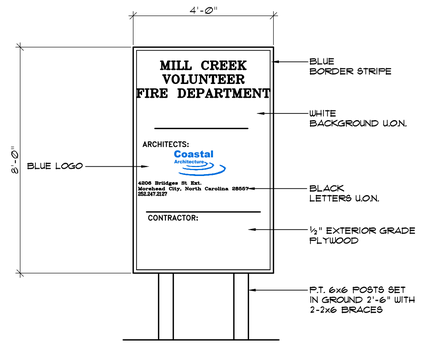
MILL CREEK VOLUNTEER FIRE DEPARTMENT

NEWPORT, NORTH CAROLINA



1 CS-1 **PROJECT SIGN**

NOT TO SCALE

NOTE: SUBMIT SHOP DRAWING FOR COORDINATION OF LETTER HEIGHTS SPECIFIC SIGN COLORS.

DRAWING LIST

Coastal Architecture

Coastal Architecture

- Architectural Design
- Planning
- Interiors

AIA

Member of the American Institute of Architects

Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC 28557

www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPARTMENT
NEWPORT, NORTH CAROLINA

COVER SHEET

25022

ISSUED: 04/16/26
DWG BY: BLS
CKD BY: LDD

REVISIONS

SHEET NO.
CS-1
OF

APPENDIX B

2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

(EXCEPT ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES)

Name of Project: MILL CREEK VOLUNTEER FIRE DEPT.
Address: 2370 MILL CREEK RD, NEWPORT, NORTH CAROLINA Zip Code 28570
Owner/Authorized Agent: _____ Phone # (___) ___ - ___ E-Mail _____
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☒ City_____ ☐ County_____ ☐ State _____

CONTACT: _____

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural	Coastal Architecture	Lee Dixon	6419	(252) 247-2127	lee@coastalarchitecture.net
Civil				(___)	
Electrical	Burke Design Group	Ben Burke	22038	(919)771-1916	benburke@ncrr.com
Fire Alarm				(___)	
Plumbing	Burke Design Group	Ben Burke	22038	(919)771-1916	benburke@ncrr.com
Mechanical	Burke Design Group	Ben Burke	22038	(919)771-1916	benburke@ncrr.com
Sprinkler-Standpipe				(___)	
Structural	FEMTB			(___)	
Retaining Walls > 5 feet High				(___)	
Other				(___)	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☐ New Building ☐ Shell/Core ☐ 1st Time Interior Completions ☒ Addition ☐ Phased Construction—Shell Core

2018 NC EXISTING BUILDING CODE: ☐ Prescriptive ☐ Alteration Level I ☐ Historic Property
(check all that apply) ☐ Repair ☐ Alteration Level II ☐ Change of Use
☐ Chapter 14 ☐ Alteration Level III

CONSTRUCTED: (date) _____ CURRENT USE(S) (Ch. 3): _____
RENOVATED: (date) _____ PROPOSED USE(S) (Ch. 3): _____
OCCUPANCY CATEGORY (Table 1604.5): Current: _____ Proposed: IV

BASIC BUILDING DATA

Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ I-B ☐ II-B ☐ III-B ☒ V-B
Sprinklers: ☐ No ☐ Partial ☐ NFPA 13 ☒ NFPA 13R ☐ NFPA 13D
Standpipes: ☐ No Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Primary Fire District: ☒ No ☐ Yes **Flood Hazard Area:** ☒ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes

GROSS BUILDING AREA TABLE

Floor	Existing (sq ft)	New (sq ft)	Subtotal
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor		2079	2079
Basement			
TOTAL		2079	2079

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design versus the annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ (If checked, the remainder of this section is not applicable.)

Exempt Building: ☐ Provide code or statutory reference: _____

Climate Zone: ☒ 3A ☐ 4A ☐ 5A

Method of Compliance:
Energy Code: ☐ Performance ☒ Prescriptive
ASHSAE 90.1: ☐ Performance ☐ Prescriptive
Other: ☐ Performance (specify source) _____

THERMAL ENVELOPE: (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly: METAL ROOF, R-38 SIMPLE SAVER INSUL., S.A.T. CEILING
U-Value of total assembly: _____
R-Value of insulation: R-38
Skylights in each assembly: _____
U-Value of skylight: _____
total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)
Description of assembly METAL STUDS
U-Value of total assembly: _____
R-Value of insulation: R-25 SIMPLE SAVER
Openings (windows or doors with glazing)
U-Value of assembly: _____
Solar heat gain coefficient: _____
projection factor: _____
Door R-Values: _____

Walls below grade (each assembly)
Description of assembly: N/A
U-Value of total assembly: _____
R-Value of insulation: _____

Floors over unconditioned space (each assembly)
Description of assembly: N/A
U-Value of total assembly: _____
R-Value of insulation: _____

Floors slab on grade
Description of assembly: 4" CONC. SLAB ON VAPOR BARRIER ON COMPACTED FILL
U-Value of total assembly: _____
R-Value of insulation: N/A
Horizontal/vertical requirement: _____
slab heated: _____

ALLOWABLE AREA

Primary Occupancy Classification(s):
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☒
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2
I-2 Condition ☐ 1 ☐ 2
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☒ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☐

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): _____
This separation is not exempt as a Nonseparated Use (see exceptions).
Special Uses (Chapter 4 – List Code Sections): _____
Special Provisions: (Chapter 5 – List Code Sections): _____
Mixed Occupancy: ☐ No ☒ Yes Separation: 1 Hr. Exception: _____
Non-separated Use (508.3)

✖ Separated Use (508.4)—See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

Select one

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ = _____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.24 AREA	(C) AREA FOR FRONTAGE INCREASE(1, 5	(D) ALLOWABLE AREA PER STORY OR UNLIMITED(2, 3
1	B/R-2	2079	7000	NOT REQ'D	7000

1. Frontage area increases from Section 506.2 are computed thus:
   a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
   b. Total Building Perimeter = _____ (P)
   c. Ratio (F/P) = _____ (F/P)
   d. W = Minimum width of public way = _____ (W)
2. Unlimited area applicable under conditions of Section 507.
3. Maximum Building Area = total number of stories in the building × D (maximum 3 stories) (506.2).
4. The maximum area of open parking garages must comply with Table 406.5.4. The maximum area of air traffic control towers must comply with Table 412.3.1.
5. Frontage increase is based on the unsprinklered area value in Table 506.2.

STRUCTURAL DESIGN

DESIGN LOADS:
Importance Factors: Wind (IW) 1.15 SEE ALSO S-1
Snow (IS) _____
Seismic (IE) 1.5

Live Loads: Roof 20 psf BALANCE OF
Mezzanine _____ psf INFO BY FEMB
Floor 50 psf
Ground Snow Load: 10 **psf**

Wind Load: Basic Wind Speed 155 mph (ASCE-7)
Exposure Category C

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☒ C ☐ D

Provide the following Seismic Design Parameters:
Occupancy Category (Table 1604.5) ☐ I ☐ II ☐ III ☒ IV
Spectral Response Acceleration SS 0.118 %g S1 0.026 %g
Site Classification (ASCE 7) ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data
Basic structural system (check one)
☐ Bearing Wall ☐ Dual w/Special Moment Frame
☒ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☒ Moment Frame ☐ Inverted Pendulum
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☒ **Yes** ☐ **No**

LATERAL DESIGN CONTROL: ☐ Earthquake ☒ Wind

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) _____ psf
Presumptive Bearing capacity 2,000 psf
Pile size, type, and capacity _____

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)	40	18'-10"	T504.3
Building Height in Stories (Table 504.4)	2	1	T504.4

1. Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (feet)	RATING REQ'D	RATING PROVIDED (W/ * REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame Including columns, girders, trusses	——	Ø	Ø				
Bearing Walls							
Exterior							
North	——	——	——				
East	——	——	——				
West	——	——	——				
South	——	——	——				
	——	——	——				
Nonbearing walls and partitions Exterior walls							
North	>5 <10	1	1	G3	U419		
East	>10 <30	Ø	Ø				
West	> 30	Ø	Ø				
South	> 30	Ø	Ø				
Interior walls and partitions							
Floor Construction Including supporting beams and joists		Ø	Ø				
Floor Ceiling Assembly		Ø	Ø				
Columns Supporting Floors		Ø	Ø				
Roof Construction, including supporting beams and joists		Ø	Ø				
Roof Ceiling Assembly		Ø	Ø				
Columns Supporting Roof		Ø	Ø				
Shaft Enclosures—Exit		N/A	N/A				
Shaft Enclosures—Other		N/A	N/A				
Corridor Separation		N/A	N/A				
Occupancy/Fire Barrier Separation		1	1	G2	U419		
Party/Fire Wall Separation		——	——				
Smoke Barrier Separation		-					
Smoke Partition		-					
Tenant/Dwelling Unit/ Sleeping Unit Separation		1	1	G2	U419		
Incidental Use Separation		-					

* Indicate section number permitting reduction

MECHANICAL DESIGN

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: _____
summer dry bulb: _____

Interior design conditions
winter dry bulb: _____
summer dry bulb: _____
summer humidity: _____

SEE MECHANICAL

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
Unitary
description of unit _____
heating efficiency: _____
cooling efficiency: _____
size category of unit: _____
Boiler
Size category. If oversized, state reason.: _____
Chiller
Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

ELECTRICAL DESIGN

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance:
Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps
ballast type used in fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified versus allowed (whole building or space by space)
total exterior wattage specified versus allowed

SEE ELECTRICAL

Additional Prescriptive Compliance
☐ 506.2.1 More Efficient Mechanical Equipment
☐ 506.2.2 Reduced Lighting Power Density
☐ 506.2.3 Energy Recovery Ventilation Systems
☐ 506.2.4 Higher Efficiency Service Water Heating
☐ 506.2.5 On-Site Supply of Renewable Energy
☐ 506.2.6 Automatic Daylighting Control Systems

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (feet) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
S, W > 30	UP, US	NO LIMIT	——
E > 10 < 15	UP, US	15%	14%
N > 5 < 10	UP, US	10%	10%

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☒ Yes ☐ No
Exit Signs: ☒ Yes ☐ No
Fire Alarm: ☐ Yes ☒ No
Smoke Detection Systems: ☒ Yes ☐ No
Carbon Monoxide Detection: ☐ Yes ☒ No

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: G-2

N/A Fire and/or smoke rated wall locations (Chapter 7)
☒ Assumed and real property line locations (if not on the site plan)
☒ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☒ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
☒ Occupant loads for each area
☒ Exit access travel distances (1017)
☒ Common path of travel distances [Tables 1006.2.1 & 1006.3.2(1)]
☒ Dead end lengths (1020.4)
☒ Clear exit widths for each exit door
☒ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☒ Actual occupant load for each exit door
N/A A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☒ Location of doors with panic hardware (1010.1.10)
N/A Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
N/A Location of doors with electromagnetic egress locks (1010.1.9.9)
N/A Location of doors equipped with hold-open devices
N/A Location of emergency escape windows (1030)
N/A The square footage of each fire area (202)
N/A The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☒ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS (SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED
	NOT APPLICABLE						

ACCESSIBLE PARKING (SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 5' ACCESS AISLE	
		EXISTING				
TOTAL						

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

USE	WATERCLOSETS			URINALS	LAVATORIES			SHOWERS/ TUBS	DRINKING FOUNTAINS	
	Male	Female	Unisex		Male	Female	Unisex		Regular	Accessible
REQ'D	1	1	-	-	1	1	-	1	-	-
PROVIDED	2	2	-	-	2	2	-	2	-	-

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below)

NOT APPLICABLE

Coastal Architecture PLLC
- Architectural Design
- Planning
- Interiors

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Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

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MILL CREEK VOLUNTEER FIRE DEPT.
NEWPORT, NORTH CAROLINA

COASTAL ARCHITECTURE PLLC — CERT. NO. 51792 — REGISTERED NORTH CAROLINA CORPORATION

LEE D. DIXON, JR. — REGISTERED ARCHITECT — 6419 — NORTH CAROLINA

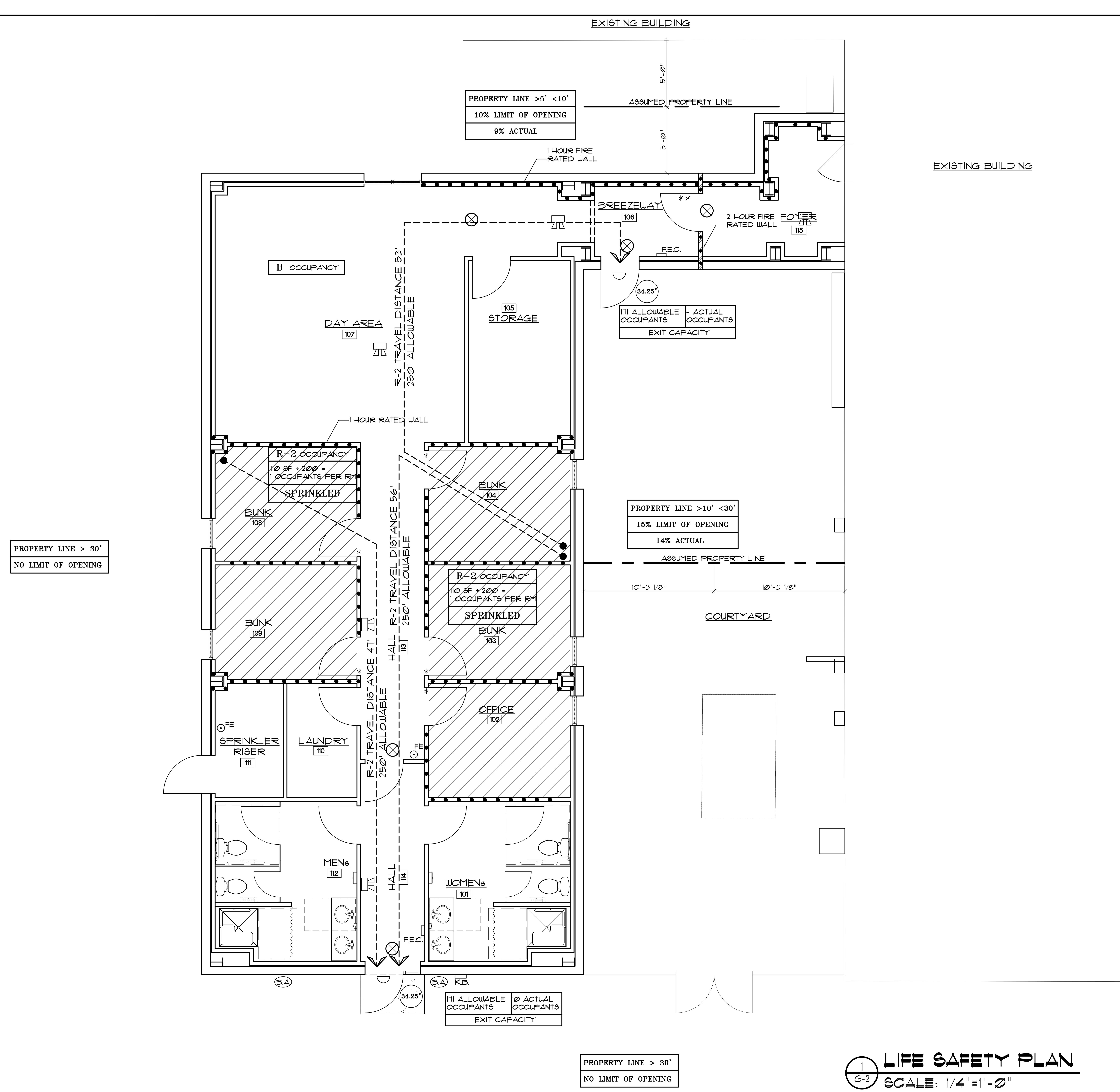
GENERAL DATA

25022

ISSUED: 04/13/26
DWG BY: BLS, MSG
CKD BY: LDD

REVISIONS

SHEET NO.
G-1
OF



1 G-2 **LIFE SAFETY PLAN**
SCALE: 1/4"=1'-0"

NORTH

OCCUPANCY/LOAD TYPE KEYING:

B = BUSINESS
R-2 = RESIDENTIAL

LEGEND:

FE	= FIRE EXTINGUISHER ON STANDARD HOOK
F.E.C.	= FIRE EXTINGUISHER AND CABINET LARSEN SEMI-RECESSED FS 2409-R3 BRUSHED CHROME W/ MP5 FIRE EXTINGUISHER
	1 HR RATED WALL (UL U419)
	2 HR RATED WALL (UL U419-2HR)
*	20 MINUTE RATED DOOR AND FRAMES
**	45 MINUTE RATED DOOR AND FRAMES
	1 HOUR RATED CEILING UL DESIGN NO. 1504
34.25"	=CLEAR EXIT WIDTH
	=EXIT SIGN
	=EMERGENCY LIGHT EXIT
	=EGRESS LIGHT
B.A.	=BUILDING ADDRESS- 6" MIN. HEIGHT, ON CONTRASTING BACKGROUND, READILY VISIBLE FROM STREET
K.B.	=KNOX BOX, FIRE DEPARTMENT KEY LOCK BOX CONFIRM LOCATION W/ FIRE DEPARTMENT
P.H.	PANIC HARDWARE

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NEWPORT, NORTH CAROLINA

LIFE SAFETY

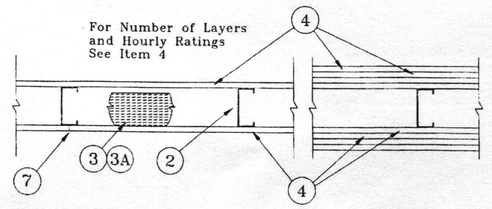
25022

ISSUED: 04/13/26
DWG BY: SKC/MSG
CKD BY: LDD
REVISIONS

SHEET NO.
G-2
OF

Design No. U419

Non Bearing Wall Ratings — 1, 2, 3 or 4 Hr (See Items 3 & 4)



1. **Floor and Ceiling Runners —** (Not shown) — Channel shaped, fabricated from min 25 MSG (min 20 MSG when Item 4A is used) corrosion-protected steel, min width to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.
2. **Steel Studs —** Channel shaped, fabricated from min 25 MSG (min 20 MSG when Item 4A is used) corrosion-protected steel, min width as indicated under Item 4, min 1-1/4 in. flanges and 1/4 in. return, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.
3. **Batts and Blankets* —** (Required as indicated under Item 4) — Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 4. See **Batts and Blankets (BKNV or BZJZ) Categories** for names of Classified companies.

3A. **Batts and Blankets* —** (Optional) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See **Batts and Blankets (BKNV or BZJZ) Categories** for names of Classified companies.

4. **Wallboard, Gypsum* —** Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Wallboard Protection on Each Side of Wall

Rating	Min Stud Depth	No. of Layers & Thkns of Panel	Min Thkns of Insulation (Item 3)
1	3-1/2	1 layer, 5/8 in. thick	Optional
1	2-1/2	1 layer, 1/2 in. thick	1-1/2 in.
1	1-5/8	1 layer, 3/4 in. thick	Optional
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
2	3-1/2	1 layer, 3/4 in. thick	3 in.
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	2 layers, 3/4 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional
4	2-1/2	2 layers, 3/4 in. thick	2 in.

CANADIAN GYPSUM COMPANY —1/2 in. thick Type C, WRC or IP-X2; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC or IP-X2; 3/4 in. thick ULTRACODE or Type IP-X3
UNITED STATES GYPSUM CO —1/2 in. thick Type C, WRC or IP-X2; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC, FRX-G or IP-X2; 3/4 in. thick ULTRACODE or Type IP-X3
YESO PANAMERICANO S A DE C V —1/2 in. thick Type C, WRC or IP-X2; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC or IP-X2; 3/4 in. thick ULTRACODE or Type IP-X3.

4A. **Wallboard, Gypsum* —** (As an alternate to Item 4) — 5/8 in. thick gypsum panels, installed as described in Item 4 with Type S-12 steel screws. The length and spacing of the screws as specified under Item 5.
CANADIAN GYPSUM COMPANY —Type FRX
UNITED STATES GYPSUM CO —Type FRX

4B. **Wallboard, Gypsum* —** (As an alternate to Items 4 and 4A) — 5/8 in. thick, 2 ft. wide, tongue and groove edge, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 5. Joint covering (Item 7) not required.
UNITED STATES GYPSUM CO —Type SCX.

5. **Fasteners —** (Not shown) — Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 6). **Single layer systems:** 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 12 in. OC when panels are applied vertically. Two layer systems: First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer.**Three-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. **Four-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

6. **Furring Channels —** (Optional, not shown, for single or double layer systems) — Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 4A.
7. **Joint Tape and Compound —** Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer panels.
8. **Siding, Brick or Stucco —** (Optional, not shown) — Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.
9. **Caulking and Sealants* —** (Optional, not shown) — A bead of acoustical sealant applied around the partition perimeter for sound control.
UNITED STATES GYPSUM CO —Type AS

*Bearing the UL Classification Marking

1 G-3 DETAIL
SCALE: N.T.S.

Coastal Architecture PLLC
- Architectural Design
- Planning
- Interiors

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Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPARTMENT
NEWPORT, NORTH CAROLINA

UL DETAILS

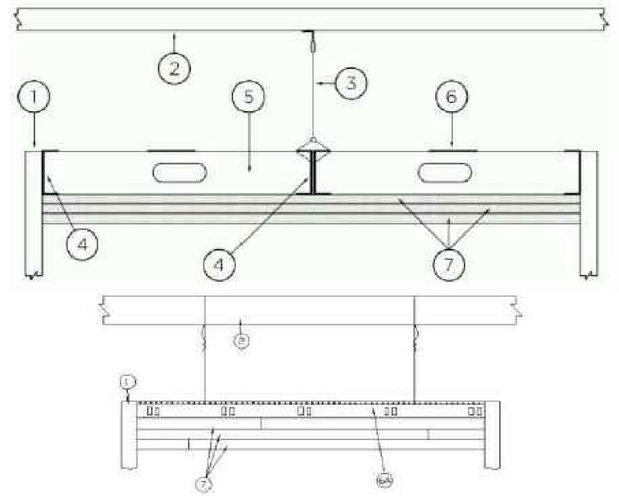
25022
ISSUED: 04/13/26
DWG BY: MSG
CKD BY: LDD
REVISIONS

SHEET NO.
G-3
OF

Design No. **I504**

Ceiling Membrane Rating – 1 Hr.
Load Restriction – Limited to the Dead Weight of the Assembly
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

1 Hour System



1. **Supporting Structure #1 —** Fire-resistance rated. Suitable point of attachment of C-Channels (Item 4).

2. **Supporting Structure #2 —** If necessary - Suitable point of attachment of hanger wire (Item 3).

3. **Hanger Wire —** If necessary – Min. 8 gauge steel wire, hung from holes punched in C-Channel (Item 4). Hanger wire spaced nominally 24 in. OC.

4. **C-Channels —** Used to support steel studs at both ends. Min. 3-5/8 in. deep with min. 1-1/4 in. legs and formed from min. No. 20 MSG galv. steel. Perimeter channels attached to a fire-resistance rated supporting structure (Item 1) with fasteners spaced not greater than 24 in. O.C. at both the top and bottom of the vertical leg. When used with Items 2 and 3, C-Channel secured back to back with 1/2 in. Type S screws spaced 24 in. OC along centerline of C-Channels. Where C-Channels form a butt joint, screws placed at both top and bottom of both sides of butt joint.

5. **Steel Studs —** Min. 3-5/8 in. wide with min. 1-5/8 in. legs containing folded back flanges and formed from min. No. 20 MSG galv. Steel. Studs to be cut 3/8 in. to 5/8 in. less than the clear span between the vertical legs of the perimeter channels. Studs spaced a max. 16 in. OC. At each end of the stud, the top and bottom legs shall be secured to the perimeter channel with one 3/8 in. long pan-head steel screw. Studs are used at each end of the horizontal barrier to terminate the assembly at the adjoining wall. These end studs shall be secured to the adjoining wall in the same manner as the perimeter channels (Item 4). Maximum unsupported length of studs not to exceed 8 ft. 1 in.

6. **Steel Strap —** Min 4 in. wide formed from min. No. 20 MSG galv. Steel. Secured perpendicular to the studs at the centerline of the span using one 3/8 in. long pan-head steel screw. Strips to overlap one full stud bay at splice locations. As an alternate to the steel strap, C-Channels (Item 4) may be substituted and installed in the same manner as the steel straps. If a continuous piece is not used, abut channels on each side of the centerline of the span and overlap one full stud bay.

6A. **Framing Members* —** As an alternate to items 3, 4, 5, and 6 – 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 24 in. OC, twist tied to supporting structure.

b. **Cross Tees —** Nom 4 ft long, 1-1/2 in. wide face, installed perpendicular to the main runners, spaced 16 in. OC. The cross tees or cross channels may be riveted or screw attached to the wall angle or channel to facilitate the ceiling installation.

c. **Cross Channels —** Nom 4 ft long, installed perpendicular to main runners, spaced 16 in. OC.

d. **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.
ARMSTRONG WORLD INDUSTRIES INC — Type DFR-8000.

7. **Gypsum Board* —** Three layers of nom. 5/8 in. thick gypsum board installed with long dimension perpendicular to the steel studs or Framing Members*. Base secured to studs and perimeter channels with 1 in. long Type S steel screws spaced max. 16 in. OC. Middle layer secured to the studs or Framing Members* and perimeter supports with 1-5/8 in. long Type S steel screws spaced max. 16 in. OC. Middle layer edge and end joints staggered a min. 16 in. from base layer joints. Face layer secured to the studs or Framing Members* and perimeter supports with 2-1/4 in. long Type S steel screws spaced max. 12 in. OC. Face layer edge and end joints staggered a min. 16 in. from middle layer joints.
NATIONAL GYPSUM CO — Type FSW

8. **Joint Tape and Compound —** Not Shown — (Optional, Not Required On Joints or Screw Heads) — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw heads; paper tape, nom. 2 in. wide, embedded in first layer of compound over all joints.

1 G-3.1 **DETAIL**
SCALE: N.T.S.

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AIA
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Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

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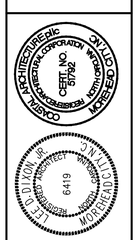
NEWPORT, NORTH CAROLINA



UL DETAILS

25022

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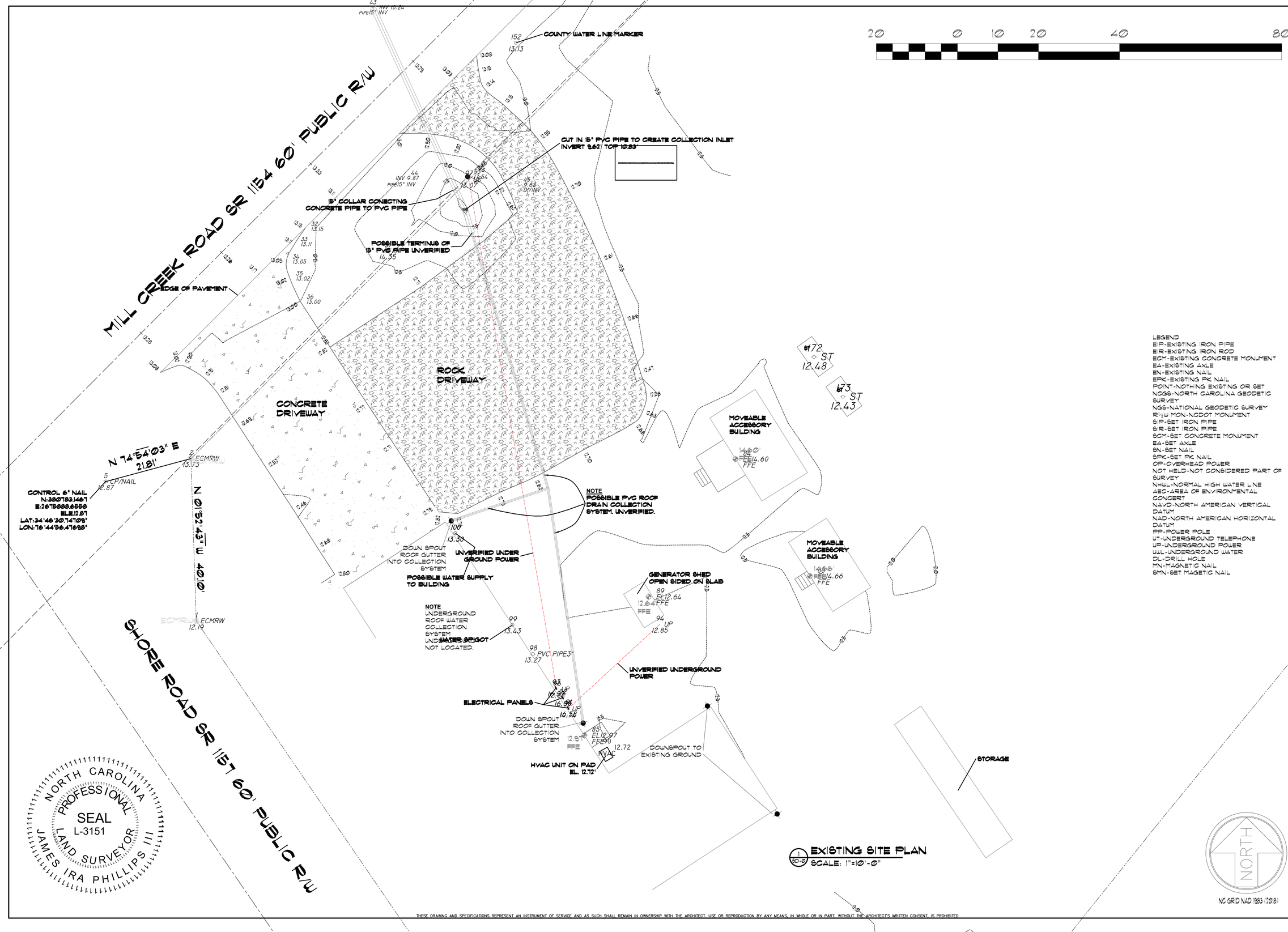
CKD BY: LDD

REVISIONS

SHEET NO.
G-3.1
OF



LEGEND

EIP-EXISTING IRON PIPE
EIR-EXISTING IRON ROD
ECM-EXISTING CONCRETE MONUMENT
EA-EXISTING AXLE
EN-EXISTING NAIL
EPK-EXISTING PK NAIL
POINT-NOTHING EXISTING OR SET
NCGS-NORTH CAROLINA GEODETIC SURVEY
NGS-NATIONAL GEODETIC SURVEY
R/W-R/W MON-NCDOT MONUMENT
SIP-SET IRON PIPE
SIR-SET IRON PIPE
SCM-SET CONCRETE MONUMENT
SA-SET AXLE
SN-SET NAIL
SPK-SET PK NAIL
OP-OVERHEAD POWER
NOT HELD-NOT CONSIDERED PART OF SURVEY
NWL-NORMAL HIGH WATER LINE
AEC-AREA OF ENVIRONMENTAL CONCERT
NAVD-NORTH AMERICAN VERTICAL DATUM
NAD-NORTH AMERICAN HORIZONTAL DATUM
PP-POWER POLE
UT-UNDERGROUND TELEPHONE
UP-UNDERGROUND POWER
UWL-UNDERGROUND WATER
DL-DRILL HOLE
MN-MAGNETIC NAIL
SMN-SET MAGETIC NAIL

EXISTING SITE PLAN

SD-0 SCALE: 1"=10'-0"

NORTH CAROLINA PROFESSIONAL SEAL L-3151 LAND SURVEYOR JAMES IRA PHILLIPS III

NC GRID NAD 1983 (2018)

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NEWPORT, NORTH CAROLINA

THIS SITE SURVEY IS PREPARED FROM INFORMATION IN SURVEY BY JAMES PHILLIPS LAND SURVEYING, P.A.

EXISTING SITE PLAN

25022

ISSUED: 04/13/26
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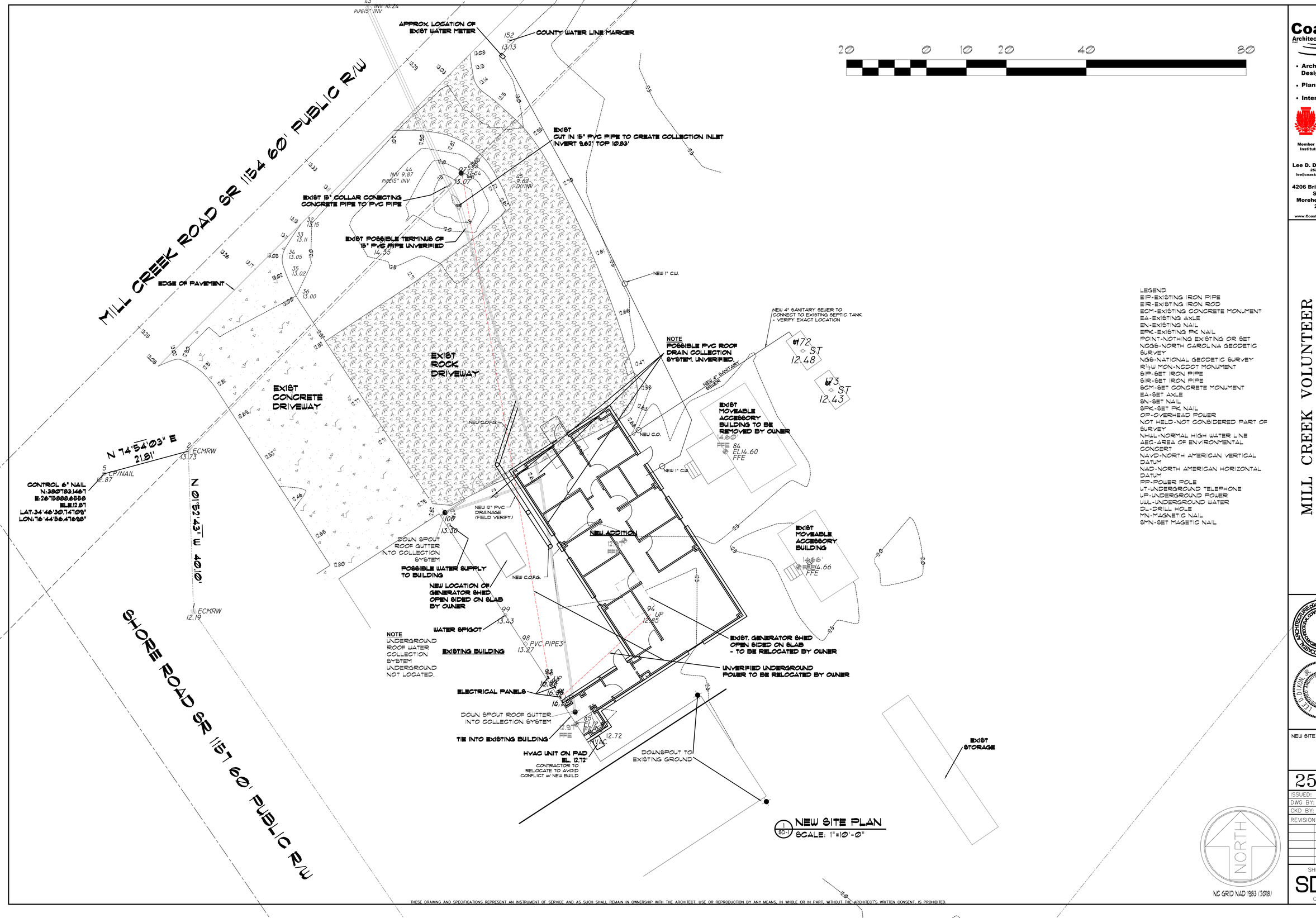

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DP-DRILL HOLE
MN-MAGNETIC NAIL
SMN-SET MAGETIC NAIL

NEW SITE PLAN
SD-1 SCALE: 1"=10'-0"

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MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

NEW SITE PLAN

25022

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SD-1
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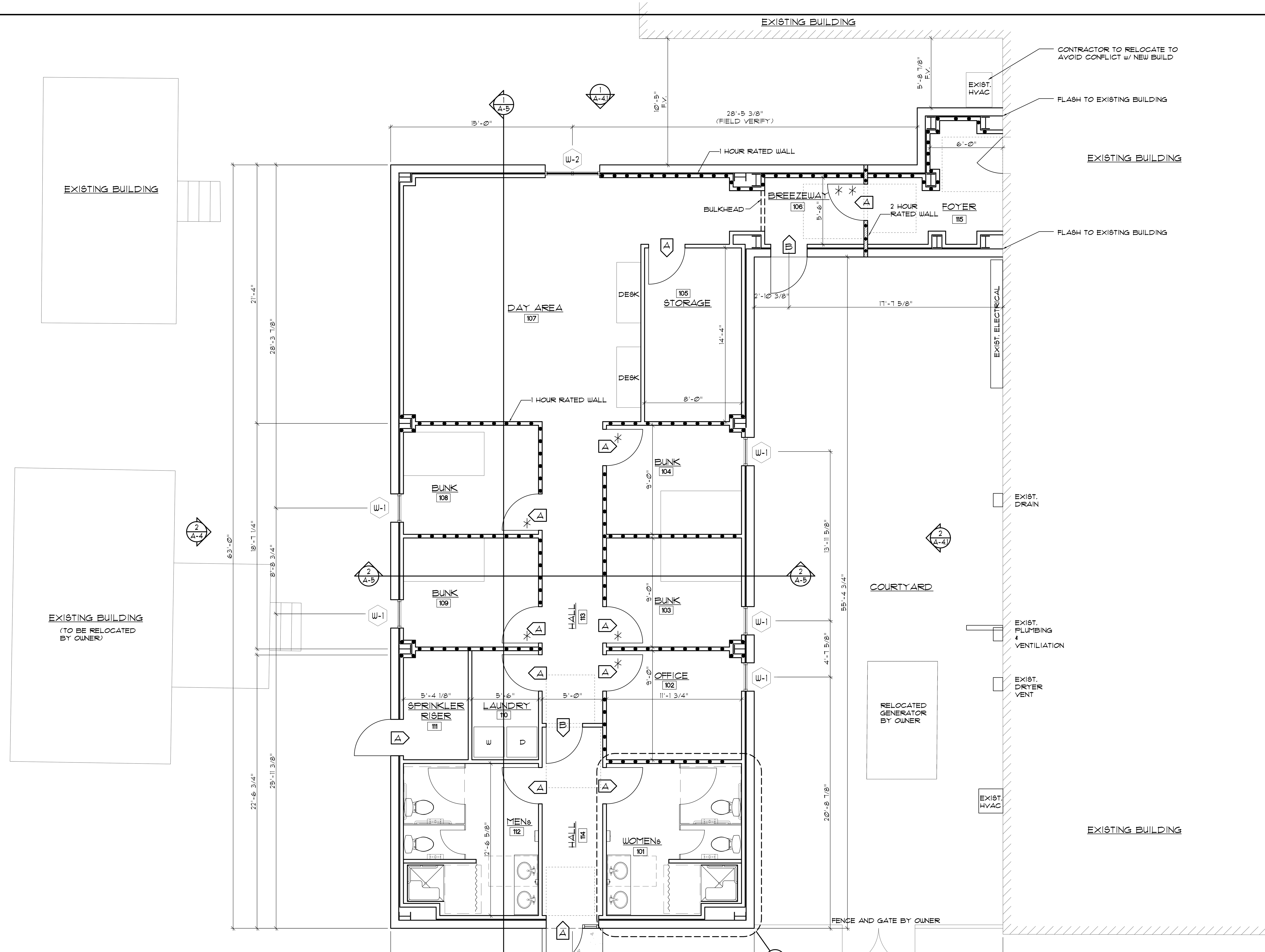

LEGEND

= 1-HOUR RATED WALL

= 2-HOUR RATED WALL

* = 20 MINUTE RATED DOOR AND FRAMES

* * = 90 MINUTE RATED DOOR AND FRAMES

FLOOR PLAN

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

DOOR LEGEND

FOYER 102 — DOOR 102A — DOOR INDICATOR — ROOM #

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NEWPORT, NORTH CAROLINA

FLOOR PLAN

25022

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CKD BY: LDD
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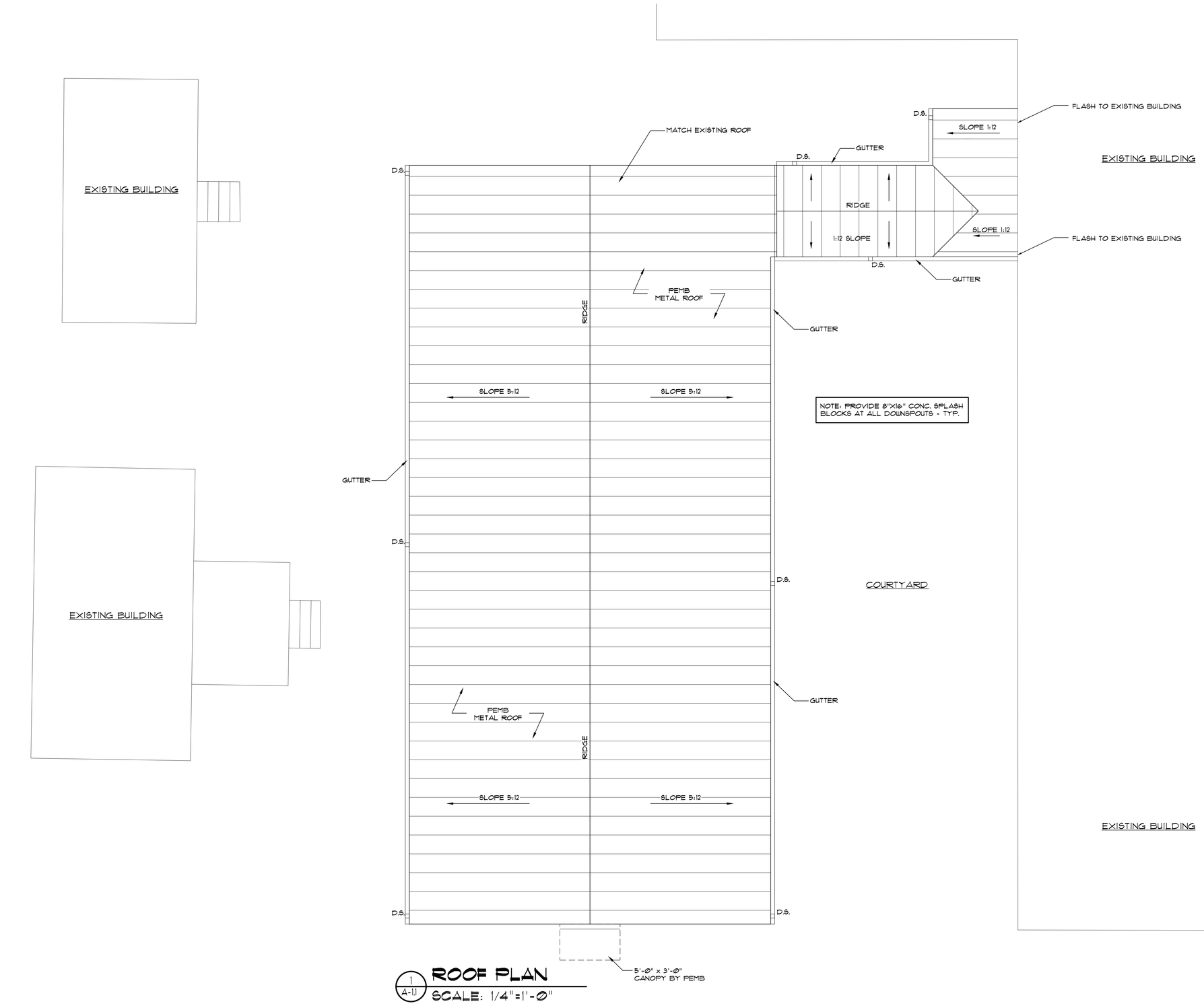
SHEET NO.
A-1
OF



1 A-1.1 **ROOF PLAN**

SCALE: 1/4"=1'-Ø"

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Member of the American Institute of Architects

Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC 28557

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ROOF PLAN

25022

ISSUED: 04/13/26
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CKD BY: LDD
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SHEET NO.
A-1.1
OF

1
A-2
REFLECTED CEILING PLAN
SCALE: 1/4"=1'-0"

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AIA
Member of the American Institute of Architects

Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC
28557

www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

COASTAL ARCHITECTURE, pllc — CERT. NO. 51792 — MOREHEAD CITY, NC

LEE D. DIXON, JR. — REGISTERED ARCHITECT — NORTH CAROLINA — 6419 — MOREHEAD CITY, NC

REFLECTED CEILING PLAN

25022

ISSUED:	04/13/26
DWG BY:	DLY
CKD BY:	LDD
REVISIONS	

SHEET NO.
A-2
OF

WINDOW SCHEDULE

MARK	TYPE	SIZE (NOMINAL)	MODEL	REMARKS
W-1	SINGLE HUNG	2'-4"W x 4'-0"H	ALUM.	MEET REQ'D WIND LOAD
W-2	SINGLE HUNG	4'-6"W x 4'-0"H	ALUM.	MEET REQ'D WIND LOAD

NOTES: WINDOWS TO BE TRIFAB 451T

DOOR SCHEDULE

DOOR NO.	SIZE	DOOR MAT.	DOOR TYPE	FRAME MAT.	FRAME TYPE	REMARKS
101A	3'-0" X 7'-0"	WOOD	A	HM	1	(1) (3)
102A	3'-0" X 7'-0"	WOOD	A	HM	1	(1) 20 MIN. RATED
103A	3'-0" X 7'-0"	WOOD	A	HM	1	(1) 20 MIN. RATED
104A	3'-0" X 7'-0"	WOOD	A	HM	1	(1) 20 MIN. RATED
105A	3'-0" X 7'-0"	WOOD	A	HM	1	
106A	3'-0" X 7'-0"	HM.	B	HM	1	(2) 90 MIN. RATED
106B	3'-0" X 7'-0"	HM.	C	HM	3	(1)
108A	3'-0" X 7'-0"	WOOD	A	HM	1	(1) 20 MIN. RATED
109A	3'-0" X 7'-0"	WOOD	A	HM	1	(1) 20 MIN. RATED
110A	3'-0" X 7'-0"	WOOD	A	HM	1	
111A	3'-0" X 7'-0"	HM.	B	HM	1	(1)
112A	3'-0" X 7'-0"	WOOD	A	HM	1	(1) (3)
114A	3'-0" X 7'-0"	HM.	C	HM	1	(1)
114B	3'-0" X 7'-0"	WOOD	A	HM	1	(1)

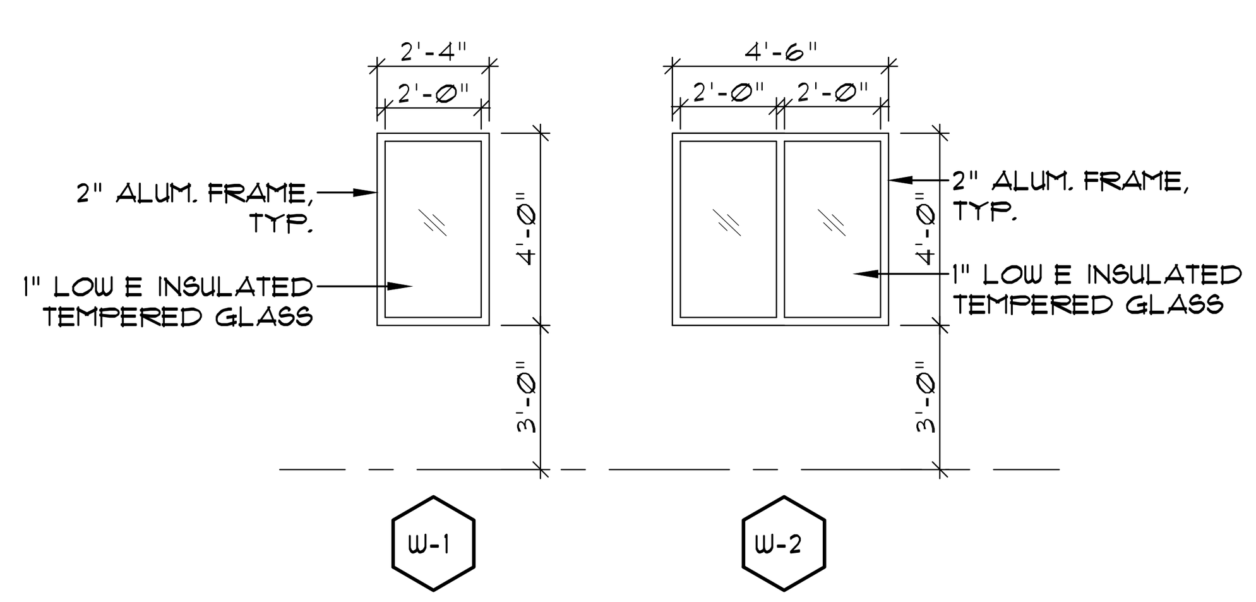
DOOR SCHEDULE REMARKS

1. CLOSERS
2. CLOSERS AND PANIC HARDWARE
3. PUSH/PULL

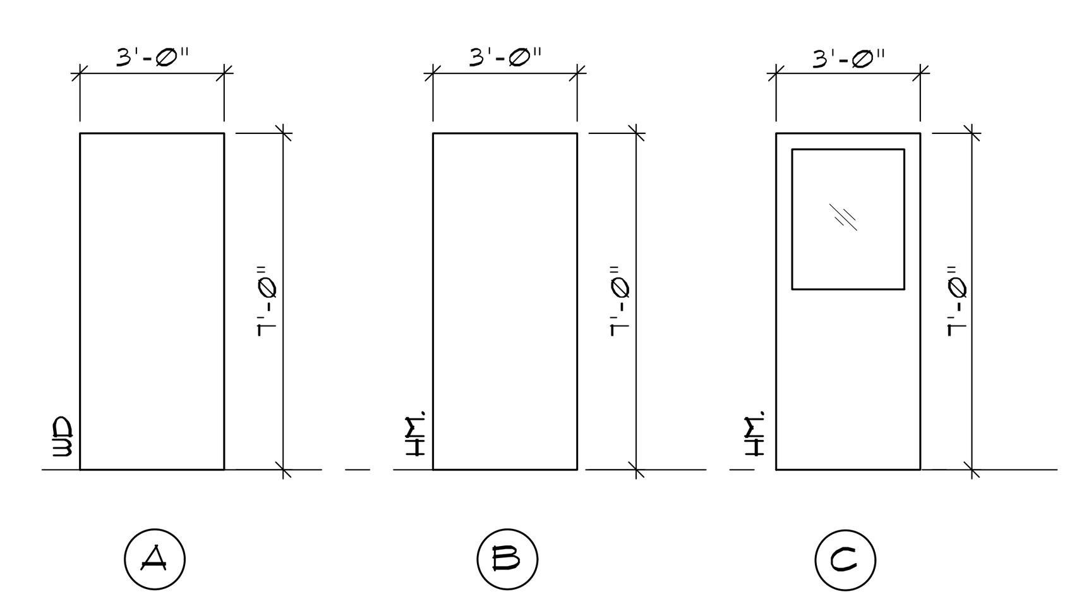
ROOM FINISH SCHEDULE

ROOM NUMBERS	ROOM	FLOORS	BASE	WALLS	CEILINGS	HEIGHT (NOMINAL)	REMARKS
100	PORCH	CONC.	-	-	-	-	
101	WOMENs BATHROOM	LVP	VINYL	GWB-PTD	S.A.T.	9'-0"	
102	OFFICE				GWB-PTD.		
103	BUNK ROOM				GWB-PTD.		
104	BUNK ROOM				GWB-PTD.		
105	STORAGE				S.A.T.		
106	BREEZEWAY					8'-0"	
107	DAY AREA					9'-0"	
108	BUNK ROOM				GWB-PTD.		
109	BUNK ROOM				GWB-PTD.		
110	LAUNDRY				S.A.T.		
111	SPRINKLER RISER	CONC-SEALED			EXPOSED	-	
112	MENs BATHROOM	LVP	VINYL		S.A.T.	9'-0"	
113	HALL						
114	HALL						
115	FOYER					8'-0"	

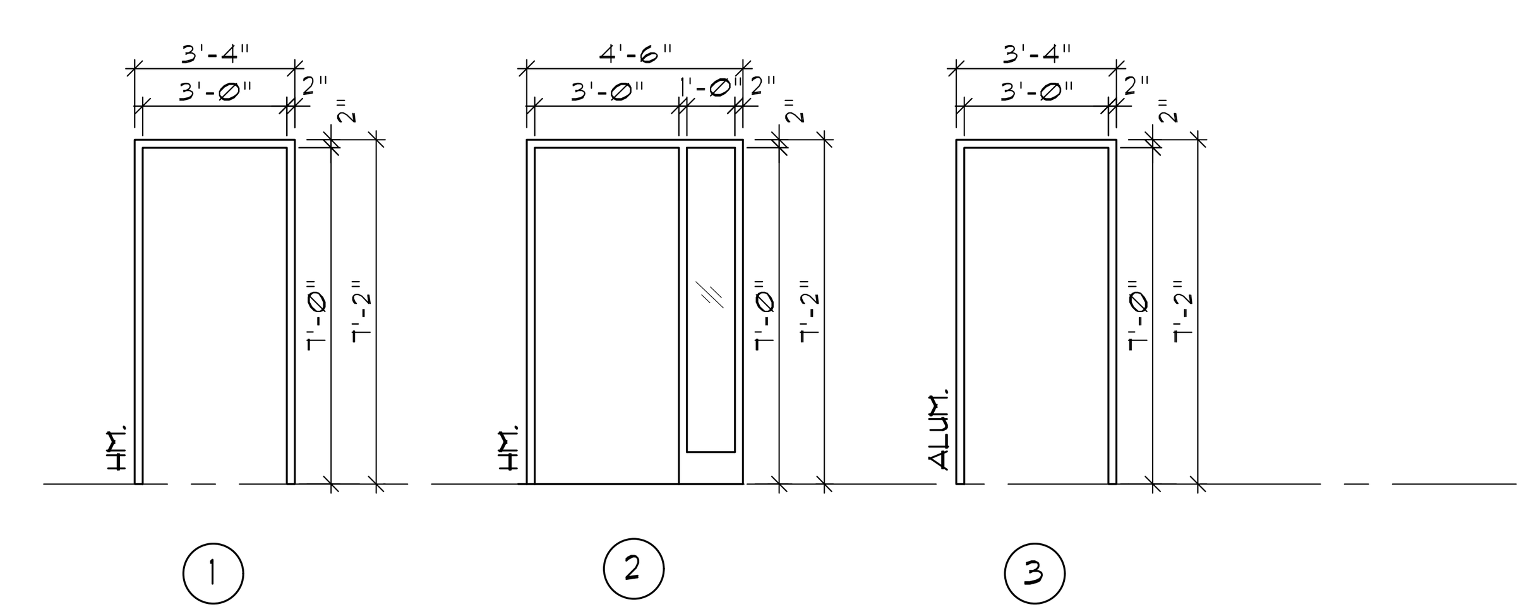
ROOM FINISH SCHEDULE REMARKS



3 / A-3 WINDOW ELEVATION
SCALE: 1/4"=1'-0"



2 / A-3 DOOR ELEVATIONS
SCALE: 1/4"=1'-0"



1 / A-3 DOOR FRAME ELEVATION
SCALE: 1/4"=1'-0"

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MILL CREEK VOLUNTEER FIRE DEPARTMENT
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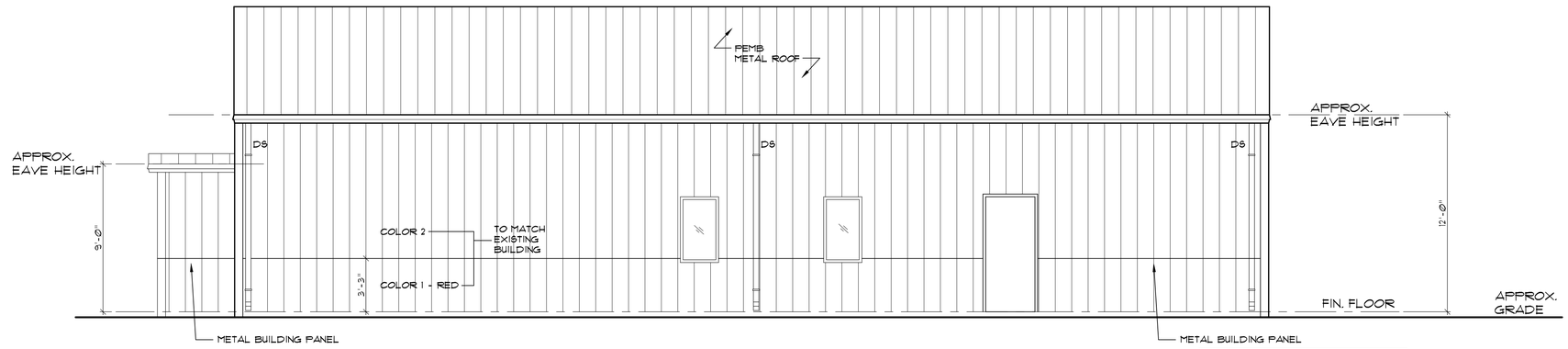
DOOR AND ROOM FINISH SCHEDULES

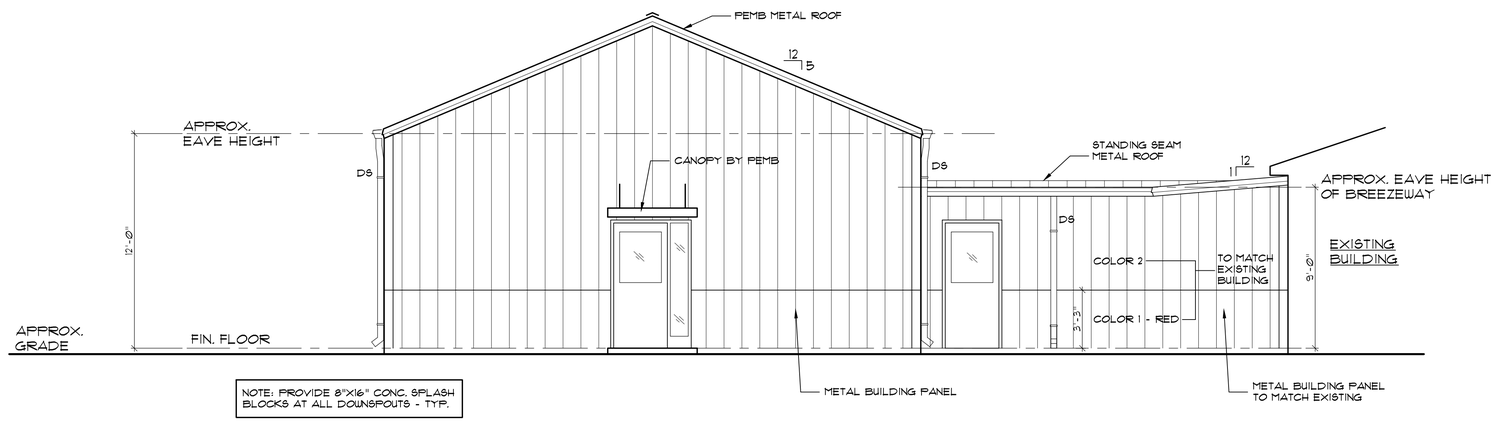
25022
ISSUED: 04/13/26
DWG BY: DLY/SKC
CKD BY: LDD
REVISIONS

SHEET NO.
A-3
OF



2 / A-4.1 **EAST ELEVATION**

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



1 / A-4 **NORTH ELEVATION**

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

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252-247-2127
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MILL CREEK VOLUNTEER FIRE DEPT

NEWPORT, NORTH CAROLINA

COASTAL ARCHITECTURE, PLLC — CERT. NO. C-1792 — REGISTERED ARCHITECTURAL CORPORATION — MOREHEAD CITY, NC

LEE D. DIXON, JR. — REGISTERED ARCHITECT — 6419 — NORTH CAROLINA — MOREHEAD CITY

EXTERIOR ELEVATIONS

25022

ISSUED:	04/13/26
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REVISIONS

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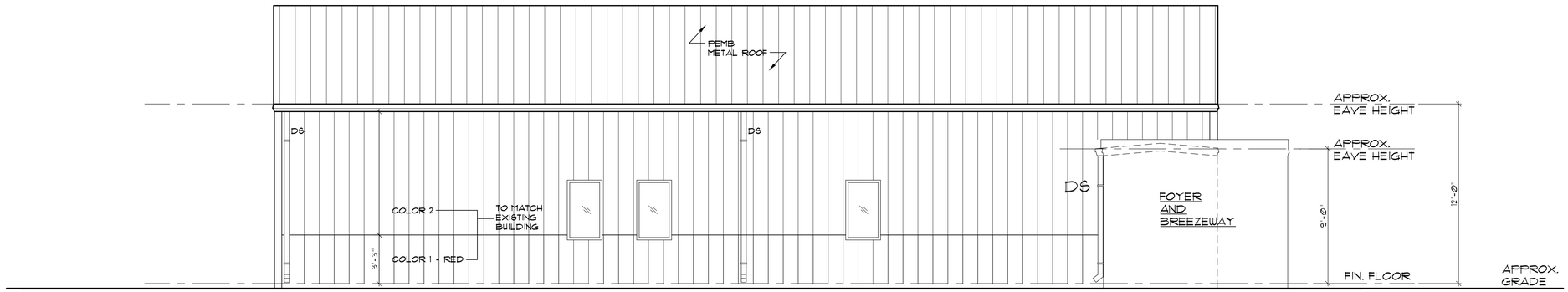
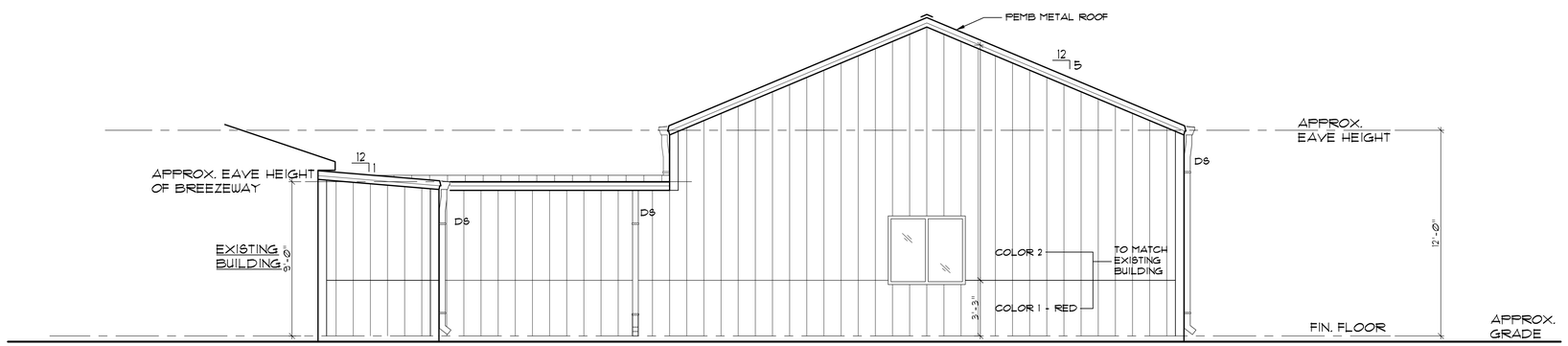


NOTE: PROVIDE 8"X16" CONC. SPLASH BLOCKS AT ALL DOWNSPOUTS - TYP.

2 A-4.1 WEST ELEVATION

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



NOTE: PROVIDE 8"X16" CONC. SPLASH BLOCKS AT ALL DOWNSPOUTS - TYP.

1 A-4.1 SOUTH ELEVATION

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

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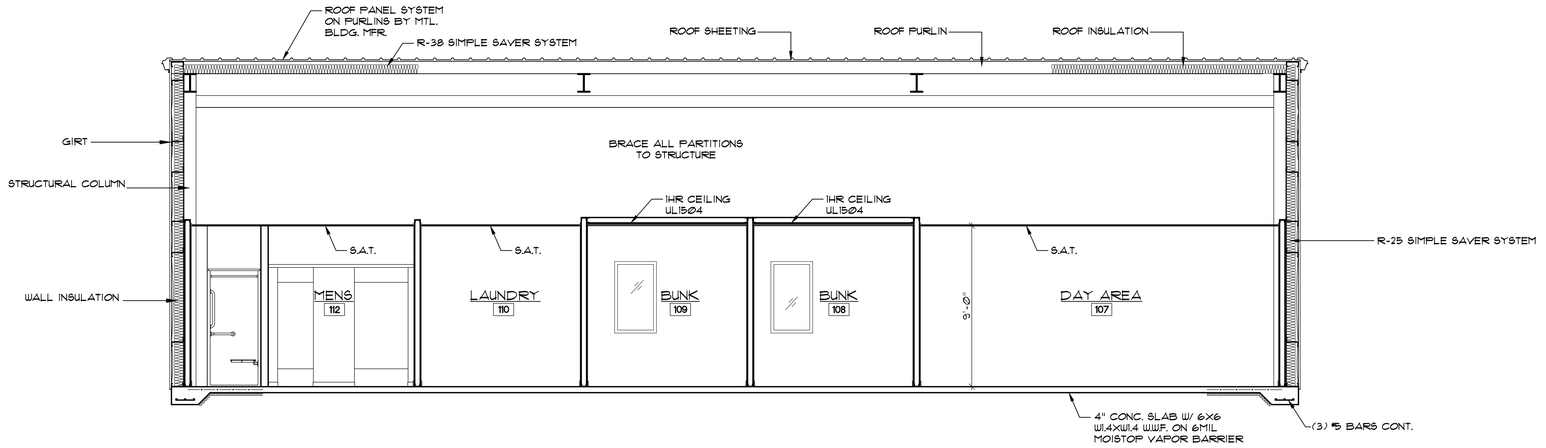
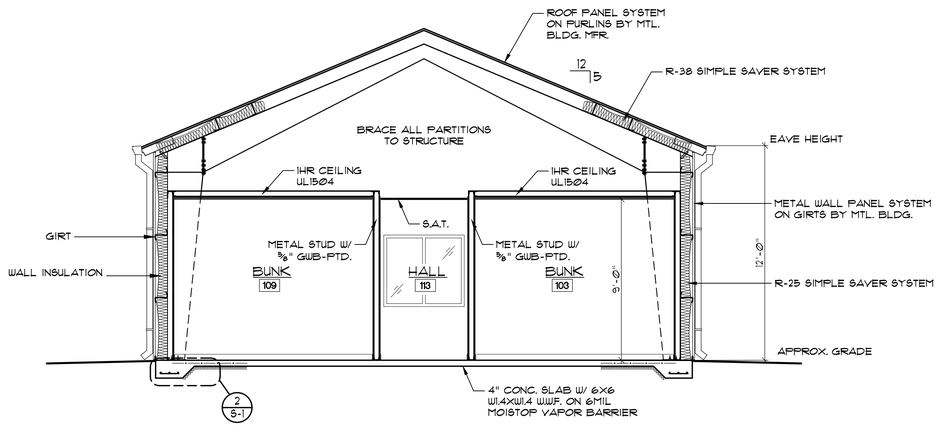


1/A-5 BUILDING SECTION

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



2/A-5 BUILDING SECTION

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CERT. NO. 57792

LEE D. DIXON, JR. REGISTERED ARCHITECT 6419 MOREHEAD CITY, NC

ELEVATIONS

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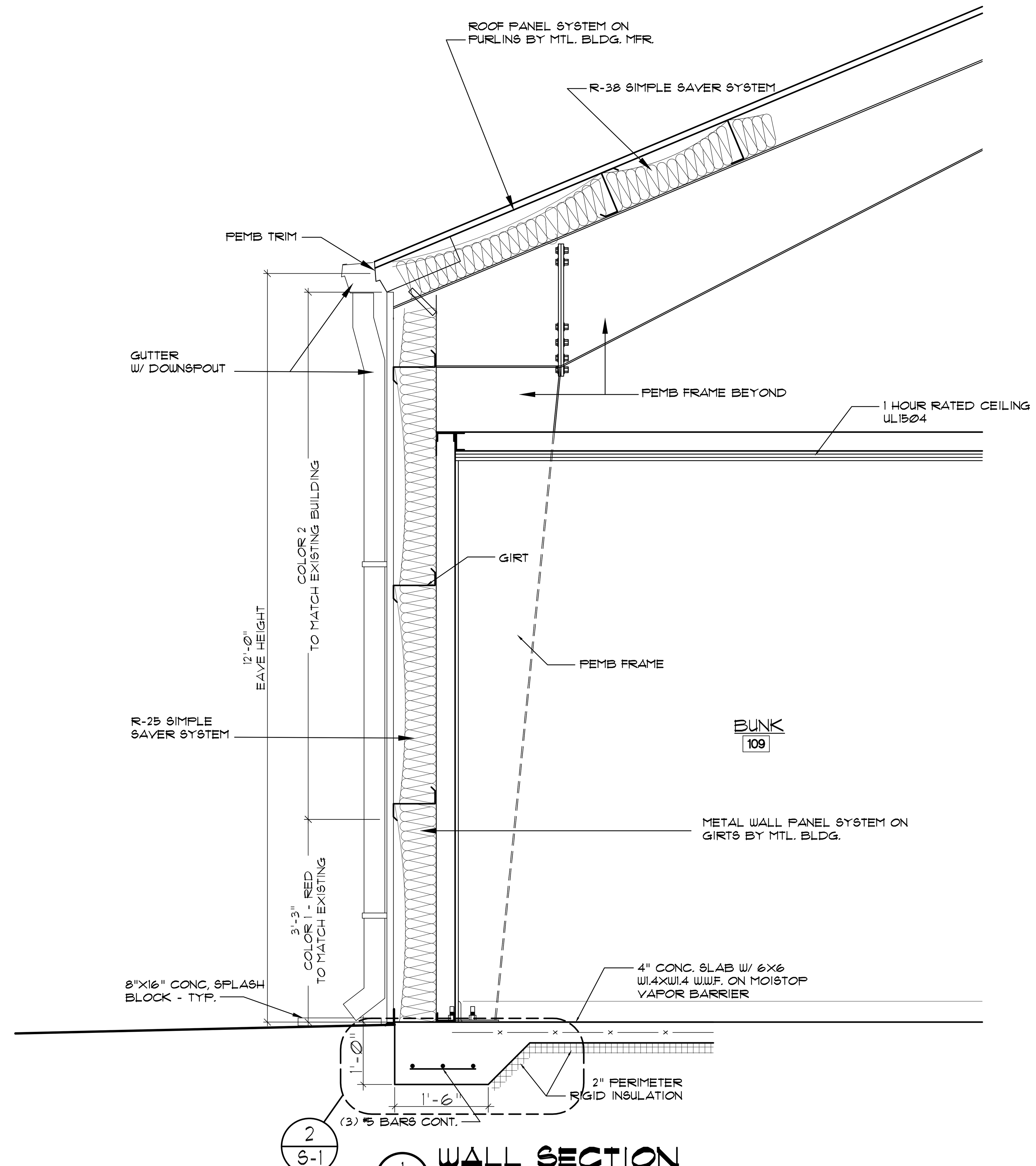

1
A-5.1

WALL SECTION

SCALE: 3/4"=1'-0"

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Lee D. Dixon, Jr., AIA
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Morehead City, NC
28557

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WALL SECTION

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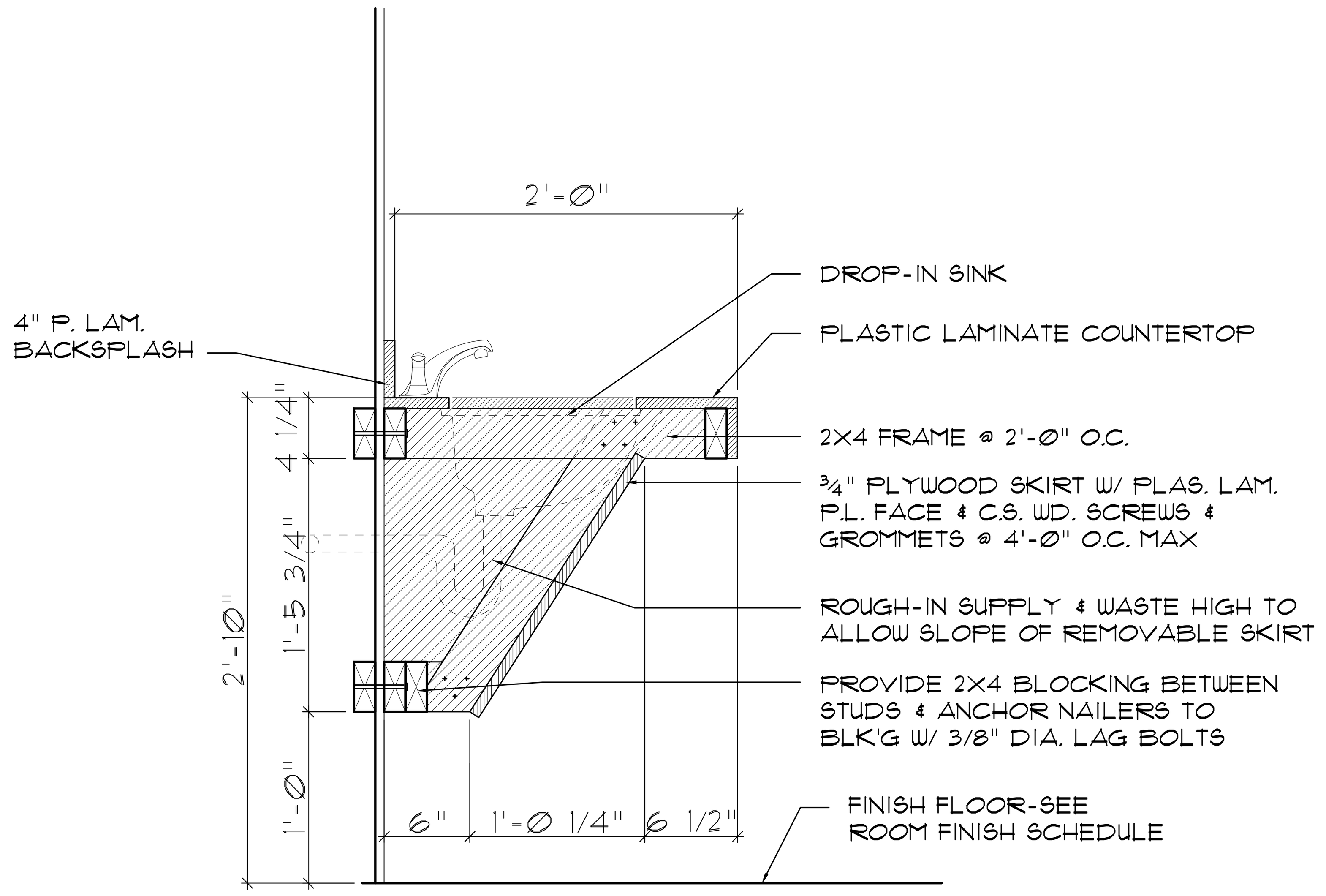
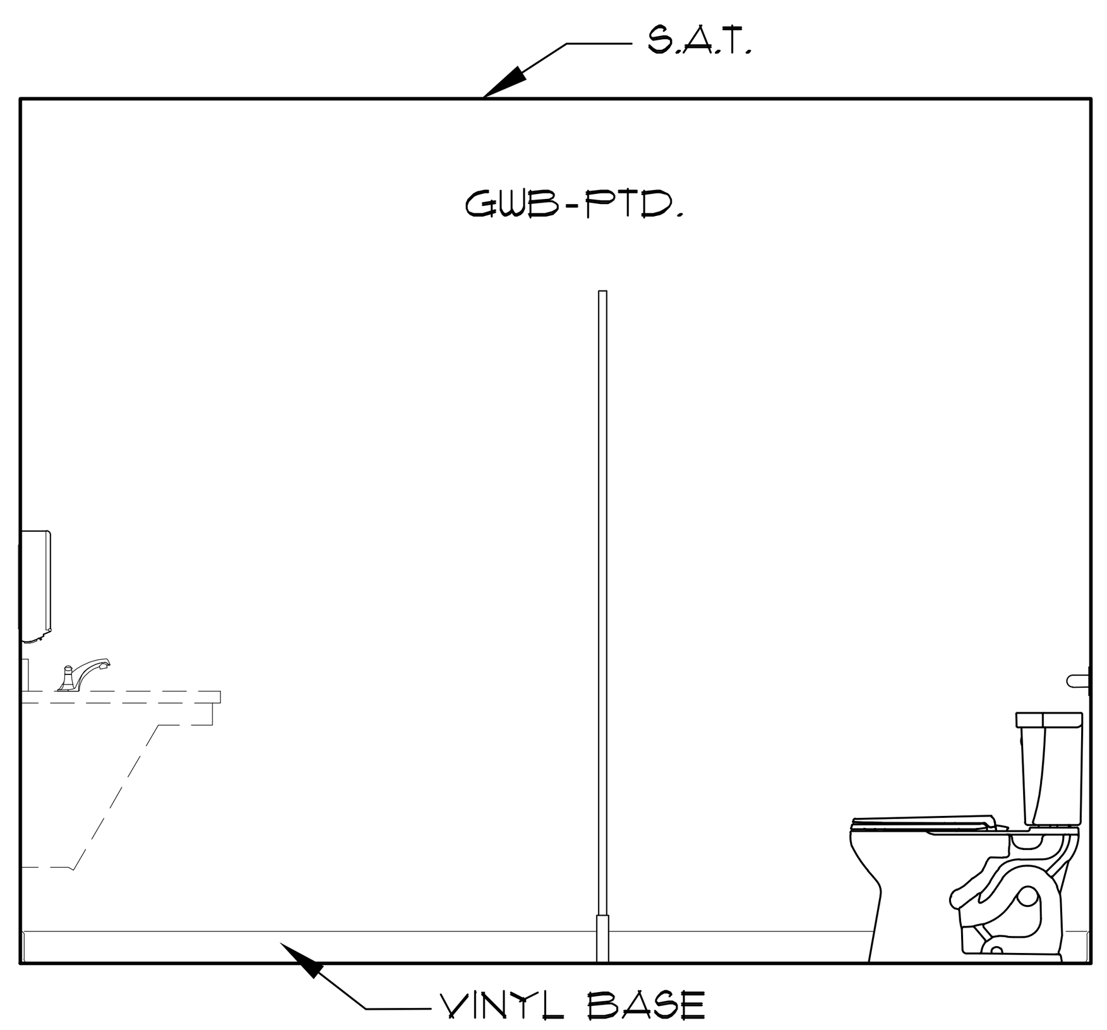


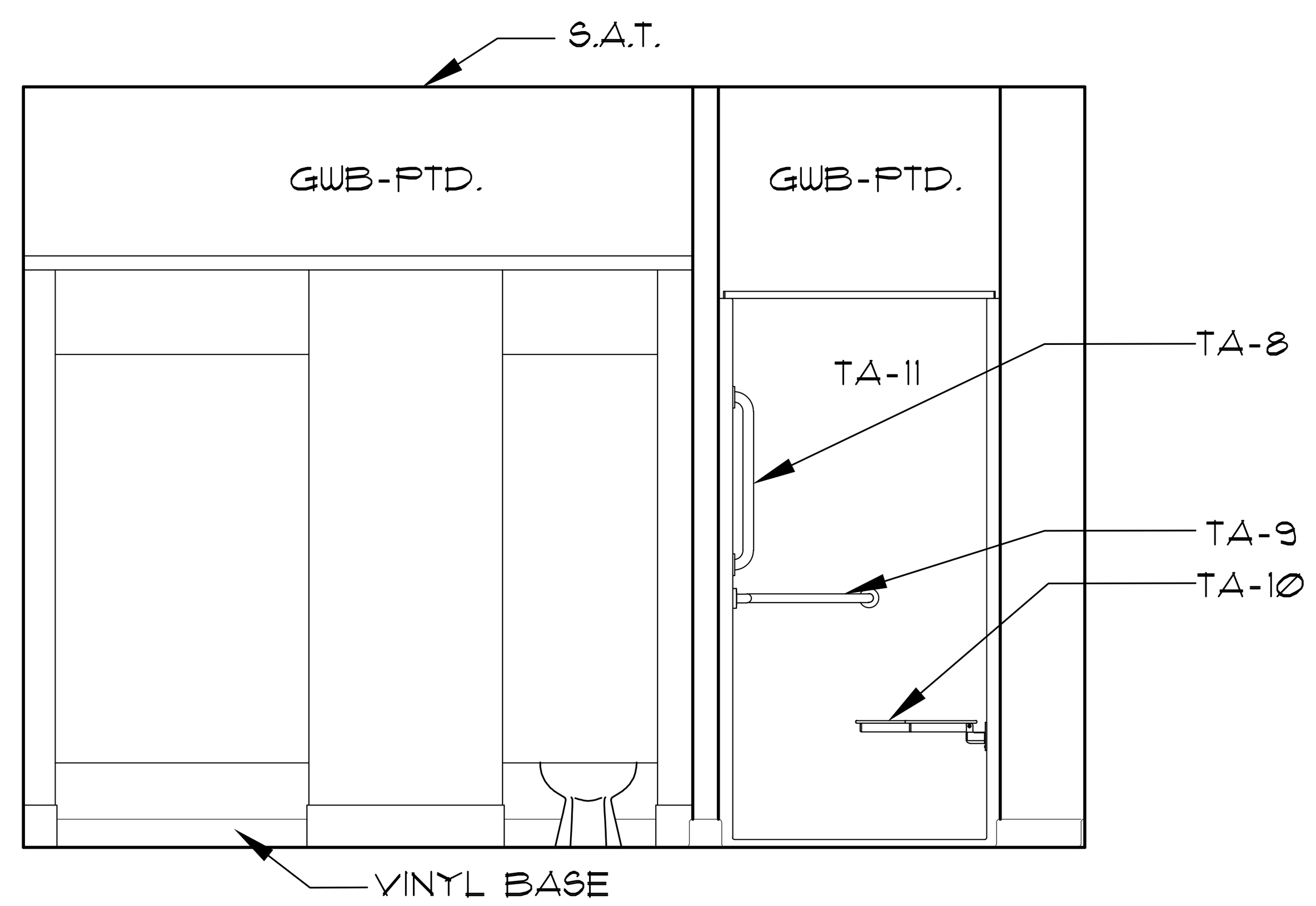
6/A-6 **VANITY DETAIL**

SCALE: 3/4"=1'-0"



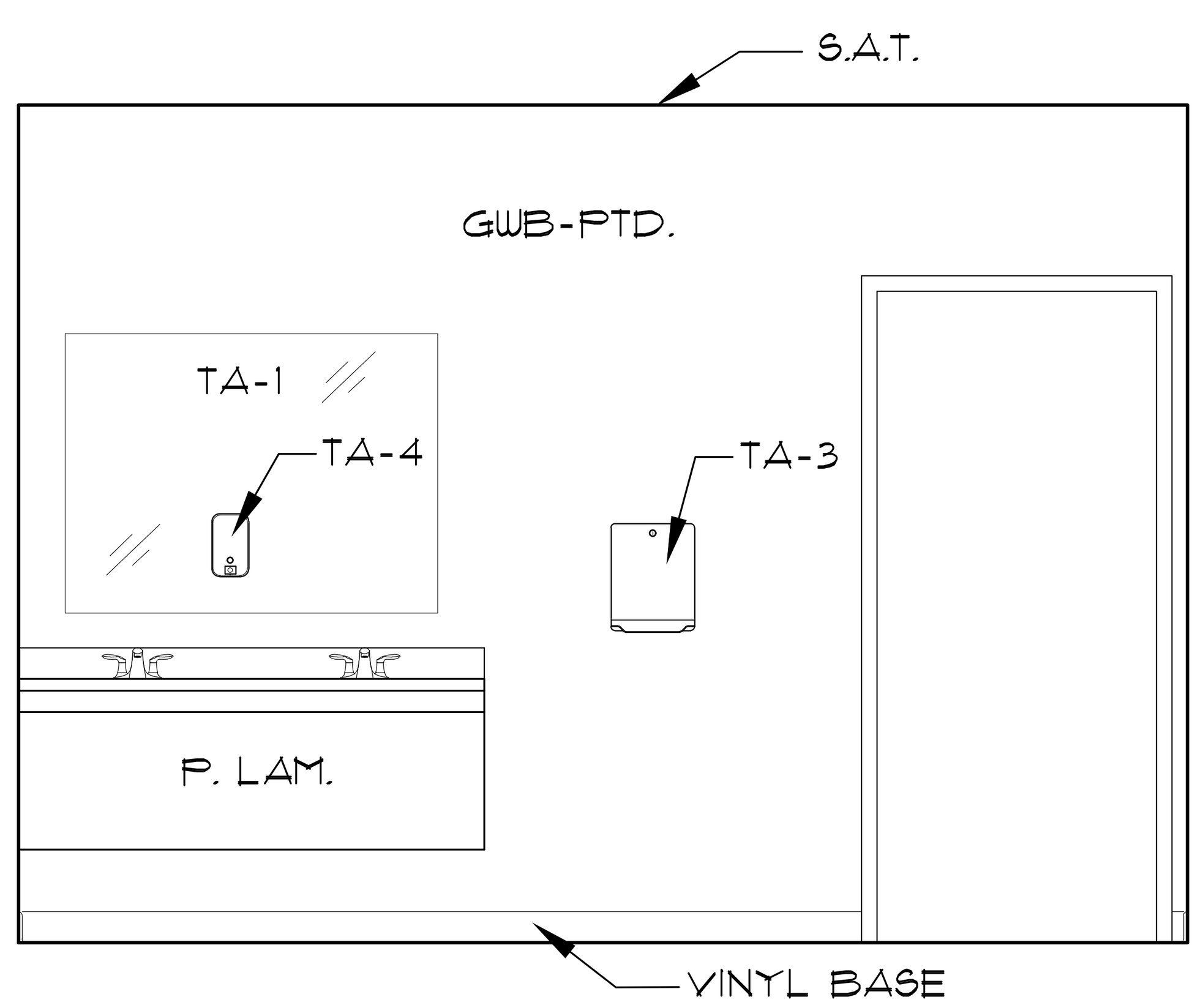
5/A-6 **ELEVATION**

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



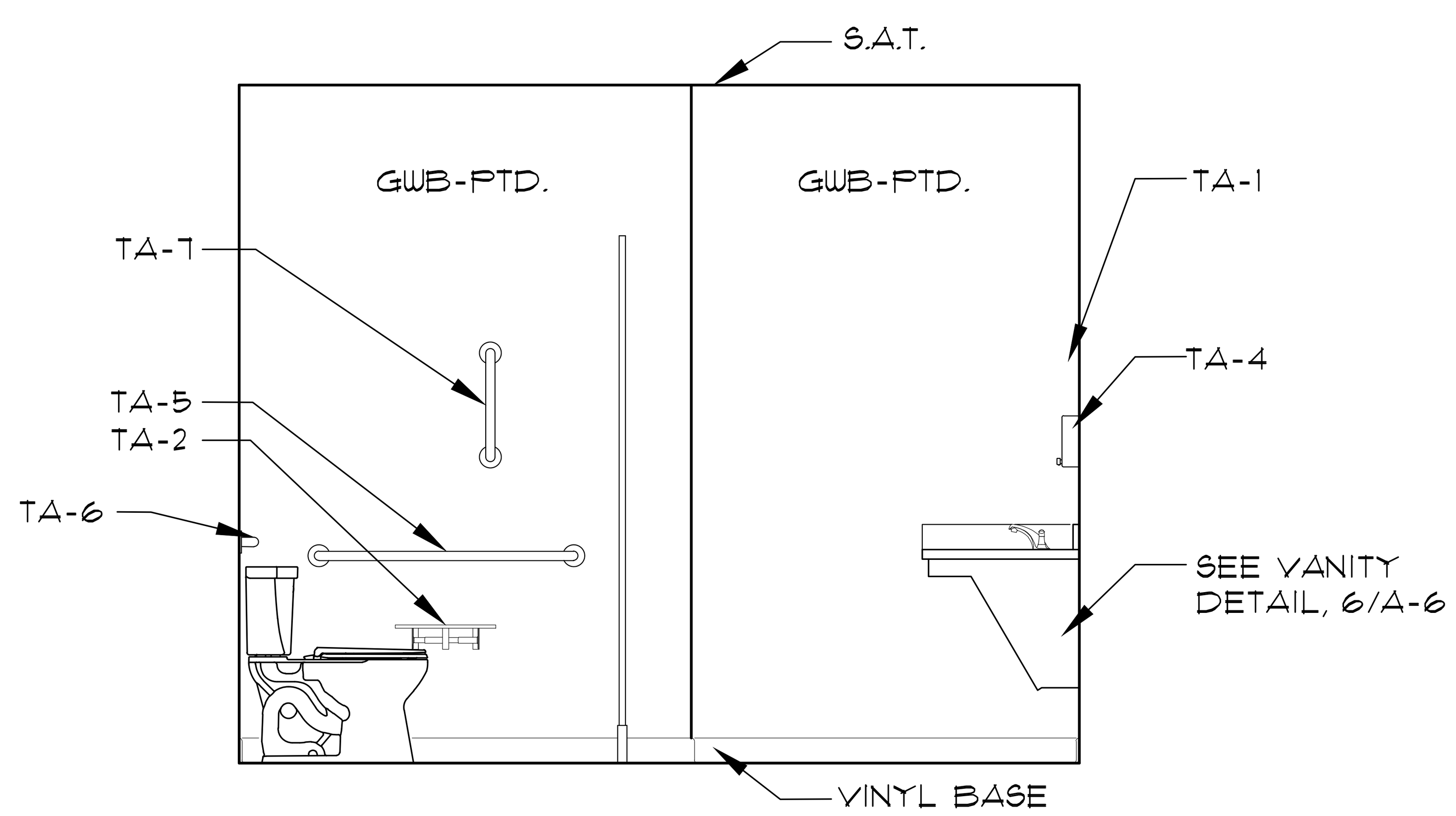
4/A-7 **ELEVATION**

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



3/A-6 **ELEVATION**

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



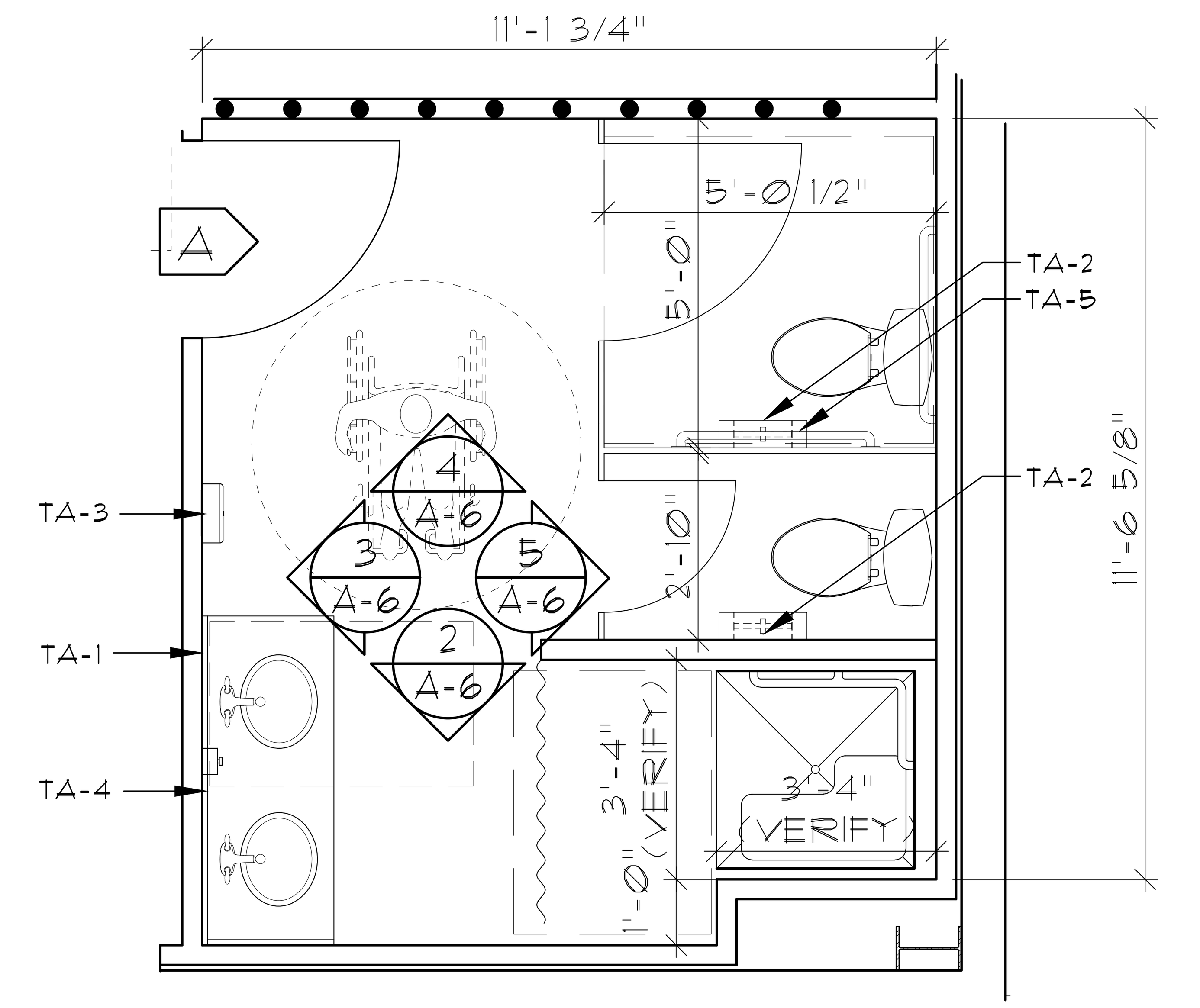
2/A-6 **ELEVATION**

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

TOILET ACCESSORY SCHEDULE

Mark	Item		MFG	MODEL #	Mtg. Ht.	Remarks
TA-1	FRAMELESS MIRROR 4'-0"W X 3'-0"H		BOBRICK	B-290 SERIES	3'-4" MAX.	HEIGHT TO BOTTOM OF MIRROR
TA-2	TOILET TISSUE DISPENSER		BOBRICK	B-4288	15"-48" MAX.	HEIGHT TO DISP. OUTLET OR DISPENSER LEVER
TA-3	PAPER TOWEL DISPENSER		BOBRICK	B-4262	4'-0" MAX.	HEIGHT TO DISP. OUTLET OR DISPENSER LEVER
TA-4	HANDICAP SOAP DISPENSER		BOBRICK	B-2111	4'-0" MAX.	HEIGHT TO DISP. OUTLET OR DISPENSER LEVER
TA-5	GRAB BAR 42"	CONCEALED MOUNTING W/ SNAP FLANGE	BOBRICK	B-5806 SERIES	3'-0" MAX.	HEIGHT TO CENTER
TA-6	GRAB BAR 36"	CONCEALED MOUNTING W/ SNAP FLANGE	BOBRICK	B-5806 SERIES	3'-0" MAX.	HEIGHT TO CENTER
TA-7	GRAB BAR 18"	CONCEALED MOUNTING W/ SNAP FLANGE (VERTICAL)	BOBRICK	B-5806 SERIES	3'-4"	HEIGHT TO BOTTOM
TA-8	GRAB BAR 24"	CONCEALED MOUNTING W/ SNAP FLANGE		B-6806X36	3'-0" MAX.	HEIGHT TO CENTER
TA-9	SHOWER GRAB BAR					SEE PLUMBING DRAWING
TA-10	ADA HANDICAP SEAT IN SHOWER					SEE PLUMBING DRAWING
TA-11	PREFAB FIBERGLASS SHOWER INSERT 36"					SEE PLUMBING DRAWING

NOTES:
- ALL HANDRAILS SHALL BE BLOCKED TO SUPPORT A 250 LB. LOAD MINIMUM
- EQUALS BY BRADLEY OR FRANKLIN OR APPROVED EQUAL ARE ACCEPTABLE



VERIFY SHOWER FRAMING REQUIREMENTS W/ FIXTURE SELECTION.

1/A-6 **WOMANS TOILET 101 (MEN 112 O.H.) ENLARGED PLAN**

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

Coastal Architecture PLLC
- Architectural Design
- Planning
- Interiors

AIA
Member of the American Institute of Architects

Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC 28557

www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

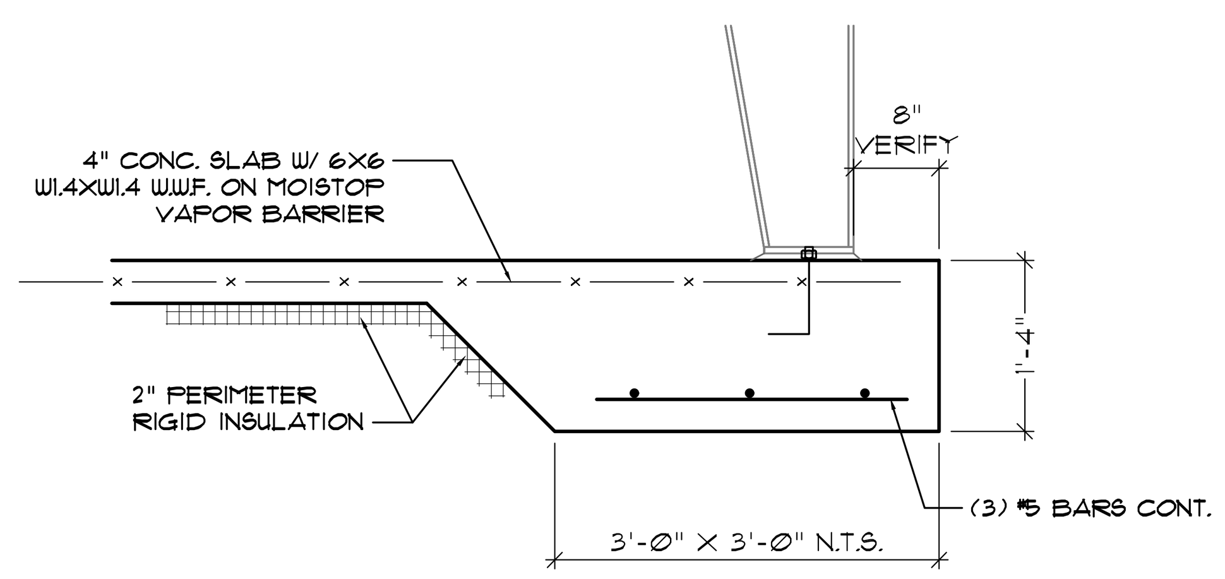
ENLARGED PLANS AND INTERIOR ELEVATION

25022

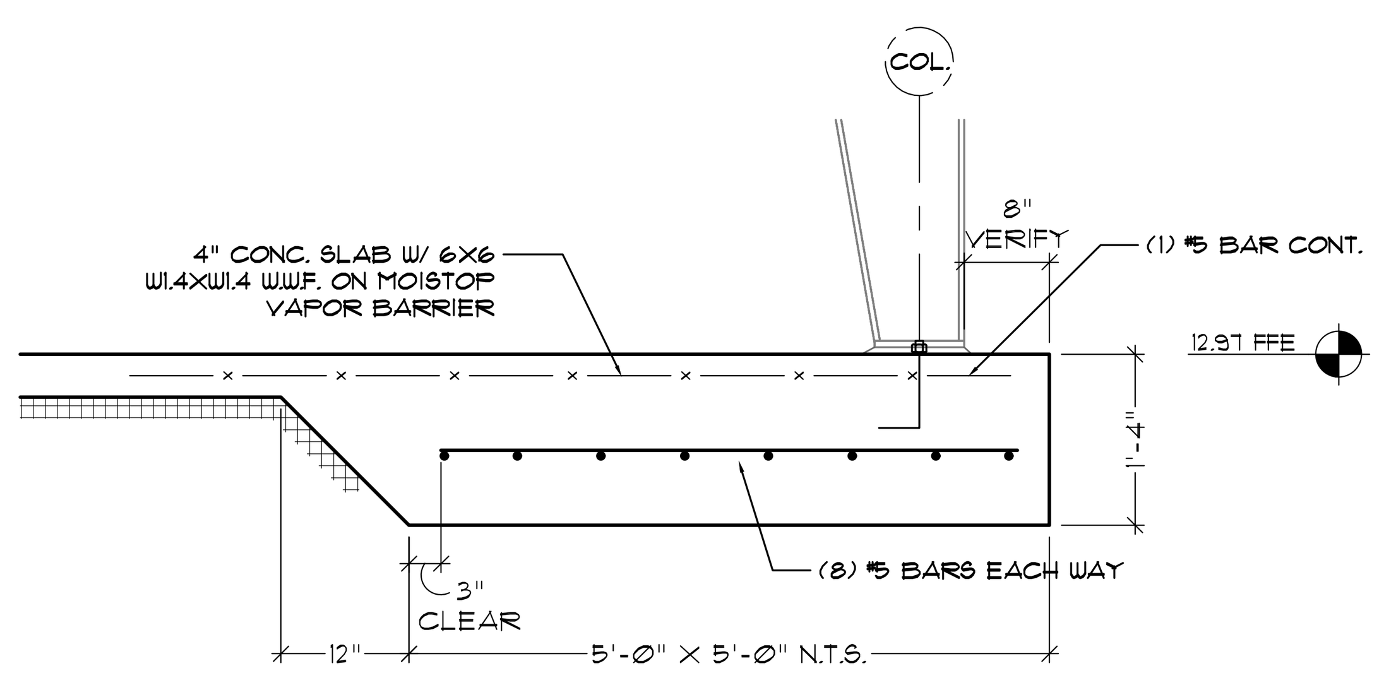
ISSUED: 04/13/26
DWG BY: MSG
CKD BY: LDD
REVISIONS

SHEET NO.
A-6
OF

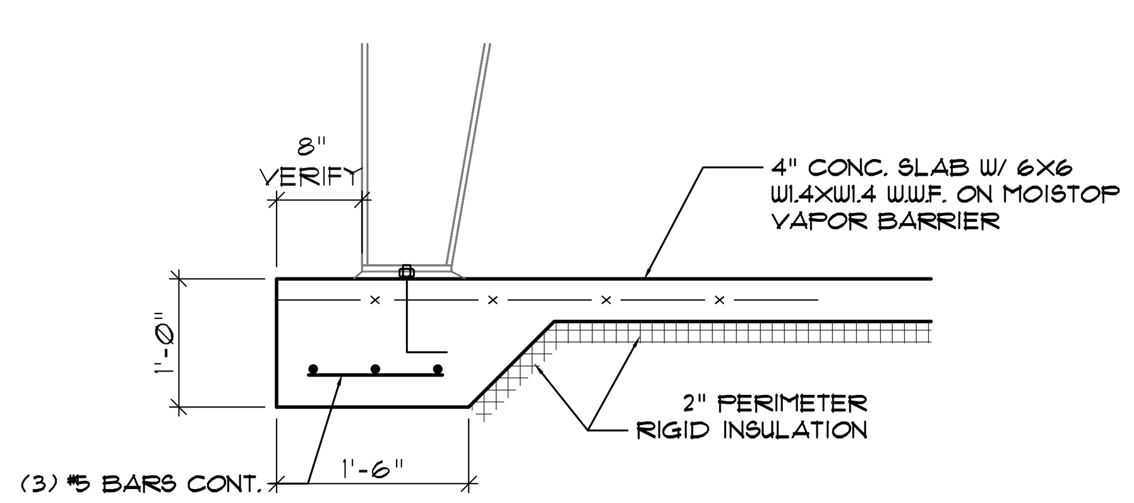
SEE ALSO G-1 FOR STRUCTURAL REQUIREMENTS, PEMB TO ALSO SUBMIT ENGINEERED SHOP DRAWINGS AND CALCULATIONS FOR APPROVAL.



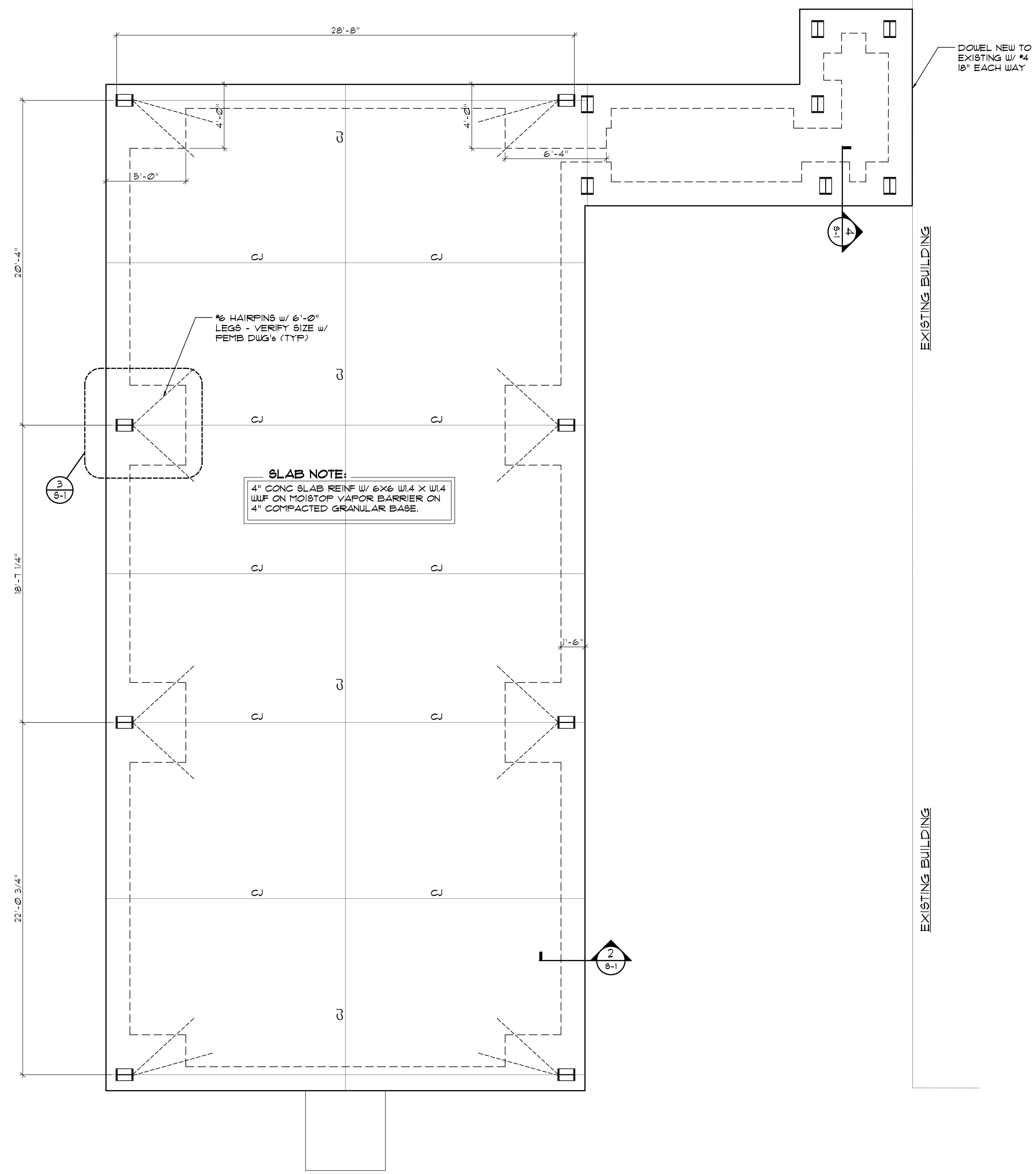
4 S-1 **TYP COLUMN DETAIL**
SCALE: 3/4"=1'-0"



3 S-1 **TYP COLUMN DETAIL**
SCALE: 3/4"=1'-0"



2 S-1 **CONCRETE FOOTING DETAIL**
SCALE: 3/4"=1'-0"



1 S-1 **FOUNDATION PLAN**
SCALE: 1/4"=1'-0"

NORTH

Coastal Architecture
• Architectural Design
• Planning
• Interiors
AIA
Member of the American Institute of Architects
Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net
4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

FOUNDATION PLAN

25022
ISSUED: 04/13/26
DWG BY: MSG
CKD BY: LDD
REVISIONS

SHEET NO.
S-1
OF

DIVISION 15A – PLUMBING

1.1 DESCRIPTION OF THE WORK

A. Work under this section includes, but is not necessarily limited to, furnishing and installing the following:
   1. Plumbing fixtures, water heaters, and any other equipment necessary.
   2. Cold and hot water piping and insulation.
   3. DWV piping.
   4. Connection of all equipment; drain, vent, water.

B. All work under this contract shall be installed in compliance with the latest edition of the following codes and standards insofar as they apply.
   1. The National Electrical Code.
   2. 2018 N.C. Building Code: Plumbing, and all applicable category codes.
   3. American Society of Sanitary Engineering Standard 1010.
   4. All local codes and ordinances.

C. These codes are minimum standards. If codes require a more stringent method of construction than the specifications require, the codes shall govern.

D. The Plumbing Contractor shall be licensed in the State of North Carolina and have all local licenses required for the work.

E. Obtain all permits, licenses, inspections, etc., required for the work, and pay for the same.

1.2 INTENT

A. The intent of these specifications and accompanying drawings is to convey as reasonably as possible the requirements for a complete job ready for the building to operate. The Plumbing Contractor shall take this into consideration and include in his base bid allowance for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner. The PC shall determine and coordinate with existing conditions.

1.3 COORDINATION

A. Coordinate work with other contractors. Notify Architect of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Architect for a decision before resuming operations.

B. Locations shown are approximate. The Plumbing Contractor shall refer to the architectural drawings for placement of equipment, fixtures, etc. Where locations are not clear, the Contractor shall obtain the exact locations from the Architect.

C. Coordinate all exterior piping connections w/Architect, site contractor/plans. Verify manhole elevations and provide backwater valves as required if flood level rims are below next upstream manhole cover elevation. Fixtures with flood level rims above upstream manhole shall not discharge thru bw valve. Notify engineer of backwater valve requirement, any issue prior to bid.

1.4 SHOP DRAWINGS

A. Shop drawings shall be submitted for plumbing fixtures and for pipe. These may consist of the manufacturer's standard catalog or tear sheets and shall have the exact items being offered clearly identified.

PART 2 – PRODUCTS

2.1 FIXTURES

A. Each fixture shall be properly supported from the building structure as required to the end effect that all fixtures and accessories will be held rigidly in place. Water pipes supplying the fixtures must also be held rigidly in place.

B. Provide loose key angle stops and chrome plated supply pipe water supplies to fixtures.

C. All exposed piping traps and accessories for fixtures shall be chrome plated. Provide chrome plated escutcheon plates where pipes enter walls.

D. Provide shutoff valves for all sinks, water heaters, toilets, washing machines, refrigerator icemaker, exterior hose bibbs and all other plumbing fixtures.

E. Provide trap primers for all floor drains in areas not served by hose bibbs.

2.2 PIPING

A. Drain–Waste–Vent: All DWV piping shall be Schedule 40 PVC–DWV u.o.n., with the following exceptions: Use cast iron piping in all return air plenums, penetrations of rated walls/floors/ceilings, and in areas/walls adjacent to cooking equipment exhaust hoods. Review Arch. and Mech. drawings. ABS or cast iron piping shall be used for drainage/discharge with a temperature greater than 140 deg. F for a minimum distance of 10'–0".

B. Hot and cold water piping above grade: Type "L" copper w/solder joints (ASTM–B88), hard drawn with wrought copper fittings (ANSI B16.22). PEX piping with copper fittings may be used with owner/tenant approval and as allowed per code. Copper piping shall be used in areas/walls adjacent to cooking equipment exhaust hoods. Review Arch. and Mech. drawings.

C. Cold water piping below grade: Type "K" copper (ASTM–B8A) soft drawn.

D. Hangers: Use pipe hangers where required on 8–foot centers with saddles to avoid crushing insulation.

E. Solder: 95/5. Lead free.

F. Unions: Provide unions where indicated on drawings, in long runs of piping (except drainage) and at equipment to provide convenient disassembly. Provide dielectric unions when connecting copper tubing to equipment and piping made of ferrous materials.

2.3 CLEANOUTS

A. Hex plugs in rough areas: Recessed plugs with cover plates in exposed locations.

2.4 SHOCK ARRESTERS

A. Provide shock arresters as required by codes, manufacturer's recommendations and accepted industry standards for qualify construction. Provide for all quick closing valves.

PART 3 – EXECUTION

3.1 CONNECTIONS

A. This contract includes complete connection of cold water, hot water, drainage, and vent piping as required. All fittings, valves, accessories, cutoffs, drains, etc., required to complete such connections shall be included.

B. The connection to water closets shall be made watertight with gasket and wax ring. Floor flanges shall be caulked into position. Plastic caps shall be provided on the tie down bolts, and shall be secured in place by screwing down on threaded brass washers.

C. Where water pipes connect to exposed chrome plated trim, use proper chrome plated escutcheons.

3.2 SERVICE ACCESS

A. All valves and accessories shall be insulated so that they can be properly serviced. In no case shall the Plumbing Contractor install equipment or other components in situations that do not meet code requirements or manufacturer's requirements. Provide access doors as required to access valves, etc.

3.3 ROUTING OF PIPING

A. Coordinate routing of piping with others, line up work true to or at right angle to adjacent surfaces and in a workmanlike manner. Support all interior piping from building structure by means of hanger or inserts to maintain pitch of lines, to prevent vibration, and to secure piping place.

B. Space pipe hangers per NCSBC– Plumbing Sect. 308.5.

C. Pipe hangers for insulated lines shall have suitable saddles to protect insulation.

3.4 INSULATION

A. All H/W and C/W piping shall be insulated with a min. of 1" inch elastomeric insulation (R–6.5 min.) in unconditioned areas. See NCSBC–Plumbing Sect. 305 for all protection requirements. All H/W piping of circulating systems shall be insulated with 1" insulation per Sect. C404.4 of the NCSBC 2018 Energy Conservation Code.

B. Provide pre–fabricated insulation kits for all sink and lavatory exposed drain and supply piping.

3.5 INSPECTIONS AND TESTS

A. Before being concealed, all water, soil and vent piping shall be tested to determine if they are water– and air–tight.

B. Prior to placing into service, entire system shall be tested for leaks in strict accordance with state and local codes.

3.6 STERILIZATION OF PIPING

A. Sterilize the new water piping thoroughly with a solution containing not less than 50 parts per million of available chlorine, using liquid chlorine, or sodium hydrochloride solution, introduced into the system in an approved manner. The sterilizing solution shall remain in the system in an approved manner. The sterilizing solution shall remain in the system for a period of 24 hours. After sterilization, flush the solution from the system with clean water until the residual chlorine content is not greater than 0.2 parts per million, unless otherwise directed.

3.7 SERVICE PRESSURE

A. Provide approved water–pressure reducing valve (PRV) if service pressure exceeds 80 psi to reduce pressure to 80 psi static or less and as required per NCSBC–Plumbing Sect. 604.8.

3.8 DRAINDOWN

A. Contractor to provide for complete plumbing system drain down.

3.9 CLEAN UP

A. During construction, keep the site clear of debris and upon completion, and before final inspection, clean up the premises to remove all evidence of his work. In addition, upon completion of construction, clean, wash, and/or polish all fixtures, equipment and exposed material and leave them bright and clean.

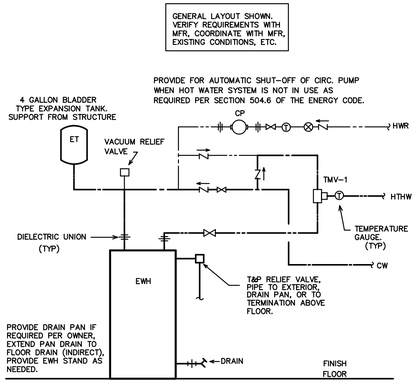
3.10 GUARANTEES

A. Guarantee all materials and labor included in the plumbing work for a period of one year from date of final acceptance by the Owner.

B. Any defects in the system which become evident during the guarantee period shall be corrected without cost to the Owner. This shall include the replacing of defective materials where required, and the repair of damage caused by leaking pipes, etc., and damage to building surfaces caused in making repairs.

GENERAL NOTES – PLUMBING

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE, ALL LOCAL AND OTHER APPLICABLE CODES.
2. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMEN. THE PLUMBING CONTRACTOR (PC) SHALL COORDINATE ALL OF HIS WORK WITH THE GENERAL CONTRACTOR (GC).
3. THE PLUMBING PLANS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO PURCHASING MATERIALS AND INSTALLATION AND ALL DISCREPANCIES OR INTERFERENCES BROUGHT TO THE ENGINEERS ATTENTION.
4. THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. THE PC SHALL PROVIDE ALL MISC. ITEMS NEEDED FOR A COMPLETE SYSTEM REGARDLESS IF NOTED ON THE DRAWINGS OR NOT. REFER TO ARCHITECTURAL DRAWINGS FOR ALL FLOORPLAN LAYOUTS. DO NOT USE ENGINEERING DRAWINGS FOR ROUGH–INS.
5. THE GC SHALL PROVIDE ALL WALL, FLOOR AND ROOF OPENINGS OF THE SIZE AND LOCATION REQUIRED BY THE PC AND SHALL BE RESPONSIBLE FOR PAINTING AND FLOOR FINISHES. THE PC SHALL PROPERLY SEAL ALL PENETRATIONS AND PROVIDE ESCUTCHEON PLATES AT ALL FINISHED LOCATIONS.
6. ALL NEW WATER PIPING SHALL BE INSTALLED TIGHT TO STRUCTURE, ADEQUATELY SUPPORTED AND PROTECTED AND PROPERLY PITCHED TO ALLOW TOTAL DRAINAGE.
7. ALL WATER PIPING SHALL BE HYDROSTATICALLY TESTED FOR A MINIMUM OF 15 MINUTES AT A MINIMUM OF 100 PSIG BEFORE COVERING AND ALL LEAKS CORRECTED. THE ENTIRE WATER DISTRIBUTION SYSTEM SHALL BE DISINFECTED PRIOR TO PLACING IN SERVICE.
8. PROVIDE MIN. 18" SHOCK ABSORBERS WITH STOPS ON ALL HOT AND COLD WATER FIXTURE RUNS AS REQUIRED BY CODE.
9. VENT LINES SHALL SLOPE UP TO ALL STACKS AND TERMINATE A MIN. OF 12" ABOVE ROOF LINE.
10. PROVIDE CUT SHEETS ON ALL PLUMBING FIXTURES FOR ARCHITECT AND OWNER APPROVAL PRIOR TO ORDERING ANY FIXTURES.
11. PROVIDE CLEANOUTS AS REQUIRED BY CODE. NOT MORE THAN 100 FEET FOR 4" DRAIN. VERIFY LOCATIONS, COVERS, ETC. WITH OWNER AND ARCHITECT. WALL CLEANOUTS SHALL BE A MINIMUM 12" A.F.F. FROM THE BOTTOM OF COVER PLATES UNLESS OTHERWISE DIRECTED.
12. VERIFY/PROVIDE HOT WATER STORAGE (EWH) TEMPERATURE OF 140 DEG. (F). PROVIDE/VERIFY HIGH TEMPERATURE HOT WATER (HTHW) AT 120 DEGREES (MAX.) F, PROVIDE/VERIFY LOW TEMPERATURE HOT WATER (LTHW) AT 110 DEGREES (MAX.) F, VERIFY LTHW FROM ALL LAVATORY FAUCETS, ANY OTHER REQUIRED FIXTURES (VERIFY). PROVIDE/VERIFY ASSE 1070 THERMOSTATIC MIXING VALVE WHERE REQUIRED, ASSE 1017 WHERE REQUIRED, AND ASSE 1016 THERMOSTATIC/PRESSURE BALANCING VALVES WHERE REQUIRED (SHOWERS, WITH MAX. SETTING OF 120 DEG. F), AND PER CODE WHETHER OR NOT SHOWN OR NOTED ON PLANS.



1 PI EWH DETAIL
SCALE: NTS

System No. W-L-1001

March 28, 2003

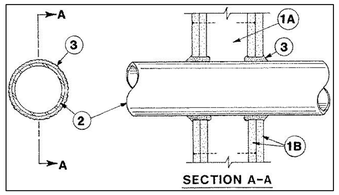
(Formerly System No. 147)

F Ratings – 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings – 0, 1, 2, 3, and 4 Hr (See Item 3)

L Rating At Ambient - less than 1 CFM/sq ft

L Rating At 400 F - less than 1 CFM/sq ft



1. Wall Assembly – The 1,2,3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL FIre Resistance Directory and shall include the following construction features:

A. Studs – Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.

B. Gypsum Board* – Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance DIrectory. Max diam of opening is 26 in.

2. Through-Penetrant– One metalic pipe, conduit or tubing installed either concentrically or eccentrically with the firestop system. The annular space between pipe, conduit, or tubing and periphery of opening shall be min of 0 in. (point contact) to max 2 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. Steel Pipe – Nom 24 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. Iron Pipe – Nom 24 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. Conduit – Nom 6 in. diam (or smaller) steel conduit or nom 4 in diam (or smaller) steel electrical metallic tubing.

D. Copper Tubing – Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.

E. Copper Pipe – Nom 6 in. diam (or smaller) Regular (or heavier) copper tubing.

F. through Penetrating Product* – Flexible Metal Piping The following types of steel flexible metal gas piping may be used:

1. Nom 2 in diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

OMEGA FLEX INC

2. Nom 1 in diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

TITLEFLEX CORP

A BUNDY CO

3. Nom 1 in diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

WARD MFG INC

3. Fill, Void or Cavity Material* – Caulk – Min 5/8, 1-1/4,1-7/8 and 2-1/2 in. thickness for caulk for 1,2,3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. dia bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In	F RATING Hr	T RATING Hr
1	1 or 2	0+, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

+When copper pipe is used, T Rating is 0 h.

3M COMPANY – CP 25WB+.

*Bearing the UL Classification Mark

2 PI PENETRATION DETAIL
SCALE: NTS

SYMBOL LEGEND – PLUMBING

SYMBOL	DESCRIPTION (U.O.N.)
———	WASTE PIPING (W)
– – – – – –	VENT PIPING (V)
———	COLD WATER PIPING (CW)
———	HOT WATER PIPING (HW)
——HTHW——	HIGH TEMPERATURE HW PIPING (HTHW) 120 DEG. F
——LTHW——	LOW TEMPERATURE HW PIPING (LTHW) 110 DEG. F
——⋈——	SHUT–OFF VALVE
——||——	DIELECTRIC UNION
T	THERMOMETER/TEMPERATURE GAUGE (T) MOUNT IN READABLE ORIENTATION
COFF	CLEANOUT FINISH FLOOR
WCO/HCO	WALL/HORIZONTAL CLEANOUT
COFG	CLEANOUT FINISH GRADE –PROVIDE FLUSH CONCRETE COLLAR AND BRONZE COVER
	VENT THRU ROOF (VTR)
A.F.F.	ABOVE FINISHED FLOOR
U.O.N.	UNLESS OTHERWISE NOTED

LOAD SUMMARY – PLUMBING

WASTE DEMAND (FU)	WATER DEMAND (FU)	WATER DEMAND (GPM)
31.0	35.0	24.9

FIXTURE SCHEDULE – PLUMBING *

ET* EXPANSION TANK
AMTROL MODEL ST–12, 4.4 GALLON, STEEL CONSTRUCTION, NON–ASME RATED.

EWH* ELECTRIC WATER HEATER
A.O. SMITH MODEL DRE–80–12, 80 GALLON, 12,000 WATT, 240V, 1 PH.
61 GPH RECOVERY AT 80 DEGREE (F) RISE. 1–1/4" INLET AND OUTLET,
PROVIDE DRAIN PAN, EXPANSION TANK AND PRESSURE RELIEF VALVE.
VERIFY INSTALLATION CLEARANCES PRIOR TO ORDERING.

FD* FLOOR DRAIN
ZURN MODEL Z415 WITH HEEL–PROOF TYPE B STRAINER, CAST IRON W/NICKEL BRONZE TOP, 5" STRAINER WITH 2" CONNECTION. PROVIDE TRAP PRIMER CONNECTION IF REQUIRED.

LAV* LAVATORY (COUNTERTOP)
KOHLER PENNINGTON SELF RIMMING COUNTERTOP LAVATORY, K–2196–4, 4" CENTERS, WHITE COLOR, ADA COMPLIANT. PROVIDE K–8998 P–TRAP WITH DELTA FAUCET MODEL 523LF–HDF, SHUT–OFF VALVES.

SHR* SHOWER (CUSTOM BUILT/TILED– VERIFY ANY ADA REQUIREMENT W/ARCHITECT)
COORDINATE FAUCET, ACCESSORIES W/OWNER, ARCH. PROVIDE ADA MODEL/ACCESSORIES IF/WHERE REQUIRED (VERIFY W/ARCH, OWNER). PROVIDE DWV/SUPPLY AS REQUIRED. VERIFY HANDING, ROUTE ALL PLUMBING AS REQUIRED REGARDLESS OF HOW SHOWN ON PLANS. PROVIDE/VERIFY PROPER PRESSURE BALANCING MIXING VALVE.

TMV–1* THERMOSTATIC MIXING VALVE #1 (ASSE 1017)
WATTS SERIES LFMMV MIXING VALVE WITH CHECK VALVES. INSTALL IN MAINTENANCE ACCESSIBLE LOCATION AS REQUIRED. SET HW OUTFLOW TO SPECIFIED TEMPERATURE FOR HTHW– 120 DEG. F (MAX.).

TMV–2* THERMOSTATIC MIXING VALVE #2 (ASSE 1070)
WATTS LFUSG–B "LEAD FREE" GUARDIAN. INSTALL IN MAINTENANCE ACCESSIBLE ONLY LOCATION BELOW LAV/SINK OR AS REQUIRED. SET HW OUTFLOW TO SPECIFIED TEMPERATURE FOR LTHW– 110 DEG. F (MAX.).

WB* WASHING MACHINE WALL BOX
SUPPLY AND DRAIN FIXTURE: POLYSTYRENE BOX WITH 2" DRAIN, 1/4 TURN BRASS BALL VALVES. OATEY OR APPROVED EQUAL.

WC* WATER CLOSET (ADA FLUSH TANK)
KOHLER HIGHLINE WATER CLOSET, K–3979, ADA COMPLIANT 1.6 GPF. PROVIDE PROPER OPEN FRONT ADA SEAT, K–7637 SUPPLY AND STOP, WAX SEAL, CLOSET BOLT KIT. PROVIDE MODEL WITH FLUSH CONTROL ON SIDE OPPOSITE GRAB BAR.

* OR APPROVED EQUAL. SUBMIT ALL ITEMS FOR APPROVAL BY TENANT AND ARCHITECT PRIOR TO ORDERING.
ALL OTHER PLUMBING FIXTURES SHOWN ARE PROVIDED BY THE TENANT AND INSTALLED BY THE PLUMBING CONTRACTOR. SEE PLANS FOR NUMBER AND LOCATION. COORDINATE ALL REQUIREMENTS WITH EQUIPMENT SERVED.

ENGINEER
BURKE DESIGN GROUP
3305–109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771–1916
FAX: (919) 779–0826
email: ben@bdg–nc.com
Corp. License # C–2652

Coastal Architecture PLLC
Architectural Design Planning Interiors
AIA
Member of the American Institure of Architects
Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net
4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

4/17/26
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 42008 BENJAMIN E. BURKE

PLUMBING SPECIFICATIONS

25022

ISSUED: 02/25/2026
DWG BY: DS
CKD BY: BEB
REVISIONS

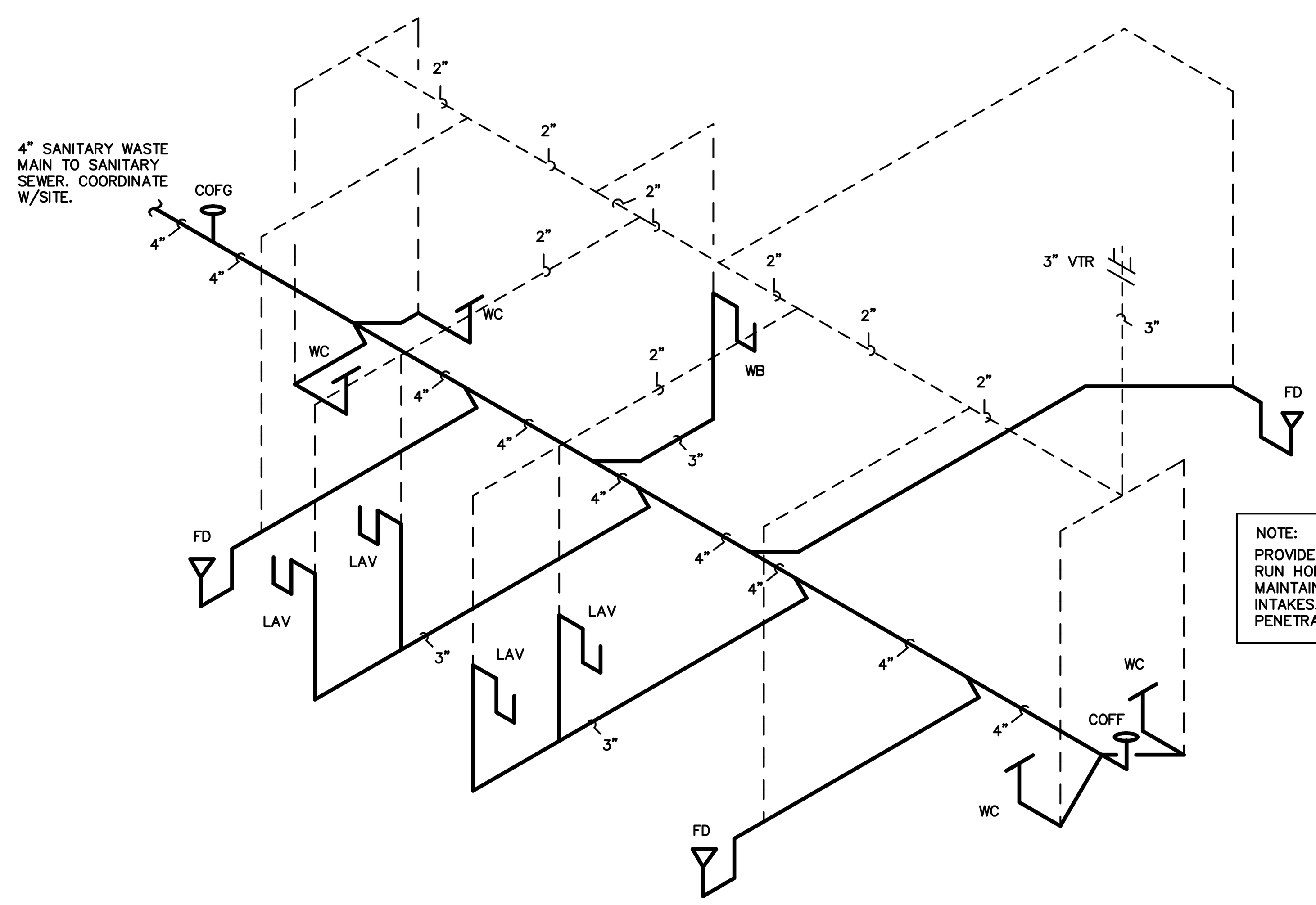
SHEET NO.
P1

RISER NOTES:

REPRESENTATIVE SIZES ARE GIVEN FOR EACH TYPE OF FIXTURE. SEE PIPE SIZING SCHEDULE.
MINIMUM 2" DRAIN LINE SIZE UNDER SLAB.
MAINTAIN PIPE SIZES SHOWN UNTIL LARGER SIZE IS REACHED.
PIPE SIZES ARE MINIMUMS FOR INDIVIDUAL FIXTURES U.O.N.

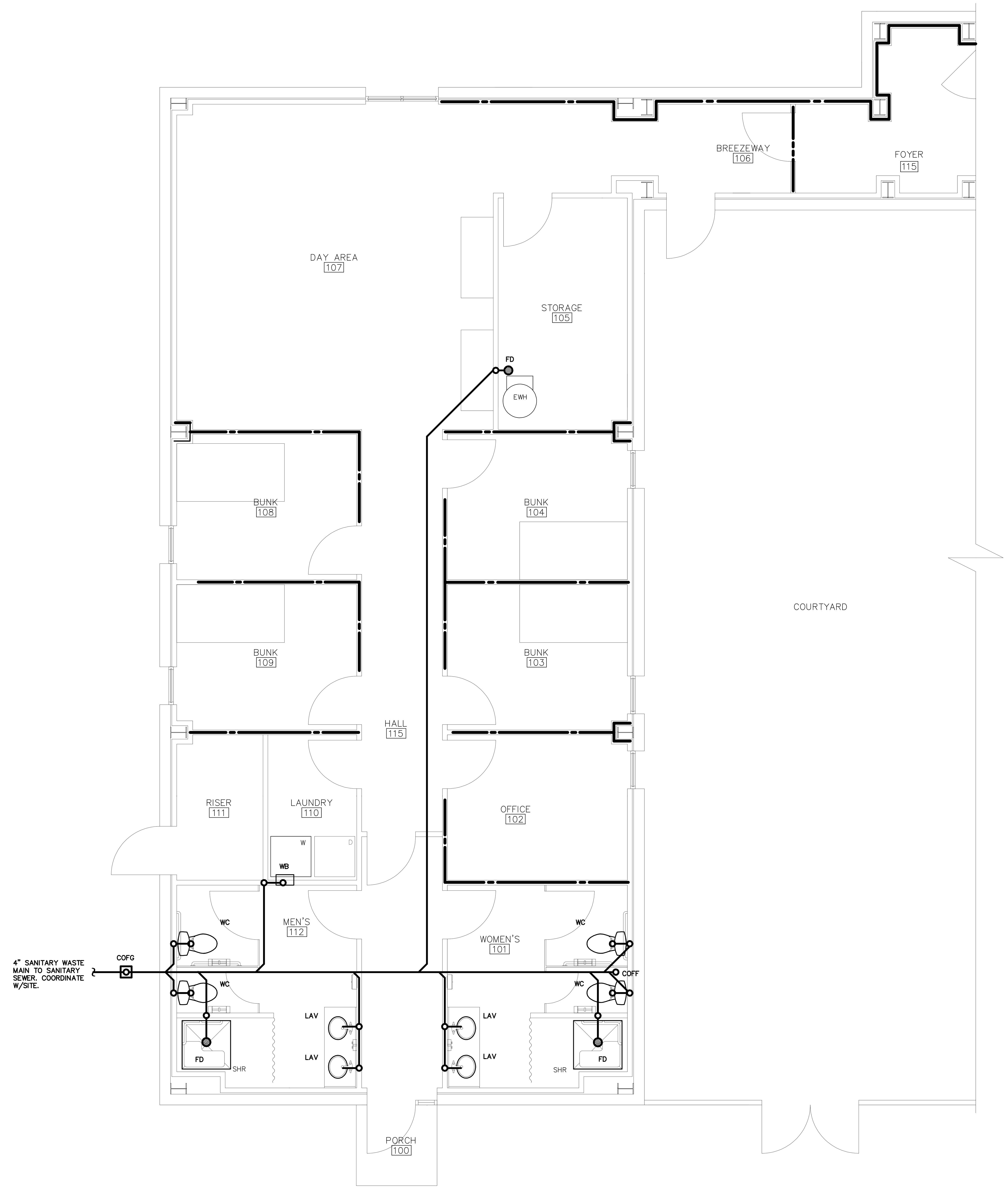
(VERIFY ALL EQUIPMENT REQUIREMENTS PRIOR TO ROUGH–IN)

PIPE SIZING SCHEDULE		
FIXTURE TYPE	DRAIN	VENT
(FD) FLOOR DRAIN	3"	1–1/2"
(LAV) LAVATORY	1–1/2"	1–1/4"
(WB) WASHING MACHINE BOX	2"	1–1/4"
(WC) FLUSH TANK WATER CLOSET	3"	1–1/2"



NOTE:
PROVIDE PROPER VENT THRU ROOF (VTR). RUN HORIZONTALLY AS REQUIRED TO MAINTAIN 10'–0" CLEARANCE FROM ANY INTAKES. PROPERLY FLASH ANY ROOF PENETRATION. (TYP)

2 / P3 DWV RISER
SCALE: NTS



1 / P2 DWV PLAN
SCALE: 1/4"=1'-0"

ENGINEER
BURKE DESIGN GROUP
3305–109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771–1916
FAX: (919) 779–0826
email: ben@bdg–nc.com
Corp. License # C-2652

Coastal Architecture PLLC
Architectural
Design
Planning
Interiors
AIA
Member of the American Institute of Architects
Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net
4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

4/17/26
NORTH CAROLINA PROFESSIONAL SEAL 22038 ENGINEER BENJAMIN E. BURKE

DWV PLAN & RISER

25022

ISSUED: 02/25/2026
DWG BY: DS
CKD BY: BEB
REVISIONS

SHEET NO.
P2

RISER NOTES:

REPRESENTATIVE SIZES ARE GIVEN FOR EACH TYPE OF FIXTURE. SEE PIPE SIZING SCHEDULE.

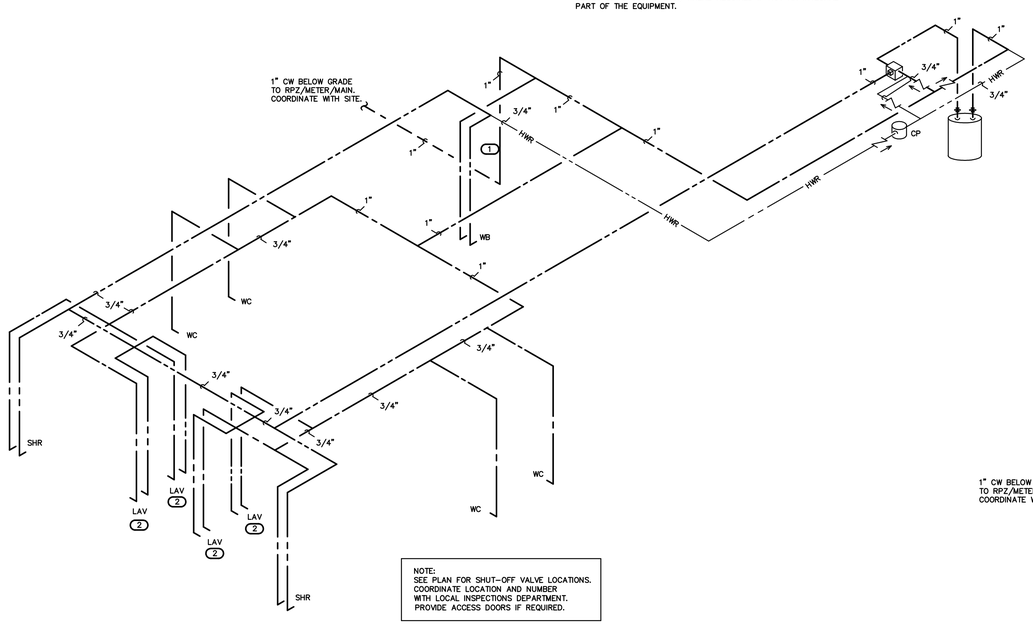
MAINTAIN PIPE SIZES SHOWN UNTIL LARGER SIZE IS REACHED. PIPE SIZES ARE MINIMUMS FOR INDIVIDUAL FIXTURES U.O.N.

(VERIFY ALL EQUIPMENT REQUIREMENTS PRIOR TO ROUGH-IN)

PIPE SIZING SCHEDULE

FIXTURE TYPE	CW	HW
(LAV) LAVATORY	1/2"	1/2"
(SHR) SHOWER	1/2"	1/2"
(WB) WASHING MACHINE BOX	1/2" *	1/2" *
(WC) FLUSH TANK WATER CLOSET	1/2"	–

* PROVIDE BACKFLOW PREVENTER PER NCSBC-PLUMBING SECT. 608.3, EX: ASSE 1024 (WATTS SERIES 7 OR EQUAL) ASSE 1022 (WATTS SERIES SD-3 EQUAL) ETC., WHERE REQUIRED IF NOT AN INTEGRAL PART OF THE EQUIPMENT.



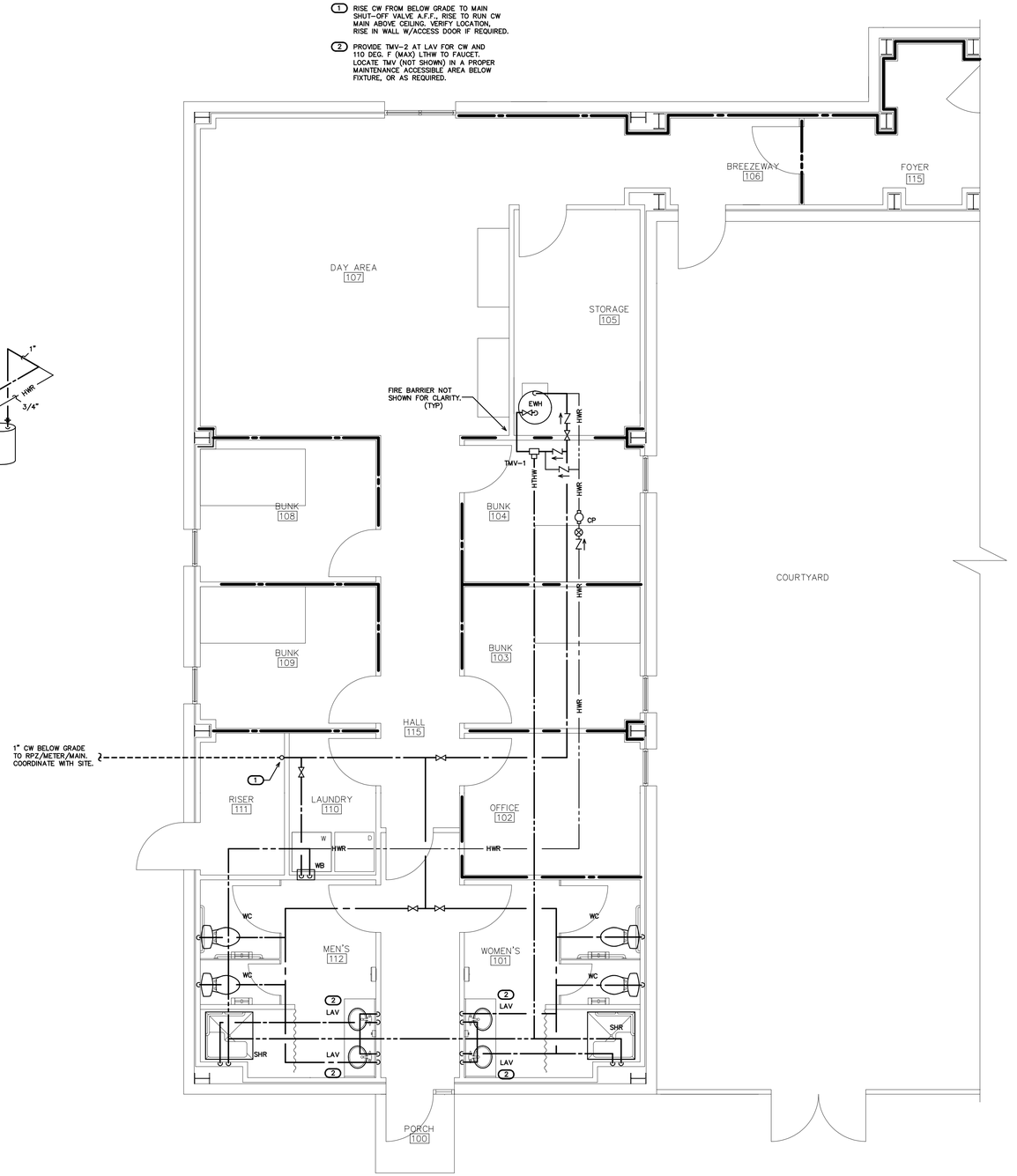
NOTE:
SEE PLAN FOR SHUT-OFF VALVE LOCATIONS. COORDINATE LOCATION AND NUMBER WITH LOCAL INSPECTIONS DEPARTMENT. PROVIDE ACCESS DOORS IF REQUIRED.

2/P3 WATER RISER
SCALE: NTS

NOTE:
PROPERLY PROTECT/INSULATE ALL PIPING IN UNCONDITIONED AREAS. VERIFY ROUTING OF WATER LINES W/ARCH. ALL LINES, VALVES, CP, ETC., SHOWN FOR CLARITY- VERIFY LOCATIONS OF ALL COMPONENTS, COORDINATE WITH ALL TRADES. (TYP)

KEY NOTES FOR SHEET P3

1. RISE CW FROM BELOW GRADE TO MAIN SHUT-OFF VALVE A.F.F., RISE TO RUN CW MAIN ABOVE CEILING. VERIFY LOCATION, RISE IN WALL W/ACCESS DOOR IF REQUIRED.
2. PROVIDE TMV-2 AT LAV FOR CW AND 110 DEG. F (MAX) LTHW TO FAUCET. LOCATE TMV (NOT SHOWN) IN A PROPER MAINTENANCE ACCESSIBLE AREA BELOW FIXTURE, OR AS REQUIRED.



1/P3 WATER PLAN
SCALE: 1/4"=1'-0"

Coastal Architecture PLLC

Architectural
Design
Planning
Interiors

Member of the American Institute of Architects

Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
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MILL CREEK VOLUNTEER FIRE DEPT

NEWPORT, NORTH CAROLINA

4/27/26

NORTH CAROLINA PROFESSIONAL SEAL 22038 ENGINEER BENJAMIN E. BURKE

WATER PLAN

25022

ISSUED: 02/25/2026
DWG BY: DS
CKD BY: BEB

REVISIONS

SHEET NO.
P3

ENGINEER
BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
email: ben@bdg-nc.com
Corp. License # C-2652

Mill Creek Fire Department MT

HVAC EQUIPMENT SCHEDULE

HVAC SYSTEM #1	
AHU-1 DIRECT EXPANSION FAN COIL UNIT	* TRANE MODEL #5TEM4D06AC41, 4 WAY, MULTIPOISE FAN COIL UNIT. 7.68 KW HEATER. NOMINAL CAPACITY = 42,000 BTUH. 1400 CFM NOMINAL. PROVIDE HARD SHUT-OFF TXV VALVE. 3.5 TON NOMINAL. PROVIDE PROGRAMMABLE THERMOSTAT AND FILTER RACK WITH HINGED DOOR. 3/4HP, 6.0A MOTOR FLA, 32A HEAT FLA, 240V, 1 PH, 48A MCA, 50A MOCP AHU & HEAT.
HP-1 OUTDOOR HEAT PUMP UNIT	* TRANE MODEL #5TWR5042A1, 3.5 TON OUTDOOR HEAT PUMP UNIT, 15 SEER, PROVIDE CYCLE PROTECTOR, LOW PRESSURE SWITCH, CRANKCASE HEATER, 240 VOLT, 1 PHASE. COMP 16.9A RLA, FAN 2.8A FLA, OUTDOOR HEAT PUMP 24A MCA, 40A MOCP.

NOTE:
THIS DRAWING SET IS IN COMPLIANCE WITH CHAPTERS 1-10 AND 12-15 OF THE 2018 NCMC AS APPLICABLE TO THE INSTALLATION UNDER NCMC SECTION 105.2 "ALTERNATE MATERIALS, METHODS, EQUIPMENT, AND APPLIANCES". WE ARE UTILIZING ASHRAE 15-2022 TO ALLOW FOR THE USE OF A2L REFRIGERANTS, AS ALLOWABLE UNDER NCMC 105.2.

REFRIGERANT SAFETY NOTES

UTILIZING ASHRAE 15-2022 IS USED AS THE MEANS OF COMPLIANCE. ALL REFRIGERANT SYSTEMS INSTALLATIONS SHALL COMPLY WITH ALL REQUIRMENTS OF ASHRAE 15-2022.

1. REFRIGERANT TYPE IS R-454B, AN A2L CLASSIFICATION REFRIGERANT.
2. ALL REFRIGERANT PIPING SHALL BE PROTECTED IN ACCORDANCE WITH ASHRAE 15-2024 9.12.1.2
3. ALL REFRIGERANT PIPING SHALL HAVE IDENTIFICATION AS BEING REFRIGERANT AND TYPE OF REFRIGERANT.
4. ALL PIPING THAT PENETRATES RATED ASSEMBLIES SHALL BE FIRE SEALED WITH APPROVED DETAILS.
5. ALL AIR HANDLING UNITS SHALL HAVE LEAK DETECTION PROVIDED FROM THE UNIT MANUFACTURER AND INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS. LEAK DETECTION SHALL SHUT OFF THE COMPRESSOR AND RUN FAN TO DILUTE REFRIGERANT.
6. PATH OF REFRIGERANT PIPING IS INDICATED ON THE PLANS.

Mill Creek Fire Department MT

EXHAUST FAN SCHEDULE

EXHAUST FAN #1&2 (EF-1&2)	* CARNES MODEL# VCDD020C EXHAUST FAN, 196 CFM @ 1/4" SP, 740 RPM, 1.8 AMPS, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, 8" RIGID DUCT TO EXTERIOR, FLASHING AND ROOF CAP. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES.

* OR APPROVED EQUAL

NOTE: RUN EXHAUST DUCTS HORIZONTALLY AS REQUIRED TO MAINTAIN 10'-0" MINIMUM SEPARATION FROM ANY INTAKES.

AIR DISTRIBUTION SCHEDULE

MARK	* MANUFACTURER	MODEL NO.	NECK SIZE	FACE SIZE	MATERIAL	SERVICE	NOTES
A	CARNES	SPAB224	SEE FLEXIBLE DUCT SCHEDULE	24" X 24"	STEEL	SUPPLY	LAY-IN CEILING, WHITE 4-WAY BLOW
B	CARNES	SPAB112	SEE FLEXIBLE DUCT SCHEDULE	12" X 12"	STEEL	SUPPLY	HARD CEILING MOUNTED, WHITE 4-WAY BLOW
C	CARNES	RTDBH	8" X 14"	10" X 16"	STEEL	SUPPLY	DUCT, SIDE WALL, OR CEILING MOUNTED
RA	CARNES	SPRB22	SEE FLEXIBLE DUCT SCHEDULE	24" X 24"	STEEL	RETURN	LAY-IN CEILING, WHITE
RB	CARNES	SPRB11	SEE FLEXIBLE DUCT SCHEDULE	12" X 12"	STEEL	RETURN	HARD CEILING MOUNTED, WHITE

* OR APPROVED EQUAL

COORDINATE BORDER TYPE WITH THE CEILING TYPE. SEE ARCH SHEETS
PROVIDE CUT SHEETS TO OWNER/ARCH. PRIOR TO ORDERING.

FLEXIBLE DUCTWORK SIZES

MAXIMUM CFM'S

SIZES	SUPPLY	RETURN
6"	100	100
8"	175	175
10"	250	250
12"	400	350
14"	550	500
16"	NA	900

(CHANGE OUT EXISTING FLEX DUCTS AND COLLARS AS REQUIRED TO GET NEW CFM'S SHOWN)

FLEXIBLE DUCTWORK NOTES

1) INSTALL FLEXIBLE DUCTWORK RUNS AS STRAIGHT AS POSSIBLE.
2) DO NOT ALLOW FLEXIBLE DUCT TO SAG BETWEEN SUPPORTS.
3) DO NOT STRETCH A SHORT SECTION TO FIT A SLIGHTLY LONGER SECTION. THIS DISTORTS THE DUCT SHAPE AND IMPEDES AIR FLOW.
4) DO NOT CRUSH DUCTWORK TO FIT IN A SPACE SMALLER THAN ITS ORIGINAL OUTSIDE DIAMETER. MAXIMUM ALLOWABLE DEFORMATION IS 15% OF ORIGINAL VOLUME.
5) USE RIGID 90 DEGREE ELBOWS AT ANY LOCATION WHERE THE DUCTWORK BECOMES DISTORTED.
6) EXTREME CARE SHALL BE TAKEN TO ELIMINATE ANY REDUCTION IN FLOW WITHIN THE FLEXIBLE DUCTS. THE MECH. CONTRACTOR WILL BE REQUIRED TO REPLACE THE FLEXIBLE DUCT WITH RIGID IF PROPER FLOW IS NOT OBTAINED.
7) SIZE ALL FLEXIBLE DUCT SO AS NOT TO EXCEED MAXIMUM CFM'S GIVEN IN TABLE.

GENERAL NOTES – MECHANICAL

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE AND ALL LOCAL AND OTHER APPLICABLE CODES.
2. ANY PERMITS AND INSPECTION FEES SHALL BE SECURED AND PAID FOR BY THE MECHANICAL CONTRACTOR (MC).
3. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMEN. THE MC SHALL COORDINATE ALL OF HIS WORK WITH THE GENERAL CONTRACTOR (GC) AND OTHER TRADES.
4. THE LOCATION OF ALL DUCT, PIPING AND EQUIPMENT SHALL BE ADJUSTED TO ACCOMMODATE ANTICIPATED OR ENCOUNTERED INTERFERENCES.
5. THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. FOR DIMENSIONS REFER TO THE ARCHITECTURAL PLANS.
6. THE MC SHALL BE RESPONSIBLE FOR ALL ELECTRICAL STARTERS INTERLOCKS, CONTROL WIRING CONDUIT AND POWER WIRING FROM DISCONNECTS TO HIS EQUIPMENT, USING A LICENSED ELECTRICIAN.
7. THE MC SHALL USE FIRE DAMPERS FOR PROTECTION OF THE OPENING IN ACCORDANCE WITH STATE AND LOCAL CODES IN ALL LOCATIONS WHERE PENETRATIONS OF RATED WALLS AND FLOORS OCCUR. SEE ARCHITECTURAL PLANS FOR RATED WALL AND FLOOR LOCATIONS. PROVIDE ACCESS DOORS AT ALL DAMPER LOCATIONS. LOCATE DOORS FOR EASY ACCESS.
8. INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCTWORK AHU. ALL MECHANICAL EQUIPMENT SHALL OPERATE FREE OF OBJECTIONAL NOISE AND VIBRATION.
9. INSTALL TURNING VANES IN SUPPLY DUCTS AT ALL ELBOWS AND SPLITTER DAMPERS. PROVIDE BALANCING DAMPERS IN ALL DUCTS WHERE SHOWN OR REQUIRED FOR SYSTEM BALANCING.
10. DUCT DIMENSIONS ARE SHOWN INSIDE CLEAR.
11. THE MC SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM HIS WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF HIS WORK. HE SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN HIS CONTRACT.
12. PROVIDE ALL REQUIRED ROOF PENETRATIONS FOR THE INSTALLATION OF THE NEW EQUIPMENT. ALL FLASHINGS ARE BY THE MECHANICAL CONTRACTOR. ALL ROOFING WORK SHALL BE DONE BY A LICENSED ROOFING CONTRACTOR SO AS TO MAINTAIN ORIGINAL WARRANTY.
13. THE M.C. SHALL COORDINATE WITH AND PROVIDE EQUIPMENT SPEC. SHEETS TO THE GENERAL AND ELECTRICAL CONTRACTORS FOR REVIEW PRIOR TO ORDERING EQUIPMENT.
14. PROPERLY SUPPORT ALL DUCT WORK, AND EQUIP FROM STRUCTURE. PROVIDE ALL STRUCTURAL SUPPORTS FOR THE LOADS AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.

OA SCHEDULE

OUTDOOR VENTILATION AIR PROVIDED PER TABLE 403.3 NCSBC MECHANICAL CODE.

APPLICATION	SQUARE FOOTAGE (SF)	AREA OUTDOOR AIR FLOW RATE (CFM/SF)	PEOPLE OUTDOOR AIR FLOW RATE (CFM/PERSON)	OCCUPANCY DENSITY RATE (# PEOPLE/ 1000SF)	OCCUPANCY (# PEOPLE)	AREA OUTDOOR AIR FLOW (CFM)	PEOPLE OUTDOOR AIR FLOW (CFM)	TOTAL (CFM)
OFFICE	100	0.06	5	5	1	6	5	11
CORRIDOR	207	0.06	–	–	–	12	–	12
STORAGE	110	0.12	–	–	–	13	–	13
DAY ROOM	443	0.06	5	10	4	27	20	47
BUNK ROOM	400	0.06	5	10	4	24	20	44
TOTAL REQUIRED								127

OUTDOOR AIR PROVIDED FROM EACH HVAC UNIT **	
HVAC UNIT	OUTDOOR AIR (CFM)
AHU-1	250 – 10" DIA. O.A. DUCT
TOTAL PROVIDED	250

APPLICATION	CFM
TOILETS	70 CFM/FLUSHING FIXTURE
SHOWER	50 CFM/SHOWER FIXTURE

4 FLUSHING FIXTURE X 70 CFM = 280 CFM
2 SHOWER FIXTURE X 50 CFM = 100 CFM

EXHAUST PROVIDED BY TWO EXHAUST FANS, MAKE UP AIR BY TRANSFER AIR

* ACTUAL OCCUPANCY PER BUILDING TENANT AS ALLOWED BY 2018 NCSBC: MECHANICAL CODE, SECTION 403.3.1.1, EXCEPTION.
** SET OUTDOOR AIR DAMPER CONTROLS TO PROVIDE OUTDOOR AIR AS INDICATED IN THIS SCHEDULE.

LEGEND – MECHANICAL

- 12 X 8 — RECTANGULAR DUCTWORK. INSIDE CLEAR DIMENSION INDICATED (WIDTH X HEIGHT)
- FLEXIBLE DUCTWORK
- 12" DIA. — ROUND GALVANIZED STEEL DUCT INSIDE CLEAR DIMENSION INDICATED.
- DUCT MOUNTED SUPPLY AIR DIFFUSER
- SUPPLY DIFFUSER
- RETURN GRILLE
- T — WALL MOUNTED THERMOSTAT (UNIT SERVED IS INDICATED)
- X / XXX — GRILLE TYPE / MIN. CFM
- 1 HOUR FIRE BARRIER
- D—D — CONDENSATE PIPING
- R—R — REFRIGERANT PIPING

APPENDIX B

2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)
MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEM AND EQUIPMENT

Thermal Zone 3A

winter dry bulb 16F
summer dry bulb 93F

Interior Design Conditions

winter dry bulb 72F
summer dry bulb 75F
relative humidity 50%

Building Heating Load (Tenant space only) 27,600 BTU/hr

Building Cooling Load (Tenant space only) 32,100 BTU/hr

Mechanical Spacing Conditioning System

Unitary – The tenant space is served the following systems:
(1) New 3.5 Ton split system heat pump unit

Boiler – Not applicable to this project.

Chiller – Not applicable to this project.

Equipment efficiencies

Efficiencies and outputs are listed on equipment schedules – See drawings.

ENGINEER
BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
email: ben@bdg-nc.com
Corp. License # C-2652

Coastal Architecture PLLC
Architectural Design Planning Interiors
AIA
Member of the American Institute of Architects
Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net
4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
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MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

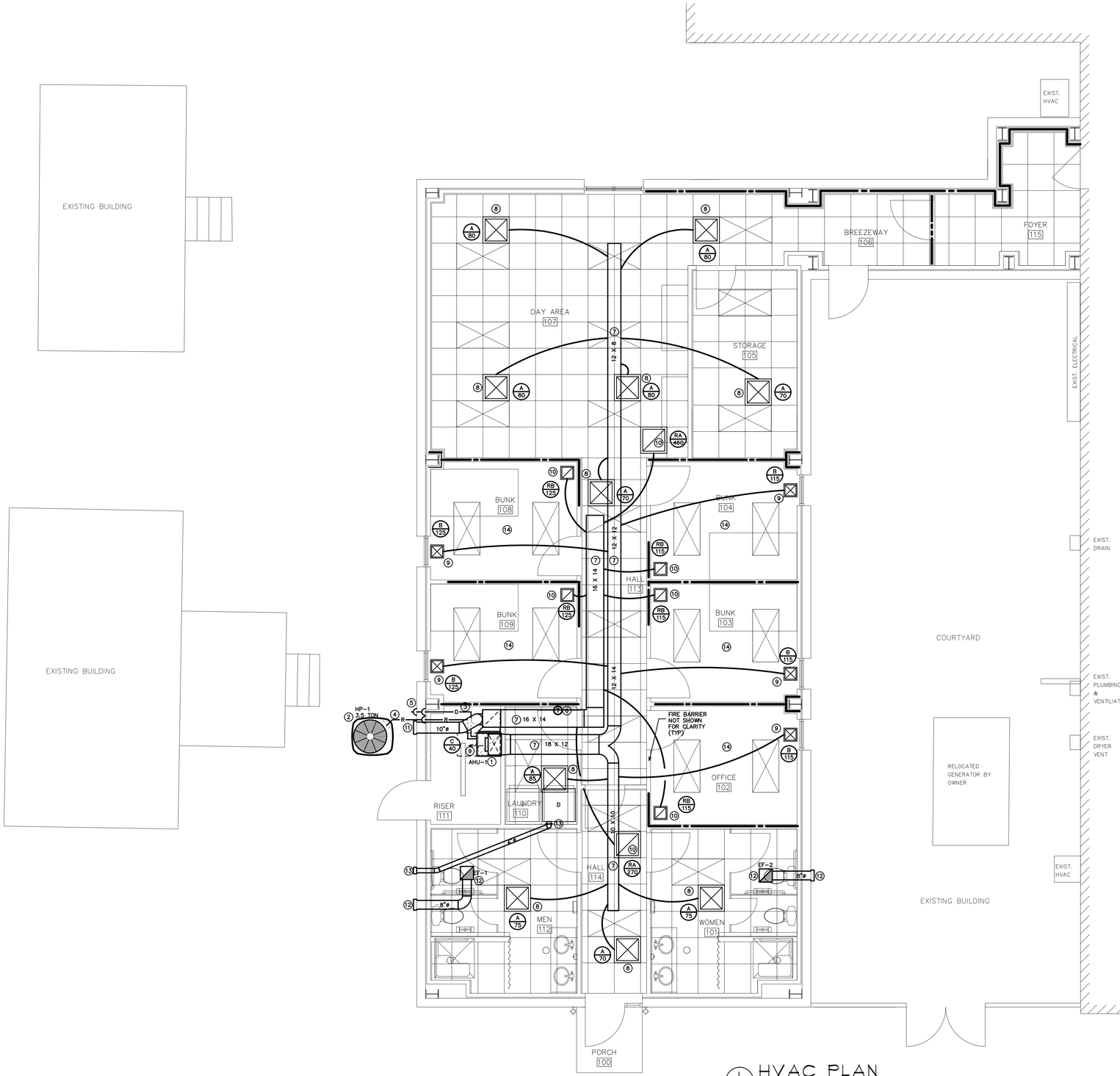
4/27/26
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 42058 BENJAMIN E. BURKE

HVAC SCHED., NOTE, LEGEND

25022

ISSUED: 02/25/2026
DWG BY: CLS
CKD BY: BEB
REVISIONS

SHEET NO.
M1



1/M2 HVAC PLAN
SCALE: 1/4"=1'-0"

KEY NOTES FOR 1/M2:

1. AIR HANDLING UNIT MOUNTED TO CONCRETE FLOOR. SEE DETAIL 1/M3.
2. NEW HEAT PUMP MOUNTED ON CONCRETE PAD.
3. RUN PIPING ATTACHED TO STRUCTURE. (TYP)
4. RUN REFRIGERANT PIPING DOWN CONCEALED IN EXTERIOR WALL.
5. RUN PUMPED CONDENSATE PIPING DOWN CONCEALED IN EXTERIOR WALL TO 6" ABOVE FINISH GRADE. TERMINATE IN ELBOW TURNED DOWN.
6. NEW THERMOSTAT, MOUNT AT 48" AFF.
7. NEW DUCTWORK, MOUNTED TO ROOF STRUCTURE. RUN ABOVE NEW LAY-IN CEILING. SEE DETAIL 1/M3.
8. NEW LAY-IN SUPPLY AIR DIFFUSER. (TYP)
9. NEW CEILING MOUNTED SUPPLY AIR DIFFUSER. PROVIDE RADIATION DAMPERS (NOT SHOWN) SEE DRAWING #3- SHEET M3 FOR DETAILS.
10. NEW LAY-IN/CEILING MOUNTED RETURN AIR GRILLE. PROVIDE RADIATION DAMPERS (NOT SHOWN) SEE DRAWING #3- SHEET M3 FOR DETAILS.
11. WALL MOUNTED OUTSIDE AIR INTAKE HOOD TO 10" DIA. RIGID DUCT SUPPLYING AHU-1. AIR INTAKE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE EXHAUST DISCHARGE.
12. BATHROOM EXHAUST FAN. RUN 8" DIAMETER RIGID EXHAUST DUCT TO A WALL MOUNTED EXHAUST CAP. EXHAUST DISCHARGE SHALL BE 10'-0" MIN. FROM ANY OUTSIDE AIR INTAKE.
13. 4 INCH DRYER EXHAUST DUCT. TERMINATE AT WALL CAP WITH BACK DRAFT DAMPER. EACH DRYER CONNECTION WLL USE A NO-TURN DRYER VENT BOX. PROVIDE IN-LINE POWER VENTILATOR (PV) WHERE DUCT LENGTH EXCEEDS CODE REQUIRED MAXIMUM. MC TO PROVIDE AND INSTALL, EC TO CONNECT
14. BUNK ROOM/OFFICE CEILING RATINGS ARE AT THE BOTTOM CORD OF THE ROOF TRUSS. ALL PENETRATIONS WILL BE PROTECTED.

DRYER EXHAUST DUCT NOTES:

(CHAPTER 504 OF 2018 NORTH CAROLINA MECHANICAL CODE)

504.1 Installation

Clothes dryers shall be exhausted in accordance with the manufacturer's instructions. Dryer exhaust systems shall be independent of all other systems and shall convey the moisture and any products of combustion to the outside of the building

504.8.4.2 Manufacturer's Instructions

The maximum length of the exhaust duct shall be determined by the dryer manufacturer's installation instructions. The code official shall be provided with a copy of the installation instructions for the make and model of the dryer. Where the exhaust duct is to be concealed, the installation instructions shall be provided to the code official prior to the concealment inspection. In the absence of fitting equivalent length calculations from the clothes dryer manufacturer, Table 504.8.4.1 shall be used.

Coastal Architecture PLLC

Architectural
Design
Planning
Interiors

AIA
Member of the American Institute of Architects

Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT

NEWPORT, NORTH CAROLINA

4/17/26

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 42038 BENJAMIN E. BURKE

HVAC PLAN

25022

ISSUED: 02/25/2026
DWG BY: CLS
CKD BY: BEB
REVISIONS

SHEET NO.
M2

ENGINEER
BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
email: ben@bdg-nc.com
Corp. License # C-2652

DIVISION 15 B – HEATING, VENTILATING AND AIR CONDITIONING

1.1 DESCRIPTION OF THE WORK

A. Work under this section includes, but is not necessarily limited to, furnishing and installing the following:

1. Heating, ventilation, and air conditioning equipment.
2. Ductwork.
3. Grilles and diffusers.
4. Controls and control wiring.
5. Condensate piping.

B. All work under this contract shall be installed in compliance with the latest edition of the following codes and standards insofar as they apply:

1. ASHRAE Guide
2. National Electric Code.
3. 2018 NC State Building Code: Mech Code.
4. The Electrical Specifications for this project.
5. SMACNA HVAC Duct Construction Standards.
6. All local codes and ordinances.
7. ARI rating.
8. 2018 NC State Building Code: Energy Conservation Code.

C. These codes are minimum standards. If codes require a more stringent method of construction than the specifications require, the codes shall govern.

D. The HVAC Contractor shall be licensed in North Carolina and have all local licenses required for the work.

1.2 INTENT

A. The intent of these specification and the accompanying drawing is to convey as reasonably as possible the requirements for a complete job ready for the building to operate. The HVAC Contractor shall take this into consideration and include in his bid allowance for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner.

1.3 COORDINATION

A. Coordinate work with other contractors. Notify Owner of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Owner for a decision before resuming operations.

B. Locations shown are approximate. The HVAC Contractor shall verify with owner, the placement of equipment, fixtures, outlets, etc. The drawings do not give exact details as to elevations and locations of various pipes, fittings, ducts, conduit, etc., and do not show all offsets and other installation details which may be required.

C. Changes in duct or piping design caused by obstructions shall be submitted to Engineer in sketch form for study and comment prior to execution. Additional cost will not be allowed for this type of work.

1.4 SHOP DRAWINGS

A. Shop drawings shall be submitted for all major items of equipment. These may consist of the manufacturer's standard catalog or tear sheets and shall have the exact items being offered clearly identified. Shop drawings shall include but are not limited to the following:

1. All equipment and accessories.
2. Grilles and diffusers.
3. Unit sizes and requirements.

PART 2 –PRODUCTS

2.1 EQUIPMENT

A. All air handling devices must have the manufacturer's recommended filter rack, for 1" thick filters.

2.2 PIPING

A. Condensate drain piping shall be PVC pipe. Provide tee and plug at changes in direction. Route pipe to proper termination point. All condensate piping shall be insulated with flexible elastomeric insulation. Provide copper piping in plenum areas.

2.3 DUCTWORK

A. Ductwork shall be built in accordance with SMACNA HVAC Duct construction standards. Furnish and install all supply, return, and ventilation ductwork shown, together with splitters, deflectors, dampers, etc. This work shall be constructed of new galvanized prime grade steel sheets. The gauges of metal to be used and the construction and bracing of joints shall be in accordance with the SMACNA recommendations.

B. Seal all sheet metal joints with fiber impregnated mastic.

C. Support from building structure on strap hangers not over 8 feet apart.

D. Use manufactured turning vanes in each elbow where required or where indicated on drawings.

E. Flexible connectors shall be 3 inches wide, of fireproof material and used to isolate noise between equipment and ductwork on supply and return side of all units.

F. Round runouts, where used, shall be built in accordance with the above standards, and each runout shall also have manufactured side take off, adjustable quadrant damper at all accessible locations and shall be of Owens Corning INL–25 flexible duct with UL label. Flex duct lengths allowed up to 14 feet. Duct must be supported with sufficient hangers in order to prevent sags. Serpentine routing will not be permitted. Quadrant damper to be 22 gauge easily adjustable manually with exterior handle (similar to H&C Kwik–set) and is not to be mounted in side take–off.

2.4 DUCT INSULATION (LOW PRESSURE)

A. All insulation, linings, coverings and adhesives shall have a flame spread classification of 25 or less and a smoke developed rating of not more than 50, exposed exterior piping.

B. All duct insulation shall comply with Section 604, of the N. C. Building Code: Mechanical Code

C. All supply and return ductwork shall be completely insulated, either internally or externally.

D. Rectangular ductwork shall be lined with two–inch thick, 1.5 lb. per cubic foot density, duct liner, Armstrong, CSG Ultraliner, Johns Manville or approved equal.

E. As an alternative to duct liner rectangular duct may be wrapped with Class 1 – 2", 3/4 lb. density (R–6.5) thick reinforced foil back fiberglass insulation, Owens–corning Series ED or equal. Tape shall be Kraft reinforced foil tape or equal.

F. Exhaust air duct does not require insulation, unless otherwise noted on the plans.

G. Insulation shall be held inplace with adhesive and welding pins 16" on center.

H. Duct dimensions shown on the drawings are Net Inside Dimensions

2.5 THERMOSTATS

A. Provide programmable electronic thermostats.
B. Submit proposed thermostats for approval.

2.6 ROOF PENETRATIONS

A. Provide pre–manufactured roof flashings compatible with equipment served.
B. Coordinate roof work with roof system used. Provide proper flashing as required.
C. Provide 1 year warranty on all roof work performed.

2.7 DUCT SMOKE DETECTORS

A. Duct detectors are not required since units air flows are 2000 cfm or less per NCSBC: Mechanical Code, Section 606.2.

PART 3 – EXECUTION

3.1 PIPING

A. The HVAC Contractor shall coordinate such routing with others, to line his work true to adjacent spaces and in a workmanlike manner and to use only short radius 90 degree elbows. Where required, piping to be sturdily supported and separated in a manner satisfactory to the Engineer.

B. The HVAC Contractor shall paint all exterior refrigerant piping. with UV resistant paint as recommended by the closed cell insulation manufacturer.

C. Insulate all condensate lines for their entire length with 1/2" closed cell insulation. Install insulation per the manufacturers recommendations.

3.2 ELECTRICAL WORK

A. The electrical contractor shall provide all switches, starters, wire conduit for the air conditioning, heating and ventilation equipment. Control wiring shall be by the heating and air conditioning contractor.

B. HVAC Contractor is responsible for verifying that power terminals have been properly grounded prior to operating equipment and must find connections to all equipment including control wiring.

C. All materials and workmanship shall be in accordance with the electrical specifications for the project. All wiring shall be color coded, and as–built wiring diagram prepared showing all connections and colors of wiring and delivered to the Owner.

D. Furnish certification for acceptance of control wiring from local electrical inspector prior to acceptance.

3.3 CLEAN UP

A. During construction, keep the site clean of debris. Upon completion, and before final inspection, clean up the premises to remove all evidence of work. In addition upon completion of construction leave equipment clean.

B. Furnish one box of clean filters, for each size required, at the time of final inspection to the owner.

3.4 OPERATOR'S MANUAL AND DIAGRAM

A. The HVAC Contractor shall prepare in one copy a manual describing the proper maintenance and operation of the systems. This manual shall not consist of standard factory instructions (although these may be included) but shall be prepared to describe this particular job.

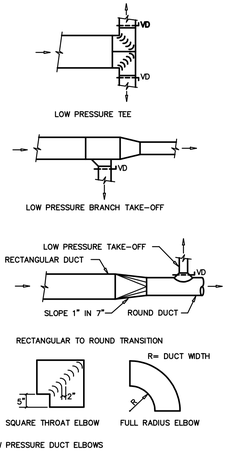
B. The manual shall be bound, indexed, dated and signed by the HVAC Contractor.

C. Qualified representative of the HVAC contractor shall meet with the designated representatives of the Owner and the Owner's representative shall be instructed in the proper operation and maintenance of the control system and other systems.

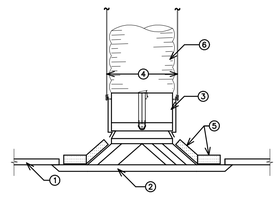
3.5 GUARANTEE

A. Guarantee all materials and labor included in the HVAC work for a period of one year from date of final acceptance by the owner. In addition, motor compressors shall be a nonprorated five year warranty. Any part or parts of the work or equipment which prove to be defective during the guarantee period shall be replaced at no additional cost to the owner or tenant.

B. All air flows must be measured and balanced to within 10% of design airflows. All equipment used must have a current certification. Provide two copies of the balance report to the owner at closeout. The HVAC contractor shall return and re–balance to occupant comfort after 90 days from close–out
Provide all balance dampers needed for satisfactory operation regardless if shown on the drawings or not, and shift location of thermostats themostats if required for occupancy comfort.



2 DUCT CONSTRUCTION DETAIL
SCALE: NOT TO SCALE

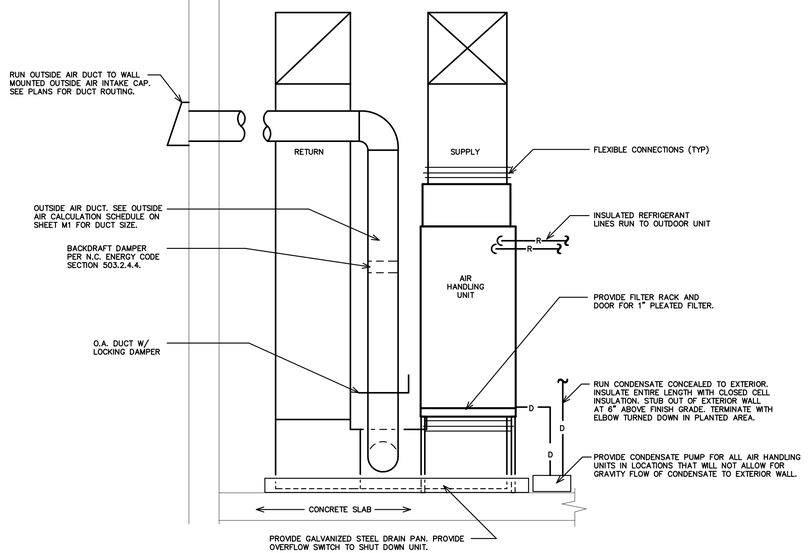


KEY NOTES FOR #3/M3

1. 1 HOUR RATED GYPSUM BOARD CEILING.
2. STEEL DIFFUSER OR GRILLE.
3. ROUND–NECK RADIATION DAMPER, MOUNTED TO NECK OF DIFFUSER.
4. SUPPORT DAMPER FROM STRUCTURE WITH 16 GA. STEEL WIRE.
5. THERMAL INSULATING BLANKET ON DIFFUSER OR GRILLE.
6. FLEXABLE DUCT.

NOTE:
THESE TYPICAL RADIATION DAMPER DETAILS ARE FOR GENERIC GUIDANCE ONLY. INSTALL RADIATION DAMPERS IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANYWAY.

3 CEILING RADIATION DAMPER DETAIL
SCALE: NOT TO SCALE



1 VERTICAL AIR HANDLING UNIT DETAIL
SCALE: NOT TO SCALE

ENGINEER
BURKE DESIGN GROUP
3305–109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771–1916
FAX: (919) 779–0826
email: ben@bdg–nc.com
Corp. License # C–2652

Coastal Architecture PLLC
Architectural Design Planning Interiors
AIA
Member of the American Institure of Architects
Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net
4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

4/17/26
NORTH CAROLINA REGISTERED PROFESSIONAL SEAL 22038 ENGINEER BENJAMIN E. BURKE

HVAC SPECs, DETAILS

25022

ISSUED:	02/25/2026
DWG BY:	CLS
CKD BY:	BEB

REVISIONS

SHEET NO.
M3

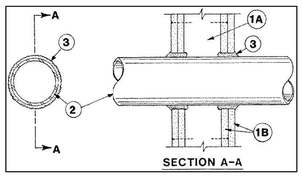
System No. W-L-1001

F Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings — 0, 1, 2, 3, and 4 Hr (See Item 3)

L Rating At Ambient — less than 1 CFM/sq ft

L Rating At 400 F — less than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly —** The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.

B. **Gypsum Board* —** Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in.

2. **Through-Penetrant —** One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit, or tubing and periphery of opening shall be min of 0 in. (point contact) to max 2 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe —** Nom 24 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 24 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. **Conduit —** Nom 6 in. diam (or smaller) steel conduit or nom 4 in. diam (or smaller) steel electrical metallic tubing.

D. **Copper Tubing —** Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe —** Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.

F. **Through Penetrating Product* — Flexible Metal Piping —** The following types of steel flexible metal gas piping may be used:

1. Nom 2 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

OMEGA FLEX INC

2. Nom 1 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

GASTITE, DIV OF TITEFLEX

3. Nom 1 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

WARD MFG LLC

Fill, Void or Cavity Material* — Caulk or Sealant — Min 5/8, 1-1/4, 1-7/8 and 2-1/2 in. thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In	F RATING Hr	T RATING Hr
1	1 or 2	0+, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

+When copper pipe is used, T Rating is 0 hr.

3M COMPANY -- CP 25WB+ or FB-3000 WT.

*Bearing the UL Classification Mark

DIVISION 16 — ELECTRICAL

PART 1 — GENERAL

1.1 DESCRIPTION OF THE WORK

A. Work under this section includes, but is not necessarily limited to, furnishing and installing the following:
1. Electrical service and service equipment.
2. Lighting and power distribution system.
3. Provide lighting fixtures selected by owner with lamps to match.
4. Wiring devices, boxes, cover plates, etc.
5. Source of power for all items of equipment.
6. Grounding.
7. Other requirements and/or systems where shown.

B. All work shall be complete and items, equipment, etc., shall be electrically connected for proper and correct operation.

C. All work under this contract shall be installed in accordance with the latest edition of the following codes and standards insofar as they apply:
1. The 2020 National Electrical Code.
2. The National Electrical Safety Code.
3. Underwriter's Laboratories, Inc., Standards and approved listings.
4. Electrical Testing Labatories standards.
5. North Carolina Building Code, Latest Edition and Revisions.
6. All local codes and ordinances.

D. The Electrical Contractor shall be licensed in the State of North Carolina and have all local licenses required for the work.

E. Obtain all permits, licenses, inspections, etc., required for the work and pay for the same. Furnish final certificate of inspection and approval from the electrical inspector having jurisdiction prior to acceptance of the work.

F. All work shall be done by skilled mechanics and shall present a neat, trim, workmanlike condition when complete.

1.2 INTENT

A. The intent of these specifications and the accompanying drawings is to convey as reasonably as possible the requirements for a complete job ready for the building to operate. The Electrical Contractor shall take this into consideration and include in his base bid allowance for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner.

1.3 COORDINATION

A. Coordinate work with other contractors. Notify Architect of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Architect for a decision before resuming operations.

B. Locations shown are approximate. The drawings do not give exact details as to elevations and locations of various pipes, fittings, ducts, conduit, etc., and do not show all offsets and other installation details which may be required. Coordinate all locations with architect before any rough-in.

1.4 SHOP DRAWINGS

A. Shop drawings shall be submitted for panels and service equipment, lighting, wiring devices, and cover plates. These may consist of the manufacturer's standard catalog or tear sheets and shall have the exact items being offered clearly identified.

PART 2 — PRODUCTS AND MATERIALS

2.1 GENERAL

A. All material shall be new and shall bear the manufacturer's name, trade name, and UL label where such standard has been established for the particular material. Materials shall be the standard products of manufacturer's regularly engaged in the manufacturer of the required type of equipment and the manufacturer's latest approved design.
1. Boxes installed in concealed locations shall be set flush with the finished surfaces.
2. Provide rated boxes in all fire barriers & walls installed per code.

2.2 NOT USED

2.3 CONDUCTORS

A. Conductors shall be color coded, sizes #8 and larger may be color taped on the job. Color coding shall be: Standard Practice.

B. Conductors shall be manufactured by Dodge, Southwire or approved equal. Conductors shall meet the latest requirements of NEMA and IPCEA and shall be UL approved.

C. Metallic sheathed "MC" cable may be used where allowed by N.E.C.

D. Conductors shall be spliced and taped as follows:
1. Size #10 and #12, use Ideal "Wing Nuts" or T&B "Piggy" connectors. Connectors shall be rated for 150 degrees C for use in recessed lighting fixtures.
2. Size #8 and larger shall be solderless screw and screw-clamping type, smoothly covered and shaped with rubber gum type with final cover vinyl plastic electrical type. In lieu of rubber gum and vinyl plastic type, factory fabricated approved preformed insulating covers may be used. All connectors shall be UL approved.
3. No split-bolt type connectors may be used.

E. All branch wire and connections shall be copper and sized per National Electric Code.

F. All conductors shall be continuous without splice between junction, outlet, device boxes, etc. No splicing will be permitted in panelboard cabinets, safety switches, etc.

G. All wiring in mechanical spaces shall be plenum rated.

H. Provide GFI protection within 6'-0" of any sink.

I. All multi-wire branch circuits shall comply with 2020 NEC, 210.4(B).

J. All wiring at medical facilities shall comply with 2020 NEC, 517.1.

2.4 PANELBOARDS, SAFETY SWITCHES

A. Panelboards shall comply with NEMA Standard PB 1 — Latest Edition and as manufactured by Square D or ITE-Siemens.

B. The contractor shall be responsible for correctly phasing the circuits in the panelboards.

C. Safety switches shall be general duty type, size and rating as required for lead service. Safety switches shall be fused or unfused as shown and/or as required. Safety switches serving motor loads shall be horsepower rated for load served.

2.5 NOT USED

2.6 WIRING DEVICES

A. Wiring devices shall be commercial grade by Bryant, Leviton, or approved equal. With matching cover. Color by Architect.

B. Wiring devices installed under a Kitchen Hood shall have stainless steel covers.

C. Wiring devices installed over counters shall comply with ANSI A117.1.

2.7 NOT USED

2.8 CONDUIT

A. PVC conduit will be allowed where N.E.C. approved.

B. All service conduit shall be rigid where exposed below 8'-0" AFF or exposed to the elements or hazardous conditions.

PART 3 — EXECUTION

3.1 CIRCUIT GROUNDING

A. All circuits shall contain an insulated, green, copper grounding conductor, sized in accordance with Table 250-95 of the NEC. Grounding conductors shall be connected to equipment grounding bus in panelboard and securely attached and grounded to the device or enclosure at the other end.

3.2 GROUNDING TYPE CONVENIENCE OUTLETS AND SWITCHES

A. Outlets and switches shall be solidly grounded to equipment grounding system with a green colored insulated conductor. Electrical connections shall be continuous from equipment ground bus in panelboard to the hex nut on the convenience outlet or switch.

3.3 MOTORS

A. All motors shall be connected to conduit system with short length (minimum length 24" and maximum length 36") of flexible liquidtight conduit.

3.4 NOT USED

3.5 EQUIPMENT LABELING

A. Provide permanent name plates for all panelboards, safety switches, wiring troughs, etc., for identification of equipment controlled, services, etc. Nameplates shall be securely and permanently attached to equipment with stainless steel screws. Nameplates shall include the name of the equipment and where it is fed from.

B. All switch plates, receptacle plates and outlet covers shall be labeled with machine printed vinyl labels identifying the circuit(s) within.

C. All empty conduit runs shall be identified and indicated where they terminate.

D. Provide typewritten directory in each panelboard to clearly identify each circuit, service, etc.

3.6 NOT USED

3.7 NOT USED

3.8 JUNCTION AND/OR PULL BOXES

A. Boxes shall be installed where necessary to avoid excessive runs and/or too many bends between outlets.

3.9 PULL WIRE

A. Leave pull wire in each empty conduit run.

3.10 NOT USED

3.11 GROUNDING

A. All grounding shall be in accordance with Article 250 of the NEC. In addition, the following requirements shall be met:
1. Grounding conductors shall be installed as to permit the shortest and most direct path from equipment to ground. All connections to grounding conductors shall be accessible.
2. Equipment ground continuity shall be maintained through flexible metal conduit.
3. All wiring devices equipped with grounding connection shall be solidly grounded to ground system with grounding conductors.
4. The frame of all lighting fixtures shall be securely grounded to the equipment ground system with grounding conductors.
5. All equipment enclosures, and non-current-carrying metallic parts of electrical equipment, raceway systems, etc., shall be effectively and adequately bonded to ground.
6. All equipment enclosures, and non-current-carrying metallic parts of electrical equipment, raceway systems, etc., shall be effectively and adequately bonded to ground.

3.12 ELECTRICAL WORK IN CONNECTION WITH OTHER WORK

A. PLUMBING WORK: The Electrical Contractor shall furnish and install switches and devices as shown and electrically connect electric water heaters, etc. All other electrical work required will be performed by the PLUMBING CONTRACTOR.

B. HEATING AND AIR CONDITIONING WORK: The Electrical Contractor shall provide all disconnect switches, starters, and associated hardware for the equipment furnished including all line and load side wiring and conduit. Final connections to the equipment will be by the HVAC contractor. All control wiring will be accomplished by the HVAC contractor. Coordinate all work associated with the HVAC contractor.

3.13 CLEAN UP

A. During construction, keep the site clean of debris. Upon completion, and before final inspection, clean up the premises to remove all evidence of work. In addition upon completion of construction leave equipment clean.

3.14 GUARANTEE

A. Guarantee all materials and labor included in the electrical work for a period of one year from date of final acceptance by the Owner. Any part or parts of the work or equipment which prove to be defective during the guarantee period shall be replaced at no additional cost to the Owner.

GENERAL NOTES

1 ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES HAVING JURISDICTION.

2 ALL BRANCH CIRCUIT CONDUCTORS TO BE COPPER (SERVICE CONDUCTORS MAY BE ALUMINUM WITH SAME AMPACITY AS COPPER CONDUCTORS. RE-SIZE CONDUCTERS AND CONDUIT PER NEC.)

3 ALL CIRCUITS TO BE 2 #12, 1 #12 GND IN 1/2" EMT CONDUIT AS A MINIMUM. PROVIDE WIRING FOR LARGER CIRCUITS AS REQUIRED BY NEC. RIGID CONDUIT IS REQUIRED WHERE EXPOSED BELOW 8'-0" A.F.F.

4 ALL EMPTY CONDUIT RUNS IN EXCESS OF 10 FEET SHALL BE PROVIDED WITH A PULL WIRE OR FISH TAPE/CORD.

5 CONTRACTOR SHALL VERIFY THAT ALL DOOR SWINGS ARE CORRECT BEFORE INSTALLING LIGHT SWITCH OUTLETS.

6 ALL BRANCH CIRCUIT CONDUCTORS FROM THE PANEL TO THE FIRST OUTLET SHALL BE INCREASED TO THE NEXT LARGER SIZE WHERE THE LENGTH OF THE HOME RUN EXCEEDS 120 FEET ON 120V AND 208V CIRCUITS.

7 THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.

8 THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTLY PHASING THE CIRCUITS IN THE PANELBOARDS.

9 THE ELECTRICAL CONTRACTOR SHALL VERIFY THE TYPE OF CEILING SYSTEM WITH THE GENERAL CONTRACTOR TO INSURE THAT ALL LIGHTING FIXTURES ARE COMPATIBLE WITH THE CEILING SYSTEM BEING INSTALLED. LIGHTING FIXTURES SHOULD NOT BE ORDERED UNTIL TYPE OF CEILING HAS BEEN VERIFIED.

10 ELECTRICAL REQUIREMENTS INDICATED ON DRAWINGS MAY DIFFER FROM ACTUAL EQUIPMENT FURNISHED. IF FURNISHED EQUIPMENT DIFFERS FROM RATINGS ON DRAWINGS CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER FOR APPROPRIATE ACTION TO BE TAKEN.

11 IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO COORDINATE EXACT BREAKER REQUIREMENTS FOR ALL EQUIPMENT PRIOR TO ORDERING PANEL. ADJUST BREAKER AND WIRE SIZES AS REQUIRED.

12 PROVIDE BOXES, JACKS, WIRING AND CONDUIT FROM LOCATIONS SHOWN TO MTP LOCATION. VERIFY EXACT REQUIREMENTS WITH OWNER.

13 ELECTRICAL CONTRACTOR SHALL PROVIDE ALL DISCONNECTS FOR MECHANICAL & PLUMBING EQUIPMENT. DISCONNECTS SHALL BE PER MANUFACTURES RECOMMENDATIONS AND FUSED PER NAME PLATE. PROVIDE NEMA 3R ENCLOSURES ON EXTERIOR. COORDINATE FUSE SIZES.

14 THE EC SHALL MEET WITH THE ARCHITECT AND TENANT PRIOR TO INSTALLING OUTLET BOXES TO VERIFY LOCATIONS AND MOUNTING HEIGHTS OF RECEPTACLES AND TELEPHONE OUTLETS.

ELECTRICAL LEGEND

X / O_X / X	LIGHT FIXTURE; LETTER DENOTES FIXTURE TYPE (REFER TO LIGHTING PLAN AND FIXTURE SCHEDULE). NL = NIGHT LIGHT (NOT SWITCHED/ALWAYS ON)
U / WP/GFI	DUPLEX RECEPTACLE — 120V; MOUNT 18" TO CENTER AFF UNLESS NOTED OTHERWISE; "WP" INDICATES WEATHER PROOF, "GFI" INDICATES GROUND FAULT CURRENT INTERRUPT PROTECTED. "U" INDICATES RECEPTACLE WITH (2) USB PORTS.
	QUADRAPLEX RECEPTACLE — 120V
	FLOOR OR CEILING OUTLET (AS NOTED) — 120V
	SPECIAL PURPOSE RECEPTACLE — REFER TO POWER PLAN AND PANEL SCHEDULE
S	LIGHT SWITCH
S_M	SWITCH WITH INTEGRAL PIR/US MOTION SENSOR FOR AUTOMATIC SHUT-OFF WITH UP TO 2 HOUR ADJUSTABLE DELAY.
S_D	DIMMABLE LIGHT SWITCH
(S)	MOTOR RATED SWITCH
(J)	JUNCTION BOX
	TELE/DATA OUTLET — PROVIDE JUNCTION BOX WITH CONDUIT BACK TO MTP. PROVIDE (1) TELEPHONE JACK AND (1) CAT 5 DATA JACK
	SINGLE-POLE HOMERUN TO PANELBOARD
	TWO-POLE OR 3-POLE HOMERUN TO PANELBOARD
EXIT	EXIT LIGHT
	EMERGENCY EGRESS FIXTURE
PC	PHOTOCELL (LED COMPLIANT)
	BRANCH CIRCUIT WIRING
	SWITCH LEG
	GROUND CONNECTION
PANEL A	DISTRIBUTION PANELBOARD
	DISCONNECTING MEANS AS REQUIRED BY CODE
	1-HR FIRE WALL

APPENDIX B

2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)
ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance

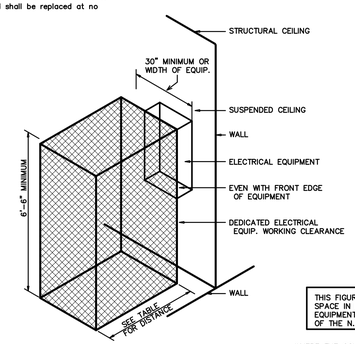
Energy Code:	Prescriptive	[X]	Energy Cost Budget	[ ]
ASHRAE 90.1:	Prescriptive	[ ]	Energy Cost Budget	[ ]

Lighting Schedule

lamp type required in fixture
number of lamps in fixture
ballast type used in fixture
number of ballasts in fixture
total wattage in fixture — See Light Fixture Schedule
total interior wattage specified vs. allowed — 1247VA / 2196VA
total exterior wattage specified vs. allowed — 364VA / 750VA

Additional Prescriptive Compliance

- [ ] 506.2.1 More Efficient Mechanical Equipment
- [X] 506.2.2 Reduced Lighting Power Density
- [ ] 506.2.3 Energy Recovery Ventilation Systems
- [ ] 506.2.4 Higher Efficiency Service Water Heater
- [ ] 506.2.5 On-Site Supply of Renewable Energy
- [ ] 506.2.6 automatic Daylighting Control System



THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 110-16 OF THE N.E.C.

ELECTRICAL EQUIPMENT WORKING CLEARANCE PER ARTICLE 110-26 OF N.E.C.

WORKING CLEARANCES			
VOLTAGE TO GROUND NOMINAL	MIN. CLEAR DISTANCE IN FEET		
CONDITION:	1	2	3
0-150	3	3	3
151-600	3	3-1/2	4

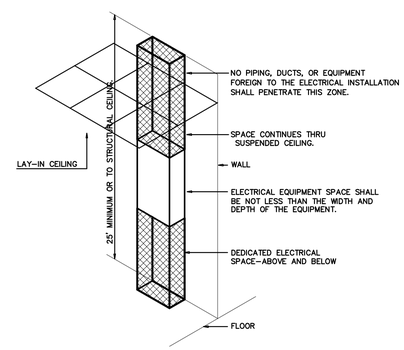
WHERE THE CONDITIONS ARE AS FOLLOWS:

1 EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR INSULATED BUSBARS OPERATING AT NOT OVER 300V SHALL NOT BE CONSIDERED LIVE PARTS.

2 EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.

3 EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

1 ELECTRICAL CLEARANCES
SCALE: NTS



ELECTRICAL EQUIPMENT DEDICATED SPACE PER ARTICLE 110.26.F.1 OF N.E.C.

2 DEDICATED SPACE
SCALE: NTS

ENGINEER
BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
email: ben@bdg-nc.com
Corp. License # C-2652

Coastal Architecture PLLC
Architectural Design Planning Interiors
AIA
Member of the American Institure of Architects
Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net
4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

4/17/26
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22038 BENJAMIN E. BURKE

ELECTRICAL NOTES

25022

ISSUED: 02/25/2026
DWG BY: LLS
CKD BY: BEB
REVISIONS

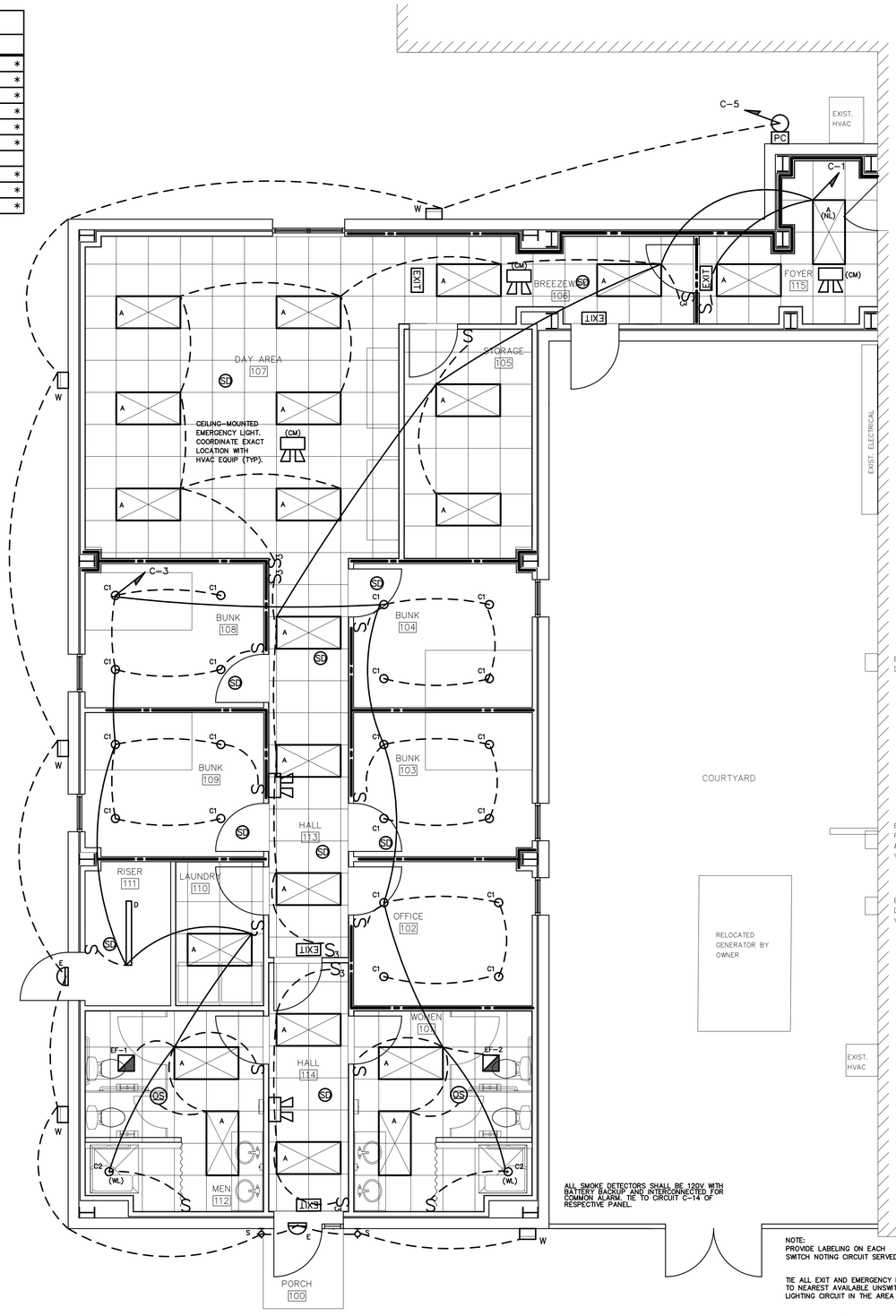
SHEET NO.
E1

Mill Creek Fire Department EC

LIGHTING SCHEDULE *

MARK	MANUFACTURER	CATALOG NO.	VOLT.	LAMPS NO.	LAMPS TYPE	LAMPS W	BALLAST TYPE	W/ FIXTURE	REMARKS	
A	COLUMBIA	CFP24-4135-HE	120	–	LED	–	–	40	2X4 LAY-IN LED FIXTURE	*
C1	HALO	RLFRC6FS	120	–	LED	–	–	13	6" LED DOWN LIGHTS FOR FIRE RATED CEILINGS	*
C2	JUNO	IC22LED-G4-14LM-35K	120	–	LED	–	–	30	6" LED RECESSED CAN FIXTURE	*
D	COLUMBIA	MPS4-35MW-CW-EU-CM24SCF3-KIT	120	–	LED	–	–	47	4' LED STRIP	*
E	COMPASS	CUSO	120	–	LED	–	–	17	EXTERIOR NORMAL/EMERGENCY LIGHT FIXTURE- COLOR BY ARCH	*
S	CHOSEN BY ONER/ARCH; PROVIDED BY EC		120	–	LED	–	–	40	EXTERIOR SCONCE FIXTURE	*
W	RAB	W22-M-50/E	120	–	LED	–	–	50	LED EXTERIOR CUT-OFF WALLPACK	
EXIT	COMPASS	CCR	120	–	LED	–	–	2	LED EXIT SIGN, COLOR BY ARCH	*
EXIT	COMPASS	CER	120	–	LED	–	–	4	COMBINATION EMERGENCY (TUNGSTEN)/ EXIT (LED) LIGHT	*
	COMPASS	CU2	120	–	LED	–	–	10	EMERGENCY LIGHT, BATTERY BACKUP, BATTERY DIAGNOSTICS, COLOR BY ARCH	*

OR APPROVED EQUAL. PROVIDE CUT SHEETS FOR OWNER APPROVAL PRIOR TO ORDERING FIXTURES.
ACTUAL NUMBERS MAY VARY.
THE EMERGENCY LIGHTS AND EXIT SIGNS MUST HAVE INTEGRAL BATTERIES, CHARGERS AND TEST SWITCHES.



1 / E2 LIGHTING PLAN
SCALE: 1/4"=1'-0"

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Architectural Design Planning Interiors

AIA

Member of the American Institute of Architects

Lee D. Dixon, Jr., AIA
252.247.2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT

NEWPORT, NORTH CAROLINA

4/27/26
NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER 42038 BENJAMIN E. BURKE

LIGHTING PLAN

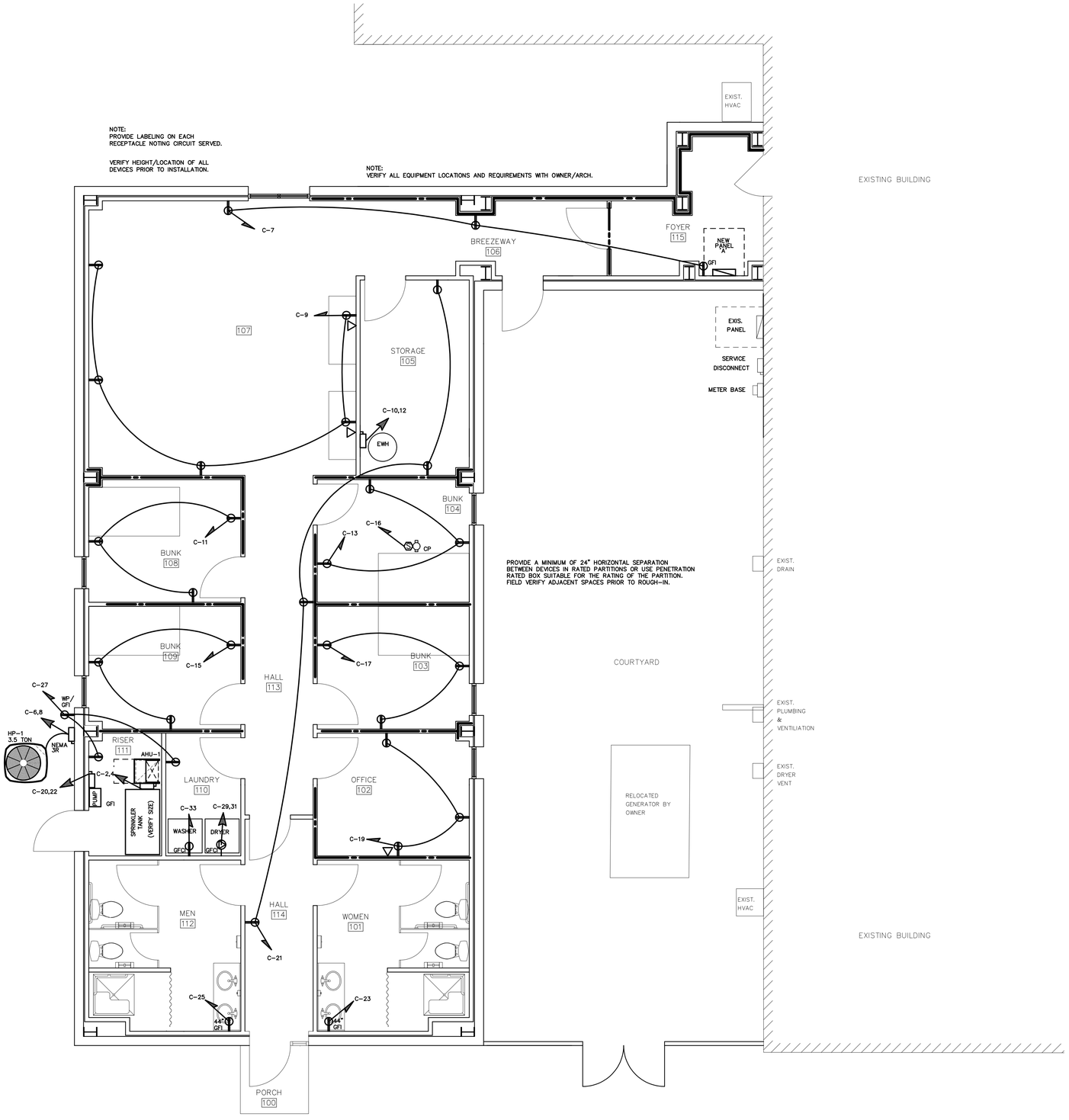
25022

ISSUED:	02/25/2026
DWG BY:	LLS
CKD BY:	BEB

REVISIONS

SHEET NO.
E2

ENGINEER
BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
email: ben@bdg-nc.com
Corp. License # C-2652



1 E3 POWER PLAN
SCALE: 1/4"=1'-0"

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Architectural
Design
Planning
Interiors

AIA
Member of the American Institute of Architects

Lee D. Dixon, Jr., AIA
252-247-2127
lee@coastalarchitecture.net

4206 Bridges St. Ext., Suite C
Morehead City, NC 28557
www.CoastalArchitecture.net

MILL CREEK VOLUNTEER FIRE DEPT

NEWPORT, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 22038 ENGINEER BENJAMIN E. BURKE
4/27/26

POWER PLAN

25022

ISSUED:	02/25/2026
DWG BY:	LLS
CKD BY:	BEB

REVISIONS

SHEET NO.
E3

ENGINEER
BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
email: ben@bdg-nc.com
Corp. License # C-2652

Mill Creek Fire Department E4

NEW PANEL- 'C'

MAKE: EATON
TYPE: PRL1A
OR APPROVED EQUAL

RATING: 120/240 1 PHASE 3 WIRE
MOUNTING: SURFACE
MINIMUM AIC: 22000

MLO MAIN CIRCUIT BREAKER
EQUIPMENT GROUND BUS ____ ☒YES ☐NO
SERVICE ENTRY RATED ____ ☐YES ☒NO

	LOAD SERVICE	CKT BRKR	WATTS PER PHASE A	WATTS PER PHASE B	CKT NO	NEUTRAL A B	CKT NO	WATTS PER PHASE A	WATTS PER PHASE B	CKT BRKR	LOAD SERVICE	
	DAY AREA/ HALL LTS	20A	680		1		2	4200		50A	AHU-1	
	BUNK/ RESTROOM LTS	20A		567	3		4		4200			
	PHOTOCELL	20A	364		5		6	2364		40A	HP-1	
	BREEZEWAY REC.	20A		540	7		8		2364			
	DAY AREA REC.	20A	900		9		10	6000		70A	EWH	
	BUNK REC.	20A		540	11		12		6000			
	BUNK REC.	20A	540		13		14	100		20A	SMOKE DETECTORS	(L)
	BUNK REC.	20A		540	15		16		528		CIRC. PUMP	
	BUNK REC.	20A	540		17		18	---			SPARE	
	OFFICE REC.	20A		540	19		20		1200		SPRINKLER PUMP	
	HALL REC.	20A	540		21		22	1200				
	RESTROOM REC.	20A		180	23		24		---		SPACE	
	RESTROOM REC.	20A	180		25		26	---			SPACE	
	OUTSIDE REC.	20A		360	27		28		---		SPACE	
(G)	DRYER	30A	2500		29		30	---			SPACE	
				2500	31		32		---		SPACE	
(G)	WASHER	20A	1440		33		34	---			SPACE	
	SPARE	20A		---	35		36		---		SPACE	
	SPARE	20A	---		37		38	---			SPACE	
	SPARE	20A		---	39		40		---		SPACE	
	SPARE	20A	---		41		42	---			SPACE	
	SUB-TOTALS 'B'		---	---		200A BUS		12564	13092		SUB-TOTALS 'A'	
						200A LUGS		7684	5767		SUB-TOTALS 'B'	TOTAL CONNECTED LOAD
						200A FEED		20248	18859		GRAND TOTAL	
						VERIFY SIZE		169A	157A		AMPS/PHASE	

NOTES
(L) LOCKING BREAKER
(G) GFCI BREAKER

NEC ALLOWABLE DEMAND FACTORS

1. DEMAND FACTORS PER NEC 220
2. LARGEST OF: NEC TABLE 220.12 OR CONNECTED LOAD
3. NEC TABLE 220.56
4. NEC 220.51
5. NEC 220.43A, 200 VA/LINEAR FT
6. NON-COINCIDENT LOADS, LARGEST OF THE TWO LOADS IS COUNTED

DIVERSIFIED LOAD SUMMARY

LOAD TYPE		DEMAND FACTOR②	A	B	TOTAL DIVERSIFIED LOAD
GENERAL LIGHTING	②	125%	1305	709	2014
TRACK LIGHTING		125%	---	---	---
GENERAL USE RECEPTACLES		≤10KVA@100%	2700	2700	5400
		>10KVA@50%	---	---	---
MOTORS AND EQUIPMENT	LARGEST	125%	5250	5250	10500
	ALL OTHERS	100%	6304	4864	11168
WATER HEATERS		125%	7500	7500	15000
KITCHEN EQUIPMENT	⑤	100%	---	---	---
FIX. ELEC. SPACE HEAT.	④	100%	---	---	---
SHOW WINDOW LIGHTS	⑥	125%	---	---	---
SIGN		125%	---	---	---
MISC		100%	---	1028	1028
PHASE (TOTAL VA)			23059	21551	44610
TOTAL AMPS			192A	179A	VOLT AMPS / VOLTS = 186A TOTAL AMPS

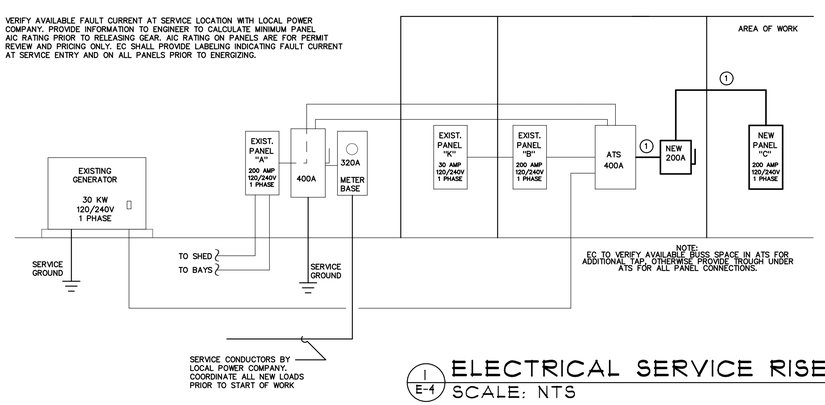
Mill Creek Fire Department E4

EQUIPMENT WIRING SCHEDULE

EQUIPMENT	MCA	MOCP	VOLTS	PH	WIRE SIZE
AHU-1	48A	50A	240V	1	2-#8, 1-#10 GND IN 3/4" CONDUIT
HP-1	24A	40A	240V	1	2-#8, 1-#10 GND IN 3/4" CONDUIT
DRYER	20.8A	30A	240V	1	2-#10, 1-#10 GND IN 1/2" CONDUIT
EWH	(12.0 KW)	70A	240V	1	2-#6, 1-#8 GND IN 3/4" CONDUIT

NOTE:
THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EQUIPMENT ELECTRICAL REQUIREMENTS PRIOR TO ROUGH-IN AND RELEASING GEAR. ADJUST BREAKER, WIRE SIZES, ETC. AS REQUIRED.

VERIFY AVAILABLE FAULT CURRENT AT SERVICE LOCATION WITH LOCAL POWER COMPANY. PROVIDE INFORMATION TO ENGINEER TO CALCULATE MINIMUM PANEL AIC RATING PRIOR TO RELEASING GEAR. AIC RATING ON PANELS ARE FOR PERMIT REVIEW AND PRICING ONLY. EC SHALL PROVIDE LABELING INDICATING FAULT CURRENT AT SERVICE ENTRY AND ON ALL PANELS PRIOR TO ENERGIZING.



1 / E-4 ELECTRICAL SERVICE RISER
SCALE: NTS

RISER WIRING SCHEDULE

① 200A: 3-#3/0, 1-#6 CU GND, IN 2" CONDUIT

NOTE:
UNLESS OTHERWISE NOTED ALL OTHER CIRCUITS ARE 20A, 120VOLT. PROVIDE 2-#12, 1-#12 CU GND IN 1/2" CONDUIT.
SEE EQUIPMENT SCHEDULES FOR ADDITIONAL WIRE SIZES.

ENGINEER
BUDG BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
email: ben@bdg-nc.com
Corp. License # C-2652

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Morehead City, NC 28557
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MILL CREEK VOLUNTEER FIRE DEPT
NEWPORT, NORTH CAROLINA

4/17/26

NORTH CAROLINA PROFESSIONAL SEAL 22038 ENGINEER BENJAMIN E. BURKE

ELECTRICAL PANELS/ RISER

25022

ISSUED: 02/25/2026
DWG BY: LLS
CKD BY: BEB
REVISIONS

SHEET NO.
E4

System No. W-L-1001

June 15, 2005

F Ratings -- 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings -- 0, 1, 2, 3, and 4 Hr (See Item 3)

L Rating At Ambient - less than 1 CFM/sq ft

L Rating At 400 F - less than 1 CFM/sq ft

1. Wall Assembly -- The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

   A. Studs -- Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.

   B. Gypsum Board* -- Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in.

2. Through-Penetrant -- One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit, or tubing and periphery of opening shall be min of 0 in. (point contact) to max 2 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. Steel Pipe -- Nom 24 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. Iron Pipe -- Nom 24 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

   C. Conduit -- Nom 6 in. diam (or smaller) steel conduit or nom 4 in. diam (or smaller) steel electrical metallic tubing.

   D. Copper Tubing -- Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.

   E. Copper Pipe -- Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.

   F. Through Penetrating Product* -- Flexible Metal Piping -- The following types of steel flexible metal gas piping may be used:

   1. Nom 2 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   OMEGA FLEX INC

   2. Nom 1 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   GASTITE, DIV OF TITEFLEX

   3. Nom 1 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   WARD MFG LLC

3. Fill, Void or Cavity Material* -- Caulk or Sealant -- Min 5/8, 1-1/4, 1-7/8 and 2-1/2 in. thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In	F RATING Hr	T RATING Hr
1	1 or 2	0+, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

+When copper pipe is used, T Rating is 0 hr.

3M COMPANY -- CP 25WB+ or FB-3000 WT.

*Bearing the UL Classification Mark

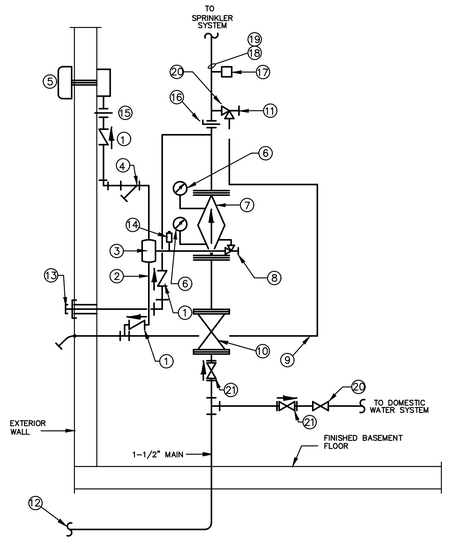
FIRE PROTECTION SYMBOLS LEGEND	
	LIGHT FIXTURE BY OTHERS
	LIGHT FIXTURE BY OTHERS
EXIT	EXIT LIGHT FIXTURE BY OTHERS
	SUPPLY AIR DIFFUSER BY OTHERS
	CEILING EXHAUST FAN BY OTHERS

FIRE PROTECTION GENERAL NOTES

1. THE SLEEPING AREAS SHALL HAVE WET TYPE SPRINKLER SYSTEM OFF OF THE DOMESTIC WATER MAIN DESIGNED PER NFPA 13D.
2. SEE ELECTRICAL AND MECHANICAL PLANS FOR LIGHTS AND DUCT LOCATIONS. SEE ARCHITECTURAL PLANS FOR CEILING TYPES AND HEIGHTS.
3. THE FIRE PROTECTION DESIGN AND CONSTRUCTION SHALL BE PART OF BID PACKAGE PROVIDED. THESE DOCUMENTS ONLY SERVE AS A GENERAL OVERVIEW OF THE OVERALL SYSTEM LAYOUT AND REQUIREMENTS.
4. THE FIRE PROTECTION CONTRACTOR SHALL PROVIDE HYDRAULIC CALCULATIONS AND TOTAL SYSTEM DESIGN. A FIRE PROTECTION SUBMITTAL MUST BE MADE TO THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO THE START OF WORK.
5. CONTACT LOCAL UTILITIES FOR FIRE HYDRANT FLOW TEST RESULTS, AS REQUIRED TO PREPARE DESIGN FOR HYDRAULICALLY CALCULATED SYSTEMS.
6. COMPLY WITH REQUIREMENTS OF AUTHORITY HAVING JURISDICTION FOR SUBMITTALS, APPROVALS, MATERIALS, HOSE THREADS, INSTALLATION, INSPECTIONS AND TESTING.
7. PROVIDE EXTRA SPRINKLER HEADS UNDER PROVISIONS OF NFPA 13.
8. CONNECT TO THE PUMP AND TANK SYSTEM PROVIDED UNDER THIS CONTRACT.
9. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO ROUGH-IN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ROUTING PIPING AS REQUIRED FOR CONFLICTS WITH OTHER SYSTEMS.
10. INSTALL SPRINKLER PIPING WITH DRAINS FOR COMPLETE SYSTEM DRAINAGE.
11. ALL PIPING PENETRATIONS OF FIRE RATED ASSEMBLIES SHALL BE WITH METALLIC PIPE OF MATERIAL AND THICKNESS AS ALLOWED BY NFPA 13D AND COMPLYING WITH REQUIREMENTS OF UL PENETRATION DETAILS ON THESE PLANS.

KEY NOTES

1. CHECK VALVE
2. RETARDING CHAMBER DRAIN
3. RETARDING CHAMBER
4. ALARM LINE STRAINER
5. WATER MOTOR ALARM
6. WATER GAUGE
7. WET-PIPE ALARM CHECK VALVE
8. ALARM TEST VALVE
9. FULL SIZE MAIN DRAIN TO OUTSIDE
10. O.S. & Y. VALVE WITH TAMPER SWITCH BY FIRE PROTECTION CONTRACTOR. A FLANGED CONNECTION WILL BE PROVIDED BY THE SITE UTILITY CONTRACTOR.
11. DRAIN VALVE
12. TO WATER SERVICE
13. WALL MOUNTED FIRE DEPARTMENT CONNECTION
14. PRESSURE SWITCH
15. UNION
16. BUTTERFLY VALVE WITH TAMPER SWITCH
17. WATER FLOW SWITCH
18. SIZED BY CONTRACTOR
19. PROVIDE INSPECTOR'S TEST VALVE AT THE HYDRAULICALLY MOST REMOTE LOCATION IN THE SYSTEM.
20. WHOLE BUILDING CUT OFF VALVE. SYSTEM DRAINED THROUGH CLOSEST LOWEST FPHB. SEE PLUMBING FOR LOCATION.
21. RPZ, SEE PLUMBING FOR SIZE.



1 FIRE PROTECTION RISER DIAGRAM
SCALE: NOT TO SCALE

ENGINEER

BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
email: ben@bdg-nc.com
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MILL CREEK VOLUNTEER FIRE DEPT

NEWPORT, NORTH CAROLINA

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 22038 BENJAMIN E. BURKE
4/17/26

FIRE PROTECTION DETAILS

25022

ISSUED:	04/20/2026
DWG BY:	LLS
CKD BY:	BEB

REVISIONS

SHEET NO.
FP-1

NOTES:

(1) FIRE PROTECTION DESIGN BASED ON NFPA 13D (2019 EDITION). LOCAL CODE OR STANDARDS TO COMPLY WITH THE AUTHORITY HAVING JURISDICTION.

(2) ALL EQUIPMENT TO BE UL LISTED OR FM APPROVED FOR FIRE PROTECTION SERVICES AND INSTALLED IN ACCORDANCE WITH ITS LISTINGS.

(3) HYDRAULIC CALCULATIONS TO BE BASED ON NFPA 13D.

(4) ALL HANGERS TO BE UL LISTED FOR FIRE PROTECTION SERVICES AND INSTALLED IN ACCORDANCE WITH THERE LISTING, SPACING LOCATION TO MEET THE REQUIREMENTS OF NFPA 13R.

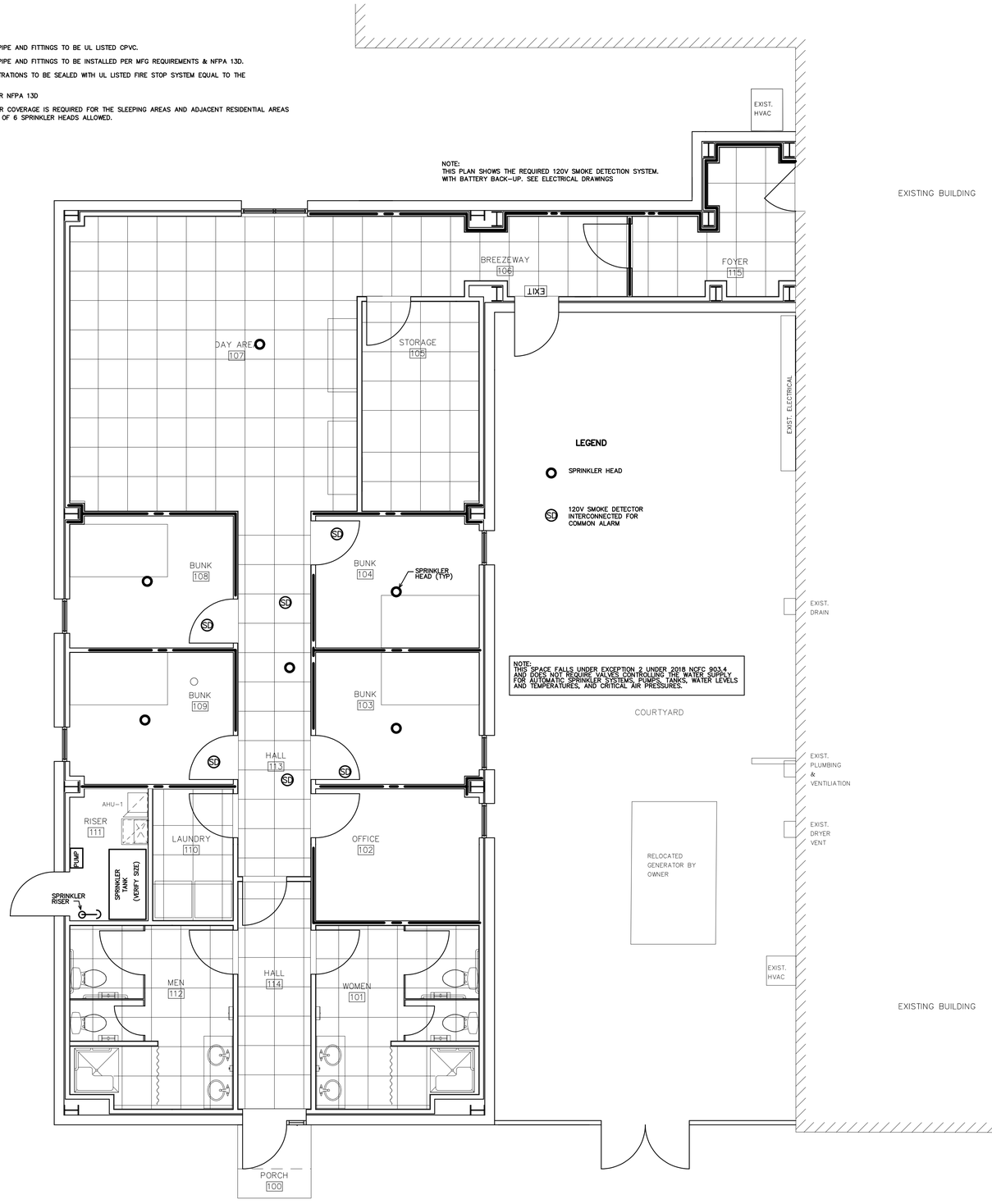
(5) ALL TESTS TO MEET THE REQUIREMENTS OF NFPA AND THE AUTHORITY HAVING JURISDICTION.

(6) IN AREAS WHERE SPRINKLERS ARE SUBJECT TO HIGH HEAT, HIGH TEMPERATURE SPRINKLERS ARE TO BE INSTALLED.

(7) ALL DRAINAGE TO COMPLY WITH NFPA 13D.

NOTES:

- FIRE SPRINKLER PIPE AND FITTINGS TO BE UL LISTED CPVC.
- FIRE SPRINKLER PIPE AND FITTINGS TO BE INSTALLED PER MFG REQUIREMENTS & NFPA 13D.
- ALL WALL PENETRATIONS TO BE SEALED WITH UL LISTED FIRE STOP SYSTEM EQUAL TO THE WALL RATING
- ALL HANGERS PER NFPA 13D
- LIMITED SPRINKLER COVERAGE IS REQUIRED FOR THE SLEEPING AREAS AND ADJACENT RESIDENTIAL AREAS WITH A MAXIMUM OF 6 SPRINKLER HEADS ALLOWED.



FIRE PROTECTION PLAN
SCALE: 1/4"=1'-0"

ENGINEER

BURKE DESIGN GROUP
3305-109 DURHAM DRIVE
RALEIGH, NC 27603
PHONE: (919) 771-1916
FAX: (919) 779-0826
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MILL CREEK VOLUNTEER FIRE DEPT

NEWPORT, NORTH CAROLINA

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 27038 BENJAMIN E. BURKE
4/21/26

FIRE PROTECTION PLAN

25022

ISSUED: 04/20/2026
DWG BY: LLS
CKD BY: BEB
REVISIONS

SHEET NO.
FP-2