DRAWING INDEX

NOTICE TO CONTRACTOR
All construction must comply with current NC Building Codes and is subject to field inspection and verification.

Reviewed for Code Compliance

04/21/2023

Harnett COUNTY NORTH CAROLINA

2018 APPENDIX B - BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

NAME OF PROJECT: THERASPACE
BUILDING ADDRESS: 2297 NC HIGHWAY 24-87 ZIP CODE: 28326
PROPOSED USE: PHYSICAL THERAPY OFFICE
OWNER OR AUTHORIZED AGENT: BRYANT DICKINSON PHONE: (919) 868-1427 EMAIL: BRYANT@MIDDEVELOPMENT.COM
OWNED BY: [ ] CITY/COUNTY [X] PRIVATE [ ] STATE
CODE ENFORCEMENT JURISDICTION: [X] CITY CAMERON [ ] COUNTY _____ [ ] STATE

CONTACT:

DESIGNER	COMPANY	NAME	LICENSE#	TELEPHONE#	EMAIL
ARCHITECTURAL	REDFOOT STUDIO	RICHARD REDFOOT	9231	(919) 931-7134	RICHARD@REDFOOTSTUDIO.COM
CIVIL	NA	NA	NA	NA	NA
ELECTRICAL	KILIAN ENGINEERING	JACOB HAMILTON	48012	(252) 438-8778	JHAMILTON@KILIANENGINEERING.COM
FIRE ALARM	NA	NA	NA	NA	NA
PLUMBING	KILIAN ENGINEERING	JACOB HAMILTON	48012	(252) 438-8778	JHAMILTON@KILIANENGINEERING.COM
MECHANICAL	KILIAN ENGINEERING	JACOB HAMILTON	48012	(252) 438-8778	JHAMILTON@KILIANENGINEERING.COM
SPRINKLER-STANDPIPE	NA	NA	NA	NA	NA
STRUCTURAL	NA	NA	NA	NA	NA
RETAINING WALLS > 5' HIGH	NA	NA	NA	NA	NA
OTHER	NA	NA	NA	NA	NA

2018 NC BUILDING CODE : [ ] NEW BUILDING [ ] ADDITION [ ] RENOVATION
[X] 1ST TIME INTERIOR COMPLETION
[ ] SHELL/CORE - CONTACT THE LOCAL INSPECTION JURISDICTION FOR POSSIBLE ADDITIONAL PROCEDURES AND REQUIREMENTS
[ ] PHASED CONSTRUCTION - SHELL/CORE- CONTACT THE LOCAL INSPECTION JURISDICTION FOR POSSIBLE ADDITIONAL PROCEDURES AND REQUIREMENTS

2018 NC EXISTING BUILDING CODE : [ ] PRESCRIPTIVE [ ] REPAIR [ ] CHAPTER 14
[ ] LEVEL I [ ] LEVEL II [ ] LEVEL III
[ ] HISTORIC PROPERTY [ ] CHANGE OF USE

CONSTRUCTED (date): 2022 CURRENT OCCUPANCY(S) (Ch. 3): NA
RENOVATED (date): NA PROPOSED OCCUPANCY(S) (Ch. 3): B

RISK CATEGORY (TABLE 1604.5): CURRENT: [ ] I [ ] II [ ] III [ ] IV
PROPOSED: [ ] I [X] II [ ] III [ ] IV

BUILDING DATA:
CONSTRUCTION TYPE: [ ] I-A [ ] II-A [ ] III-A [ ] IV [ ] V-A
[ ] I-B [X] II-B [ ] III-B [ ] V-B
SPRINKLERS: [X] NO [ ] PARTIAL [ ] YES [ ] NFPA 13 [ ] NFPA 13R [ ] NFPA 13D
STANDPIPES: [X] NO [ ] YES CLASS [ ] I [ ] II [ ] III [ ] WET [ ] DRY
FIRE DISTRICT: [X] NO [ ] YES (Primary) FLOOD HAZARD AREA: [X] NO [ ] YES
SPECIAL INSPECTIONS REQUIRED: [X] NO [ ] YES (contact the local inspection jurisdiction for additional procedures and requirements.)

GROSS BUILDING AREA:

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3RD FLOOR	NA	NA	NA
2ND FLOOR	NA	NA	NA
MEZZANINE	NA	NA	NA
1ST FLOOR	17,178	2,896 (AREA OF WORK)	17,178 (2,896)
BASEMENT	NA	NA	NA
TOTAL	17,178	2,896 (AREA OF WORK)	17,178 (2,896)

ALLOWABLE AREA
OCCUPANCY:
ASSEMBLY [ ] A-1 [ ] A-2 [ ] A-3 [ ] A-4 [ ] A-5
BUSINESS [X]
EDUCATIONAL [ ]
FACTORY/INDUSTRIAL [ ] 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 CONDITION [ ] 1 [ ] 2
[ ] I-2 CONDITION [ ] 1 [ ] 2
[ ] I-3 CONDITION [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
[ ] I-4
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 CLASSIFICATIONS: NA
INCIDENTAL USES (TABLE 509): NA
SPECIAL USES (CHAPTER 4 - LIST CODE SECTIONS): NA
SPECIAL PROVISIONS: (CHAPTER 5 - LIST CODE SECTIONS): NA
MIXED OCCUPANCY: [X] NO [ ] YES SEPARATION: NA HR. EXCEPTION NA

[ ] NON-SEPARATED USE (508.3) - THE REQUIRED TYPE OF CONSTRUCTION FOR THE BUILDING SHALL BE DETERMINED BY APPLYING THE HEIGHT AND AREA LIMITATIONS FOR EACH OF THE APPLICABLE OCCUPANCIES TO THE ENTIRE BUILDING. THE MOST RESTRICTIVE TYPE OF CONSTRUCTION, SO DETERMINED, SHALL APPLY TO THE ENTIRE BUILDING.

[ ] 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.

$$\frac{\text{ACTUAL AREA OF OCCUPANCY A}}{\text{ALLOWABLE AREA OF OCCUPANCY A}} + \frac{\text{ACTUAL AREA OF OCCUPANCY B}}{\text{ALLOWABLE AREA OF OCCUPANCY B}} \leq 1$$

$$\frac{\quad}{\quad} + \frac{\quad}{\quad} + \text{.....} \leq 1.00$$

STORY NO.	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,5]	(E) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]
1	B	17,178	69,000	NOT USED	69,000

[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)
E. PERCENT OF FRONTAGE INCREASE $I_f = 100[F/P\ 0.25] \times W/30$ = ____--____ (%)
[2] UNLIMITED AREA APPLICABLE UNDER CONDITIONS OF SECTION 507
[3] MAXIMUM BUILDING AREA = TOTAL NUMBER OF STORIES IN THE BUILDING x D (MAXIMUM 3 STORIES) (506.2)
[4] THE MAXIMUM AREA OF OPEN PARKING GARAGES MUST COMPLY WITH 406.5.4. THE MAXIMUM AREA OF AIR TRAFFIC CONTROL TOWERS MUST COMPLY WITH 412.3.1
[5] FRONTAGE INCREASE BASED ON THE UNSPRINKLERED AREA VALUE IN TABLE 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE
BUILDING HEIGHT IN FEET (TABLE 504.3)	NA - EXISTING TO REMAIN		
BUILDING HEIGHT IN STORIES (TABLE 504.4)	NA - EXISTING TO REMAIN		

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ _NA_* REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
STRUCTURAL FRAME, INCLUDING COLUMNS, GIRDERS, TRUSSES	NA	0	0	NA	NA	NA	NA
BEARING WALLS							
EXTERIOR							
NORTH	**NA**	NA	NA	NA	NA	NA	NA
EAST	**NA**	NA	NA	NA	NA	NA	NA
WEST	**NA**	NA	NA	NA	NA	NA	NA
SOUTH	**NA**	NA	NA	NA	NA	NA	NA
INTERIOR	**NA**	NA	NA	NA	NA	NA	NA
NON-BEARING WALLS AND PARTITIONS							
EXTERIOR WALLS							
NORTH	30' +	0	NA	NA	NA	NA	NA
EAST	30' +	0	NA	NA	NA	NA	NA
WEST	30' +	0	NA	NA	NA	NA	NA
SOUTH	30' +	0	NA	NA	NA	NA	NA
INTERIOR WALLS AND PARTITIONS	NA	0	0	NA	NA	NA	NA
FLOOR CONSTRUCTION, INCLUDING SUPPORTING BEAMS AND JOISTS	NA	0	0	NA	NA	NA	NA
FLOOR CEILING ASSEMBLY	NA	NA	NA	NA	NA	NA	NA
COLUMNS SUPPORTING FLOORS	NA	0	NA	NA	NA	NA	NA
ROOF CONSTRUCTION, INCLUDING SUPPORTING BEAMS AND JOISTS	NA	0	0	NA	NA	NA	NA
ROOF CEILING ASSEMBLY	NA	0	0	NA	NA	NA	NA
COLUMNS SUPPORTING ROOF	NA	0	0	NA	NA	NA	NA
SHAFT ENCLOSURES - EXIT	NA	NA	NA	NA	NA	NA	NA
SHAFT ENCLOSURES - STAIR	**NA**	NA	NA	NA	NA	NA	NA
CORRIDOR SEPARATION	NA	0	0	NA	NA	NA	NA
OCCUPANCY / FIRE BARRIER SEPARATION	NA	2	2 - EXISTING	1/A0.0	UL U419	WL 1001	NA
PARTY/FIRE WALL SEPARATION	NA	NA	NA	NA	NA	NA	NA
SMOKE BARRIER SEPARATION	NA	NA	NA	NA	NA	NA	NA
SMOKE PARTITION	NA	NA	NA	NA	NA	NA	NA
TENANT / DWELLING UNIT / SLEEPING UNIT SEPARATION	NA	1	1	1/A0.0	UL U419	WL 1001	NA
INCIDENTAL USE SEPARATION	NA	NA	NA	NA	NA	NA	NA
MEDICAL GAS CLOSET	NA	NA	NA	NA	NA	NA	NA

* INDICATES SECTION NUMBER PERMITTING REDUCTION.

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINE	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
NA - EXISTING BUILDING			

LIFE SAFETY SYSTEM REQUIREMENTS

EMERGENCY LIGHTING:	[ ] NO	[X] YES	
EXIT SIGNS:	[ ] NO	[X] YES	
FIRE ALARM:	[X] NO	[ ] YES	
SMOKE DETECTION SYSTEMS:	[X] NO	[ ] YES	[ ] PARTIAL
CARBON MONOXIDE DETECTION:	[X] NO	[ ] YES	

LIFE SAFETY PLAN REQUIREMENTS
LIFE SAFETY PLAN SHEET #: 3/A2.0

[X] FIRE AND SMOKE RATED WALL LOCATIONS (Chapter 7)
[ ] ASSUMED AND REAL PROPERTY LINE LOCATIONS (IF NOT ON THE SITE PLAN)
[ ] EXTERIOR WALL OPENINGS WITH RESPECT TO DISTANCE TO ASSUMED PROPERTY LINES (705.8)
[X] OCCUPANCY USE FOR EACH AREA AS IT RELATES TO OCCUPANT LOAD CALCULATION (TABLE 1004.1.2)
[X] OCCUPANT LOADS FOR EACH AREA
[X] EXIT ACCESS TRAVEL DISTANCE (1017)
[X] COMMON PATH OF TRAVEL DISTANCES (TABLES 1006.2.1 & 1006.3.2 (1))
[ ] DEAD END LENGTHS (1020.4)
[X] CLEAR EXIT WIDTHS FOR EACH EXIT DOOR
[X] MAXIMUM CALCULATED OCCUPANT LOAD CAPACITY EACH EXIT DOOR CAN ACCOMMODATE BASED ON EGRESS WIDTH (1005.3)
[X] ACTUAL OCCUPANT LOAD FOR EACH EXIT DOOR
[ ] 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)
[ ] LOCATION OF DOORS WITH DELAYED EGRESS LOCKS AND THE AMOUNT OF DELAY (1010.1.9.7)
[ ] LOCATION OF DOORS EQUIPPED WITH HOLD-OPEN DEVICES
[ ] LOCATION OF EMERGENCY ESCAPE WINDOWS (1030)
[ ] THE SQUARE FOOTAGE OF EACH FIRE AREA (202)
[ ] 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) — NA - NO DWELLING UNITS

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS REQUIRED	TYPE 'A' UNITS REQUIRED	TYPE 'A' UNITS PROVIDED	TYPE 'B' UNITS REQUIRED	TYPE 'B' UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING — NA - EXISTING BUILDING AND PARKING

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 8' ACCESS AISLE	
USE 1						
USE 2						
USE 3						
TOTAL						

STRUCTURAL DESIGN — NA - EXISTING BUILDING
DESIGN LOADS

IMPORTANCE FACTORS: SNOW (Is) _____
SEISMIC (Ie) _____
LIVE LOADS: ROOF _____ psf
MEZZANINE _____ psf
FLOOR _____ psf
GROUND SNOW LOAD: _____ psf
WIND LOAD: BASIC WIND SPEED _____ mph (ASCE-7)
EXPOSURE CATEGORY _____
SEISMIC DESIGN CATEGORY [ ] A [ ] B [ ] C [ ] D
PROVIDE THE FOLLOWING SEISMIC DESIGN PARAMETERS:
RISK CATEGORY (Table 1604.5) [ ] I [ ] II [ ] III [ ] IV
SPECTRAL RESPONSE ACCELERATION S_s _____ %g S_1 _____ %g [ ] F
SITE CLASSIFICATION (ASCE 7) [ ] A [ ] B [ ] C [ ] D [ ] E
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 CAPACITY:
FIELD TEST (PROVIDE COPY OF TEST REPORT) _____ psf
PRESUMPTIVE BEARING CAPACITY _____ psf
PILE SIZE, TYPE, AND CAPACITY _____ psf

PLUMBING REQUIREMENTS

USE		WATER CLOSET MALE	WATER CLOSET FEMALE	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	SHOWERS & TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESS.
SPACE	EXISTING	0	0	0	0	0	0	0	0
	NEW	1	1	0	1	1	0	1	1
	REQUIRED	1	1	0	1	1	0	1	1

SPECIAL APPROVALS: (LOCAL JURISDICTION, DEPARTMENT OF INSURANCE, OSC, DPI, DHHS, ETC., DESCRIBE BELOW)
NA

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 BUDGET FOR THE STANDARD REFERENCE DESIGN VERSUS ANNUAL ENERGY COST FOR THE PROPOSED DESIGN.

EXISTING BUILDING ENVELOPE COMPLIES WITH CODE: [ ] NO [X] YES (THE REMAINDER OF THIS SECTION IS NOT APPLICABLE)
EXEMPT BUILDING: [X] NO [ ] YES (PROVIDE CODE OR STATUTORY REFERENCE) NA
CLIMATE ZONE: [ ] 3A [X] 4A [ ] 5A
METHOD OF COMPLIANCE:
ENERGY CODE [ ] PERFORMANCE [X] PRESCRIPTIVE
ASHRAE 90.1 [ ] PERFORMANCE [ ] PRESCRIPTIVE
(IF 'OTHER' SPECIFY SOURCE HERE) _____
THERMAL ENVELOPE (PRESCRIPTIVE METHOD ONLY)
ROOF/CEILING ASSEMBLY (each assembly):
DESCRIPTION OF ASSEMBLY: NA
U-VALUE OF TOTAL ASSEMBLY: _____
R-VALUE OF INSULATION: _____
SKYLIGHTS IN EACH ASSEMBLY:
U-VALUE OF SKYLIGHT: _____
TOTAL SQ FT OF SKYLIGHTS IN EACH ASSEMBLY: _____
EXTERIOR WALLS (each assembly):
DESCRIPTION OF ASSEMBLY: NA
U-VALUE OF TOTAL ASSEMBLY: _____
R-VALUE OF INSULATION: _____
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: NA
U-VALUE OF TOTAL ASSEMBLY: _____
R-VALUE OF INSULATION: _____
FLOORS OVER UNCONDITIONED SPACE (each assembly):
DESCRIPTION OF ASSEMBLY: NA
U-VALUE OF TOTAL ASSEMBLY: _____
R-VALUE OF INSULATION: _____
FLOORS SLAB ON GRADE
DESCRIPTION OF ASSEMBLY: NA
U-VALUE OF TOTAL ASSEMBLY: _____
R-VALUE OF INSULATION: _____
HORIZONTAL/VERTICAL REQUIREMENT: _____
SLAB HEATED: _____

MECHANICAL SUMMARY — SEE MECHANICAL DRAWINGS
MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT
THERMAL ZONE
WINTER DRY BULB _____
SUMMER DRY BULB _____
INTERIOR DESIGN CONDITIONS
WINTER DRY BULB _____
SUMMER DRY BULB _____
RELATIVE HUMIDITY _____
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 SUMMARY — SEE ELECTRICAL DRAWINGS
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 IN FIXTURE _____
BALLAST TYPE USED IN FIXTURE _____
NUMBER OF BALLASTS IN FIXTURE _____
TOTAL WATTAGE PER FIXTURE _____
TOTAL INTERIOR WATTAGE SPECIFIED VS. ALLOWED (whole building or space by space) _____
TOTAL EXTERIOR WATTAGE SPECIFIED VS. ALLOWED _____
ADDITIONAL EFFICIENCY PACKAGE OPTIONS
(WHEN USING THE 2018 NCECC; NOT REQUIRED FOR ASHRAE 90.1)
[ ] C406.2 MORE EFFICIENT MECHANICAL EQUIPMENT
[ ] C406.3 REDUCED LIGHTING POWER DENSITY
[ ] C406.4 ENHANCED DIGITAL LIGHTING CONTROLS
[ ] C406.5 ON-SITE RENEWABLE ENERGY
[ ] C406.6 DEDICATED OUTDOOR AIR SYSTEM
[ ] C406.7 REDUCED ENERGY USE IN SERVICE WATER HEATING

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CORPORATE STAMP

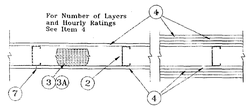
RICHARD STEVEN REDFOOT — REGISTERED ARCHITECT — 9231 — NORTH CAROLINA — 30 JANUARY 2023

ARCHITECT'S STAMP

THERASPACE

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 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 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 staggered a min of 12 in. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer system) 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 And Thickness Of Panels	Min Thickness Of Insulation (Item 3B)
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.
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
4	1-5/8	4 layers, 1/2 in. thick	Optional
4	2-1/2	2 layers, 3/4 in. thick	2 in.

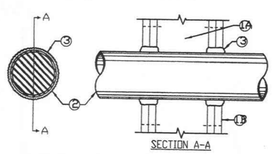
Canadian Gypsum Co.—1/2 in. thick Type C, WRC or IP-X2; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC or IP-X2; 3/4 in. thick ULTRACODE or Type IP-X3
United States Gypsum Co.—1/2 in. thick Type C, WRC or IP-X2; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC or IP-X2; 3/4 in. thick ULTRACODE or Type IP-X3
Yeso Panamericano SA de CV—1/2 in. thick Type C, WRC or JP-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.

5. **Fasteners**—(Not shown)—Type S or S-12 self-drilling, self-tapping 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. 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. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 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. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 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 panhead steel screws.
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 **UL #U419**
NOT TO SCALE

System No. WL 1001
F Ratings - 1, 2, 3, & 4 Hr (See Items 2 & 3)
T Rating - 0, 1, 2, 3, & 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/steel stud assembly shall be constructed of the following and in the manner described in the individual Gypsum Association 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 (nom 2 by 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 sleeper plates. Steel studs to be an 3-5/8 in. wide by
B. Wallboard, Gypsum - Gypsum wallboard, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness and number of layers required for the wall assembly are specified in the individual Gypsum Association Wall Series Designs in the UL Fire Resistance Directory. Nom 4 in. opening is provided
2. Pipe or Conduit - Nom 2 in. dia (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. dia (or smaller) service weight (or heavier) cast iron soil pipe, nom 6 in. dia (or smaller) Schedule 20 (or heavier) ductile iron pressure pipe, nom 6 in. dia (or smaller) steel conduit, nom 4 in. dia (or smaller) steel electrical metallic tubing, nom 4 in. dia (or smaller) type L (or to heavier) copper tubing or nom 4 in. dia (or smaller) flexible steel conduit. Steel conduit coupling also is used. A fitting or ferrous sleeve nom 2-1/2 in. dia (or smaller) may be used in lieu of the steel conduit coupling. The annular space between the pipe or conduit and the periphery of the opening shall be filled with fill, void or cavity material. The thickness of fill material is the same as the thickness of the gypsum wallboard layers on both sides of the wall assembly. The annulus is centered within the opening. The annular space between pipe or conduit and gypsum wallboard may be left empty or caulked on both sides of wall as required. The annulus is sealed symmetrically on both sides of wall with a min 1/4 in. thick fill of the fire stop system. The fill material shall fill the annular space between the pipe or conduit and the periphery of the opening. The fill material is positioned within the opening to coincide with the midpoint of the wall assembly in which it is installed as indicated below

Max Pipe or Conduit Diam, In.	Annular Space, In.	F Rating Hr	T Rating Hr
2	0 to 3/4	1 or 2	1 or 2
4	0 to 1/2	1 or 2	1 or 2
6	0 to 1/2	1 or 2	1 or 2
12	0 to 1/2	1 or 2	1 or 2
2	0 to 3/8	3 or 4	0
4	0 to 3/8	3 or 4	0
6	0 to 3/8	3 or 4	0
12	0 to 3/8	3 or 4	0

When copper is used, T Rating is 0 hr
3. Fill, Void or Cavity Material - Sealant - Min 5/8 in. thick fill of caulk or sealant compound applied within annular space between pipe or conduit and gypsum wallboard and tooled flush with surface of gypsum wallboard on both sides of wall as required. Min 5/8 in. thick fill of caulk or sealant compound applied within annular space between pipe or conduit and gypsum wallboard and tooled flush with surface of gypsum wallboard on both sides of wall as required. For hourly F Ratings of the fire stop system, the hourly fire rating of the wall assembly in which it is installed, as shown in the individual Gypsum Association Wall Design, shall be the hourly F Rating of the fire stop system. For hourly T Ratings of the fire stop system, the hourly fire rating of the wall assembly in which it is installed, as indicated below

Max Pipe or Conduit Diam, In.	Annular Space, In.	F Rating Hr	T Rating Hr
2	0 to 3/4	1 or 2	1 or 2
4	0 to 1/2	1 or 2	1 or 2
6	0 to 1/2	1 or 2	1 or 2
12	0 to 1/2	1 or 2	1 or 2
2	0 to 3/8	3 or 4	0
4	0 to 3/8	3 or 4	0
6	0 to 3/8	3 or 4	0
12	0 to 3/8	3 or 4	0

When copper is used, T Rating is 0 hr
4. Fill, Void or Cavity Material - Caulk - Min 5/8 in. thick fill of caulk compound applied within annular space between pipe or conduit and gypsum wallboard and tooled flush with surface of gypsum wallboard on both sides of wall as required. For hourly F Ratings of the fire stop system, the hourly fire rating of the wall assembly in which it is installed, as shown in the individual Gypsum Association Wall Design, shall be the hourly F Rating of the fire stop system. For hourly T Ratings of the fire stop system, the hourly fire rating of the wall assembly in which it is installed, as indicated below

Max Pipe or Conduit Diam, In.	Annular Space, In.	F Rating Hr	T Rating Hr
2	0 to 3/4	1 or 2	1 or 2
4	0 to 1/2	1 or 2	1 or 2
6	0 to 1/2	1 or 2	1 or 2
12	0 to 1/2	1 or 2	1 or 2
2	0 to 3/8	3 or 4	0
4	0 to 3/8	3 or 4	0
6	0 to 3/8	3 or 4	0
12	0 to 3/8	3 or 4	0

When copper is used, T Rating is 0 hr
5. Fill, Void or Cavity Material - Sealant - Optional min 5/8 in. thick fill of sealant compound applied within annular space between pipe or conduit and gypsum wallboard and tooled flush with surface of gypsum wallboard on both sides of wall as required. For hourly F Ratings of the fire stop system, the hourly fire rating of the wall assembly in which it is installed, as shown in the individual Gypsum Association Wall Design, shall be the hourly F Rating of the fire stop system. For hourly T Ratings of the fire stop system, the hourly fire rating of the wall assembly in which it is installed, as indicated below

Max Pipe or Conduit Diam, In.	Annular Space, In.	F Rating Hr	T Rating Hr
2	0 to 3/4	1 or 2	1 or 2
4	0 to 1/2	1 or 2	1 or 2
6	0 to 1/2	1 or 2	1 or 2
12	0 to 1/2	1 or 2	1 or 2
2	0 to 3/8	3 or 4	0
4	0 to 3/8	3 or 4	0
6	0 to 3/8	3 or 4	0
12	0 to 3/8	3 or 4	0

When copper is used, T Rating is 0 hr
6. Max Size Opening - 12 in. dia (or smaller) opening.
7. Max Number of Openings - Unlimited
8. Min Spacing of Openings - Min 24 in. between openings.
9. Max Area of Openings - Unlimited
10. Max Area of Openings - Unlimited
11. Max Area of Openings - Unlimited
12. Max Area of Openings - Unlimited
13. Max Area of Openings - Unlimited
14. Max Area of Openings - Unlimited
15. Max Area of Openings - Unlimited
16. Max Area of Openings - Unlimited
17. Max Area of Openings - Unlimited
18. Max Area of Openings - Unlimited
19. Max Area of Openings - Unlimited
20. Max Area of Openings - Unlimited
21. Max Area of Openings - Unlimited

*Bearing the UL Classification Marking

2 **W-L 1001**
NOT TO SCALE

DOOR AND FRAME SCHEDULE

DOOR NO.	DOOR SIZE WD	DOOR SIZE HGT	DOOR SIZE THK	DOOR MATL	FRAME MATL	HARDWARE SET	HARDWARE KEYSIDE RM NO	REMARKS
100A	3'-0"	7'-0"	1 3/4"	WOOD	HM	P.L., D.S.	---	1
101A	3'-0"	7'-0"	1 3/4"	WOOD	HM	PR.L., D.S., C.H.	---	---
102A	3'-0"	7'-0"	1 3/4"	WOOD	HM	P.L., D.S., C.H.	---	---
104A	3'-0"	7'-0"	1 3/4"	WOOD	HM	P.L., D.S., C.H.	---	---
105A	3'-0"	7'-0"	1 3/4"	WOOD	HM	P.L., D.S., C.H.	---	2
106A	3'-0"	7'-0"	1 3/4"	WOOD	HM	PR.L., D.S., C.H.	---	---
107A	3'-0"	7'-0"	1 3/4"	WOOD	HM	MFR'S STANDARD	---	3
108A	3'-0"	7'-0"	1 3/4"	WOOD	HM	P.L., D.S., C.H.	---	---

GENERAL DOOR SCHEDULE NOTES

A. ALL DOORS ARE FACTORY FINISHED, SOLID CORE, PLAIN SLICED WHITE BIRCH.
B. PROVIDE DOUBLE JACK STUDS AT ALL DOOR JAMBS
C. DOORS WITH NO NUMBER ARE EXISTING TO REMAIN.
D. DOOR HARDWARE TO BE COMMERCIAL GRADE AND ADA COMPLIANT. HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERABLE PARTS ON DOORS AND GATES SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST TO OPERATE.

HARDWARE LEGEND

P.L.	PASSAGE LATCHSET	CR.L.	CLASSROOM LOCKSET	O.C.	OVERHEAD CLOSER	C.H.	COAT HOOK
PR.L.	PRIVACY LOCKSET	D.B.	DEADBOLT	H.	1 1/2 HINGES	D.S.	DOOR SWEEP
C.L.	CYLINDER LOCKSET	ALT	ALUMINUM THRESHOLD	W.S.	WEATHER STRIPPING		
M.L.	MORTISE LOCKSET	W.S.	WOOD THRESHOLD	D.S.	DOOR STOP		

REMARKS

1. PROVIDE VIEW LITE IN DOOR. VERIFY SIZE W/ OWNER.
2. PROVIDE SOUND KIT AND DOOR SWEEP ON DOOR.
3. BARN DOOR AND FRAME ASSEMBLY. IN FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FOR BOTH SIDES AND WIDTH OF DOOR OPENING SHALL BE A MINIMUM OF 32" CLEAR.

ROOM FINISH SCHEDULE

ROOM NO	ROOM NAME	FLOOR	BASE	WALLS N	WALLS S	WALLS E	WALLS W	CEILING	REMARKS
100	WAITING	LVP	RUBBER	GWB	GWB	GWB	GWB	ACT	---
101	UNI-SEX TOILET	LVP	RUBBER	GWB	GWB	GWB	GWB	ACT	---
102	RECEPTION	LVP	RUBBER	GWB	GWB	GWB	GWB	ACT	---
103	GYM	CPT TILE	RUBBER	GWB	GWB	GWB	GWB	ACT	---
104	TREATMENT	CPT TILE	RUBBER	GWB	GWB	GWB	GWB	ACT	---
105	SENSORY & TREATMENT	CPT TILE	RUBBER	GWB	GWB	GWB	GWB	ACT	---
106	UNI-SEX TOILET	LVP	RUBBER	GWB	GWB	GWB	GWB	ACT	---
107	LAUNDRY	LVP	RUBBER	GWB	GWB	GWB	GWB	ACT	---
108	BREAK ROOM	LVP	RUBBER	GWB	GWB	GWB	GWB	ACT	---

GENERAL FINISH SCHEDULE NOTES

A. COORDINATE AND VERIFY FINISHES AND COLORS WITH OWNER.
B. WALL PAINT TO BE BENJAMIN MOORE OR APPROVED EQUAL. ONE COAT OF PRIMER TINTED TO WALL COLOR, TWO COATS OF PAINT. SATIN FINISH. PAINT AND PRIMER TO BE LOW VOC. WALLS TO BE FREE OF DUST PRIOR TO PAINTING. OWNER TO INSPECT WALLS PRIOR TO PAINTING AND BETWEEN COATS. COLOR TO BE SELECTED BY OWNER.
C. ALL NEW GYPSUM WALLBOARD TO BE 5/8". PROVIDE 5/8" GREENBOARD AT ALL WET LOCATIONS.
H. PROVIDE HONEY COMB SHADES AT ALL WINDOWS. GRABER, HUNTER DOUGLAS OR APPROVED EQUAL.

FINISHES

LVP	LUXURY VINYL PLANK	TO BE SELETED FROM MANUFACTURER'S STANDARD COLORS
CPT TILE	CARPET TILE	TO BE SELETED FROM MANUFACTURER'S STANDARD COLORS
RUBBER	RUBBER COVE BASE	4" RUBBER COVE BASE, MANUFACTURER'S STANDARD COLORS
GWB	GYPSUM WALLBOARD	NEW OR EXISTING GYPSUM WALLBOARD, PAINTED
ACT	ACOUSTIC CEILING TILE	SUSPENDED 2'X2' ACOUSTIC CEILING TILE SYSTEM, ARMSTRONG 1774 'DUNE' W/ TEGULAR EDGE, 15/16" STANDARD GRID

ALLOWANCES (INCLUDES LABOR AND MATERIAL)

NONE

REMARKS

NONE

GENERAL NOTES

1. GENERAL NOTES APPLY TO ALL SHEETS.
2. THE DRAWINGS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO ORDERING, PURCHASING AND INSTALLING MATERIALS AND SYSTEMS. ALL DISCREPANCIES, INTERFERENCES, AND OMISSIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT.
3. ANY DEVIATIONS FROM THE CONTRACT DOCUMENTS DURING CONSTRUCTION SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT.
4. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE, ALL LOCAL AND OTHER APPLICABLE CODES.
5. CONTRACTOR TO VISIT SITE PRIOR TO SUBMITTAL OF BID. CONTRACTOR TO ESTABLISH SCOPE OF WORK FROM CONSTRUCTION DOCUMENTS AND ACTUAL SITE VISIT. ANY OMISSIONS, DISCREPANCIES OR CLARIFICATIONS TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT.
6. CONTRACTOR TO ITEMIZE ALL COSTS AND SCOPE OF WORK RELATED TO ANY CHANGE ORDER. THIS INFORMATION MUST BE PRESENTED TO THE OWNER AND ARCHITECT FOR APPROVAL PRIOR TO ANY WORK BEING EXECUTED.
7. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS, DO NOT SCALE DIMENSIONS.
8. DIMENSIONS ARE TO FACE OF METAL STUDS OR EXISTING GYPSUM WALLBOARD.
9. COORDINATE ALL FINISHES AND MATERIALS WITH OWNER. ALL COLORS AND MATERIALS SHALL BE APPROVED BY OWNER PRIOR TO ORDERING MATERIALS.
10. PROVIDE BLOCKING AS REQUIRED FOR FOR INSTALLATION AND SUPPORT OF FIXTURES, GRAB BARS, TOILET ACCESSORIES, CABINETS, TELEVISIONS, EQUIPMENT, ETC.. BLOCKING FOR ADJUSTABLE SHELVING TO BE CONTINUOUS FROM FLOOR TO 8'-0" AFF.
11. COORDINATE INSTALLATION OF ALL EQUIPMENT AND APPLIANCES, INCLUDING BOTH CONTRACTOR AND OWNER SUPPLIED ITEMS, WITH MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS.
12. TOP OF PARTITIONS STOP 1" TO 6" ABOVE CEILING. PROVIDE LATERAL BRACING, SECURED TO TOP OF WALL AND ROOF STRUCTURE ABOVE, U.O.N.
13. ALL GYPSUM WALLBOARD TO BE FINISHED TO LEVEL 4 PER GYPSUM ASSOCIATION GUIDELINES AS DETAILED IN GA 214-10.
14. EXISTING BUILDING ASSEMBLIES, COMPONENTS, AND SYSTEMS TO REMAIN UNLESS OTHERWISE REQUIRED BY NEW WORK OR NOTED IN THE DOCUMENTS.
15. CONTRACTOR TO USE LANDLORD'S ROOFING CONTRACTOR FOR ALL ROOF WORK.
16. ANY WOOD BLOCKING, FRAMING, OR SHEATHING NOT ENCASED WITHIN GYPSUM WALLBOARD OF WALL TO BE FIRE-TREATED.
17. PROVIDE INFRASTRUCTURE AS REQUIRED FOR OFFICE AUDIO SYSTEM. COORDINATE W/ OWNER.
18. PROVIDE INFRASTRUCTURE AS REQUIRED FOR OFFICE SECURITY SYSTEM. COORDINATE W/ OWNER.
19. ALL CABINETS PROVIDED BY GENERAL CONTRACTOR. PROVIDE SHOP DRAWINGS FOR OWNER REVIEW AND APPROVAL.
20. ALL SINKS AND FAUCETS TO BE SELECTED BY OWNER.
21. ALL DOOR HARDWARE TO BE SELECTED BY OWNER.

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Graham, NC

CORPORATE STAMP

RICHARD STEVEN REDFOOT
REGISTERED ARCHITECT
9231
NORTH CAROLINA
30 JANUARY 2023

ARCHITECT'S STAMP

No	Rev./Submissions	Date
	PERMIT	01/30/23

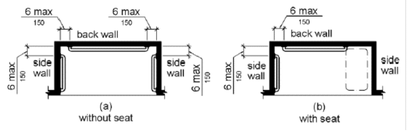
SCALE	PROJECT NO
AS NOTED	221105
DESIGNED: RSR	DATE: 30 JAN 23
DRAWN: RSR	CHECKED: RSR

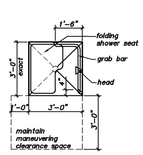
DRAWINGS

GENERAL NOTES, SCHEDULES, AND UL DETAILS

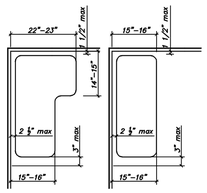
DRAWING NO

A0.0

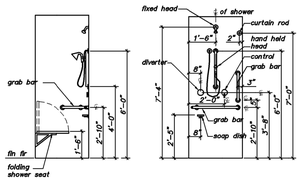




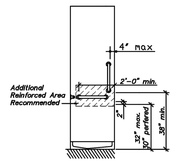
SHOWER SIZE AND CLEARANCES



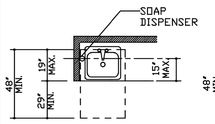
SHOWER SEAT DESIGN



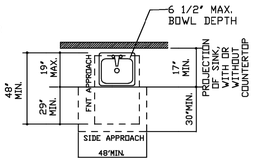
SHOWER CONTROLS SIDE WALL ELEVATION



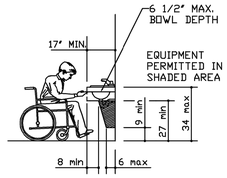
SHOWER SIDE WALL BLOCKING



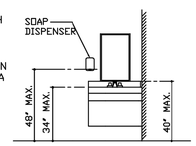
ACCESSIBLE SINK FLOOR CLEARANCE



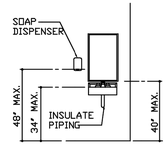
ACCESSIBLE SINK FLOOR CLEARANCE



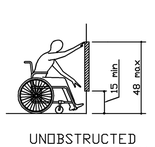
ACCESSIBLE SINK COUNTER HEIGHT AND KNEE CLEARANCE



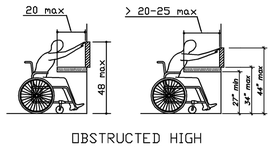
SINGLE LAVATORY COUNTER W/MIRROR



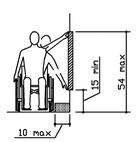
SINGLE LAVATORY WALLHUNG W/MIRROR



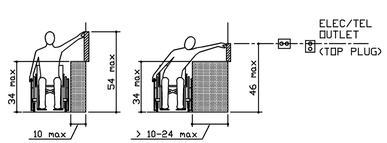
UNOBSTRUCTED FORWARD REACH



OBSTRUCTED HIGH FORWARD REACH



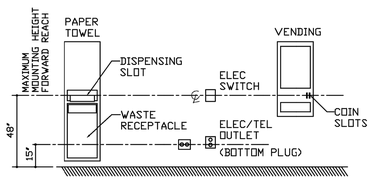
UNOBSTRUCTED SIDE REACH



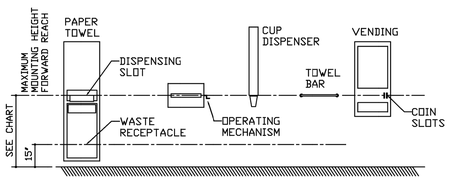
OBSTRUCTED HIGH SIDE REACH

SURFACE MOUNTED ACCESSORIES
MAXIMUM REACH DEPTH AND HEIGHT (FORWARD APPROACH)

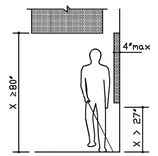
PROJECTED DIM FROM WALL FACE	.5 INCH	2 INCHES	5 INCHES	6 INCHES	9 INCHES	11 INCHES
MAXIMUM MOUNTING HEIGHT	48 INCH	46 INCH	42 INCH	40 INCH	36 INCH	34 INCH



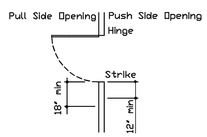
FLUSH MOUNTED EQUIPMENT (LESS THAN 1/2" PROJECTION FROM WALL FACE)



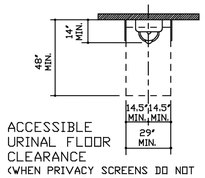
SURFACE MOUNTED EQUIPMENT (GREATER THAN 1/2" PROJECTION FROM WALL FACE)



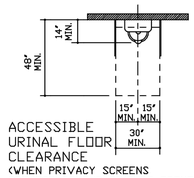
LIMIT OF PROTRUDING OBJECTS



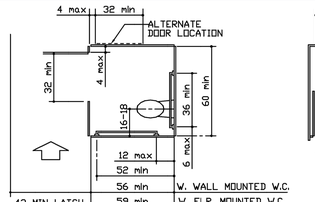
CLEAR AREA OF ACCESSIBILITY FORWARD APPROACH TO ACCESS WAY



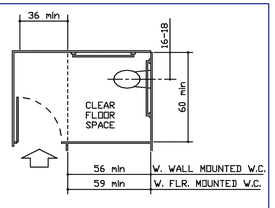
ACCESSIBLE URINAL FLOOR CLEARANCE (WHEN PRIVACY SCREENS DO NOT PROJECT BEYOND FIXTURE FRONT EDGE)



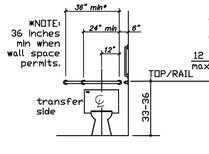
ACCESSIBLE URINAL FLOOR CLEARANCE (WHEN PRIVACY SCREENS PROJECT BEYOND FIXTURE FRONT EDGE)



STANDARD STALL

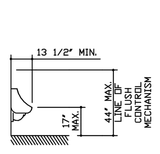


STANDARD STALL (END OF ROW)

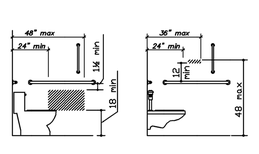


BACK WALL GRAB BARS AT WATER CLOSETS

SIDE WALL GRAB BARS AT WATER CLOSETS

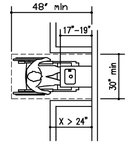


SIDE WALL ACCESSIBLE WALL HUNG URINAL

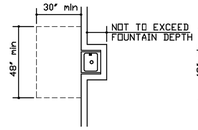


below grab bar above grab bar

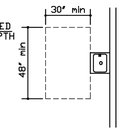
TOILET PAPER DISPENSER LOCATION



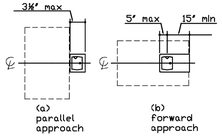
WATER COOLER CLEAR FLOOR SPACE



BUILT-IN FOUNTAIN OR COOLER

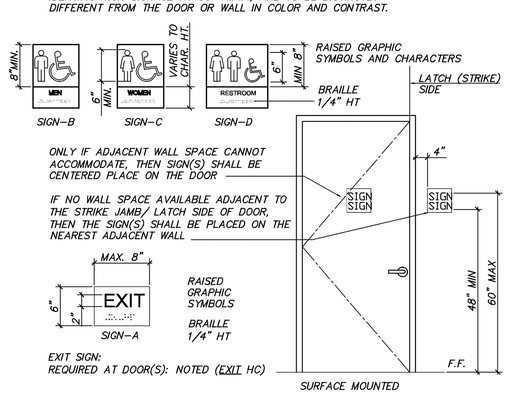


FREESTANDING FOUNTAIN OR COOLER



DRINKING FOUNTAIN SPOUT LOCATION

IDENTIFICATION SIGNAGE AT 60" A.F.F., ARE TO BE DISTINCTLY DIFFERENT FROM THE DOOR OR WALL IN COLOR AND CONTRAST.



1 Accessibility Details and Requirements

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

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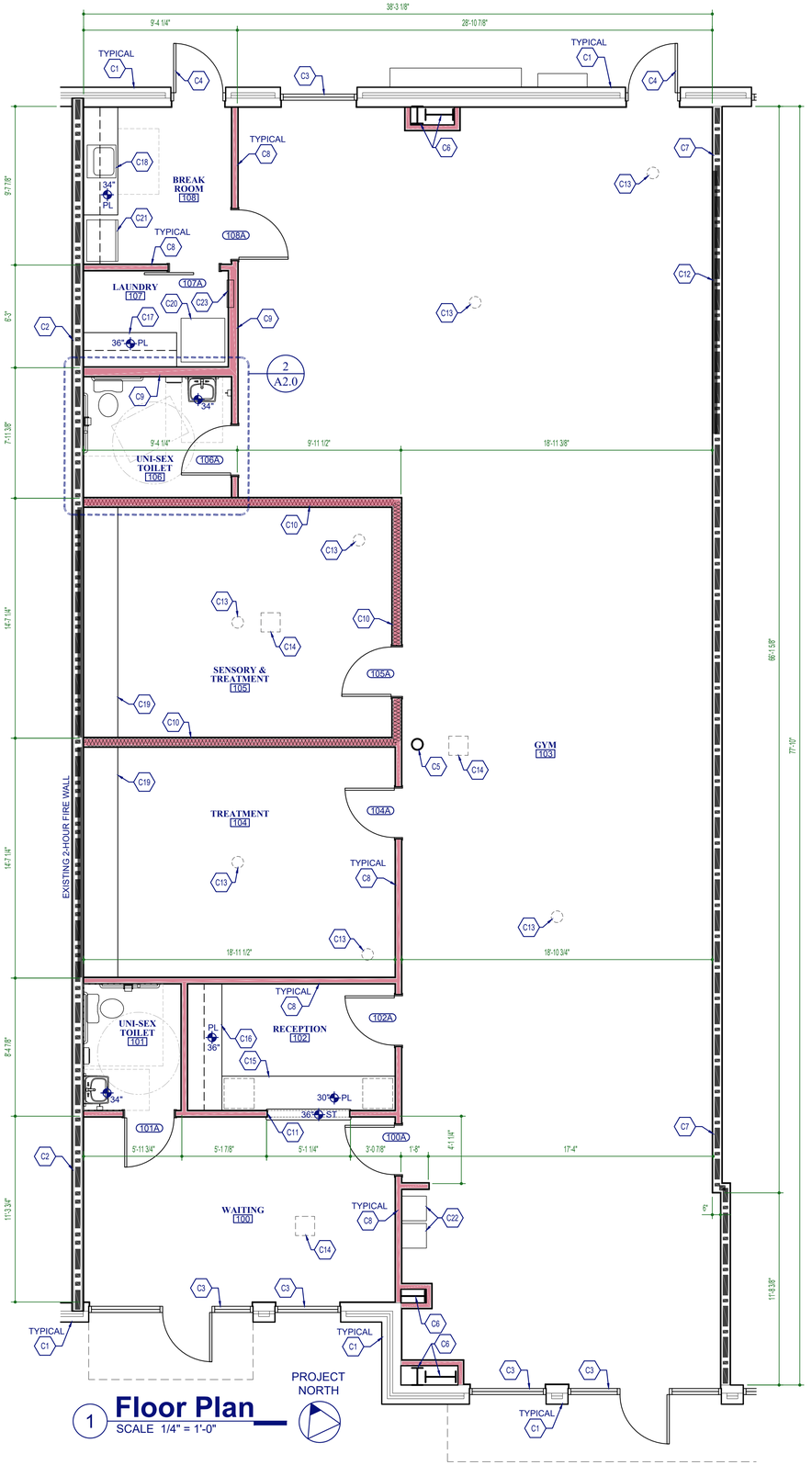
	PERMIT	01/30/23

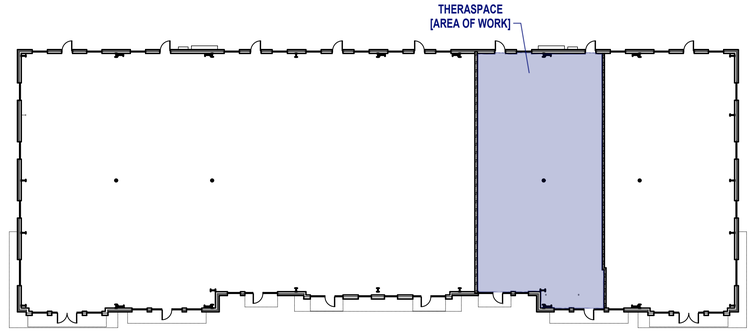
SCALE: AS NOTED	PROJECT NO: 221105
DESIGNED: RSR	DATE: 30 JAN 23
DRAWN: RSR	CHECKED: RSR

DRAWINGS: ACCESSIBILITY DETAILS

DRAWING NO: **A0.1**



1 **Floor Plan**
SCALE 1/4" = 1'-0"



1 **Key Plan**
NOT TO SCALE

PROJECT NORTH

CONSTRUCTION NOTES:

- C1 EXISTING INSULATED EXTERIOR WALL TO REMAIN, PROVIDE GYPSUM WALLBOARD ON INTERIOR SIDE TO DECK ABOVE, TYPICAL
- C2 EXISTING 2-HOUR FIRE-RATED FIRE WALL TO REMAIN, ANY WORK TO WALL PER UL U419, SEE 1/A0.0, TYPICAL
- C3 EXISTING STOREFRONT WINDOW OR ENTRY ASSEMBLY TO REMAIN, CASE OPENING W/ GYPSUM WALLBOARD
- C4 EXISTING HOLLOW METAL DOOR AND FRAME ASSEMBLY TO REMAIN, PAINT, CASE OPENING W/ GYPSUM WALLBOARD
- C5 EXISTING TUBE STEEL COLUMN TO REMAIN, PAINT
- C6 EXISTING STEEL COLUMN(S) TO REMAIN, COORDINATE W/ OWNER DURING FRAMING WHETHER THEY WANT TO ENCASE THE COLUMN W/ FRAMING AND GYPSUM WALLBOARD OR LEAVE EXPOSED AND PAINT
- C7 PROVIDE NEW 1-HOUR FIRE-RATED TENANT DEMISING WALL TO ROOF DECK, PER UL U419, SEE 1/A0.0, TYPICAL
- C8 PROVIDE NEW INTERIOR 3-5/8" METAL STUD WALL, SEE 1/A3.0, TYPICAL WHERE SHOWN THUS
- C9 PROVIDE NEW INTERIOR 6" METAL STUD WALL, SIMILAR TO 1/A3.0
- C10 PROVIDE NEW SOUND WALL ASSEMBLY TO ROOF DECK, GYPSUM WALLBOARD FINISH TO BE CONTINUOUS WHERE NON-SOUND WALLS INTERSECT SOUND WALL, SEE 2/A3.0
- C11 CASED OPENING, HEAD OF OPENING AT 7'-0" AFF
- C12 PROVIDE 16'-0" LINEAR FEET OF CONTINUOUS BLOCKING FROM FLOOR TO CEILING IN DEMISING WALL, VERIFY LOCATION IN FIELD W/ OWNER
- C13 PROVIDE STEEL EYE HOOK IN CEILING FOR SWING OR OTHER EXERCISE EQUIPMENT. COORDINATE FINAL LOCATION W/ OWNER DURING FRAMING; VERIFY ANY REINFORCING REQUIREMENTS W/ STRUCTURAL ENGINEER.
- C14 PROVIDE BLOCKING, POWER, AND DATA FOR CEILING MOUNTED PROJECTOR, COORDINATE FINAL LOCATION IN FIELD W/ OWNER
- C15 RECEPTION COUNTER AND DESK, OPEN BELOW DESK, PROVIDE (2) ROLLING BELOW COUNTER LOCKABLE FILE CABINETS
- C16 RECEPTION CABINETS, SEE 3/A3.0
- C17 LAUNDRY CABINETS, SEE 4/A3.0
- C18 STAFF LOUNGE CABINETS, PLASTIC LAMINATE COUNTERTOP AT 34" AFF, PROVIDE MINIMUM (1) UPPER CABINET STORAGE SHELF AT 48" AFF, SIDE APPROACH ACCESSIBLE SINK, SEE 5/A3.0
- C19 PROVIDE (6) 24" ADJUSTABLE WIRE SHELVES WITH HEAVY-DUTY BRACKETS & STANDARDS
- C20 WASHER AND DRYER, SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR
- C21 REFRIGERATOR, SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR
- C22 ACCESSIBLE HIGH-LOW DRINKING FOUNTAINS, SEE PLUMBING AND ELECTRICAL DRAWINGS
- C23 ELECTRIC PANEL LOCATION, RECESS IN WALL, SEE ELECTRICAL DRAWINGS

FLOOR PLAN NOTES:

1. COORDINATE SELECTION OF ALL FINISHES AND COLORS WITH OWNER.
2. DIMENSIONS ARE TO FACE OF FRAMING EXCEPT AT DEMISING WALLS DIMENSIONS ARE TO FACE OF GYPSUM WALLBOARD.
3. 5/8" GYPSUM WALLBOARD, TYPICAL EXCEPT 5/8" GREENBOARD AT WET LOCATIONS.
4. PROVIDE GYPSUM WALLBOARD TO DECK ABOVE AT ALL EXTERIOR AND DEMISING WALLS.
5. PROVIDE TRANSITION STRIPS BETWEEN DIFFERENT FLOORING MATERIALS.
6. COORDINATE DESIGN OF ALL CABINETRY AND CASEWORK W/ OWNER. PROVIDE CABINETRY SHOP DRAWINGS FOR OWNER REVIEW.
7. ALL 3-5/8" STUD WALLS TO BE INSULATED WITH R-11 BATT INSULATION. ALL 6" METAL STUD WALLS TO BE INSULTED WITH R-19 BATT INSULATION.
8. PROVIDE TYPE 2A 10BC FIRE EXTINGUISHER AS REQUIRED FOR MAX. 75' TRAVEL DISTANCE TO EXTINGUISHER FROM ANYWHERE IN OFFICE. VERIFY FINAL LOCATION AND NUMBER OF FIRE EXTINGUISHERS WITH FIRE MARSHAL.
9. PROVIDE BLOCKING AS REQUIRED FOR ALL CABINETRY, EQUIPMENT, AND CASEWORK. PROVIDE CONTINUOUS BLOCKING FROM FLOOR TO CEILING AT ALL ADJUSTABLE SHELVING LOCATIONS.
10. VERIFY INSTALLATION REQUIREMENTS AND LOCATIONS OF ALL THERAPY EQUIPMENT W/ OWNER. VERIFY ANY REINFORCING OR SUPPORT REQUIREMENTS W/ STRUCTURAL ENGINEER.

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30 JANUARY 2023

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DRAWINGS

KEY PLAN AND FLOOR PLAN

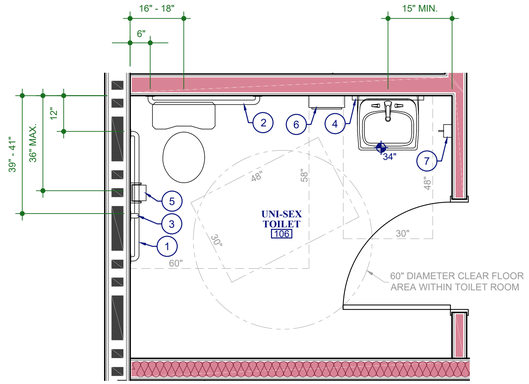
DRAWING NO

A1.0

Toilet Accessory Schedule

1	42" GRAB BAR, CENTERLINE OF GRAB BAR AT 34" A.F.F.
2	36" GRAB BAR, CENTERLINE OF GRAB BAR AT 34" A.F.F.
3	18" VERTICAL GRAB BAR, BOTTOM OF GRAB BAR AT 39"-41" A.F.F.
4	18" x 36" STAINLESS STEEL MIRROR, BOTTOM EDGE OF MIRROR 40" AFF, MAX.
5	TOILET PAPER DISPENSER, 19" AFF MIN. TO CENTERLINE OF TOILET PAPER ROLL
6	PAPER TOWEL DISPENSER, 48" AFF MAX. TO TOWEL DISPENSER SLOT OR OPERATING MECHANISM
7	SOAP DISPENSER, 48" AFF MAX. TO DISPENSER

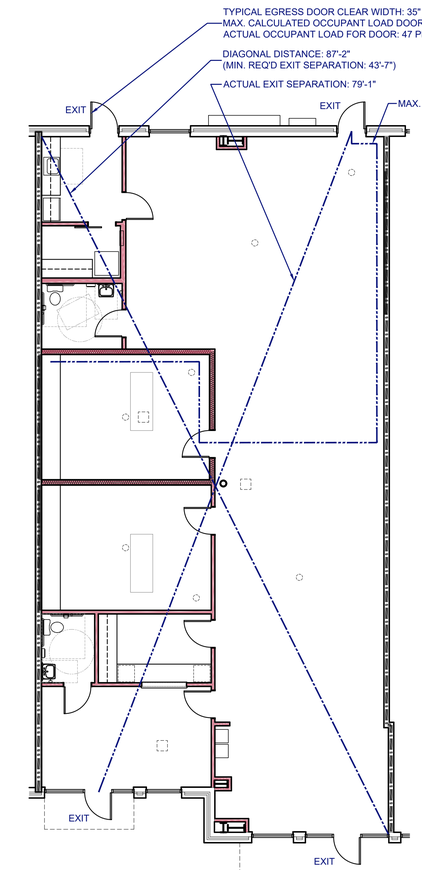
SCHEDULE NOTES:
1. ALL FIXTURES AND TOILET ACCESSORIES TO MEET ADA REQUIREMENTS AND BE INSTALLED PER ADA GUIDELINES.
2. PROVIDE BLOCKING IN WALLS AS REQUIRED TO INSTALL ALL TOILET ACCESSORIES.



TOILET PLAN NOTES:
1. PROVIDE ALL BLOCKING REQUIRED FOR GRAB BARS AND OTHER ACCESSORIES.
2. UNI-SEX TOILET 106 IS SHOWN, ALL OTHER TOILET ROOMS ARE SIMILAR.

PROJECT NORTH

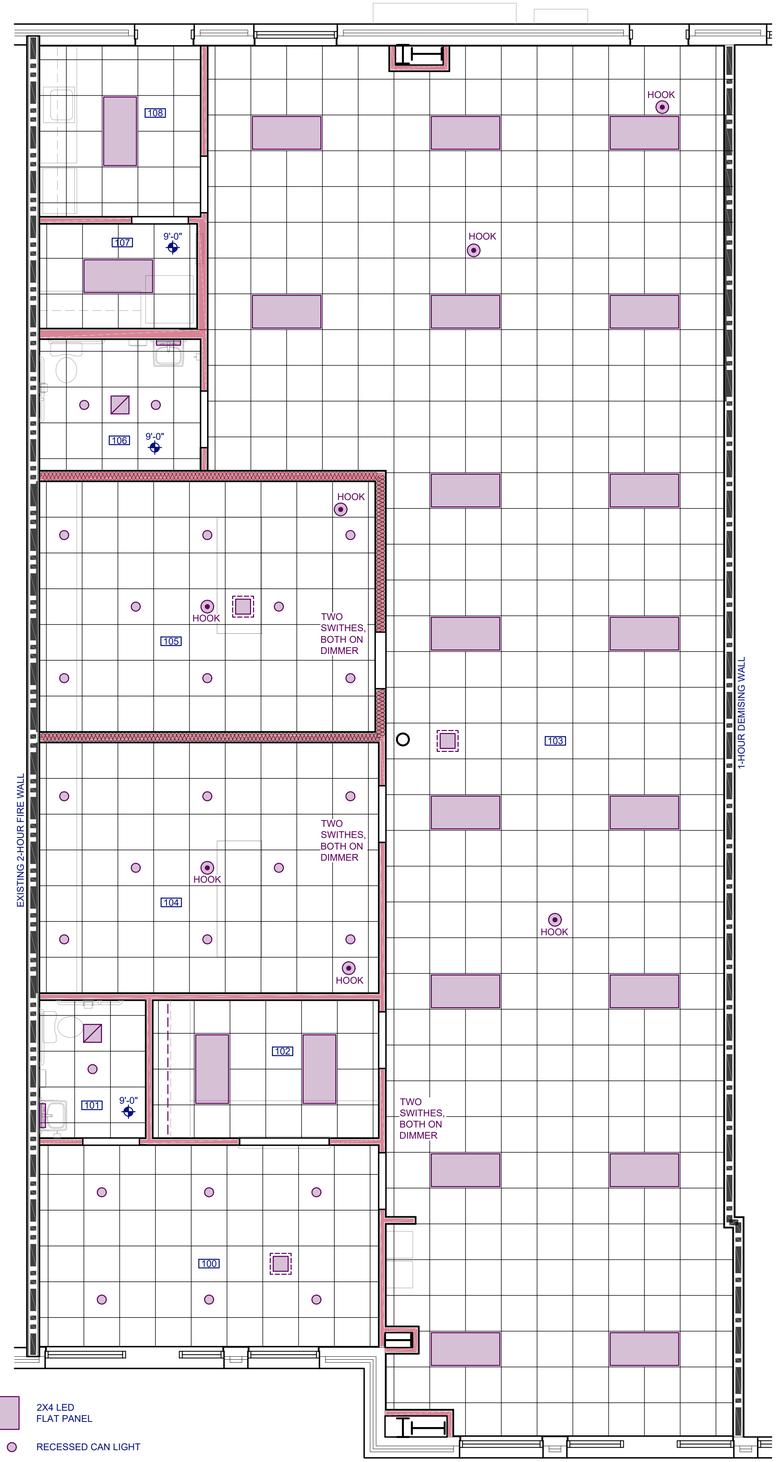
2 Enlarged Toilet Plan
SCALE 1/2" = 1'-0"



OCCUPANT LOADS:
BUSINESS: 1,181 SF /100 GROSS SF/PERSON = 12 PEOPLE
EXERCISE: 1,715 SF / 50 GROSS SF/PERSON = 35 PEOPLE
TOTAL: 2,896 SF = 47 PEOPLE

PROJECT NORTH

3 Life Safety Plan
SCALE 1/8" = 1'-0"



2X4 LED FLAT PANEL
RECESSED CAN LIGHT
VANITY LIGHT
BELOW CABINET LIGHT
EXHAUST FAN
EXERCISE HOOK IN CEILING
PROJECTOR IN CEILING, VERIFY FINAL LOCATION IN FIELD W/ OWNER

PROJECT NORTH

1 Reflected Ceilng Plan
SCALE 1/4" = 1'-0"

REFLECTED CEILING PLAN NOTES:
1. CEILING HEIGHT TO BE 10'-0" AFF, TYPICAL U.O.N.
2. SEE ELECTRICAL AND MECHANICAL DRAWINGS FOR ADDITIONAL NOTES AND INFORMATION.
3. BATH FANS AND LIGHTS SWITCHED SEPARATELY.

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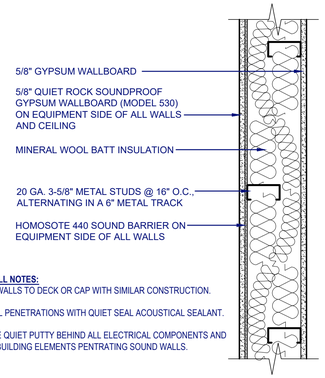
DRAWINGS
CEILING, TOILET, & LIFE SAFETY FLOOR PLANS

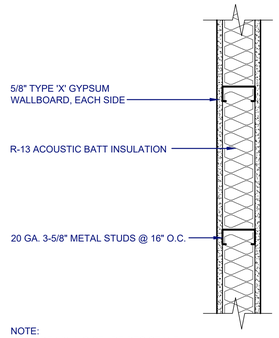
DRAWING NO
A2.0



SOUND WALL NOTES:

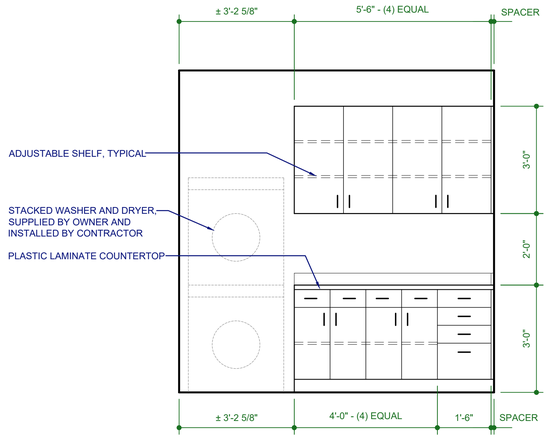
1. CARRY WALLS TO DECK OR CAP WITH SIMILAR CONSTRUCTION.
2. SEAL ALL PENETRATIONS WITH QUIET SEAL ACOUSTICAL SEALANT.
3. PROVIDE QUIET PUTTY BEHIND ALL ELECTRICAL COMPONENTS AND OTHER BUILDING ELEMENTS PENTRATING SOUND WALLS.

2 Sound Wall
SCALE 1 1/2"= 1'-0"

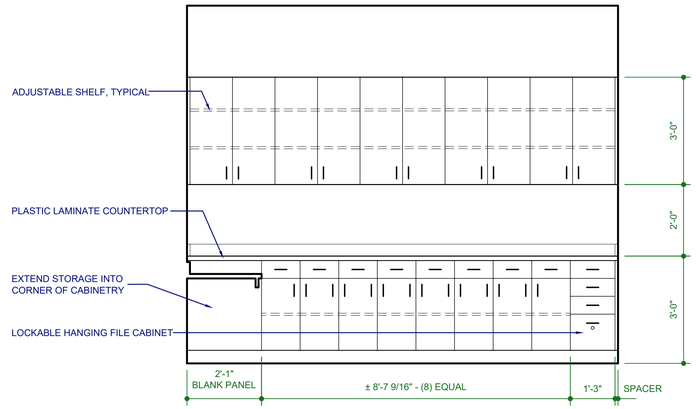


NOTE:
PROVIDE 5/8" MOISTURE RESISTANT GYPSUM WALLBOARD AT ALL WET WALL LOCATIONS.

1 Interior Wall
SCALE 1 1/2" = 1'-0"



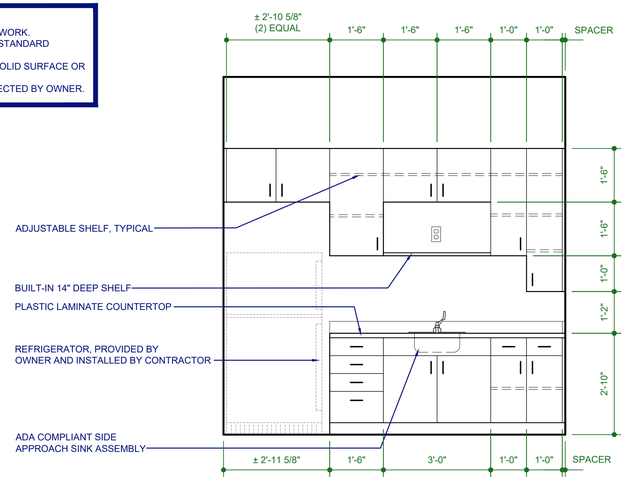
4 Laundry
SCALE 1/2" = 1'-0"



3 Reception Work
SCALE 1/2" = 1'-0"

CABINET NOTES:

1. PROVIDE SHOP DRAWINGS FOR OWNER REVIEW OF ALL CABINETS AND CASEWORK.
2. PLASTIC LAMINATE FINISH FOR CABINET EXTERIOR FROM MANUFACTURER'S STANDARD COLORS. WHITE MELAMINE FINISH AT INTERIOR OF ALL CABINETS.
3. ALL COUNTERTOPS PLASTIC LAMINATE. PROVIDE ALTERNATE FOR LEVEL 2 SOLID SURFACE OR LEVEL 2 GRANITE FOR RECEPTION TRANSACTION COUNTER.
4. ALL CABINET HARDWARE TO BE COMMERCIAL GRADE HARDWARE TO BE SELECTED BY OWNER.



5 Staff Lounge
SCALE 1/2" = 1'-0"

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DRAWINGS

DETAILS & CABINETS

DRAWING NO

A3.0

PLUMBING FIXTURE SCHEDULE						
SYMBOL	FIXTURE	MANUFACTURER	FITTING	HW	CW	WASTE
P1	TWO PIECE TANK TYPE ADA WATER CLOSET	TOTO CST744EL OR EQUAL BY AMERICAN STANDARD OR KOHLER	TWO-PIECE VITREOUS CHINA TOILET WITH HIGH-PROFILE TANK, ELONGATED FRONT BOWL AND CHROME TRIP LEVER. 1.28 GPF. PROVIDE SCS34 OPEN FRONT SEAT LESS COVER. ASME 112.19.2 COMPLIANCE. TOP OF SEAT SHALL BE 17-19 INCHES AFF FOR ADA. LEVER MOUNTED ON WIDE SIDE FOR ADA	-	1/2"	3"
P2	WALL MOUNT LAVATORY	TOTO LT307.4 OR EQUAL BY AMERICAN STANDARD OR KOHLER	VITREOUS CHINA LAVATORY WITH BACKSPLASH COMPLYING WITH ASME 112.19.2. TOP OF RIM SHALL BE 34 INCHES AFF FOR ADA. PROVIDE WITH LAV-GUARD PROTECTORS FOR SUPPLY AND DRAIN LINES. PROVIDE JR SMITH 0700 (CONCEALED ARMS) WITH 19" ARMS 0800 (WALL SUPPORT PLATE). USE MOEN 8430 FAUCET.	1/2"	1/2"	2"
P3	SINK SINGLE BOWL	JUST MFG SL-ADA-2125-A-GR OR EQUAL BY FRANKE, ELKAY OR MOEN	TOP MOUNTED 18 GA STAINLESS STEEL. MAX BOWL DEPTH 6 INCHES FOR WHEEL CHAIR ACCESSIBILITY-USE JUST MFG FAUCET SET JPD-1550 OR EQUAL BY MOEN, DELTA OR KOHLER.	1/2"	1/2"	2"
P4	THERMOSTATIC MIXING VALVE	WATTS LFMMV OR EQUAL BY LAWLER OR LEONARD VALVE	ASSE STANDARD 1069 OR 1070 APPROVED WITH 1/2 INCH FEMALE NPT INLET AND OUTLET CONNECTIONS, BRASS BODY, AND INTEGRAL MOUNTING HOLES. TAMPER RESISTANT THERMOPLASTIC ENCLOSURE. SINGLE REPLACEABLE CARTRIDGE DESIGN.	1/2"	1/2"	-
P5	REFRIGERATOR VALVE BOX	DATEY OR APPROVED EQUAL	HIGH IMPACT POLYSTYRENE BOX WITH 1/4 TURN BRASS BALL VALVE. COMPLIANT WITH NSF 61, SECTION 9.	-	1/2"	-
P6	EXPANSION TANK	AMTROL ST-5 OR EQUAL BY WATTS OR BELL & GOSSETT	INSTALL ON COLD WATER LINE BETWEEN WATER HEATER AND RPZ	-	3/4"	-
P7	SINGLE LAV TANKLESS ELEC WATER HEATER	STIEBEL ELTRON MINI-E 3-1 OR APPROVED EQUAL	SINGLE POINT TANKLESS THERMOSTATIC ELECTRIC WATER HEATER. 3 kW AT 120V. 40°F TEMPERATURE RISE AT 0.5 GPM. DESIGNED TO MEET 105-110°F OUTLET TEMPERATURE AT 0.5 GPM. INSTALL LOW FLOW AERATORS SUPPLIED WITH UNIT. UL LISTED.	3/8"	3/8"	-
P8	WASHING MACHINE SHUTOFF BOX	WATTS SERIES 2MZ DVB OR APPROVED EQUAL	SINGLE-HANDLE WASH MACHINE SHUTOFF VALVE. THE BALL-TYPE VALVE SHALL SIMULTANEOUSLY CONTROL THE FLOW OF BOTH HOT AND COLD WATER TO THE APPLIANCE AND BE FITTED IN A DECORATIVE RECESSED WALL BOX. THE DECORATIVE WALL BOX SHALL HAVE A PROVISION FOR 1-1/2 INCH AND 2 INCH DRAIN PIPING AND A DECORATIVE COVER. RATED FOR 150 PSI AND 180°F MAXIMUM.	1/2"	1/2"	-
P9	DRINKING FOUNTAIN	OASIS PGBACSL OR EQUAL BY ELKAY OR STERN WILLIAMS	ADA COMPLIANT FOR ADULT AND CHILD. 8.0 GPH OF 50°F WATER AT 90°F AMBIENT. PROVIDE ACCESSORY APRON FOR ADA COMPLIANCE AS NECESSARY	-	3/8"	2"
P10	1" DOUBLE CHECK VALVE	WATTS 007M1QT OR EQUAL BY CONBRACO OR WILKINS	ASSEMBLY SHALL CONSIST OF TWO POSITIVE SEATING CHECK MODULES WITH CAPTURED SPRINGS AND RUBBER SEAT DISCS. THE CHECK MODULE SEATS AND SEAT DISCS SHALL BE REPLACEABLE. SERVICE OF ALL INTERNAL COMPONENTS SHALL BE THROUGH A SINGLE ACCESS COVER SECURED WITH STAINLESS STEEL BOLTS. THE ASSEMBLY SHALL ALSO INCLUDE TWO RESILIENT SEATED ISOLATION VALVES; FOUR TSP MOUNTED, RESILIENT SEATED TEST COCKS. ASSEMBLY SHALL MEET THE REQUIREMENTS OF ASSE 1015 AND AWWA C510	-	1"	-
FCD	FLOOR CLEANOUT	ZURN, WATTS, JR SMITH	EPOXY COATED CAST IRON FLOOR CLEANOUT WITH ROUND ADJUSTABLE GASKETED NICKEL BRONZE TOP, REMOVABLE GAS TIGHT GASKETED BRASS CLEANOUT PLUG, AND NO HUB INLET.	-	-	4"
AAV	AIR ADMITTANCE VALVE	STUDOR REDIVENT OR APPROVED EQUAL	ANSI/ASSE 1051 LISTED. NSF STANDARD 14. PROVIDE PVC OR ABS CONNECTOR AS NECESSARY. CONNECT VALVE TO PIPING PER MANUFACTURER. INSTALL IN THE VERTICAL, UPRIGHT POSITION AFTER ROUGH-IN AND PRESSURE TESTING OF THE SYSTEM. PROVIDE WALL BOX IF NOT ABOVE CEILING OR OTHERWISE CONCEALED.	-	-	2"

PLUMBING LINES SIZING TABLE									
FIXTURE TYPE	OCCUPANCY	QTY	DRAINAGE FIXTURE UNITS		WATER SUPPLY FIXTURE UNITS				
			EACH	TOTAL	CW	HW	CW & HW	HW TOTAL	TOTAL
WATER CLOSET (FLUSH TANK)	PUBLIC	2	4.00	8.00	5.00	0.00	5.00	0.00	10.00
LAVATORY	PUBLIC	3	1.00	3.00	1.50	1.50	2.00	4.50	6.00
WASHING MACHINE	PRIVATE	1	2.00	2.00	1.00	1.00	1.40	1.00	1.40
EMERGENCY FLOOR DRAIN	PUBLIC	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DEMAND FIXTURE	GPM	QTY	TOTAL GPM	TOTAL DFU	13.0
REFRIGERATOR	0.5	1	0.50	TOTAL WFSUs	5.5 / 17.4
HOSE BIBBS	5	1	5.00	GPM	8.00 / 14.92
				OTHER FIXTURES* GPM	5.00 / 5.50
				TOTAL GPM	13.00 / 20.42

MINIMUM BUILDING DRAIN SIZE	4"	CONNECT TO EXISTING TAPS
MINIMUM WATER LINE SIZE	1"	

DO NOT TAP WATER LINE AHEAD OF DOUBLE CHECK VALVE.

LINETYPE LEGEND

- 140 D HOT WATER RECIRCULATING
- 140 D HOT WATER RETURN
- COLD WATER SUPPLY
- HOT WATER SUPPLY
- SANITARY SEWER LINE
- VENT LINE

ELECTRIC WATER HEATER SCHEDULE											
MARK	MFG	MODEL	TANK VOL	INPUT	RECOVERY	SET POINT	POWER		CONNECTIONS		OPTIONS
			GALS	kW	GPH @ 60° ΔT	°F	VOLTAGE	PHASE	HOT	COLD	
WH	RHEEM	EGSP20	20	4.5	30	110	208	1	3/4	3/4	1-5

1. PROVIDE GALVANIZED STEEL SAFETY PAN
2. UL 174 LISTED
3. PROVIDE ASME LISTED TEMPERATURE AND PRESSURE RELIEF VALVE
4. MEET OR EXCEED ENERGY FACTOR REQUIREMENTS OF ASHRAE 90.1-2007
5. OR EQUAL BY A.O. SMITH, BRADFORD WHITE, OR STATE

GENERAL PLUMBING NOTES:

ADMINISTRATIVE:

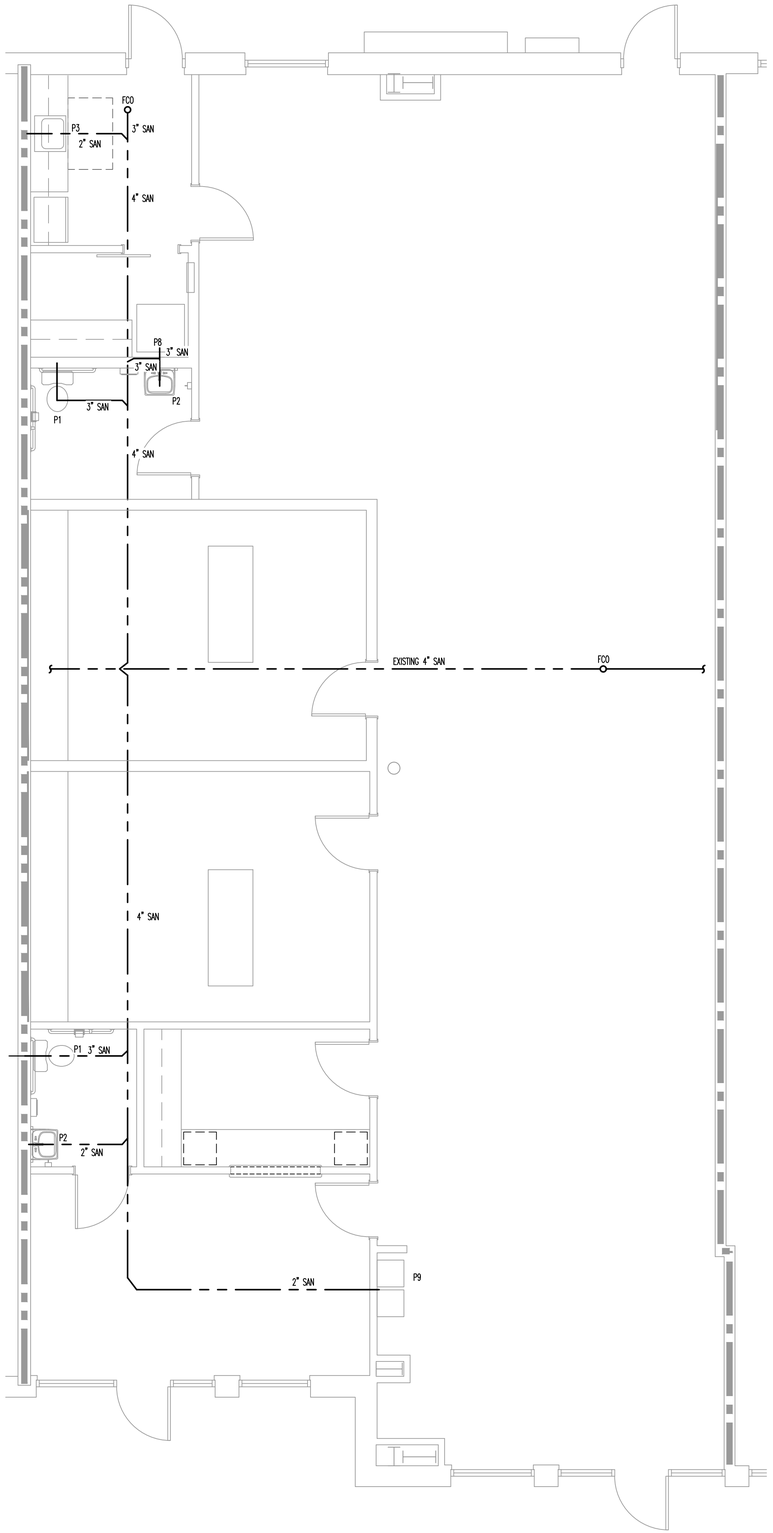
1. THE FOLLOWING ABBREVIATIONS SHALL APPLY TO NOTES AND PLANS: PC – PLUMBING CONTRACTOR, EC – ELECTRICAL CONTRACTOR, MC – MECHANICAL CONTRACTOR, GC – GENERAL CONTRACTOR, FASC – FIRE ALARM SYSTEM CONTRACTOR.
2. "PROVIDE" MEANS TO FURNISH AND INSTALL. THE PLUMBING CONTRACTOR SHALL ALSO INSTALL MATERIALS FURNISHED BY OTHERS AND THE GENERAL CONTRACTOR.
3. THE PC SHALL BE RESPONSIBLE FOR A COMPLETE AND OPERATIONAL SYSTEM AS DESCRIBED BY THESE PLANS AND SPECIFICATIONS.
4. ALL MATERIALS AND EQUIPMENT SHALL BE DELIVERED TO THE SITE AND UNLOADED AT AN APPROVED LOCATION. PC SHALL PROTECT ALL MATERIALS AND EQUIPMENT FROM BREAKAGE, THEFT, AND THE ELEMENTS. ALL MATERIALS AND EQUIPMENT SHALL REMAIN THE PROPERTY OF THE PC UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE OWNER.
5. ALL MATERIALS USED SHALL BE NEW AND FREE OF DEFECTS. ANY MATERIALS FOUND TO BE DEFECTIVE SHALL BE REPLACED AT NO EXPENSE TO THE OWNER. ALL MATERIALS AND EQUIPMENT SHALL BEAR APPROVAL FROM UL OR AN APPROVED THIRD PARTY AGENCY. WHERE A MANUFACTURER AND MODEL NUMBER IS GIVEN, IT IS TO ESTABLISH A STANDARD OF QUALITY AND NOT TO LIMIT PRODUCTS TO A PARTICULAR MANUFACTURER. PRODUCTS DETERMINED TO BE EQUAL BY THE ENGINEER WILL BE ACCEPTED.
6. THE PLUMBING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 NORTH CAROLINA PLUMBING CODE AND ANY APPLICABLE LOCAL CODES. WHERE A CONFLICT EXISTS BETWEEN THE ABOVE REQUIREMENTS, THE CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ENGINEER OR IN THE EVENT ANY PART OF THESE PLANS CONFLICTS WITH THE ABOVE REQUIREMENTS.
7. THE PC SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS NECESSARY FOR THE COMPLETION OF THE WORK UNDER THIS CONTRACT.
8. DO NOT SCALE THESE DRAWINGS–REFER TO ARCHITECTURAL SHEETS FOR DIMENSIONS.
9. THESE PLANS ARE DIAGRAMMATIC. THE PC SHALL ADJUST THE LOCATIONS OF EQUIPMENT, FIXTURES, PIPING, ETC, TO ACCOMMODATE PLANNED AND ENCOUNTERED INTERFERENCES. THE DRAWINGS DO NOT SHOW ALL BENDS, OFFSETS, AND FITTINGS THAT MAY BE REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. THE PC SHALL MAKE ALLOWANCES FOR SUCH DEVIATIONS AND CONTINGENCIES IN BID TO IMPLEMENT THEM WITHOUT ADDITIONAL COST TO THE OWNER. THE PC SHALL VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS. CONTRACTOR SHALL CONTACT THE ENGINEER TO RESOLVE ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS. TO AVOID POTENTIAL CONFLICTS, COORDINATE WITH OTHER TRADES PRIOR TO THE START OF CONSTRUCTION. ALL UNDERGROUND UTILITIES SHALL BE LOCATED PRIOR TO ANY DIGGING.
10. TRENCHING, COMPACTION, AND BACKFILL SHALL BE BY PC AND SHALL BE IN ACCORDANCE WITH SECTION 306 OF THE NC PLUMBING CODE. UNDERGROUND LINES SHALL BE LOCATED SUCH THAT THEY DO NOT ENDANGER FOOTINGS OR FOUNDATION WALLS.
11. THE PC SHALL PROVIDE FIRESTOPPING AT ALL PENETRATIONS OF RATED FLOOR/CEILING ASSEMBLIES AND RATED WALL ASSEMBLIES TO PRESERVE OR RESTORE THE FIRE RESISTANCE RATING. SEAL ALL PENETRATIONS USING A UL LISTED SYSTEM FOUND IN THE UL DIRECTORY SPECIFIC TO THE UL LISTING OF THE ASSEMBLY BEING PENETRATED. SEE ARCHITECTURAL PLANS FOR UL RATED ASSEMBLIES SPECIFIC TO THE PROJECT.
12. SYSTEM TESTING SHALL BE PERFORMED BY PLUMBING CONTRACTOR IN ACCORDANCE WITH NORTH CAROLINA PLUMBING CODE, SECTIONS 312.2, 312.3, AND 312.5.
13. PC SHALL DISINFECT THE ENTIRE DOMESTIC WATER PIPING SYSTEM IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
14. AT THE COMPLETION OF WORK AND PRIOR TO ACCEPTANCE BY OWNER, THE PC SHALL CLEAN ALL EXPOSED FIXTURES, MATERIALS, AND EQUIPMENT UNDER THIS CONTRACT.
15. PC SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE ALL APPLICABLE CONSTRUCTION WASTE IS RECYCLED DURING THE CONSTRUCTION PHASE OF THE PROJECT.

MATERIALS:

1. ALL OVERHEAD DOMESTIC WATER PIPING SHALL BE TYPE L COPPER WITH 95/5 LEAD FREE SOLDER, AND ALL BELOW GRADE WATER PIPING SHALL BE TYPE K COPPER WITH NO JOINTS. ALL PIPING SHALL HAVE MANUFACTURER'S NAME AND THE APPLICABLE STANDARD TO WHICH IT WAS MANUFACTURED CLEARLY MARKED ON EACH LENGTH. PIPING SHALL COMPLY WITH ASTM B-88. USE BRAZED JOINTS ON ALL COPPER PIPING 1-1/2 INCH AND LARGER. ALL PIPE AND PIPE FITTINGS, INCLUDING VALVES AND FAUCETS, USED IN THE WATER DISTRIBUTION SYSTEM SHALL HAVE A MAXIMUM LEAD CONTENT OF .25–PERCENT AND SHALL CONFORM TO NSF 61. HOT WATER DISTRIBUTION PIPE AND TUBING SHALL HAVE A MINIMUM PRESSURE RATING OF 100 PSI AT 180°F. COLD WATER DISTRIBUTION PIPE AND TUBING SHALL HAVE A MINIMUM PRESSURE RATING OF 160 PSI AT 73.4°F. DO NOT INSTALL PEX OR CPVC PIPING IN RETURN AIR PLENUMS.
2. BALL VALVES SHALL HAVE BRASS BODY, FULL PORT, CHROME PLATED BALL, WITH TEFLON SEATS, 150 PSI WSP, AND COMPLY WITH MSS SP–110. GATE VALVES SHALL HAVE BRONZE BODY, CLASS 150, AND COMPLY WITH MSS SP–80, TYPE 2 STANDARD. VALVE BODY SHALL BE ASTM B 62, BRONZE WITH INTEGRAL SEAT AND UNION RING BONNET. ENDS SHALL BE THREADED OR SOLDER WITH COPPER–SILICON BRONZE STEM AND SOLID–WEDGE BRONZE DISC. INSTALL VALVES IN LOCATIONS THAT PERMIT EASY ACCESS WITHOUT DAMAGE TO BUILDING OR FINISHED MATERIALS; PROVIDE ACCESS DOORS IF REQUIRED. VALVES SHALL BE BY NIBCO, WATTS, OR STOCKHAM.
3. COLD WATER LINES SHALL BE INSULATED WITH 1/2 INCH THICK FIBROUS GLASS INSULATION WITH A FLAME DENSITY RATING LESS THAN 25 AND A SMOKE DENSITY RATING LESS THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84. HOT WATER LINES UP TO 2 INCHES DIAMETER SHALL HAVE 1 INCH THICK INSULATION CONFORMING TO THE SAME STANDARD. PIPING LARGER THAN 2 INCHES SHALL RECEIVE 1-1/2 INCH THICK INSULATION. CLOSED CELL RUBBER INSULATION MEETING THE SMOKE AND FLAME RATINGS ABOVE MAY BE SUBSTITUTED FOR FIBROUS GLASS TYPE IF SO DESIRED. INSULATION INSTALLED ON PIPING OPERATING BELOW AMBIENT TEMPERATURES MUST HAVE A CONTINUOUS VAPOR RETARDER. ALL JOINTS, SEAMS AND FITTINGS MUST BE SEALED. ON SYSTEMS OPERATING ABOVE AMBIENT, THE BUTT JOINTS SHOULD NOT BE SEALED. ON COLD SURFACES WHERE A VAPOR SEAL MUST BE MAINTAINED, INSULATION SHALL BE APPLIED WITH A CONTINUOUS, UNBROKEN MOISTURE AND VAPOR RETARDER. ALL HANGERS, SUPPORTS, ANCHORS, OR OTHER PROJECTIONS SECURED TO COLD SURFACES SHALL BE INSULATED AND VAPOR SEALED TO PREVENT CONDENSATION. ALL PIPE INSULATION SHALL BE CONTINUOUS THROUGH WALLS, CEILING OR FLOOR OPENINGS, OR SLEEVES EXCEPT WHERE FIRESTOP OR FIRESAFING MATERIALS ARE REQUIRED. INSULATION SHALL HAVE A FACTORY APPLIED ALL–SERVICE JACKET WITH SELF–SEALING LAP. WHITE–KRAFT PAPER BONDED TO ALUMINUM FOIL AND REINFORCED WITH GLASS FIBERS; CONFORMING TO ASTM C 1136 TYPE 1; VAPOR RETARDER; WITH A SELF–SEALING ADHESIVE. VERIFY THAT PIPING HAS BEEN TESTED, SURFACES ARE CLEAN AND DRY, AND ALL FOREIGN MATERIALS ARE REMOVED BEFORE APPLYING INSULATION MATERIALS. INSULATION SHALL BE BY KNAUF, ARMACELL, JOHNS–MANVILLE, OR OWENS–CORNING.
4. ALL INSULATION CONTAINING FIBROUS MATERIALS EXPOSED TO AIRFLOW SHALL BE RATED FOR THAT EXPOSURE OR SHALL BE ENCAPSULATED. INSULATING PROPERTIES FOR ALL MATERIALS SHALL MEET OR EXCEED INDUSTRY STANDARDS. POLYSTYRENE PRODUCTS SHALL MEET ASTM C578 91. ALL INSULATION SHALL BE LOW–EMITTING WITH NOT GREATER THAN 0.05 PPM FORMALDEHYDE EMISSIONS. THE MAXIMUM FLAME SPREAD AND SMOKE DEVELOPED INDEX FOR INSULATION SHALL MEET THE REQUIREMENTS OF THE LOCAL CODES AND ORDINANCES ADOPTED BY THE JURISDICTION IN WHICH THE BUILDING IS LOCATED.
5. FAUCETS AND FIXTURE FITTINGS SHALL CONFORM TO ASME A112.18.1. FAUCETS AND FIXTURE FITTINGS THAT SUPPLY DRINKING WATER FOR HUMAN CONSUMPTION SHALL CONFORM TO THE REQUIREMENTS OF NSF 61, SECTION 9. FIXTURE FITTINGS, FAUCETS, AND DIVERTERS SHALL BE INSTALLED AND ADJUSTED SO THAT THE FLOW OF HOT WATER FROM THE FITTINGS CORRESPONDS TO THE LEFT HAND SIDE OF THE FIXTURE FITTING.
6. BACKFLOW PREVENTION SHALL BE IN ACCORDANCE WITH SECTION 608.13 OF THE NC PLUMBING CODE AND THE LOCAL AUTHORITY HAVING JURISDICTION. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS SHALL CONFORM TO ASSE 1013 OR AWWA C511. THE RELIEF OPENING SHALL DISCHARGE BY AIR GAP. AIR GAPS SHALL COMPLY WITH ASME A112.1.1 AND AIR GAP FITTINGS WITH ASME A112.1.3. DOUBLE CHECK VALVE ASSEMBLIES SHALL CONFORM TO ASSE 1015 OR AWWA C510. ACCESS TO BACKFLOW PREVENTERS SHALL BE PROVIDED AS SPECIFIED BY THE INSTALLATION INSTRUCTIONS OF THE APPROVED MANUFACTURER.
7. FOR BELOW GRADE SANITARY WASTE PIPING, PC SHALL USE SERVICE WEIGHT CAST IRON PIPE WITH COMPRESSION JOINTS (ASTM A 74). USE MINIMUM 2 INCH SIZE UNDERGROUND. SOLID WALL SCHEDULE 40 PVC (ASTM D 2665) WITH SCHEDULE 40 SOCKET TYPE PIPE FITTINGS (ASTM D 3311) MAY ALSO BE USED. DO NOT USE PVC PIPE FOR APPLICATIONS WHERE THE WASTE WATER TEMPERATURE EQUALS OR EXCEEDS 140°F OR IF THE BUILDING HEIGHT EXCEEDS 75 FEET.
8. FOR ABOVE GRADE SANITARY WASTE AND VENT PIPING, USE SERVICE WEIGHT CAST IRON NO–HUB TYPE WITH COUPLINGS (CISPI 301). SOLID WALL SCHEDULE 40 PVC (ASTM D 2665) WITH SCHEDULE 40 SOCKET TYPE FITTINGS (ASTM D 3311) MAY BE USED IF PERMITTED BY LOCAL CODE, EXCEPT IN BUILDINGS EXCEEDING 75 FEET IN HEIGHT. DO NOT INSTALL PVC IN RETURN AIR PLENUMS. ALL VENT AND BRANCH VENT PIPES SHALL BE SO GRADED AND CONNECTED AS TO DRAIN BACK TO THE DRAINAGE PIPE BY GRAVITY. BRANCH VENTS EXCEEDING 40 FEET IN DEVELOPED LENGTH SHALL BE INCREASED BY ONE NOMINAL SIZE FOR THE ENTIRE DEVELOPED LENGTH OF THE PIPE.
9. PC SHALL PROVIDE ALL WATER HEATERS (WATTAGE/INPUT AND CAPACITY AS NOTED IN SCHEDULE). ALL WATER HEATERS SHALL BE THIRD PARTY CERTIFIED; PROVIDE PANS FOR WATER HEATERS IN ACCORDANCE WITH 504.7 OF THE NC PLUMBING CODE. ELECTRICAL CONNECTIONS SHALL BE BY ELECTRICAL CONTRACTOR, PC SHALL COORDINATE WITH EC ON ELECTRICAL CHARACTERISTICS OF THE EQUIPMENT PROVIDED.

METHODS:

1. WATER SERVICE PIPE AND THE BUILDING SEWER SHALL BE SEPARATED BY 5 FEET OF UNDISTURBED OR COMPACTED EARTH IN ACCORDANCE WITH 603.2. PROVIDE ALL FITTINGS, VALVES, AND OTHER ACCESSORIES AS NECESSARY FOR A COMPLETE INSTALLATION. ALL DOMESTIC WATER PIPING SHALL BE CONCEALED IN FINISHED AREAS. ANY OPEN ENDS SHALL BE PROTECTED UNTIL FINAL CONNECTIONS ARE MADE.
2. ABOVE GRADE DOMESTIC WATER PIPING SHALL BE SLOPED AT A MINIMUM OF 1/32 INCH PER FOOT AND ARRANGED TO DRAIN AT LOW POINTS. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT. ROUTE PIPING IN AN ORDERLY MANNER–PARALLEL OR PERPENDICULAR TO WALLS WHEN POSSIBLE–AND MAINTAIN GRADIENT. EACH SUPPLY BRANCH LINE SERVING MORE THAN ONE FIXTURE SHALL HAVE A SHUTOFF VALVE INSTALLED TO ISOLATE ALL FIXTURES AND PIECES OF EQUIPMENT SUPPLIED BY THE BRANCH LINE. THE SHUTOFF VALVE SHALL BE LABELED AND LOCATED AS CLOSE TO THE CONNECTION TO THE SUPPLY MAIN AND RISER AS POSSIBLE. PROVIDE A FULL–OPEN VALVE ON THE BASE OF EVERY WATER RISER PIPE AND ON THE TOP OF EVERY WATER DOWN–FEED PIPE. PROVIDE VALVE HANDLE EXTENSIONS AS NECESSARY FOR INSULATION.
3. IT SHALL BE THE RESPONSIBILITY OF THE PC TO SUSPEND AND SUPPORT ALL PIPING SYSTEMS FOLLOWING RECOGNIZED ENGINEERING PRACTICES AND USING STANDARD, COMMERCIALLY ACCEPTED PIPE HANGERS AND SUSPENSION EQUIPMENT. ALL FIXTURES, DEVICES, AND EQUIPMENT SHALL BE SECURELY MOUNTED TO THE BUILDING STRUCTURE AND SHALL NOT RELY ON CEILING OR WALL SURFACES FOR SUPPORT. THE SUPPORT ATTACHMENT SHALL SUPPORT THE WEIGHT OF THE FIXTURE OR EQUIPMENT PLUS THE WEIGHT OF THE SUPPORT ATTACHMENT ITSELF. SUPPORT FROM THE TOP CHORD OF THE ROOF JOISTS, GIRDERS, AND BEAMS. THE BOTTOM CHORD IS NOT TO BE USED FOR EQUIPMENT AND PIPING SUPPORT. HANGERS SHALL NOT BE ATTACHED TO CORRUGATED STEEL DECKING. USE STEEL HANGERS FOR STEEL AND PLASTIC PIPE AND COPPER OR COPPER–PLATED HANGERS FOR COPPER PIPE. PROVIDE PROTECTION FOR COPPER PIPING IN CONTACT WITH DISSIMILAR METALS. WHERE COPPER PIPING IS SUPPORTED ON HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH OTHER METALS. IN GENERAL, HANGERS SHALL BE CLEVIS TYPE, STANDARD WEIGHT. FOR PIPING, HANGER SPACING SHALL BE IN ACCORDANCE WITH TABLE 308.5 OF THE NC PLUMBING CODE. HANGERS AND ACCESSORIES SHALL BE GRINNELL, MASON, OR B–LINE.
4. SLEEVE ALL PIPES PASSING THROUGH PARTITIONS, WALLS, AND FLOORS. SLEEVES IN FLOORS AND INTERIOR WALLS OF POURED IN PLACE CONCRETE, BRICK, TILE, OR MASONRY SHALL BE SCHEDULE 40 STEEL PIPE, MACHINE CUT. SLEEVES IN GYPSUM BOARD WALLS SHALL BE 22 GAUGE, ROLLED GALVANIZED SHEET METAL. TACK WELD ON THE LONGITUDINAL SEAM. PROVIDE SLEEVES WHERE PIPES PASS THROUGH FLOORS AND WALLS ABOVE AND BELOW CEILINGS. PROVIDE SPLIT PIPE SLEEVES IN NEW WALLS BUILT UP AROUND EXISTING PIPES. TACK WELD SPLIT SLEEVES TOGETHER. SLEEVES IN WALLS SHALL BE INSTALLED FLUSH WITH THE WALL. SLEEVES IN FLOORS SHALL EXTEND 3/4 INCH ABOVE THE FLOOR–EXCEPT THEY SHALL BE FLUSH FOR 2 HOUR RATED FLOORS–AND SHALL BE FLUSH WITH THE STRUCTURE BELOW. EACH SLEEVE SHALL HAVE AN INSIDE DIAMETER 1 INCH LARGER THAN THE OUTSIDE DIAMETER OF THE COVERING OF EACH COVERED PIPE TO ALLOW CONTINUOUS INSULATION–BUT NOT LESS THAN TWO PIPE SIZES LARGER THAN EACH UNCOVERED. ANNULAR SPACES BETWEEN SLEEVES AND PIPES SHALL BE FILLED OR CAULKED IN AN APPROVED MANNER.
5. THE TOP OF WATER PIPES INSTALLED BELOW GRADE OUTSIDE THE BUILDING SHALL BE BELOW THE FROST LINE OR A MINIMUM OF 12 INCHES BELOW FINISHED GRADE WHICHEVER IS GREATER. WATER PIPING INSTALLED IN A WALL EXPOSED TO THE EXTERIOR SHALL BE LOCATED ON THE HEATED SIDE OF THE WALL INSULATION. WATER PIPING INSTALLED IN AN UNCONDITIONED UTILITY ROOM OR UNCONDITIONED ATTIC SHALL BE INSULATED TO A MINIMUM OF R6.5 DETERMINED IN ACCORDANCE WITH ASTM C 177.
6. HOT WATER PROVIDED TO PUBLIC HAND–WASHING FACILITIES/LAVATORIES SHALL BE TEMPERED WATER DELIVERED THROUGH AN APPROVED WATER–TEMPERATURE LIMITING DEVICE THAT CONFORMS TO ASSE 1070 OR CSA B125.3.
7. INSULATE ALL EXPOSED WASTE AND SUPPLY PIPING UNDER LAVATORIES, SINKS, AND ELECTRIC WATER COOLERS WITH THE HANDI–LAV GUARD INSULATION KIT BY TRUEBRO OR EQUAL.
8. POTABLE WATER OUTLETS SHALL BE PROTECTED FROM BACKFLOW IN ACCORDANCE WITH 608.15. PRESSURE TYPE VACUUM BREAKERS SHALL CONFORM TO ASSE 1020 AND SPILPROOF VACUUM BREAKERS SHALL COMPLY WITH ASSE 1056. HOSE–CONNECTION VACUUM BREAKERS SHALL CONFORM TO ASSE 1011, ASSE 1019, ASSE 1035, OR ASSE 1052. CONNECTIONS TO BEVERAGE DISPENSERS, COFFEE MACHINES, AND NON–CARBONATED BEVERAGE DISPENSERS SHALL BE PROTECTED BY A BACKFLOW PREVENTER IN ACCORDANCE WITH ASSE 1022.
9. THE PC SHALL INSTALL WATER HAMMER ARRESTORS ON BRANCH LINES WITH QUICK CLOSING VALVES PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. WATER HAMMER ARRESTORS SHALL CONFORM TO ASSE 1010.
10. THE PC SHALL PROVIDE CHECK VALVES AT ALL FIXTURES WITH THREADED OUTLETS AS REQUIRED BY CODE. TRAP PRIMERS SHALL BE PROVIDED AS SHOWN ON THE PLANS OR AS REQUIRED.
11. ADJUST STOPS AND VALVES FOR INTENDED FLOW RATE TO FIXTURES WITHOUT SPLASHING, NOISE, OR OVERFLOW.
12. BEFORE COMMENCING WORK, CHECK INVERT ELEVATIONS REQUIRED FOR SEWER CONNECTIONS, CONFIRM INVERTS, AND VERIFY THESE CAN BE PROPERLY CONNECTED TO WITH SLOPE FOR DRAINAGE AND COVER TO AVOID FREEZING. ONCE INVERTS AND FALL HAVE BEEN ESTABLISHED, AND INSTALL ALL DRAINS, STACKS, VENTS, FLOOR DRAINS, AND CLEANOUTS NECESSARY FOR A COMPLETE INSTALLATION.
13. ALL SANITARY SEWER PIPING IS BELOW GRADE OR WITHIN WALLS UNLESS OTHERWISE NOTED. ALL SANITARY VENT PIPING IS ABOVE THE CEILING OR WITHIN WALLS UNLESS OTHERWISE NOTED. SOIL AND WASTE PIPING SHALL BE INSTALLED TO PROVIDE PROTECTION AGAINST FREEZING PER 305.6.1. WASTE AND SOIL LINES LEAVING THE BUILDING MUST HAVE A MINIMUM COVER OF 3 INCHES.
14. SOIL AND WASTE LINES 2–1/2 INCHES AND SMALLER SHALL BE SLOPED AT 1/4 INCH PER FOOT MINIMUM. SOIL AND WASTE LINES 3 INCHES TO 6 INCHES IN DIAMETER SHALL BE SLOPED AT 1/8 INCH PER FOOT MINIMUM.
15. FOR WATER CLOSET WASTE CONNECTIONS, A 4 INCH BY 3 INCH CLOSET BEND SHALL BE ACCEPTABLE. WHERE A 3 INCH BEND IS UTILIZED ON WATER CLOSETS, A 4 INCH BY 3 INCH FLANGE SHALL BE INSTALLED TO RECEIVE THE FIXTURE HORN.
16. FOR PLASTIC PIPE SIZES GREATER THAN 6 INCHES, AND OTHER PIPE SIZES GREATER THAN 4 INCHES, RESTRAINTS SHALL BE PROVIDED FOR DRAIN PIPES AT ALL CHANGES IN DIRECTION AND AT ALL CHANGES IN DIAMETER GREATER THAN TWO PIPE SIZES. BRACES, BLOCKS, RODDING, BACKFILL AND OTHER SUITABLE METHODS AS SPECIFIED BY THE COUPLING MANUFACTURER SHALL BE UTILIZED.
17. BASES OF STACKS SHALL BE SUPPORTED BY THE BUILDING STRUCTURE, VIRGIN OR COMPACTED EARTH, OR OTHER SUITABLE MATERIAL TO SUPPORT THE WEIGHT OF THE PIPING.
18. HORIZONTAL DRAIN PIPES SHALL HAVE CLEANOUTS IN ACCORDANCE WITH 708.10. EXTEND CLEANOUTS TO FINISHED FLOOR OR WALL SURFACE. LUBRICATE THREADED CLEANOUT PLUGS WITH A MIXTURE OF GRAPHITE AND LINSEED OIL. ENSURE CLEARANCE AT ALL CLEANOUTS FOR RODDING OF DRAINAGE SYSTEM. INSTALL FLOOR CLEANOUTS AT AN ELEVATION TO ACCOMMODATE FINISHED FLOOR. EVERY CLEANOUT SHALL BE INSTALLED TO ALLOW CLEANING IN THE DIRECTION OF FLOW OF THE DRAINAGE PIPE OR AT RIGHT ANGLES THERETO. CLEANOUTS ON 6 INCH AND SMALLER PIPES SHALL BE PROVIDED WITH A CLEARANCE OF NOT LESS THAN 18 INCHES FOR RODDING.
19. DRAINAGE PIPING FOR FUTURE FIXTURES SHALL TERMINATE WITH AN APPROVED CAP OR PLUG.
20. AIR ADMITTANCE VALVES SHALL BE INSTALLED AFTER THE DWV TESTING REQUIRED BY SECTIONS 312.2 AND 312.3. PROVIDE ACCESS TO ALL AIR ADMITTANCE VALVES PER CODE. INSTALLATION OF ALL AIR ADMITTANCE VALVES SHALL CONFORM TO SECTION 918 OF NC PLUMBING CODE. AIR ADMITTANCE VALVES SHALL CONFORM TO ASSE 1050 OR 1051.
21. INDIRECT WASTE PIPING THAT EXCEEDS 2 FEET IN DEVELOPED LENGTH MEASURED HORIZONTALLY, OR 4 FEET IN TOTAL DEVELOPED LENGTH, SHALL BE TRAPPED. THE AIR GAP BETWEEN THE INDIRECT WASTE PIPE AND THE FLOOD LEVEL RIM OF THE WASTE RECEPTOR SHALL BE A MINIMUM OF TWICE THE EFFECTIVE OPENING OF THE INDIRECT WASTE PIPE.
22. THE PC SHALL PROVIDE UNIONS FOR DISASSEMBLY AND SERVICE OF ALL FIXTURES AND OTHER RELEVANT PLUMBING EQUIPMENT. UNIONS SHALL BE GROUND–JOINT WITH BRASS SEAT. PROVI

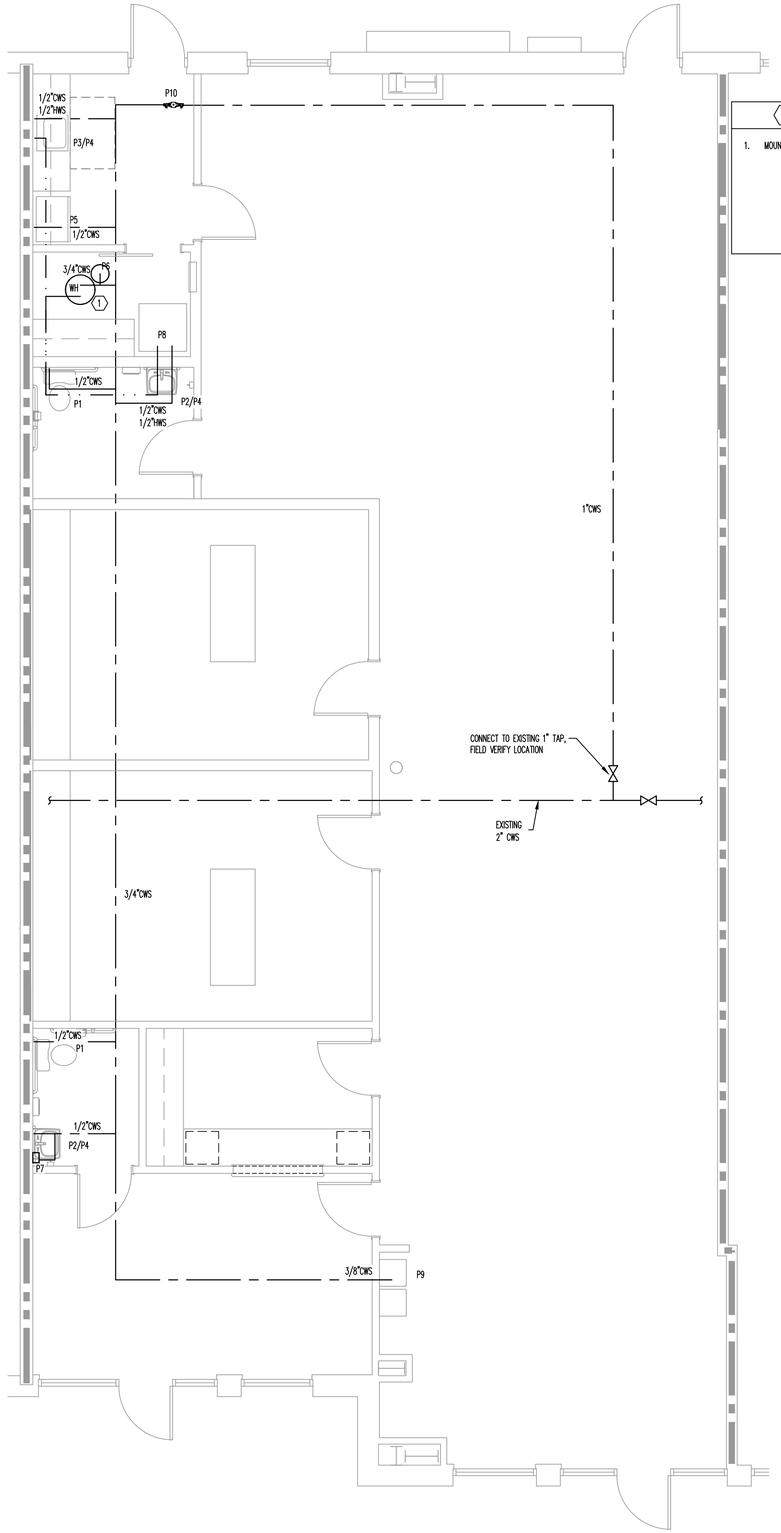


WASTE PLAN - SCALE- 1/4" = 1'-0" | 1

RATED WALL LEGEND

2 HOUR RATED WALL

3 HOUR RATED WALL



SUPPLY PLAN HEX NOTES

1. MOUNT WATER HEATER ABOVE CEILING.

SUPPLY PLAN - SCALE- 1/4" = 1'-0" | 2

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NORTH CAROLINA PROFESSIONAL SEAL 049866 ENGINEER JACOB L HAMILTON 1-30-23 SEAL

K.M. ENGINEERING CORPORATE INC. SEAL NORTH CAROLINA SEAL

UPFIT FOR

THERASPACE

2297 NC HIGHWAY 24-87, SUITE
CAMERON, NORTH CAROLINA

REVISION:

NO	DATE	DESCRIPTION
8		
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ISSUED:

NO	DATE	DESCRIPTION
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1	01/30/2023	ISSUED FOR PERMITTING/CONSTRUCTION
0		

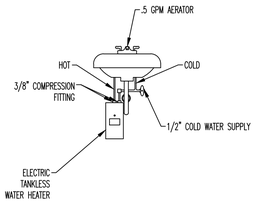
DRAWN BY: CLS
CHECKED BY: JLH

WASTE & SUPPLY PLANS

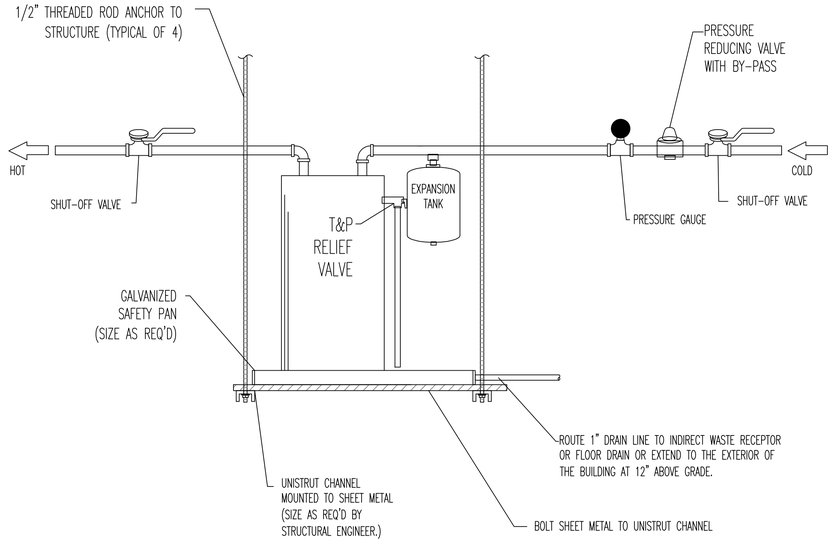
SHEET NO.

P2

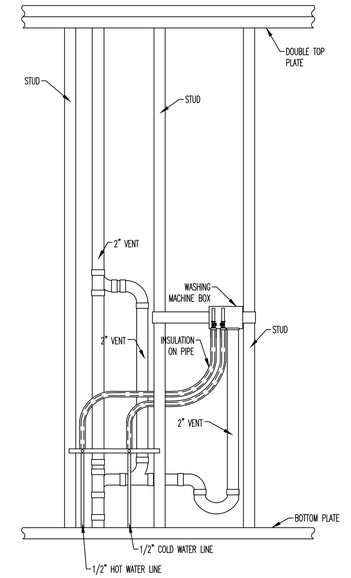
PROJECT NO: 230046



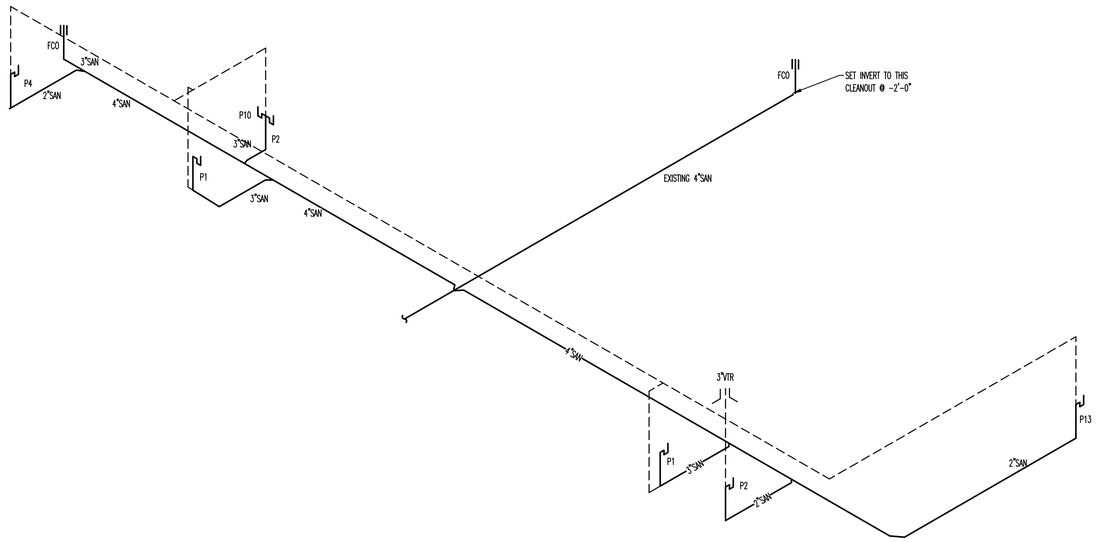
TANKLESS WATER HEATER DETAIL - NO SCALE | 1



ELECTRIC WATER HEATER ABOVE CEILING DETAIL - NO SCALE | 2

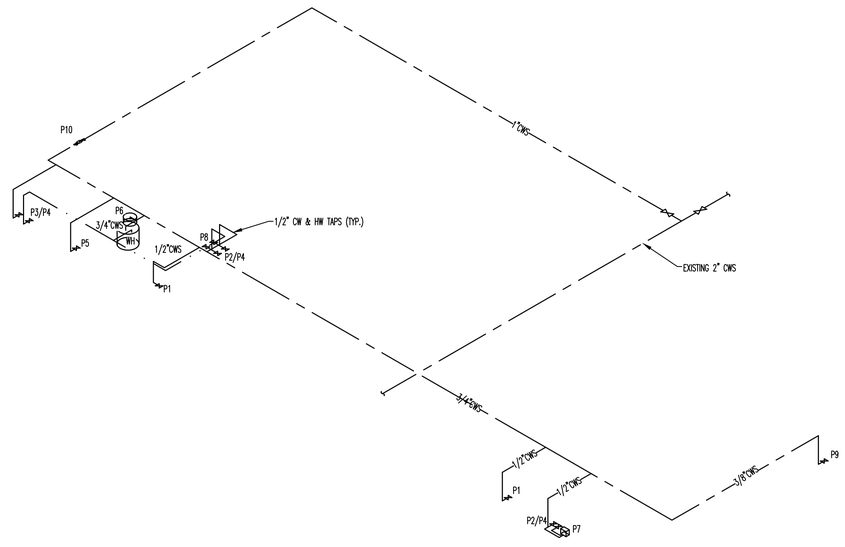


WASHING MACHINE VENTING DETAIL - NOT TO SCALE | 3



ALL VENTS MUST RISE AT LEAST 6" PRIOR TO HORIZONTAL RUN

WASTE RISER - NO SCALE | 4



SUPPLY RISER - NO SCALE | 5

Kilian Engineering, Inc.
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NORTH CAROLINA PROFESSIONAL SEAL 049322 ENGINEER JACOB L HAMILTON 1-30-23 SEAL

KILIAN ENGINEERING CORPORATE, INC. SEAL NORTH CAROLINA SEAL

UPFIT FOR
THERASPACE
2297 NC HIGHWAY 24-87, SUITE
CAMERON, NORTH CAROLINA

REVISION:

ISSUED:
ISSUED FOR PERMITTING/CONSTRUCTION — DD/MM/YYYY
01/30/2023 — DATE

DRAWN BY: CLS
CHECKED BY: JLH

WASTE & SUPPLY RISERS

SHEET NO.
P3

PROJECT NO: 230046

GENERAL MECHANICAL NOTES:

ADMINISTRATIVE:

1. THE FOLLOWING ABBREVIATIONS SHALL APPLY TO NOTES AND PLANS: PC – PLUMBING CONTRACTOR, EC – ELECTRICAL CONTRACTOR, MC – MECHANICAL CONTRACTOR, GC – GENERAL CONTRACTOR, FASC – FIRE ALARM SYSTEM CONTRACTOR.
2. "PROVIDE" MEANS TO FURNISH AND INSTALL. MC SHALL ALSO INSTALL MATERIALS FURNISHED BY OTHERS AND GENERAL CONTRACTOR AS SHOWN ON THE PLANS OR NECESSARY FOR A COMPLETE INSTALLATION.
3. THE MC SHALL BE RESPONSIBLE FOR A COMPLETE AND OPERATING SYSTEM AS DESCRIBED BY THESE PLANS AND SPECIFICATIONS.
4. ALL MATERIALS AND EQUIPMENT SHALL BE DELIVERED TO THE SITE AND UNLOADED BY THE CONTRACTOR AT AN APPROVED LOCATION. THE MC SHALL PROTECT ALL MATERIALS AND EQUIPMENT FROM BREAKAGE, THEFT, AND THE ELEMENTS. ALL MATERIALS AND EQUIPMENT SHALL REMAIN THE PROPERTY OF THE MC UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE OWNER.
5. THE MC SHALL INSTALL ALL MATERIALS AND EQUIPMENT IN ACCORDANCE WITH THE 2018 NORTH CAROLINA MECHANICAL AND BUILDING CODES AND ANY APPLICABLE LOCAL CODES. WHERE A CONFLICT EXISTS BETWEEN THE ABOVE REQUIREMENTS, THE MC SHALL OBTAIN CLARIFICATION FROM THE ENGINEER OR IN THE EVENT ANY PART OF THESE PLANS CONFLICTS WITH THE ABOVE REQUIREMENTS.
6. THE MC SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS NECESSARY FOR THE COMPLETION OF THE WORK UNDER THIS CONTRACT.
7. DO NOT SCALE THESE DRAWINGS–REFER TO ARCHITECTURAL SHEETS FOR DIMENSIONS.
8. THE MC SHALL VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS. THE MC SHALL CONTACT THE ENGINEER TO RESOLVE ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS. THE MC SHALL COORDINATE WITH OTHER TRADES PRIOR TO THE START OF CONSTRUCTION.
9. ALL MECHANICAL MATERIALS SHALL BE NEW AND FREE OF DEFECT AND LISTED AND LABELED BY UL OR AN APPROVED THIRD PARTY AGENCY. ANY MATERIALS FOUND TO BE DEFECTIVE SHALL BE REPLACED BY THE MC WITHOUT ADDITIONAL COST TO THE OWNER. WHERE A MANUFACTURER AND MODEL NUMBER IS GIVEN, THE CITED EXAMPLE IS INTENDED TO ESTABLISH A STANDARD OF QUALITY AND NOT TO LIMIT PRODUCTS TO A PARTICULAR MANUFACTURER. SUCH EXAMPLES ARE USED TO CONVEY A GENERAL STYLE, TYPE, CHARACTER, AND QUALITY OF THE PRODUCT DESIRED; PRODUCTS DETERMINED TO BE EQUAL BY THE ENGINEER WILL BE ACCEPTED.
10. THESE PLANS ARE DIAGRAMMATIC. THE MC SHALL ADJUST THE LOCATIONS OF EQUIPMENT, DUCTS, REGISTERS, GRILLES, ETC, TO ACCOMMODATE PLANNED AND ENCOUNTERED INTERFERENCES. THE DRAWINGS DO NOT SHOW ALL BENDS, OFFSETS, AND FITTINGS THAT MAY BE REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. THE MC SHALL MAKE ALLOWANCES FOR SUCH DEVIATIONS AND CONTINGENCIES IN BID TO IMPLEMENT THEM WITHOUT ADDITIONAL COST TO THE OWNER.
11. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER CONNECTIONS TO THE MECHANICAL EQUIPMENT. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING.
12. IT IS THE MC'S RESPONSIBILITY TO VERIFY THAT ITEMS FURNISHED FOR THIS CONTRACT WILL FIT IN THE SPACE AVAILABLE. THE MC SHALL MAKE FIELD MEASUREMENTS AS NECESSARY TO DETERMINE SPACE REQUIREMENTS. IF THE MC MUST ALTER EQUIPMENT DUE TO SPACE CONSIDERATIONS, THE MC SHALL PROVIDE SIZES AND SHAPES THAT FIT THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS.
13. MC SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR REGARDING THE ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT BEING PROVIDED.
14. MAINTAIN CLEARANCES FOR ALL EQUIPMENT ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR SERVICEABILITY. ALL ROOFTOP EQUIPMENT MUST BE A MINIMUM OF 10 FEET FROM ROOF EDGE.
15. MC SHALL FURNISH A BOUND SET OF OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT TO THE OWNER UPON COMPLETION OF THE PROJECT. MC SHALL PROVIDE ALL DOCUMENTATION TO THE OWNER AS NECESSARY TO SUBMIT FOR FACTORY WARRANTIES.
16. CONTRACTOR SHALL PROTECT ALL HVAC EQUIPMENT FROM CONSTRUCTION AND SHEET ROCK DUST DURING CONSTRUCTION. ALL FILTERS SHALL BE REPLACED WITH NEW AT THE COMPLETION OF THE PROJECT.
17. ALL EQUIPMENT INSTALLED ON ROOF MUST BE WITHIN THE ROOF SCREEN.
18. IF A ROOF PENETRATION IS REQUIRED AND THE ROOF IS UNDER WARRANTY, USE THE AUTHORIZED ROOFER. PROVIDE DOCUMENTATION.
19. ALL PIPING, WIRING, CONDUIT, INSULATION, EQUIPMENT, SUPPORTS, ETC. SHALL BE SUITABLE FOR INSTALLATION IN A RETURN PLENUM AS NECESSARY. COORDINATE WITH OTHER TRADES ON LOCATIONS OF ALL PLENUMS.
20. MC SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE ALL APPLICABLE CONSTRUCTION WASTE IS RECYCLED DURING THE CONSTRUCTION PHASE OF THE PROJECT.

MATERIALS:

1. THE MC SHALL PROVIDE ALL DX UNITARY HEATING AND COOLING EQUIPMENT AS SCHEDULED ON THE DRAWINGS. AIR-COOLED SPLIT SYSTEM HEAT PUMPS AND AIR-CONDITIONERS SHALL BE BY TRANE, CARRIER, OR YORK. AIR-COOLED THE MC SHALL PROVIDE FACTORY AND FIELD INSTALLED ACCESSORIES AS SCHEDULED OR AS NECESSARY FOR A COMPLETE AND OPERATIONAL HVAC SYSTEM.
2. THE MC SHALL PROVIDE ALL EXHAUST AND SUPPLY FANS AS SCHEDULED. FANS SHALL BE BY GREENHECK, LOREN COOK, TWIN CITY, OR PENNBARRY.
3. DUCTWORK IS SHOWN WITH FREE AREA DIMENSIONS. ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA LOW PRESSURE DUCT STANDARD, 2 INCH S.P.
4. EXTERNAL DUCT INSULATION AND FACTORY-INSULATED FLEXIBLE DUCT SHALL BE LEGIBLY PRINTED OR IDENTIFIED AT INTERVALS NOT GREATER THAN 36 INCHES WITH THE NAME OF THE MANUFACTURER, THE THERMAL RESISTANCE R-VALUE AT THE SPECIFIED INSTALLED THICKNESS AND THE FLAME SPREAD AND SMOKE-DEVELOPED INDEXES OF THE COMPOSITE MATERIALS. ALL DUCT INSULATION PRODUCT R-VALUES SHALL BE BASED ON INSULATION ONLY, EXCLUDING AIR FILMS, VAPOR RETARDERS OR OTHER DUCT COMPONENTS, AND SHALL BE BASED ON TESTED C-VALUES AT 75°F MEAN TEMPERATURE AT THE INSTALLED THICKNESS, IN ACCORDANCE WITH RECOGNIZED INDUSTRY PROCEDURES. THE INSTALLED THICKNESS OF DUCT INSULATION USED TO DETERMINE ITS R-VALUES SHALL BE DETERMINED AS FOLLOWS:
   - 4.1. FOR DUCT BOARD, DUCT LINER AND FACTORY-MADE RIGID DUCTS NOT NORMALLY SUBJECTED TO COMPRESSION, THE NOMINAL INSULATION THICKNESS SHALL BE USED.
   - 4.2. FOR DUCT WRAP, THE INSTALLED THICKNESS SHALL BE ASSUMED TO BE 75 PERCENT (25-PERCENT COMPRESSION) OF NOMINAL THICKNESS.
   - 4.3. FOR FACTORY-MADE FLEXIBLE AIR DUCTS, THE INSTALLED THICKNESS SHALL BE DETERMINED BY DIVIDING THE DIFFERENCE BETWEEN THE ACTUAL OUTSIDE DIAMETER AND NOMINAL INSIDE DIAMETER BY TWO.
5. ALL INSULATION CONTAINING FIBROUS MATERIALS EXPOSED TO AIRFLOW SHALL BE RATED FOR THAT EXPOSURE OR SHALL BE ENCAPSULATED. INSULATING PROPERTIES FOR ALL MATERIALS SHALL MEET OR EXCEED INDUSTRY STANDARDS. POLYSTYRENE PRODUCTS SHALL MEET ASTM C578. ALL INSULATION SHALL HAVE FORMALDEHYDE EMISSIONS NOT GREATER THAN 0.05 PPM. THE MAXIMUM FLAME SPREAD AND SMOKE DEVELOPED INDEX FOR INSULATION SHALL MEET THE REQUIREMENTS OF THE LOCAL CODES AND ORDINANCES ADOPTED BY THE JURISDICTION IN WHICH THE BUILDING IS LOCATED.
6. MASTIC USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A-95 OR UL 181B-98. MAINTAIN AMBIENT TEMPERATURES AND CONDITIONS REQUIRED BY MANUFACTURER OF ADHESIVES, MASTICS, AND INSULATION CEMENTS. DO NOT INSTALL DUCT SEALANT WHEN TEMPERATURES ARE LESS THAT THOSE RECOMMENDED BY THE SEALANT MANUFACTURER.
7. ALL ADHESIVES AND SEALANTS SHALL HAVE VOC CONTENT BELOW 20 GRAMS PER LITER AND WHICH MEET THE REQUIREMENTS OF THE MANUFACTURER OF THE PRODUCTS BEING ADHERED OR INVOLVED. ADHESIVES AND SEALANTS SHALL CONTAIN NO HEAVY METALS OR FORMALDEHYDE.
8. FACTORY-MADE AIR DUCTS AND CONNECTORS SHALL COMPLY WITH UL 181-96.
9. FLEXIBLE DUCT SHALL BE UL LISTED CLASS 0 OR CLASS 1, INSULATED, AND COMPLY WITH UL 181. FLEXIBLE DUCT SHALL BE FACTORY FORMED, COMPOSED OF SPIRAL WOUND CORROSION RESISTANT WIRE BONDED TO AN INNER FABRIC LINER. DUCT SHALL BE FACTORY INSULATED WITH A FOIL VAPOR BARRIER JACKET. CONNECT TO RIGID DUCT WITH SPIN-IN FITTING AND DAMPER. FLEXIBLE DUCTS AND AIR CONNECTORS SHALL NOT PASS THROUGH ANY FIRE RESISTANCE RATED ASSEMBLY.
10. THE MC SHALL PROVIDE ALL DIFFUSERS GRILLES, LOUVERS, AND OTHER AIR DISTRIBUTION OUTLETS AND INLETS. LOUVERS, GRILLES, AND DIFFUSERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. FOR LAY-IN CEILINGS, INSTALL SUPPORT FROM THE STRUCTURE FOR EACH DIFFUSER OR DAMPER. AIR DISTRIBUTION OUTLETS AND INLETS SHALL BE BY HART & COOLEY, PRICE, METAL-AIRE, NAILOR, OR CARNES.
11. AIR FILTERS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 605 OF THE 2018 NC MECHANICAL CODE.
12. THE MC SHALL PROVIDE ALL REFRIGERATION PIPING. ALL PIPE AND FITTINGS SHALL BE TYPE ACR HARD COPPER TUBING WITH SWEAT FITTINGS. REFRIGERATION LINES SHALL BE RUN NEATLY. WHERE A GROUP OF LINES ARE RUN, TRAPEZE HANGERS MAY BE USED. DO NOT USE CHAIN OR WIRE HANGERS. WRAP TUBING WITH RUBBER TAPE AT EACH CLAMP OR HANGER. FOR COVERED PIPES, HANGERS SHALL FIT AROUND THE OUTSIDE OF THE COVERING WITH 12 GAUGE GALVANIZED STEEL SHIELDS OF A LENGTH EQUAL TO THE OUTSIDE DIAMETER OF THE INSULATION AND COVERING 3/4 OF THE CIRCUMFERENCE OF THE INSULATION. SAGS SHALL NOT BE PERMISSIBLE. HORIZONTAL LINES SHALL PITCH DOWN NOT LESS THAN 1 INCH IN 40 FEET. INSULATE WITH 1 INCH CLOSED CELL ARMAFLEX TYPE INSULATION WITH A FLAME DENSITY RATING LESS THAN 25 AND A SMOKE DENSITY RATING LESS THAN 50. ALL JOINTS AND SPLICES IN INSULATION SHALL BE TAPED AND AIR TIGHT. SOLDER REFRIGERATION LINES USING 15 PERCENT SILVER SOLDER AND EVACUATE LINES TO 300 MICRONS. PROVIDE MOISTURE INDICATING SIGHT GLASS AND FILTER DRYER IN LIQUID LINE. PROVIDE OIL TRAPS AND DOUBLE RISERS IN REFRIGERANT SUCTION AND HOT GAS LINES WHERE REQUIRED TO PREVENT OIL SLUGGING AT THE COMPRESSOR AND INSURE PROPER LUBRICATION. MC SHALL BE RESPONSIBLE FOR SEALING LINE SET PENETRATIONS OF ANY RATED ASSEMBLIES IN ACCORDANCE WITH A SYSTEM LISTED IN THE UL DIRECTORY FOR THE SPECIFIC ASSEMBLY BEING PENETRATED. SEE ARCHITECTURAL PLANS FOR A LIST OF ALL UL FIRE RATED ASSEMBLIES.

METHODS:

1. INSULATE DUCTWORK WITH FIBERGLASS DUCT WRAP; INSTALLED R-VALUE SHALL BE A MINIMUM R-6. COVERINGS AND LININGS, INCLUDING ADHESIVES WHEN USED, SHALL HAVE A FLAME SPREAD INDEX NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84. ALL NEW DUCTWORK SHALL RECEIVE INSULATION ON THE OUTSIDE. INSTALL DUCT WRAP INSULATION WITH FACING OUTSIDE SO THAT TAPE FLAP OVERLAPS INSULATION AND FACING OF ADJACENT PIECE OF DUCT WRAP. INSULATION SHALL BE TIGHTLY BUTTED. FOR RECTANGULAR DUCTS, INSTALL SO INSULATION IS NOT EXCESSIVELY COMPRESSED AT DUCT CORNERS. STAPLE SEAMS APPROXIMATELY 6 INCHES ON CENTER WITH OUTWARD CLINCHING STAPLES. SEAL SEAMS WITH PRESSURE SENSITIVE TAPE MATCHING THE FACING. FOR RECTANGULAR DUCTS 24 INCHES IN WIDTH OR GREATER, SECURE DUCT WRAP TO THE BOTTOM OF THE DUCT WITH MECHANICAL FASTENERS SPACED 18 INCHES ON CENTER TO PREVENT SAGGING OF INSULATION. ADJACENT SECTIONS OF DUCT WRAP SHALL BE TIGHTLY BUTTED WITH THE 2 INCH TAPE FLAP OVERLAPPING. ALL TEARS, PUNCTURES, ETC. OF THE DUCT WRAP INSULATION SHALL BE SEALED WITH TAPE OR MASTIC TO PROVIDE A VAPOR TIGHT SYSTEM. INSULATION SHALL BE BY KNAUF INSULATION, OWENS CORNING CORP, OR CERTAINTEED CORPORATION.
2. VERIFY THAT DUCTS HAVE BEEN TESTED BEFORE APPLYING INSULATION MATERIALS. VERIFY THAT DUCT SURFACES ARE CLEAN, DRY AND FREE OF FOREIGN MATERIAL PRIOR TO INSULATING. DUCT COVERINGS SHALL NOT PENETRATE A WALL OR FLOOR REQUIRED TO HAVE A FIRE-RESISTANCE RATING OR REQUIRED TO BE FIRE BLOCKED.
3. WHERE DUCTS ARE CONNECTED TO EXTERIOR WALL LOUVERS AND DUCT OUTLET IS SMALLER THAN LOUVER FRAME, PROVIDE BLANK-OUT PANELS SEALING LOUVER AREA AROUND DUCT. USE SAME MATERIAL AS DUCT, PAINTED BLACK ON EXTERIOR SIDE; SEAL TO LOUVER FRAME AND DUCT.
4. PROVIDE DUCT ACCESS DOORS FOR INSPECTION AND CLEANING BEFORE AND AFTER FILTERS, COILS, FANS, AUTOMATIC DAMPERS, AT FIRE DAMPERS, COMBINATION FIRE AND SMOKE DAMPERS.
5. CONSTRUCT T's, BENDS, AND ELBOWS WITH RADII OF NOT LESS THAN 1-1/2 TIMES THE WIDTH OF THE DUCT ON CENTERLINE. WHERE NOT POSSIBLE AND WHERE RECTANGULAR ELBOWS MUST BE USED, PROVIDE TURNING VANES. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE; MAXIMUM OF 30 DEGREES DIVERGENCE UPSTREAM OF EQUIPMENT AND 45 DEGREES CONVERGENCE DOWNSTREAM.
6. IT SHALL BE THE RESPONSIBILITY OF THE MC TO SUSPEND AND SUPPORT ALL EQUIPMENT, DUCTWORK, DIFFUSERS, AND OTHER MATERIALS FOLLOWING RECOGNIZED ENGINEERING PRACTICES AND USING STANDARD, COMMERCIALLY ACCEPTED HANGERS AND SUSPENSION EQUIPMENT. ALL HVAC EQUIPMENT SHALL BE SECURELY MOUNTED TO THE BUILDING STRUCTURE AND SHALL NOT RELY ON CEILING OR WALL SURFACES FOR SUPPORT. THE SUPPORT ATTACHMENT SHALL SUPPORT THE WEIGHT OF THE EQUIPMENT PLUS THE WEIGHT OF THE SUPPORT ATTACHMENT ITSELF. SUPPORT FROM THE TOP CHORD OF THE ROOF JOISTS, GIRDERS, AND BEAMS. THE BOTTOM CHORD IS NOT TO BE USED FOR EQUIPMENT OR PIPING SUPPORT. HANGERS SHALL NOT BE ATTACHED TO CORRUGATED STEEL DECKING.
7. DUCTS SHALL BE SUPPORTED IN ACCORDANCE WITH SMACNA AT INTERVALS NOT EXCEEDING 10 FEET. DUCTS 36 INCHES OR LARGER SHALL HAVE TRAPEZE TYPE HANGERS SUSPENDED WITH THREADED ROD. SUPPORT DUCTS FROM BAR JOISTS, GIRDERS, OR BEAMS.
8. CHECK LOCATIONS OF AIR OUTLETS AND INLETS AND MAKE NECESSARY ADJUSTMENTS IN POSITION TO CONFORM WITH ARCHITECTURAL FEATURES, SYMMETRY, AND LIGHTING ARRANGEMENT. COORDINATE WITH SPRINKLER CONTRACTOR IF APPLICABLE.
9. PROVIDE BALANCING DAMPERS AT POINTS ON SUPPLY WHERE BRANCHES ARE TAKEN FROM LARGER DUCTS AS REQUIRED FOR AIR BALANCING. INSTALL MINIMUM 2 DUCT WIDTHS FROM DUCT TAKE-OFF. PROVIDE BALANCING DAMPERS ON DUCT TAKE-OFFS TO DIFFUSERS, AND REGISTERS, REGARDLESS OF WHETHER DAMPERS ARE SPECIFIED AS PART OF THE DIFFUSER OR REGISTER ASSEMBLY. ADJUST AIR HANDLING AND DISTRIBUTION SYSTEMS TO PROVIDE DESIGN SUPPLY, RETURN, AND EXHAUST AIR QUANTITIES AT SITE ALTITUDE.
10. MC SHALL INSTALL FIRE DAMPERS AT EACH PENETRATION OF A RATED WALL AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. FIRE DAMPERS SHALL BE UL LABELED (UL 555), CURTAIN TYPE, WITH INTEGRAL FACTORY SLEEVE AND BLADES LOCATED OUTSIDE THE AIR STREAM. INSTALLATION OF ALL FIRE DAMPERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SECTION 607 OF THE 2018 NC MECHANICAL CODE. PROVIDE ACCESS PANELS FOR TESTING AND SERVICE AS NECESSARY. MC SHALL PROVIDE RADIATION DAMPERS AND THERMAL BLANKETS FOR ALL PENETRATIONS OF RATED CEILING ASSEMBLIES. RADIATION DAMPERS SHALL BE UL LABELED (UL 555C) AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC INSTALLATION INSTRUCTIONS. FIRE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS, AND CEILING RADIATION DAMPERS SHALL BE BY RUSKIN, NAILOR, OR LLOYD INDUSTRIES.
12. MC SHALL INSTALL A SMOKE DETECTOR-UL LISTED FOR DUCT INSTALLATION (UL 268A) IN EACH UNIT'S RETURN UPSTREAM OF ANY FILTERS, OUTSIDE AIR CONNECTIONS, OR RECONTAMINATION EQUIPMENT. DUCT SMOKE DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 72. DUCT SMOKE DETECTOR SUPERVISION SHALL COMPLY WITH 606.4.1 OF THE 2018 NC MECHANICAL CODE. IF THE BUILDING IS (TO BE) EQUIPPED WITH A FIRE ALARM SYSTEM, THE FIRE ALARM SYSTEM CONTRACTOR SHALL FURNISH AND WIRE ALL DUCT SMOKE DETECTORS. IF THE BUILDING IS NOT PROVIDED WITH A FIRE ALARM SYSTEM, THE MC SHALL FURNISH AND WIRE THE DUCT SMOKE DETECTORS AND A/V DEVICE. IT SHALL BE THE RESPONSIBILITY OF THE MC TO INSTALL ALL SMOKE DUCT DETECTORS PER NFPA AND MFG'S INSTALLATION INSTRUCTIONS REGARDLESS OF WHO FURNISHES THE DEVICES.
13. MC SHALL INSTALL PROGRAMMABLE THERMOSTATS AS SHOWN ON THE PLANS. THERMOSTAT SHALL BE MOUNTED AT 48 INCHES AFF. THERMOSTATS SHALL MEET THE REQUIREMENTS OF SECTION C403.2.4 OF THE 2018 NORTH CAROLINA ENERGY CONSERVATION CODE.
14. FRESH AIR INTAKES SHALL BE INSTALLED ON ALL UNITS AS SHOWN ON DRAWINGS. MAINTAIN 10 FEET OF DISTANCE BETWEEN FRESH AIR INTAKES AND ALL EXHAUST TERMINATIONS AND PLUMBING VENT THRU ROOF'S.
15. MC SHALL INSTALL ALL EXHAUST FANS AND VENT TO THE BUILDING'S EXTERIOR. EC SHALL SWITCH FANS WITH LIGHTS OR ON SEPARATE SWITCH AS SHOWN.
16. P-TRAPS MUST BE INSTALLED ON ALL UNITS. MC SHALL INSTALL AUXILIARY DRAIN PANS UNDER OVERHEAD AIR HANDLERS AND AN AUTOMATIC CUT-OFF FLOAT SWITCH FOR EACH. P-TRAPS AND CONDENSATE LINES SHALL BE 1 INCH. P-TRAPS AND CONDENSATE LINES MAY BE PVC WHERE NOT LOCATED IN PLENUMS; OTHERWISE, THEY SHALL BE TYPE M COPPER.
17. INSTALL BACKDRAFT DAMPERS ON FRESH AIR AND EXHAUST DUCTS WHERE THEY PENETRATE THE THERMAL ENVELOPE PER NORTH CAROLINA ENERGY CONSERVATION CODE C402.5.5

RATED WALL LEGEND

2 HOUR RATED WALL

3 HOUR RATED WALL

MECHANICAL PLAN HEX NOTES

1. ROUTE CONDENSATE TO EXTERIOR OF BUILDING. TERMINATE IN LOCATION THAT WILL NOT PRODUCE SLIPPING HAZARD.

SPLIT SYSTEM HEAT PUMP SCHEDULE

MARK	MFG / MODEL #	NOMINAL CAPACITY	REF LINES		MOTORS		EFFICIENCIES			ELECTRICAL			WEIGHT	REMARKS
			GAS	LIQ	COMPRESSOR	COND. FAN	SEER	COP @ 17°	HSPF	V/PH	MCA	MOCP		
		TONS			NO.	NO.	EER						LBS	
HP-1,2	YORK / YHEE48TB21S	4	7/8"	3/8"	1	1	14.3/10.5	2.47	7.5	208/1	26.1	45	215	1,5,6,8-10

SPLIT SYSTEM AIR HANDLER SCHEDULE

MARK	MFG / MODEL #	NOMINAL CAPACITY	AIR FLOW		FAN MOTORS		HEATING CAPACITY			COOLING CAPACITY			ELECTRICAL			WEIGHT	REMARKS
			SUPPLY	MIN. OA	SUPPLY	ESP	OUTPUT	AUX ELEC HEAT		EAT WB/DB	TOTAL	SENSIBLE	V/PH	MCA	MOCP		
		TONS	CFM	CFM	NO.	in wg	MBH	kW	STAGES	°F	MBH	MBH				LBS	
AHU-1,2	YORK / JHETC48GBCS2N1	4	1600	325	1	0.5	15.0	4.4	1?	65.7/79.1	46.7	34.8	208/1	30.7	30	129	2-5,7-10

1. PROVIDE CONCRETE PAD FOR UNIT TO SIT ON
2. PROVIDE HEAT STRIP OUTDOOR TEMPERATURE LOCKOUT TO PREVENT SUPPLEMENTAL HEAT OPERATION IN RESPONSE TO THE THERMOSTAT BEING CHANGED TO A WARMER SETTING. SET NO LOWER THAN 35°F AND NO HIGHER THAN 40°F
3. REPLACE ALL FILTERS AT PROJECT'S COMPLETION
4. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT WITH NIGHT-TIME SET BACK
5. CONSULT MANUFACTURER ON LINE SET LENGTHS EXCEEDING 60FT
6. PROVIDE HARD START KIT
7. HEATER RATED AT 208V
8. OR EQUAL BY CARRIER, LENNOX, DAIKIN OR TRANE
9. ANY EQUIPMENT SUBSTITUTIONS MUST EQUAL OR EXCEED EFFICIENCIES LISTED (RATINGS PER ARI)
10. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES

① THERMOSTAT LOCATION MOUNT AT 48" A.F.F.

EXHAUST FAN SCHEDULE

MARK	MFG / MODEL #	TYPE	ESP (in WG)	CFM	VOLT/PH	FLA	SONES	NOTES
EF-1,2	GREENHECK SP-B110	CEILING	0.40	96	120/1	1.14	2.0	1-3

1. PROVIDE WITH PITCHED ROOF CURB & CAP FOR FLAT OR SLOPED ROOF,OR HOODED WALL WITH BACKDRAFT DAMPER CAP AS APPLICABLE.
2. PROVIDE WITH SQUARE TO ROUND DUCT ADAPTER AS NECESSARY
3. OR EQUAL BY LOREN COOK OR PENNBARRY OR TWIN CITY

REGISTER & GRILLE SCHEDULE

MARK	MFG	MODEL #	SIZE	MOUNTING	DESCRIPTION	NOTES
A	HART & COOLEY	HVS	24X24	LAY-IN	4-WAY DIFFUSER, BRIGHT WHITE	1,2
R	HART & COOLEY	RH45T	24X24	LAY-IN	ALUMINUM, LAY IN RETURN GRILLE	1

1. DR EQUAL BY PRICE, METAL-AIRE, CARNES, TITUS OR NAILOR.
2. PROVIDE WITH FOIL LINED, MOLDED INSULATION BLANKET.

Ventilation Calculation (Theraspace Center)

Room Name(s)	Zone Type	Area (sq.ft.)	Rp	Ra	Default Occupancy	Pz	Ez	Airflow to Zone (cfm)
Office Areas	Office Space	2477	5	0.06	5	12.39	0.8	2900
Reception	Reception	213	5	0.06	30	6.39	0.8	250
Storage	Storage	98	0	0.12	0	0.00	0.8	0
Restroom	N/A	112	0	0	0	0.00	0.8	50
	N/A	0	0	0	0	0.00	0.8	0

		Maximum Zp:	0.22365	
K-12 School?	No	Ev:	0.9	
		Actual System Population:	15	
Uncorrected Intake	248 cfm			
Outdoor Air Intake	276 cfm			
Percent of Unit Air	9%			

MECHANICAL SYSTEM, SERVICE SYSTEMS, AND EQUIPMENT

METHOD OF COMPLIANCE: PRESCRIPTIVE
THERMAL ZONE: ZONE 3A

EXTERIOR DESIGN CONDITIONS
- HEATING DESIGN DRY BULB: 22.9°F
- COOLING DESIGN DRY BULB: 91.3°F
- COOLING DESIGN WET BULB: 74.7°F

INTERIOR DESIGN CONDITIONS
- HEATING DESIGN DRY BULB: 70°F
- COOLING DESIGN DRY BULB: 75°F
- COOLING RELATIVE HUMIDITY: 50%

HEATING LOAD: 28,770 BTU/H

SENSIBLE COOLING LOAD: 36,975 BTU/H
LATENT COOLING LOAD: 9,700 BTU/H

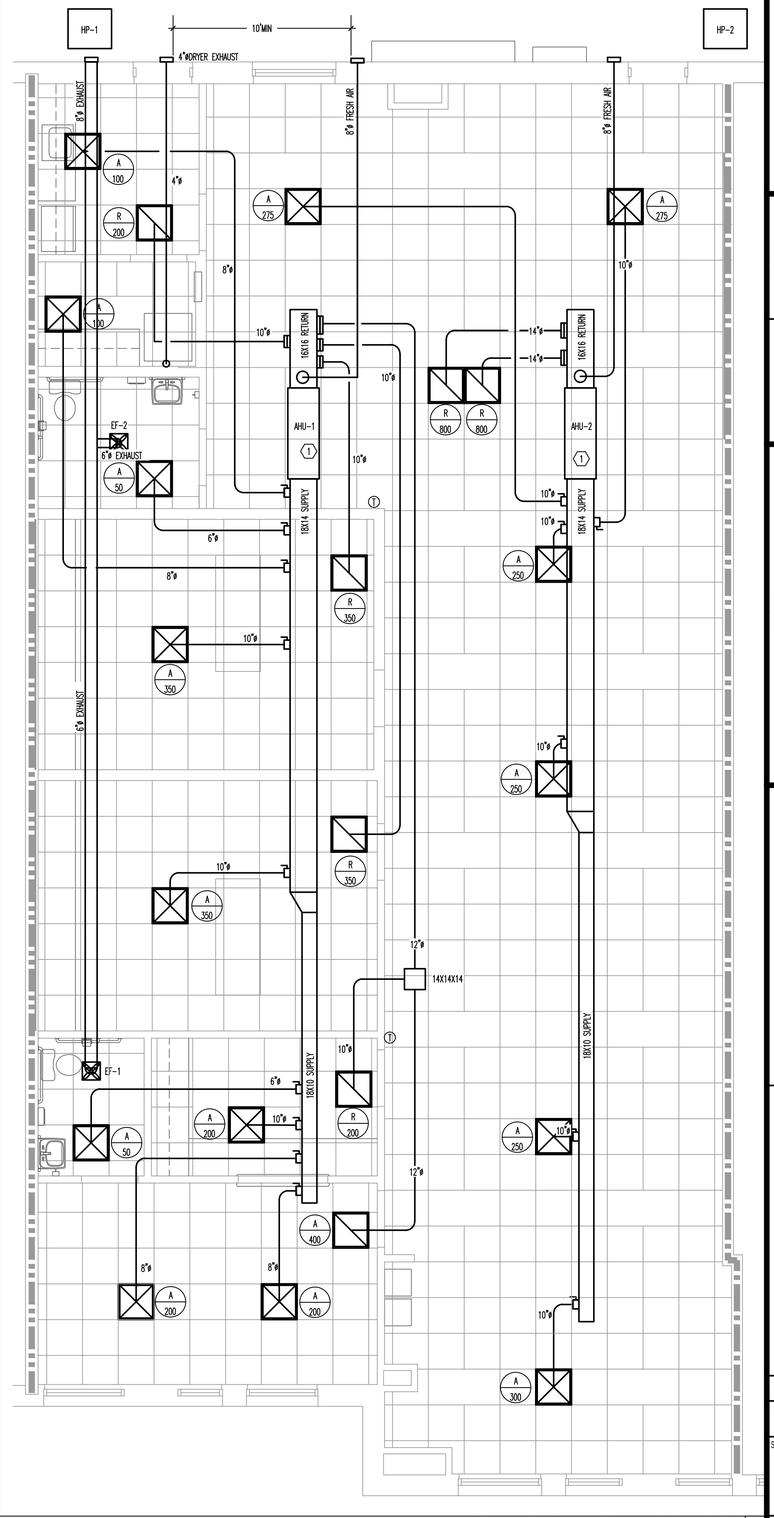
MECHANICAL SPACING CONDITIONING SYSTEM
- UNITARY: AIR COOLED DX
- DESCRIPTION OF UNIT(S): SEE SCHEDULES
- BOILER: N/A
- TOTAL BOILER OUTPUT: N/A
- CHILLER: N/A
- TOTAL CHILLER CAPACITY: N/A

EQUIPMENT EFFICIENCIES: SEE SCHEDULES

EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS): SEE SCHEDULES

DESIGNER STATEMENT:

TO THE BEST OF MY KNOWLEDGE, THE MECHANICAL DESIGN FOR THIS BUILDING COMPLIES WITH MECHANICAL AND EQUIPMENT REQUIREMENTS OF THE 2018 NORTH CAROLINA STATE BUILDING CODE AND 2018 NORTH CAROLINA ENERGY CONSERVATION CODE.



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NORTH CAROLINA PROFESSIONAL SEAL 048944 ENGINEER JACOB L HAMILTON 1-30-23 SEAL

KILIAN ENGINEERING CORPORATE SEAL NORTH CAROLINA SEAL

UPFIT FOR
THERASPACE
2297 NC HIGHWAY 24-87, SUITE
CAMERON, NORTH CAROLINA

REVISION:

ISSUED:
01/30/2023 ISSUED FOR PERMITTING/CONSTRUCTION

DRAWN BY: CLS
CHECKED BY: JLH

MECHANICAL PLAN

SHEET NO.
M1

PROJECT NO: 230046

LED LIGHT FIXTURE SCHEDULE										
MARK	DESCRIPTION	LOUVER/LENS	LAMPS		VOLTAGE	INPUT WATTAGE	MOUNTING	REMARKS	MFG	MODEL
			TYPE	CCT						
A	2X4 LED FLAT PANEL - HIGH LUMEN	ACRYLIC	LED	4000K	120	52.7	RECESSED	2,3	LITHONIA	CPANL-2X4-ALO6-SWF7-M2
B	2X4 LED FLAT PANEL - MEDIUM LUMEN	ACRYLIC	LED	4000K	120	43.3	RECESSED	2,4	LITHONIA	CPANL-2X4-ALO6-SWF7-M2
C	LED DOWNLIGHT	-	LED	4000K	120	17.5	RECESSED	2	LITHONIA	LDNG-40/15-L06-AR-LSS-MVOLT-EZ10
C	LED DOWNLIGHT	-	LED	4000K	120	8.9	RECESSED	2	LITHONIA	LDNG-40/07-L06-AR-LSS-MVOLT-EZ10
DE	EXTERIOR OVAL LED EMERGENCY LIGHT	-	LED	N/A	120	2.8	SURFACE	2	LITHONIA	AFD-DB-MVOLT-N-SD
EX	LED EXIT SIGN W/ BATTERY BACKUP	-	LED	N/A	120	0.71	SURFACE	1,2	LITHONIA	LQM-S-W-3-R-120/277-EL-N-SD
EXH	LED EXIT/COMBO W/ BATTERY BACKUP	-	LED	N/A	120	4.3	SURFACE	1,2	LITHONIA	LHQM-LED-R-SD
EM	DUAL HEAD EMERGENCY FIXTURE	-	LED	N/A	120	1.09	SURFACE	1,2	LITHONIA	ELM2L-M12

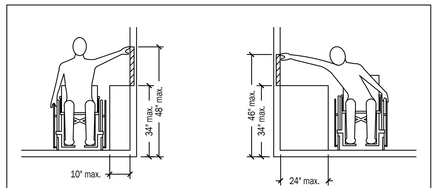
1. FIXTURE SHALL HAVE BATTERY BACKUP FOR 90 MINUTE ILLUMINATION.
2. OR EQUAL BY COOPER, PHILIPS OR DAY-BRITE LIGHTING
3. FIXTURE IS SELECTABLE. SET COLOR TEMPERATURE TO 4000K AND NOMINAL LUMENS TO 6000LM.
4. FIXTURE IS SELECTABLE. SET COLOR TEMPERATURE TO 4000K AND NOMINAL LUMENS TO 5000LM.

LIGHTING DEVICE LEGEND		
SYMBOL	DESCRIPTION	REMARKS
$	SINGLE POLE WALL SWITCH	HEAVY DUTY, AC ONLY, COMMERCIAL GRADE GENERAL USE SNAP SWITCH COMPLYING WITH NEMA WD 6 AND WD 1. IVORY PLASTIC BODY WITH TOGGLE HANDLE. 120-277V, 20A. MEET FEDERAL SPECIFICATION W-S-896.
$MD	OCCUPANCY SENSOR/DIMMER SWITCH	LUTRON MS-Z101
$M	WALL MOUNTED OCCUPANCY SENSOR	LUTRON MS-OPS6M2-DV-WH
$P	LOW VOLTAGE SWITCH	LUTRON PJ-2B-GXX-YY
OS	CEILING OCCUPANCY SENSOR	LURTON LRF2-OCR2B-P-WH
RMJ	POWER PACK	LUTRON RMJS-16R-DV-B
J	JUNCTION BOX	GALVANIZED METAL BOX CONSTRUCTED IN ACCORDANCE WITH 314.40 OF THE NEC.
	EXHAUST FAN	VENT FAN, 120V, CFM AS NOTED MC TO PROVIDE AND VENT, EC TO WIRE.

GENERAL LIGHTING SENSOR NOTES:

1. INSTALL PICO SWITCHES IN LOCATIONS SHOWN.
2. ALL SWITCHES AND SENSORS TO BE WHITE
3. RMJ'S WITH A NUMBER ASSOCIATE WITH THE WALL OR CEILING MOUNT DEVICE WITH THE SAME NUMBER (IE RMJ1 ASSOCIATES WITH WW1, WC1, WH1 ETC.)
4. EC TO ORDER ALL WALL PLATES AND ACCESSORIES FOR COMPLETE INSTALLATION.

POWER DEVICE LEGEND		
SYMBOL	DESCRIPTION	REMARKS
	DATA AND TELEPHONE JACK	PHONE/DATA OUTLET. EC TO INSTALL 3/4" WITH PULL-STRING FROM OUTLET BOX TO ABOVE CEILING FOR FUTURE USE. JACKS AND COMMUNICATION CAGELING BY OTHERS
	DUPLEX RECEPTACLE	NEMA 5-20R, HEAVY DUTY, COMMERCIAL GRADE, 125V, 20A COMPLYING WITH NEMA WD 6 AND WD 1. GFCI OR AFCI IF NOTED. 'WP' DENOTES WEATHERPROOF COVER. 'CH' DENOTES COUNTER HEIGHT. LISTED TAMPERPROOF IF NOTED. MEET FEDERAL SPECIFICATION W-C-596
	QUAD RECEPTACLE	QUAD RECEPTACLE OF SAME CHARACTERISTICS AS DUPLEX TYPE ABOVE.
	DEDICATED RECEPTACLE	NEMA 5-20R, HEAVY DUTY, COMMERCIAL GRADE, 125V, 20A COMPLYING WITH NEMA WD 6 AND WD 1 UNLESS OTHERWISE NOTED ON PLANS. VERIFY PLUG TYPE PRIOR TO PURCHASE & INSTALLATION GFCI OR AFCI IF NOTED. 'WP' DENOTES WEATHERPROOF COVER. 'CH' DENOTES COUNTER HEIGHT. LISTED TAMPERPROOF IF NOTED. MEET FEDERAL SPECIFICATION W-C-596. MAY BE EITHER SIMPLEX, DUPLEX, OR QUAD.
	DUPLEX FLOOR RECEPTACLE	DUPLEX RECEPTACLE OF SAME CHARACTERISTICS AS ABOVE WITH BRASS COVER. MOUNT IN FLOOR. ALL FLOOR BOXES MUST BE LISTED FOR FLOOR APPLICATION.
	QUAD FLOOR RECEPTACLE	QUAD RECEPTACLE OF SAME CHARACTERISTICS AS ABOVE WITH BRASS COVER. MOUNT IN FLOOR. ALL FLOOR BOXES MUST BE LISTED FOR FLOOR APPLICATION.
F	FUSIBLE DISCONNECT SWITCH	HEAVY DUTY TYPE. TYPE 1 ENCLOSURE IN INTERIOR APPLICATIONS, TYPE 3R ENCLOSURE IN EXTERIOR APPLICATIONS, FUSE ACCORDING TO NAMEPLATE DATA.
F	DISCONNECT SWITCH	HEAVY DUTY TYPE. TYPE 1 ENCLOSURE IN INTERIOR APPLICATIONS, TYPE 3R ENCLOSURE IN EXTERIOR APPLICATIONS.
J	JUNCTION BOX	GALVANIZED METAL BOX CONSTRUCTED IN ACCORDANCE WITH 314.40 OF THE NEC.



ANSI A117.1 FIG. 308.3.2. OBSTRUCTED HIGH REACH SIDE.
ALL SWITCHES AND CONTROLS MUST COMPLY FOR ALL COUNTERTOPS

ELECTRICAL DESIGNER'S STATEMENT		
ELECTRICAL SYSTEM AND EQUIPMENT METHOD OF COMPLIANCE PRESCRIPTIVE _X_ PERFORMANCE ___ ENERGY COST BUDGET ___		
LIGHTING SCHEDULE:		
LAMP TYPE REQUIRED IN FIXTURE:		SEE LIGHTING LEGEND
NUMBER OF LAMPS PER FIXTURE:		SEE LIGHTING LEGEND
BALLAST TYPE USED IN FIXTURE:		SEE LIGHTING LEGEND
NUMBER OF BALLASTS IN FIXTURE:		SEE LIGHTING LEGEND
TOTAL WATTAGE PER FIXTURE:		SEE LIGHTING LEGEND
TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED:	WATTS SPECIFIED	WATTS ALLOWED
	1541.8	2610.00

OCCUPANCY	AREA (sf)	ALLOWANCE (W/sf)	WATTAGE ALLOWED
HEALTH CARE	2900	0.90	2610.00
TOTAL	2900		2610.00

EQUIPMENT SCHEDULES WITH MOTORS (NOT USED FOR MECHANICAL SYSTEMS)
MOTOR HORSEPOWER: N/A
NUMBER OF PHASES: N/A
MINIMUM EFFICIENCY: N/A
MOTOR TYPE: N/A
NUMBER OF POLES: N/A

DESIGNER STATEMENT: TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE 2018 NORTH CAROLINA ENERGY CONSERVATION CODE.

FOR THE ADDITIONAL PRESCRIPTIVE REQUIREMENT REQUIRED BY C406 OF 2018 NORTH CAROLINA ENERGY CONSERVATION CODE, WE ARE CHOOSING C406.3 - REDUCED LIGHTING POWER DENSITY.

1541.8 W SPECIFIED <= 234.9 W (2610.00 W ALLOWED X 90%)

GENERAL ELECTRICAL NOTES:

ADMINISTRATIVE:

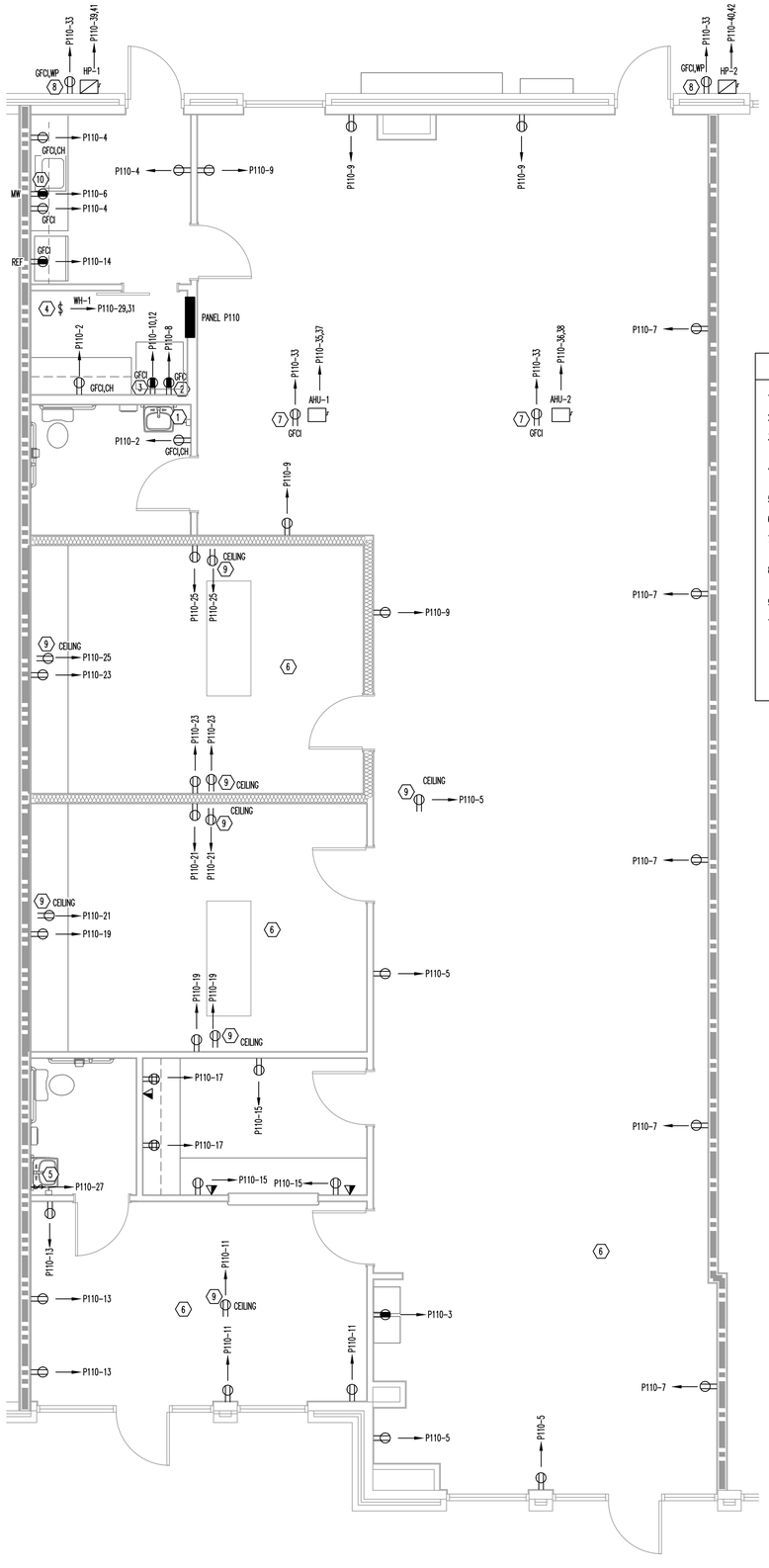
1. THE FOLLOWING ABBREVIATIONS SHALL APPLY TO NOTES AND PLANS: PC - PLUMBING CONTRACTOR, EC - ELECTRICAL CONTRACTOR, MC - MECHANICAL CONTRACTOR, GC - GENERAL CONTRACTOR, FASC - FIRE ALARM SYSTEM CONTRACTOR, AHJ - AUTHORITY HAVING JURISDICTION.
2. "PROVIDE" MEANS TO FURNISH AND INSTALL. THE ELECTRICAL CONTRACTOR SHALL ALSO INSTALL MATERIALS AND EQUIPMENT FURNISHED BY OTHERS AND THE GENERAL CONTRACTOR AS REQUIRED.
3. EC SHALL PROVIDE LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY AND REASONABLY INCIDENTAL TO INSURE A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. MINOR ITEMS, ACCESSORIES, AND DEVICES REASONABLY INFERABLE AS NECESSARY FOR THE COMPLETION AND PROPER OPERATION OF ANY ELECTRICAL SYSTEM SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
4. WORKMANSHIP SHALL BE IN ACCORDANCE WITH NECA 1 "STANDARD PRACTICE FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING."
5. ALL MATERIALS AND EQUIPMENT SHALL BE DELIVERED TO THE SITE AND UNLOADED BY THE ELECTRICAL CONTRACTOR AT AN APPROVED LOCATION. THE ELECTRICAL CONTRACTOR SHALL PROTECT ALL MATERIALS AND EQUIPMENT FROM BREAKAGE, THEFT, AND THE ELEMENTS. ALL MATERIALS AND EQUIPMENT SHALL REMAIN THE PROPERTY OF THE ELECTRICAL CONTRACTOR UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE OWNER.
6. THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS NECESSARY FOR THE COMPLETION OF THE WORK UNDER THIS CONTRACT.
7. DO NOT SCALE THESE DRAWINGS--REFER TO ARCHITECTURAL SHEETS FOR DIMENSIONS.
8. TRADE NAMES AND MANUFACTURERS ARE SPECIFIED TO ESTABLISH A QUALITY STANDARD. SUBSTITUTIONS SHALL BE PERMITTED IF APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ALL LISTED MODEL NUMBERS SHALL BE VERIFIED WITH THE MANUFACTURER FOR PROPER APPLICATION OF EQUIPMENT.
9. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS. THE ELECTRICAL CONTRACTOR SHALL CONTACT THE ENGINEER TO RESOLVE ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER TRADES PRIOR TO THE START OF CONSTRUCTION.
10. GROUNDING AND BONDING SHALL BE PER NEC ARTICLE 250. THE RACEWAY SYSTEM SHALL NOT BE RELIED UPON FOR GROUNDING CONTINUITY. A GREEN EQUIPMENT GROUNDING CONDUCTOR, SIZED PER NEC TABLE 250-122, SHALL BE RUN IN ALL POWER RACEWAYS. FOR NON-ISOLATED GROUND CIRCUITS PROVIDE ONE EQUIPMENT GROUNDING CONDUCTOR PER CONDUIT RUN. FOR ISOLATED GROUND CIRCUITS, PROVIDE ONE NEUTRAL AND ONE ISOLATED GROUND WIRE FOR EACH CIRCUIT; IN ADDITION, PROVIDE ONE EQUIPMENT GROUNDING CONDUCTOR PER CONDUIT RUN. MAIN BONDING JUMPERS AND SYSTEM BONDING JUMPERS SHALL BE INSTALLED IN ACCORDANCE WITH 250.28 OF THE NEC. FOR BUILDINGS OR STRUCTURES SUPPLIED BY FEEDERS OR BRANCH CIRCUITS, GROUNDING AND BONDING SHALL BE IN ACCORDANCE WITH 250.32. SEPARATELY DERIVED AC SYSTEMS SHALL BE GROUNDED IN ACCORDANCE WITH 250.30. RESISTANCE TO GROUND SHALL NOT EXCEED 25 OHMS; ADDITIONAL GROUNDING ELECTRODES SHALL BE INSTALLED PER 250.56 AS NECESSARY.
11. ALL MATERIALS AND EQUIPMENT SHALL COMPLY WITH THE UNDERWRITERS' LABORATORIES, INC. STANDARDS OR HAVE UL APPROVAL, OR BEAR UL RE-EXAMINATION LISTING WHERE SUCH APPROVAL HAS BEEN ESTABLISHED FOR THE TYPE OF DEVICE IN QUESTION.
12. CONDUCTORS, FUSES, CIRCUIT BREAKERS, AND DISCONNECT SWITCHES SHOWN ON THESE PLANS HAVE BEEN SIZED FOR THE SPECIFIED EQUIPMENT. BEFORE ORDERING ELECTRICAL EQUIPMENT, THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS ON THE SITE AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES SHOULD CONDUCTOR, CIRCUIT BREAKER, OR FUSE SIZES REQUIRE CHANGE.
13. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE THE FOLLOWING MATERIALS ARE RECYCLED DURING THE CONSTRUCTION PHASE OF THE PROJECT: LIGHT FIXTURES, INCLUDING PROPER DISPOSAL OF BALLASTS, FLUORESCENT LIGHT BULBS, AND TRANSFORMERS, WIRING AND ELECTRICAL EQUIPMENT, AND INSULATION. WASTE MATERIALS CONTAINING LEAD, ASBESTOS, PCBs (FLUORESCENT LAMP BALLASTS), OR OTHER HARMFUL SUBSTANCES SHALL BE HANDLED AND DISPOSED OF IN ACCORDANCE WITH FEDERAL AND STATE LAWS AND REQUIREMENTS CONCERNING HAZARDOUS WASTE.
14. ALL WORK SHALL CONFORM TO 2020 NATIONAL ELECTRIC CODE, 2018 STATE BUILDING CODE, AND ALL APPLICABLE LOCAL CODES.

MATERIALS:

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY DISCONNECTS, SWITCHES, RECEPTACLES, TERMINALS, ETC, UNDER THE ELECTRICAL BID AND SHALL INCLUDE ALL NECESSARY CIRCUITS AND CONNECTIONS TO THE EQUIPMENT PROVIDED BY ALL SUPPLIERS, UNLESS NOTED OTHERWISE BY OTHER DISCIPLINES.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SERVICE ENTRANCE EQUIPMENT, SUB PANELS, AND OTHER ELECTRICAL DISTRIBUTION EQUIPMENT AS NECESSARY FOR A COMPLETE INSTALLATION. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH UTILITY REGARDING SERVICE AND METERING DETAILS. PRIOR TO ORDERING EQUIPMENT, THE ELECTRICAL CONTRACTOR SHALL OBTAIN THE AVAILABLE FAULT CURRENT OR TRANSFORMER SIZE AND IMPEDANCE FROM THE UTILITY AND CONTACT THE ENGINEER IF THE VALUE EXCEEDS THE EQUIPMENT SPECIFIED. PANEL BOARDS AND SWITCH BOARDS SHALL BE SQUARE D, CUTLER-HAMMER, SIEMENS, OR GE. BUSES SHALL BE COPPER UNLESS OTHERWISE APPROVED BY THE ENGINEER. RECESSED PANEL BOARDS SHALL BE INSTALLED FLUSH WITH THE WALL FINISH. METER BASES SHALL COMPLY WITH THE UTILITY'S SPECIFICATIONS AND SHALL BE MOUNTED AT A HEIGHT APPROVED BY THE UTILITY. ALL EQUIPMENT IDENTIFIED FOR SERVICE ENTRANCE USE SHALL BE SO LABELED AND UL LISTED FOR SUCH USE. ELECTRICAL CONTRACTOR SHALL INSTALL ALL ELECTRICAL EQUIPMENT WITH CLEARANCES PER NEC 110.26. ELECTRICIAN SHALL PERMANENTLY LABEL EQUIPMENT PER NEC 110.24.
3. ENCLOSED SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE BY SQUARE D, EATON, OR GE. ENCLOSED SWITCHES SHALL HAVE A HANDLE LOCKABLE IN THE OFF POSITION AND SHALL HAVE A HANDLE INTERLOCKED TO PREVENT OPENING THE FRONT COVER WHILE IN THE ON POSITION. ENCLOSED SWITCHES OF THE FUSIBLE TYPE SHALL BE FUSED IN ACCORDANCE WITH NAMEPLATE DATA WITH DUAL ELEMENT TYPE FUSES BY BUSSMAN, LITTELFUSE, OR MERSEN.
4. OCCUPANCY SENSORS SHALL BE BY WATTSTOPPER, LUTRON, LEVITON, SENSOR SWITCH, HUBBELL, OR APPROVED EQUAL.
5. CIRCUIT BREAKERS SHALL BE MOLDED-CASE, THERMAL MAGNETIC TYPE WITH QUICK-MAKE, QUICK-BREAK MECHANISM, COMMON TRIP ON MULTI-POLE BREAKERS, AND UL LISTED FOR BOTH COPPER AND ALUMINUM CONDUCTORS. CIRCUIT BREAKERS IN PANELS SHALL BE SERIES RATED WITH THE MAIN BREAKER, FULLY RATED FOR THE SYSTEM, OR SERIES RATED WITH THE BREAKER FEEDING THE PANEL FROM THE FACTORY.
6. ALL WIRE, CONNECTORS, TERMINALS, AND LUGS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. WHERE CONDUCTORS ARE RUN IN PARALLEL, LUGS SHALL BE LISTED FOR PARALLEL CONDUCTORS. PUSH WIRE CONNECTORS ARE NOT ALLOWED FOR BUILDING WIRE. PUSH CONNECTORS ARE ONLY ALLOWED, WHEN APPROVED, AS PART OF MANUFACTURED LISTED PRODUCTS. ALL WIRE SHALL BE INSTALLED IN CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE.
7. THE INSULATION TYPE FOR INTERIOR WIRING SHALL BE DUAL RATED THHN/THWN OR XHHW; ALL WIRING INSTALLED BELOW GRADE OR IN MOIST OR WET LOCATIONS SHALL HAVE TYPE THWN OR XHHW INSULATION. INSULATION VOLTAGE RATING SHALL BE 600 VOLTS AND A MINIMUM TEMPERATURE RATING OF 75°C. CONDUCTORS SHALL BE SOLID OR STRANDED COPPER FOR #10 AWG AND #12 AWG, AND STRANDED COPPER FOR #8 AWG AND LARGER SIZES. ALL WIRING AND CABLE SHALL BE UL LISTED. ALL TERMINATIONS AND DEVICES SHALL BE RATED FOR USE WITH 75°C CONDUCTORS. FINAL CONNECTIONS TO ALL MOTORS AND EQUIPMENT SUBJECT TO VIBRATION OR MOVEMENT SHALL BE MADE WITH STRANDED COPPER CONDUCTORS. CONDUCTORS SHALL BE BY CERRO WIRE, INC, INDUSTRIAL WIRE & CABLE, INC, ENCORE WIRE CORPORATION, OR SOUTHWIRE COMPANY.
8. JOINTS IN SOLID CONDUCTORS SHALL BE SPLICED USING IDEAL "WIRE NUTS", 3M "SCOTCH LOCK", OR T&B "PIGGY" CONNECTORS IN JUNCTION BOXES, OUTLET BOXES, AND LIGHTING FIXTURES. JOINTS IN STRANDED CONDUCTORS SHALL BE SPLICED BY APPROVED MECHANICAL CONNECTORS AND GUM RUBBER TAPE OR FRICTION TAPE. SOLDERLESS MECHANICAL CONNECTORS FOR SPLICES AND TAPS, PROVIDED WITH UL APPROVED INSULATING COVERS, MAY BE USED INSTEAD OF MECHANICAL CONNECTORS PLUS TAPE. IN ALL CASES, CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND NO SPLICING SHALL BE MADE EXCEPT WITHIN OUTLET OR JUNCTION BOXES, TROUGHS, OR GUTTERS. WHERE CONCENTRIC, ECCENTRIC, OR OVERSIZED KNOCKOUTS ARE ENCOUNTERED, A GROUNDING TYPE INSULATED BUSHING SHALL BE PROVIDED.
9. ALL LUMINARES SHALL BE LISTED. LUMINARES IN WET OR DAMP LOCATIONS SHALL BE MARKED AS SUITABLE FOR THE RESPECTIVE USE. EMERGENCY LIGHTING SHALL BE INSTALLED AS SHOWN. FINAL LOCATIONS OF ALL EXIT AND EMERGENCY LIGHTS SHALL BE VERIFIED WITH THE BUILDING INSPECTOR PRIOR TO INSTALLATION. ALL FLUORESCENT FIXTURES SHALL HAVE ELECTRONIC BALLASTS MEETING ANSI C82.11 FOR ELECTRONIC BALLAST PERFORMANCE. ALL BALLASTS SHALL BE UL LISTED AND MEET FEDERAL AND STATE EFFICIENCY REQUIREMENTS.
10. ALL CONDUIT, FITTINGS, COUPLINGS, AND SUPPORTS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. CONDUIT FITTINGS AND COUPLINGS SHALL BE BY APPLETON, RACO, OR O-Z/GEDNEY. COUPLINGS SHALL BE THREADED, SET-SCREW, OR COMPRESSION TYPE. INDENTER OR CRIMP TYPE ARE NOT PERMITTED. CONDUIT FITTINGS AT ALL ELECTRICAL BOXES INCLUDING PULL, JUNCTION, AND OUTLET BOXES, SHALL HAVE INSULATED THROATS TO PREVENT INSULATION SCORING. DIE CAST FITTINGS ARE NOT PERMITTED
11. EMT SHALL BE MANUFACTURED IN ACCORDANCE WITH AMERICAN NATIONAL STANDARDS INSTITUTE-AMERICAN NATIONAL STANDARD FOR STEEL ELECTRICAL METALLIC TUBING (EMT), ANSI C80.3 AND UL 797. RIGID METAL CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI-AMERICAN NATIONAL STANDARD FOR ELECTRICAL RIGID STEEL CONDUIT (ERSC), ANSI C80.1 AND UL 6. INTERMEDIATE METAL CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI-AMERICAN NATIONAL STANDARD FOR INTERMEDIATE METAL CONDUIT ANSI C80.6 AND UL 1242.
12. METAL CONDUIT SHALL BE BY ALLIED TUBING & CONDUIT, BECK MANUFACTURING, INC, OR WHEATLAND TUBE COMPANY. FLEXIBLE METAL CONDUIT, LIQUID-TIGHT FLEXIBLE METAL CONDUIT, AND NONMETALLIC CONDUIT SHALL BE BY AFC CABLE SYSTEMS, INC, ELECTRI-FLEX COMPANY, OR INTERNATIONAL METAL HOSE.

METHODS:

1. EC SHALL REVIEW THE MECHANICAL PLANS TO ESTABLISH POINTS OF CONNECTION AND THE EXTENT OF THE ELECTRICAL WORK TO BE PROVIDED IN THE CONTRACT.
2. ALL CIRCUIT BREAKERS FEEDING HVAC EQUIPMENT SHALL BE HACR BREAKERS. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE MINIMUM #12 AWG IN 3/4 in CONDUIT. EACH MULTI-WIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH A MEANS TO SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE SOURCE PER NEC 210.4(B). GROUP ALL CONDUCTORS OF EACH MULTI-WIRE BRANCH CIRCUIT PER 210.4(D) WITH WIRE TIES OR SIMILAR MEANS. DO NOT EXCEED THREE HOMERUNS PER CONDUIT. DO NOT INSTALL ISOLATED GROUND AND NON-ISOLATED GROUND CIRCUITS IN THE SAME CONDUIT. INSTALL CONDUCTORS OF DIFFERENT VOLTAGES IN SEPARATE CONDUITS.
3. COLOR CODE CONDUCTORS PER NEC. FEEDERS SHALL BE IDENTIFIED IN ACCORDANCE WITH NEC 215.12. USE BLACK, RED, AND BLUE FOR PHASES A, B, AND C RESPECTIVELY ON 208Y/120 VOLT THREE-PHASE Y SYSTEMS AND WHITE FOR THE NEUTRAL. THIS IDENTIFICATION SHALL BE MADE AT EACH POINT WHERE A CONNECTION IS MADE. COLORS SHALL BE FACTORY APPLIED FOR CONDUCTORS #6 AWG AND SMALLER. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE GREEN IN COLOR AND MINIMUM #12 AWG. THE EC SHALL PROVIDE PLENUM RATED CABLE FOR ANY ELECTRICAL, TELEPHONE, COMMUNICATION, OR OTHER CABLE THAT ENTERS CEILING RETURN PLENUMS.
4. ALL LIGHT FIXTURES SHALL BE SUPPORTED INDEPENDENTLY OF THE SUSPENDED CEILING. COORDINATE LIGHTING LAYOUT WITH CEILING GRID, MECHANICAL EQUIPMENT, DUCTWORK AND SPRINKLER HEADS AS NECESSARY. SEE REFLECTED CEILING PLAN FOR DETAILS. FLUORESCENT FIXTURES UTILIZING DOUBLE-ENDED LAMPS MUST HAVE A DISCONNECTING MEANS COMPLYING WITH NEC 410.130(G).
5. MOUNT LIGHT SWITCHES AT 48 in AFF. MULTIPLE SWITCHES AT SAME LOCATION SHALL BE UNDER ONE WALL PLATE. VERIFY WALL PLATE COLOR AND MATERIAL WITH THE ARCHITECT/OWNER. INSTALL SWITCHES WITH off POSITION DOWN. ALL SWITCHES SHALL BE HEAVY DUTY, NORY PLASTIC WITH TOGGLE HANDLE, RATED 120-277V AC, AND COMPLYING WITH NEMA WD 6 AND WD 1. SWITCHES SHALL BE BY COOPER WIRING DEVICES, LEVITON MANUFACTURING, PASS & SEYMOUR, OR HUBBELL. PROVIDE BOX DEVICE PARTITION/DIVIDERS FOR MULTI-GANG BOXES FOR COMPLIANCE WITH NEC 404.8(B).
6. ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE-STOPPING AT ALL ELECTRICAL PENETRATIONS OF RATED FLOORS AND WALLS TO PRESERVE OR RESTORE THE FIRE-RESISTANCE RATING. SEAL PENETRATIONS USING A UL LISTED SYSTEM FOUND IN THE UL DIRECTORY SPECIFIC TO THE UL LISTING OF THE ASSEMBLY BEING PENETRATED. SEE ARCHITECTURAL PLANS FOR UL RATED ASSEMBLIES SPECIFIC TO THIS PROJECT.
7. ELECTRICAL CONTRACTOR SHALL PROVIDE GFCI RECEPTACLES IN KITCHENS, RESTROOMS, OUTDOORS, AND IN SHOP AREAS AS REQUIRED BY NEC. REFRIGERATORS AND WATER COOLERS MUST HAVE A DEDICATED GFCI BREAKER. EACH OUTDOOR HVAC UNIT MUST HAVE A GFCI RECEPTACLE WITHIN 25 FEET FOR SERVICING. GFCI RECEPTACLES SHALL CONFORM TO UL 943 CLASS A AND UL 498 STANDARDS. RECEPTACLES SHALL BE BY COOPER WIRING DEVICES, LEVITON MANUFACTURING, PASS & SEYMOUR, OR HUBBELL. ALL RECEPTACLES SHALL BE 125V RATED, HEAVY DUTY, AND COMPLY WITH NEMA WD 6 AND WD 1.
8. LOCATIONS AND HEIGHTS OF ALL WALL-MOUNTED DEVICES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION.
9. CONCEAL ALL CONDUIT EXCEPT IN MECHANICAL ROOMS OR UNFINISHED AREAS AS NOTED. USE EMT CONDUIT FOR ALL BRANCH CIRCUITS AND FEEDERS INSIDE THE BUILDING. TYPE MC CABLE AND TYPE AC CABLE MAY BE INSTALLED WITHIN WALLS IF ALL NEUTRAL WIRES, ISOLATED GROUND WIRES, AND EQUIPMENT GROUND WIRES AS LISTED ABOVE ARE CONTAINED IN THE CABLE. FLEXIBLE CONNECTIONS TO MOTORS AND OTHER EQUIPMENT SHALL BE MADE USING WEATHERPROOF FLEXIBLE CONDUIT. FOR LAY-IN LIGHT FIXTURES, USE MAXIMUM OF SIX (6) FEET OF FLEXIBLE MC CABLE (OR THE FLEXIBLE CONDUIT PROVIDED BY THE FIXTURE MANUFACTURER). SCHEDULE 40 PVC CONDUIT MAY BE USED FOR THE SECONDARY UNDERGROUND SERVICE, UNDERGROUND TELEPHONE SERVICE, AND BRANCH AND FEEDER CIRCUITS UNDER SLAB OR EXTERIOR TO THE BUILDING. EXPOSED EXTERIOR CONDUIT SHALL BE SCHEDULE 80 PVC. ALL UNDERGROUND RACEWAYS SHALL BE IDENTIFIED WITH UNDERGROUND LINE MARKING TAPE 6-8 in BELOW GRADE DIRECTLY ABOVE THE RACEWAY. PROVIDE PULL WIRE IN EMPTY CONDUITS. UPSIZE CONDUIT FROM MINIMUM SIZE AS NECESSARY FOR LONGER PULLS. UNDERGROUND RACEWAYS THAT STUB INTO THE BOTTOM OF SWITCHBOARDS, OUTDOOR TRANSFORMERS, GENERATORS, ETC., SHALL RISE AT LEAST 2 in ABOVE THE FINISHED SLAB TO PREVENT WATER FROM DRAINING INTO THE RACEWAYS. RACEWAYS THAT PENETRATE EXTERIOR WALLS OR INTERIOR PARTITIONS SEPARATING SPACES THAT WILL BE AT SIGNIFICANTLY DIFFERENT TEMPERATURES SHALL BE SEALED IN ACCORDANCE WITH 300.5(G), 300.7(A), AND 300.50(E) OF THE NEC. ROUTE CONDUIT IN AND UNDER SLAB FROM POINT-TO-POINT. ROUTE EXPOSED CONDUIT AND CONDUIT INSTALLED ABOVE ACCESSIBLE CEILINGS PARALLEL AND PERPENDICULAR TO WALLS. COMPLETELY AND THOROUGHLY SWAB ALL RACEWAYS BEFORE INSTALLING WIRE. PULL ALL CONDUCTORS INTO EACH RACEWAY AT ONE TIME. USE A SUITABLE WIRE PULLING LUBRICANT FOR BUILDING WIRE #4 AWG AND LARGER.
10. CABLES, RACEWAYS, OR BOXES, INSTALLED IN EXPOSED OR CONCEALED LOCATIONS UNDER METAL-CORRUGATED SHEET ROOF DECKING, SHALL BE INSTALLED AND SUPPORTED SO THERE IS NOT LESS THAN 1-1/2 in MEASURED FROM THE LOWEST SURFACE OF THE ROOF DECKING TO THE TOP OF THE CABLE, RACEWAY, OR BOX. A CABLE, RACEWAY, OR BOX SHALL NOT BE INSTALLED IN CONCEALED LOCATIONS IN METAL-CORRUGATED, SHEET DECKING-TYPE ROOF. SEE NEC 300.4(E).
11. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL OUTLET, JUNCTION, PULL BOXES, FITTINGS, AND SUPPORTS. ALL OUTLET AND JUNCTION BOXES SHALL BE GALVANIZED STEEL TYPE BY APPLETON, STEEL CITY, OR RACO. EXTERIOR BOXES SHALL BE TYPE FS. VAPORTITE BOXES SHALL BE TYPE GS. WHERE SURFACE MOUNTED BOXES ARE USED, THOSE BOXES AND THEIR FACEPLATES SHALL HAVE ROUNDED CORNERS. BOXES INSTALLED IN FLOORS SHALL BE RATED FOR THE APPLICATION. MOUNT JUNCTION AND OUTLET BOXES FLUSH WITH FINISH SURFACES UNLESS OTHERWISE NOTED. WHERE MOUNTING HEIGHTS ARE GIVEN, THEY SHALL BE MEASURED FROM THE FINISHED FLOOR TO THE CENTER OF THE BOX. ALL BOXES SHALL BE SIZED PER NEC ARTICLE 314. ALL OUTLET AND JUNCTION BOXES SHALL HAVE A COVER PLATE, PROVIDED BY THE ELECTRICAL CONTRACTOR. OUTLET BOXES IN RATED WALLS SHALL BE INSTALLED IN ACCORDANCE WITH NORTH CAROLINA BUILDING CODE 714.3.2 (MAXIMUM BOX SIZE IS 16 SQUARE in AND MAXIMUM OF SIX (6) BOXES PER 100 SQUARE FEET). INSTALL OUTLET BOXES IN RATED WALLS SUCH THAT OPENINGS OCCUR IN ONE SIDE ONLY WITHIN ANY GIVEN STUD SPACE. ALL CLEARANCES BETWEEN THE OUTLET BOX AND THE GYPSUM BOARD SHALL BE FILLED WITH JOINT COMPOUND OR OTHER APPROVED FIRE STOP MATERIAL. FLUSH MOUNTED JUNCTION BOXES IN ADJACENT ROOMS SHALL NOT BE MOUNTED BACK-TO-BACK. SURFACE MOUNTED FIXTURES SHALL BE FED THROUGH FLUSH MOUNTED 4X4 OCTAGONAL OR SQUARE BOXES.
12. ALL CONDUIT, BOXES, AND ELECTRICAL EQUIPMENT SHALL BE FIRMLY AND SECURELY FASTENED TO OR SUPPORTED FROM THE BUILDING STRUCTURAL MEMBERS OR EMBEDDED IN CONCRETE OR MASONRY. ELECTRICAL SUPPORTS SHALL NOT BE ATTACHED TO DUCTWORK, PIPING, OR THEIR SUPPORTS. HANGERS SHALL BE CATALOG ITEMS COMPATIBLE WITH AND SUITABLE FOR THE INTENDED USE. FOR METAL ROOF DECK INSTALLATIONS, 1 in EMT CONDUIT MAXIMUM AND 4 in JUNCTION BOXES MAXIMUM MAY BE SUPPORTED BY DECKING. THE SUSPENDED CEILING SYSTEM SHALL NOT BE US



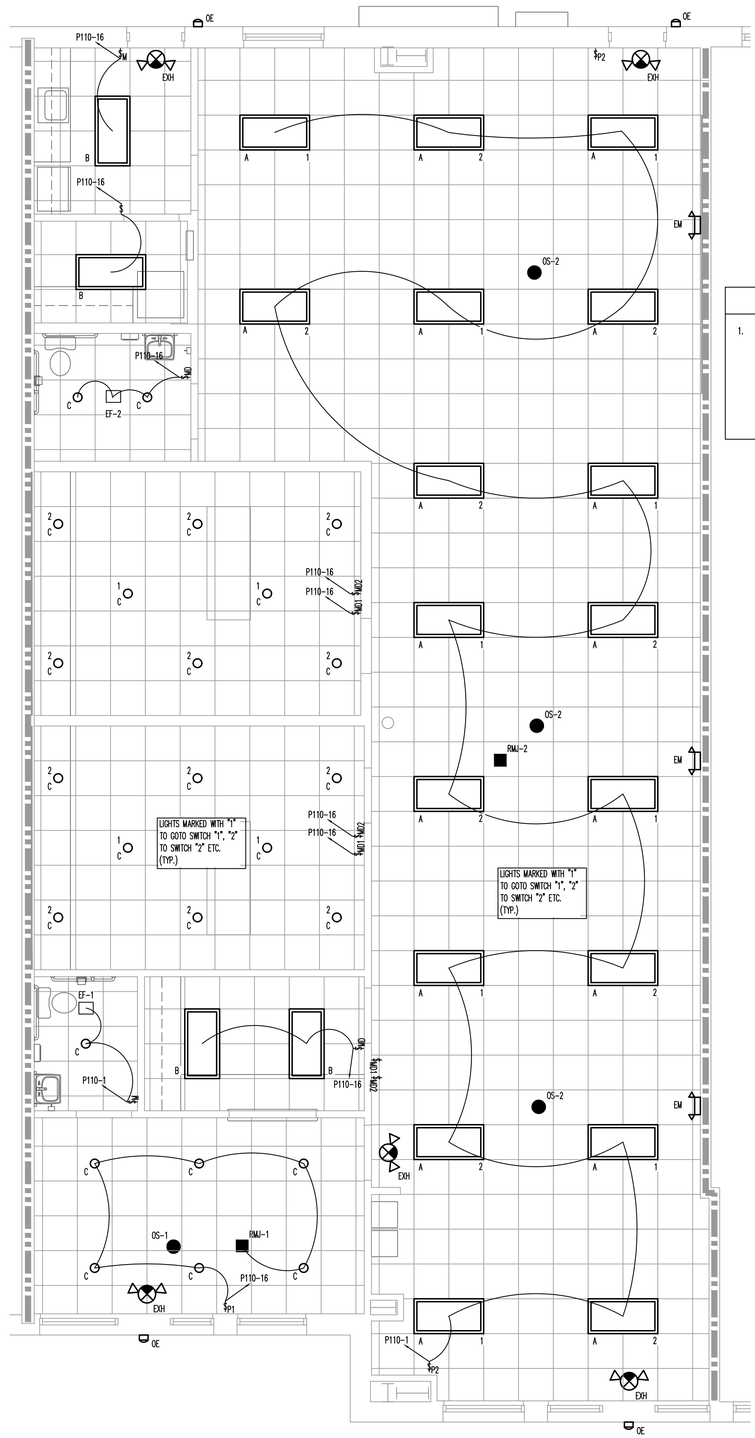
POWER PLAN - SCALE - 1/4" = 1'-0" | 1

RATED WALL LEGEND

2 HOUR RATED WALL	▬ ▪ ▬ ▪ ▬
3 HOUR RATED WALL	▬ ▪ ▪ ▬ ▪ ▪ ▬

⬡ POWER PLAN HEX NOTES

1. MOUNT GFCI RECEPTACLE AT 48" A.F.F.
2. RECEPTACLE FOR WASHER.
3. RECEPTACLE FOR DRYER. VERIFY RECEPTACLE CONFIGURATION NEEDED WITH OWNER.
4. DISCONNECT FOR TANK TYPE WATER HEATER LOCATED ABOVE CEILING WITH WATER HEATER.
5. DISCONNECT FOR TANKLESS POINT OF USE WATER HEATER.
6. ALL WIRING IN THIS ROOM SHALL COMPLY WITH 2020 NEC 517.13.
7. DISCONNECT FOR AHU-1 AND GFCI SERVICE RECEPTACLE LOCATED ABOVE CEILING.
8. DISCONNECT FOR HP-1 AND WP GFCI SERVICE RECEPTACLE AND LOCATION DESIGNATED FOR THIS SUITE'S OUTDOOR UNIT.
9. RECEPTACLE ON CEILING
10. MOUNT RECP. FOR MICROWAVE IN CABINET



LIGHTING PLAN - SCALE - 1/4" = 1'-0" | 2

LIGHTING PLAN NOTES

1. VERIFY SWITCH CONFIGURATION WITH TENANT PRIOR TO ROUGH-IN

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JACOB L HAMILTON
048...
1-30-23
SEAL

KILIAN ENGINEERING, INC.
CORPORATE SEAL
NORTH CAROLINA
SEAL

UPFIT FOR
THERASPACE
2297 NC HIGHWAY 24-87, SUITE
CAMERON, NORTH CAROLINA

REVISION:

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		

ISSUED:

NO.	DATE	DESCRIPTION
0	01/30/2023	ISSUED FOR PERMITTING/CONSTRUCTION
1		
2		
3		
4		
5		
6		
7		

DRAWN BY: CLS
CHECKED BY: JLH
POWER & LIGHTING PLANS

SHEET NO.
E2

PROJECT NO: 230046

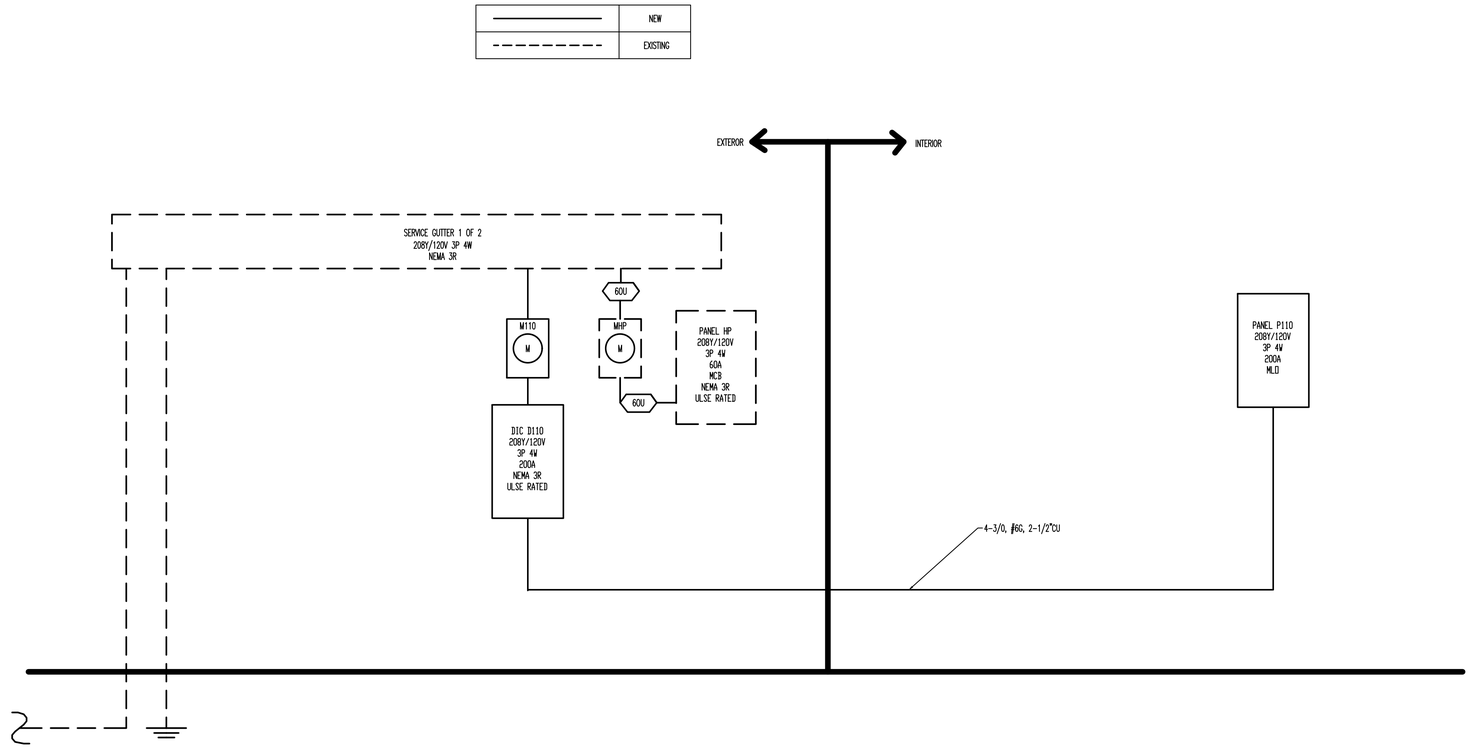
PANEL P110								
CKT	LOAD	BKR	LOAD kVA	PH	LOAD kVA	BKR	LOAD	CKT
1	110 OPEN SPACE LIGHTS	20/1	0.95	A	0.36	20/1	REC-RESTROOM, STORAGE	2
3	WATER COOLER	20/1	0.18	B	0.54	20/1	REC-BREAKROOM	4
5	REC-MAIN AREA	20/1	0.72	C	0.00	20/1	MW-BREAKROOM	6
7	REC-MAIN AREA	20/1	0.90	A	1.20	20/1	WASHER	8
9	REC-MAIN AREA	20/1	0.90	B	3.12	30/2	DRYER	10
11	REC-RECPTION AREA	20/1	0.54	C	3.12			12
13	REC-RECPTION AREA	20/1	0.54	A	1.00	20/1	REFRIGERATOR	14
15	REC-RECPTION OFFICE	20/1	0.54	B	0.59	20/1	110 LIGHTS	16
17	REC-RECPTION OFFICE (QUADS)	20/1	0.72	C	0.00	20/1	SPARE	18
19	REC-OFFICE	20/1	0.54	A	0.00	20/1	SPARE	20
21	REC-OFFICE	20/1	0.54	B	0.00	20/1	SPARE	22
23	REC-OFFICE	20/1	0.54	C	0.00	-	SPACE	24
25	REC-OFFICE	20/1	0.54	A	0.00	-	SPACE	26
27	WATER HEATER-TANKLESS	25/1	3.00	B	0.00	-	SPACE	28
29	WATER HEATER-TANK TYPE	25/2	2.81	C	0.00	-	SPACE	30
31			2.81	A	0.00	-	SPACE	32
33	REC-HVAC SERVICE	20/1	0.72	B	0.00	-	SPACE	34
35	AHU-1	30/2	3.19	C	3.19	30/2	AHU-2	36
37			3.19	A	3.19			38
39	HP-1	50/2	2.71	B	2.71	50/2	HP-2	40
41			2.71	C	2.71			42
			kVA	PH	AMPS			
			15.2	A	127			
			15.6	B	130			
			20.3	C	169			

VOLTAGE/PHASE		208Y/120V, 3P, 4W
BUS RATING		200A
MAIN CIRCUIT BREAKER RATING		MLO
AIC RATING		22K
SERVICE ENTRANCE RATED		NO
ENCLOSURE		NEMA 1
MOUNTING		RECESSED

NEC ELECTRIC DEMAND SUMMARY 208Y/120V, 3P, 4V							
EQUIPMENT	DEMAND FACTOR	kVA			LOAD kVA	NEC REFERENCE	NOTES/CALCULATIONS
		A	B	C			
LIGHTING	125%	1.55	1.55	1.55	4.64	220.12	2900 SF X 1.6 VA/SF
RECEPTACLES < 10 kVA	100%	3.90	3.4	2.5	9.80	220.44	
RECEPTACLES > 10 kVA	50%	0.00	0.00	0.00	0.00	220.44	
HVAC	100%	6.40	5.40	11.80	23.60	--	BASED ON MCA
WATER HEATER	125%	2.81	3.00	2.81	8.62	422.13	STORAGE TANK <120 GAL @ 125%
EQUIPMENT	100%	2.20	3.1	3.10	8.40	--	BASED ON MCA
DEMAND kVA PER PHASE		16.86	16.45	21.76			
DEMAND AMPS PER PHASE		140	137	181			

THE CALCULATED LIGHTING LOAD EXCEEDS THE CONNECTED LIGHTING LOAD.

PANEL SCHEDULES | 1



ELECTRICAL RISER - NOT TO SCALE | 2

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NORTH CAROLINA PROFESSIONAL SEAL 040161 ENGINEER JACOB L HAMILTON
11-30-23 SEAL

KILIAN ENGINEERING CORPORATE INC. SEAL NORTH CAROLINA
SEAL

UPFIT FOR
THERASPACE

2297 NC HIGHWAY 24-87, SUITE
CAMERON, NORTH CAROLINA

REVISION:

NO	DESCRIPTION	DATE

ISSUED:

NO	DESCRIPTION	DATE
1	ISSUED FOR PERMITTING/CONSTRUCTION	01.30.2023

DRAWN BY: CLS
CHECKED BY: JLH

PANEL SCHEDULE & ELECTRICAL RISER

SHEET NO.
E3

PROJECT NO: 230047