type FSW-5, Type FSW-G, Type FSK-C, Type FSW-C, Type FSMR-C, Type FSW-6, Type FSL

THAI GYPSUM PRODUCTS PCL — Type C or Type X

2D. **Gypsum Board* —** (As an alternate to Items 2, 2A, 2B and 2C) — 5/8 in. thick gypsum panels, with square edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last 2 screws 1 and 4 in. from edge of board or nailed as described in Item 2. When used in widths of other than 48 in., gypsum boards are to be installed horizontally.
GEORGIA-PACIFIC GYPSUM L L C — GreenGlass Type X, Type DGG.

2E. **Gypsum Board* —** (As an alternate to Items 2 through 2D) — 5/8 in. thick, 4 ft. wide, paper surfaced applied vertically only and secured as described in Item 2.
GEORGIA-PACIFIC GYPSUM L L C — Type X ComfortGuard Sound Deadening Gypsum Board.

2F. **Gypsum Board* —** (As an alternate to Items 2 through 2E) - Installed as described in Item 2. 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically only and fastened to the studs and plates with 6d cement coated nails 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam heads, 7 in. OC. Not for use with item #6.
NATIONAL GYPSUM CO — Type SBWB

2G. **Gypsum Board* —** (As an alternate to Items 2 through 2F) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 2.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Types QuietRock ES.

2H. **Gypsum Board* —** (As an alternate to Items 2 through 2G) — Installed as described in Item 2. 5/8 in. thick, 4 ft. wide, paper surfaced, applied vertically or horizontally fastened to the studs and plates with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 12 in. OC.
CERTAINTEED GYPSUM INC — Type SilentFX

2I. **Wall and Partition Facings and Accessories* —** (As an alternate to Items 2 through 2H) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 2.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock 527.

2J. **Gypsum Board* —** (As an alternate to 5/8 in. Type FSW in Item 2) — 2 layers nom. 5/16 in. thick gypsum panels applied vertically or horizontally. Horizontal joints on the same side need not be staggered. Inner layer attached with fasteners, as described in item 2, spaced 24 in. OC. Outer layer attached per Item 2.
NATIONAL GYPSUM CO — Type FSW.

2K. **Gypsum Board* —** (As an alternate to Item 2) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a maximum 10 in. OC with the last two screws 4 and 1 in. from the edges of the board. When used in widths other than 48 in., gypsum panels are to be installed horizontally.
CERTAINTEED GYPSUM INC — Type LGFC6A (finish rating 21 min), Type LGFC2A, Type LGFC-C/A, Type LGFC-WD, Type LGLLX

3. **Joints and Nailheads —** Gypsum board joints of outer layer covered with tape and joint compound. Nail heads of outer layer covered with joint compound. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard with joints reinforced with paper tape.

4. **Sheathing —** (Optional) — Septum may be sheathed with min 7/16 in. thick wood structural panels min grade "C-D" or "Sheathing" or min 1/2 in. thick **Mineral and Fiber Boards***.
See **Mineral and Fiber Boards** (CERZ) category for names of Classified companies.

5. **Batts and Blankets* —** 3-1/2 in. max thickness glass or mineral fiber batt insulation. **Optional** when sheathing (Item 4) is used on both halves of wall.
See **Batts and Blankets** (BZJZ) category for list of Classified companies.

5A. **Fiber, Sprayed* —** As an alternate to Batts and Blankets (Item 5) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product with a nominal dry density of 2.7 lb/ft^3. Alternate Application Method: The fiber is applied without water or adhesive at a nominal dry density of 3.5 lb/ft^3, in accordance with the application instructions supplied with the product.

Applegate Greenfiber Acquisition LLC — Insulmax and SANCTUARY for use with wet or dry application.

5B. **Fiber, Sprayed* —** As an alternate to Batts and Blankets (Item 5) when Sheathing (Item 4) is used on both halves of wall - Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft.

NU-WOOL CO INC — Cellulose Insulation

5C. **Batts and Blankets* —** (Required for use with Wall and Partition Facings and Accessories, Item 2A. Use of Sheathing, Item 4, does not nullify requirement of Item 5C for use with Item 2A) — Glass fiber insulation, nom 3-1/2 in. thick, min. density of 0.80 pcf, with a flame spread of 25 or less and a smoke developed of 50 or less, friction-fitted to completely fill the stud cavities. See Batts and Blankets Category (BKNV) for names of manufacturers.

5D. **Fiber, Sprayed* —** As an alternate to Batts and Blankets (Item 5) and Item 5A when Sheathing (Item 4) is used on both halves of wall - Spray applied cellulose fiber. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. The minimum dry density shall be 4.30 lbs/ft^3.
INTERNATIONAL CELLULOSE CORP — Celbar-RL

5E. **Fiber, Sprayed* —** As an alternate to Batts and Blankets (Item 5) - Spray-applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. To facilitate the installation of the material, any thin, woven or non-woven netting may be attached by any means possible to the outer face the studs. The material shall reach equilibrium moisture content before the installation of materials on either face of the studs. The minimum dry density shall be 5.79 lbs/ft^3.

Applegate Greenfiber Acquisition LLC— Applegate Advanced Stabilized Cellulose Insulation

6. **Steel Framing Members* —** (Optional, Not Shown) — Furring channels and Steel Framing Members as described below:
A. **Furring Channels —** Formed of No. 25 MSG galv steel. 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Wallboard attached to furring channels as described in Item 2.

B. **Steel Framing Members* —** Used to attach furring channels (Item a) to studs (Item 1) . Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips. RSIC-1 clip for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) clip for use with 2-23/32 in. wide furring channels.
PAC INTERNATIONAL L L C — Types RSIC-1, RSIC-1 (2.75).

6A. **Steel Framing Members* —** (Optional, Not Shown, As an alternate to Item 6) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels —** Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

b. **Steel Framing Members* —** Used to attach furring channels (Item a) to studs. Clips spaced 48 in. OC. Genie clips secured to studs with No. 8 x 1-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
PLITEQ INC — Type Genie Clip

6B. **Steel Framing Members* —** (Optional, Not Shown, As an alternate to Item 6) — Furring channels and Steel Framing Members as described below:
a. **Furring Channels —** Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 2.

b. **Steel Framing Members* —** Used to attach furring channels (Item 6Ba) to studs. Clips spaced 48 in. OC., and secured to studs with 2 in. coarse drywall screw with 1 in. diam washer through the center hole. Furring channels are friction fitted into clips.
STUDCO BUILDING SYSTEMS — RESILMOUNT Sound Isolation Clips - Type A237R

6C. **Steel Framing Members* —** (Optional, Not Shown, As an alternate to Item 6) — Furring channels and Steel Framing Members as described below:

A. **Furring Channels —** Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 6Cb. Ends of adjoining channels overlapped 6 in. and tied together with double strand of No. 18 AWG galvanized steel wire. Gypsum board attached to furring channels as described in Item 2.

B. **Steel Framing Members* —** Used to attach furring channels (Item 6CA) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Furring channels are friction fitted into clips.
REGUPOL AMERICA — Type SonusClip

6D. **Steel Framing Members* —** (Optional, Not Shown, As an alternate to Item 6) — Resilient channels and Steel Framing Members as described below:
a. **Resilient Channels —** Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels overlapped 6 in. and secured in place with two No. 8 15 x 1/2 in. Philips Modified Truss screws spaced 2-1/2 in. from the center of the overlap. Gypsum board attached to resilient channels as described in Item 2.

b. **Steel Framing Members* —** Used to attach resilient channels (Item 6Da) to studs. Clips spaced 48 in. OC., and secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center hole. Resilient channels are secured to clips with one No. 10 x 1/2 in. pan-head self-drilling screw.
KEENE BUILDING PRODUCTS CO INC — Type RC+ Assurance Clip

6E. **Steel Framing Members* —** (Optional, Not Shown) — Resilient channels and Steel Framing Members as described below:

a. **Resilient Channels —**Formed of No. 25 MSG galv steel, spaced 24 in. OC, and perpendicular to studs. Channels secured to studs as described in Item b. Gypsum board attached to resilient channels as described in Item 2.

b. **Steel Framing Members*** - Used to attach resilient channels to wall studs. A resilient sound isolation accessory shall be used at each attachment point of the resilient channels to the studs. Channel ends butted and centered under the structural members and attached with one accessory at each end. Additional accessories used to hold resilient channels that support the gypsum board end joints. The accessory envelops the mounting edge of the resilient channel. The accessory and resilient channel are fastened to the studs with the screws supplied with the accessory and per the accessory manufacturer's installation instructions.

PAC INTERNATIONAL L L C — Type RC-1 Boost

6F **Steel Framing Members* —** (Optional, Not Shown, As an alternate to Item 6) — Furring channels and Steel Framing Members as described below:
a **Furring Channels —** Formed of No. 25 MSG galv steel. 2-23/32 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel. Gypsum board attached to furring channels as described in Item 2.

b **Steel Framing Members* —** Used to attach furring channels (Item 6Fa) to studs. Clips spaced maximum 48 in. OC. Clips secured to studs with No. 8 x 2-1/2 in. coarse drywall screw through the center grommet. Furring channels are friction fitted into clips.

CLARKDIETRICH BUILDING SYSTEMS — Type ClarkDietrich Sound Clip

7. **Wall and Partition Facings and Accessories* —** (Optional, Not shown) — Nominal 1/2 in. thick, 4 ft wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations. When the QR-500 or QR-510 panel is installed between the wood framing and the UL Classified gypsum board, the required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.
PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type QuietRock QR-500 and QR-510

8. **Mineral and Fiber Board* —** ((Optional, Not Shown) — For optional use as an additional layer on one or both sides of wall. Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing as described in Item 2. The required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

HOMASOTE CO — Homasote Type 440-32

9. **Non-Bearing Wall Partition Intersection —** (Optional) — Two nominal 2 by 4 in. stud or nominal 2 by 6 in. stud nailed together with two 3in. long 10d nails spaced a max. 16 in. OC. vertically and fastened to one side of the minimum 2 by 4 in. stud with 3 in. long 10d nails spaced a max 16 in. OC. vertically. Intersection between partition wood studs to be flush with the 2 by 4 in. studs. The wall partition wood studs are to be framed by with a second 2 by 4 in. wood stud fastened with 3 in. long 10d nails spaced a max. 16 in. OC. vertically. Maximum one non-bearing wall partition intersection per stud cavity. Non-bearing wall partition stud depth shall be at a minimum equal to the depth of the bearing wall.

(Optional, Not Shown) Alternate Construction For Use On One Side Of The Wall.

10. **Mineral and Fiber Board* —** For use with Items 10A-10D) —Nom 1/2 in. thick, 4 ft wide with long dimension parallel and centered over studs. Attached to framing with minimum 1-3/8 in. long ring shanked nails or 1-1/4 in. long Type W steel screws, spaced 12 in. OC along board edges and 24 in. OC in field of board along intermediate framing. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.
HOMASOTE CO — Homasote Type 440-32

10A. **Glass Fiber Insulation —** (For use with Item 10) — 3-1/2 in. thick glass fiber batts bearing the UL Classification Marking as to Surface Burning and/or Fire Resistance, placed to fill the interior of the wall. See Batts and Blankets (BKNV or BZJZ) categories for names of Classified companies.

10B. **Batts and Blankets* —** (As an alternate to Item 10B, For use with Item 10), 3 in. thick mineral wool batts, placed to fill interior of wall, attached to the 3-1/2 in. face of the studs with staples placed 24 in. OC.
THERMAFIBER/OWENS CORNING — Type SAFB, SAFB FF

10C. **Adhesive —** (For use with Item 10) — Construction grade adhesive applied in vertical, serpentine, nominal 3/8 in. wide beads down the length of both vertical edges of Mineral and Fiber Board (Item 14A).

10D. **Gypsum Board* —** (For use with Item 10) — 5/8 in. thick, 4 ft wide, applied vertically over Mineral and Fiber Board (Item 14A) with vertical joints located anywhere over stud cavities. Secured to mineral and fiber boards with 1-1/2 in. Type G Screws spaced 8 in. OC along edges of each vertical joint and 12 in. OC in intermediate field of the Mineral and Fiber Board (Item 10). Secured to outermost studs and bearing plates with 2 in. long Type S screws spaced 8 in. OC. Gypsum Board joints covered with paper tape and joint compound. Screw heads covered with joint compound. Finish Rating 30 Min.
AMERICAN GYPSUM CO — Type AG-C

CERTAINTEED GYPSUM INC — Type C

CERTAINTEED GYPSUM INC — Type LGFC-C/A

GEORGIA-PACIFIC GYPSUM L L C — Types 5, DAPC, TG-C

NATIONAL GYPSUM CO — Types FSK-C, FSW-C

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM — Type PG-C

PANEL REY S A — Type PRC

THAI GYPSUM PRODUCTS PCL — Type C

UNITED STATES GYPSUM CO —Types C, IP-X2, IPC-AR

USG BORAL DRYWALL SFZ LLC — Type C

USG MEXICO S A DE C V — Types C, IP-X2, IPC-AR

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

Last Updated on 2024-01-31

BUILDING A INFORMATION

OCCUPANCY OVERALL: RESIDENTIAL

CONSTRUCTION TYPE: V-B

OCCUPANCY BASIC: R-2 APARTMENTS; B BUSINESS

ALLOWABLE AREA INCREASE:

	R-2
BASE ALLOWABLE	7,000 SF
FRONTAGE INCREASE (74%)	4,130 SF
TOTAL FLOOR ALLOWABLE	11,130 SF

ACTUAL BUILDING AREA:

FIRST FLOOR	8,609 SF
SECOND FLOOR	7,155 SF
THIRD FLOOR	7,155 SF
TOTAL BLDG AREA	22,919 SF

*BUILDING HAS AN NFPA 13R SPRINKLER SYSTEM. SECTION 903.3.1.2
*ALLOWABLE AREA AND HEIGHT BASED ON DIFFERENT USES NOT BEING SEPARATED BY FIRE BARRIERS. MOST RESTRICTIVE ALLOWANCE.

BASIC ALLOWABLE STORIES: 3 *(PER IBC TABLE 504.4)* — ACTUAL STORIES: 3

BASIC ALLOWABLE HEIGHT: 60' *(PER IBC TABLE 504.3)* — ACTUAL HEIGHT: 42'-2"

TOTAL OCCUPANT LOAD: 126

EXITING: REFERENCE PLAN

OCCUPANT LOAD FACTORS: (TABLES 1004.5 & 1006.2.1)

OCCUPANCY	USE	LOAD FACTOR	MAX.OCC/STRY 1 EXIT
R-2	APARTMENT	200 sf/OCCUPANT	10
A-3	CLUB ROOM	20 sf/OCCUPANT	49
B	OFFICE	100 sf/OCCUPANT	49
S-1	STORAGE	300 sf/OCCUPANT	29
M	MECHANICAL	300 sf/OCCUPANT	49

BUILDING B INFORMATION

OCCUPANCY OVERALL: RESIDENTIAL

CONSTRUCTION TYPE: V-B

OCCUPANCY BASIC: R-2 APARTMENTS

ALLOWABLE AREA INCREASE:

	R-2
BASE ALLOWABLE	7,000 SF
FRONTAGE INCREASE (67.0%)	4,690 SF
TOTAL FLOOR ALLOWABLE	11,690 SF

ACTUAL BUILDING AREA:

FIRST FLOOR	9,509 SF
SECOND FLOOR	9,484 SF
THIRD FLOOR	9,484 SF
TOTAL BLDG AREA	28,477 SF

*BUILDING HAS AN NFPA 13R SPRINKLER SYSTEM. SECTION 903.3.1.2

BASIC ALLOWABLE STORIES: 3 *(PER IBC TABLE 504.4)* — ACTUAL STORIES: 3

BASIC ALLOWABLE HEIGHT: 60' *(PER IBC TABLE 504.3)* — ACTUAL HEIGHT: 42'-2"

TOTAL OCCUPANT LOAD: 132

EXITING: REFERENCE PLAN

OCCUPANT LOAD FACTORS: (TABLES 1004.5 & 1006.2.1)

OCCUPANCY	USE	LOAD FACTOR	MAX.OCC/STRY 1 EXIT
R-2	APARTMENT	200 sf/OCCUPANT	10

GENERAL PROJECT INFORMATION

FIRE RESISTANCE RATING FOR BUILDING ELEMENTS: V-B

EXTERIOR BEARING WALLS:	0 HOUR
STRUCTURAL FRAME:	0 HOUR
INTERIOR BEARING WALLS:	0 HOUR
INTERIOR NON-BEARING WALLS:	0 HOUR
STAIRS	0 HOUR
FLOOR/CEILING ASSEMBLY:	0 HOUR
BETWEEN DWELLINGS:	1 HOUR
CEILING/ROOF ASSEMBLY:	0 HOUR
CORRIDOR/DWELLING UNITS:	1/2 HOUR
DWELLING UNITS - 1 HR FIRE PARTITIONS	

ROOF COVERINGS
CLASS C OR BETTER

REQUIRED SEPARATION OF OCCUPANCIES *(PER IBC 508.2.4 & TABLE 508.4)*
USES ARE NOT SEPARATED BY FIRE BARRIERS. CONSTRUCTION IS BASED ON THE MOST RESTRICTIVE USE.
DWELLING UNITS -1 HR FIRE PARTITIONS

AUTOMATIC FIRE SUPPRESSION SYSTEM:
REQUIRED, PROVIDED PER NFPA 13R - ENTIRE BUILDING

DRAFTSTOPPING *(PER IBC 718.4)*
DRAFTSTOPPING SHALL BE INSTALLED IN LINE WITH UNIT SEPARATION WALLS THAT DO NOT EXTEND TO THE ROOF SHEATHING OR ATTIC SPACE MAY BE SUBDIVIDED INTO AREAS NOT EXCEEDING 3,000 SF OF ABOVE EVERY TWO DWELLING UNITS, WHICHEVER IS SMALLER.
OPENING IN THE PARTITIONS SHALL BE PROTECTED BY SELF-CLOSING DOORS WITH AUTOMATIC LATCHES CONSTRUCTED AS REQUIRED FOR THE PARTITIONS.

PORTABLE FIRE EXTINGUISHERS
REQUIRED - PROVIDED.
EACH DWELLING UNIT SHALL BE PROVIDED WITH A PORTABLE FIRE EXTINGUISHER HAVING A MINIMUM RATING OF 1-A:10-B:C

SMOKE CONTROL:	SMOKE PARTITIONS:	STANDPIPES:
NOT REQUIRED	NOT REQUIRED	NOT REQUIRED (TOP FLR <30')

FIRE ALARM REQUIREMENTS:
REQUIRED, PROVIDED - MANUAL & AUTOMATIC FIRE ALARM SYSTEM PER NFPA 72
SIGNALING SYSTEM IS AUDIBLE/VISUAL PER NFPA 72 & ADA INSTALLED THROUGHOUT
INITIATING DEVICES: PULL STATIONS; SMOKE DETECTION @ SLEEPING & COMMON AREAS, SPRINKLER SYSTEM FLOW AND TAMPER SWITCHES MONITORED.

SMOKE ALARM REQUIREMENTS:
REQUIRED, PROVIDED - SLEEPING ROOMS, OUTSIDE SLEEPING ROOMS & AT EACH FLOOR

EMERGENCY POWER SOURCE:
EXIT SIGNS, EXIT ILLUMINATION & EMERGENCY LIGHTING IS BY BATTERY BACK-UP

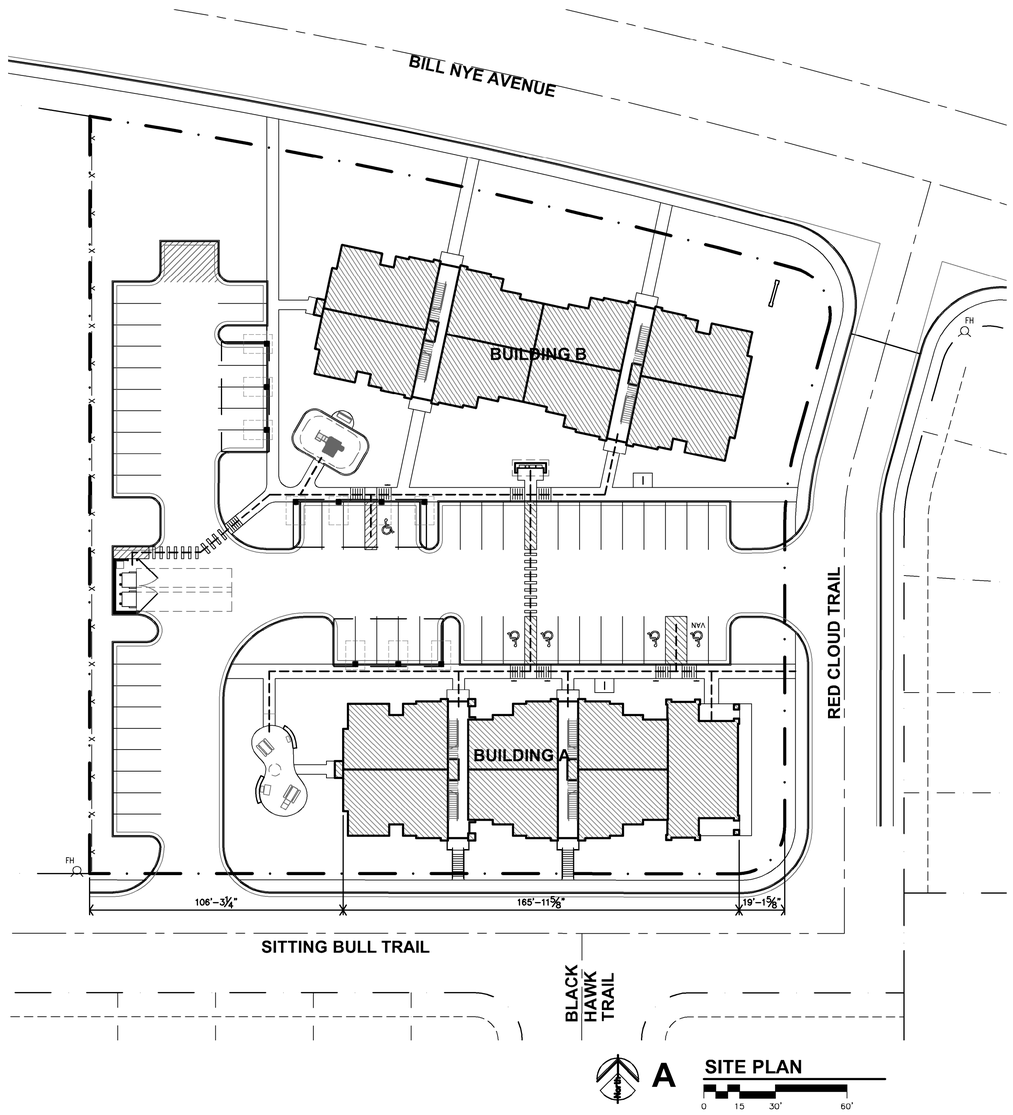
PROJECT INFORMATION

TYPE OF CONSTRUCTION	NEW CONSTRUCTION
FACILITY NAME	THE RESERVES AT GRAND VIEW HEIGHTS
FACILITY ADDRESS	(UNASSIGNED) BILL NYE AVENUE
COUNTY	ALBANY COUNTY
LOCAL FIRE DEPARTMENT	CITY OF LARAMIE, WY
WATER SUPPLY	CITY OF LARAMIE, WY
LOCAL BUILDING	CITY OF LARAMIE, WY
INSPECTION DEPARTMENT	CITY OF LARAMIE, WY
ARCHITECT	JONES GILLAM RENZ ARCHITECTS 730 N. NINTH ST.; SALINA, KS 67401
CODES/REGULATIONS	2021 INTERNATIONAL BUILDING CODE 2021 INTERNATIONAL MECHANICAL CODE 2021 INTERNATIONAL ECONOMIC CODE 2023 NATIONAL ELECTRICAL CODE 2021 INTERNATIONAL FIRE CODE 2021 INTERNATIONAL ENERGY CONSERV CODE FAIR HOUSING ACT DESIGN MANUAL 2010 ADA STANDARDS for ACCESSIBLE DESIGN 2017 ICC A117.1 ACCESSIBLE & USABLE BUILDINGS and FACILITIES

LEGEND

DESIGNATED EMERGENCY EXIT	68"/24.4" ← EXIT WIDTH (ACTUAL/REQUIRED) 122/340 ← OCCUPANT LOAD (ACTUAL/ALLOWED)
0 HOUR CONSTRUCTION	
1/2 HOUR FIRE PARTITION: CORRIDOR *(PER IBC TABLE 1020.1)* W/ 20 MIN OPENINGS *(PER IBC TABLE 716.5)*	
1 HOUR FIRE PARTITION WITH 90 MIN. OPENINGS *(PER IBC 708.3 & 716.5)*	
EXIT LIGHT	⊗
EXIT/EMERGENCY LIGHT	EXIT
EMERGENCY LIGHT	
FIRE EXTINGUISHER	FE
FIRE HYDRANT	FH
FIRE ALARM CONTROL PANEL	FACP

OCCUPANCY GROUP (AU - ACCESSORY USE)	A-1	
OCCUPANCY USE	ASSEMBLY HALL	
ROOM SQUARE FOOTAGE/OCCUPANT LOAD FACTOR	5,550	15
OCCUPANT LOAD/REQUIRED NUMBER OF EXITS	370	2



A SITE PLAN
0 15 30' 60'

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THE RESERVES AT GRAND VIEW HEIGHTS

NEW APARTMENT COMPLEX

LARAMIE, WYOMING

LICENSED ARCHITECT MARGARET J. GILLAM C-3485 STATE OF WYOMING

REVISION:	
1	9-27-2024
DATE:	7-17-2024
JOB:	22-3262
SHEET NO.:	CFP1

PROJECT INFORMATION

TYPE OF CONSTRUCTION	NEW CONSTRUCTION
FACILITY NAME	THE RESERVES AT GRAND VIEW HEIGHTS
FACILITY ADDRESS	(UNASSIGNED) BILL NYE AVENUE
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WATER SUPPLY	CITY OF LARAMIE, WY
LOCAL BUILDING	CITY OF LARAMIE, WY
INSPECTION DEPARTMENT	CITY OF LARAMIE, WY
ARCHITECT	JONES GILLAM RENZ ARCHITECTS 730 N. NINTH ST.; SALINA, KS 67401
CODES/REGULATIONS	2021 INTERNATIONAL BUILDING CODE 2021 INTERNATIONAL MECHANICAL CODE 2021 INTERNATIONAL PLUMBING CODE 2023 NATIONAL ELECTRICAL CODE 2021 INTERNATIONAL FIRE CODE 2021 INTERNATIONAL ENERGY CONSERV CODE FAIR HOUSING ACT DESIGN MANUAL 2010 ADA STANDARDS for ACCESSIBLE DESIGN 2017 ICC A117.1 ACCESSIBLE & USABLE BUILDINGS and FACILITIES

LEGEND

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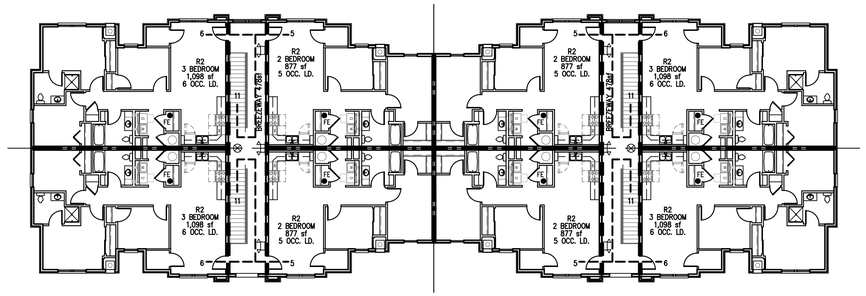
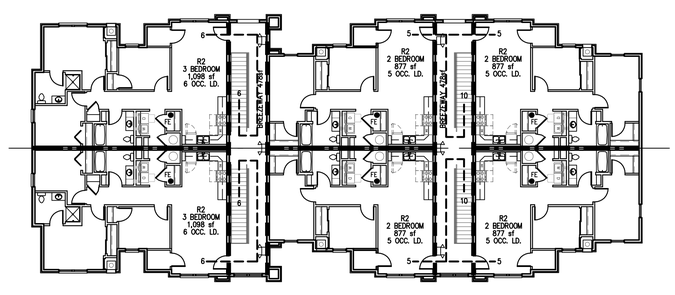
0 HOUR CONSTRUCTION	
1/2 HOUR FIRE PARTITION; CORRIDOR *(PER IBC TABLE 1020.1)* W/ 20 MIN OPENINGS *(PER IBC TABLE 716.5)*	
1 HOUR FIRE PARTITION WITH 90 MIN. OPENINGS *(PER IBC 708.3 & 716.5)*	
EXIT LIGHT	⊗
EXIT/EMERGENCY LIGHT	EXIT
EMERGENCY LIGHT	EL
FIRE EXTINGUISHER	• FE
FIRE HYDRANT	FH
FIRE ALARM CONTROL PANEL	FACP

OCCUPANCY GROUP (AU – ACCESSORY USE)	A-1	
OCCUPANCY USE	ASSEMBLY HALL	
ROOM SQUARE FOOTAGE/OCCUPANT LOAD FACTOR	5,550	15
OCCUPANT LOAD/REQUIRED NUMBER OF EXITS	370	2



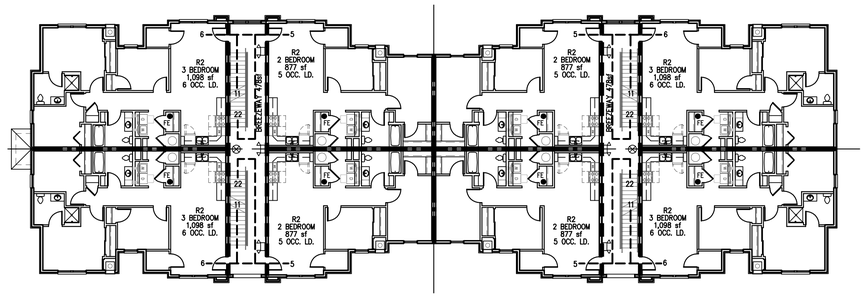
F APARTMENT BUILDING B
THIRD FLOOR PLAN

0 16' 32' 64'



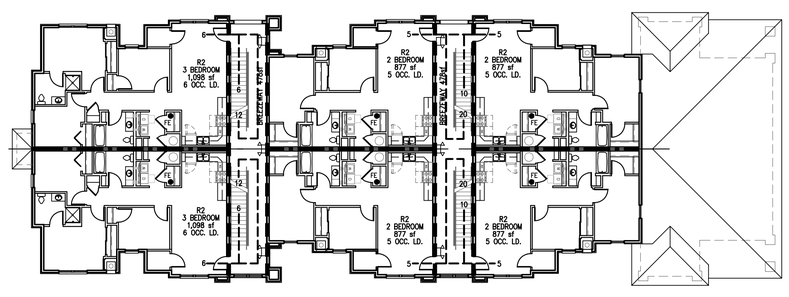
C APARTMENT BUILDING A
THIRD FLOOR PLAN

0 16' 32' 64'



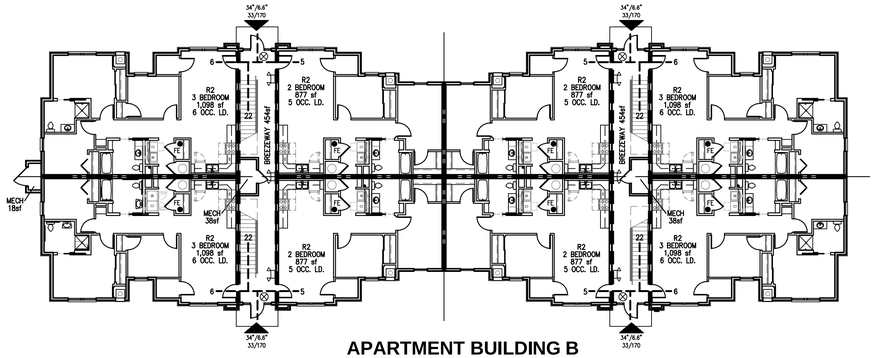
E APARTMENT BUILDING B
SECOND FLOOR PLAN

0 16' 32' 64'



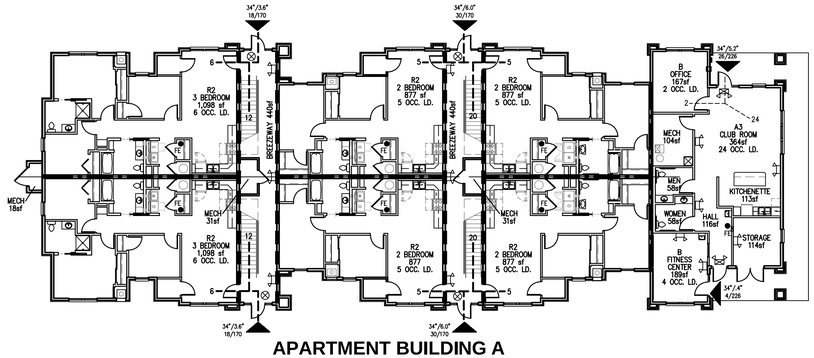
B APARTMENT BUILDING A
SECOND FLOOR PLAN

0 16' 32' 64'



D APARTMENT BUILDING B
FIRST FLOOR PLAN

0 16' 32' 64'



A APARTMENT BUILDING A
FIRST FLOOR PLAN

0 16' 32' 64'

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THE RESERVES AT GRAND VIEW HEIGHTS

NEW APARTMENT COMPLEX

LARAMIE, WYOMING

LICENSED ARCHITECT
MARGARET J. GILLAM
C-3465
STATE OF WYOMING
Date

REVISION:	
1	9-27-2024
DATE:	7-17-2024
JOB:	22-3262
SHEET NO.:	

CFP2

GENERAL NOTES

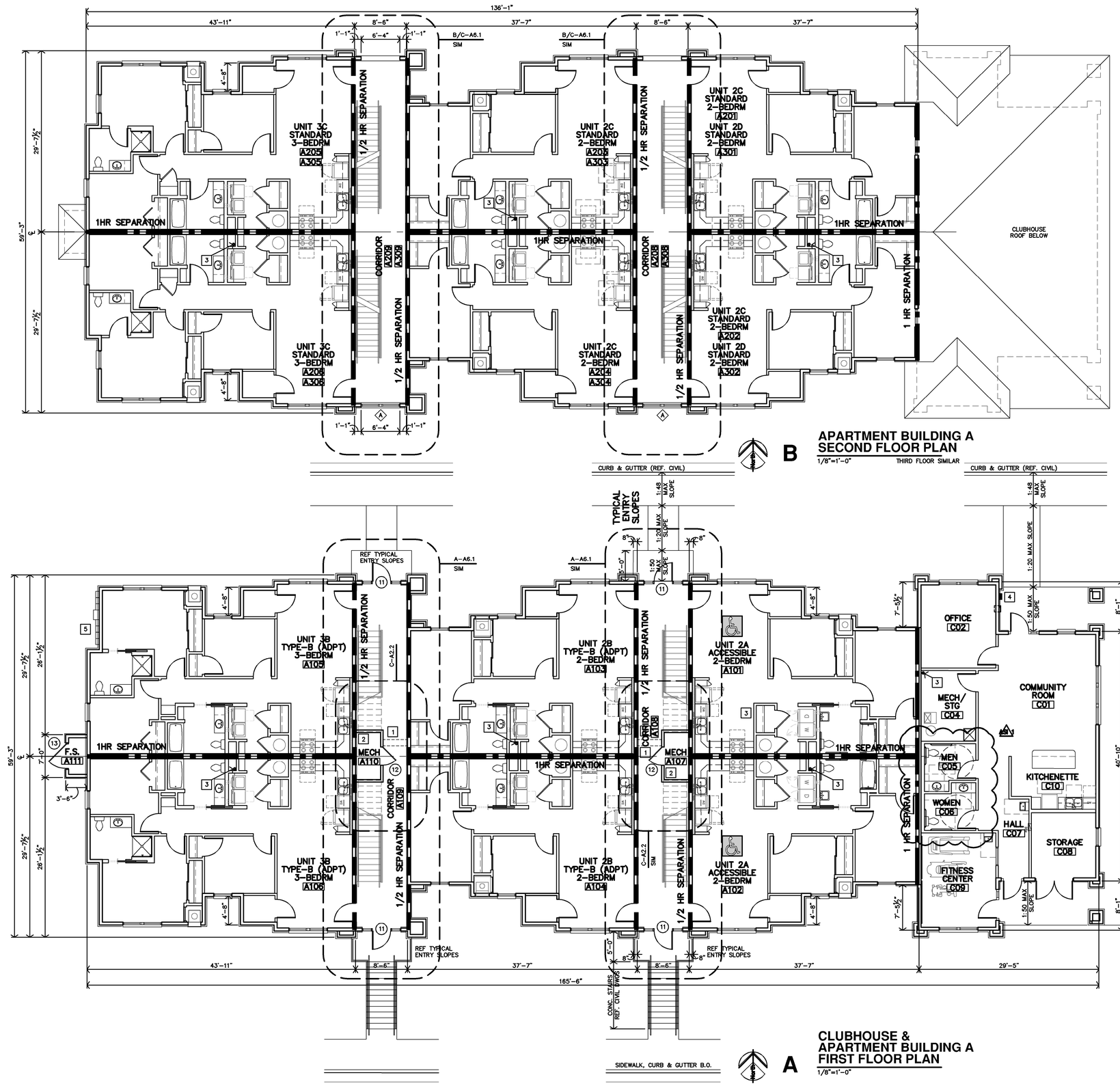
1. REF. SHEET A1.1 FOR LOCATION & ORIENTATION OF BUILDINGS.
2. REF. SHEET A2.10 FOR BREEZEWAY AND ADJACENT ROOMS FINISH & DOOR SCHEDULES.
3. F.O.S. = FACE OF STUD.
4. REF STRUCTURAL DRAWINGS FOR SHEAR WALL LOCATIONS.
5. TYPICAL GROUND FLOOR FINISH FLOOR ELEVATION IS REFERENCED AS 100'-0". CONTRACTOR SHALL VERIFY BUILDING ELEVATION WITH SITE CIVIL DRAWINGS.
6. CONTRACTOR SHALL PROVIDE FIREBLOCKING, ANCHOR BOLTS AND ANY REQUIRED SHEAR WALL BLOCKING AS REQUIRED BY STRUCTURAL DRAWINGS.
7. CONTRACTOR TO PROVIDE FIRE BLOCKING AT PARTY WALL AT 10'-0" O.C., TYPICAL. CONTRACTOR TO PROVIDE FIRE BLOCKING AT PARTY WALL AT ALL BACK TO BACK ELECTRICAL OUTLETS. PROVIDED AND INSTALL ALL FIRE BLOCKING AND DRAFTSTOPS PER 2021 IBC, SECTION 718.2, 718.3 & 718.4.
8. FIRE EXTINGUISHERS SHALL BE INSTALLED & PROVIDED IN ACCORDANCE WITH NFPA 10 & 2021 IBC, SECTION 906.1. LOCATED PER CFP SHEET.
9. ALL PENETRATIONS THRU RATED WALLS AND/OR FLOOR ASSEMBLIES SHALL BE FIRESTOPPED PER APPROVED U.L. DESIGNS. REFERENCE SHEET A4.9 FOR FIRE PENETRATION ASSEMBLIES.
10. ALL SIGNAGE MUST COMPLY W/ ADA 2010 SECTIONS 216 & 703 FOR SIZE, LOCATION AND FABRICATION.

KEY NOTES

1	FIRE LINE IN INSULATED BULKHEAD ADD'L WATER LINES TO BE UNDERGROUND REF. MECH DWGS & SHEET A6.1. COORDINATE LOCATION OF BULKHEAD
2	MECH. CLOSET 1st FLOOR ONLY. REF. SITE PLAN & MECH DWGS. FULLY INSULATE WALLS & CEILING.
3	RADON PIPE THROUGH ROOF REF. N-A4.5 & MECH DWGS
4	KNOX BOX REF. SHEET A1.1 FOR LOCATION
5	METER CENTER LOCATON REF. ELECT. DWGS

APARTMENT CHART

	SYMBOL INDICATES ACCESSIBLE UNITS A101, A102, B107
	SYMBOL INDICATES A HEARING & VISION IMPAIRED ACCESSIBLE UNIT B103
	ALL OTHER UNITS: • ADAPTABLE (TYPE-B) UNITS ON FIRST FLOOR • STANDARD UNITS ON SECOND/THIRD FLOORS



B APARTMENT BUILDING A
SECOND FLOOR PLAN
1/8"=1'-0" THIRD FLOOR SIMILAR

A CLUBHOUSE &
APARTMENT BUILDING A
FIRST FLOOR PLAN
1/8"=1'-0"

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THE RESERVES AT GRAND VIEW HEIGHTS

NEW APARTMENT COMPLEX

LARAMIE, WYOMING

LICENSED ARCHITECT
MARGARET J. GILLAM
C-3695
STATE OF WYOMING

REVISION:	
1	9-27-2024

DATE: 7-17-2024
JOB: 22-3262
SHEET NO.:

A2.1

APARTMENT GENERAL NOTES

1. REF STRUCTURAL DRAWINGS FOR SHEAR WALL LOCATIONS.
2. TYPICAL GROUND FLOOR FINISH FLOOR ELEVATION IS REFERENCED AS 100'-0". CONTRACTOR SHALL VERIFY BUILDING ELEVATION WITH SITE CIVIL DRAWINGS.
3. REFERENCE SITE PLAN SHEET A1.1 FOR LOCATION & ORIENTATION OF BUILDINGS.
4. CONTRACTOR SHALL PROVIDE ADJUSTABLE PLASTIC COATED WIRE SHELVES & ROD AT ALL CLOSETS U.N.O.
5. CONTRACTOR SHALL PROVIDE FIREBLOCKING, ANCHOR BOLTS AND ANY REQUIRED SHEAR WALL BLOCKING AS REQUIRED BY STRUCTURAL DRAWINGS.
6. CONTRACTOR TO PROVIDE FIRE BLOCKING AT PARTY WALL AT 10'-0" O.C., TYPICAL. CONTRACTOR TO PROVIDE FIRE BLOCKING AT PARTY WALL AT ALL BACK TO BACK ELECTRICAL OUTLETS. PROVIDED AND INSTALL ALL FIRE BLOCKING AND DRAFTSTOPS PER 2021 IBC, SECTION 718.
7. FIRE EXTINGUISHERS SHALL BE INSTALLED & PROVIDED IN ACCORDANCE WITH NFPA 10, 2021 IBC, SECTION 906.1 AND SPECIFICATIONS. WALL MOUNTED EXTINGUISHERS PROVIDED IN CLOSET #108 PER FLOOR PLANS AND CFP.
8. ALL PENETRATIONS THRU RATED WALLS AND/OR FLOOR ASSEMBLIES SHALL BE FIRESTOPPED PER APPROVED U.L. DESIGNS. REFERENCE SHEET A4.8 FOR FIRE PENETRATION ASSEMBLIES
9. HOSE BIBS TO BE LOCATED 6"min. ABOVE WAINSCOT (30"MIN ABV. FIN. FLOOR).
10. B.O. HEADER 83" ABV. FIN. FLR.
11. KITCHEN RECEPTACLES TO BE @ 44"max ABOVE FIN FLR.
12. SUBMIT VERIFICATION THAT ALL CONSTRUCTION MATERIAL WILL MEET US EPA CRITERIA PARTICULARLY MATERIALS THAT WILL BE OBTAINED FROM INTERNATIONAL SOURCES. ALSO PROVIDE VERIFICATION THAT THE CONSTRUCTION WILL NOT RESULT IN OR CONTAIN HAZARDOUS MATERIALS.
13. ALL WALL DIMENSIONS ARE TO FACE OF GYP. BD. UNLESS NOTED OTHERWISE.
14. F.O.S. = FACE OF STUD
15. FE = FIRE EXTINGUISHER
16. HEARING/VISION IMPAIRED UNIT (WHERE INDICATED ON SHEET A1.1 AND LISTED ON BUILDING PLANS):
    - CONTRACTOR SHALL INSTALL EQUIPMENT REQUIRED PER 2010 ADA SEC. 809.5.
    - REF. ELECT. DWGS
17. REF. A2.4 FOR PARTITION AND ASSEMBLY SCHEDULES.
18. ////////// INDICATES FURRED PLUMBING WALLS

STANDARD UNIT NOTES

19. STANDARD UNITS (ALL SECOND & THIRD FLOOR UNITS):
    - CONTRACTOR TO PROVIDE 2x8 BLOCKING IN WALLS FOR COUNTERTOP & SUPPORTS.
    - ALL CLOSETS TO HAVE PLASTIC WIRE CLOTHES SHELF & ROD WITH ADJUSTABLE BRACKETS (UNLESS OTHERWISE NOTED). MOUNT TOP OF SHELF AT 69" AFF.

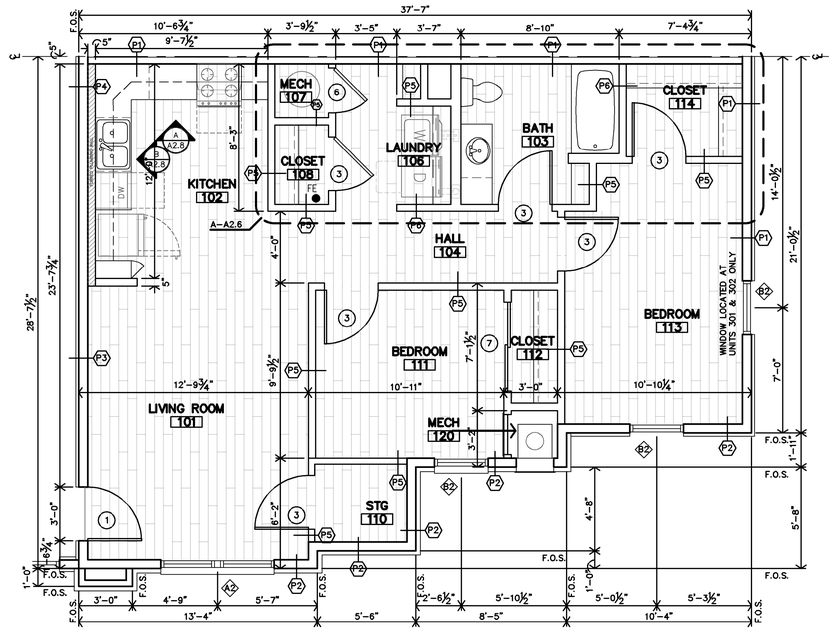
ADAPTABLE (TYPE-B) UNIT NOTES

20. ADAPTABLE (TYPE-B) UNITS (WHERE INDICATED ON SHEET A1.1 AND BUILDING PLANS):
    - REFERENCE ENLARGED PLANS AND DETAILS FOR ADDITIONAL INFORMATION
    - *2-BEDROOM:* CONTRACTOR TO INSTALL 2x8 BLOCKING IN WALLS FOR FUTURE GRAB BARS @ ALL TOILETS & TUBS AND COUNTERTOPS AT BATH #103
    - *3-BEDROOM:* CONTRACTOR TO INSTALL 2x8 BLOCKING IN WALLS FOR FUTURE GRAB BARS @ ALL TOILETS & TUBS AND COUNTERTOPS AT BATH #103 & PRIMARY BATH #118.
    - *ALL UNITS:*
        - TOILETS SHALL BE ADA COMPLIANT (17"-19" HIGH).
        - CONTRACTOR TO INSTALL BLOCKING PER ICC/ANSI A117.1-2017.
        - ALL CLOSETS TO HAVE PLASTIC WIRE CLOTHES SHELF & ROD WITH ADJUSTABLE BRACKETS (UNLESS OTHERWISE NOTED). MOUNT TOP OF SHELF AT 69" AFF.
        - ALL SWITCHES, OUTLETS, THERMOSTATS, AND OTHER ENVIRONMENTAL CONTROLS MUST BE MOUNTED A MAX. OF 48" A.F.F. (NOT LESS THAN 15" A.F.F.)

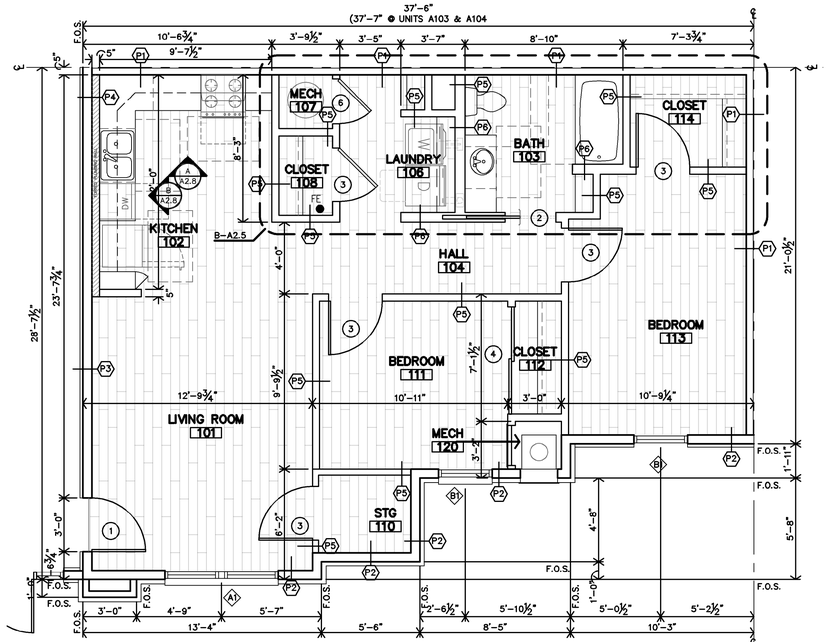
ACCESSIBLE UNITS NOTES

21. ACCESSIBLE UNITS (WHERE INDICATED ON SHEET A1.1 AND LISTED ON BUILDING PLANS):
    - REFERENCE ENLARGED PLANS AND DETAILS FOR ADDITIONAL INFORMATION
    - *2-BEDROOM:* CONTRACTOR TO INSTALL 2x8 BLOCKING IN WALLS FOR GRAB BARS @ ALL TOILETS & TUBS AND BLOCKING @ SINKS & COUNTERTOPS AT BATH #103
    - *3-BEDROOM:* CONTRACTOR TO INSTALL 2x8 BLOCKING IN WALLS FOR GRAB BARS @ ALL TOILET & TUB AND BLOCKING @ COUNTERTOP AT PRIMARY BATHS #103 & #118
    - *ALL UNITS:*
        - OPEN KNEE SPACE SHALL BE PROVIDED @ SINK & WORK SPACE IN KITCHEN #102
        - CONTRACTOR SHALL INSTALL HOT WATER & DRAIN PIPES COVERS.
        - TOILETS SHALL BE ADA COMPLIANT (17"-19" HIGH).
        - CONTRACTOR TO INSTALL BLOCKING AND PROVIDE & INSTALL GRAB BARS PER ICC/ANSI A117.1-2017.
        - ALL CLOSETS TO HAVE PLASTIC WIRE CLOTHES SHELF & ROD WITH ADJUSTABLE BRACKETS (UNLESS NOTED OTHERWISE). MOUNT TOP OF SHELF AT 48" AFF.
        - KITCHEN COUNTERTOPS SHALL BE MAX. 34" A.F.F. BATHROOM SINK RIM SHALL BE MAX. 34" A.F.F.
        - ALL SWITCHES, OUTLETS, THERMOSTATS, AND OTHER ENVIRONMENTAL CONTROLS MUST BE MOUNTED A MAX. OF 48" A.F.F. (NOT LESS THAN 15" A.F.F.)
        - HEIGHT OF OPERABLE WINDOW PARTS (LATCHES/LOCKS, ETC.) SHALL BE LOCATED MAX 48" A.F.F.

PARTITION & ASSEMBLY TYPES CAN BE FOUND ON SHEET A2.4

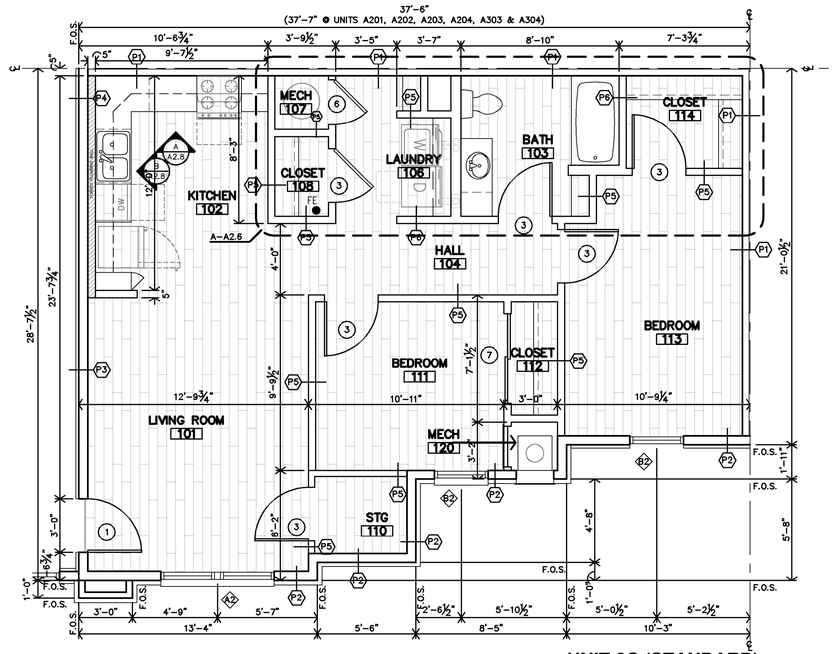


D UNIT 2D (STANDARD) 2-BEDROOM/1-BATH
1/4"=1'-0" WCDA: 877 sf total

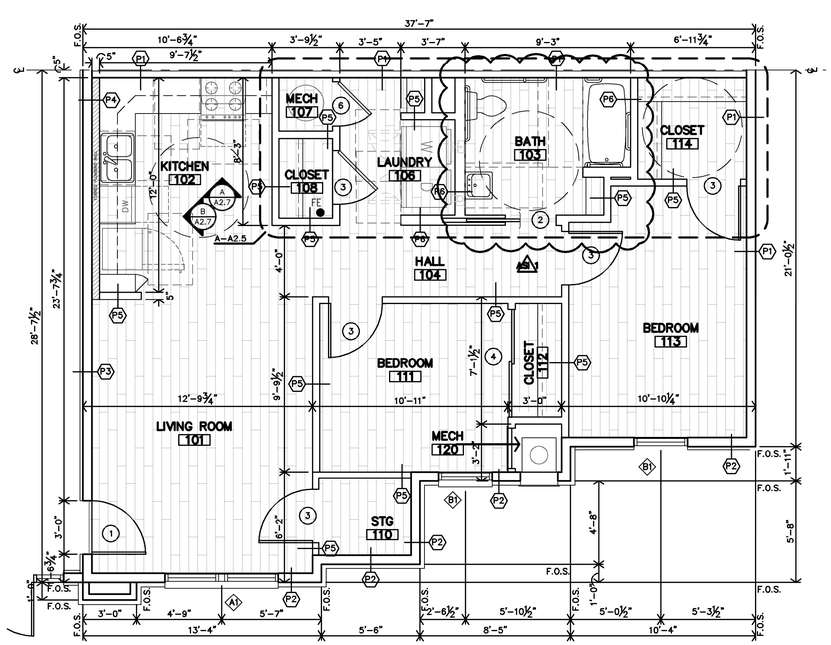


1 FIRST FLOOR UNIT SHALL BE HEARING & VISION IMPAIRED ACCESSIBLE UNIT (B103)

B UNIT 2B (TYPE-B) ADAPTABLE 2-BEDROOM/1-BATH
1/4"=1'-0" WCDA: 877 sf total



C UNIT 2C (STANDARD) 2-BEDROOM/1-BATH
1/4"=1'-0" WCDA: 877 sf total



2 FIRST FLOOR UNITS SHALL BE FULLY ACCESSIBLE (A101 & A102)

A UNIT 2A (ACCESSIBLE) 2-BEDROOM/1-BATH
1/4"=1'-0" WCDA: 877 sf total

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NEW APARTMENT COMPLEX

LARAMIE, WYOMING

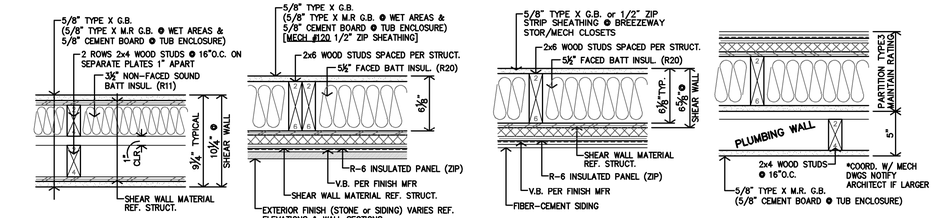
LICENSED ARCHITECT MARGARET J. GILLAM C-3495 STATE OF WYOMING

REVISION:	
1	9-27-2024

DATE:	7-17-2024
JOB:	22-3262
SHEET NO.:	A2.3

APARTMENT PARTITION SCHEDULE

PARTITION NOTES:
1. SHEAR WALLS: REF. STRUCTURAL FOR LOCATIONS, MATERIAL & SECTIONS
2. EXTERIOR SHEAR WALLS: CONTRACTOR TO EXTEND SHEAR WALL MATERIAL TO CORNER OF WALL, TO ENSURE FLUSH INSTALLATION OF FINISH MATERIALS. REFERENCE STRUCT. DWGS FOR MORE NOTES AND DETAILS.
3. FIRE BLOCKING REQUIRED PER 2021 IBC SEC. 708 & 718. ● 10'-0"O.C. VERT. & HORIZ. AND ● ALL BACK TO BACK ELECTRICAL OUTLETS. (1) LAYER – 5/8" TYPE X G.B. OR 1/2" PLYWOOD TO EXTEND THRU SPACE

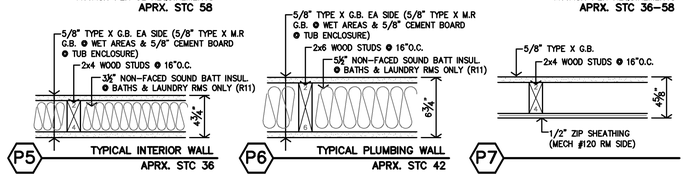


P1 DOUBLE STUD PARTY WALL
1 HOUR RATING (UL U341)
ATTACH PER UL REQUIREMENTS
APRX. STC 58

P2 TYPICAL EXTERIOR WALL
APRX. STC 36–58

P3 BREEZEWAY EXTERIOR WALL
1 HOUR RATING (UL U303)
ATTACH PER REQUIREMENTS
APRX. STC 36–58

P4 FURRED PLUMBING WALL
APRX. STC 58



P5 TYPICAL INTERIOR WALL
APRX. STC 36

P6 TYPICAL PLUMBING WALL
APRX. STC 42

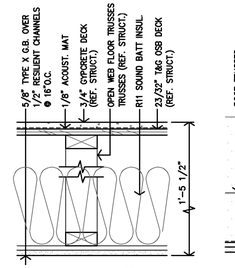
P7

FOR UL ASSEMBLY/ATTACHMENT DETAILS – REFERENCE SPECIFICATIONS AND PROJECT MANUAL

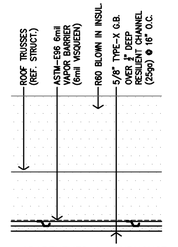
NOTES

1. REF. SHEET A2.3 FOR APARTMENT GENERAL NOTES.

ASSEMBLY SCHEDULE

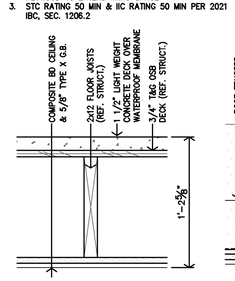


APARTMENTS
FLOOR/CEILING A
1–HOUR RATED (UL DESIGN No. L528)
ATTACH PER ul REQUIREMENTS

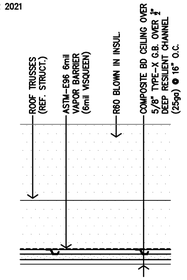


APARTMENTS & CLUBHOUSE
ROOF/CEILING 1
1–HOUR RATED
UL P522
ATTACH PER REQUIREMENTS

NOTES:
1. DRAFTSTOPPING AT CONCEALED SPACES NOT REQUIRED PER 2021 IBC SEC. 718.3.2, EXCEPTION #1.
2. FIRE BLOCKING REQUIRED PER 2021 IBC SEC. 708 & 718. (1) LAYER – 5/8" TYPE X G.B. OR 1/2" PLYWOOD TO EXTEND THRU SPACE
3. STC RATING 50 MIN & IIC RATING 50 MIN PER 2021 IBC, SEC. 1206.2

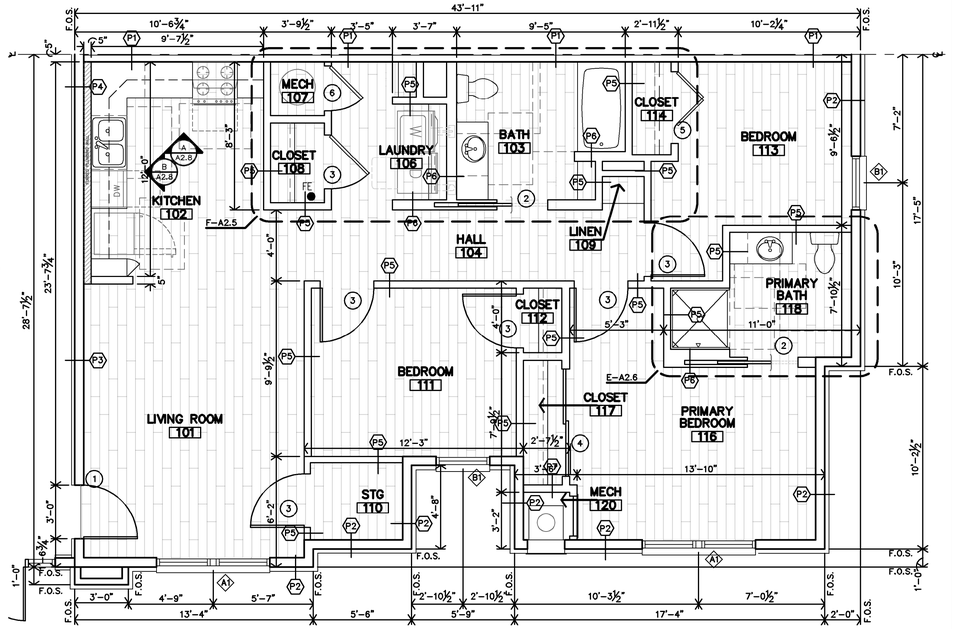


BREEZEWAY
FLOOR/CEILING B
1–HOUR RATED (UL DESIGN No. L501)
ATTACH PER ul REQUIREMENTS

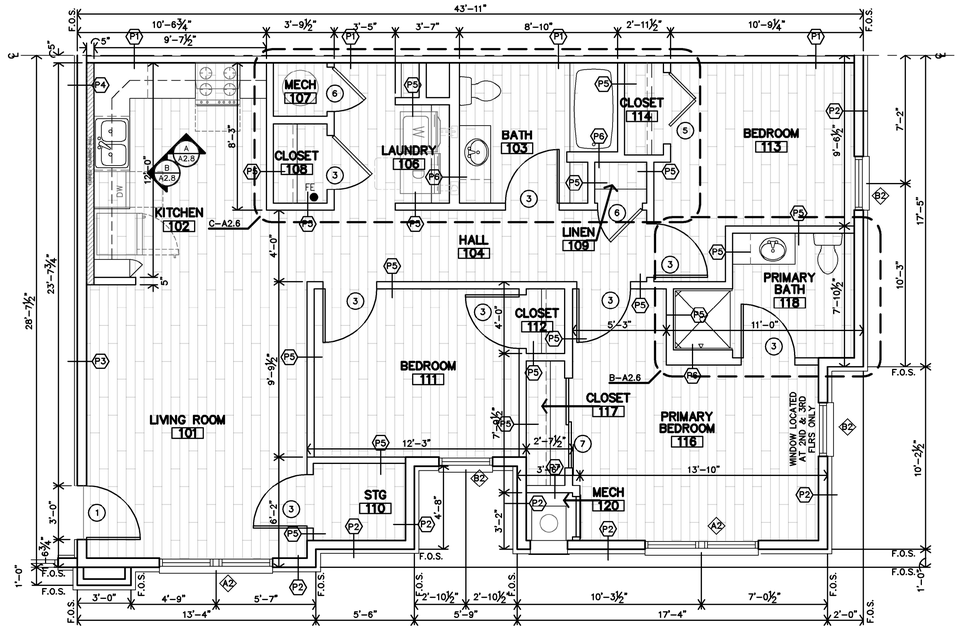


BREEZEWAY
ROOF/CEILING 2
1–HOUR RATED
UL P522
ATTACH PER REQUIREMENTS

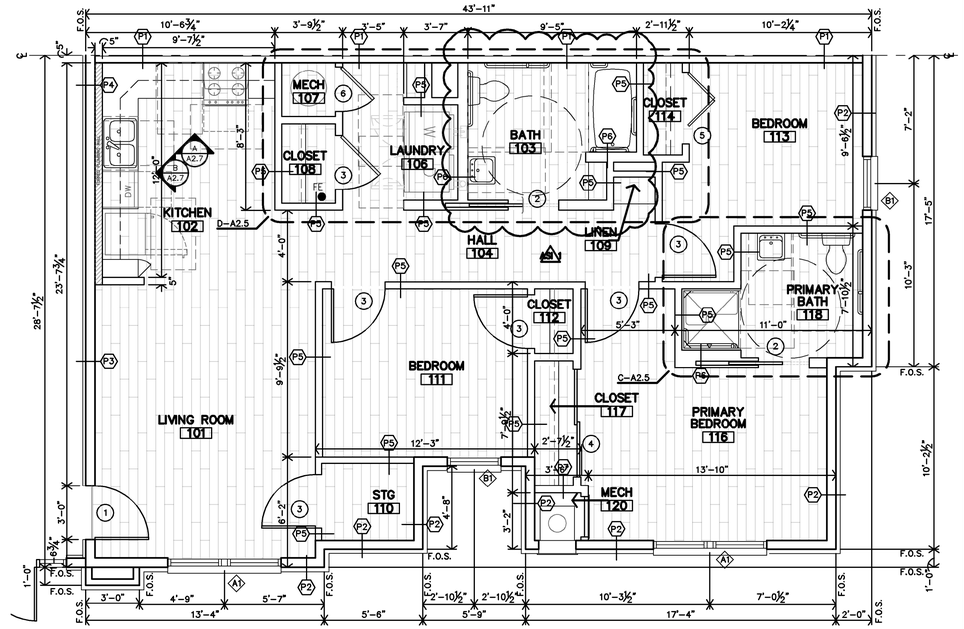
NOTES:
1. DRAFTSTOPPING AT CONCEALED SPACES NOT REQUIRED PER 2021 IBC SEC. 718.3.2, EXCEPTION #1.
2. FIRE BLOCKING REQUIRED PER 2021 IBC SEC. 708 & 718. (1) LAYER – 5/8" TYPE X G.B. OR 1/2" PLYWOOD TO EXTEND THRU SPACE



B UNIT 3B (TYPE-B)
ADAPTABLE
3-BEDROOM/2-BATH
1/2"=1'-0" WDCA: 1,098 sf total



C UNIT 3C (STANDARD)
3-BEDROOM/2-BATH
1/2"=1'-0" WDCA: 1,098 sf total



1 FIRST FLOOR UNITS SHALL BE FULLY ACCESSIBLE (B107)
ACCESSIBLE

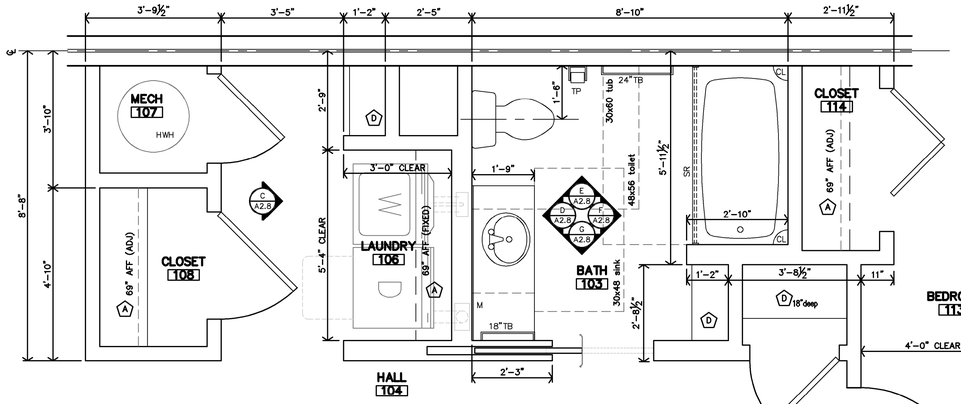
A UNIT 3A (ACCESSIBLE)
3-BEDROOM/2-BATH
1/2"=1'-0" WDCA: 1,098 sf total

JonesGillamRenz
730 N. Ninth
Salina, KS 67401
1881 Main Street, Suite 301
Kansas City, MO 64108
785.827.0386
jgr@jgrarchitects.com

THE RESERVES AT GRAND VIEW HEIGHTS
NEW APARTMENT COMPLEX
LARAMIE, WYOMING

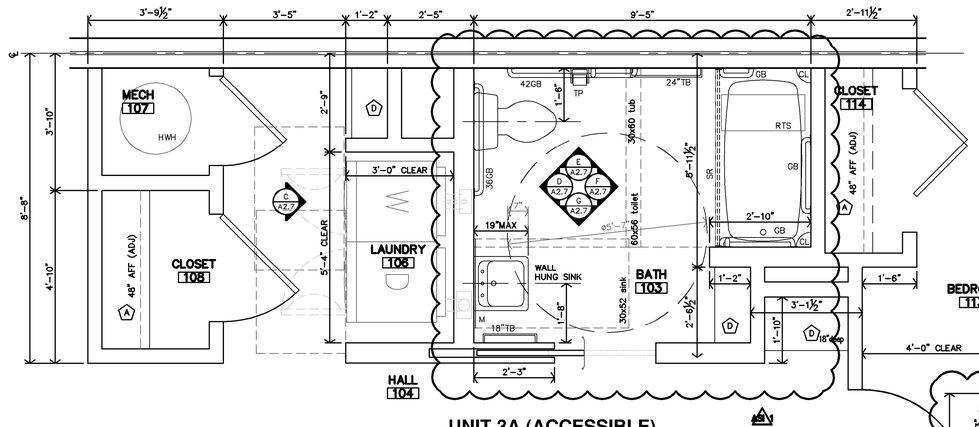
LICENSED ARCHITECT MARGARET J. GILLAM C-3495 STATE OF WYOMING

REVISION:	
1	9–27–2024
DATE:	7–17–2024
JOB:	22–3262
SHEET NO.:	A2.4

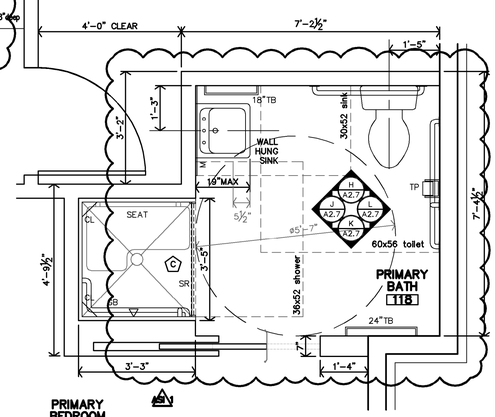


F UNIT 3B TYPE-B (ADAPTABLE)
BATH #103 & LAUNDRY #106
ENLARGED PLAN
1/2"=1'-0"

E UNIT 3B TYPE-B (ADAPTABLE)
PRIMARY BATH #118
ENLARGED PLAN
1/2"=1'-0"



D UNIT 3A (ACCESSIBLE)
BATH #103 & LAUNDRY #106
ENLARGED PLAN
1/2"=1'-0"



C UNIT 3A (ACCESSIBLE)
PRIMARY BATH #118
ENLARGED PLAN
1/2"=1'-0"

ACCESSIBLE & ADAPTABLE UNIT BATH NOTES

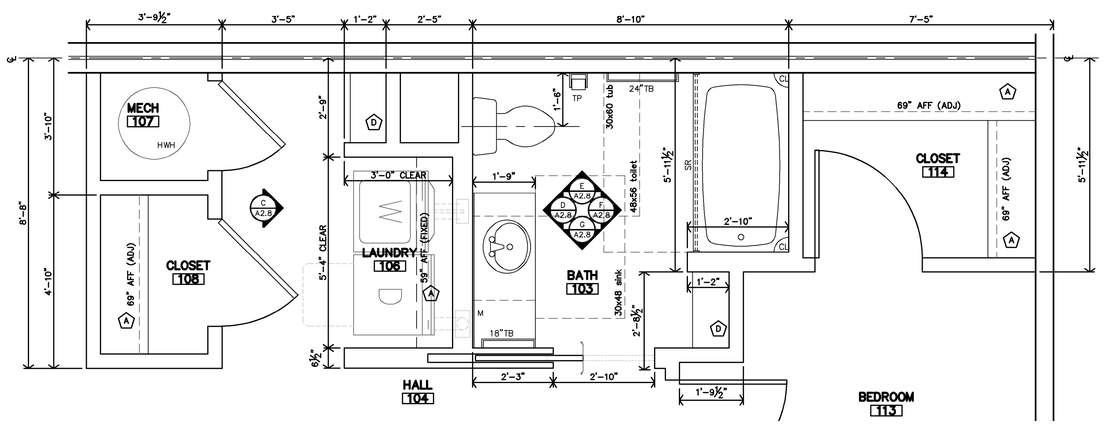
1. REF UNIT NOTES ON SHEET A2.3 FOR ADDITIONAL DIRECTION.
2. ALL DIMENSIONS ARE TO FACE OF GYP. BD. UNLESS NOTED OTHERWISE
3. CONTRACTOR TO INSTALL 2x8 BLOCKING IN WALLS FOR ALL WALL MOUNTED/SUPPORTED COUNTERTOPS & BRACES, SHOWER UNIT, SLIDE BAR, TOWEL BARS, FUTURE GRABS BARS & FUTURE SHOWER SEAT, ETC. AS REQ'D. (REF. SHEET A2.9)
4. LOCATION OF WASHER & DRYER IS CRITICAL. WASHER IS TO BE LEFT OF DRYER, ALWAYS. THIS NEEDS TO BE COORDINATED ON SITE. UNITS DESIGNED AROUND 27"wX33.5"d FRONT LOADING ACCESSIBLE WASHER & DRYER.

LEGEND

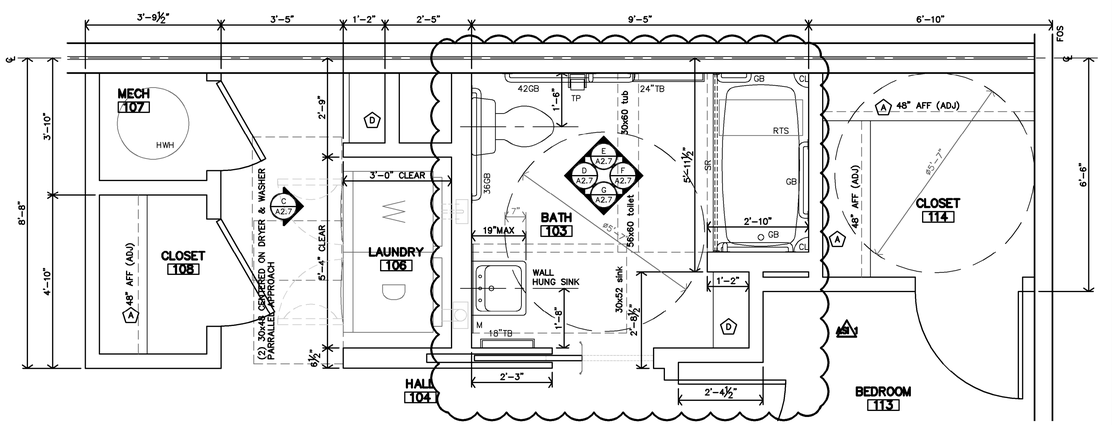
M	MIRROR
TP	TOILET PAPER DISP.
TB	TOWEL BAR
CL	CORNER LEDGE
SR	SHOWER ROD
GB	GRAB BAR
HWH	HOT WATER HEATER
RTS	REMOVABLE TUB SEAT

KEYNOTES:

- (A) PLASTIC COATED WIRE CLOTHES SHELF & ROD (HEIGHT AS CALLED OUT ON PLAN)
- (B) NOTE NOT USED
- (C) VERIFY SIZE w/ FIBERGLASS SHOWER UNIT
- (D) 12"or 18" DEEP PLASTIC COATED WIRE SHELVES (5 TOTAL) WITH ADJUSTABLE BRACKETS



B UNIT 2B TYPE-B (ADAPTABLE)
BATH #103 & LAUNDRY #106
ENLARGED PLAN
1/2"=1'-0"



A UNIT 2A (ACCESSIBLE)
BATH #103 & LAUNDRY #106
ENLARGED PLAN
1/2"=1'-0"

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Kansas City, MO 64108
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THE RESERVES AT GRAND VIEW HEIGHTS

NEW APARTMENT COMPLEX

LARAMIE, WYOMING

LICENSED ARCHITECT
MARGARET J. GILLAM
C-3495
STATE OF WYOMING

REVISION:	
1	9-27-2024

DATE:	7-17-2024
JOB:	22-3262
SHEET NO.:	A2.5

CLUBHOUSE/BREEZEWAYS INTERIOR FINISH SCHEDULE

FINISHES & INSTRUCTIONS

P1	LATEX ENAMEL	VT	VINYL TILE, CLEAN & WAX	SV	SHEET VINYL	ST	SPRAY TEXTURE
P2	EPOXY PAINT	C1	CARPET #1	LVT	LUXURY VINYL TILE	S	SMOOTH
EP	EXTERIOR PAINT	C2	CARPET #2	CT	CERAMIC TILE	T	TEXTURED, LIGHT KNOCKDOWN

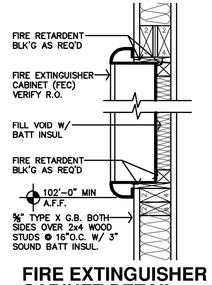
NO.	DESCRIPTION	FLOOR				BASE				N.WALL			E.WALL			S.WALL			W.WALL			CEILING		HGT.	NOTES
		VINYL PLANK FLOORING	12x12 CERAMIC TILE	CARPET	SEALED CONC.	2 1/2" WOOD	CERAMIC TILE	COMPOSITE TRM/SIDING	4" RUBBER BASE	5/8" TYPE X G.B.	48" HIGH WAINSCOT	COMPOSITE TRM/SIDING	5/8" TYPE X G.B.	48" HIGH WAINSCOT	COMPOSITE TRM/SIDING	5/8" TYPE X G.B.	48" HIGH WAINSCOT	COMPOSITE TRM/SIDING	5/8" TYPE X G.B.	48" HIGH WAINSCOT	COMPOSITE TRM/SIDING	5/8" TYPE X G.B.	COMPOSITE TRM/SIDING		
CLUBHOUSE																									
C01	COMMUNITY ROOM	LVT				P1				P½			P½			P½			P½			ST		9'-0"	
C02	OFFICE			C1		P1				P½			P½			P½			P½			ST		9'-0"	
C03	--NOT USED--																								
C04	MECH/STOR.				●				RB	P1			P1			P1			P1			P1		9'-0"	
C05	MEN		CT				CT			P½	CT		P½	CT		P½	CT		P½	CT		ST		9'-0"	1.
C06	WOMEN		CT				CT			P½	CT		P½	CT		P½	CT		P½	CT		ST		9'-0"	1.
C07	HALL	LVT				P1				P½			P½			P½			P½			ST		9'-0"	
C08	FITNESS CENTER	LVT				P1				P½			P½			P½			P½			ST		9'-0"	
C09	STORAGE				●				RB	P1			P1			P1			P1			P1		9'-0"	
C10	KITCHETTE	LVT				P1				P½			P½			P½			P½			ST		9'-0"	1.
BREEZEWAYS																									
A107	MECHANICAL				●				RB	EP			EP			EP			EP			EP		9'-0"	
A110	MECHANICAL				●				RB	EP			EP			EP			EP			EP		9'-0"	
B109	MECHANICAL				●				RB	EP			EP			EP			EP			EP		9'-0"	
B112	MECHANICAL				●				RB	EP			EP			EP			EP			EP		9'-0"	
A108	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
A208	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
A308	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
A109	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
A209	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
A309	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
B110	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
B210	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
B310	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
B111	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
B211	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
B311	BREEZEWAY				●		EP				EP			EP			EP			EP			EP	9'-0"	
FIRE SPRINKLER CLOSETS																									
A111	F.S.				●				RB				EP			EP			EP			EP		9'-0"	1.
B113	F.S.				●				RB				EP			EP			EP			EP		9'-0"	1.

NOTES: 1. INSTALL 5/8" TYPE X M.R G.B. ● ALL WET AREAS.

CLUBHOUSE/BREEZEWAYS DOOR SCHEDULE

MARK	DOOR SIZE W	H	T	DOOR MATERIAL MTL. INSULATED	WOOD S.C.	TYPE	DOOR FINISH PREFIN.	PAINT	FRAME MATERIAL WOOD	FRAME FINISH PAINT	DETAILS	REMARKS
CLUBHOUSE												
1	3'-0"	6'-8"	1 3/4"	●		A	●		●	●		1,2,5,6,7,8,9
2	3'-0"	6'-8"	1 3/4"	●		B	●		●	●		1,2,5,6,7,8,9
3	PR 3'-0"	6'-8"	1 3/4"	●		E	●		●	●		8,9
4	3'-0"	6'-8"	1 3/4"		●	D		●	●	●		2,4,9
5	3'-0"	6'-8"	1 3/4"		●	B		●	●	●		2,4,9
6	3'-0"	6'-8"	1 3/4"		●	D		●	●	●		3,9
BREEZEWAYS/FIRE SPRINKLER ROOMS												
11	3'-6"	6'-8"	1 3/4"	●		C	●		●	●		6,7,8,9
12	3'-0"	6'-8"	1 3/4"	●		E	●		●	●		6,8,9
13	3'-6"	6'-8"	1 3/4"	●		E	●		●	●		8,9

NOTES:
1. FLUSH BOLTS AND SURFACE BOLTS PROHIBITED
2. KEYED LOCKSETS
3. DECORATIVE KICK PLATES, SELF CLOSING HINGES AND PRIVACY LOCKSETS
4. PROVIDE DECORATIVE KICK PLATES AT HALL SIDE OF DOOR
5. ALL GLAZING IN DOORS TO BE SAFETY GLAZED
6. PROVIDE CLOSERS
7. PROVIDE DECORATIVE KICK PLATES AT INTERIOR SIDE OF DOOR
8. WEATHER STRIPPING TO BE INSTALLED.
9. ALL DOOR HARDWARE TO BE LEVER TYPE LATCH SETS.



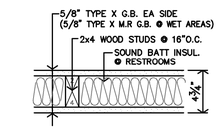
N FIRE EXTINGUISHER CABINET DETAIL
1 1/2"=1'-0"

CLUBHOUSE GENERAL NOTES

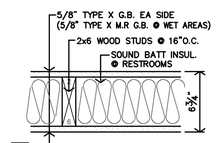
1. REF STRUCTURAL DRAWINGS FOR SHEAR WALL LOCATIONS.
2. TYPICAL GROUND FLOOR FINISH FLOOR ELEVATION IS REFERENCED AS 100'-0". CONTRACTOR SHALL VERIFY BUILDING ELEVATION W/ CIVIL DRAWINGS.
3. REFERENCE SITE PLAN SHEET A1.1 FOR LOCATION & ORIENTATION OF BUILDING.
4. CONTRACTOR SHALL PROVIDE FIREBLOCKING, ANCHOR BOLTS & ANY REQUIRED SHEAR WALL BLOCKING AS REQUIRED BY STRUCTURAL DRAWINGS.
5. FIRE EXTINGUISHERS SHALL BE INSTALLED & PROVIDED IN ACCORDANCE WITH NFPA 10 & 2021 IBC, SECTION 906.1 AND SPECIFICATIONS. LOCATED PER CFP SHEETS.
6. ALL PENETRATIONS THRU RATED WALLS AND/OR FLOOR ASSEMBLIES SHALL BE FIRESTOPPED PER APPROVED U.L. DESIGNS. REFERENCE SHEET A4.9 FOR FIRE PENETRATION ASSEMBLIES
7. B.O. HEADER 83" ABV. FIN. FLR.
8. KITCHENETTE AREA RECEPTACLES TO BE @ 44"max ABOVE FIN FLR.
9. ALL OPERABLE PARTS, (PER ADA SECTION 309) SHALL BE A MAX. OF 48" A.F.F. THIS INCLUDES OUTLETS, WINDOW LATCHES/LOCKS, ENVIRONMENTAL CONTROLS, LIGHT SWITCHES, ETC.
10. CONTRACTOR TO PROVIDE 2x8 BLOCKING IN WALLS FOR GRAB BARS, COUNTERTOPS, SUPPORTS, ETC.
11. SUBMIT VERIFICATION THAT ALL CONSTRUCTION MATERIAL WILL MEET US EPA CRITERIA PARTICULARLY MATERIALS THAT WILL BE OBTAINED FROM INTERNATIONAL SOURCES. ALSO PROVIDE VERIFICATION THAT THE CONSTRUCTION WILL NOT RESULT IN OR CONTAIN HAZARDOUS MATERIALS.
12. ALL DIMENSIONS ARE TO FACE OF GYP. BD. UNLESS NOTED OTHERWISE.
13. F.O.S. = FACE OF STUD
14. FEC = FIRE EXTINGUISHER CABINET, REFERENCE DETAIL N-A2.10

CLUBHOUSE PARTITION SCHEDULE

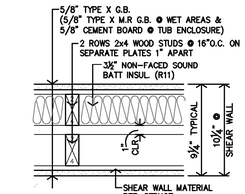
PARTITION NOTES:
1. SHEAR WALLS: REF. STRUCTURAL FOR LOCATIONS, MATERIAL & SECTIONS
2. FIRE BLOCKING REQUIRED PER 2021 IBC SEC. 708 & 718. @ 10'-0"O.C. VERT. & HORIZ. AND @ ALL BACK TO BACK ELECTRICAL OUTLETS. (1) LAYER – 5/8" TYPE X G.B. OR 1/2" PLYWOOD TO EXTEND THRU SPACE



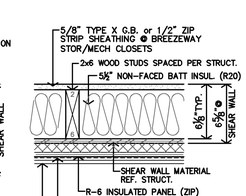
1 TYPICAL INTERIOR WALL
APRX. STC 36



2 TYPICAL PLUMBING WALL
APRX. STC 42

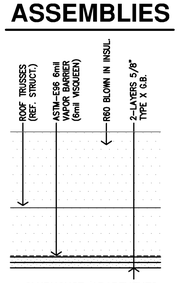


3 DOUBLE STUD PARTY WALL
1 HOUR RATING (UL U341)
ATTACH PER UL REQUIREMENTS
APRX. STC 58

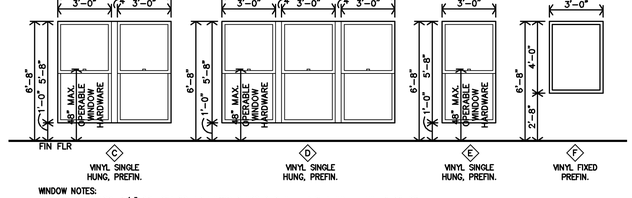


4 TYPICAL EXTERIOR WALL
APRX. STC 36-58

ASSEMBLIES



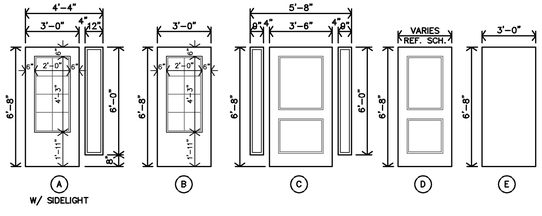
CLUBHOUSE/APARTMENTS
ROOF/CEILING 1
1-HOUR RATED
2015 IBC, TABLE 721.1(3), 21-1
ATTACH PER REQUIREMENTS



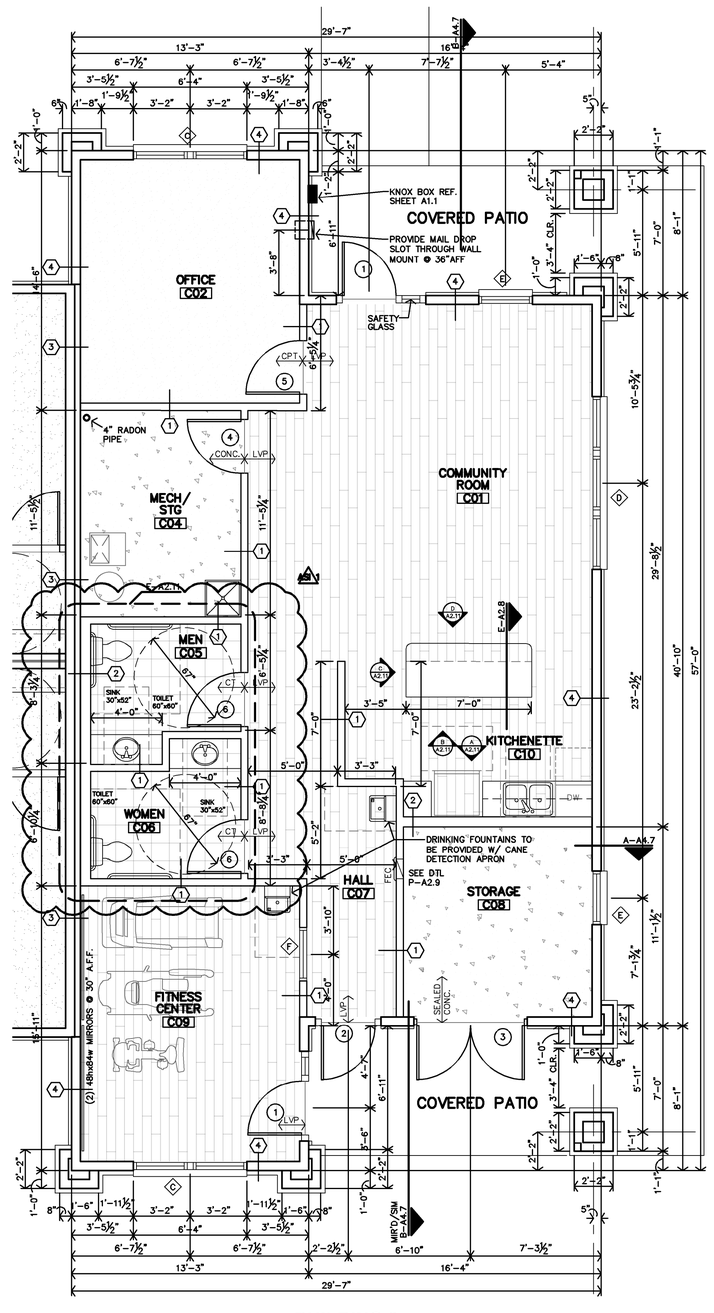
WINDOW NOTES:
1. EXTERIOR GLASS: 3/4" DBL SEALED INSULATED GLASS & SHALL HAVE A MIN. U-VALUE OF .27.
2. SAFETY GLASS SHALL BE LOCATED PER 2021 IBC SECTION 2406.4
3. INTERIOR GLASS: 1/4" SAFETY GLASS PER 2021 IBC SECTION 2406.4
4. EMERGENCY ESCAPE & RESCUE: PER 2021 IBC SEC. 1031. 20"w X 24"h MIN. OPENINGS, 5.7sf MIN. AREA (ALSO REF. 1030.4)

D WINDOW SCHEDULE
1/4"=1'-0"

GLASS NOTES:
1. 3/4" DBL SEALED INSULATED GLASS & SHALL HAVE MIN. U-VALUES AND SHGC PER SPECIFICATIONS.
2. SAFETY GLASS SHALL BE LOCATED PER 2015 IBC SECTION 2406.4



E DOOR TYPES
1/4"=1'-0"



A BUILDING 2
CLUBHOUSE FLOOR PLAN
1/4"=1'-0"

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THE RESERVES AT GRAND VIEW HEIGHTS
NEW APARTMENT COMPLEX
LARAMIE, WYOMING

LICENSED ARCHITECT MARGARET J. GILLAM C-3385 STATE OF WYOMING

REVISION:	
1	9-27-2024
DATE:	7-17-2024
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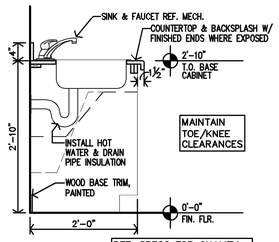
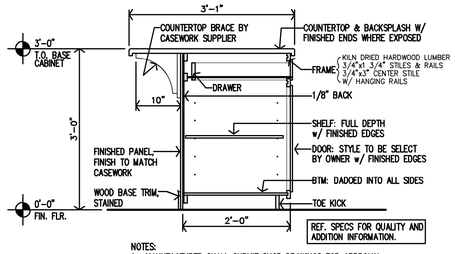


NOTES:
1. MANUFACTURER SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
2. MANUFACTURER SHALL PROVIDE ALL FILLERS/BRACES TO MATCH CABINETS.

P KITCHENETTE #C10 CASEWORK SECTION
3/4"=1'-0"



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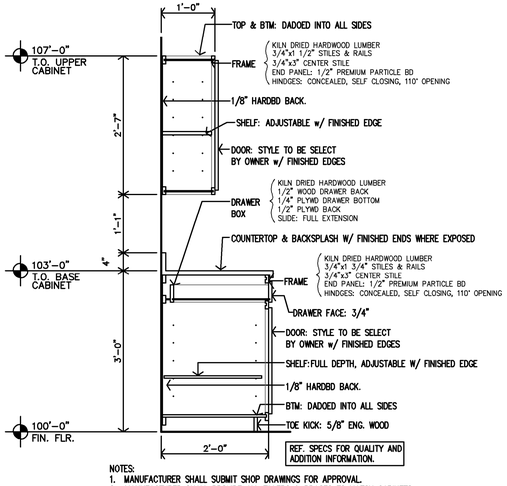
2. MANUFACTURER SHALL PROVIDE ALL FILLERS & BRACES TO MATCH CABINETS.

O KITCHENETTE #C10 CASEWORK SECTION
3/4"=1'-0"



NOTES:
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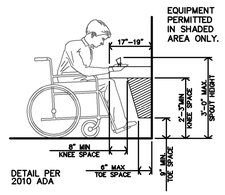
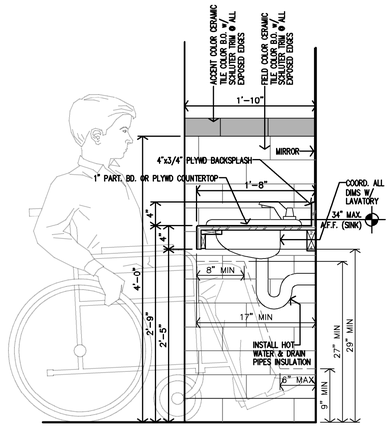
2. MANUFACTURER SHALL PROVIDE ALL FILLERS & BRACES TO MATCH CABINETS.

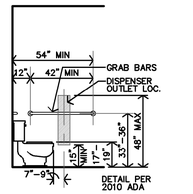
N KITCHENETTE #C10 CASEWORK SECTION
3/4"=1'-0"



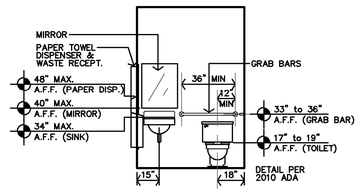
M DRINKING FOUNTAIN DETAIL
3/8"=1'-0"



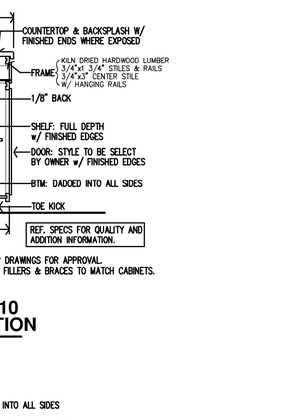
L VANITY SECTION
1"=1'-0"



K TYP. HEIGHTS @ H.C. TOILET SIDE WALL
1/4"=1'-0" FOR HC HEIGHTS & LOCATION ONLY

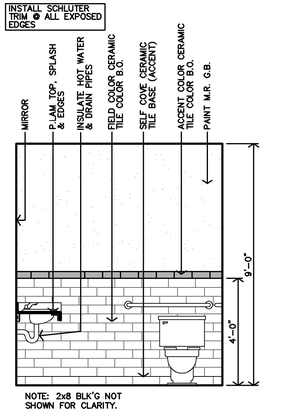


J TYP. HEIGHTS @ H.C. TOILET BACK WALL
1/4"=1'-0" FOR HC HEIGHTS & LOCATION ONLY



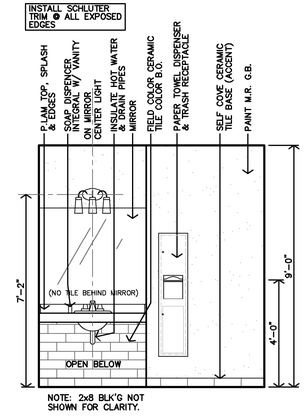
NOTE: 2x8 BLK'G NOT SHOWN FOR CLARITY.

H MEN #C05 INTERIOR ELEVATION
3/8"=1'-0" WOMEN #C06 MIRRORED



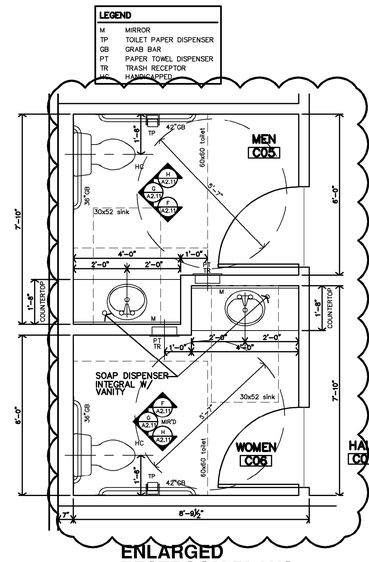
NOTE: 2x8 BLK'G NOT SHOWN FOR CLARITY.

G MEN #C05 INTERIOR ELEVATION
3/8"=1'-0" WOMEN #C06 SIMILAR

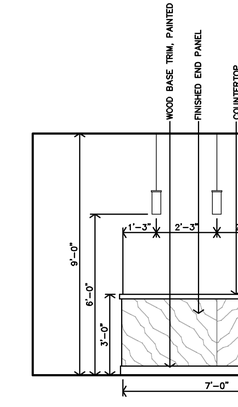


NOTE: 2x8 BLK'G NOT SHOWN FOR CLARITY.

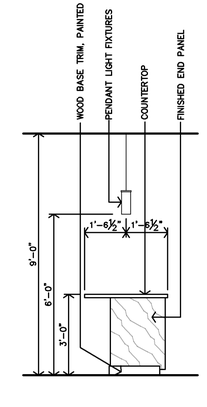
F MEN #C05 INTERIOR ELEVATION
3/8"=1'-0" WOMEN #C06 MIRRORED



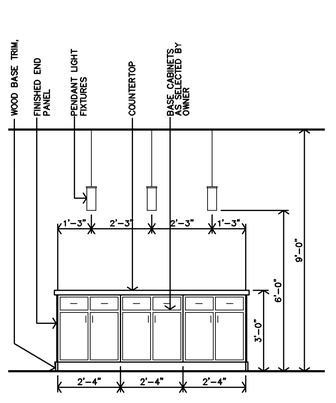
E ENLARGED RESTROOM PLANS
3/8"=1'-0"



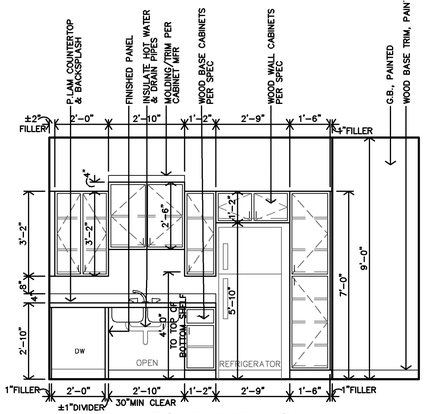
D KITCHENETTE #C10 CASEWORK ELEVATION
3/8"=1'-0"



C KITCHENETTE #C10 CASEWORK ELEVATION
3/8"=1'-0"



B KITCHENETTE #C10 CASEWORK ELEVATION
3/8"=1'-0"



A KITCHENETTE #C10 CASEWORK ELEVATION
3/8"=1'-0"

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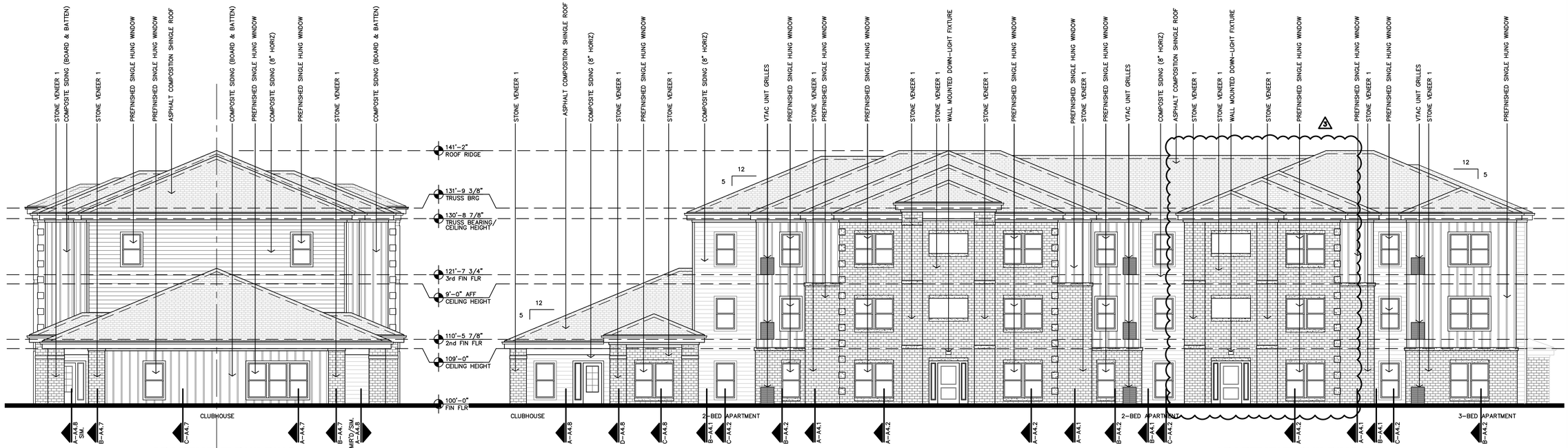
THE RESERVES AT GRAND VIEW HEIGHTS
NEW APARTMENT COMPLEX
LARAMIE, WYOMING

LICENSED ARCHITECT MARGARET J. GILLAM O-3486 STATE OF WYOMING

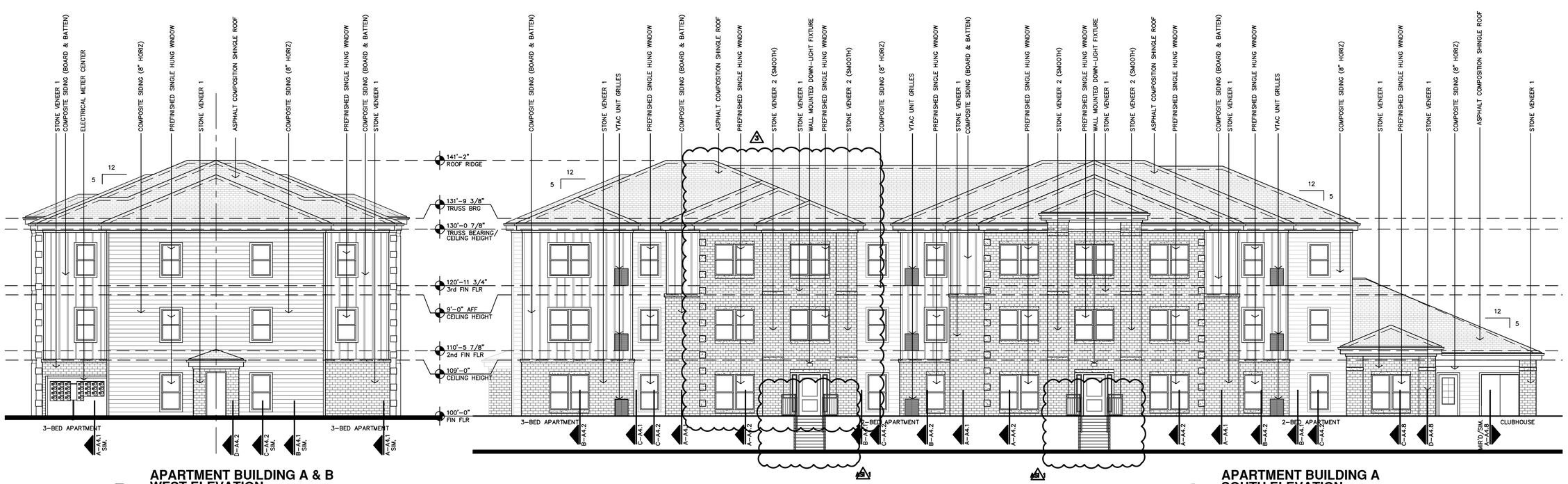
REVISION:	
1	9-27-2024
DATE:	7-17-2024
JOB:	22-3262
SHEET NO.:	A2.11



D **APARTMENT BUILDING A EAST ELEVATION**
1/8"=1'-0"

LOCATION OF SHEAR WALLS VARIES. REFERENCE DETAIL C-A4.1 AND STRUCTURAL PLANS AND DETAILS.

C **APARTMENT BUILDING A NORTH ELEVATION**
1/8"=1'-0"



B **APARTMENT BUILDING A & B WEST ELEVATION**
1/8"=1'-0"

A **APARTMENT BUILDING A SOUTH ELEVATION**
1/8"=1'-0"

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THE RESERVES AT GRAND VIEW HEIGHTS

NEW APARTMENT COMPLEX

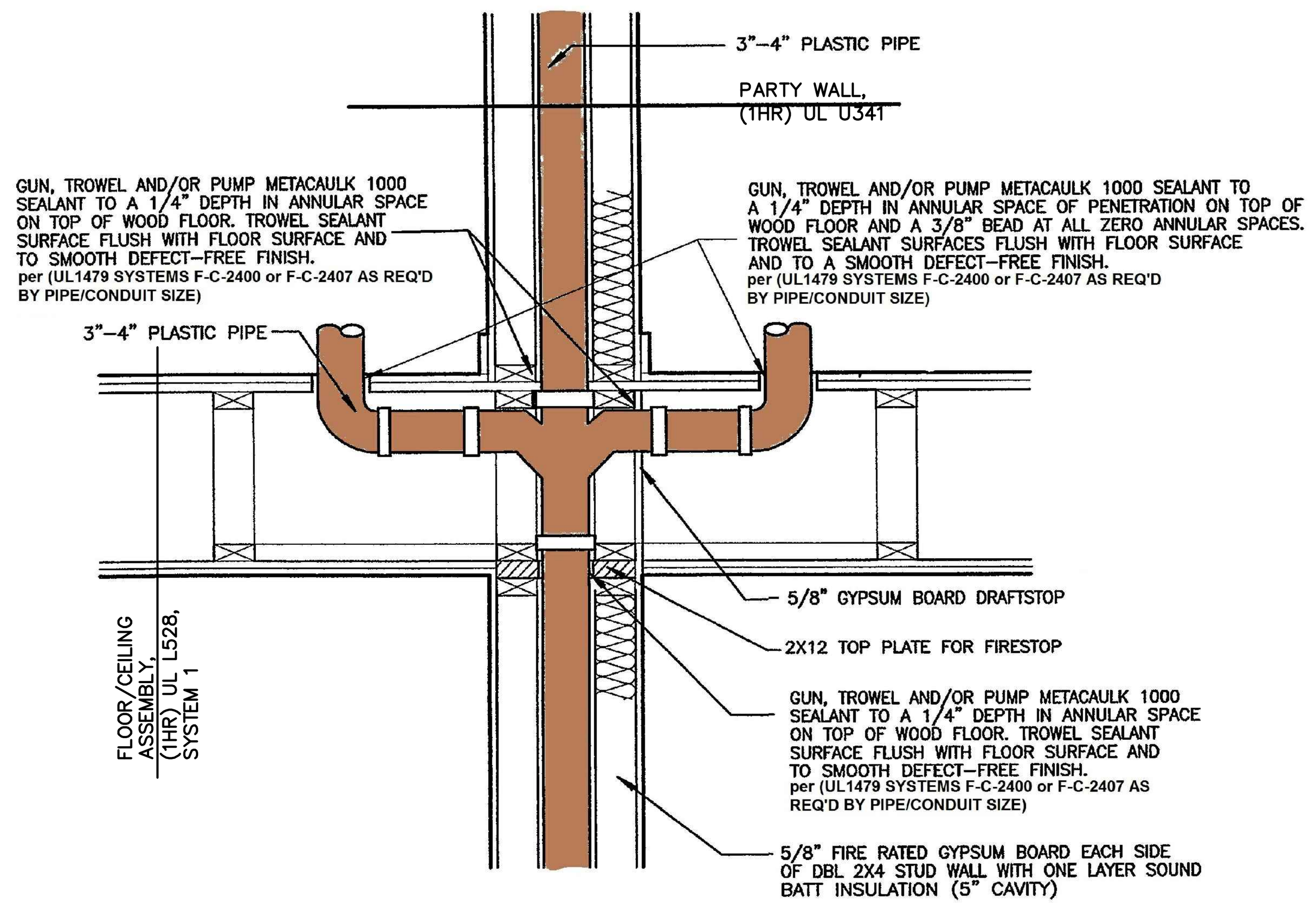
LARAMIE, WYOMING

LICENSED ARCHITECT MARGARET J. GILLAM C-3986 STATE OF WYOMING

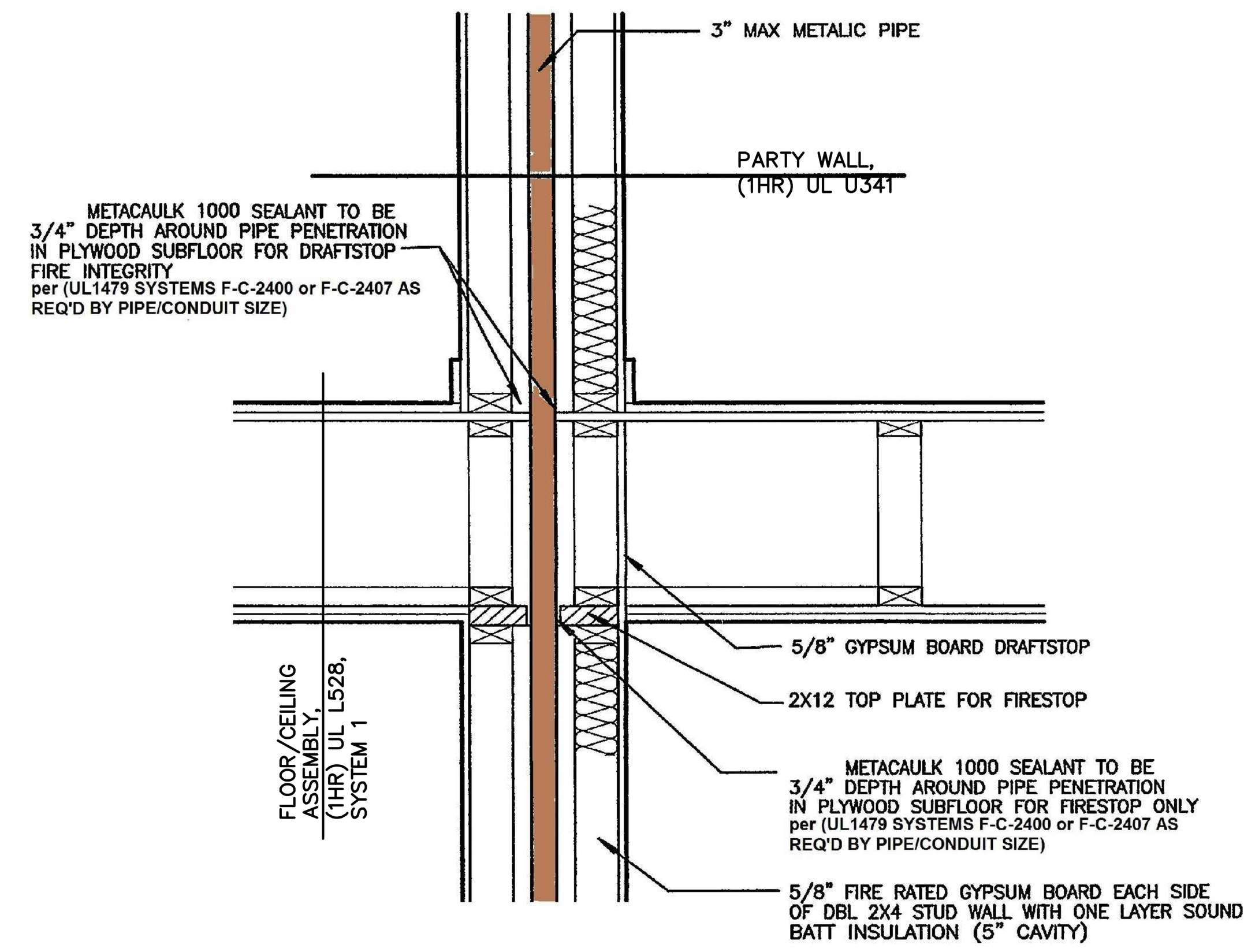
REVISION:	
3	9-10-2024
4	9-27-2024

DATE: 7-17-2024
JOB: 22-3262
SHEET NO.:

A3.1



1 **PENETRATION ASSEMBLY**
NO SCALE



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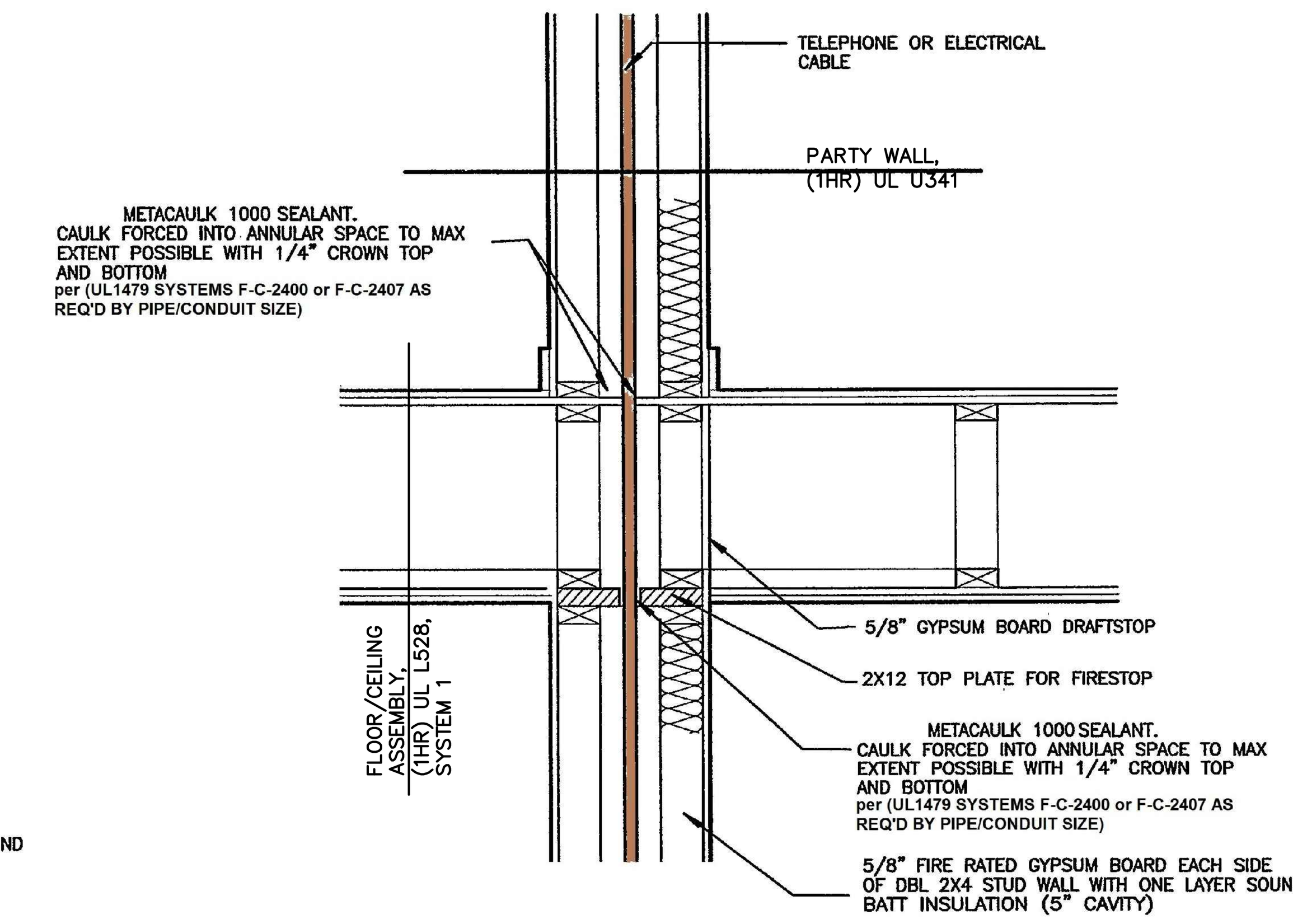

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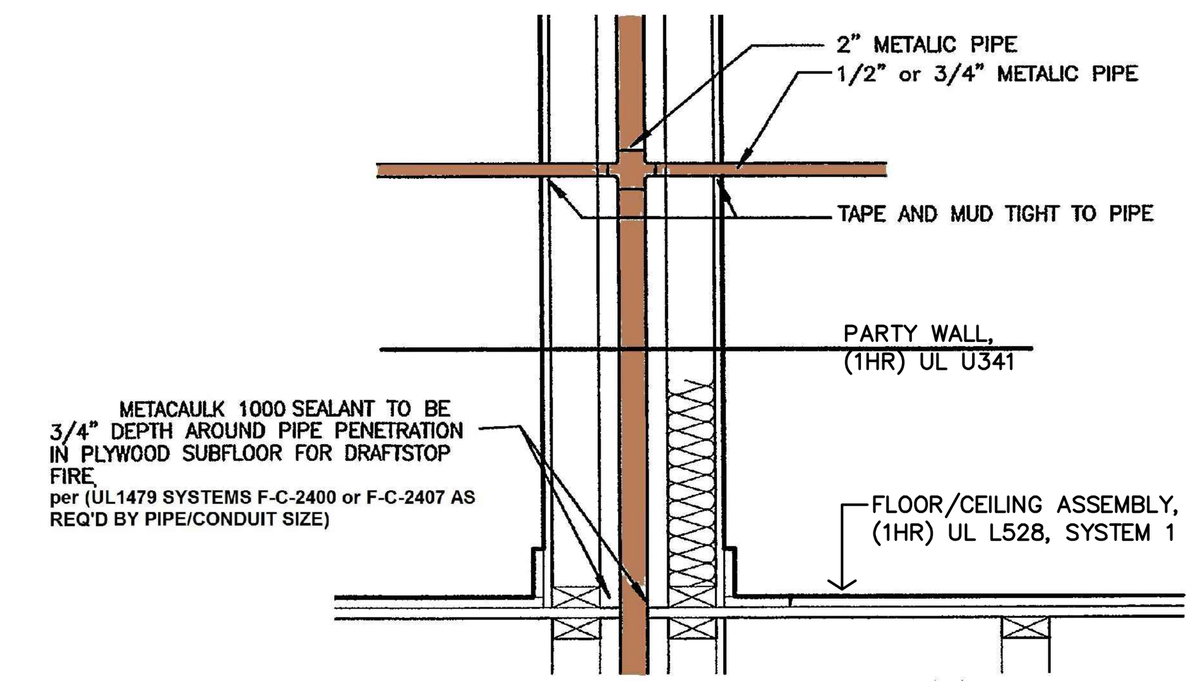

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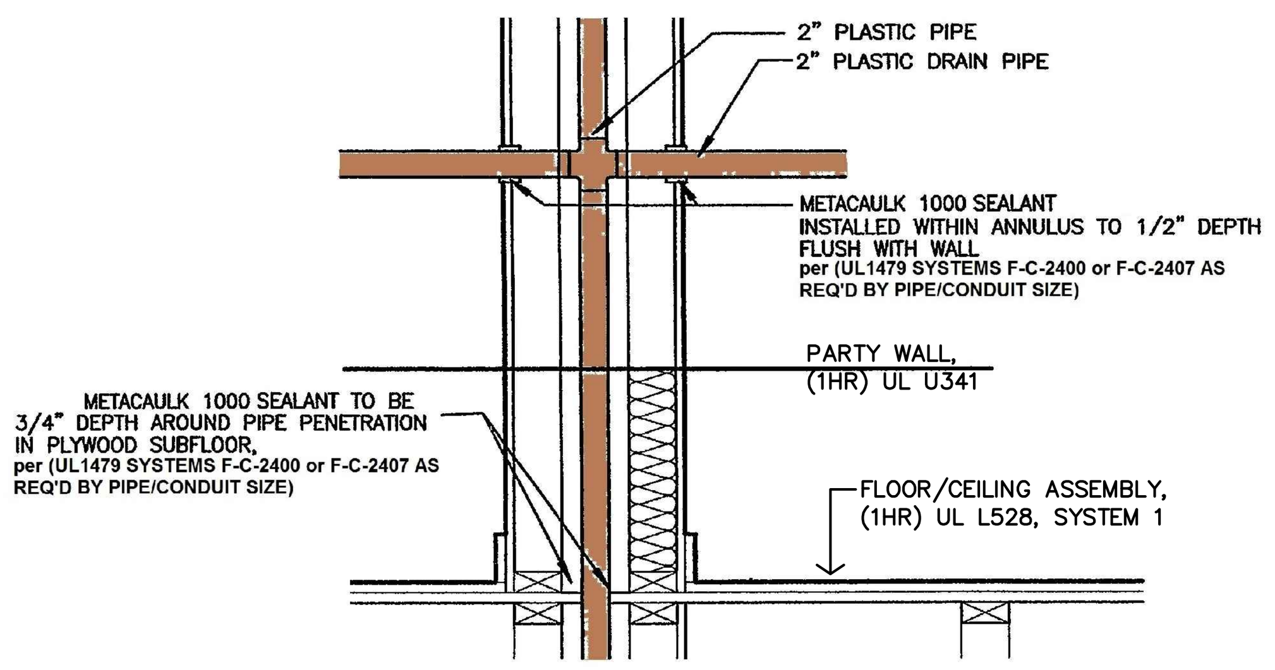

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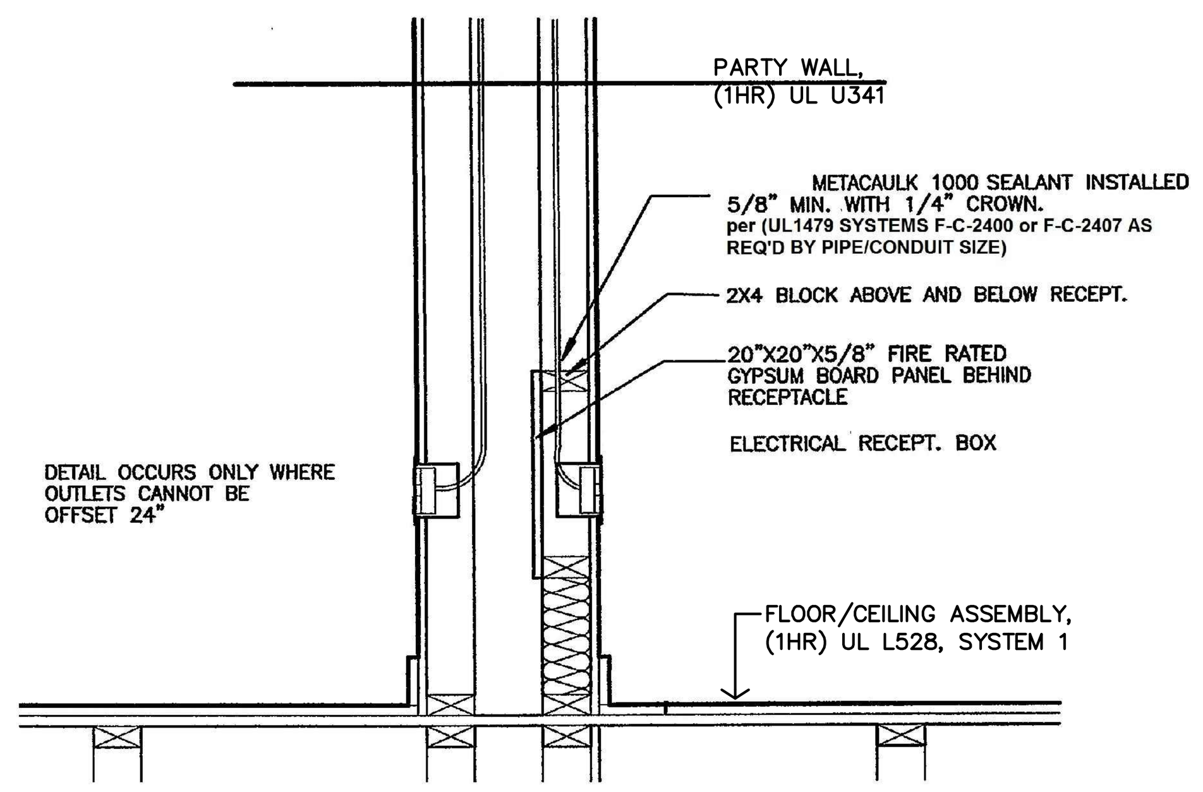

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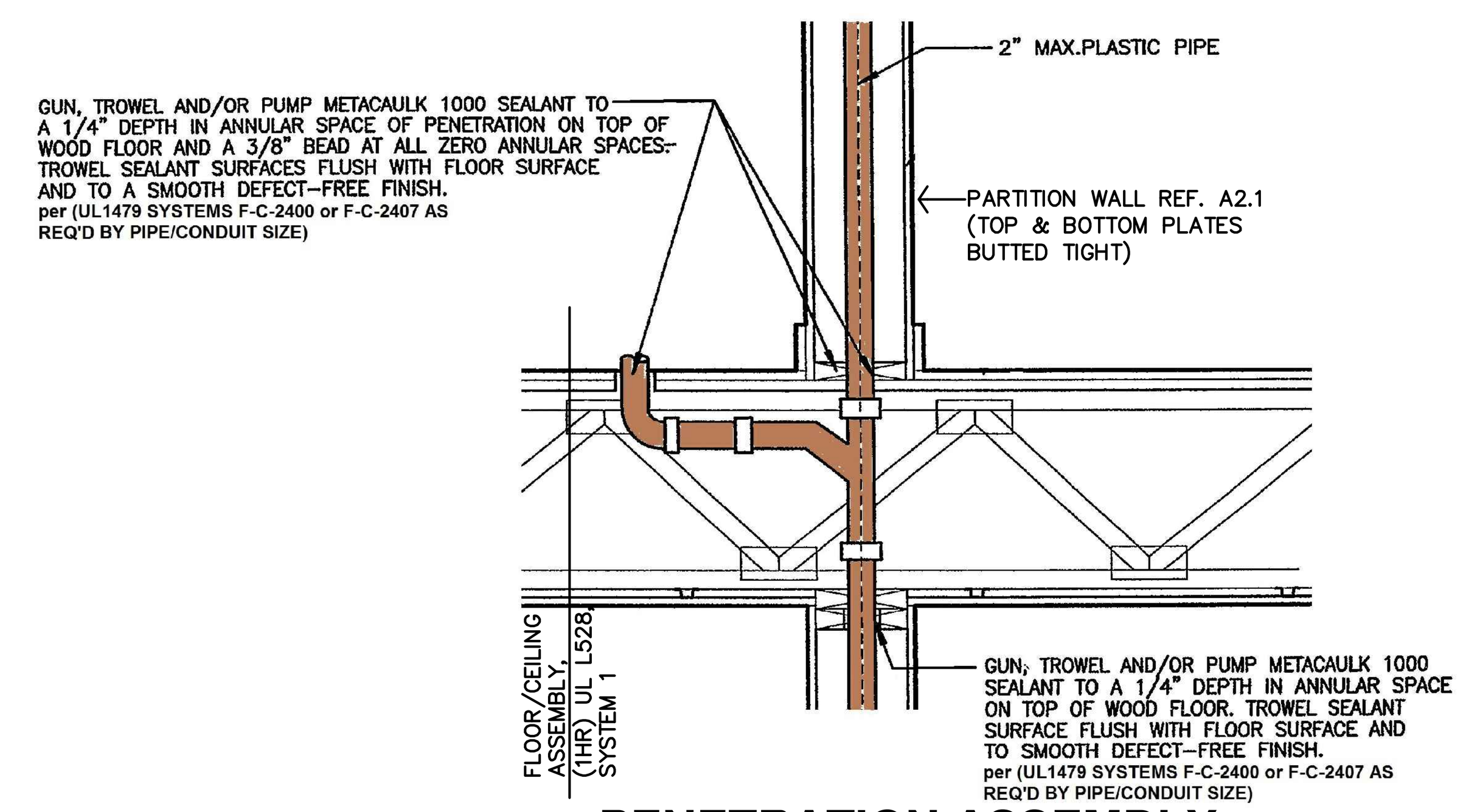

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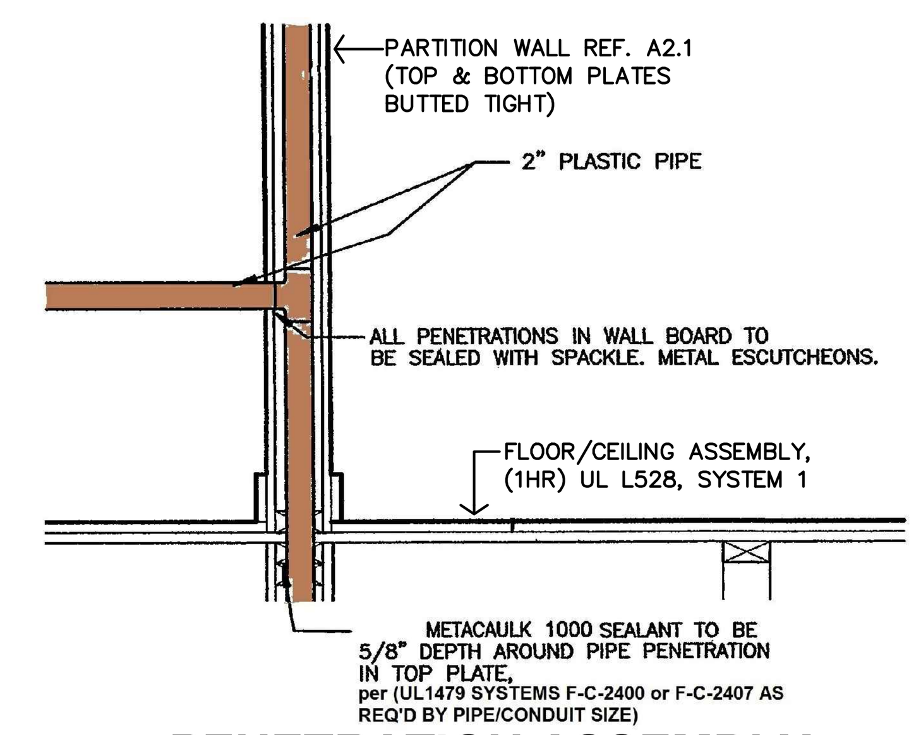

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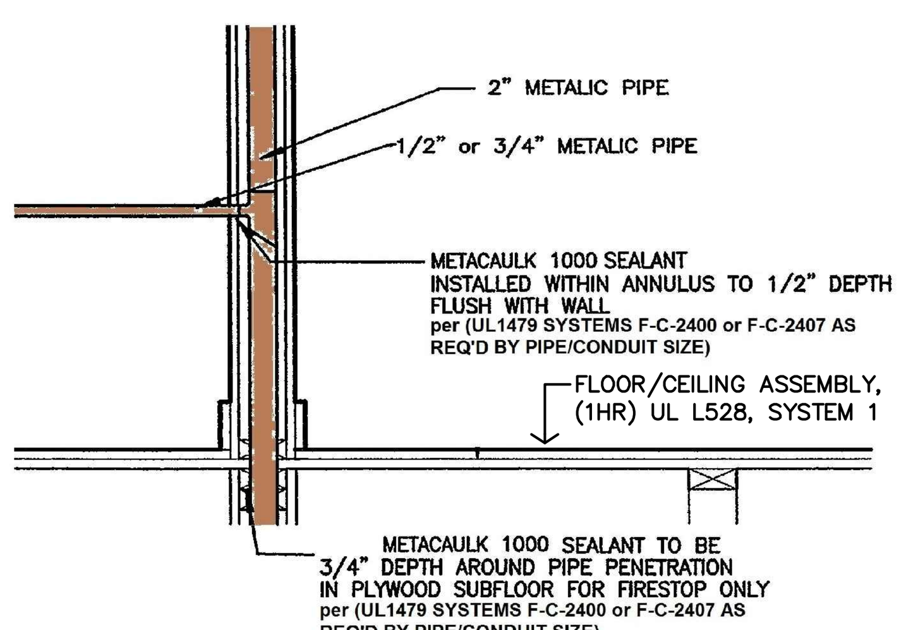

9 **PENETRATION ASSEMBLY**
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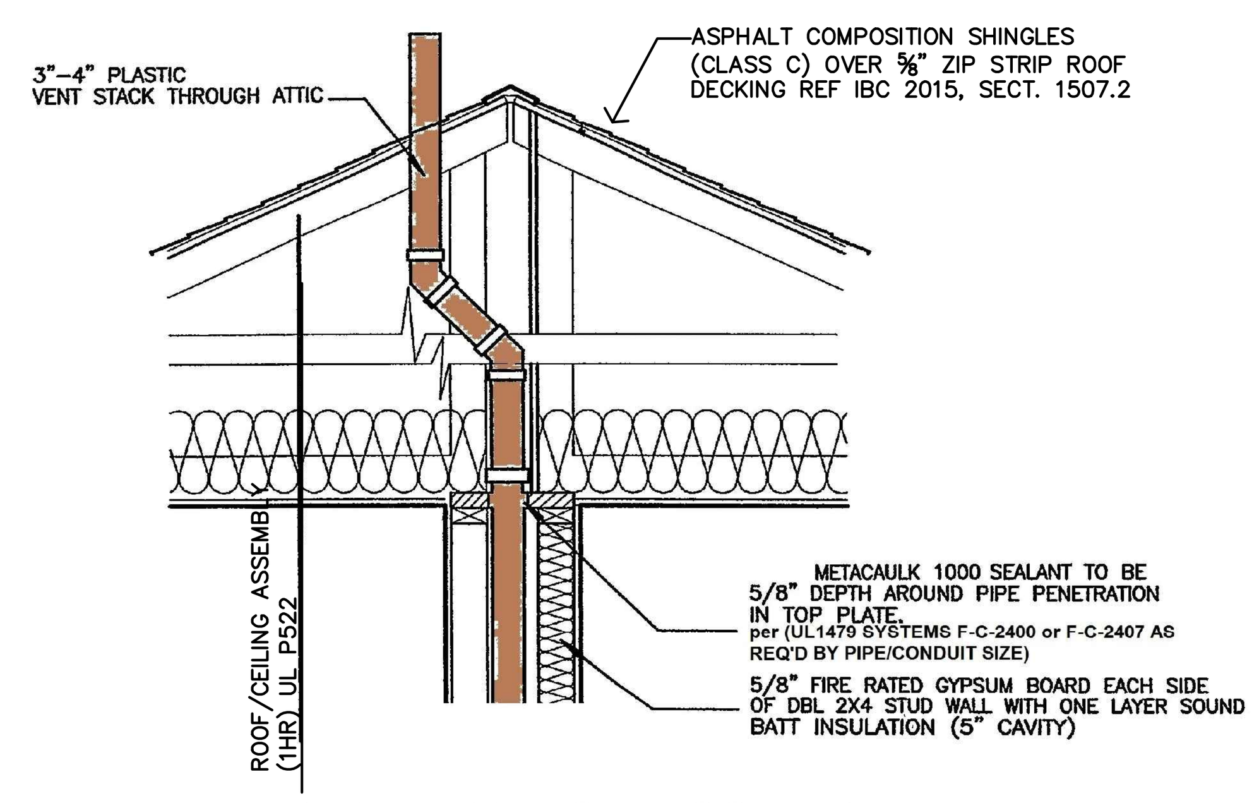

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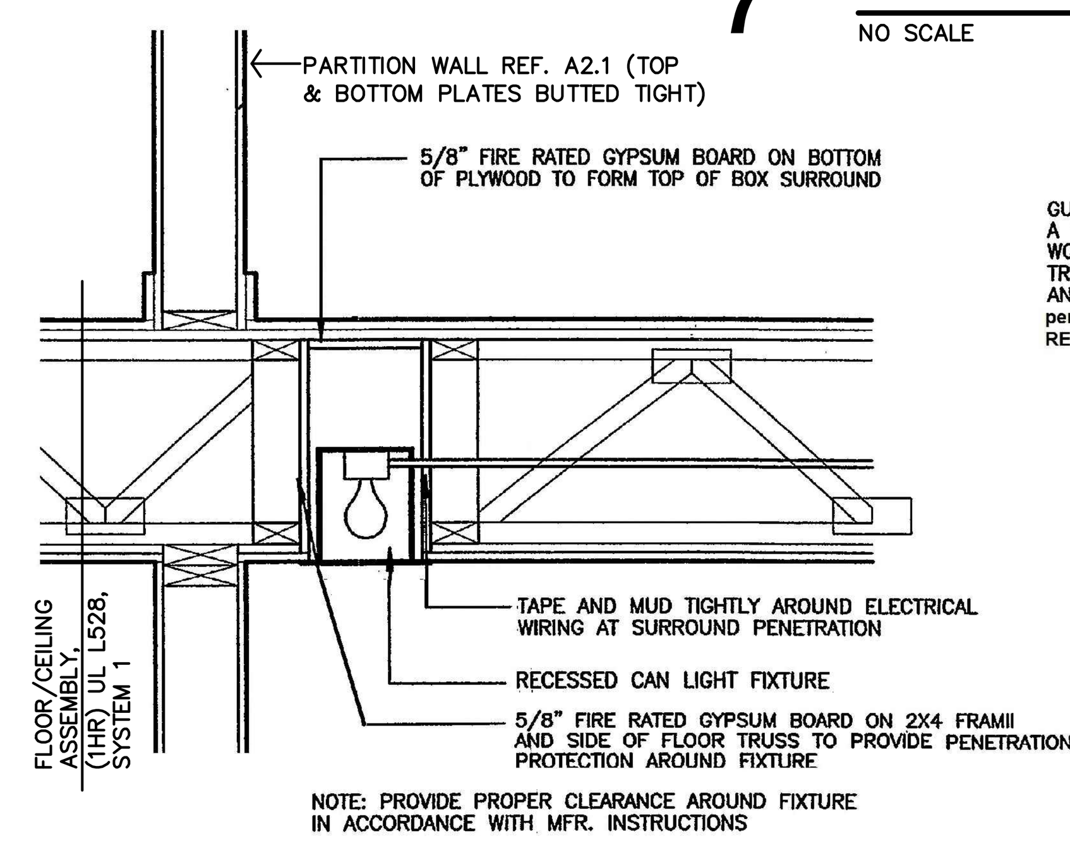

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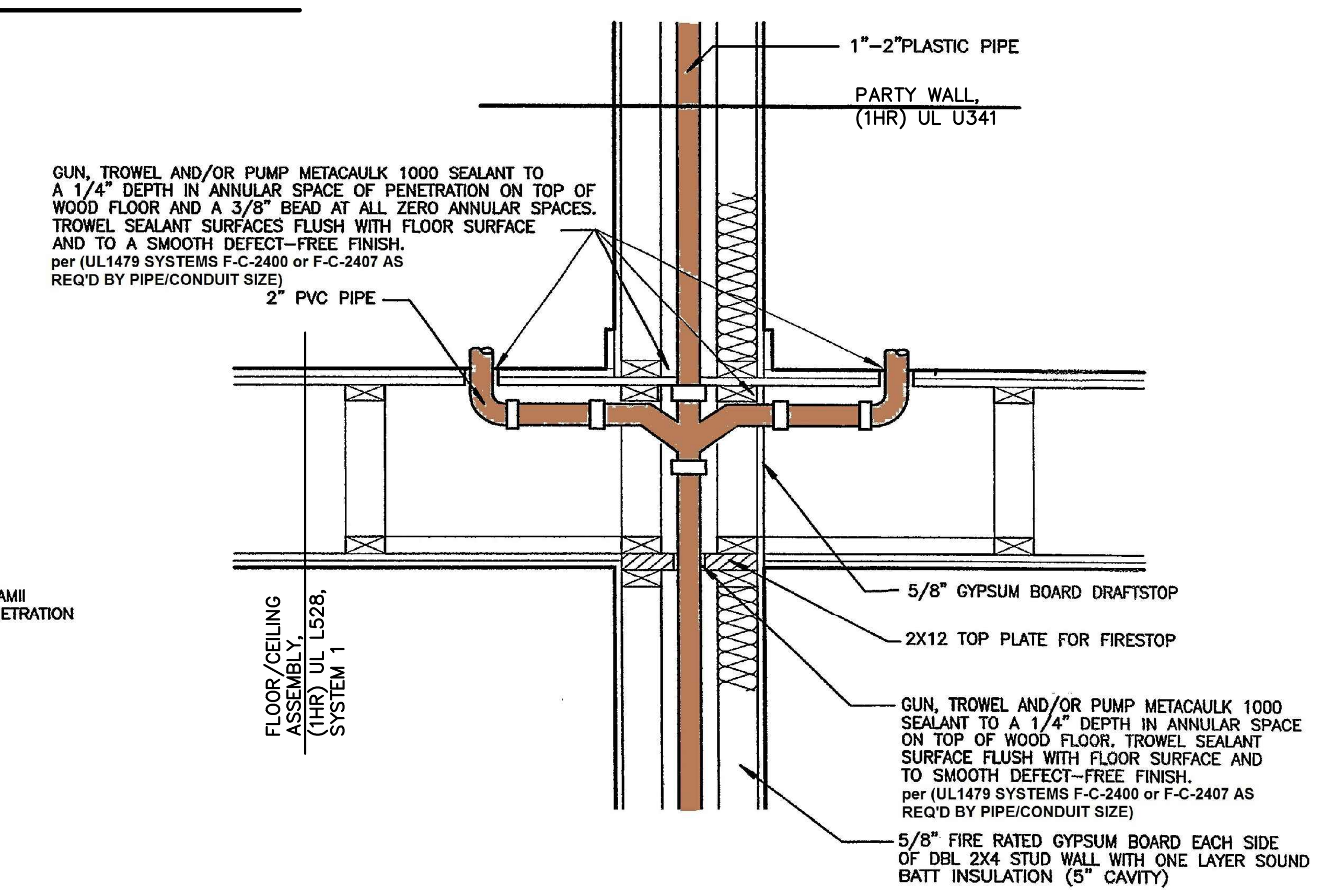

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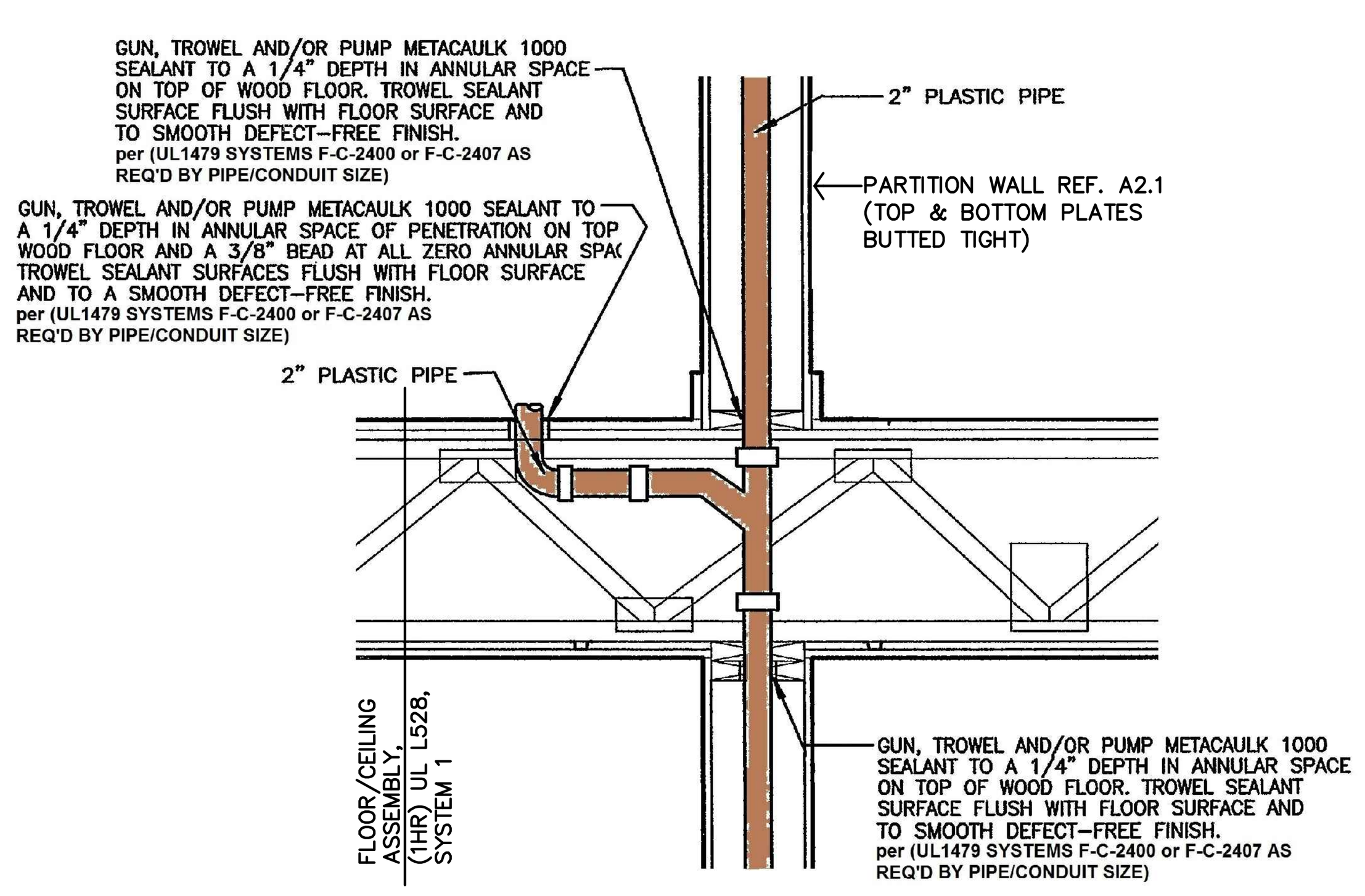

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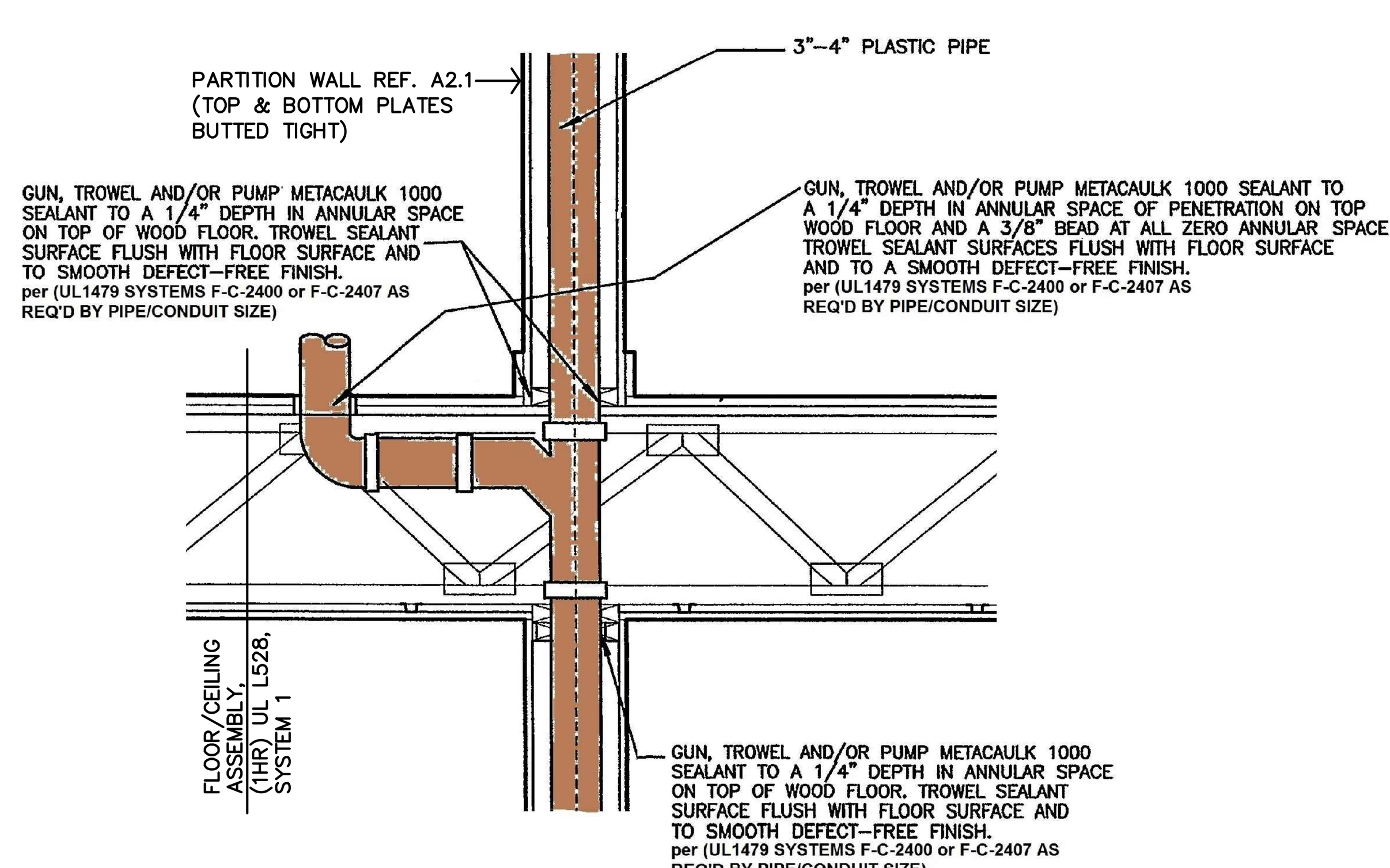

14 **PENETRATION ASSEMBLY**
NO SCALE

FIRE PENETRATION ASSEMBLIES
NOT TO SCALE

ENTIRE SHEET ADDED

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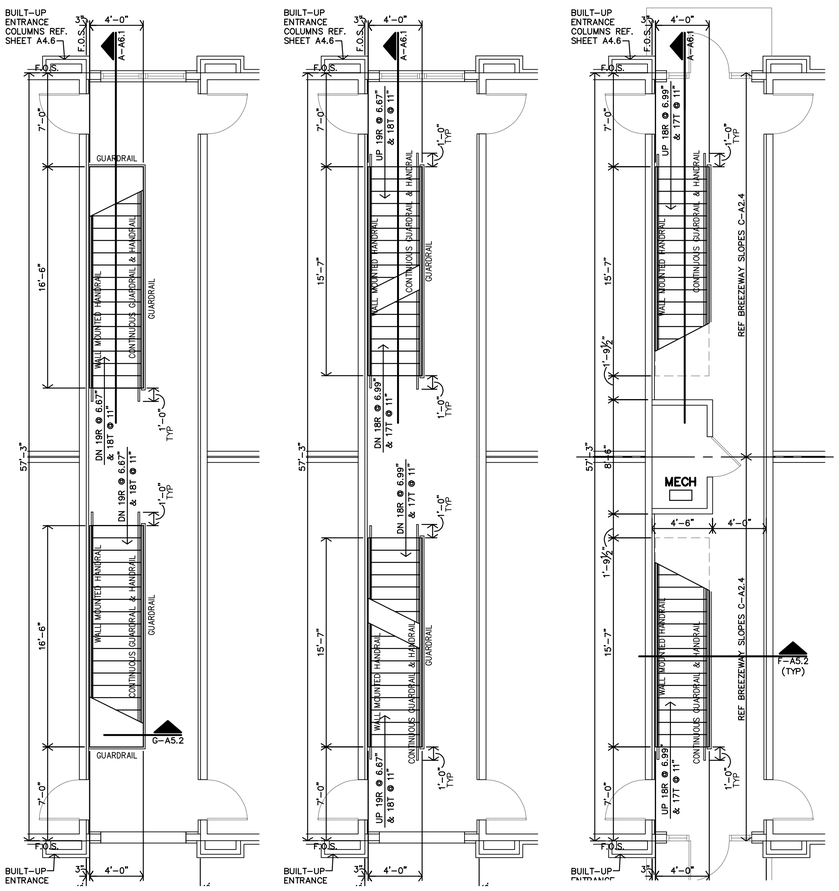
THE RESERVES AT GRAND VIEW HEIGHTS
NEW APARTMENT COMPLEX
LARAMIE, WYOMING

LICENSED ARCHITECT MARGARET J. GILLAM C-3495 STATE OF WYOMING

REVISION:
9-27-2024

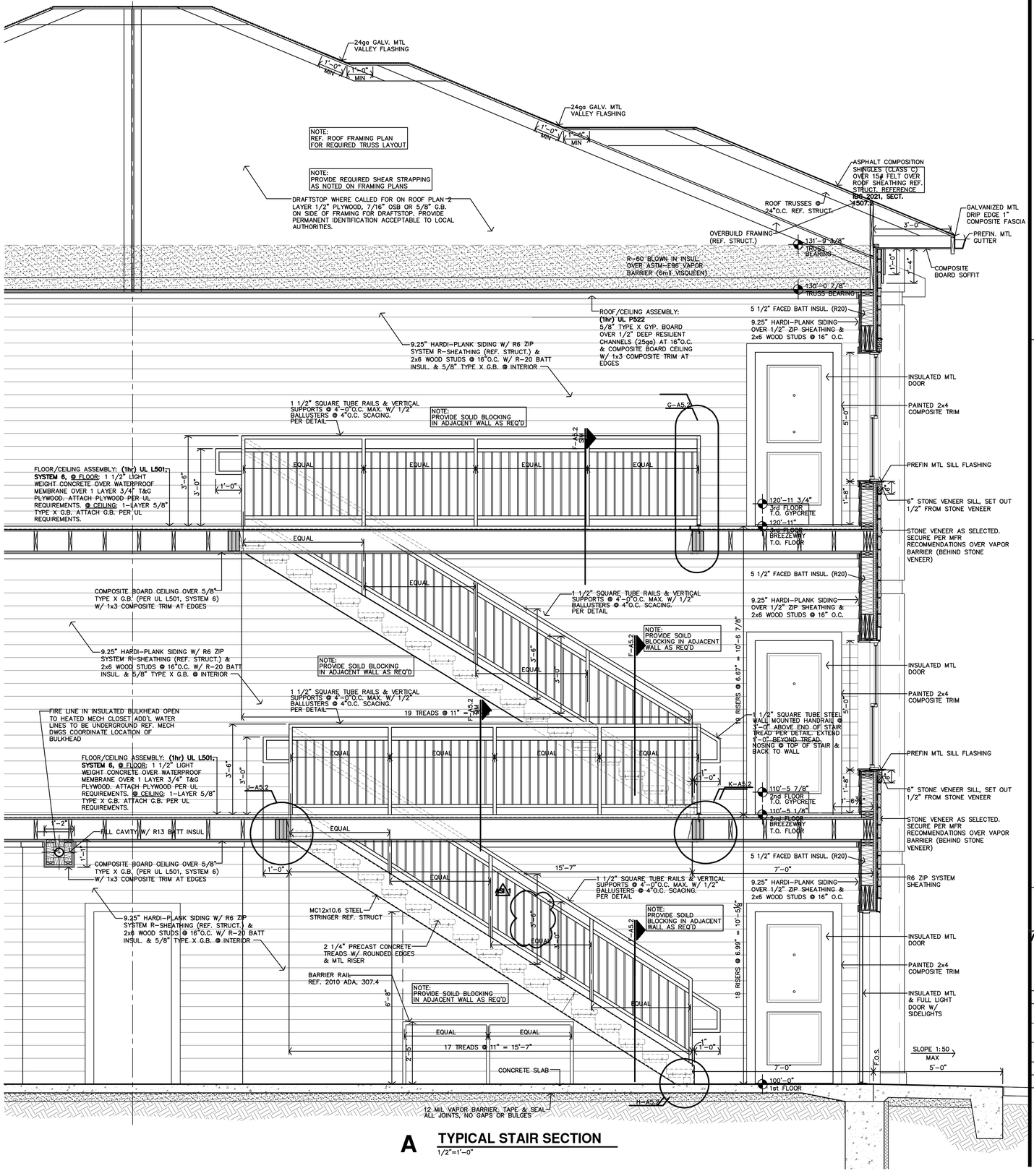
DATE: 7-17-2024
JOB: 22-3262
SHEET NO.:
A4.9



D **TYPICAL THIRD FLOOR PLAN**
3/16"=1'-0"

C **TYPICAL SECOND FLOOR PLAN**
3/16"=1'-0"

B **TYPICAL FIRST FLOOR PLAN**
3/16"=1'-0"



A **TYPICAL STAIR SECTION**
1/2"=1'-0"

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THE RESERVES AT GRAND VIEW HEIGHTS

NEW APARTMENT COMPLEX

LARAMIE, WYOMING

LICENSED ARCHITECT MARGARET J. GILLAM C-3466 STATE OF WYOMING

REVISION:	
1	9-27-2024
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JOB:	22-3262
SHEET NO.:	

A6.1

A. DESIGN CRITERIA

1. Design Codes:
   a. City of Laramie Code Administration Division Informational Bulletin #2 /1
   b. International Building Code: IBC 2021
   c. Minimum Design Loads for Buildings and Other Structures: ASCE 7-16
2. Design Loads:
   a. Dead Loads

Floors (Units)	= 25 psf
Interior Partitions	= 15 psf
Floors (Breezeway)	= 30 psf
Roof	= 22 psf

   b. Live Loads (reducible per code UNO)

Residential	= 40 psf
Corridors/Exits	= 100 psf
Mechanical/Storage	= 125 psf (non-reducible)
Typical Roof	= 20 psf

   c. Roof Snow Load

Ground Snow Load (p_g)	= 30 psf (Per City Bulletin #2)
Flat Roof Snow Load (p_f)	= 30 psf (Per City Bulletin #2)
Snow Exposure Factor (C_e)	= 0.9
Snow Load Importance (I_s)	= 1.0
Thermal Factor (C_t)	= 1.0
Slope Factor (C_s)	= 1.0
Unbalanced Loads for Hip & Gable Roofs	
Windward Snow Load	= 5.7 psf
Leeward Snow load from ridge to 7.61'	= 40.2 psf
Leeward Snow load from 7.61' to eave	= 18.9 psf

   d. Wind Load

Basic Design Wind Speed, V	= 115 mph (3 sec. Gust) (Per City Bulletin #2)
ASD Wind Speed, V_{asd}	= 89.1 mph
Risk Category	= II
Wind Exposure	= C
Internal pressure Coefficient (GC_{pi})	= ±0.18

Components and Cladding (psf):

Zone	A=10ft²	A=50 ft²	A=100 ft²
1	+26/-47	+18/-35	+16/-29
2	+26/-65	+18/-49	+16/-42
3	+26/-65	+18/-49	+16/-42
4	+35/-38	+32/-35	+30/-33
5	+35/-47	+32/-40	+30/-37

Notes:
1. A is the Effective Wind Area as defined in ASCE 7 Ch. 26.
2. Linear interpolation between tabulated values is permitted.
3. Elements with Tributary Area (A_t) > 700 ft² shall be permitted to be designed using provisions for MWFRS.

   e. Earthquake Load

Risk Category	= II
Seismic Importance Factor (I_e)	= 1.0
S_S = 0.252g S_1 = 0.063g	
Soil Site Class:	D (Per Geotechnical Report)
S_{DS} = 0.268 S_{D1} = 0.101	
Seismic Design Category	B
Basic Seismic Force Resisting System(s)	
Light-Frame Walls with shear panels – all other materials (ASCE 7 Table 12.2-1 Line A.17)	
R = 2.0 C_s = 0.134 (Controls Design)	
Light-Frame Wood Walls with structural wood shear panels (ASCE 7 Table 12.2-1 Line A.15)	
R = 6.5 C_s = 0.041	
Design Base Shear, V= C_s x W	= 314 kips
Analysis Procedure	= Equivalent Lateral Force Procedure (ASCE 7-16 Chapter 12.8)

   f. Rain Load

Rain Intensity (i)	= 1.8 in/hr (Per City Bulletin #2)

3. Allowable Deflections:

	Total Load	Live/Snow/Wind Load	Absolute Maximum
Floor Joists/Trusses	L/360	L/480	1"
Roof Joists/Trusses	L/240	L/360	1.5"
Wall Framing (flexible finish)		L/240	0.75"
Wall Framing (brittle/brick finish)		L/360	0.5"

   Cantilever deflection limits are the more restrictive of 2 x the appropriate L/--- limit (e.g. 2L/360 = L/180) or absolute maximum value listed above, measured at the tip of the cantilever U.N.O.
4. Soil Properties:
   a. Soil properties are based on the project geotechnical report entitled Grand View Property Geotechnical Engineering Report, prepared by Terracon on June 10, 2024 (herein known as "Geotechnical Report").
   b. Allowable Soil Bearing Pressure = 2500 psf (Strip Footing)
      = 4000 psf (Square Footings)
   c. Frost Depth = 42" (per City Bulletin #2) /1

B. STRUCTURAL ENGINEERING DESIGN NARRATIVE

1. McClure Engineering Company (McClure, MEC) is the Structural Engineer of Record (EOR) responsible for the documentation of structural design criteria, strength and stability of the primary vertical and lateral load-carrying systems in their completed form, and conformance of the structural design to the applicable building codes. These drawings produced by McClure convey the structural engineering design for the project, which includes the following components and systems:
   a. Foundations consisting of strip footings and isolated column footings.
   b. Slabs on grade.
   c. Residential tower framing above the slab on grade consisting of:
      i. Load-bearing wood wall and opening framing.
      ii. Gypcrete over wood T&G Sheathing over wood joists, floor and roof trusses.
   d. The lateral force resisting system of the structure consisting of sheathed gypsum and wood shear walls and wood sheathed diaphragms.
2. The following items are Deferred Submittals. Framing intent and additional requirements for these structural components are provided within these drawings*:
   a. Structural steel stair framing and connections – see general notes section "Structural Steel" | see S002 for applicable design criteria
   b. Wood Floor & Roof Trusses* – see general notes section "Wood Framing and Fastening" | see S002 for applicable design criteria.
   c. Connections of Wood Trusses to the supporting structure*

   * Reference section "D. Submittal Requirements." Coordinate requirements of these drawings with those of other design consultant drawings and the Project Specifications.
3. The following items are specifically excluded from McClure's design scope as represented on these drawings:
   a. Requirements for fire rating of assemblies or fire protection of structural members
   b. Global stability of soil mass
   c. Any exterior slabs, bollards, curbs, and any enclosures not shown on these drawings
   d. Interior non-load-bearing wood wall or ceiling framing
   e. Shoring design, formwork design, temporary bracing, and other means and methods items

C. GENERAL NOTES

1. All construction shall conform to the Design Codes in Section "A. Design Criteria," including all applicable standards and documents referenced within those codes.
2. Plan and detail notes provided on specific sheets within these drawings supplement information in these General Notes. Always coordinate the requirements of these notes with what is shown within the drawings.
3. Unless noted specifically on a plan, all floor plans show framing for the floor indicated and vertical framing (walls, openings, posts, columns) above that floor.
4. Contract Document Coordination:
   a. The drawings contained herein are intended to be utilized in conjunction with other design consultant's drawings (architectural, civil, mechanical, etc.). It is the responsibility of the Contractor to coordinate the requirements of the drawings into their shop drawings and construction.
   b. Refer to the architectural, mechanical, electrical, and civil drawings for location and size of block outs, inserts, openings, curbs, bases & pads, and dimensions not shown on these drawings.
   c. Refer to the architectural drawings for size and location of doors and window openings, exterior wall assemblies, and floor, wall, and roof finishes. Refer to the mechanical and electrical drawings for additional information including locations of mechanical units, generators, etc.
   d. Omissions or conflicts between various elements of the drawings, notes and details shall be brought to the attention of the engineer and resolved before proceeding with the work.
5. Use of Drawings in Construction:
   a. The Contractor shall verify all dimensions and conditions at the job site before commencing work and shall report any discrepancies to the engineer responsible for the design of that work.
   b. Do not use scaled dimensions; use written dimensions or, where no dimension is provided, consult the engineer for clarification before proceeding with the work.
   c. Details and keynotes shown shall be incorporated into the project at all appropriate locations, whether or not they are specifically referenced on the drawings.
   d. McClure may provide the contractor with electronic files for their convenience and use in the preparation of shop drawings. These electronic files are not construction documents; the contractor is not relieved of his/her duty to fully comply with the contract documents, including the need to confirm and coordinate all dimensions and details, take field measurements, verify field conditions, and coordinate the contractor's work with that of other contractors for the project.
6. Changes During Construction:
   a. Openings shall not be cut or otherwise made in any structural member unless that opening is specifically shown on these drawings. The Contractor shall seek approval in writing from the engineer for any design incorporating additional openings.
   b. Support details shown for Architectural, Mechanical, Electrical, and Plumbing equipment as well as elevators is based upon available information from the manufacturer (if any). The Contractor shall coordinate requirements of actual equipment supplied with details and shall provide any additional framing required.
   c. The Contractor has the responsibility to notify the engineer of any architectural, mechanical, electrical, or plumbing load imposed on the structure that is not documented on the Contract Documents or differs from what is originally shown. Provide documentation of location, load, size, and anchorage of all undocumented loads in excess of 250 lbs.
7. Construction Sequence and Methods:
   a. These drawings and the related Specifications represent the finished structure and, except where specifically shown, do not indicate the method or means of construction. Loads on the structure during construction shall not exceed the design loads indicated in Section "A. Design Criteria" as a maximum. The Contractor shall supervise and direct the work and shall be solely responsible for all construction means, methods, procedures, techniques, and sequence.
   b. The Contractor is responsible for compliance with all applicable job-related safety standards proceeding from governing organizations (e.g. OSHA).
   c. It is the responsibility of the Contractor to ensure the stability of the structural elements during construction as a result of means and sequence by providing shoring, bracing, etc. as required.
      i. Stability considerations should include all applicable temporary construction and environmental loads per ASCE 37 which may include wind and seismic forces.
      ii. Temporary bracing shall remain in place until positive connection is made between the braced element and the floor/roof diaphragm or foundation above and below, and those diaphragms in turn are structurally complete and connected to the vertical elements of the lateral force resisting system. This is a means and methods item.
      iii. The Contractor may at their discretion employ a Specialty Structural Engineer, licensed in the state where the project is located, for the design of any temporary bracing, lifting, rigging, and shoring. Any sealed drawings, calculations, reports, etc. prepared for construction stability shall be submitted to the engineer for review.
   d. The Contractor shall consider the effects of thermal movements due to hot or cold weather construction and the potential for extreme temperature variations before the structure is complete.
   e. The Contractor is responsible for the protection and repair of any adjacent existing structures, surfaces, and areas which may be damaged as a result of the work.

D. SUBMITTAL REQUIREMENTS

1. Submittal Procedures:
   a. The Contractor shall provide all submittals in PDF format unless otherwise requested or indicated in the Project Specifications.
   b. All submittals must be reviewed by the Contractor prior to McClure's review. The Contractor is responsible for reviewing each submittal for basic coordination with these drawings and to verify that all the required components of the submittal are incorporated. The submittal must bear the electronic review stamp of the Contractor before McClure will proceed with the review.
   c. Incomplete submittals or submittals not meeting the requirements of this section will not be reviewed. McClure will notify the contractor that the submittal is incomplete or unacceptable and that resubmission is required.
      i. Submittals requiring engineering calculations for all or a portion of the work are considered incomplete without the sealed calculations and will not be reviewed.
      ii. Shop Drawings shall be original drawings. Submissions incorporating any portion or reproduction of the contract documents will not be reviewed.
      iii. Deferred Submittals not meeting the seal requirements of section D.2.b are considered incomplete and will not be reviewed.
      iv. Resubmittals with comments from a previous review left unaddressed or without any response will not be reviewed.
   d. Allow two weeks for review of all submittals unless an agreement for expedited review is made in writing by McClure.
   e. McClure's submittal review scope of work includes a single submittal review and one review of the revised submittal if required (two reviews total of the same submittal). Time required for more than two reviews of a submittal is considered an additional service and will be billed hourly. McClure reserves the right to withhold review of a submittal surpassing this allowance until proper billing to the responsible party can be established.
   f. Submittals must be returned to the Contractor by McCure bearing a stamp marked "Reviewed No Exception Taken" or "Reviewed With Comments/Exceptions" prior to proceeding with the work. Submittals marked "Reject/Resubmit" must be revised according to the comments provided prior to commencing with the respective scope of work.
2. Deferred Submittals:
   a. See Section "B. Structural Engineering Design Narrative" for the list of items considered Deferred Submittals.
   b. Deferred Submittals shall bear the seal of a professional engineer licensed in the state where the project is located. If the project requires a licensed Structural Engineer (S.E.) as the Engineer of Record according to state laws, the same qualification level applies to the engineer sealing the Deferred Submittals.
   c. Deferred Submittal items shall not be installed until the Deferred Submittal documents have been approved by the Building Official.
3. Submittal List:
   a. Submittals (product data, test records, shop drawings, and/or calculations) are required for the following:

Submittal Name	Items Required:				
	Product Data	Shop Drawings	Test Records	Engineering Drawings	Engineering Calculations
1. Concrete Mix Designs	X		X		
2. Concrete Break Reports			X		
3. Concrete Reinforcing Layout		X			
4. Concrete Anchor Bolts & Embedded Plates	X	X			
5. Concrete Anchors (Post-Installed)	X				
6. Post-Installed Anchor Substitutions (If used)	X				X
7. Post-Installed Connection Geometry Alteration (If used)	X			X	X
8. Steel Stair Framing incl. Connections to Supports				X	X
9. Wood Framing Materials	X				
10. Wood Floor & Roof Trusses incl. Reactions				X	
11. Wood Truss Connections to Supporting Structure				X	X
12. Specialty Wood Fasteners	X				
13. All Cladding Systems & Attachments as Identified in the Architectural Drawings (If used)	X			X	X

   b. "Product Data" may indicate mill certifications, material data sheets, Evaluation Service Reports (ESRs), etc. See requirements of each material section of the general notes for further information.
   c. Where "Engineering Drawings" and/or "Engineering Calculations" are indicated, the submittal must comply with the requirements of item "2. Deferred Submittals" above.
4. Submittals For Record:
   a. The following items impact the structural design and therefore must be submitted to the engineer; however, they do not require review. They will be returned stamped as "Received For Record".
      i. Mechanical Equipment Shop Drawings with Weight
      ii. Brick & Stone Veneer with Weight

E. CONCRETE

1. Reinforced concrete shall have the following minimum 28 day compressive strengths:
   a. Slab on grade, unless noted otherwise 4000 psi normal weight
   b. Foundations 5000 psi normal weight
2. All concrete exposed to weather shall have 6% (+- 1%) air entrainment.
3. Submit mix designs for all concrete mixes prior to placement. All submittals shall include the following:
   a. Batch quantities including admixture dosage rates.
   b. Strength test results for trial mixes.
   c. Aggregate source(s) and gradation(s).
   d. Product data for cement, fly ash and other cementitious materials.
   e. Product data for all admixtures.
4. Provide protection for reinforcing bars as follows:
   a. Concrete cast against and permanently exposed to earth 3"
   b. Concrete exposed to earth and weather (formed)
      i. #5 and smaller 1-1/2"
      ii. #6 and larger 2"
   c. Concrete not exposed to weather and not in contact with ground:
      i. Slabs and walls 3/4"
      ii. Beams and columns 1-1/2"
5. Interface of all slab and foundation construction joints shall be roughened with 1/4" amplitude. Surface of construction joints shall be clean and free of laitance. Immediately before new concrete is placed, construction joints shall be wetted and standing water removed.
6. Construction joints in walls shall be keyed and placed at locations approved by the Architect and Structural Engineer.
7. Provide PVC waterstops in all below grade construction joints and at other locations as shown.
8. Provide compressible filler and sealant in all slab-on-grade and wall and column interfaces that are not doweled together.
9. All column pockets shall be filled with concrete after column is erected.
10. Sleeves and openings in slabs not shown on structural drawings or outside the parameters of typical sleeve details are not permitted, unless approved by the Structural Engineer.
11. Conduit and pipes embedded in slabs, walls, or grade beams shall be no larger in outside dimension than 1/3 the overall member thickness and shall be placed no closer than 3 diameters or widths on center.
12. Conduits and pipes shall not be permitted in concrete pilasters or columns.
13. Provide concrete housekeeping pads under all mechanical, plumbing, fire protection, and electrical equipment per plans. Pads shall extend beyond equipment a nominal 6" on all sides. Apply a bonding agent to existing concrete slab prior to pouring of housekeeping pad. Provide reinforcing per details.
14. At floor drains, locally slope floor towards drain. See architectural and plumbing drawings for drain locations.
15. Foundation walls shall be temporarily braced until positive attachment is made to floor framing per details. This is a means and methods item.

Slab on Grade

1. Slab shall be constructed as shown on plans.
2. Slab-on-grade shall be founded on 6" deep ¾" clean aggregate base.
3. The existing fill shall be removed a minimum of 18" below slabs on grade and footings. The Geotechnical Report notes that it may be necessary to remove and replace up to 6ft of existing fill, consult the on-site geotechnical representative. Refer to the geotechnical report for risk assessment and verify with ownership what direction shall be taken. At a minimum, per the geotechnical report, the existing fill shall be removed and filled with 12" engineered fill consisting of low volume change material such as rollstone or wastelime. Granular fill shall be compacted to a minimum of 98% of the ASTM D698 maximum dry Standard Proctor density. The 6" aggregate base shall not be included in the 12" depth required for the low volume change layer.
4. Provide joints at 30 x slab thickness (+-) in both directions and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays, etc.). Submit control joint layout to Architect for any exposed concrete surface.
5. Saw cut control joints shall be done late enough to prevent raveling of the cut edges and early enough to prevent cracking of the slab ahead of the saw blade.
6. Concrete slab to be cured according to ACI Standards. Concrete slab cure to be compatible with any sealer, grout, or adhesive that may be used on the floor later.
7. At floor drains, locally slope floor towards drain. See architectural and plumbing drawings for drain locations.

/1
Subsurface Requirements

1. Foundation design is based on geotechnical report by Terracon, dated June 10, 2024.
2. A geotechnical representative shall be retained on site for all construction activity to verify that all proper requirements have been met to meet the design requirements outlined in the geotechnical report. Representative shall be Terracon or someone familiar with all documents of the geotechnical investigation provided for the project.
3. The Contractor shall provide dewatering of excavations from surface water and ground water. Do not place concrete if water is present at base of excavation.
4. Geotechnical Testing Agency Requirements
   a. If the geotechnical representative on site takes exception to anything in the Geotechnical Report and requires additional field investigation to clarify those expectations, the cost of such investigation shall be included in the additional fee for field quality control and testing and identified as such. All other exceptions, the cost of such investigation shall be included in the additional fee for field quality control and testing and identified as such. All other exceptions shall be documented and approved by the geotechnical engineer.
   b. The geotechnical representative must have read all documents pertaining to the geotechnical report for the project and understood and accepted the criteria contained in the report.
   c. The geotechnical representative must understand and be able to make decisions affecting the work for field observations and conditions described in the report during construction. The representative must be capable of advising the owner or contractor for procedures regarding, but not limited to: sub-grade preparation, dewatering activities, and other construction considerations.

F. REINFORCING FOR CONCRETE

1. General
   a. All reinforcing steel to be ASTM A615, Grade 60, deformed bars, unless noted otherwise.
      i. Any reinforcing to be welded shall be ASTM A706 and welded with E80 electrodes.
      ii. Alternatively, ASTM A615 reinforcing may be welded with E90 electrodes and proper preheat according to AWS D1.4.
      iii. E70 electrodes are not permitted for welding rebar.
   b. Welded wire fabric shall be plain wire conforming to ASTM A1064. Welded wire fabric shall be in flat sheets.
   c. All reinforcing bars to be detailed and placed in accordance with the ACI "Manual of Standard Practice for Detailing Reinforced Concrete Structures" specifications.
   d. All reinforcing, including dowels, shall be securely tied and cast with the lower member. Placing reinforcing after concrete has been placed will not be permitted.
   e. Field bending of reinforcing partially embedded in concrete will not be allowed unless specifically noted on the drawings or approved by the Structural Engineer.
   f. All reinforcing bars shall be contact lap spliced or doweled as follows, unless noted otherwise:

Tension Development and Splice Lengths for f'_c = 4,000psi

Bar Size	Development Top Bar	Development Other Bar	Class "B" Splice Top Bar	Class "B" Splice Other Bar	Standard 90 deg. Hook Embed	Standard 90 deg. Hook Leg Length	Standard 90 deg. Hook Bend Dia.
#3	19	15	24	19	6	6	2-1/4
#4	25	19	32	25	7	8	3
#5	31	24	40	31	9	10	3-3/4
#6	37	29	48	37	10	12	4-1/2
#7	54	42	70	54	12	14	5-1/4
#8	62	48	80	62	14	16	6
#9	70	54	91	70	15	19	9-1/2
#10	79	61	102	79	17	22	10-3/4

1. Straight development and Class "B" splice lengths shown in above tables are based on uncoated bars assuming center-to-center bar spacing ≥ 3"d_b without ties or stirrups or ≥ 2"d_b with ties or stirrups, and bar clear cover ≥ 1.0"d_b. Normal weight concrete as well as no transverse reinforcing are both assumed.
2. Standard 90 deg. hook embedment lengths are based on bar side cover ≥ 2.5" and bar end cover ≥ 2" without ties around hook.
3. For special seismic considerations, refer to ACI 318 Code Chapter 21.
4. All tension splices shall be Class "B" splices unless noted otherwise on plans.

Tension Development and Splice Lengths for f'_c = 5,000psi

Bar Size	Development Top Bar	Development Other Bar	Class "B" Splice Top Bar	Class "B" Splice Other Bar	Standard 90 deg. Hook Embed	Standard 90 deg. Hook Leg Length	Standard 90 deg. Hook Bend Dia.
#3	17	13	22	17	6	6	2-1/4
#4	22	17	29	22	6	8	3
#5	28	22	36	28	8	10	3-3/4
#6	33	26	43	33	9	12	4-1/2
#7	49	37	63	49	11	14	5-1/4
#8	55	43	72	55	12	16	6
#9	63	48	81	63	14	19	9-1/2
#10	70	54	91	70	15	22	10-3/4

1. Straight development and Class "B" splice lengths shown in above tables are based on uncoated bars assuming center-to-center bar spacing ≥ 3"d_b without ties or stirrups or ≥ 2"d_b with ties or stirrups, and bar clear cover ≥ 1.0"d_b. Normal weight concrete as well as no transverse reinforcing are both assumed.
2. Standard 90 deg. hook embedment lengths are based on bar side cover ≥ 2.5" and bar end cover ≥ 2" without ties around hook.
5. For special seismic considerations, refer to ACI 318 Code Chapter 21.
3. All tension splices shall be Class "B" splices unless noted otherwise on plans.

   g. All welded wire fabric shall be lapped 12" or 48 wire diameters, whichever is greater.
   h. Provide (2) #5 x 6'-0" diagonals at all corners of openings and re-entrant corners, unless noted otherwise.
   i. Dowels between foundation and walls shall be installed and shall be the same grade, size, and spacing as the vertical wall reinforcing, unless noted otherwise.
   j. Provide corner bars to match longitudinal reinforcing in all footings. Provide (2) corner bars at tee intersections.
   k. Provide 200 pounds of miscellaneous straight bar reinforcing (#4 & #5) to be used in field for special conditions. Labor for placing same to be included.
2. Slabs and Slabs-on-Grade
   a. All slabs on grade to be reinforced with 6x6 – W2.9xW2.9 welded wire fabric, unless noted otherwise.

McCLURE™
2001 W Broadway
Columbia, MO 65203
P 573-814-1568

WYOMING CERTIFICATE OF AUTHORITY NO. E-1790
EXPIRES: DECEMBER 31, 2025

Professional Engineer
MARCUS HIMMELBERG
17369
9-27-2024
WYOMING

MARCUS HIMMELBERG
17369
12/31/2024

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WYOMING.

No.	Description	Date
1	ASI #1	09/27/2024

PROJECT NUMBER 2024000185
SET ISSUE DATE 07/17/2024
ENGINEER MDH
DRAWN BY CEL
CHECKED BY IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY

GENERAL NOTES

DRAWING NO.
S001

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt

WOOD WALL SCHEDULE				
Wood Wall Location	Wall Stud Size, number of plys, and spacing			Sheathing & Fastening U.N.O. (See Note 5)
	Level 1	Level 2	Level 3	
Exterior & Breezeway Walls	(1) 2x6 @ 24" o.c.	(1) 2x6 @ 24" o.c.	(1) 2x6 @ 24" o.c.	15/32" Structural wood sheathing fastened w/ 10d nails. 6" o.c. edge fastening, 12" o.c. field fastening
Interior Unit Walls (indicated)	(2) 2x4 @ 12" o.c.	(1) 2x4 @ 12" o.c.	(1) 2x4 @ 16" o.c.	5/8" Gypsum wallboard fastened w/ 1 5/8" Type W screws. 7" o.c. edge fastening, 7" o.c. field fastening
Unit Separation Walls	(1) 2x4 @ 16" o.c.	(1) 2x4 @ 16" o.c.	(1) 2x4 @ 16" o.c.	5/8" Gypsum wallboard fastened w/ 1 5/8" Type W screws. 7" o.c. edge fastening, 7" o.c. field fastening

Notes:
1. Wall stud spacing is to be per schedule unless noted otherwise.
2. Bottom sill plates at foundation to be fastened w/ 3/8"Ø x 6" Hilti Kwik HUS-EZ Bolts @ 48" o.c. U.N.O.
3. Bottom sill plate connections shall have a 3"x3" steel plate washer at each anchor bolt on shear walls only.
4. Sill and top plates at all other levels to be fastened w/ (2) 16d nails @ 16" o.c. U.N.O.
5. Shear walls shall be sheathed & fastened per shear wall schedule
6. Non-load bearing walls not shown, refer to architectural drawings.
7. All top plates are to be continuous. Splice per 4/S500
8. U.N.O. bottom sill plates shall be (1) 2x member matching wall thickness, and top plates shall be (2) 2x members.

TYPICAL WALL HEADER SCHEDULE (STACKED OPENINGS)													
Opening Mark	Max. Span (ft-in)	Header				Kings & Jacks						Sills*
		Level 1	Level 2	Level 3	Header Plates* (All Levels)	Level 1		Level 2		Level 3		All Levels (if applicable)
						Kings	Jacks	Kings	Jacks	Kings	Jacks	
H1	4'-2"	(2) 2x10	(2) 2x10	(2) 2x8	---	(3) 2x4	(1) 2x4	(2) 2x4	(1) 2x4	(1) 2x4	(1) 2x4	(1) 2x4
H2	3'-4"	(2) 2x8	(2) 2x8	(2) 2x8	---	(2) 2x6	(1) 2x6	(2) 2x6	(1) 2x6	(2) 2x6	(1) 2x6	(1) 2x6
H3	6'-4"	(2) LVL 1-3/4 x 11-7/8	(2) LVL 1-3/4 x 11-7/8	(3) 2x10	(1) 2x6 T&B	(2) 2x6	(1) 2x6	(2) 2x6	(1) 2x6	(2) 2x6	(1) 2x6	(1) 2x6
H4	9'-8"	(3) LVL 1-3/4 x 11-7/8	---	---	(1) 2x6 T&B	(2) 2x6	(1) 2x6	---	---	---	---	(2) 2x6
H5	6'-4"	---	(3) 2x10	(3) 2x10	(1) 2x6 T&B	(2) 2x6	(1) 2x6	(1) 2x6	(1) 2x6	(1) 2x6	(1) 2x6	(1) 2x6
H6	6'-4"	(3) 2x10	(3) 2x10	(3) 2x12	(1) 2x6 T&B	(2) 2x6	(2) 2x6	(1) 2x6	(2) 2x6	(1) 2x6	(2) 2x6	(1) 2x6

1 H = An opening which requires a header

Notes:
1. See S500 for typical opening framing.
2. All openings should stack according to the plans.
3. Coordinate all dimensions and elevations with architectural drawings.
4. Cripple studs should match the adjacent wall framing.
5. * Header top and bottom plates and sills should match the wall stud depths.
6. All LVL shall be stress class 2.0E-2500F

WOOD COLUMN SCHEDULE			
Mark	Level 1	Level 2	Level 3
C1	(3) 2x6	(3) 2x6	(3) 2x6
C2	(4) 2x4	(3) 2x4	(3) 2x4

Notes:
1. All exterior columns are to be pressure treated

WOOD BEAM SCHEDULE			
Mark	Max. Span (ft-in)	Beam Size	Hanger
B1	8'-6"	(2) 2x12	Simpson U210-2
B2	16'-3"	(2) 1-3/4"x11-1/4" LVL	Simpson HU212-2
B3	8'-6"	(2) 1-3/4"x11-1/4" LVL	Simpson HGUS410
B4	4'-2"	(2) 2x10	Simpson HUCQ210-2-SDS
B6	8'-6"	(3) 2x12	Simpson HUCQ210-3-SDS

Notes:
1. All exterior beams are to be pressure treated.
2. All LVL shall be stress class 2.0E-2500F
3. Hangers to be installed with typical fasteners per manufacturer product data

FLOOR AND ROOF SCHEDULE				
Type	Membrane/Sheathing	Fastening	Concrete/Topping	Reinforcing
Slab on Grade	12mil Vapor Retarder	Taped Edges	4" NW Concrete U.N.O.	See General Notes
Breezeway Floor	3/4" Plywood	10d @ 6/12	1 1/2" Gypcrete Toping	See General Notes
Interior Floors	3/4" Plywood	10d @ 6/12	3/4" Gypcrete Topping	---
Roof	15/32" Plywood	10d @ 6/12 UNO	---	---

Notes:
1. Vapor barrier to be placed over compacted fill per general notes.
2. Plywood sheathing to be fastened per detail 2/S500
3. Floor/Roof diaphragm are unblocked unless noted otherwise on plan.
4. Plywood to be Structural Grade 1 Material
5. See architectural drawings for full floor and roof assemblies including nonstructural elements.

JOIST & HANGER SCHEDULE		
Mark	Joist Size	Hanger
J1	2x12	Simpson LUS28

Notes:
1. Hangers to be installed with typical fasteners per manufacturer product data
2. All exterior members are to be pressure treated

WOOD SHEAR WALL SCHEDULE						
Mark	Level	Sheathing/ Fastener Layout	Post	Hold-Down	Min. Sill/Top Plate	Base Connection
SW1	Level 3	(1) Sided, Wood Structural Panels - S1 - 15/32" Thick, 10d Nail, 6" Edge fastening Unblocked	(2) 2x6	MSTA 49 w/ (26) 0.148X2-1/2" nails	(1) 2x6	(2) 16d nails @ 12" o.c.
	Level 2	(1) Sided, Wood Structural Panels - S1 - 15/32" Thick, 10d Nail, 4" Edge fastening	(2) 2x6	MST48 w/ (34) 0.162x2-1/2" nails	(1) 2x6	(2) 16d nails @ 6" o.c.
	Level 1	(1) Sided, Wood Structural Panels - S1 - 15/32" Thick, 10d Nail, 3" Edge fastening	(2) 2x6	HTT4 w/ (18) SD #10x1-1/2 & 5/8"Ø Anchor Rod	(1) 2x6	(1) HILTI KH-EZ 3/8"Øx 6" @ 12" o.c.
SW2	Level 3	(1) Sided, Gypsum Wallboard - 1/2" Thick, 5d Nail, 7" Edge Fastening, 16" O.C.	(2) 2x4	LSTA9 w/ (8) 0.148"x2-1/2" nails	(1) 2x4	(2) 16d nails @ 16" o.c.
	Level 2	(1) Sided, Wood Structural Panels - S1 - 15/32" Thick, 10d Nail, 6" Edge fastening	(2) 2x4	MSTA 49 w/ (26) 0.148X2-1/2" nails	(1) 2x4	(2) 16d nails @ 12" o.c.
	Level 1	(1) Sided, Wood Structural Panels - S1 - 15/32" Thick, 10d Nail, 6" Edge fastening	(3) 2x4	HTT4 w/ (18) SD #10x1-1/2 & 5/8"Ø Anchor Rod	(1) 2x4	(1) HILTI KH-EZ 3/8"Øx 6" @ 24" o.c.
SW3	Level 3	(1) Sided, Wood Structural Panels - S1 - 15/32" Thick, 10d Nail, 6" Edge fastening	(2) 2x6	MSTA 49 w/ (26) 0.148X2-1/2" nails	(1) 2x6	(2) 16d nails @ 12" o.c.
	Level 2	(1) Sided, Wood Structural Panels - S1 - 15/32" Thick, 10d Nail, 3" Edge fastening	(2) 2x6	MST60 w/ (46) 0.162x2-1/2" nails	(1) 2x6	(2) 16d nails @ 4" o.c.
	Level 1	(1) Sided, Wood Structural Panels - S1 - 15/32" Thick, 10d Nail, 2" Edge fastening	(2) 2x6	HDU8-SDS2.5 w/ (20) 1/4"Øx2-1/2"SDS Screws & 7/8"Ø Anchor Rod	(1) 2x6	(1) HILTI KH-EZ 3/8"Øx 6" @ 8" o.c.

Notes:
1. See S530 for typical shear wall framing
2. All threaded rods shall be F1554 GR105
3. Floor to floor strap ties at top of wall shall match that of the floor above.
4. All hold downs and strap ties are Simpson Strong-Tie brand, U.N.O.
5. Bottom sill plate connections shall have a 3"x3"x1/4" steel plate washer at each anchor bolt on shear walls only.
6. All drag trusses shall be connected to shear walls per detail 4/S530.
7. Provide floor to floor strapping on the same side as the OSB sheathing.
8. Field fastening for all sheathing to be 12" O.C. U.N.O
9. All shear walls to be blocked at all panel joints unless noted "Unblocked."

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WYOMING CERTIFICATE OF AUTHORITY
NO. E-1790
EXPIRES: DECEMBER 31, 2025

Professional Engineer
MARCUS HIMMELBERG
17369
9-27-2024
WYOMING

MARCUS HIMMELBERG
17369
12/31/2024

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WYOMING.

No.	Description	Date
1	ASI #1	09/27/2024

PROJECT NUMBER 2024000185
SET ISSUE DATE 07/17/2024
ENGINEER MDH
DRAWN BY CEL
CHECKED BY IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY
SCHEDULES

DRAWING NO.
S004

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt

FRAMING PLAN LEGEND:

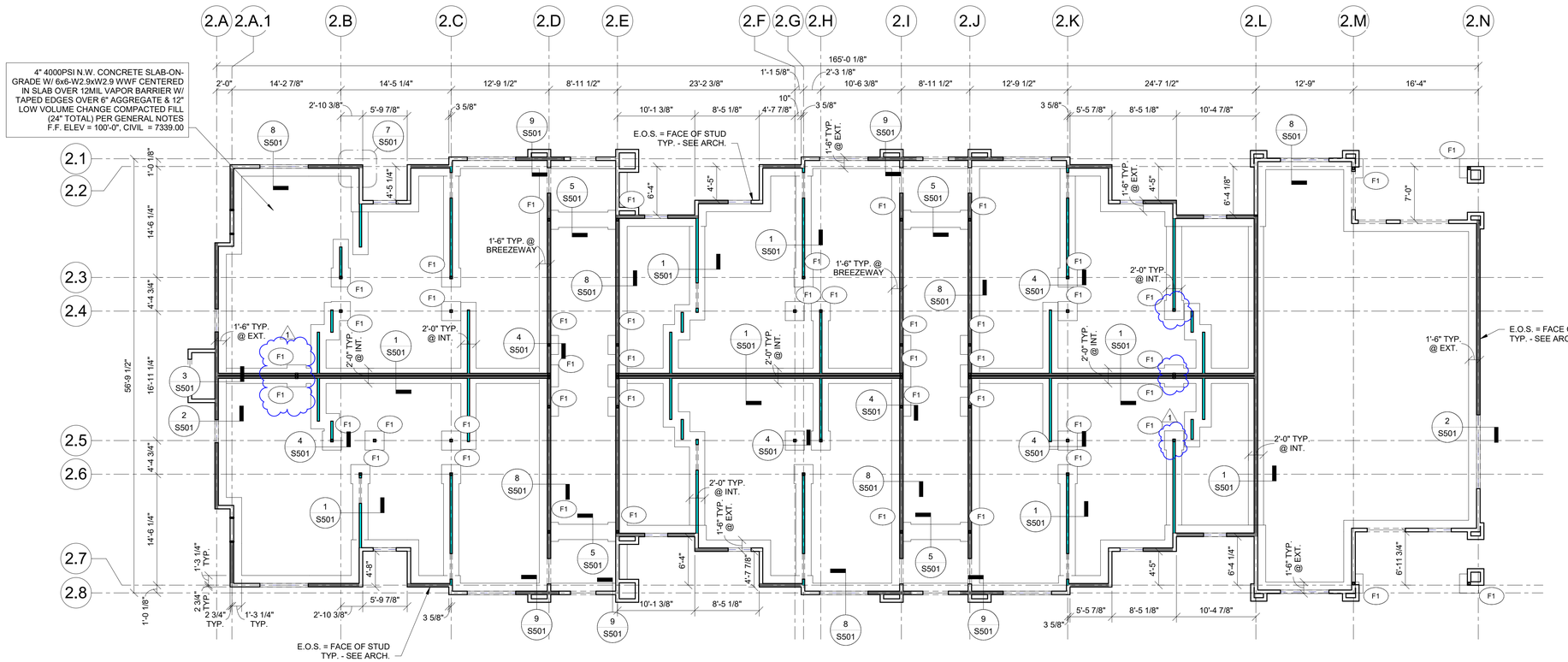
- (H?#) HEADER/OPENING PER OPENING SCHEDULE
- (SW?) SHEAR WALL TYPE, SHEAR WALL INDICATED BY
- (F?) INDICATES FOOTING TYPE
- C# INDICATES COLUMN TYPE
- B# INDICATES BEAM TYPE
- P* JAMB FROM OPENING ABOVE
- BREEZEWAY SHEATHING ELEVATION VARIES FROM TYP. SEE ARCH. & SCHEDULES
- E.O.S. INDICATES EDGE OF CONCRETE SLAB

FOUNDATION PLAN NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR SITE PLAN BENCHMARK ELEVATION. FOR REFERENCE ELEVATIONS, SEE BELOW (VERIFY ALL ELEVATIONS AND DIMENSIONS WITH ARCHITECTURAL DRAWINGS)
   - T.O. SLABE-ON-GRADE: 100'-0"
2. PROVIDE CONTROL JOINTS IN SLAB ON GRADE PER DETAIL 5/S501 AND PER GENERAL NOTES.
3. COORDINATE PLUMBING FIXTURES AND FLOOR DRAINS WITH ARCH. & MEP DRAWINGS.
4. ALL EXTERIOR AND INTERIOR LOAD BARING WALLS ARE PER WALL SCHEDULE ON SHEET S003. SEE ARCHITECTURAL FLOOR PLAN FOR NON-BEARING WALL, DOOR, AND WINDOW LOCATIONS.
5. REFER TO MANUFACTURER'S GUIDELINES FOR INSTALLATION OF STRAP TIES, HOLD DOWNS & OTHER CONNECTIONS.
6. SEE SHEET S501 & S502 FOR DETAILS.

FOUNDATION SCHEDULE		
Mark	Size	Reinforcing
F1	2'-6"x2'-6"x1'-0"	(3) #4 BARS Top & Bottom (Each Way)

Notes:
1. All footings must be centered on walls and columns U.N.O.



1 S110 BLDG A - FOUNDATION
1/8" = 1'-0"

N

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17369
9-27-2024
WYOMING

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ENGINEER MDH
DRAWN BY CEL
CHECKED BY IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY

BUILDING A - FOUNDATION

DRAWING NO. S110

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt

FRAMING PLAN LEGEND:

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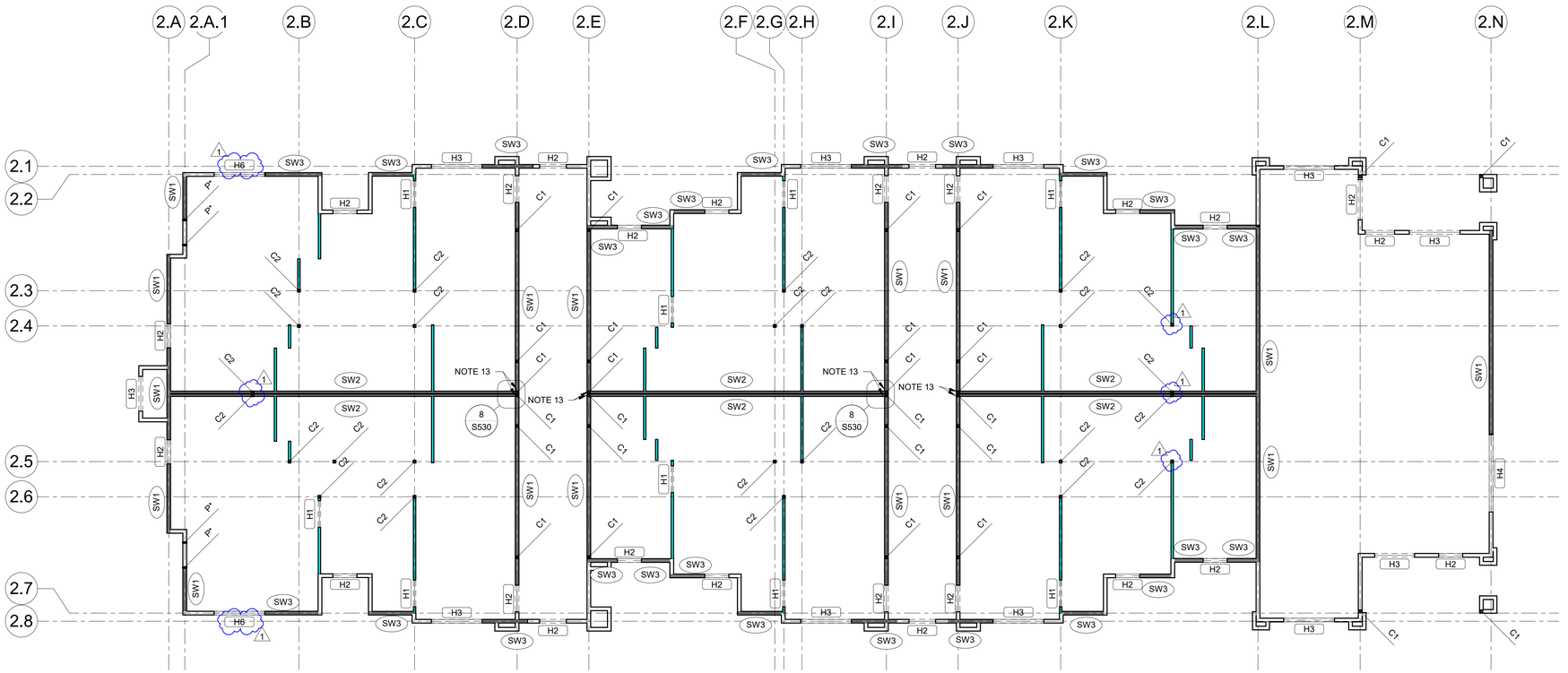
- (SW?) SHEAR WALL TYPE, SHEAR WALL INDICATED BY
- (F?) INDICATES FOOTING TYPE
- C# INDICATES COLUMN TYPE
- B# INDICATES BEAM TYPE
- P* JAMB FROM OPENING ABOVE
- BREEZEWAY SHEATHING ELEVATION VARIES FROM TYP. SEE ARCH. & SCHEDULES
- E.O.S. INDICATES EDGE OF CONCRETE SLAB

PLAN NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR SITE PLAN BENCHMARK ELEVATION. FOR REFERENCE ELEVATIONS, SEE BELOW (VERIFY ALL ELEVATIONS AND DIMENSIONS WITH ARCHITECTURAL DRAWINGS)
   - T.O. SLAB-ON-GRADE: 100'-0"
   - LEVEL 2 F.F. : 110'-5 7/8"
   - LEVEL 3 F.F. : 120'-11 3/4"
   - TRUSS BRG: 130'-0 7/8"
2. FLOOR SHEATHING: 15/32" STRUCTURAL GRADE PLYWOOD. FASTEN TO FRAMING W/ 10d COMMON NAILS SPACED 6" O.C. AT EDGES, 12" O.C. WITHIN FIELD.
3. ROOF SHEATHING: 15/32" STRUCTURAL GRADE PLYWOOD. FASTEN TO FRAMING W/ 10d COMMON NAILS SPACED 6" O.C. AT EDGES, 12" O.C. WITHIN FIELD.
4. COORDINATE PLUMBING FIXTURES, SHAFTS, AND FLOOR DRAINS WITH ARCH. & MEP DRAWINGS.
5. ALL EXTERIOR AND INTERIOR LOAD BEARING WALLS ARE PER WALL SCHEDULE ON SHEET S003. SEE ARCHITECTURAL FLOOR PLAN FOR NON-BEARING WALL, DOOR, AND WINDOW LOCATIONS.
6. FLOOR PLAN SHOWS FRAMING FOR THE FLOOR INDICATED & VERTICAL FRAMING (WALLS, HEADERS, POSTS, COLUMNS) SUPPORTING THAT FLOOR.
7. SEE ARCHITECTURAL DRAWINGS FOR ALL RAILING DETAILS. REFER TO GENERAL NOTES FOR DESIGN CRITERIA.
8. REFER TO MANUFACTURER'S GUIDELINES FOR INSTALLATION OF STRAP TIES, HOLD DOWNS & OTHER CONNECTIONS.
9. ALL EXTERIOR LUMBER (POSTS, BEAMS, DECKING, ETC.) TO BE TREATED.
10. WOOD FLOOR TRUSSES TO BE DESIGNED BY MANUFACTURER AND ARE SHOWN FOR THE INTENT OF SPAN DIRECTION AND LOAD PATH ONLY. REFER TO GENERAL NOTES FOR DESIGN CRITERIA.
11. TRUSS MANUFACTURER TO DESIGN & PROVIDE GIRDER TRUSSES AT ALL FLOOR OPENINGS & SPECIFY HANGERS FOR GIRDERS & SUPPORTED FRAMING.
12. REFER TO ARCHITECTURAL PLANS FOR STAIR DIMENSIONS AND REQUIREMENTS. REFER TO STRUCTURAL GENERAL NOTES FOR STAIR DESIGN CRITERIA.
13. COLUMN FRAMING MAY BE USED IN LIEU OF SHEAR WALL END POST FRAMING AT END OF SHEAR WALLS.



1 S111 BLDG A - FIRST FLOOR FRAMING
1/8" = 1'-0"

N

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9-27-2024
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CHECKED BY IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY
BUILDING A - LEVEL 1

DRAWING NO.
S111

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt

FRAMING PLAN LEGEND:

- (H?#) HEADER/OPENING PER OPENING SCHEDULE
- (SW?) SHEAR WALL TYPE, SHEAR WALL INDICATED BY
- (F?) INDICATES FOOTING TYPE
- C# INDICATES COLUMN TYPE
- B# INDICATES BEAM TYPE
- P* JAMB FROM OPENING ABOVE
- BREEZEWAY SHEATHING ELEVATION VARIES FROM TYP. SEE ARCH. & SCHEDULES
- E.O.S. INDICATES EDGE OF CONCRETE SLAB

PLAN NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR SITE PLAN BENCHMARK ELEVATION. FOR REFERENCE ELEVATIONS, SEE BELOW (VERIFY ALL ELEVATIONS AND DIMENSIONS WITH ARCHITECTURAL DRAWINGS)
   - T.O. SLAB-ON-GRADE: 100'-0"
   - LEVEL 2 F.F. : 110'-5 7/8"
   - LEVEL 3 F.F. : 120'-11 3/4"
   - TRUSS BRG: 130'-0 7/8"
2. FLOOR SHEATHING: 15/32" STRUCTURAL GRADE PLYWOOD. FASTEN TO FRAMING W/ 10d COMMON NAILS SPACED 6" O.C. AT EDGES, 12" O.C. WITHIN FIELD.
3. ROOF SHEATHING: 15/32" STRUCTURAL GRADE PLYWOOD. FASTEN TO FRAMING W/ 10d COMMON NAILS SPACED 6" O.C. AT EDGES, 12" O.C. WITHIN FIELD.
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5. ALL EXTERIOR AND INTERIOR LOAD BEARING WALLS ARE PER WALL SCHEDULE ON SHEET S003. SEE ARCHITECTURAL FLOOR PLAN FOR NON-BEARING WALL, DOOR, AND WINDOW LOCATIONS.
6. FLOOR PLAN SHOWS FRAMING FOR THE FLOOR INDICATED & VERTICAL FRAMING (WALLS, HEADERS, POSTS, COLUMNS) SUPPORTING THAT FLOOR.
7. SEE ARCHITECTURAL DRAWINGS FOR ALL RAILING DETAILS. REFER TO GENERAL NOTES FOR DESIGN CRITERIA.
8. REFER TO MANUFACTURER'S GUIDELINES FOR INSTALLATION OF STRAP TIES, HOLD DOWNS & OTHER CONNECTIONS.
9. ALL EXTERIOR LUMBER (POSTS, BEAMS, DECKING, ETC.) TO BE TREATED.
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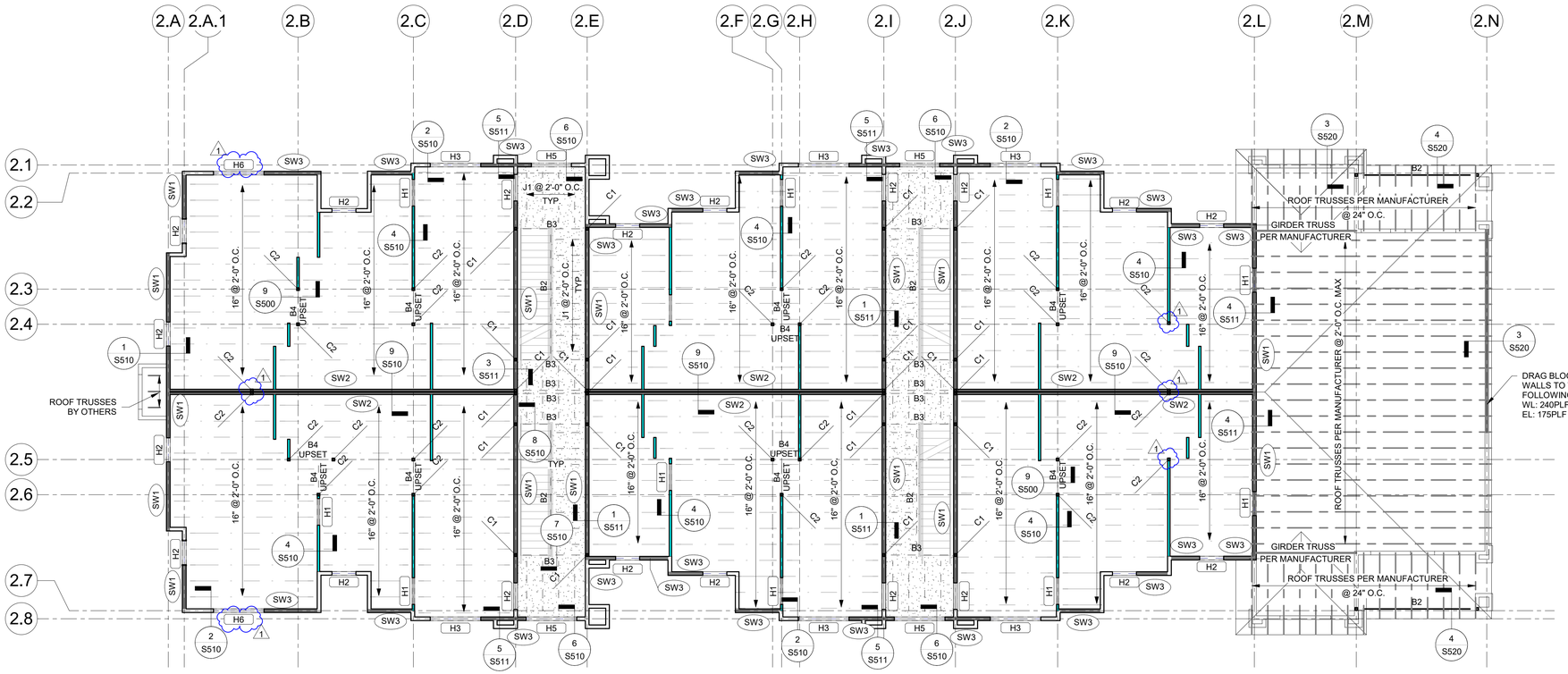
13. COLUMN FRAMING MAY BE USED IN LIEU OF SHEAR WALL END POST FRAMING AT END OF SHEAR WALLS.



1 S112 BLDG A - SECOND & THIRD FLOOR FRAMING
1/8" = 1'-0"

N

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9-27-2024
WYOMING

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ENGINEER MDH
DRAWN BY CEL
CHECKED BY IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY
BUILDING A - LEVEL 2 & 3

DRAWING NO.
S112

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt

FRAMING PLAN LEGEND:

- (H?#) HEADER/OPENING PER OPENING SCHEDULE
- (SW?) SHEAR WALL TYPE, SHEAR WALL INDICATED BY
- (F?) INDICATES FOOTING TYPE
- C# INDICATES COLUMN TYPE
- B# INDICATES BEAM TYPE
- P* JAMB FROM OPENING ABOVE
- BREEZEWAY SHEATHING ELEVATION VARIES FROM TYP. SEE ARCH. & SCHEDULES
- E.O.S. INDICATES EDGE OF CONCRETE SLAB

FOUNDATION PLAN NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR SITE PLAN BENCHMARK ELEVATION. FOR REFERENCE ELEVATIONS, SEE BELOW (VERIFY ALL ELEVATIONS AND DIMENSIONS WITH ARCHITECTURAL DRAWINGS)
   - T.O. SLABE-ON-GRADE: 100'-0"
2. PROVIDE CONTROL JOINTS IN SLAB ON GRADE PER DETAIL 5/S501 AND PER GENERAL NOTES.
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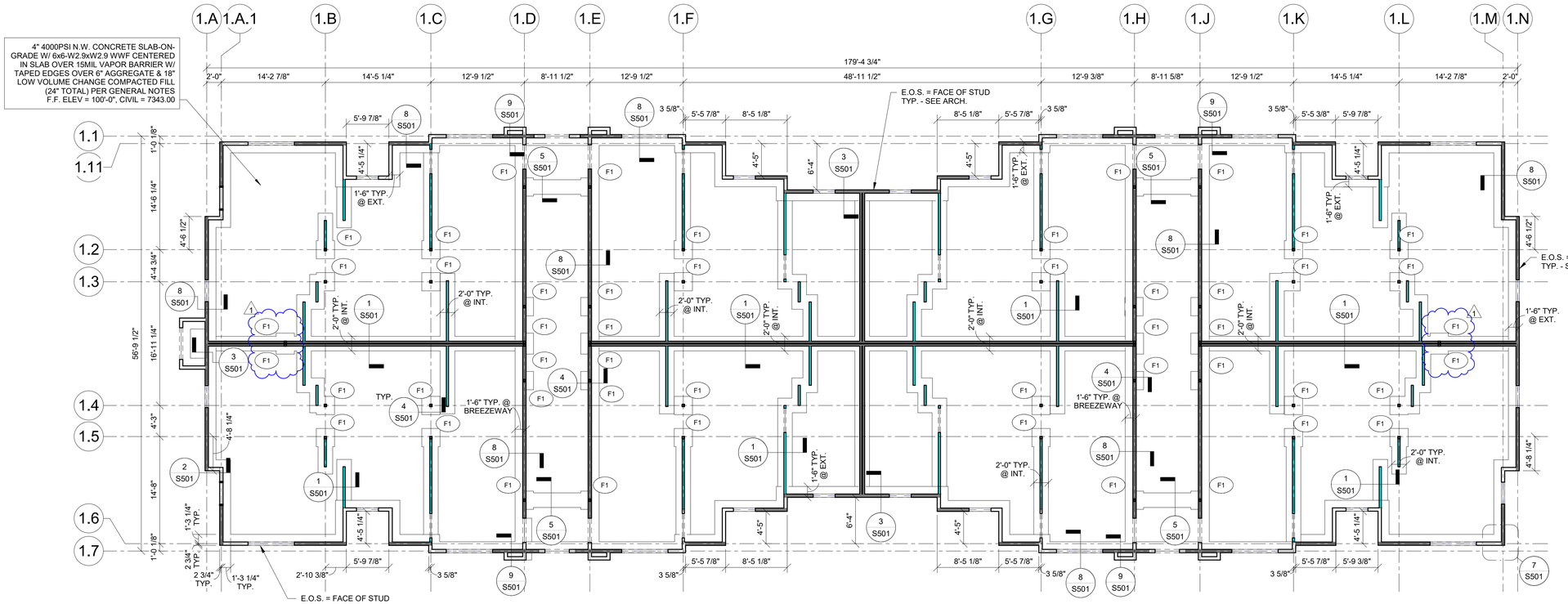
4. ALL EXTERIOR AND INTERIOR LOAD BARING WALLS ARE PER WALL SCHEDULE ON SHEET S003. SEE ARCHITECTURAL FLOOR PLAN FOR NON-BEARING WALL, DOOR, AND WINDOW LOCATIONS.
5. REFER TO MANUFACTURER'S GUIDELINES FOR INSTALLATION OF STRAP TIES, HOLD DOWNS & OTHER CONNECTIONS.
6. SEE SHEET S501 & S502 FOR DETAILS.

FOUNDATION SCHEDULE		
Mark	Size	Reinforcing
F1	2'-6"x2'-6"x1'-0"	(3) #4 BARS Top & Bottom (Each Way)

Notes:
1. All footings must be centered on walls and columns U.N.O.



1 S120 BLDG B - FOUNDATION
1/8" = 1'-0"

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MARCUS HIMMELBERG
17369
9-27-2024
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JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY

BUILDING B - FOUNDATION

DRAWING NO.
S120

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt

FRAMING PLAN LEGEND:

(H?#)	HEADER/OPENING PER OPENING SCHEDULE
(SW?)	SHEAR WALL TYPE, SHEAR WALL INDICATED BY
(F?)	INDICATES FOOTING TYPE
C#	INDICATES COLUMN TYPE
B#	INDICATES BEAM TYPE
P*	JAMB FROM OPENING ABOVE
	BREEZEWAY SHEATHING ELEVATION VARIES FROM TYP. SEE ARCH. & SCHEDULES
E.O.S.	INDICATES EDGE OF CONCRETE SLAB

PLAN NOTES:

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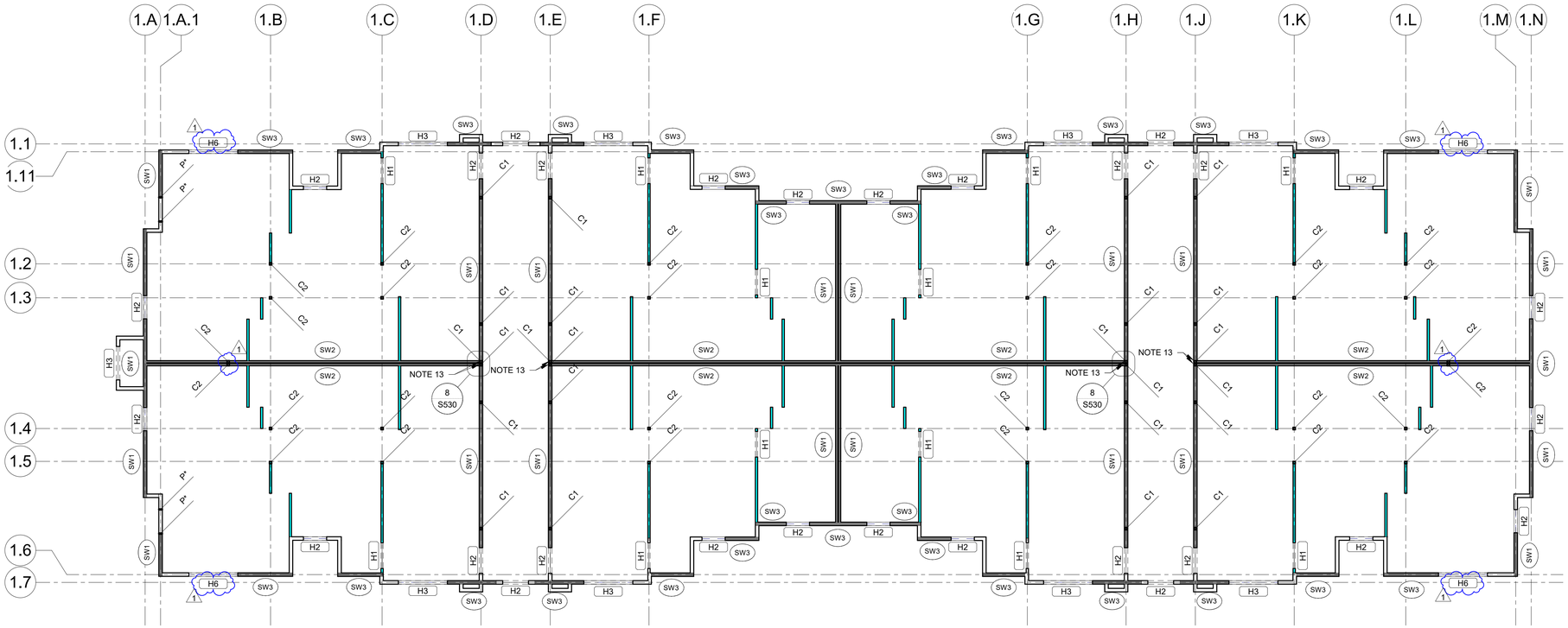

1 S121 BLDG B - FIRST FLOOR FRAMING
1/8" = 1'-0"

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JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY
BUILDING B - LEVEL 1

DRAWING NO.
S121

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt

FRAMING PLAN LEGEND:

- (H?#) HEADER/OPENING PER OPENING SCHEDULE
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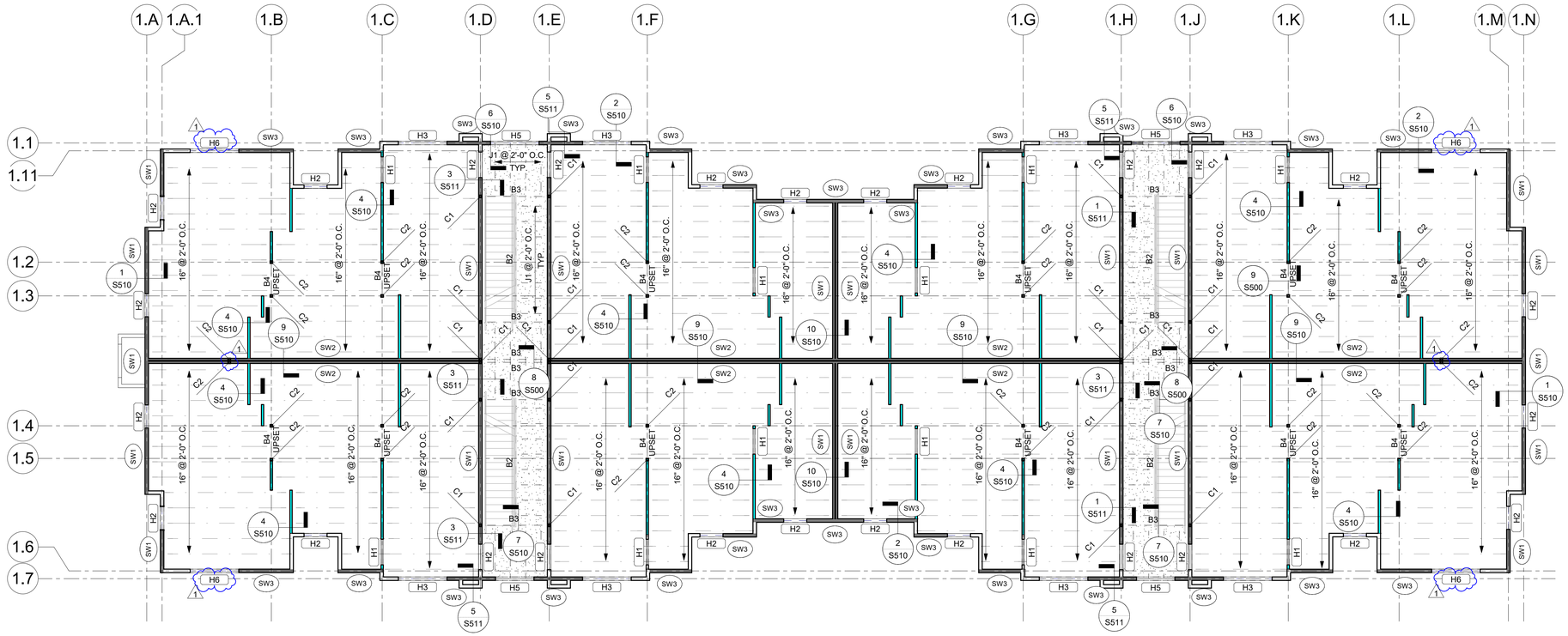

1 S122 BLDG B - SECOND & THIRD FLOOR FRAMING
1/8" = 1'-0"

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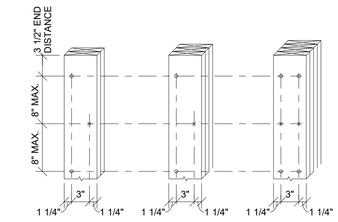
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY

BUILDING B - LEVEL 2 & 3

DRAWING NO.
S122

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt



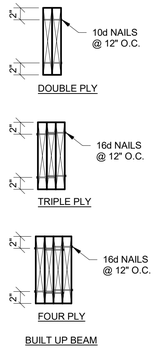
LEGEND

◦ NAIL FROM THIS SIDE

◦ NAIL FROM OPPOSITE SIDE

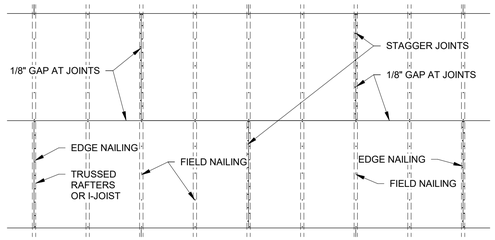
COLUMN NOTES:
1. USE 10d NAILS FOR 2-PLY & 30d FOR REST
2. ADJACENT NAILS ARE TO BE DRIVEN FROM OPPOSITE SIDES OF COLUMN

BUILT UP COLUMN



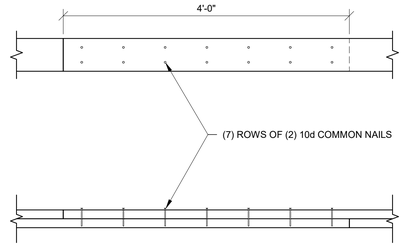
BUILT UP BEAM

1 S500 TYPICAL BUILT-UP MEMBERS
1" = 1'-0"

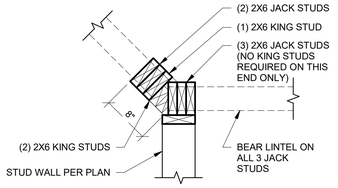


NOTE:
SEE SHEATHING TYPE & NAILING SCHEDULE ON PLAN SHEETS

2 S500 DIAPHRAGM NAILING
3/8" = 1'-0"



3 S500 TOP PLATE SPLICE
1" = 1'-0"



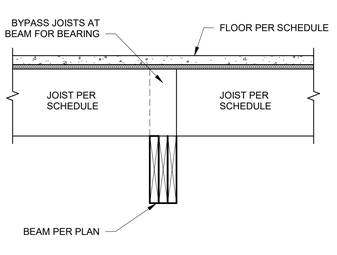
4 S500 ANGLED CORNER FRAMING
1" = 1'-0"

5 S500 FRAMING AT OPENING
3/4" = 1'-0"

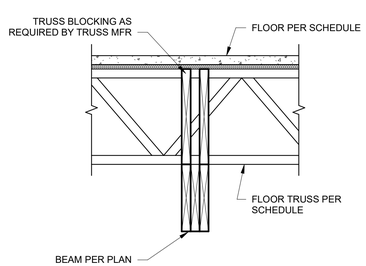
6 S500 FRAMING AT OPENING - RAISED HEADER
1" = 1'-0"

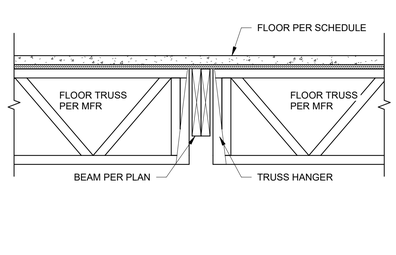
1

7 S500 NOT USED
1" = 1'-0"

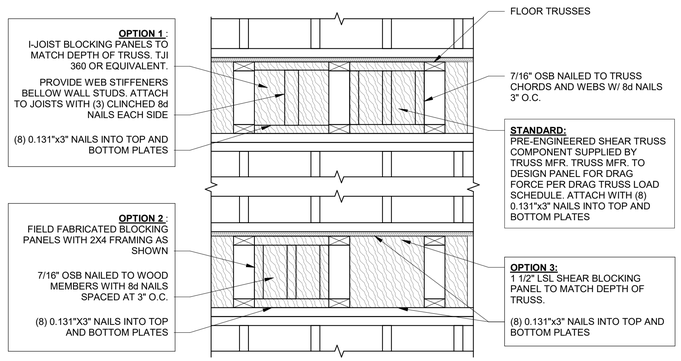


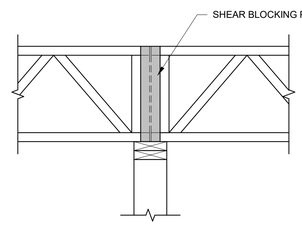
8 S500 JOIST BEARING AT BEAM
1" = 1'-0"





9 S500 FLOOR TRUSS TO BEAM
1" = 1'-0"





10 S500 SHEAR BLOCKING OPTIONS AT SHEAR WALLS
1" = 1'-0"

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WYOMING CERTIFICATE OF AUTHORITY
NO. E-1790
EXPIRES: DECEMBER 31, 2025

MARCUS HIMMELBERG
17369
12/31/2024

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WYOMING.

No.	Description	Date
1	ASI #1	09/27/2024

PROJECT NUMBER 2024000185
SET ISSUE DATE 07/17/2024

ENGINEER	DRAWN BY	CHECKED BY
MDH	CEL	IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY

TYPICAL WOOD DETAILS

DRAWING NO.
S500

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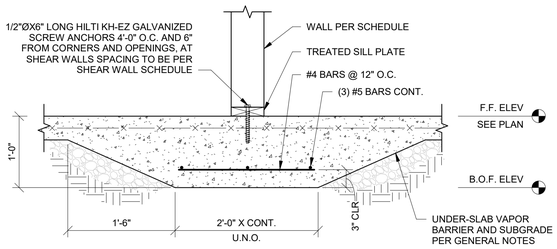
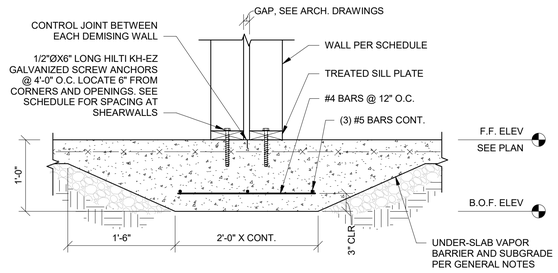
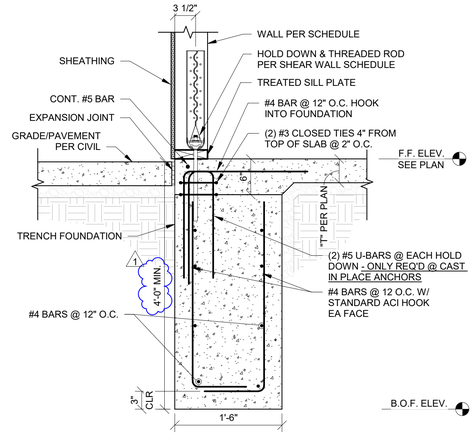
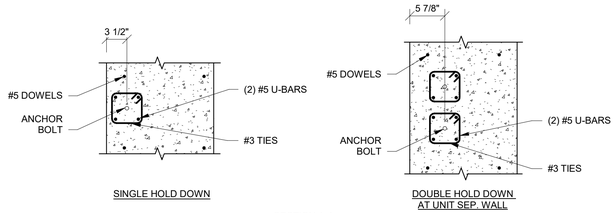


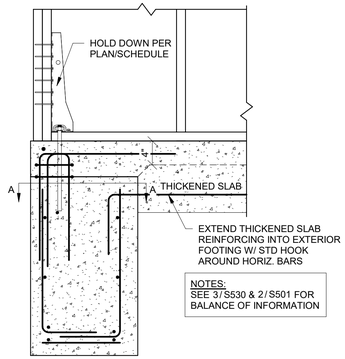


1 S501 INTERIOR BEARING WALL AT THICKENED SLAB
1" = 1'-0"

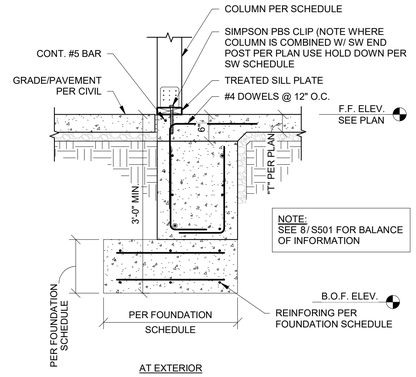


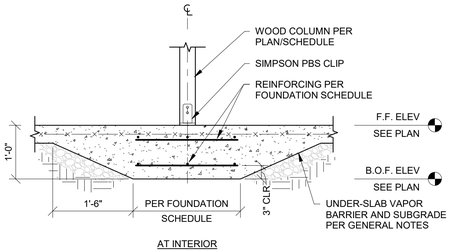
2 S501 SECTION AT SHEAR WALL HOLD DOWN
1" = 1'-0"



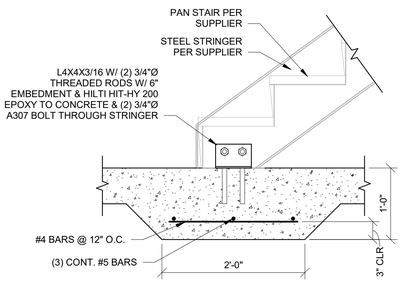


3 S501 DOUBLE SHEARWALL HOLD DOWN
1" = 1'-0"

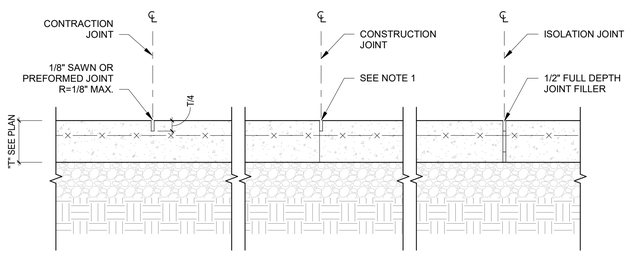




4 S501 COLUMN AT FOUNDATION
3/4" = 1'-0"

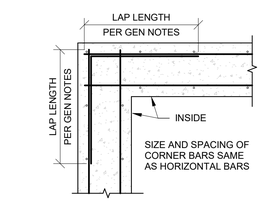


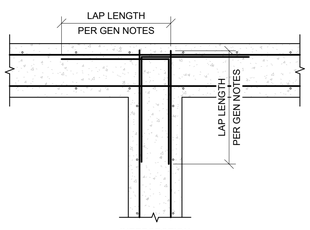
5 S501 STAIR TO THICKENED SLAB
1" = 1'-0"



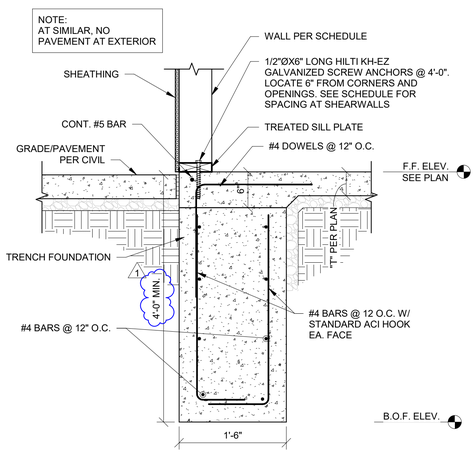
NOTES:
1. LOCATE CONSTRUCTION JOINTS AT SAW JOINT LOCATIONS. MATCH SAW JOINT PROFILE. ALL CONSTRUCTION JOINT LOCATIONS TO BE REVIEWED AND APPROVED BY EOR PRIOR TO CONSTRUCTION.
2. MAXIMUM SPACING BETWEEN SAW JOINTS = 15'-0" FOR 6" SLABS & 10'-0" FOR 4" SLABS.
3. CONTINUE SLAB ON GRADE REINFORCING, UNO. PROVIDE TENSION LAP SPLICE AS REQUIRED.
4. DO NOT PLACE DOWELS WITHIN 12" OF A SLAB CORNER.

6 S501 TYPICAL SLAB ON GRADE JOINTS
1" = 1'-0"

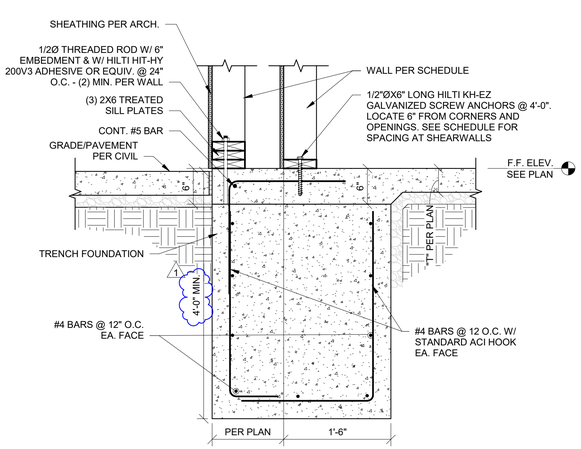




7 S501 CORNER BAR DETAIL
3/4" = 1'-0"



8 S501 SECTION AT FOOTING
1" = 1'-0"



9 S501 FOUNDATION AT BUMP OUT
1" = 1'-0"

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WYOMING CERTIFICATE OF AUTHORITY NO. E-1790
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Professional Engineer
MARCUS HIMMELBERG
17369
9-27-2024
WYOMING

MARCUS HIMMELBERG
17369
12/31/2024

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CHECKED BY IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY

FOUNDATION DETAILS

DRAWING NO.
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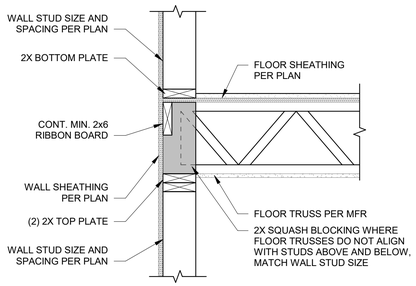
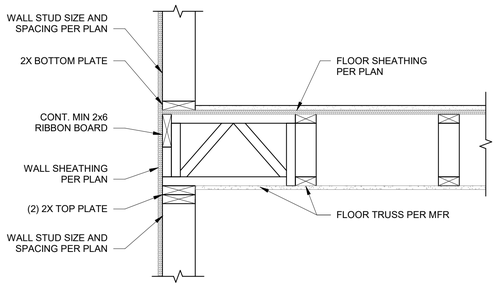
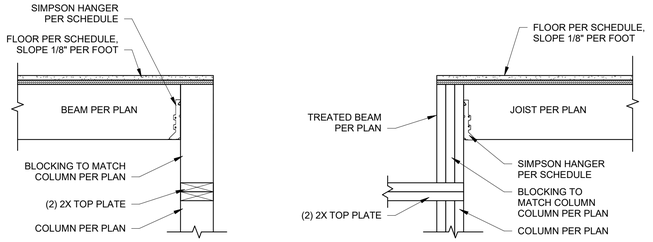


1 S510 FRAMING AT EXTERIOR WALL - JOIST BEARING
1" = 1'-0"



2 S510 FRAMING AT EXTERIOR WALL - JOIST PARALLEL
1" = 1'-0"



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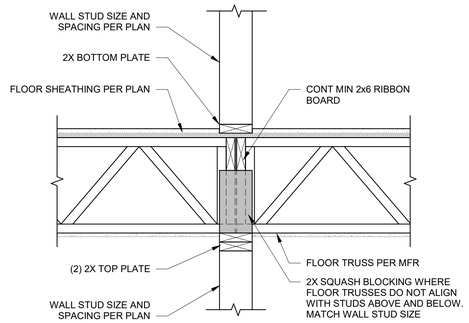
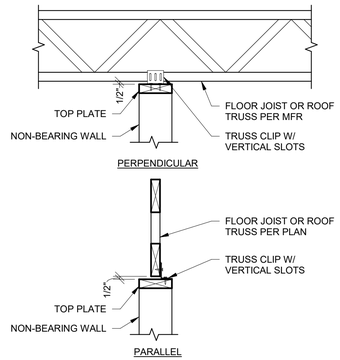
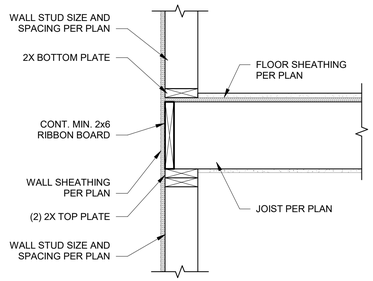
3 S510 BEAM TO COLUMN CONNECTION
1" = 1'-0"



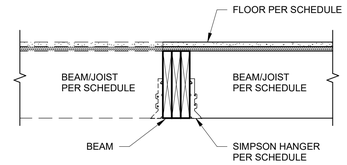
4 S510 FRAMING AT INTERIOR BEARING WALL (NON-SHEAR)
1" = 1'-0"



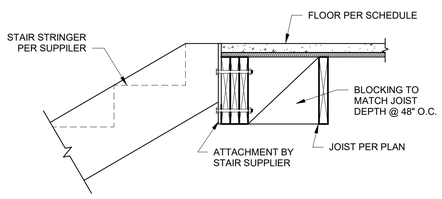
5 S510 NON-BEARING WALL TO JOIST
1" = 1'-0"



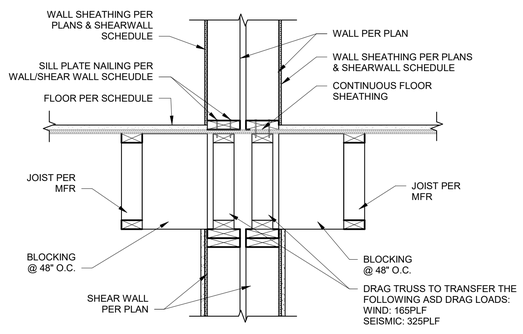
6 S510 JOIST BEARING AT EXTERIOR WALL
1" = 1'-0"



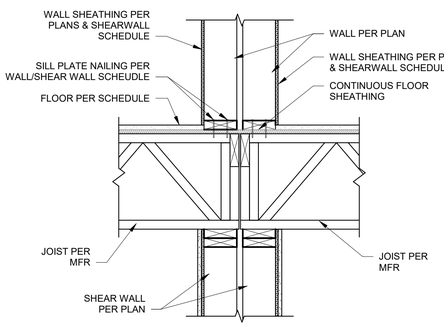
7 S510 BEAM CONNECTIONS
1" = 1'-0"



8 S510 LANDING AT FLOOR JOIST
1" = 1'-0"



9 S510 FRAMING AT PARTY WALL - JOIST PARALLEL
1" = 1'-0"



10 S510 FRAMING AT PARTY WALL - JOIST BEARING
1" = 1'-0"

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WYOMING CERTIFICATE OF AUTHORITY
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CHECKED BY IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY
FRAMING DETAILS

DRAWING NO.
S510

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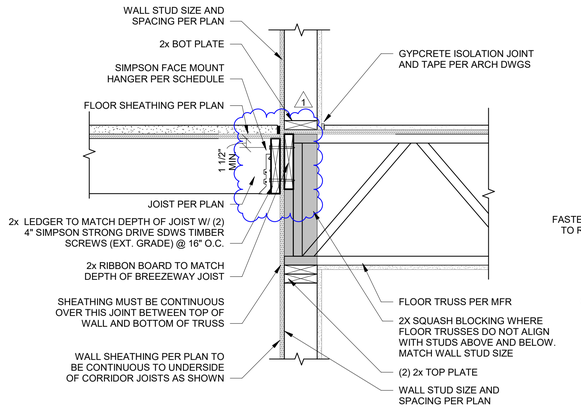
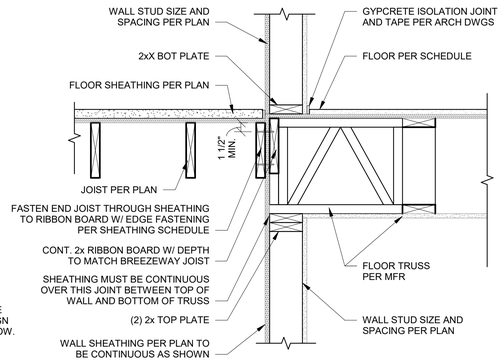
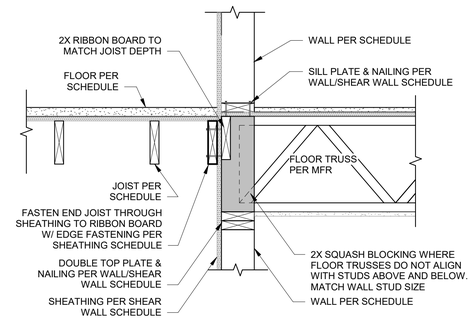


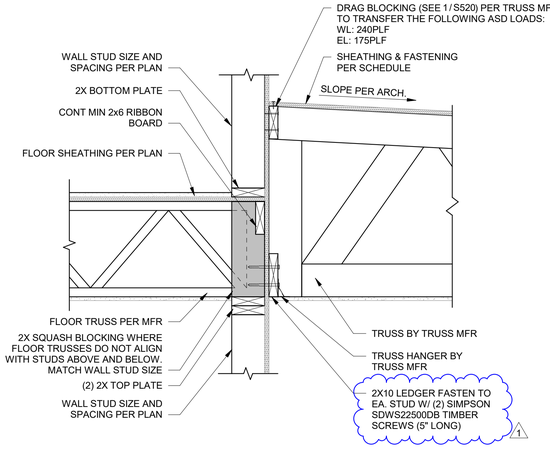
1 S511 FRAMING AT CORRIDOR WALL
1" = 1'-0"



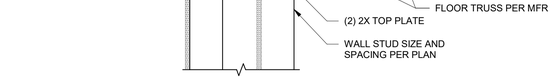
2 S511 FRAMING AT INTERIOR WALL
1" = 1'-0"



3 S511 FRAMING AT BREEZEWAY
1" = 1'-0"



4 S511 FLOOR TRUSS & ROOF TRUSS BEARING
1" = 1'-0"



5 S511 FLOOR FRAMING AT BUMP OUT
1" = 1'-0"

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LARAMIE, WY
FRAMING DETAILS

DRAWING NO.
S511

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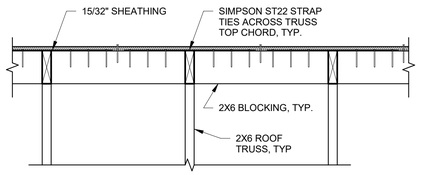
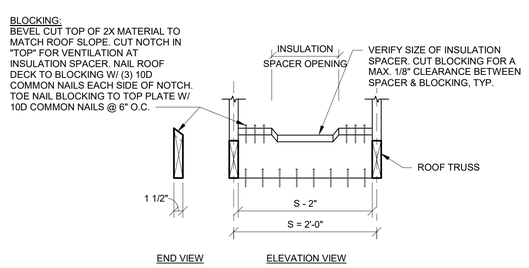
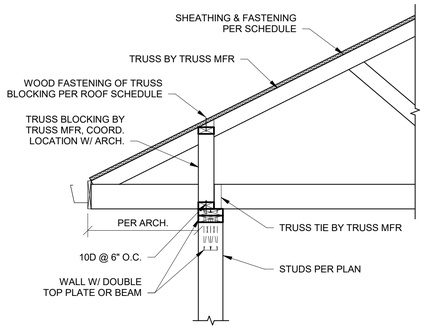


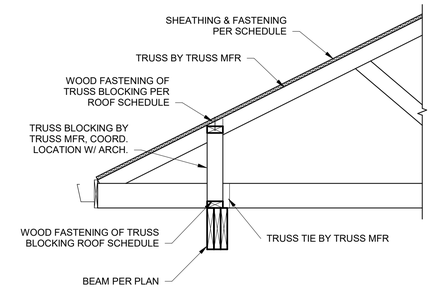
1 S520 BLOCKING BETWEEN TRUSSES
1" = 1'-0"



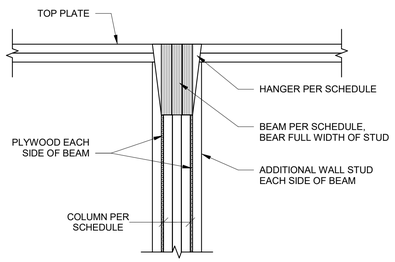
2 S520 TRUSS BLOCKING DETAIL
1" = 1'-0"



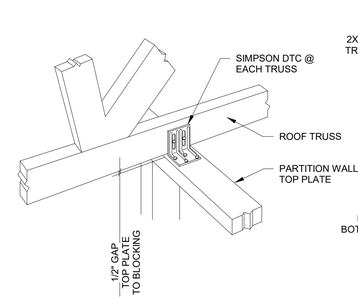
3 S520 ROOF BEARING AT WALL/BEAM
3/4" = 1'-0"



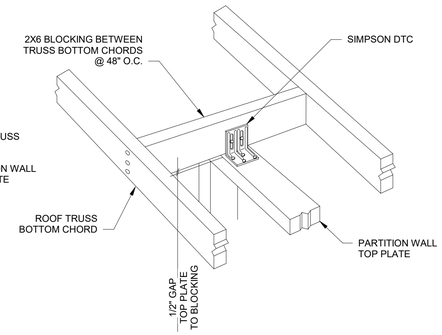
4 S520 ROOF BEARING AT OVERHANG
3/4" = 1'-0"



5 S520 BEAM POCKET
1" = 1'-0"

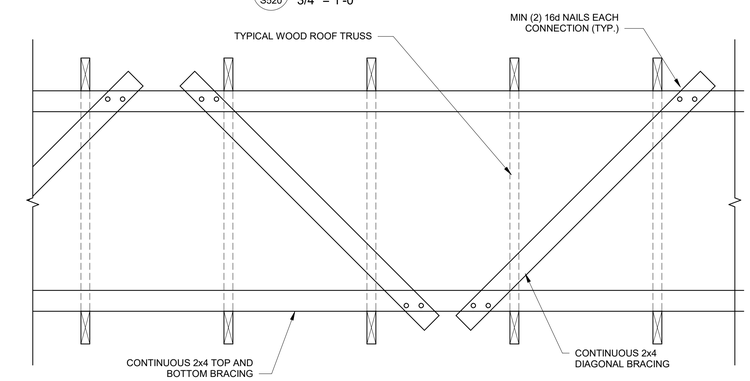


WALL PERPENDICULAR TO TRUSSES

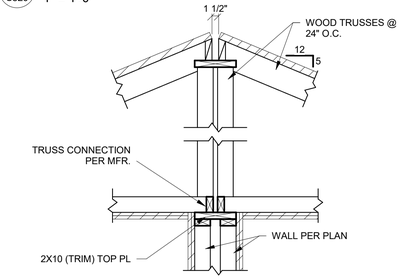


WALL PARALLEL TO TRUSSES

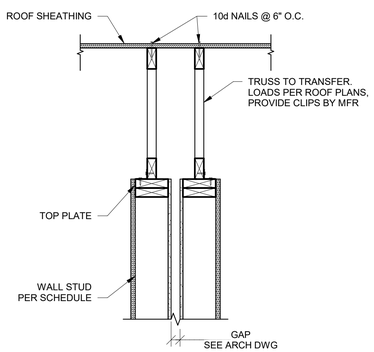
6 S520 PARTITION WALL AT ROOF TRUSS
1" = 1'-0"



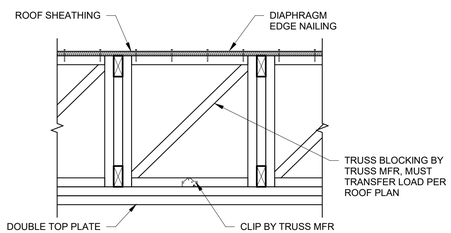
7 S520 ROOF TRUSS BRACING AT BEARING WALLS
1" = 1'-0"



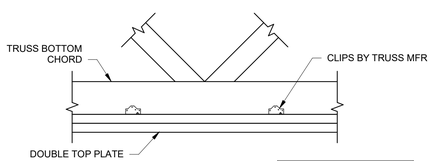
8 S520 ROOF PEAK CONNECTION
3/4" = 1'-0"



9 S520 DEMISING WALL AT ROOF
1" = 1'-0"



TRUSS BEARING

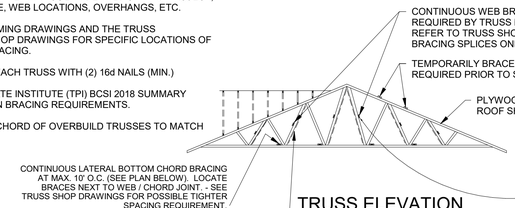


GABLE TRUSS

NOTE:
TRUSS MFR MUST DESIGN BLOCKING TO TRANSFER LOAD PER ROOF PLAN

10 S520 TRUSS BLOCKING
1" = 1'-0"

- THE FOLLOWING DIAGRAMS ILLUSTRATE SOME OF THE REQUIRED BRACING FOR ROOF TRUSSES. THE DIAGRAMS ARE NOT REPRESENTATIVE OF THE PARTICULAR DETAILS OF THIS PROJECT, SUCH AS ROOF SLOPE, WEB LOCATIONS, OVERHANGS, ETC.
- REFER TO ROOF FRAMING DRAWINGS AND THE TRUSS MANUFACTURER'S SHOP DRAWINGS FOR SPECIFIC LOCATIONS OF OTHER REQUIRED BRACING.
- FASTEN BRACES TO EACH TRUSS WITH (2) 16d NAILS (MIN.)
- REFER TO TRUSS PLATE INSTITUTE (TPI) BCSI 2018 SUMMARY SHEET FOR ERECTION BRACING REQUIREMENTS.
- BEVEL CUT BOTTOM CHORD OF OVERBUILD TRUSSES TO MATCH ROOF SLOPE.

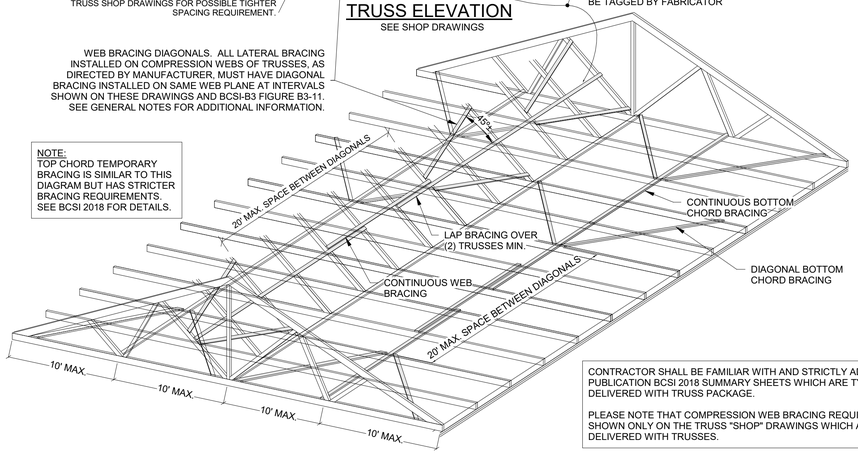


TRUSS ELEVATION
SEE SHOP DRAWINGS

SHOP DRAWINGS WILL INDICATE LOCATION OF REQUIRED WEB BRACING - TRUSSES MUST BE TAGGED BY FABRICATOR

WEB BRACING DIAGONALS. ALL LATERAL BRACING INSTALLED ON COMPRESSION WEBS OF TRUSSES, AS DIRECTED BY MANUFACTURER, MUST HAVE DIAGONAL BRACING INSTALLED ON SAME WEB PLANE AT INTERVALS SHOWN ON THESE DRAWINGS AND BCSI-B3 FIGURE B3-11. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.

NOTE:
TOP CHORD TEMPORARY BRACING IS SIMILAR TO THIS DIAGRAM BUT HAS STRICTER BRACING REQUIREMENTS. SEE BCSI 2018 FOR DETAILS.



TRUSS BRACING 3-D VIEW

CONTRACTOR SHALL BE FAMILIAR WITH AND STRICTLY ADHERE TO PUBLICATION BCSI 2018 SUMMARY SHEETS WHICH ARE TYPICALLY DELIVERED WITH TRUSS PACKAGE.

PLEASE NOTE THAT COMPRESSION WEB BRACING REQUIREMENTS ARE SHOWN ONLY ON THE TRUSS "SHOP" DRAWINGS WHICH ARE ALSO DELIVERED WITH TRUSSES.

11 S520 TYP. WOOD TRUSS BRACING DIAPHRAGM
1/2" = 1'-0"

1

McCLURE™
1901 Pennsylvania Drive
Columbia, MO 65202
P 573-814-1568

WYOMING CERTIFICATE OF AUTHORITY NO. E-1790
EXPIRES: DECEMBER 31, 2025

Professional Engineer
MARCUS HIMMELBERG
17369
9-27-2024
WYOMING

MARCUS HIMMELBERG
17369
12/31/2024

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WYOMING.

No.	Description	Date
1	ASI #1	09/27/2024

PROJECT NUMBER 2024000185
SET ISSUE DATE 07/17/2024
ENGINEER MDH
DRAWN BY CEL
CHECKED BY IWC

JONES GILLAM RENZ
THE RESERVES AT GRAND VIEW HEIGHTS
LARAMIE, WY

ROOF DETAILS

DRAWING NO.
S520

P:\2024000185-000 - JGR - The Reserves at Grand View Heights\04-Drawings\2024000185 - JGR - THE RESERVES AT GRAND VIEW HEIGHTS - R23.rvt

LST Consulting Engineers, PA
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785.587.8042
WICHITA
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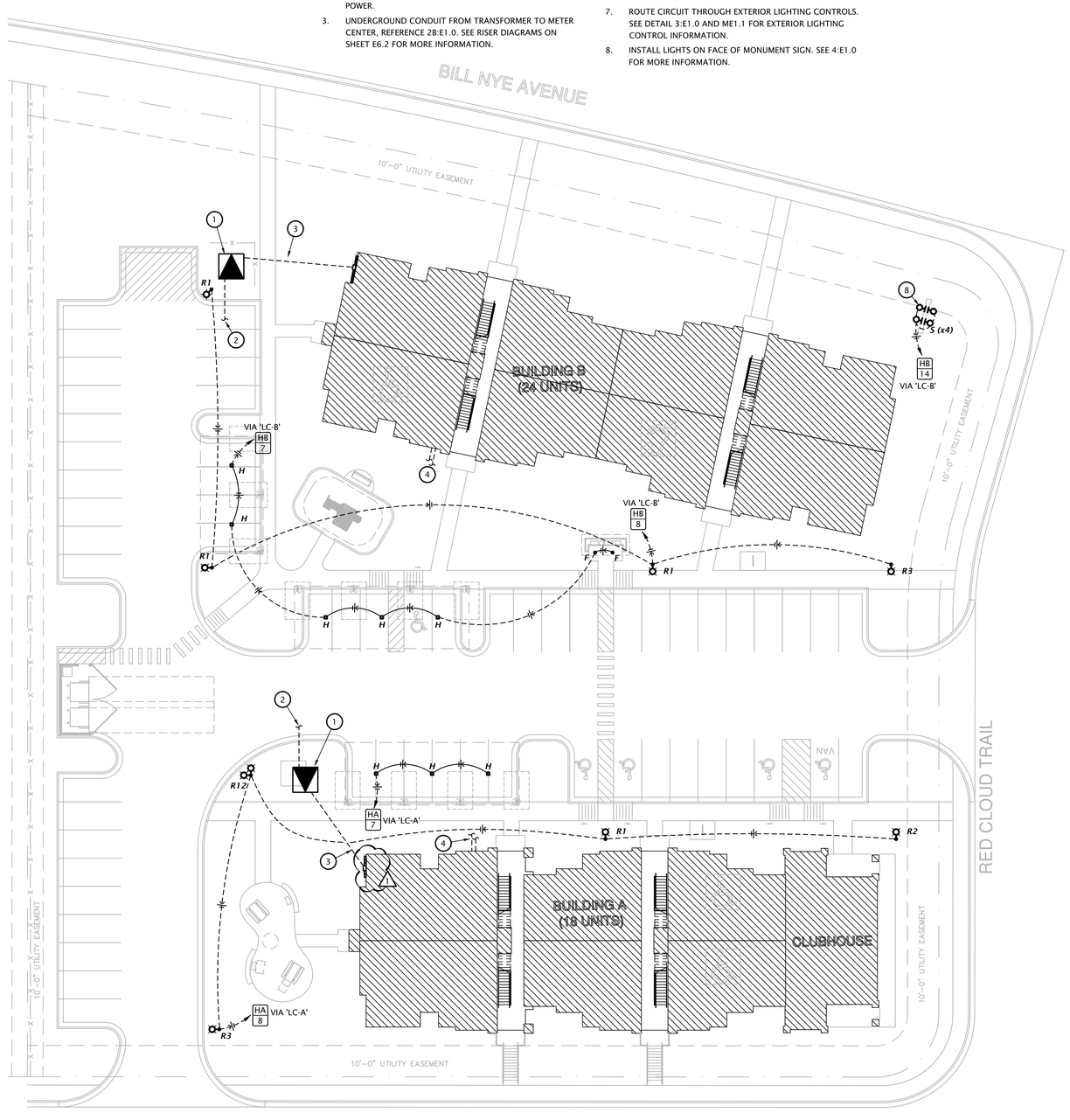
316.285.0696
www.LSTengineers.com
mail@LSTengineers.com

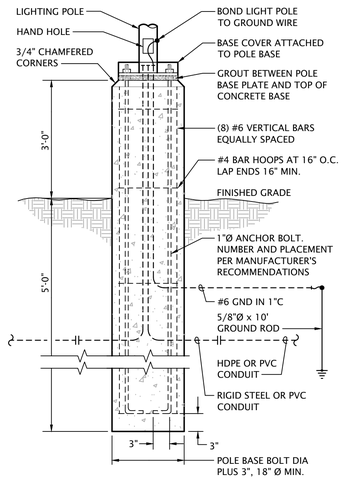
Project 24037 July 2023

⑥ M/E NOTES BY SYMBOL

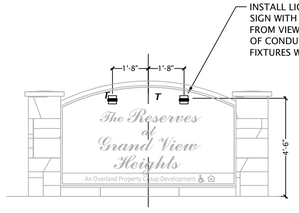
1. POWER COMPANY PAD MOUNTED TRANSFORMER. CONCRETE PAD BY GENERAL CONTRACTOR PER ROCKY MOUNTAIN POWER STANDARDS. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH UTILITY PROVIDER PRIOR TO COMMENCING WORK.
2. PROVIDE (2) 4" CONDUITS FOR POWER COMPANY PROVIDED PRIMARY CABLING, REFERENCE 2A:E1.0. COORDINATE ROUTING AND REQUIREMENTS WITH ROCKY MOUNTAIN POWER.
3. UNDERGROUND CONDUIT FROM TRANSFORMER TO METER CENTER, REFERENCE 2B:E1.0. SEE RISER DIAGRAMS ON SHEET E6.2 FOR MORE INFORMATION.
4. ROUTE (2) 2" CONDUITS FOR TELEPHONE AND CATV SERVICES TO PROPERTY LINE. PROVIDE PULLSTRING IN EACH RACEWAY, REFERENCE 2C:E1.0. VERIFY TERMINATION POINTS WITH LOCAL TELEPHONE AND CATV COMPANIES.
5. METER CENTER, SEE ME1.1 AND E6.2 FOR MORE INFORMATION.
6. POLE MOUNTED AREA LIGHT, REFERENCE 2:E1.0 FOR MORE INFORMATION.
7. ROUTE CIRCUIT THROUGH EXTERIOR LIGHTING CONTROLS. SEE DETAIL 3:E1.0 AND ME1.1 FOR EXTERIOR LIGHTING CONTROL INFORMATION.
8. INSTALL LIGHTS ON FACE OF MONUMENT SIGN. SEE 4:E1.0 FOR MORE INFORMATION.



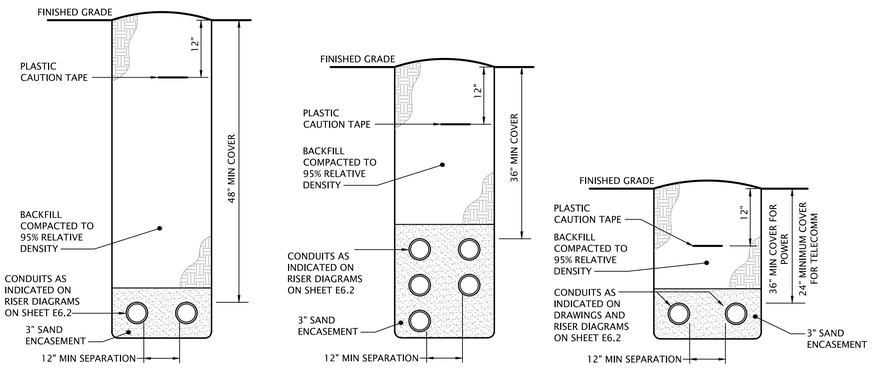
① ELECTRICAL SITE PLAN
1" = 20'-0"



③ CONCRETE POLE BASE DETAIL
No Scale



④ MONUMENT LIGHT DETAIL
No Scale



② CONDUIT TRENCH DETAILS
No Scale

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jgr@jgrarchitects.com

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Salina, KS 67401
785.827.0386

THE RESERVES AT GRAND VIEW HEIGHTS
NEW APARTMENT COMPLEX
LARAMIE, WYOMING

Professional Engineer
John F. LEWIS-SMITH
20170
Date 7/17/24
WYOMING

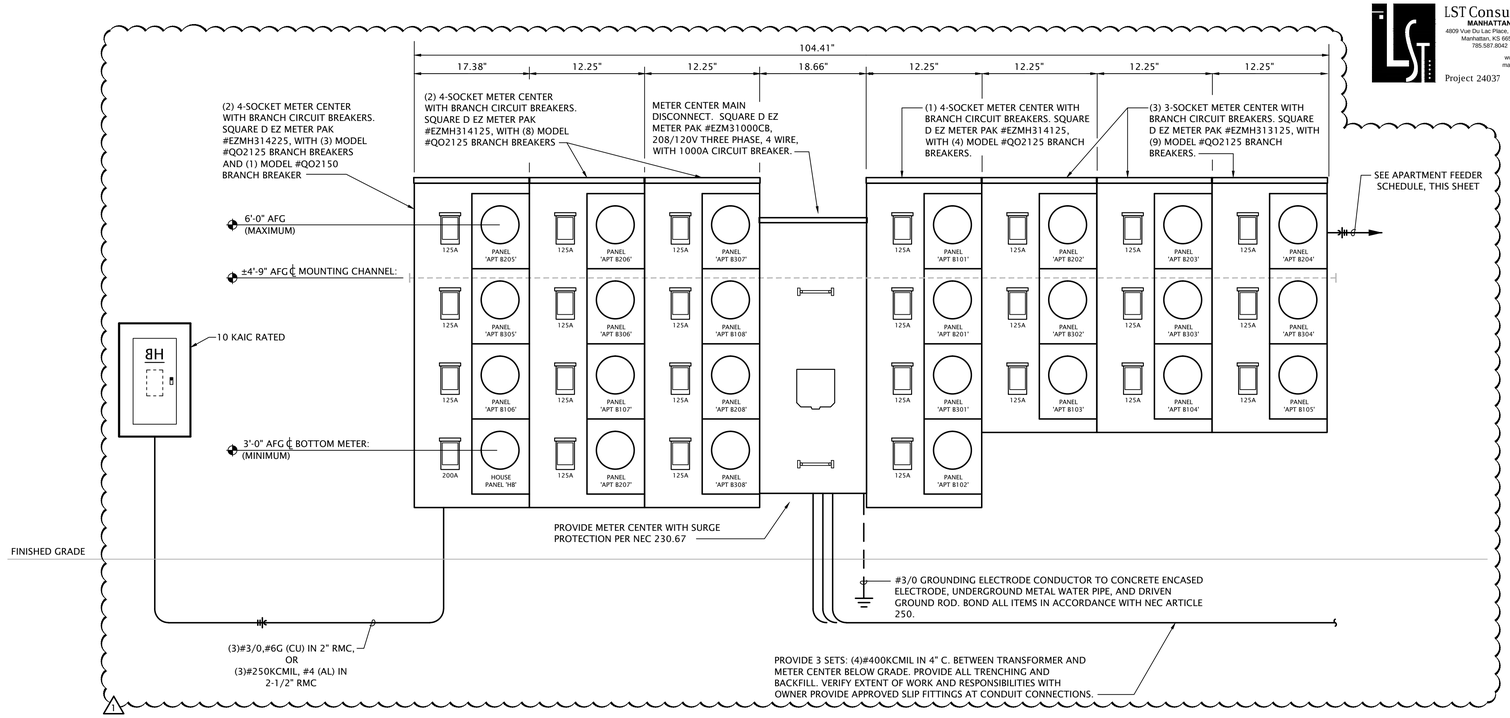
REVISION:	
1	9-27-2024

DATE: 7-17-2024
JOB: 22-3262
SHEET NO.:

E1.0

Building B Service Calculation (24 total units)								
Area:	23820 SF (Dwelling Units Only)							
							Connected Load (VA)	Demand Load (VA)
Feeder & Service Loads per NEC 220.84 Part IV								
C1	General Loads (220.84 (C)(1))							
a	Lighting & Receptacles	3	VA/SF	23820	SF		71,460	
C2	Required Circuits (220.84 (C)(2))							
a	Laundry Circuit	1,500	VA/Circuit	24	Circuit		36,000	
b	Kitchen Circuits	1,500	VA/Circuit	48	Circuit		72,000	
C3	Nameplate Ratings of Equipment (220.84 (C)(3))							
a1	Microwave	1,000	VA/Circuit	24	ea		24,000	
a2	Dishwasher	840	VA/Circuit	24	ea		20,160	
a3	Disposal	1175	VA/Circuit	24	ea		28,200	
a4	Refrigerator	1200	VA/Circuit	24	ea		28,800	
b	Electric Range	8,000	VA/Circuit	24	ea		192,000	
c	Electric Clothes Dryer	5,000	VA/Circuit	24	ea		120,000	
d	Water Heater	4,500	VA/Circuit	24	ea		108,000	
C4	Nameplate Ratings of Motors (220.84 (C)(4))							
	VTAC Blower	150	VA/Circuit	24	ea		3,600	
	Exhaust Fan - Kitchen	20	VA/Circuit	24	ea		480	
	Exhaust Fan - RR	20	VA/Circuit	48	ea		960	
C5	Larger of Heating and A/C load (220.84 (C)(5))							
	2BR Electric Heat + Defrost	8,694	VA/Circuit	12	ea		104,328	
	3BR Electric Heat + Defrost	8,694	VA/Circuit	12	ea		104,328	
						Connected Load Total	914,316	
						Dwelling Unit Demand Load from Table 220.84	35%	**320,011**
						Building Service NEC Demand Load (VA) Sub-Total		**320,011**
						Total Aparment Service Demand Load (VA)		**320,011**
						Panel HB Service Demand Load (VA)		**31,408**
						Total Building Service Demand Load (Amperes) @ 208/120V-3Ph, 4W		**976**
	Provide 1000A Meter Center							

1



1

2 ELECTRICAL RISER DIAGRAM - BULDING B

No Scale

APARTMENT FEEDER SCHEDULE

Apartment #	Feeder Size
A103, A104, A105, A106, A203, A204, A303, A304, A205, A206, A305, A306, B105, B106, B107, B108, B205, B206, B207, B208, B305, B306, B307, B308	BASE BID (COPPER): (3)#1,#6G IN 1-1/4" C OR MC CABLE ALTERNATE BID (ALUMINUM): (3)#1/0, #4G IN 1-1/2" C OR MC CABLE
A101, A102, A201, A202, A301, A302, B103, B104, B203, B204, B303, B304	BASE BID (COPPER): (3)#1/0,#4G IN 1-1/2" C. OR MC CABLE ALTERNATE BID (ALUMINUM): (3)#3/0, #2G IN 2" C OR MC CABLE
B101, B102, B201, B202, B301, B302	BASE BID (COPPER): (3)#1/0,#4G IN 1-1/2" C. OR MC CABLE ALTERNATE BID (ALUMINUM): (3)#4/0, #1G IN 2" C OR MC CABLE

NOTES:

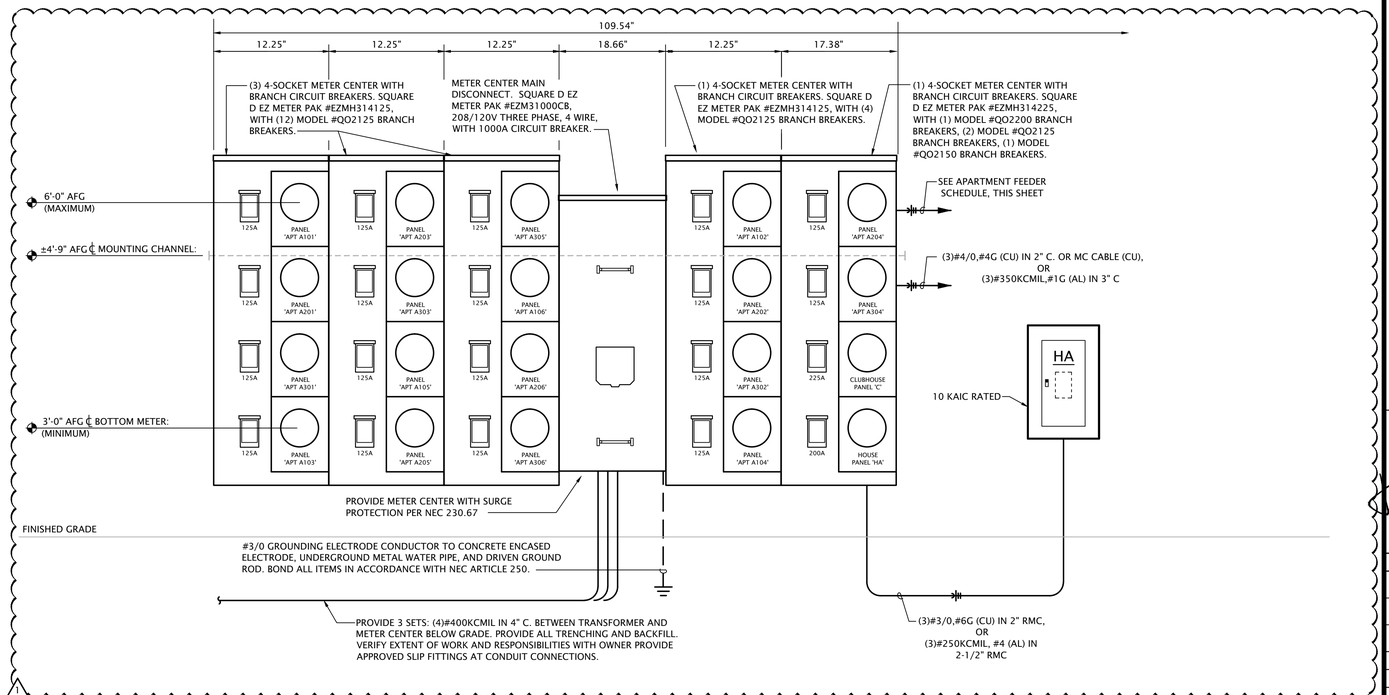
1. Voltage drop has been accounted for in sizes indicated, further up-sizing of feeders is not necessary
2. Ensure panel lugs are adequately sized to handle up-sized feeders. Provide lug adapter kits if required.

NOTES:

- See sheets E1.0 and ME1.1, ME1.2 for meter center locations.
- Main disconnect section shall be rated for maximum 42,000A peak let through.
- All conductor sizes are based on copper, U.N.O.
- Entire installation shall comply with NEC.
- Coordinate all responsibilities and requirements with utility company and pay associated fees. Contact Information:
  Thayne Cranford
  Rocky Mountain Power
  thayne.cranford@pacificorp.com
  307-721-7916
- Coordinate final location of meter assemblies with utility company. Provide shop drawings of proposed equipment whether as specified or substituted to utility company for approval.
- All meter center components shall be NEMA 3R
- All dimensions based on Square D equipment, it is the contractor's responsibility to verify the dimensions of substitute equipment and receive approval from utility for substitution.
- For each meter, provide a permanent brass, copper or aluminum tag identifying the apartment served. Tags shall be securely fastened to the meter base and be stamped with 1/8" letters, minimum.

Building A Service Calculation (18 total units + Clubhouse)								
Area:	17190 SF (Dwelling Units Only)							
							Connected Load (VA)	Demand Load (VA)
Feeder & Service Loads per NEC 220.84 Part IV								
C1	General Loads (220.84 (C)(1))							
a	Lighting & Receptacles	3	VA/SF	17190	SF		51,570	
C2	Required Circuits (220.84 (C)(2))							
a	Laundry Circuit	1,500	VA/Circuit	18	Circuit		27,000	
b	Kitchen Circuits	1,500	VA/Circuit	36	Circuit		54,000	
C3	Nameplate Ratings of Equipment (220.84 (C)(3))							
a1	Microwave	1,000	VA/Circuit	18	ea		18,000	
a2	Dishwasher	840	VA/Circuit	18	ea		15,120	
a3	Disposal	1175	VA/Circuit	18	ea		21,150	
a4	Refrigerator	1200	VA/Circuit	18	ea		21,600	
b	Electric Range	8,000	VA/Circuit	18	ea		144,000	
c	Electric Clothes Dryer	5,000	VA/Circuit	18	ea		90,000	
d	Water Heater	4,500	VA/Circuit	18	ea		81,000	
C4	Nameplate Ratings of Motors (220.84 (C)(4))							
	VTAC Blower	150	VA/Circuit	18	ea		2,700	
	Exhaust Fan - Kitchen	20	VA/Circuit	18	ea		360	
	Exhaust Fan - RR	20	VA/Circuit	36	ea		720	
C5	Larger of Heating and A/C load (220.84 (C)(5))							
	2BR Electric Heat + Defrost	8,694	VA/Circuit	12	ea		104,328	
	3BR Electric Heat + Defrost	8,694	VA/Circuit	6	ea		52,164	
						Connected Load Total	683,712	
						Dwelling Unit Demand Load from Table 220.84	38%	**239,299**
						Building Service NEC Demand Load (VA) Sub-Total		**239,299**
						Total Aparment Service Demand Load (VA)		**239,299**
						Clubhouse Service Demand Load (VA)		**39,139**
						Panel HA Service Demand Load (VA)		**28,743**
						Total Building Service Demand Load (Amperes) @ 208/120V-3Ph, 4W		**853**
	Provide 1000A Meter Center							

1



1

1 ELECTRICAL RISER DIAGRAM - BULDING A

No Scale

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Wichita, Kansas 67202
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Salina, KS 67401
785.827.0386

Project 24037

July 2023

THE RESERVES AT GRAND VIEW HEIGHTS

NEW APARTMENT COMPLEX

LARAMIE, WYOMING

Professional Engineer
JOHN F. LEWIS-SMITH
20170
Date 7/17/2024
WYOMING

REVISION:	
1	9-27-2024

DATE:	7-17-2024
JOB:	22-3262
SHEET NO.:	E6.2

LST Consulting Engineers, PA
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Project 24037 July 2023

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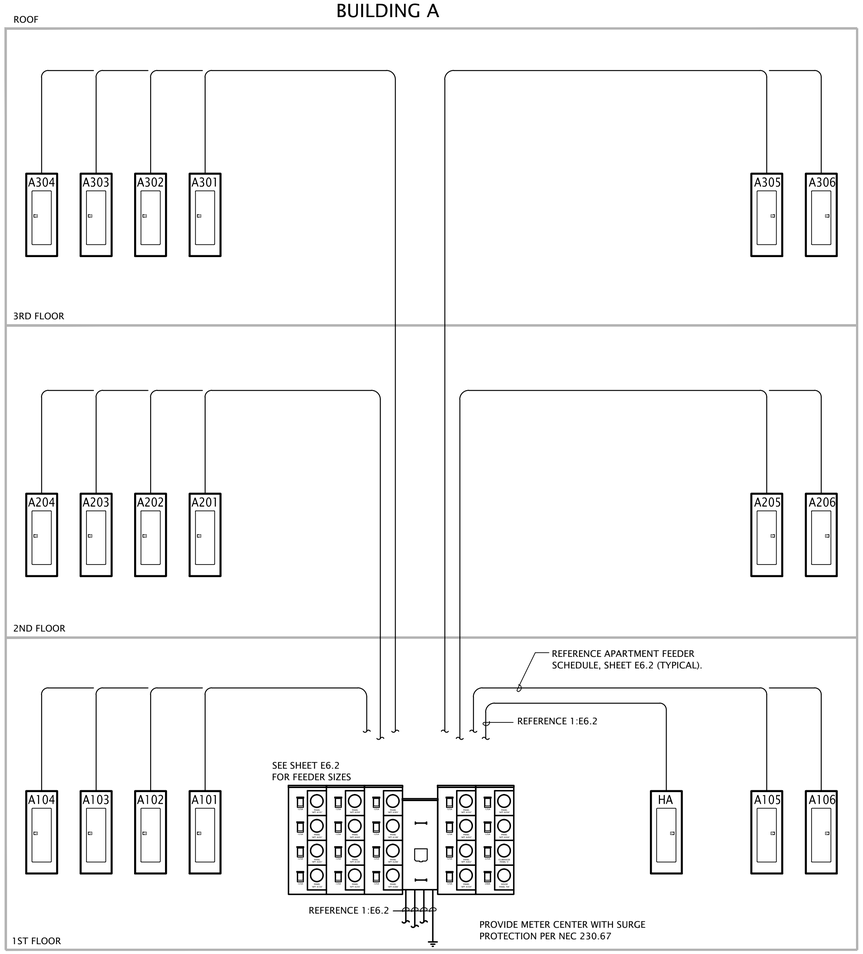
Kansas City, MO 64108
jgr@jgrarchitects.com

THE RESERVES AT GRAND VIEW HEIGHTS

NEW APARTMENT COMPLEX

LARAMIE, WYOMING

BUILDING A

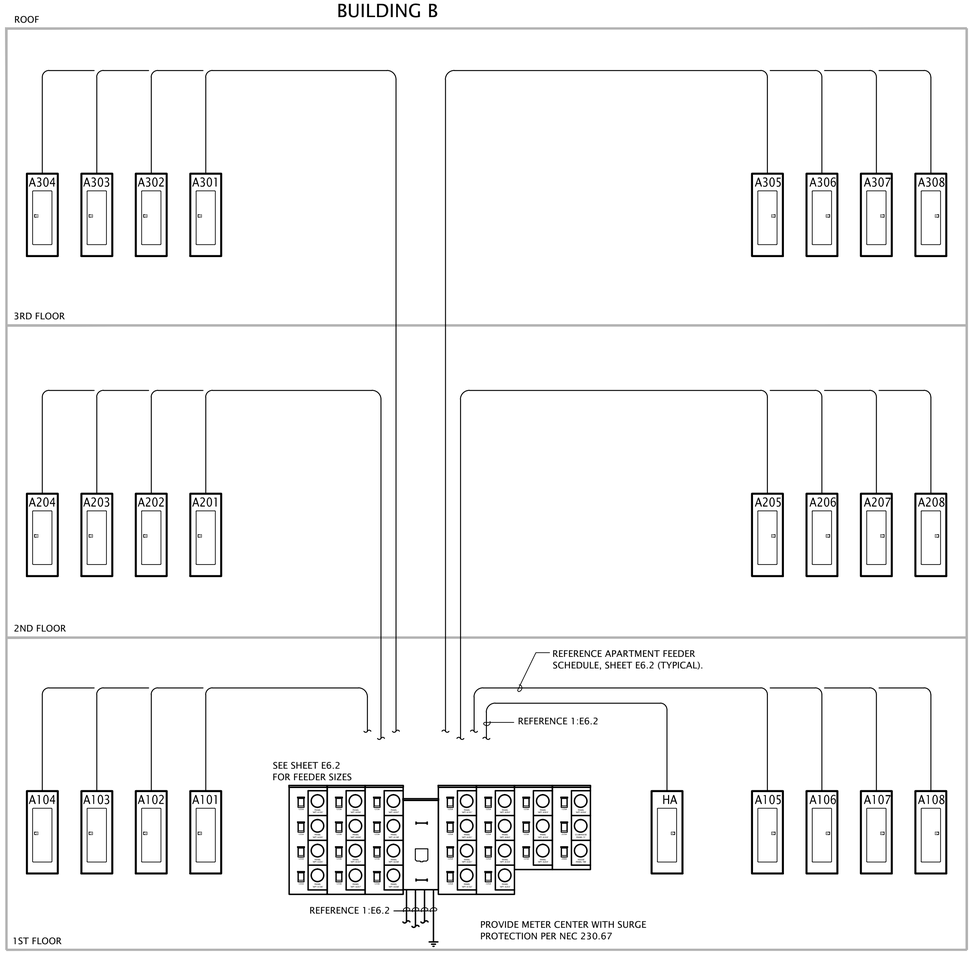


SEE SHEET E6.2 FOR COMPLETE AVAILABLE FAULT CURRENT CALCULATIONS.

1 BUILDING A ELECTRICAL RISER DIAGRAM

No Scale

BUILDING B



SEE SHEET E6.2 FOR COMPLETE AVAILABLE FAULT CURRENT CALCULATIONS.

2 BUILDING B ELECTRICAL RISER DIAGRAM

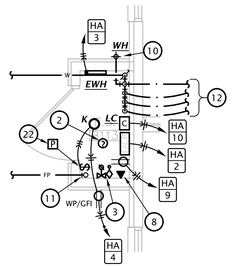
No Scale

REVISION:

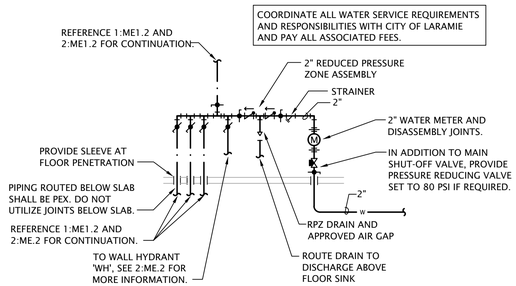
1 9-27-2024

DATE: 7-17-2024
JOB: 22-3262
SHEET NO.:

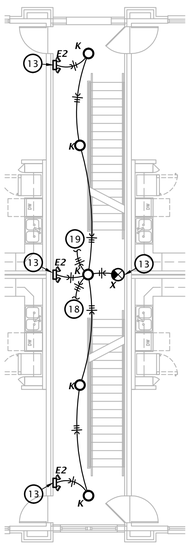
E6.4



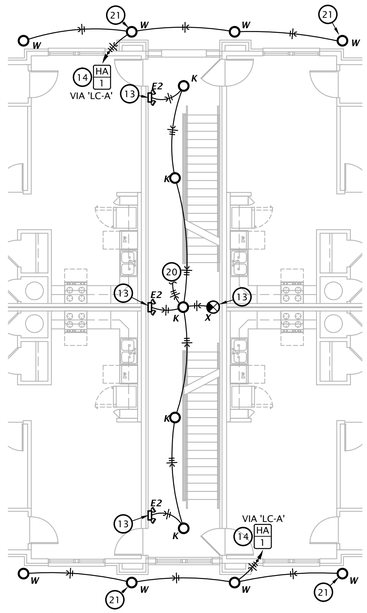
2 BUILDING - A WATER RISER CLOSET
1/4" = 1'-0"



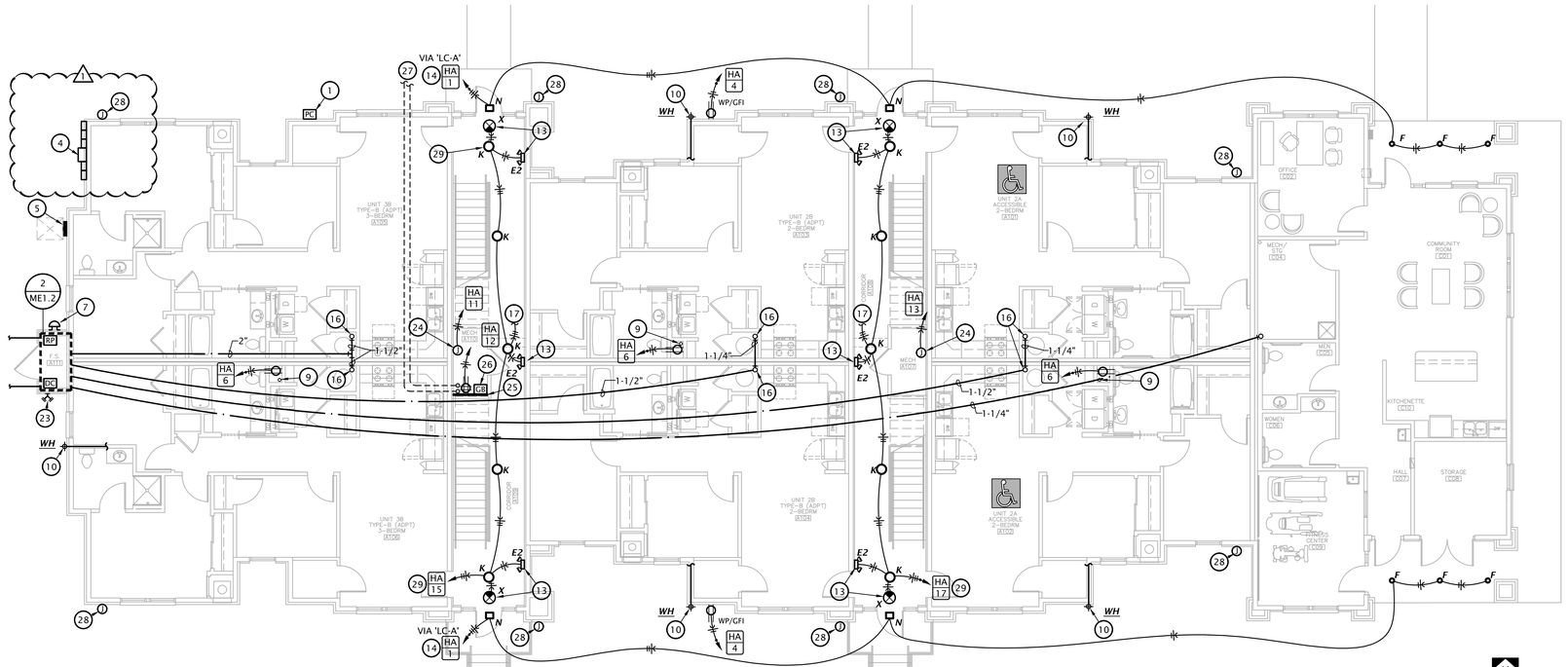
3 BUILDING - A WATER SERVICE RISER
NO SCALE



4 2ND FLOOR BREEZEWAY PLAN
1/8" = 1'-0"



5 3RD FLOOR BREEZEWAY PLAN
1/8" = 1'-0"



1 BUILDING A - M/E PLAN
1/8" = 1'-0"

M/E NOTES BY SYMBOL

1. PROVIDE PHOTOCELL ON NORTH SIDE OF BUILDING FOR OPERATION OF BREEZEWAY AND BUILDING MOUNTED LIGHTS, SEE DETAIL 2:E6.1 FOR MORE INF ORMATION.
2. PROVIDE SMOKE DETECTOR ABOVE FACP AND CONNECT TO FIRE ALARM SYSTEM.
3. CONNECT FIRE SPRINKLER FLOW AND TAMPER SWITCHES TO FIRE ALARM SYSTEM.
4. FIRST FLOOR ONLY: ELECTRIC SERVICE AND METER. SEE RISER DIAGRAMS ON SHEET E6.2. SEE M/E SITE PLAN FOR EXACT LOCATION AT EACH BUILDING AND COORDINATE EXACT LOCATION WITH UTILITY COMPANY.
5. HOUSE PANEL 'HA'. PROVIDE RESERVED SPACE TO ALLOW INSTALLATION OF A 2-POLE BREAKER FOR FUTURE SOLAR POWER SYSTEM. THIS SPACE IS TO BE LABELED 'FOR FUTURE SOLAR ELECTRIC'. THE RESERVED SPACE IS TO BE POSITIONED AT THE END OF THE PANEL THAT IS OPPOSITE FROM THE PANEL SUPPLY CONDUCTOR CONNECTION.
6. HOUSE PANEL 'HB'. PROVIDE RESERVED SPACE TO ALLOW INSTALLATION OF A 2-POLE BREAKER FOR FUTURE SOLAR POWER SYSTEM. THIS SPACE IS TO BE LABELED 'FOR FUTURE SOLAR ELECTRIC'. THE RESERVED SPACE IS TO BE POSITIONED AT THE END OF THE PANEL THAT IS OPPOSITE FROM THE PANEL SUPPLY CONDUCTOR CONNECTION.
7. EXTERIOR FIRE ALARM BELL, CONNECT TO FIRE ALARM PANEL SYSTEM COORDINATE LOCATION WITH AUTHORITY HAVING JURISDICTION.
8. PROVIDE (2) PHONE LINES FOR MONITORING OF FIRE SPRINKLER SYSTEM. REFERENCE SPECIFICATION NOTES FOR ADDITIONAL INFORMATION.
9. 4" PVC PIPE FOR FUTURE RADON SYSTEM BY OTHERS. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH ARCHITECT. PROVIDE OUTLET IN ATTIC NEAR RADON PIPE FOR FUTURE RADON FAN.
10. CONNECT NON-FREEZE WALL HYDRANT WITH 1/2" CW BRANCH TO SERVICE PIPING AHEAD OF TENANT WATER METER AND PROVIDE SHUT-OFF VALVE ACCESSIBLE IN MECHANICAL CLOSET. REFERENCE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHT AND COORDINATE WITH G.C. (TYPICAL)
11. FIRE PROTECTION RISER - SEE DETAIL ON P6.1.
12. SEE OVERALL PLAN ON THIS SHEET FOR CONTINUATION. COORDINATE FINAL ROUTING OF MAIN WATER PIPING WITH G.C. PRIOR TO ROUGHING IN. (TYPICAL)
13. CONNECT EMERGENCY LIGHT/EXIT SIGN TO UNSWITCHED CIRCUITRY SERVING LIGHTING IN BREEZEWAY.
14. EXTERIOR LIGHTS TO BE CONTROLLED VIA PHOTOCELL AND CON TACTOR, SEE DETAIL 2:E6.1 FOR MORE INFORMATION.
15. WHERE FIRE PROTECTION PIPING MUST CROSS HALLWAY, ROUTE IN SOFFIT. PROVIDE HEAT TRACE AND INSULATE PIPING IN SOFFIT PER HEAT TRACE MANUFACTURER'S INSTRUCTIONS. PROVIDE ALL REQUIRED HEAT TRACE COMPONENTS AND CONTROLS FOR FREEZE PROTECTION OF WATER PIPING. COORDINATE WITH E.C.
16. COLD WATER RISER, SEE RISER DIAGRAM S ON SHEET P5.2 FOR MORE INFORMATION.
17. TO LIGHTS ON 2ND FLOOR BREEZEWAY.
18. FROM LIGHTS ON 1ST FLOOR BREEZEWAY.
19. TO LIGHTS ON 3RD FLOOR BREEZEWAY.
20. FROM LIGHTS ON 2ND FLOOR BREEZEWAY.
21. DOWNLIGHTS TO BE INSTALLED IN SOFFIT ABOVE THIRD FLOOR. (TYPICAL)
22. PROVIDE MANUAL PULL STATION AT FACP CLOSET AND CONNECT TO FIRE ALARM SYSTEM.
23. COORDINATE EXACT LOCATION OF FIRE DEPARTMENT CONNECTION WITH AUTHORITY HAVING JURISDICTION.
24. CONNECT HEAT TRACE FOR PIPING IN SOFFIT. COORDINATE REQUIREMENTS WITH OTHER TRADES.
25. TELEPHONE TERMINAL BOARD: COVER WALL AS INDICATED ON PLAN WITH 4'x8'x3/4" ACX FIRE RETARDANT PLYWOOD SHEETS INSTALLED VERTICALLY WITH BOTTOM AT 6" AFF. PLYWOOD SHALL BE PERMANENTLY FASTENED TO THE WALL BY MEANS OF WALL ANCHORS UTILIZING GALVANIZED, ZINC PLATED, OR STAINLESS STEEL HARDWARE WITH A FLAT HEAD. FINISHED INSTALLATION SHALL HAVE FLUSH APPEARANCE WITH COUNTERSUNK SCREW HEADS TO PREVENT SPLITTING OF THE PLYWOOD. DRYWALL SCREWS ARE NOT ACCEPTABLE. PAINT WITH TWO COATS OF LIGHT GRAY FIRE RETARDANT SEALER PRIOR TO INSTALLATION OF ANY EQUIPMENT.
26. TELECOMMUNICATION GROUND BAR AT 18" AFF SHALL BE 13-1/4"W x 2"H x 1/4" THICK ELECTRO-TIN PLATED COPPER BUS BAR, COMPETE WITH INSULATED STAND-OFFS AND STAINLESS STEEL BRACKETS, ERICO #TGBA14LO6PT OR EQUAL. BOND TO EQUIPMENT GROUND BUS AT METER CENTER MAIN AND HOUSE PANEL WITH #4 AWG INSULATED STRANDED COPPER. INSTALL GROUNDING / BONDING CONDUCTORS IN 3/4" CONDUIT WHERE EXPOSED AND WHERE SUBJECT TO PHYSICAL DAMAGE. ALL CONNECTION TO GROUND BAR SHALL BE MEADE USING COMPRESSION TYPE LUGS (MECHANICAL LUGS ARE NOT ACCEPTABLE).
27. (2) 2" CONDUITS FOR COMMUNICATIONS SERVICES. SEE SITE PLAN, E1.0 FOR CONTINUATION.
28. PROVIDE JUNCTION BOX IN SOFFIT FOR FUTURE ROOF AND GUTTER DE-ICING CABLE. PROVIDE 1" CONDUIT WITH PULL STRING FROM JUNCTION BOX TO HOUSE PANEL. PROVIDE JUNCTION BOX WITH WEATHER PROOF BLANK COVER.
29. CIRCUIT BREEZWAY LIGHTS FOR CONTINUOUS OPERATION.

NOTE:
ALL AREAS OF BUILDINGS TO BE PROTECTED WITH SPRINKLER SYSTEM DESIGNED IN ACCORDANCE WITH NFPA 13R. FIRE PROTECTION CONTRACTOR SHALL SUBMIT DRAWINGS AND CALCULATIONS TO AHJ FOR APPROVAL. BREEZEWAYS, BALCONIES, AND OTHER UNHEATED AREAS ARE TO BE PROVIDED WITH FREEZE-PROOF HEADS AND PIPING.

SEE SHEET P4.1 FOR DOMESTIC WATER DISTRIBUTION IN INDIVIDUAL APARTMENTS.

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Date 7/17/2024

REVISION:	
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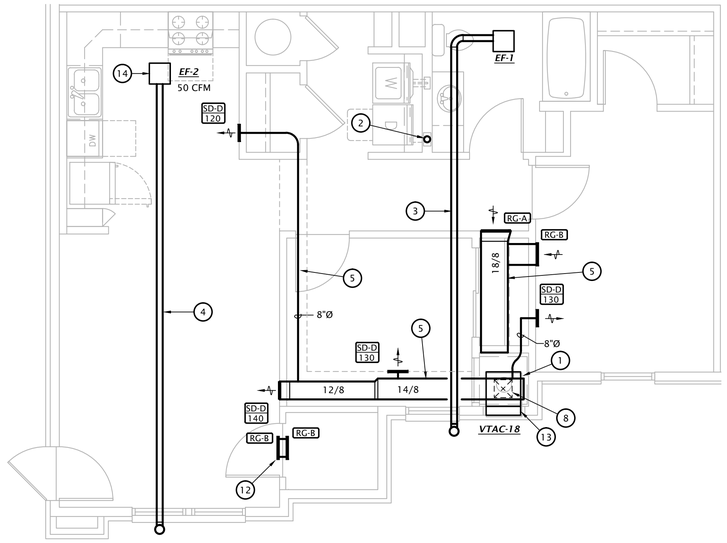
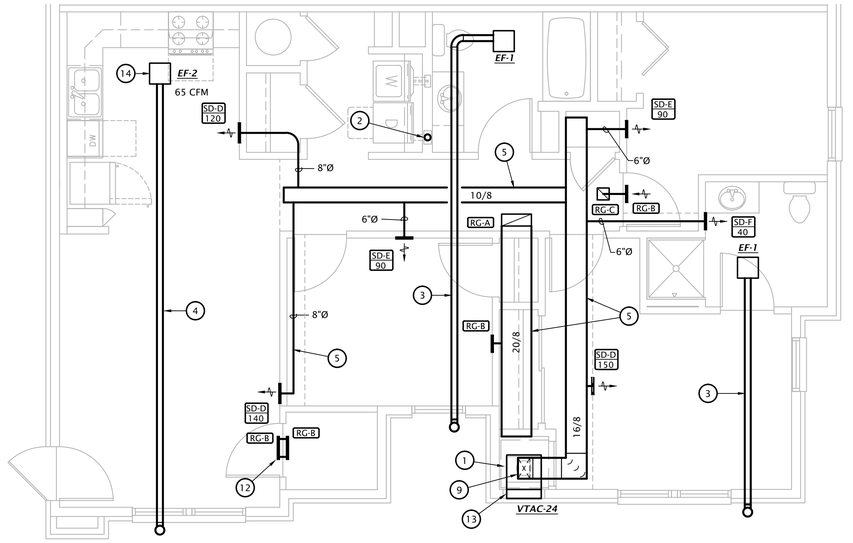
DATE:	7-17-2024
JOB:	22-3262
SHEET NO.:	ME1.2



1 2 BEDROOM ENLARGED FLOOR PLAN - 3RD FLOOR
1/4" = 1'-0"



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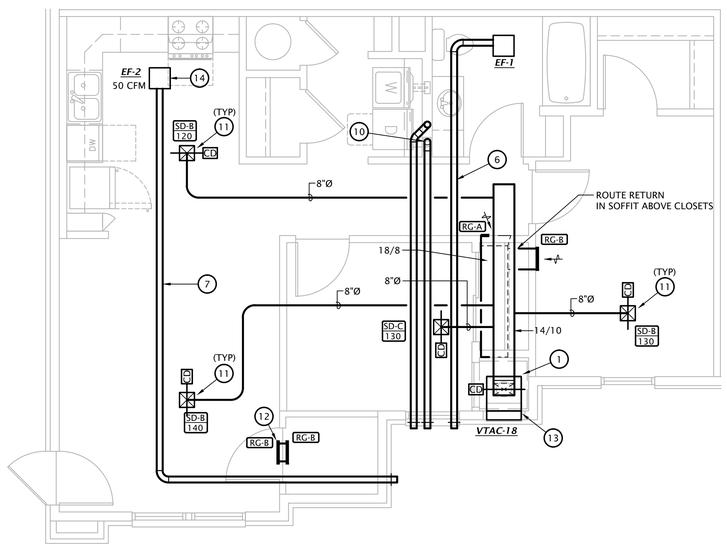
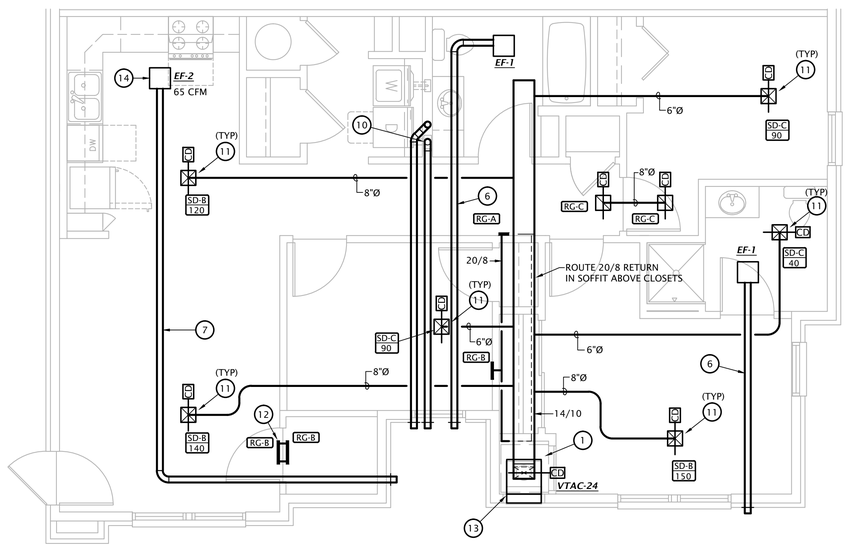


3 2 BEDROOM ENLARGED FLOOR PLAN - 1ST & 2ND FLOORS
1/4" = 1'-0"



4 3 BEDROOM ENLARGED FLOOR PLAN - 1ST & 2ND FLOORS
1/4" = 1'-0"

MECHANICAL NOTES BY SYMBOL

NOTES SHOWN ARE TYPICAL FOR ALL APARTMENTS WHERE APPLICABLE.

1. ROUTE 3/4" CONDENSATE DRAIN FROM VTAC TO ABOVE FLOOR DRAIN.
2. PROVIDE UL LISTED DRYER BOX EQUAL TO IN-O-VATE TECHNOLOGIES IN WALL INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, AND ROUTE 4"Ø DRYER EXHAUST DUCT BELOW FLOOR TO WALL CAP WITH BACKDRAFT DAMPER. MANUFACTURER'S MAXIMUM ALLOWABLE DUCT LENGTH = 45' WITH TWO 90° ELBOW. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT PROVIDED. PROVIDE PERMANENT LABEL IDENTIFYING EQUIVALENT LENGTH OF DRYER DUCT INSTALLED PER IMC 504.

   NOTE: ANNULAR SPACE AROUND DUCT IS TO BE SEALED AT ALL PENETRATIONS OF FLOORS AND CEILINGS WITH U.L. LISTED FIRE STOPPING SYSTEM.
3. ROUTE 4"Ø EXHAUST DUCT TO SOFFIT VENT EQUAL TO PANASONIC EZSOFFIT VENT.
4. ROUTE 6"Ø EXHAUST DUCT FROM EXHAUST FAN TO SOFFIT VENT EQUAL TO PANASONIC EZSOFFIT VENT. TRANSITION TO CONNECTIONS AT SOFFIT VENT AND FAN.
5. ROUTE ALL SUPPLY AND RETURN DUCTWORK ON 3RD FLOOR APARTMENTS IN SOFFITS OR DROPPED CEILING AREAS. SUPPLY AND RETURN DUCTWORK SHALL BE ROUTED BELOW DRYWALL AT BOTTOM OF ROOF TRUSSES WITHIN BUILDING AIR BARRIER AND THERMAL ENVELOPE. COORDINATE EXACT SOFFIT LOCATION WITH ARCHITECT AND G.C.
6. ROUTE 4"Ø EXHAUST DUCT TO WALL CAP WITH BIRD SCREEN AND BACKDRAFT DAMPER.
7. ROUTE 6"Ø EXHAUST DUCT TO WALL CAP WITH BIRD SCREEN AND BACKDRAFT DAMPER.
8. TRANSITION FROM CONNECTION AT VTAC TO 12/12 SUPPLY DUCT.
9. TRANSITION FROM CONNECTION AT VTAC TO SUPPLY DUCT.
10. PROVIDE UL LISTED DRYER BOX EQUAL TO IN-O-VATE TECHNOLOGIES IN WALL INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, AND ROUTE 4"Ø DRYER EXHAUST DUCT TO WALL CAP WITH BACKDRAFT DAMPER. MANUFACTURER'S MAXIMUM ALLOWABLE DUCT LENGTH = 45' WITH TWO 90° ELBOW. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT PROVIDED. PROVIDE PERMANENT LABEL IDENTIFYING EQUIVALENT LENGTH OF DRYER DUCT INSTALLED PER IMC 504.

    NOTE: ANNULAR SPACE AROUND DUCT IS TO BE SEALED AT ALL PENETRATIONS OF FLOORS AND CEILINGS WITH U.L. LISTED FIRE STOPPING SYSTEM.
11. PROVIDE U.L. LISTED RADIATION DAMPER AT ALL MEMBRANE PENETRATIONS OF FLOOR CEILING ASSEMBLY. REFERENCE DETAIL 3 SHEET M6.1 FOR MORE INFORMATION.
12. MOUNT RETURN GRILLES ON BOTH SIDES OF WALL. CENTER RETURN GRILLE BETWEEN CEILING AND TOP OF DOOR. PROVIDE TRANSFER DUCT BETWEEN GRILLES.
13. ENSURE VTAC, WALL SLEEVE, AND LOUVER ARE SEALED TO MAINTAIN INTEGRITY OF AIR BARRIER.
14. TWO SPEED KITCHEN EXHAUST FAN UTILIZED AS VENTILATION FAN PER REQUIREMENTS OF IMC AND ENERGY STAR. FAN SHALL OPERATE CONTINUOUSLY AT AIRFLOW INDICATED ON PLANS. COORDINATE WITH ELECTRICAL CONTRACTOR TO PROVIDE OVERRIDE SWITCH TO ALLOW OCCUPANT TO INCREASE FAN AIRFLOW TO 100 CFM FOR INTERMITTENT OPERATION.

NOTES:
- ALL PENETRATIONS OF APARTMENT AIR BARRIERS SHALL BE SEALED TO MAINTAIN INTEGRITY OF AIR BARRIER. COORDINATE WITH G.C.
- ALL DUCTWORK SHALL BE SEALED PER ENERGY STAR REQUIREMENTS. COORDINATE REQUIREMENTS WITH ENERGY RATER.
- DUCTWORK AT SUPPLY, RETURN, AND TRANSFER AIR REGISTERS SHALL BE SEALED TO FLOOR, WALL, OR CEILING USING HVAC TAPE.

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MECHANICAL SYMBOLS

T	THERMOSTAT
	SQUARE SUPPLY DIFFUSER - TYPE AND AIRFLOW INDICATED
	SQUARE RETURN GRILLE - TYPE INDICATED
	MANUAL BALANCING DAMPER
	FLEXIBLE DUCTWORK - MAX. 5'
XX-X / XXX	DIFFUSER DESIGNATION AIRFLOW INDICATED
	RECTANGULAR RETURN OR RELIEF AIR DUCT UP
	RECTANGULAR SUPPLY AIR DUCT UP
	RECTANGULAR SUPPLY AIR DUCT DOWN
	RECTANGULAR RETURN OR EXHAUST AIR DUCT DOWN
	WALL DIFFUSER
	ROUND DUCT UP
	PIPE TURNING UP
	PIPE TURNING DOWN
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
CD	CEILING RADIATION DAMPER
	CONTROL CABLE, VERIFY TYPE WITH EQUIPMENT MANUFACTURER

VERTICAL PACKAGED TERMINAL AIR CONDITIONER SCHEDULE

MARK	MANUFATURER	MODEL NUMBER	COOLING					HEATING			AIRFLOW	ESP	FAN SPEED	OA CFM	MIN. CKT. AMPS	MAX. OCPD	ELECTRICAL CHARACTERISTICS	NOTES
			OA DB	ENT DB/WB	SENSIBLE COOLING	TOTAL COOLING	SEER2	TOTAL HEATING	HSPF2	ELECTRIC HEAT OUTPUT								
VTAC-18	FREIDRICH	VHA18K-75RTQ	85	75/63	12,945	17,980	11.9	16,000	6.3	6.1kW	550	0.3"	HIGH	0	41.8	45	208V-1PH	1,2,3,4,5
VTAC-24	FREIDRICH	VHA24K-75RTQ	85	75/63	14,980	21,400	11.9	18,500	6.3	6.1kW	600	0.3"	HIGH	0	41.8	45	208V-1PH	1,2,3,4,5

NOTES:

1. PROVIDE WITH ACCESS PANEL WITH RETURN AIR GRILLE. PROVIDE FILTER BRACKET AT UNIT WITH MIN. MERV 6 FILTER.
2. PROVIDE WITH ACCESSORY DRAIN PAN.
3. PROVIDE WITH WALL PLENUM AND ACCESSORY ARCHITECTURAL LOUVER IN COLOR AS SELECTED BY ARCHITECT
4. PROVIDE WITH WIRED PROGRAMMABLE THERMOSTAT.
5. MOUNT ON 24" TALL METAL PLATFORM - COORDINATE MOUNTING HEIGHT OF UNIT AND EXTERIOR LOUVER WITH G.C.
6. PERMANENTLY SEAL FRESH AIR OPENING IN VTAC UNIT. OUTSIDE AIR IS PROVIDED TO SPACE VIA 'EF-2'.

EXHAUST FAN SCHEDULE

MARK	MANUFACTURER	MODEL	CFM	ESP (" wg)	POWER	VOLTS/ PHASE	NOTES
EF-1	PANASONIC	FV-0810VSS1	50	0.45"	21 W	120 / 1	1,2,3,4,5,6
EF-2	PANASONIC	FV-0511VK2	110	0.45"	21 W	120 / 1	1,2,3,4,5,6,7

NOTES:

1. Fixture shall be Energy Star listed.
2. Fixture shall operate at <1 SONE
3. Provide with ec motor with integral disconnect.
4. Provide manufacturer's wall cap or roof jack, see plans.
5. Provide integral backdraft damper.
6. Provide with manufacturer's ceiling radiation damper. Omit radiation dampers where rated ceilings are not present, coordinate with Arch.
7. Provide Panasonic FV-VS15VK1 multi-speed with time delay module set to provide cfm as listed on drawings continuously with a max of 110 cfm for 15min (adj) when wall switch is turned on.

AIR DEVICE SCHEDULE

MARK	MANUFATURER	MODEL	APPLICATION				FINISH	MOUNTING	DAMPER	FACE SIZE	DESCRIPTION	NOTES
			SUPPLY	RETURN	EXHAUST	TRANSFER						
SD-A	HART & COOLEY	684	•				WHITE	SURFACE	YES	12"x12"	Steel square louvered 4-way suppply register	1
SD-B	HART & COOLEY	684	•				WHITE	SURFACE	YES	10"x10"	Steel square louvered 4-way suppply register	1
SD-C	HART & COOLEY	684	•				WHITE	SURFACE	YES	8"x8"	Steel square louvered 4-way suppply register	1
SD-D	HART & COOLEY	661	•				WHITE	SURFACE	YES	12"x6"	Steel wall mounted louvered 2-way supply register	1
SD-E	HART & COOLEY	661	•				WHITE	SURFACE	YES	12"x4"	Steel wall mounted louvered 2-way supply register	1
SD-F	HART & COOLEY	661	•				WHITE	SURFACE	YES	6"x4"	Steel wall mounted louvered 2-way supply register	1
RG-A	HART & COOLEY	650		•		•	WHITE	SURFACE	NO	20"x8"	Louvered face return grille	
RG-B	HART & COOLEY	650		•		•	WHITE	SURFACE	NO	12"x8"	Louvered face return grille	
RG-C	HART & COOLEY	650		•		•	WHITE	SURFACE	NO	8"x8"	Louvered face return grille	1

GENERAL NOTES

- Maximum noise criteria shall be 25.
- Runouts to diffusers shall be same size as neck, U.N.O.

NOTES:

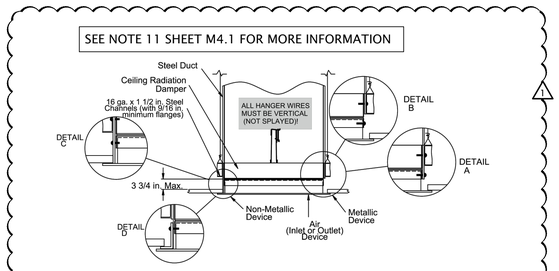
1. Provide transition to neck of diffuser for runout size as indicated on plans.

ELECTRIC HEATER SCHEDULE

MARK	MANUF.	MODEL	MOUNTING	WATTS	VOLTAGE/PHASE	DESCRIPTION	NOTES
EWH	TRANE	UHAA	WALL	3,000	208/1	Architectural fan forced wall heater	1,2,3
EH-1	BERKO	RUX300812	WALL	3,000	208/1	Explosion proof heater	1,2,3,4

NOTES:

1. Provide with integral thermostat, high temp. thermal cutout and fan delay.
2. Provide with unit mounted disconnect switch.
3. Provide with surface mounting frame.



3 CEILING RADIATION DAMPER DETAIL

NO SCALE

HEAT PUMP SCHEDULE

MARK	MANUF.	MODEL	NOMINAL TONS	COOLING CAPACITY					HEATING CAPACITY			MIN HSPF	ELECTRICAL		
				OA DB	ENT AIR DB/WB	SENS MBH	TOT MBH	MIN SEER	OA DB	ENT AIR DB	TOT MBH		MCA	MOCP	V/PH
HP	TRANE	4TWR4030H1	2.5	85	75/63	20.9	28.4	16	47	70	28.4	9.75	15	25	208/1

Notes:

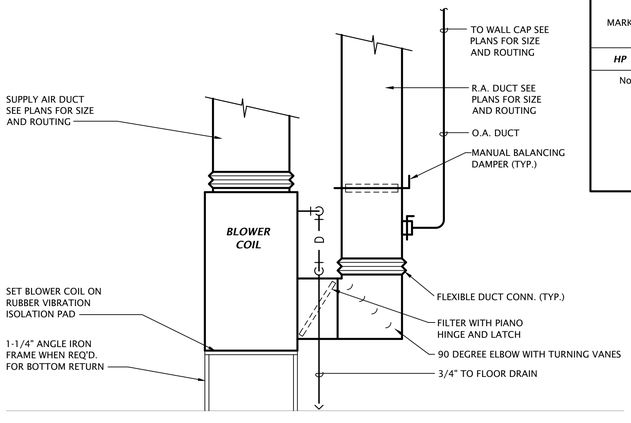
1. Refrigerant lines shall be field fabricated. Coordinate line sizing requirements with equipment manufacturer for length of run for each apartment. Provide suction accumulators, etc. as required.
2. Provide 7-day programmable thermostat.
3. Provide with R410a refrigerant.
4. Provide 2 sets of MERV-7 filters.

BLOWER COIL SCHEDULE

MARK	MANUF.	MODEL	FAN			HEATING KW	V/Ph	MOTOR FLA	MCA	MOCP
			CFM	ESP	SPEED					
BC	TRANE	TEM6A0B30H21	1000	0.7	HIGH	7.2/3.6	208/1	4.3	49/22	50/25

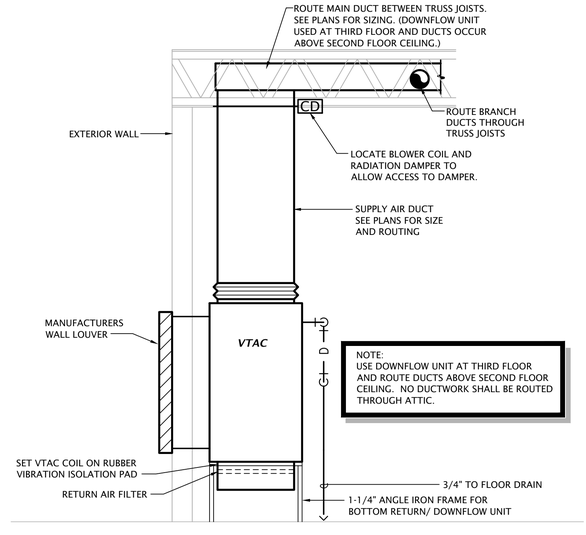
Notes:

1. Single point connection required, coordinate the exact electrical requirements of equipment provided with E.C.
2. Electric heater shall not operate simultaneously with heat pump. Electric heater shall be used as back-up heat only.
3. Provide with integral factory installed disconnect swtich.



2 BLOWER COIL DETAIL

NO SCALE



1 TYPICAL VTAC COIL DETAIL

NO SCALE

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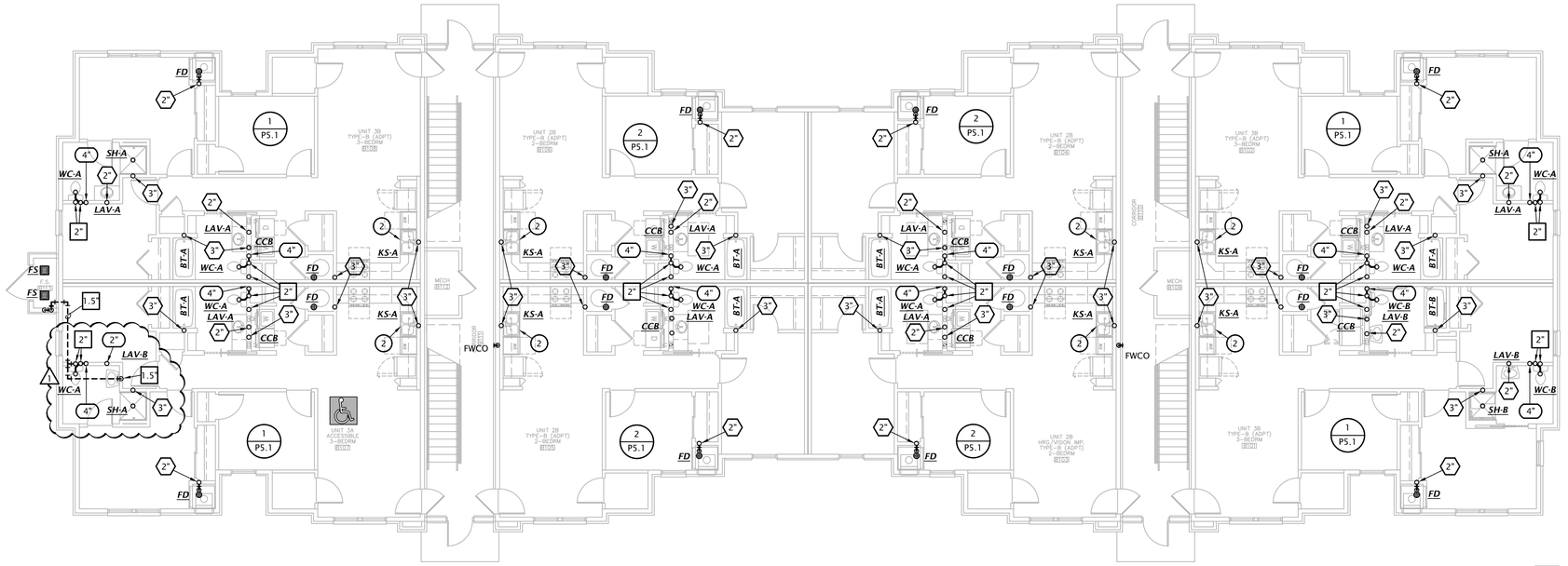
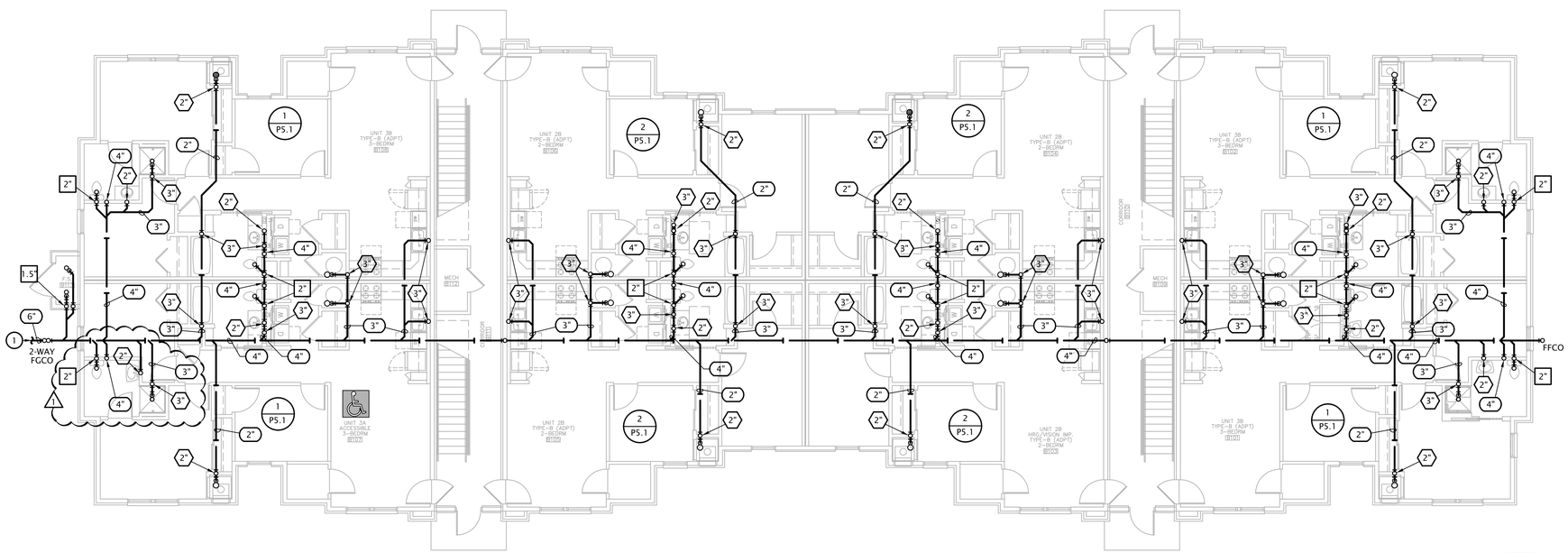


2 BUILDING B - FIRST FLOOR WASTE AND VENT PLAN

1/8" = 1'-0"



1 BUILDING B - UNDER FLOOR WASTE AND VENT PLAN

1/8" = 1'-0"

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PLUMBING SIZING SYMBOLS	
X"	DRAIN (X = SIZE)
X"	VENT (X = SIZE)
X"	WASTE STACK VENT (X = SIZE)

W&V PLAN GENERAL NOTES

1. SEE PLUMBING ROUGH-IN SCHEDULE ON SHEET P6.1 FOR INDIVIDUAL FIXTURE CONNECTION SIZES AND ADDITIONAL INFO.
2. SEE WASTE AND VENT ISOMETRICS ON SHEET P5.1 FOR ADDITIONAL INFO.
3. PIPING SHALL NOT BE ROUTED VERTICALLY IN FIREWALLS SEPARATING UNITS. ALL PIPING SHALL BE ROUTED VERTICALLY IN FURRED OUT WALLS AS INDICATED ON PLANS. VERIFY DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
4. ALL PENETRATIONS OF APARTMENT AIR BARRIERS SHALL BE SEALED TO MAINTAIN INTEGRITY OF AIR BARRIER. COORDINATE WITH G.C.

(#) W&V PLAN NOTES BY SYMBOL

1. SEE CIVIL DRAWINGS FOR CONTINUATION.
2. CONNECT DISHWASHER DRAIN TO INDIRECT CONNECTION AT GARBAGE DISPOSER. COORDINATE EXACT REQUIREMENTS WITH DISHWASHER PROVIDED BY OTHERS.

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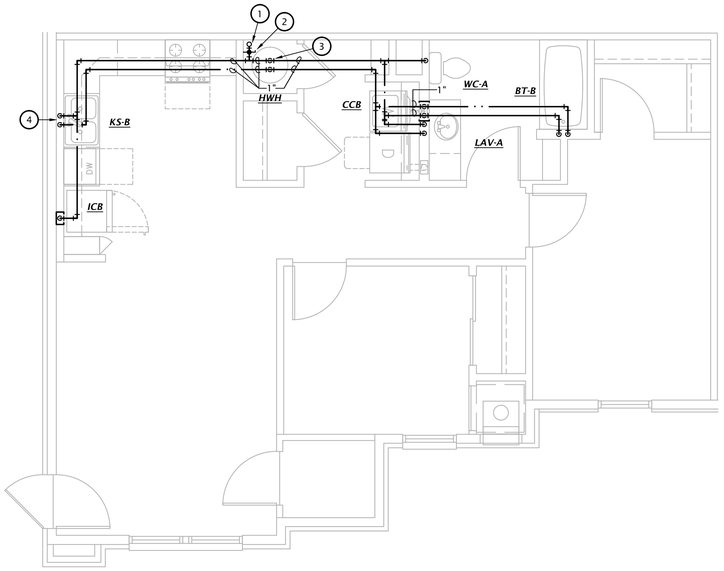
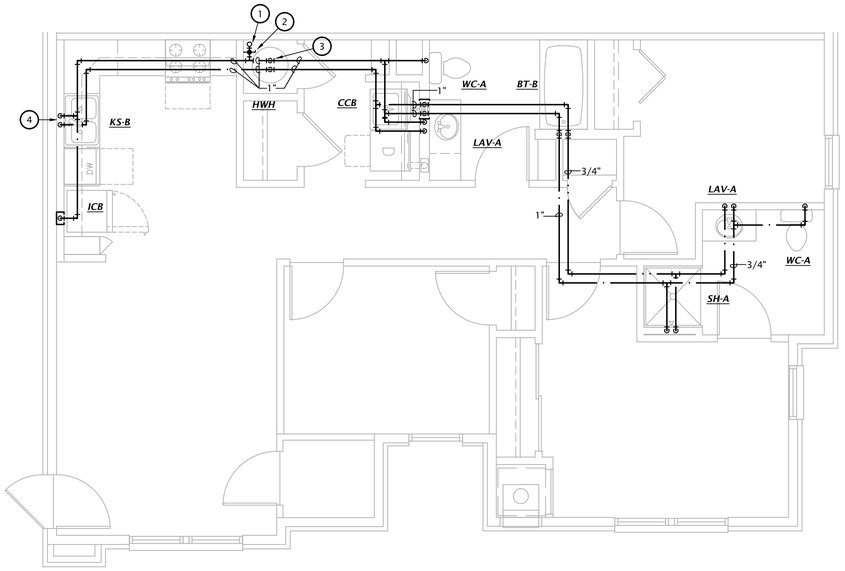
(#) PLUMBING PLAN NOTES BY SYMBOL

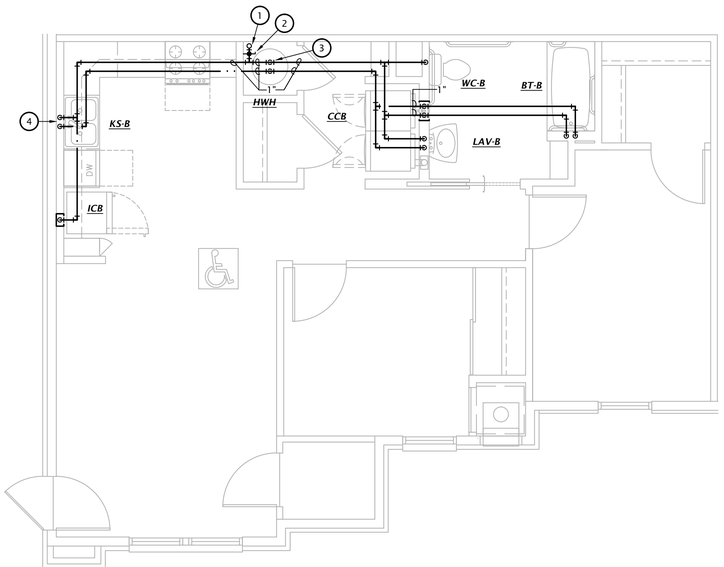
1. SEE OVERALL DOMESTIC WATER PLANS FOR CONTINUATION.
2. PROVIDE 1-1/4" WATER SERVICE TO APARTMENT WITH SHUT-OFF VALVE. SEE DOMESTIC RISER DIAGRAMS ON SHEET P5.2 FOR ADDITIONAL INFORMATION.
3. CONNECT 1" CW AND HW TO HOT WATER HEATER 'HWH-A' SEE DETAIL X:P6.1.
4. PROVIDE 1/2" VALVED BRANCH BELOW SINK AND CONNECT DISHWASHER. ROUTE PIPING ALONG BACK OF CABINETRY, COORDINATE EXACT ROUTING WITH C.C. COORDINATE EXACT REQUIREMENTS WITH DISHWASHER PROVIDED.



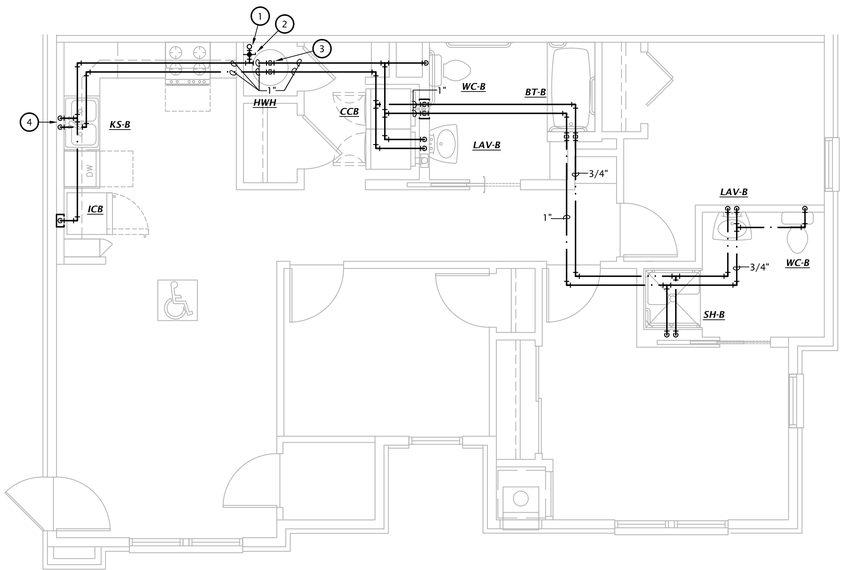
1 2 BEDROOM ENLARGED FLOOR PLAN
1/4" = 1'-0"



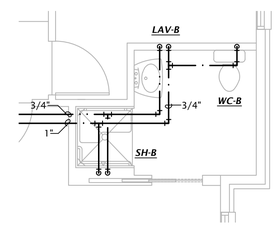
2 3 BEDROOM ENLARGED FLOOR PLAN
1/4" = 1'-0"



3 2 BEDROOM ACCESSIBLE ENLARGED FLOOR PLAN
1/4" = 1'-0"



4 3 BEDROOM ACCESSIBLE ENLARGED FLOOR PLAN
1/4" = 1'-0"



5 UNIT 3A ACCESSIBLE PRIMARY BATH 118 ENLARGED FLOOR PLAN
1/4" = 1'-0"

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THE RESERVES AT GRAND VIEW HEIGHTS
NEW APARTMENT COMPLEX
LARAMIE, WYOMING

Professional Engineer
John F. LEWIS-SMITH
20170
WYOMING
Date 7/17/2024

REVISION:	
1	9-27-2024

DATE: 7-17-2024
JOB: 22-3262
SHEET NO.:

P4.1