cyclyx
1 New Hampshire Avenue, Suite 340 |Portsmouth, NH 03801
503.217.3160

May 19, 2021

Cyclyx International LLC is a company dedicated to helping solve the worlds plastic waste problem. Our goal is to increase the rate of recycling which is currently at 10%, up to 90%, and keep waste plastics out of our oceans, rivers, and landfills. To be clear this is not a recycling facility of any kind. There is absolutely no collection, drop-offs, or processing. The purpose of the Laboratory will be to analyze small samples of plastic from various sources, to determine its exact composition. This data will then enable us to match that particular source of plastic to a specific conversion technology partner and provide a pathway for these plastics that are now being discarded to become a new product. This would be a small analytical Laboratory.

Valuation of New Construction:

The renovation cost of the proposed tenant fit-up to the existing interior space is quoted at $344,000.

Lot area: 5.78 acres

Description of existing and proposed land uses:

The property is currently zoned as Industrial, and the land use is Industrial Office. The proposed land use, special exception, would allow the inclusion of a Laboratory for the purpose of identifying and characterizing, the chemical composition of post-consumer plastics as outlined in the Zoning Ordinance, section 10.440 – use 14.61: “Biological and Chemical Laboratory – Not Marine Dependent”.

Location and gross floor area of the area devoted to the existing and proposed land uses:

The building at 124 Heritage Avenue is 74,600 sf in total. The proposed Laboratory would be located within the existing unit # 15 space, which has a total rentable space of 7,853 sf. The Laboratory space would be located within the south east corner of unit #15 and would be 1,169 sf in total.

1 New Hampshire Avenue, Suite 340 |Portsmouth, NH 03801
503.217.3160

May 19, 2021

Existing and proposed number of parking spaces:

The lot has designated parking spaces totaling 180. All tenants share the unreserved parking spaces pro rata. Unit #15 has a 10.53% share for a total of 18 spaces. There is no plan to create new parking spaces.

Project Representatives:

Tenant:

Cyclyx International, LLC.

Mike Bilodeau, Project Manager

One New Hampshire Avenue, Suite 340

Portsmouth, New Hampshire 03801 603-819-9957

Landlord:

124 Group, LLC

Stacey Able, Senior Property Manager

The Kane Company, Inc.

210 Commerce Way, Suite 300

Portsmouth, New Hampshire 03801 603-559-9666

Builder:

Destefano & Associates

Eric Destefano, Vice President

2456 Lafayette Road

Portsmouth, New Hampshire 03801 603-765-2303

cyclyx
1 New Hampshire Avenue, Suite 340 |Portsmouth, NH 03801
503.217.3160

May 19, 2021

We believe this request meets all the standards of and are in keeping with the overall intent of the ordinance set forth in section **10.232.20** for Special Exceptions, for the following reasons.

10.232.21 As outlined in the Zoning Ordinance, section 10.440 – use 14.61: "Biological and Chemical Laboratory – Not Marine Dependent" is classified as requiring a special exception for Industrial Zoning.

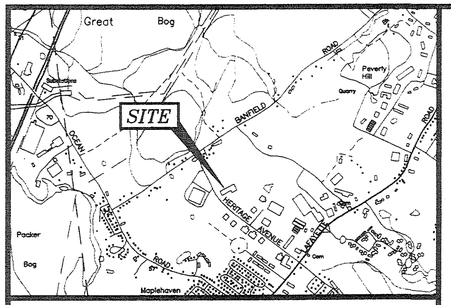
10.232.22 The use and operation of this Laboratory poses no hazard to the public or adjacent properties due to the nature of the intended activities. It does not pose an increase in possibility of fire, explosion, or release of toxic materials. The materials within the Lab are of a type and quantity that is well within the minimal fire hazard rating, and safety equipment will be installed in accordance with industry standards.

10.232.23 There will be no detriment to surrounding properties in any way due to this approval. There will be no structural changes to the building, no changes to access or parking, no outdoor storage of any kind, no business vehicles, and no expected additional noise, odors, smoke, gas, dust, or pollutants.

10.232.24 There will be no creation of any traffic hazard or increase in traffic congestion. The space already has its own dedicated loading dock which is more than adequate for our needs. There is no need for, or any plan to expand or change the loading dock area, or parking area.

10.232.25 There will be no excessive demand on municipal services. The water, sewer, waste disposal, electric, and gas usage will likely be lower than a typical industrial/ office space of similar square footage, because it will not be a manufacturing or processing facility. Any wastes created as a result, of typical lab work, will be handled according to local, state, and federal requirements. There will be no impact on, or any special consideration regarding Police, Fire, or schools.

10.232.26 There will be no increase of stormwater runoff due to the fact, that there will be no changes to the outside structure of the building, the landscaping or parking areas.



LOCATION MAP SCALE: 1" = 2000'

LEGEND

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
⊡ BND w/DH	BOUND WITH DRILL HOLE
○ IR FND	IRON ROD FOUND
○ IP FND	IRON PIPE FOUND
● IR SET	IRON ROD TO BE SET
11/21	MAP 11/LOT 21 (ASSESSORS MAPS)
MW	MONITORING WELL

ZONING DATA

1) PARCEL IS LOCATED IN THE INDUSTRIAL ZONE.
2) DIMENSIONAL REQUIREMENTS :

LOT AREA :	2 ACRES
FRONTAGE :	200'
DEPTH:	200'
SETBACKS : FRONT	70'
SIDE	50'
REAR	50'
MAXIMUM STRUCTURE HEIGHT:	70'
MAXIMUM STRUCTURE COVERAGE:	50%
MINIMUM OPEN SPACE:	20%

FLOOD NOTE:
BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS IN ZONE C OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 330139 0025B, WHICH BEARS AN EFFECTIVE DATE OF MAY 17, 1982 AND IS NOT IN A SPECIAL FLOOD HAZARD AREA.

STATEMENT OF ENCROACHMENTS

[1] PAVEMENT ENCROACHES ONTO ABUTTER.

NOTES

[1] REFERENCE PLANS:
A) SUBDIVISION OF PORTSMOUTH INDUSTRIAL PARK. RCRD D-6584.
B) SUBDIVISION FOR JOHN MACEWICH. RCRD D-1407.

[2] UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE OWNER.

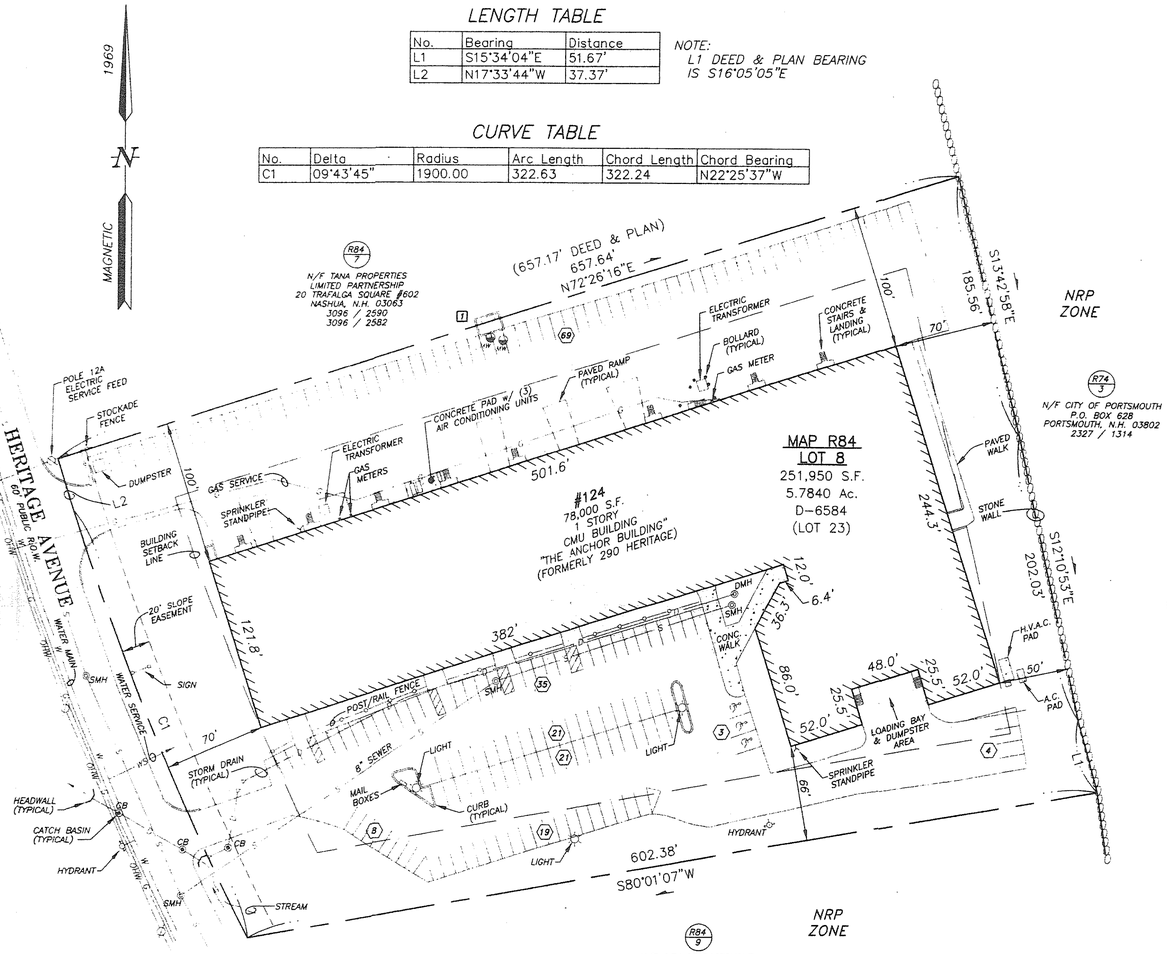
LENGTH TABLE

No.	Bearing	Distance
L1	S15°34'04"E	51.67'
L2	N17°33'44"W	37.37'

NOTE: L1 DEED & PLAN BEARING IS S16°05'05"E

CURVE TABLE

No.	Delta	Radius	Arc Length	Chord Length	Chord Bearing
C1	09°43'45"	1900.00	322.63	322.24	N22°25'37"W



DEED DATA

1) CURRENT DEED: 3037 / 2641
2) PROTECTIVE COVENANTS AND AGREEMENTS:
2253 / 1670 | 2363 / 1045
2293 / 1951 | 2556 / 1861
2343 / 620 | 3095 / 1385
3) EASEMENTS:
NET&T: 2578 / 2878
PSNH & NET&T: 2556 / 1661

GRAPHIC SCALE
50 25 0 50 100 150 200 FEET
15 10 5 0 10 20 30 40 50 60 METERS

LEGAL DESCRIPTION

DEED DESCRIPTION OF LOT 23
124 GROUP, INC.
124 HERITAGE AVENUE, PORTSMOUTH, NEW HAMPSHIRE

FROM
SUBDIVISION PLAN OF PORTSMOUTH INDUSTRIAL PARK
FOR PORTSMOUTH PROPERTIES

A certain tract or parcel of land situated easterly of Heritage Avenue, in Portsmouth, County of Rockingham and State of New Hampshire, and bounded and described as follows:

Beginning at a point on the easterly line of Heritage Avenue, formerly known as A Street, at the southwest corner of Lot 24 (Plan D-6584); thence

1. North 72 ° 26 ' 16 " East along the southerly line of Lot 24 a distance of Six Hundred Fifty- Seven and Seventeen Hundredths (657.17) feet to a point; thence
2. South 13 ° 42 ' 58 " East along a stone wall a distance of One Hundred Eighty-Five and Fifty-Six Hundredths (185.56) feet to a point; thence
3. South 12 ° 10 ' 53 " East along a stone wall a distance of Two Hundred Two and Three Hundredths (202.03) feet to a point; thence
4. South 16 ° 05 ' 05 " East a distance of Fifty One and Sixty- Six Hundredths (51.66) feet to a point; thence
5. South 80 ° 01 ' 07 " West a distance of Six Hundred Two and Thirty-Eight Hundredths (602.38) feet to a point on the easterly line of Heritage Avenue; thence
6. Along the easterly line of Heritage Avenue in a curve to the right with a radius of One Thousand Nine Hundred (1900) feet a distance of Three Hundred Twenty -Two and Sixty -Three Hundredths (322.63) feet to a point; thence
7. North 17 ° 33 ' 44 " West along the easterly line of Heritage Avenue a distance of Thirty-Seven and Thirty-Seven Hundredths (37.37) feet to the point of beginning.

Said parcel contains 5.78 Acres and is shown as Lot 23 on a plan entitled "Subdivision Plan, Portsmouth Industrial Park for Portsmouth Properties" prepared by tpe Associates. 1" = 100', Rev. 2 (7-6-76), recorded in the Rockingham County Registry of Deeds as Plan D-6584.

MERRILL LYNCH CONDUIT PROGRAM SURVEY
FOR
ONE TWENTY FOUR GROUP, INC.
c/o
VENTURI HOLDING COMPANY, INC.
124 HERITAGE AVENUE
PORTSMOUTH, N.H.
COUNTY OF ROCKINGHAM

SCALE: 1" = 50' DATE: NOVEMBER 10 1997

SURVEYORS CERTIFICATION:

TO ONE TWENTY FOUR GROUP, INC. c/o VENTURI HOLDING COMPANY, INC., TICOR TITLE INSURANCE AND MERRILL LYNCH CREDIT CORPORATION AND THEIR RESPECTIVE SUCCESSORS AND ASSIGNS:

THE UNDERSIGNED CERTIFIES TO THE BEST OF HIS PROFESSIONAL KNOWLEDGE, INFORMATION AND BELIEF THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT WAS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND ACSM IN 1992; PURSUANT TO THE ACCURACY STANDARDS (AS ADOPTED BY ALTA AND ACSM AND IN EFFECT ON THE DATE OF THIS CERTIFICATION) OF AN URBAN SURVEY.

JOHN R. CHAGNON
LICENSED LAND SURVEYOR NO. 738
STATE OF NEW HAMPSHIRE
DATE OF SURVEY: 10 NOVEMBER 1997
DATE OF LAST REVISION: 18 DECEMBER 1997

STATE OF NEW HAMPSHIRE — No. 738 JOHN R. CHAGNON — LICENSED LAND SURVEYOR — SIGNATURE
SEAL

AMBIT SURVEY
Civil Engineers & Land Surveyors
801 Islington Street C1
Portsmouth, N.H. 03801-4255
Tel (603) 430-9282
Fax (603) 436-2315


City of Portsmouth, NH
Property
Zoom To
Share
Print
124 Heri
124 HERITAGE AVE
Property
Location 124 HERITAGE AVE
Map-Lot 0284-0008-0000
Vision Account Number 35921
Ownership
Owner ONE TWENTY FOUR GROUP INC
Address 210 COMMERCE WAY SUITE 300, PORTSMOUTH, NH 03801
Valuation
Total $5,397,400
Last Sale $0 on 1994-01-06
Deed Date 1994-01-06
Book/Page 3037/2641
Land
Land Use 4020
Land Use Description IND OFFICE
Market Delineation 301
Local District C
Parcel Area (AC) 8.57
Zoning
Zoning
I
Show On Map
Search
Selection
Themes
Markup
Search
Advanced Search
Download Results
More
Showing 1-1 results. Scroll to see more.
124 HERITAGE AVE
ONE TWENTY FOUR GROUP INC
0284-0008-0000
Heritage Ave
275-7
284-7
284-8
284-6-1
284-5
284-9
Google AppSeo
43.033971,-70.793641
Map data ©2021 100 ft
Terms of Use
Report a map error


124 Heritage Ave
UNIT
15

Office Area


Bathrooms


Warehouse Area


Location Of Proposed
Laboratory


Exterior Loading Dock

Agilyx Tenant Fit-Up

124 Heritage Drive
Portsmouth, NH

Construction

Jan 5th, 2021

agilyx

T|W DESIGNS
254 Drake Hill Rd.
Strafford, NH 03884
P:603.664.2181

Revision Schedule

No.	Description	Date
1	Deleted Lab Tank Rack	01/13/21
2	Reclassification	03/02/21

LICENSED ARCHITECT JOHN M. TUTTLE No. 04015 STATE OF NEW HAMPSHIRE
March 2, 2021

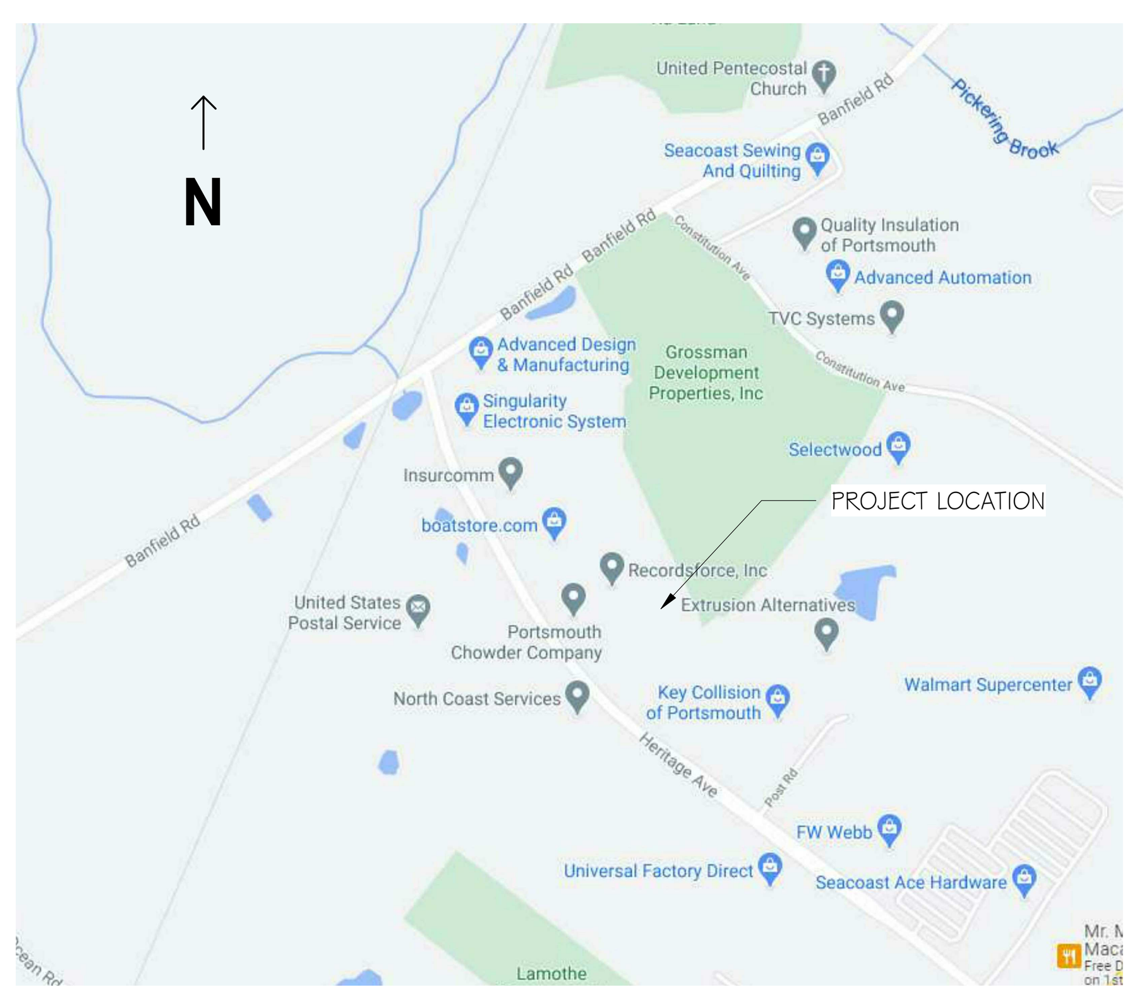
ABBREVIATION:

Abbreviation	Meaning
#	POUNDS / NUMBER
&	AND
@	AT
Ø	DIAMETER
°	DEGREE
±	PLUS OR MINUS
℄	CENTER LINE
PL	WALL PLATE
A.B.	ANCHOR BOLT
A/C	AIR CONDITIONING
ADJ.	ADJUST
AGG.	AGGREGATE
ALT.	ALTERNATE
A.P.	ACCESS PANEL
ARCH.	DESIGN / BUILD CONTRACTOR (URAL)
A.F.F.	ABOVE FINISH FLOOR
ALUM.	ALUMINUM
ANOD.	ANODIZED
APP'D	APPROVED
AUTO.	AUTOMATIC
A.C.T.	ACOUSTICAL CEILING TILE
ASPH	ASPHALT
AVG.	AVERAGE
BD.	BOARD
B.E.J.	BUILDING EXPANSION JOINT
BLD.	BUILDING
B.M.	BENCH MARK
BOT.	BOTTOM
BRG.	BEARING
BSMT.	BASEMENT
B.W.	BOTH WAYS
BIT.	BITUMINOUS
B.O.	BY OWNER / BY OTHER
B.P.	BEARING PLATE
B.S.	BOTH SIDES
CAB.	CABINET
CPT.	CARPET
C.B.	CATCH BASIN
CEM.	CEMENT
C.L.	CENTER LINE
C.T.	CERAMIC TILE
C.B.	CHALKBOARD
C.M.U.	CEMENT MASONRY UNIT
C.J.	CONTROL JOINT
C.F.	CUBIC FEET
CLG.	CEILING
C.H.	CEILING HEIGHT
CIRC.	CIRCULAR
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONT.	CONTINUOUS
CORR.	CORRUGATED / CORRIDOR
CATV	CABLE AUDIO TELEVISION
C/C	CENTER TO CENTER
C.P.	COAT PEGS
C.U.H.	CABINET UNIT HEATER
D.S.	DOWN SPOUT
DEMO	DEMOLISH / DEMOLITION
DIA.	DIAMETER
DIV.	DIVIDE / DIVISION
DR.	DOOR
D.F.	DRINKING FOUNTAIN
D/W	DISH WASHER
DTL.	DETAIL
DIAG.	DIAGONAL
DIM.	DIMENSION
DBL.	DOUBLE
DN.	DOWN
DWG.	DRAWING
EXP.	EXPOSED / EXPANSION
E.I.F.S.	EXTERIOR INSUL. FINISH SYSTEM
EXT.	EXTERIOR
EXH.	EXHAUST
EX.	EXISTING
E.F.	EACH FACE
E.W.	EACH WAY
ELEC.	ELECTRICAL
EL.	ELEVATION
ELEV.	ELEVATOR
EMER.	EMERGENCY
EQP.	EQUIPMENT
EST.	ESTIMATED
EA.	EACH
E.P.	ELECTRICAL PANEL
EQ.	EQUAL
E.W.C.	ELECTRIC WATER COOLER
E.J.	EXPANSION JOINT
FIN.	FINISH
F.E.C.	FIRE EXTINGUISHER CABINET
F/F	FACE TO FACE
FL.	FLOOR
FLUOR.	FLUORESCENT
F.T.	FIRE TREATED
FUT.	FUTURE
F.E.	FIRE EXTINGUISHER
F.F.	FINISH FLOOR
F.G.	FIBERGLASS
F.D.	FLOOR DRAIN
FND.	FOUNDATION
FTG.	FOOTING
F/O	FACE OF
F.P.	FIRE PROOFING
GA.	GAUGE
G.C.	GENERAL CONTRACTOR
G.W.B.	GYPSUM WALL BOARD
GALV.	GALVANIZED
GL.	GLASS
GND.	GROUND
GR.	GRADE
GYP.	GYPSUM
HDW.	HARDWARE
H.D.	HEAVY DUTY
H.M.	HOLLOW METAL
HDWD.	HARDWOOD
HVAC	HEATING VENTILATION A/C
HGT.	HEIGHT
H.C.	HOLLOW CORE
HORIZ.	HORIZONTAL
INCL.	INCLUDE
INSUL.	INSULATION
INT.	INTERIOR
I.D.	INSIDE DIAMETER
INV.	INVERT
JAN.	JANITOR
JT.	JOINT
KIT.	KITCHEN
K.D.	KILN DRY / KNOCK DOWN
K.O.	KNOCK OUT
L.H.	LEFT HAND
L.F.	LINER FOOT
LAV.	LAVATORY
LxWxD	LENGTH, WIDTH, DEPTH
LT.	LIGHT
LTG.	LIGHTING
MAS.	MASONRY
MAX.	MAXIMUM
MIN.	MINIMUM
M.C.	MEDICINE CABINET
M.B.	MARKER BOARD
MFR.	MANUFACTURER
M.O.	MASONRY OPENING
MECH.	MECHANICAL
MED.	MEDIUM
MISC.	MISCELLANEOUS
MLD.	MOLDING
MTL.	METAL
M.R.	MOISTURE RESISTANT
MACH.	MACHINE
MAINT.	MAINTENANCE
MOD.	MODIFY
MTD.	MOUNTED
MTG.	MOUNTING
NAT.	NATIONAL
N.T.S.	NOT TO SCALE
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
O.A.	OVERALL
OPNG.	OPENING
O.H.	OVER HEAD
O/O	OUTSIDE TO OUTSIDE
O/C.	ON CENTER
OPP.	OPPOSITE
O.D.	OUTSIDE DIAMETER
PR.	PAIR
PVMT.	PAVEMENT
PREF.	PERFORATED
P.LAM	PLASTIC LAMINATE
PLYWD.	PLYWOOD
PTD.	PAINTED
PERIM.	PERIMETER
PART.	PARTITION
P.T.	PRESSURE TREATED
PL.	PLATE
PLUMB.	PLUMBING
PREFIN.	PREFINISHED
PRELIM.	PRELIMINARY
Q.T.	QUARRY TILE
QTY.	QUANTITY
QUAL	QUALITY
REQ'D	REQUIRED
REF.	REFERENCE
REINF.	REINFORCE
R.H.	RIGHT HAND
RM.	ROOM
R	RADIUS
REF.	REFRIGERATOR
REV.	REVISION
R.D.	ROOF DRAIN
R.O.	ROUGH OPENING
RND.	ROUND
SHT.	SHEET
SIM.	SIMILAR
SF.	SQUARE FEET
STL.	STEEL
SUSP.	SUSPENDED
STR.	STRUCTURAL
S.C.	SOLID CORE
SQ.	SQUARE
SPEC.	SPECIFICATION
STD.	STANDARD
STO.	STORAGE
T.B.	TACKBOARD
TELE.	TELEPHONE
THK.	THICKNESS
T.P.	TOILET PAPER
T.O.	TOP OF
T&B	TOP & BOTTOM
T.S.	TRANSITION STRIP
T.V.	TELEVISION
T&G	TONGUE AND GROOVE
TEMP.	TEMPERED / TEMPERATURE
TYP.	TYPICAL
T.U.	TOUCH UP
THRU.	THROUGH
T.O.M.	TOP OF MASONRY
T.O.W.	TOP OF WALL
T.O.S.	TOP OF STEEL / TOP OF SLAB
U.C.	UNDERCUT
U.N.O.	UNLESS NOTED OTHERWISE
UTIL.	UTILITY
VERT.	VERTICAL
VFY.	VERIFY
V.I.F.	VERIFY IN FIELD
V.B.	VAPOR BARRIER
V.C.T.	VINYL COMPOSITE TILE
VEST.	VESTIBULE
W/	WITH
W/O	WITHOUT
W.P.	WATER PROOF
W.C.	WATER CLOSET
W.W.F.	WELDED WIRE FABRIC
W.G.	WIRE GLASS
WD.	WOOD
WT.	WEIGHT
WIN.	WINDOW

ANNOTATION LEGEND KEY:

- ROOM NAME 101 = ROOM NAME & NUMBER TAG
- 2 / A3. EXTERIOR ELEVATION = KEY TO EXTERIOR ELEVATION
- 3 / A4. = KEY TO WALL / BUILDING SECTION
- A = INDICATES GRID LINE
- 101A = DOOR NUMBER TAG
- A = WINDOW TYPE TAG
- 1 = WALL TYPE TAG
- 5 = TOILET LEGEND KEY
- X XXX.XX X ELEVATION = INTERIOR ELEVATION
- G.W.B. 9'-0" = CEILING MATERIAL & HEIGHT

LOCUS MAP: (N.T.S.)



DRAWING SHEET INDEX:

Sheet	Sheet Name	Issued	Rev	Rev Date
PCS	Project Cover Sheet	01/05/21	2	03/02/21
CR.1	Code Review Sheet	01/05/21	2	03/02/21
A1.1	Proposed Floor Plan Layout	01/05/21	2	03/02/21
A1.2	Proposed Reflected Ceiling Plan	01/05/21	2	03/02/21
A2.1	Enlarged Rest Room Plan & Interior Elevations	01/05/21		
A6.1	Door & Window Schedule & Legend, Room Finish Schedule	01/05/21		
M-1	FIT-UP HVAC PLAN AND DETAILS	12/23/20	1	01/12/21
M-2	VENTILATION CALCULATIONS, SCHEDULE AND DETAILS	12/23/20	1	01/12/21
M-3	SPECIFICATIONS LEGENDS AND SQUENCE OF OPERATION	12/23/20	1	01/12/21
M-4	CAPTIVEAIRE INFORMATION	12/23/20	1	01/12/21
M-5	CAPTIVEAIRE INFORMATION	12/23/20	1	01/12/21
M-6	CAPTIVEAIRE INFORMATION	12/23/20	1	01/12/21
E1	Electrical Symbols, legend, notes, lighting Schedule	11/20/20		
E1A	Scope of Work, Specifications, demo notes	11/20/20		
E1B	Curcuit Schedule - Existing & New	11/20/20		
E2	Power Riser Diagram, Mechanical Schedule	11/20/20		
E3	Floor Plan - Power	11/20/20		
E4	Floor Plan - Lighting	11/20/20		
FA1	Floor Plan - Fire Alarm	11/20/20		
FA2	Fire Alarm Riser Diagram	11/20/20		
P-1	FIRST FLOOR SANITARY & VENT PIPING PLAN	12/23/20		
P-2	FIRST FLOOR DOMESTIC WATER & GAS PIPING PLAN	12/23/20		
P-3	WATER CALC'S, LEGEND, SCHEDULES & DETAILS	12/23/20		
P-4	FIRST FLOOR DOMESTIC WATER & GAS PIPING PLAN	12/23/20		

GENERAL NOTES:

1) DO NOT SCALE DRAWING OR DIMENSIONS. FOR MISSING DIMENSIONS OR DIMENSIONS IN CONFLICT, CONTACT THE CONTRACTOR IMMEDIATELY BEFORE CONTINUING WITH WORK.
2) ANY DISCREPANCIES IN THESE PLANS WILL BE BROUGHT TO THE CONTRACTOR'S ATTENTION IN WRITING IMMEDIATELY
3) REFER TO MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION DESIGN-BUILD PLANS AND SPECIFICATION FOR LOCATIONS OF ALL BLOCK OUTS, INSERTS, OPENINGS, CURBS, BASES, & PADS THAT ARE NOT DIMENSIONED OR SHOWN ON CONTRACTOR'S DWG'S. OR STRUCTURAL DWG'S.
4) STRUCTURAL STEEL, MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION PLANS AND SPECIFICATION SHALL BE PROVIDED AND ARE THE RESPONSIBILITY OF THERE RESPECTIVE SUBCONTRACTORS IF NOT CARRIED IN ARCHITECTURAL SERVICES
5) ALL CONSTRUCTION SHALL CONFORM TO AND BE IN ACCORDANCE WITH THE REGULATOR REQUIREMENTS MANDATED BY ALL FEDERAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION IN ACCORDANCE TO THE STATE IN WHICH THE WORK IS PERFORMED (STATE BUILDING CODE, STATE LIFE SAFETY & FIRE CODE ETC.)
6) THE CONTRACTOR SHALL REVIEW ALL DOCUMENTS AND VERIFY ALL DIMENSIONS AND FIELD CONDITIONS, AND SHALL CONFIRM WORK IS BUILDABLE AS SHOWN. ANY CONFLICTS OR OMISSIONS, ETC. SHALL BE IMMEDIATELY REPORTED IN WRITING TO THE ARCHITECT FOR CLARIFICATION
7) DIMENSIONS ARE FROM EXTERIOR FACE OF FOUNDATION, VENEER, OR WALL STUD AND TO CENTER OF ALL INTERIOR STUD WALLS OR FACE OF INTERIOR MASONRY. UNLESS NOTED OTHERWISE.
8) CLEAR DIMENSIONS ARE FROM FACE TO FACE OF WALL FINISH. UNLESS NOTED OTHERWISE
9) REFER TO MECHANICAL DRAWINGS / SPEC. FOR ALL SIZES AND LOCATIONS OF MECHANICAL DUCT WORK.
10) UNLESS OBVIOUSLY SHOWN OTHERWISE, DOOR LOCATIONS NOT DESIGNATED BY WRITTEN DIMENSION SHALL BE CENTERED IN THE WALL OR SHALL BE LOCATED FOUR (4) INCHES FROM FINISH WALL TO EDGE OF DOOR JAMB. PER PLAN.
11) PROVIDE METAL CORNER BEAD AT ALL OUTSIDE CORNERS OF PLASTERED OR DRYWALL SURFACES, UNLESS NOTED OTHERWISE.
12) PENETRATIONS OF ALL FIRE RATED ASSEMBLIES SHALL BE PROTECTED BY LIKE RATED CONSTRUCTION DAMPERS, SEALANTS, COLLARS, ETC., TYPICAL.
13) CONTRACTOR SHALL FURNISH, LOCATE AND INSTALL ALL ACCESS PANELS AS REQUIRED AFTER INSTALLATION OF MECHANICAL DUCTS, PLUMBING AND ELECTRICAL WORK, FIRE RATED AS REQUIRED.
14) FURNISH AND INSTALL SOLID BLOCKING BEHIND ALL WALL HUNG MILLWORK ITEMS, RAILS, FIXTURES,GRAB BARS, ETC. . WHERE INDICATED OR REQUIRED.
15) CONTRACTOR SHALL LAYOUT OR MARK, ALL EQUIPMENT, SYSTEMS AND MILLWORK ON THE FLOOR FOR ARCHITECT OR OWNER'S APPROVAL PRIOR TO BEGINNING CEILING / OVER HEAD WORK.
16) ALL SPRINKLER HEAD LOCATIONS, MAINS, BRANCHES AND RISER PIPE LOCATIONS MUST BE COORDINATED WITH THE DESIGN / BUILD CONTRACTOR PRIOR TO WORK.
17) FURNISH AND INSTALL FIRE EXTINGUISHERS IN TYPE, QUANTITY, AND LOCATION PER LOCAL FIRE DEPARTMENT. TYPICAL
18) CONTRACTOR SHALL VERIFY, COORDINATE LOCATION WITH THE ARCHITECT ANY SMOKE, CARBON MONOXIDE DETECTOR OR FIRE ALARM DEVICE AS REQUIRED BY THE LOCAL FIRE DEPARTMENT.
19) FURNISH & INSTALL FIRE DAMPERS WITH FUSIBLE LOUVER WHEREVER DUCT WORK PENETRATES ONE OR TWO HOUR CEILINGS OR WALLS. TYPICAL UNLESS NOTED OTHERWISE.
20) PROVIDE PLASTER AND GYPSUM WALL BOARD CONTROL JOINTS AT 30'-0" ON CENTER FROM FLOOR TO CEILING, OR AS NOTED ON THE CONSTRUCTION DOCUMENTS.. VERIFY IN FEILD WITH ARCHITECT PRIOR TO WORK.

Architect of Record:
T | W Designs, LLC
254 Drake Hill Rd.
Strafford, NH 03884
603-664-2181

Civil Engineer:
N/A

Structural Engineer:
N/A

Electrical Engineer:
Seacoast Consulting Engineers, LLC
261 Jennie Ln.
Eliot, ME 03903
207-370-7230

Mechanical Engineer:
Design Day Mechanicals, Inc
P.O. Box 447
New Ipswich, NH 03071
603-463-1086

Fire Protection Eng.:
N/A

General Contractor:
Whitcher Builders, Inc.
254 Drake Hill Rd.
Strafford, NH 03884
603-664-5577

Project Info:
Agilyx, Inc.
124 Heritage Drive
Portsmouth, NH

20047
Project Cover Sheet

SHEET NUMBER
PCS

REVISED CODE COMPLIANCE SHEET | FIT-UP WAS RECLASSIFIED AS BUSINESS (B) PER 2015 IBC SECTION 304.1

State Building Code:
International Building Code - 2015
w/ New Hampshire Amendments

Life Safety Code:
SAF-C 6000
National Fire Protection Agency
Life Safety Code Handbook 2015
(NFPA Life Safety 2015)

State Energy Code:
International Energy Conservation Code 2015
w/ New Hampshire Amendments

State Mechanical Code:
International Mechanical Code 2015
w/ New Hampshire Amendments

State Electrical Code:
National Electrical Code 2017
w/ New Hampshire Amendments

State Plumbing Code:
International Plumbing Code 2015
w/ New Hampshire Amendments

State / Federal Accessibility Code:
International Building Code 2015
ICC/ANSI A117.1-2003 Accessible & Usable Buildings & Facilities
Federal Register 28 CFR Part 36

TTW DESIGNS LLC
254 DRAKE HILL RD. STRAFFORD, NH
P: 603.664.2181 | F: 603.664.9508

LICENSED ARCHITECT — JOHN M. TUTTLE No. 04015 — STATE OF NEW HAMPSHIRE
March 2, 2021

Project Description:
Agilyx, Inc. is a recycled plastic analysis facility consisting of two research and analysis laboratories which conduct studies of recycled plastic materials to determine their chemical composition. The facility is part of an existing multi-unit building constructed of CMU block. Agilyx, Inc. will consist of the two laboratories, a low-hazard storage warehouse, a training / classroom open area and an administrative office area. The facility is protected throughout by an existing automatic sprinkler system which will be modified & reconfigured as required for the new proposed interior layout.

PROPOSED BUILDING DATA:

Building Footprint	7,207 S.F.	
Building Height	17'-0" approx. (Top of Mean Grade / Top of Roof)	
Number of Stories Above Grade	1 Story(s)	
Construction Type	*2B (Non-Combustible Non-Protected)*	Section 602 IBC
Sprinkler System	Existing Sprinkler System	
Occupancy	*B (Business)*	Section 306 IBC
Accessory Uses	*N/A*	
Incident Use Accessory	*N/A*	
Excess Open Perimeter (Above. 25%)	*N/A*	
Distance (Min.) to Lot / Structure	*N/A*	

ADJUSTED HEIGHT & AREA LIMITATIONS:

Basic Height Limitation	B = 4 stories / 75' (measured Mean Grade / Mean Roof)	Table 504 IBC
Sprinkler Increase	N/A (Existing Facility)	Section 504.1
Adjusted Allowable Height	N/A (Existing Facility)	
Basic Area Limitation	B = 92,000 S.F.	Table 506 IBC
If = Frontage Increase (Abv. 25%)	N/A (Existing Facility)	Section 506.3
Is = Auto-Sprinkler Increase	N/A (Existing Facility)	Table 506.2 IBC

AREA SEPARATION & FIRE RATING - Construction Type: *(2B - existing building)*

Special Provisions	N/A	Section 510 IBC
Incidental Accessory Occupancy	N/A	Table 509 IBC
Primary Structural Frame	0 Hour(s)	Table 601 IBC
Bearing walls		
Interior	N/A Hour(s)	Table 601 IBC
Exterior (& Table 602)	N/A Hour(s)	Table 601 IBC
Non-Bearing Interior Walls	N/A Hour(s)	
Non-Bearing Exterior Walls	N/A Hour(s)	Table 601 IBC
Floor Construction & 2nd Members	N/A Hours(s)	Table 601 IBC
Roof Construction & 2nd Members	N/A Hours(s)	Table 601 IBC
Occupancy Separation (*B*)	N/A Hour(s)	Table 6.1.14.4.1 NFPA 101
Fire Area Summary	N/A Hour(s)	Section 707 IBC
Shaft Enclosure	N/A	Section 713 IBC
Elevator Lobby	N/A	Section 3007.6.2 IBC
Exit Enclosure	N/A Hour(s)	NFPA 101
Penetrations	N/A Hour(s) (Per Wall Rating)	Section 714 IBC
Door & Shutters	N/A	Table 716.5 IBC
Exterior Wall Openings	Unlimited	Section 705 IBC

MEANS OF EGRESS COMPONENTS:

Occupant Load	50 Occupant (See Note 1)	Table 7.3.1.2. NFPA 101
Egress Width		
Door	50occ x 0.2" = 10" Required (72" Proposed)	Table 7.3.3.1 NFPA 101
Stair	N/A	Table 7.3.3.1 NFPA 101
Ramp (N/A)	N/A	Table 7.3.3.1 NFPA 101
Minimum Number of Exits	2 Req'd. (2 Proposed)	Section 7.4 NFPA 101
Remoteness of Exit (1/3 Sprinkled)	129'-2" / (1/3) = 43'-1" (80'-2" Proposed)	Section 7.5 NFPA 101
Maximum Travel Distance (B)	300'-0" (100'-0" Proposed)	Table 7.6 NFPA 101
Maximum Common Path of Travel (B)	100'-0" (32'-6" Proposed)	Table 7.6 NFPA 101
Maximum Dead End Limit (B)	50'-0" (25'-0" Proposed)	Table 7.6 NFPA 101

PLUMBING FIXTURE SUMMARY- TYPE B OCCUPANCY:

Occupant Load (From Above)	50 Occupants	
Separate Fixture Requirement	YES: Separate Fixtures (15 Male & 15 Female)	Section 2902.1 IBC
Toilet Mens	1 Per 25 = 1 Req'd. / 1 Provided	Table 403.1 IPC
Toilet Womens	1 Per 25 = 1 Req'd. / 1 Provided	Table 403.1 IPC
Lavatories Mens	1 Per 40 = 1 Req'd. / 1 Provided	Table 403.1 IPC
Lavatories Womens	1 Per 40 = 1 Req'd. / 1 Provided	Table 403.1 IPC
Drinking Fountain	1 Per 100 = 1 Req'd. / 1 Provided	Table 403.1 IPC
Service Sink	1 Req'd. / 1 Provided (@ Janitor Closet)	Table 403.1 IPC

INTERIOR FINISHES: Per Chart
(For definitions of classifications, refer to 2015 NFPA 101 Section 10.1.3)

Interior Floor Finish	All Covering Material Shall Comply w/ DOC FF 1-70 "Pill Test"	
Exit Enclosure (B Business)	Class A or B & Class I or II	NFPA 101 Table A.10.2.2
Passageways, & Corridors	Class A or B	NFPA 101 Table A.10.2.2
Other Spaces	Class A, B or C	NFPA 101 Table A.10.2.2

Accessibility Compliance Statement:

Per New Hampshire TITLE XII PUBLIC SAFETY AND WELFARE CHAPTER 155-A NEW HAMPSHIRE BUILDING CODE Section 155-A:5-b I John M Tuttle licensed Architect in the state of New Hampshire certify that to the best of my knowledge the information, documents & design contained with in this project meet Federal, State and local Accessibility codes.

GENERAL CODE REVIEW NOTES:

1. Occupant loads of this facility are based on the maximum number of occupants using the facility at any given time. The classroom / training area has been classified as B (Business) with an load of 30 occupants, 8 occupants in the administrative office area, 2 occupants in the warehouse and 10 occupants in the laboratories.
   A. **Giving an occupant load grand total of 50 occupants**

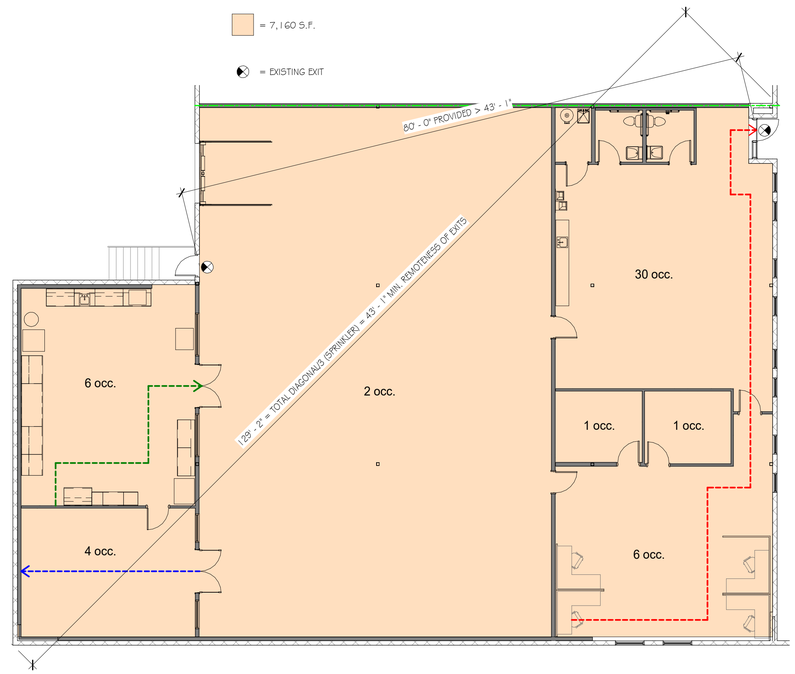
ENERGY EFFICIENCY - Portsmouth, NH - Rockingham County - Zone 5A - Group R Use:
Refer to ComCheck insert on this sheet for verification of compliance

Building Envelope: Listed below are the assumed values used in the ComCheck

Roof	N/A (Existing Facility)	Table 502.2(1) IECC
Walls Abv. Grade	N/A (Existing Facility)	Table 502.2(1) IECC
Walls Below Grade	N/A (Existing Facility)	Table 502.2(1) IECC
Floors	N/A (Existing Facility)	Table 502.2(1) IECC
Slab-on-Grade	N/A (Existing Facility)	Table 502.2(1) IECC

TABLE INDICATES LONGEST DISTANCES COMPUTED

= TRAVEL DISTANCE (PROPOSED = 100' - 0" < 300' - 0")
= COMMON PATH OF TRAVEL (PROPOSED = 32' - 6" < 100' - 0")
= DEAD END LIMIT (PROPOSED = 25' - 0" < 50' - 0")



1 LIFE SAFETY PLAN
1" = 10'-0"

CONSTRUCTION 3/2/2021 8:54:15 AM

No.	Description	Date
2	Reclassification	03/02/21

Revision Schedule

Project Info:
Agilyx Tenant Fit-Up

124 Heritage Drive Portsmouth, NH

Sheet Status:

Latest Release:	03/02/21 - Rev_2
Issued For:	Construction
Org. Issue Date:	Jan 5th, 2021
JOB NO:	20047
DRAFTED:	MLN
CHECKED:	JMT
SCALE:	1" = 10'-0"

Sheet Title:
Code Review Sheet

Sheet Number:
CR.1

Printed on: 3/2/2021 8:54:15 AM

T:\3 Projects\20047-Agilyx Renovation\20047_A.rvt

WALL LEGEND:

= NEW WALLS

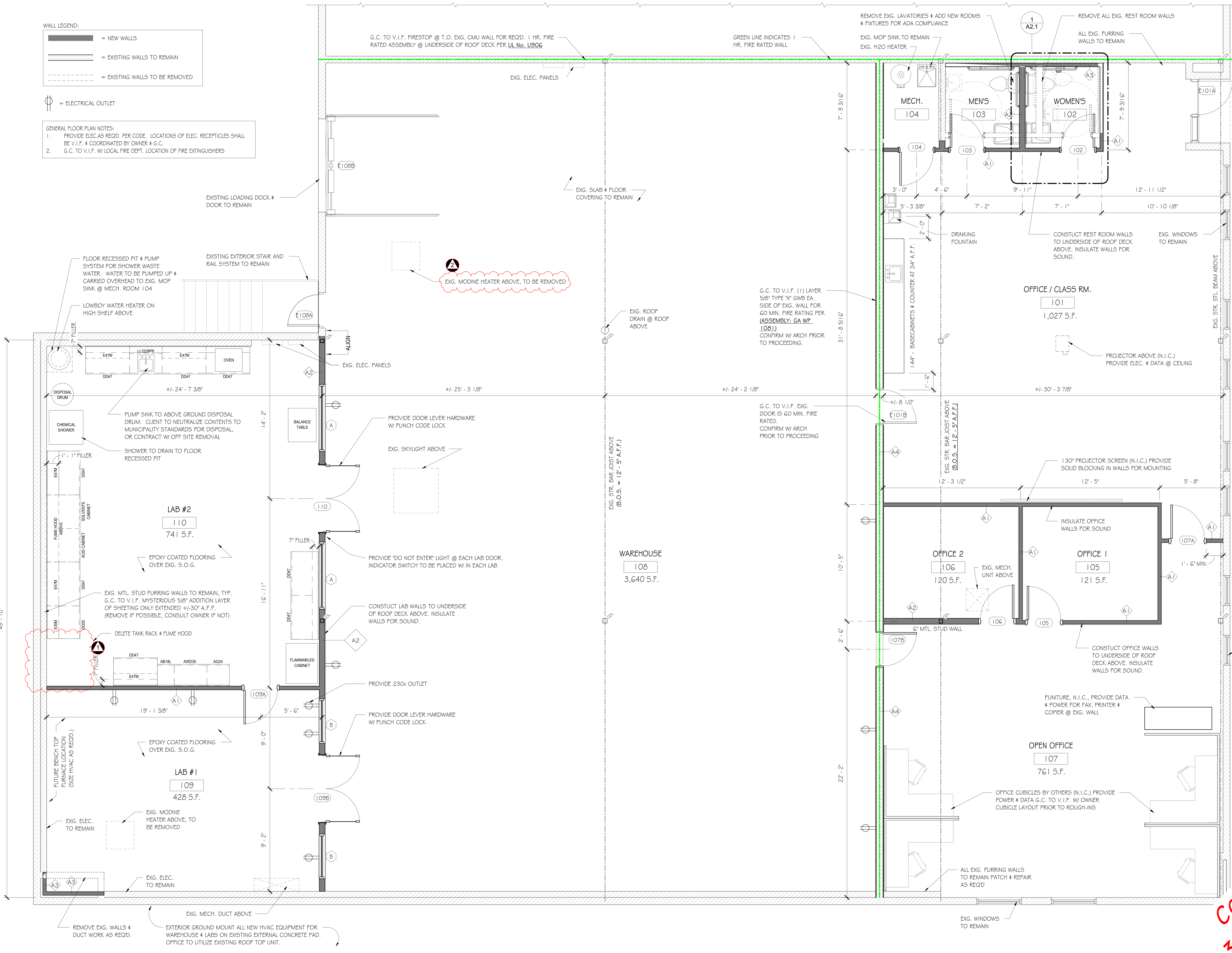
= EXISTING WALLS TO REMAIN

= EXISTING WALLS TO BE REMOVED

= ELECTRICAL OUTLET

GENERAL FLOOR PLAN NOTES:

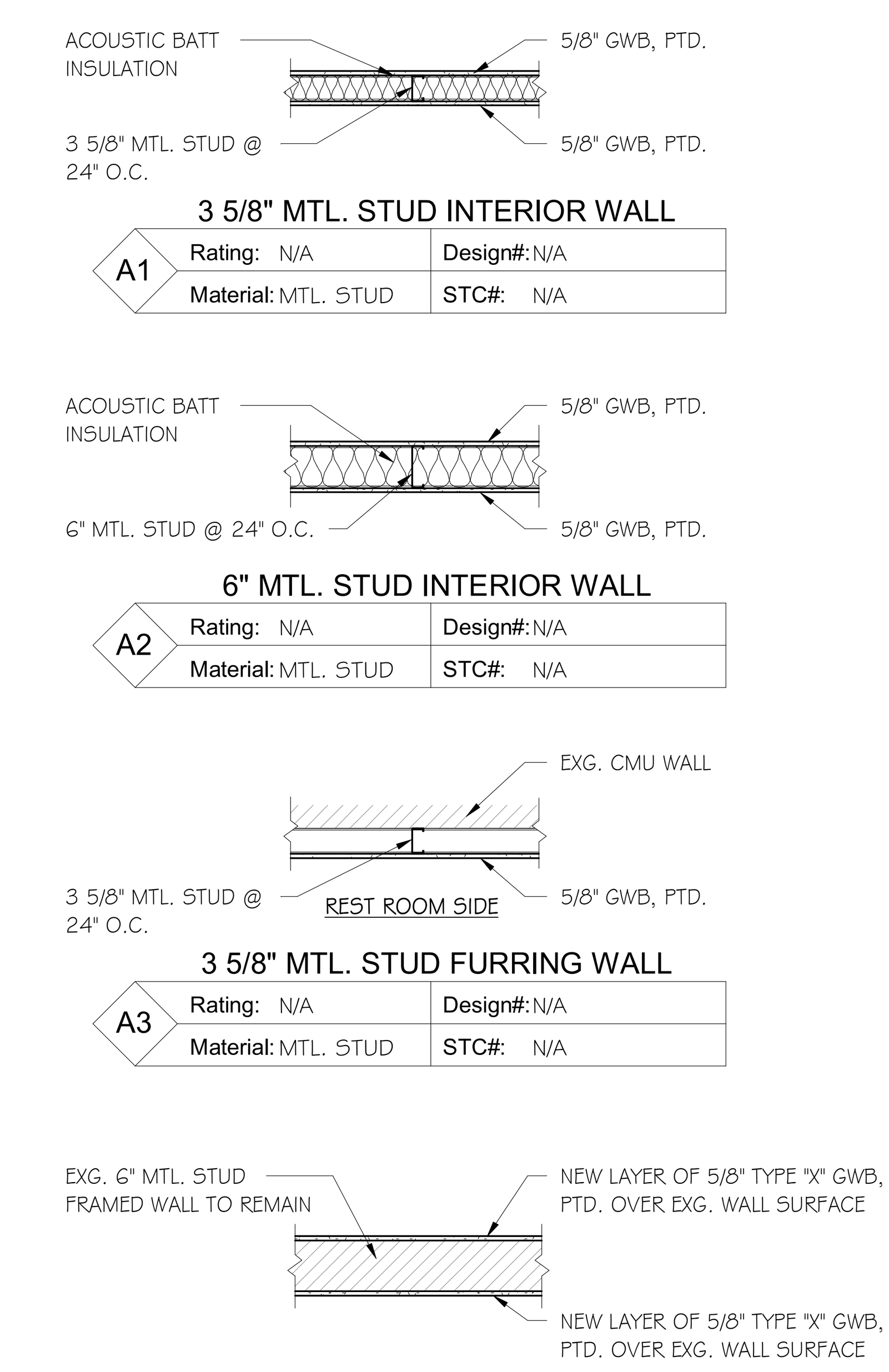
1. PROVIDE ELEC. AS REQ'D. PER CODE. LOCATIONS OF ELEC. RECEPTICLES SHALL BE V.I.F. & COORDINATED BY OWNER & G.C.
2. G.C. TO V.I.F. W/ LOCAL FIRE DEPT. LOCATION OF FIRE EXTINGUISHERS



G.C. TO V.I.F. FIRESTOP @ T.O. EXG. CMU WALL FOR REQ'D. 1 HR. FIRE RATED ASSEMBLY @ UNDERSIDE OF ROOF DECK PER UL No. U906
GREEN LINE INDICATES 1 HR. FIRE RATED WALL
REMOVE EXG. LAVATORIES & ADD NEW ROOMS & FIXTURES FOR ADA COMPLIANCE
EXG. MOP SINK TO REMAIN
EXG. H2O HEATER
REMOVE ALL EXG. REST ROOM WALLS
ALL EXG. FURRING WALLS TO REMAIN
EXG. ELEC. PANELS
MECH. 104
MEN'S 103
WOMEN'S 102
EXISTING LOADING DOCK & DOOR TO REMAIN
EXG. SLAB & FLOOR COVERING TO REMAIN
DRINKING FOUNTAIN
CONSTUCT REST ROOM WALLS TO UNDERSIDE OF ROOF DECK ABOVE. INSULATE WALLS FOR SOUND.
EXG. WINDOWS TO REMAIN
FLOOR RECESSED PIT & PUMP SYSTEM FOR SHOWER WASTE WATER. WATER TO BE PUMPED UP & CARRIED OVERHEAD TO EXG. MOP SINK @ MECH. ROOM 104
EXISTING EXTERIOR STAIR AND RAIL SYSTEM TO REMAIN
EXG. MODINE HEATER ABOVE, TO BE REMOVED
G.C. TO V.I.F. (1) LAYER 5/8" TYPE "X" GWB EA. SIDE OF EXG. WALL FOR 60 MIN. FIRE RATING PER (ASSEMBLY: GA WP 1081) CONFIRM W/ ARCH PRIOR TO PROCEEDING.
OFFICE / CLASS RM. 101 1,027 S.F.
LOWBOY WATER HEATER ON HIGH SHELF ABOVE
EXG. ROOF DRAIN @ ROOF ABOVE
144" BASECABINETS & COUNTER AT 34" A.F.F.
PROJECTOR ABOVE (N.I.C.) PROVIDE ELEC. & DATA @ CEILING
EXG. ELEC. PANELS
ALIGN
+/- 24' - 7 3/8"
+/- 25' - 3 1/8"
+/- 24' - 2 1/8"
+/- 30' - 3 7/8"
PUMP SINK TO ABOVE GROUND DISPOSAL DRUM. CLIENT TO NEUTRALIZE CONTENTS TO MUNICIPALITY STANDARDS FOR DISPOSAL, OR CONTRACT W/ OFF SITE REMOVAL
G.C. TO V.I.F. EXG. DOOR IS 60 MIN. FIRE RATED. CONFIRM W/ ARCH PRIOR TO PROCEEDING
PROVIDE DOOR LEVER HARDWARE W/ PUNCH CODE LOCK
SHOWER TO DRAIN TO FLOOR RECESSED PIT
EXG. SKYLIGHT ABOVE
130" PROJECTOR SCREEN (N.I.C.) PROVIDE SOLID BLOCKING IN WALLS FOR MOUNTING
EXG. STR. BAR JOIST ABOVE (B.O.S. = 12' - 5" A.F.F.)
EXG. STR. STL. BEAM ABOVE
INTERIOR PUBLIC CORRIDOR
LAB #2 110 741 S.F.
INSULATE OFFICE WALLS FOR SOUND
EPOXY COATED FLOORING OVER EXG. S.O.G.
PROVIDE "DO NOT ENTER" LIGHT @ EACH LAB DOOR. INDICATOR SWITCH TO BE PLACED W/ IN EACH LAB
WAREHOUSE 108 3,640 S.F.
OFFICE 2 106 120 S.F.
EXG. MECH. UNIT ABOVE
OFFICE 1 105 121 S.F.
EXG. MTL. STUD FURRING WALLS TO REMAIN, TYP. G.C. TO V.I.F. MYSTERIOUS 5/8" ADDITION LAYER OF SHEETING ONLY EXTENDED +/-30" A.F.F. (REMOVE IF POSSIBLE, CONSULT OWNER IF NOT)
CONSTUCT LAB WALLS TO UNDERSIDE OF ROOF DECK ABOVE. INSULATE WALLS FOR SOUND.
6" MTL. STUD WALL
DELETE TANK RACK & FUME HOOD
CONSTUCT OFFICE WALLS TO UNDERSIDE OF ROOF DECK ABOVE. INSULATE WALLS FOR SOUND.
EXG. WINDOWS TO REMAIN
PROVIDE 230v OUTLET
FUNITURE, N.I.C., PROVIDE DATA & POWER FOR FAX, PRINTER & COPIER @ EXG. WALL
PROVIDE DOOR LEVER HARDWARE W/ PUNCH CODE LOCK
EPOXY COATED FLOORING OVER EXG. S.O.G.
LAB #1 109 428 S.F.
OPEN OFFICE 107 761 S.F.
FUTURE BENCH TOP FURNACE LOCATION (SIZE HVAC AS REQ'D.)
EXG. MODINE HEATER ABOVE, TO BE REMOVED
EXG. ELEC. TO REMAIN
OFFICE CUBICLES BY OTHERS (N.I.C.) PROVIDE POWER & DATA G.C. TO V.I.F. W/ OWNER CUBICLE LAYOUT PRIOR TO ROUGH-INS
EXG. ELEC. TO REMAIN
ALL EXG. FURRING WALLS TO REMAIN PATCH & REPAIR AS REQ'D
EXG. MECH. DUCT ABOVE
EXG. WINDOWS TO REMAIN
REMOVE EXG. WALLS & DUCT WORK AS REQ'D.
EXTERIOR GROUND MOUNT ALL NEW HVAC EQUIPMENT FOR WAREHOUSE & LABS ON EXISTING EXTERNAL CONCRETE PAD. OFFICE TO UTILIZE EXISTING ROOF TOP UNIT.
49' - 10"

PROPOSED FLOOR PLAN
1/4" = 1'-0"
AREA: 7,207 S.F.

T:\3.Projects\20047-Agilyx Renovation\20047_A.rvt



3 5/8" MTL. STUD INTERIOR WALL (A1)

Rating: N/A	Design#: N/A
Material: MTL. STUD	STC#: N/A

6" MTL. STUD INTERIOR WALL (A2)

Rating: N/A	Design#: N/A
Material: MTL. STUD	STC#: N/A

3 5/8" MTL. STUD FURRING WALL (A3)

Rating: N/A	Design#: N/A
Material: MTL. STUD	STC#: N/A

1 HR. RATED INTERIOR WALL (A4)

Rating: 1 HR.	Design#: GA WP 1081
Material: MTL. STUD	STC#: +/- 49

WALL TYPES
1/2" = 1'-0"

Revision Schedule

No.	Description	Date
2	Reclassification	03/02/21
1	Deleted Lab Tank Rack	01/13/21

T|W DESIGNS
254 DRAKE HILL RD. STRAFFORD, NH
P: 603.664.2181 | F: 603.664.9508

LICENSED ARCHITECT JOHN M. TUTTLE No. 04015 STATE OF NEW HAMPSHIRE
March 2, 2021

CONSTRUCTION 3/2/2021 8:54:13 AM

Project Info:

Agilyx Tenant Fit-Up

124 Heritage Drive Portsmouth, NH

Sheet Status:

Latest Release:	03/02/21 - Rev_2
Issued For:	Construction
Org. Issue Date:	Jan 5th, 2021
JOB NO:	20047
DRAFTED:	MLN
CHECKED:	JMT
SCALE:	As indicated

Sheet Title:

Proposed Floor Plan Layout

Sheet Number:

A1.1

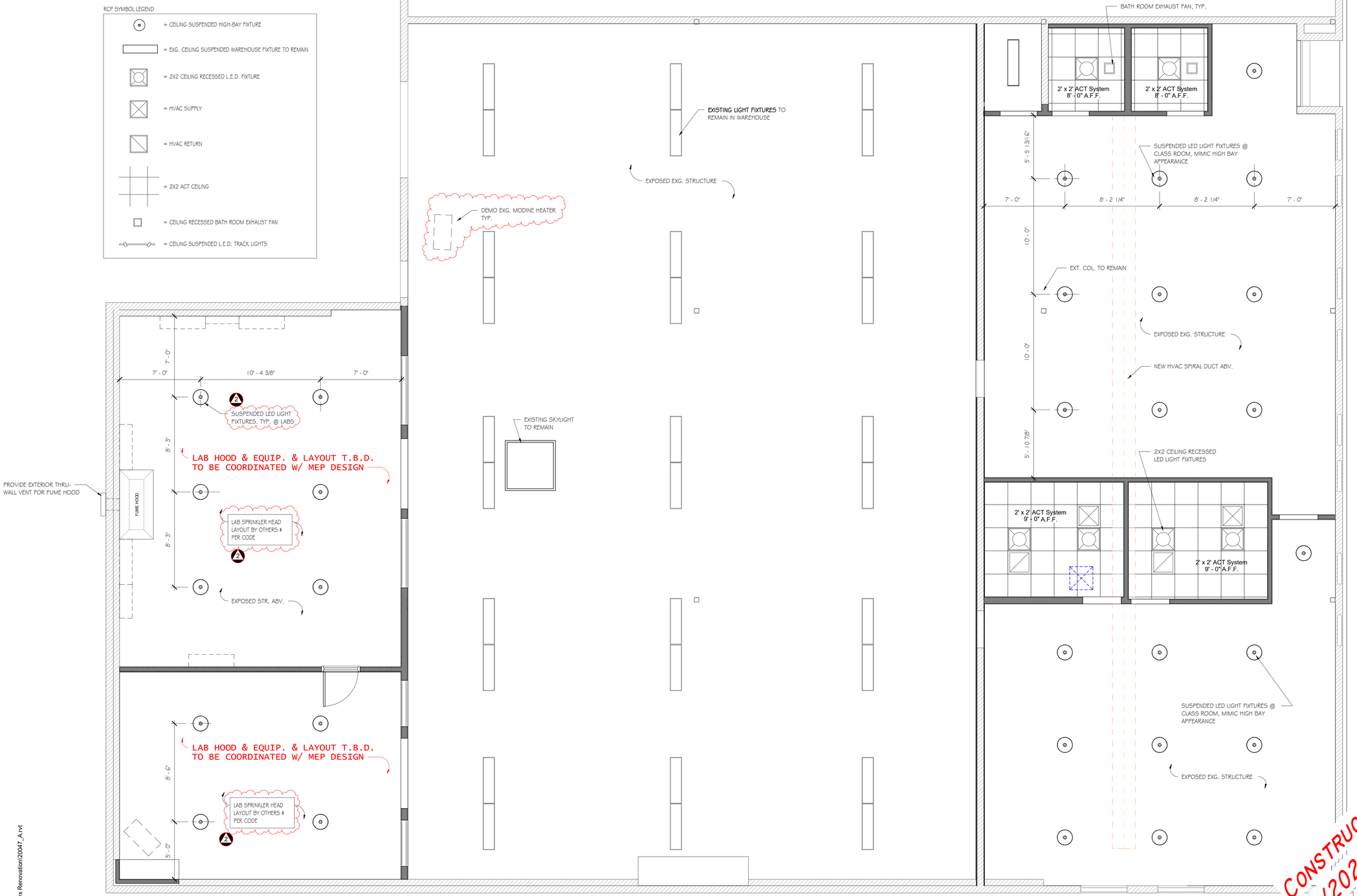
Printed on: 3/2/2021 8:54:13 AM

TW DESIGNS LLC
254 DRAKE HILL RD. STRAFFORD, NH
P: 603.664.2181 | F: 603.664.9508

LICENSED ARCHITECT
JOHN M. TUTTLE
No. 04015
STATE OF NEW HAMPSHIRE
March 2, 2021

RCP SYMBOL LEGEND

- = CEILING SUSPENDED HIGH-BAY FIXTURE
- = EXG. CEILING SUSPENDED WAREHOUSE FIXTURE TO REMAIN
- = 2X2 CEILING RECESSED L.E.D. FIXTURE
- = HVAC SUPPLY
- = HVAC RETURN
- = 2X2 ACT CEILING
- = CEILING RECESSED BATH ROOM EXHAUST FAN
- = CEILING SUSPENDED L.E.D. TRACK LIGHTS



1 FIRST FLOOR REFLECTED CEILING PLAN
1/4" = 1'-0"

1

REFLECTED CEILING PLAN NOTES:
1. REFER TO SHEET AG.1 FOR CEILING FINISH MATERIAL SCHEDULE
2. LIGHTING LAYOUT FOR DESIGN INTENT ONLY. REFER TO ELECTRICAL ENGINEERING DRAWINGS.
3. MECHANICAL LAYOUT FOR DESIGN INTENT ONLY. REFER TO MECHANICAL ENGINEERING DRAWINGS.
4. PROVIDE LOCAL CO DETECTION ALARM @ LAB CEILINGS

No.	Description	Date
2	Reclassification	03/02/21

Revision Schedule

Project Info:

Agilyx Tenant Fit-Up

124 Heritage Drive Portsmouth, NH

Sheet Status:

Latest Release:	03/02/21 - Rev_2
Issued For:	Construction
Org. Issue Date:	Jan 5th, 2021
JOB NO:	20047
DRAFTED:	MLN
CHECKED:	JMT
SCALE:	As indicated

Sheet Title:

Proposed Reflected Ceiling Plan

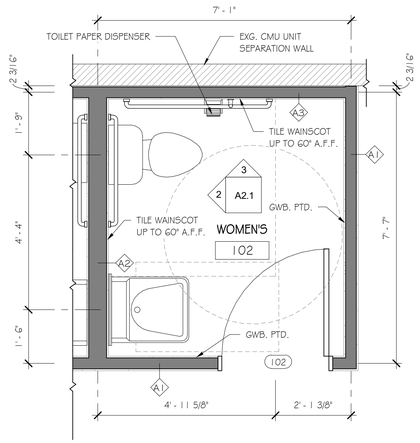
Sheet Number:

A1.2

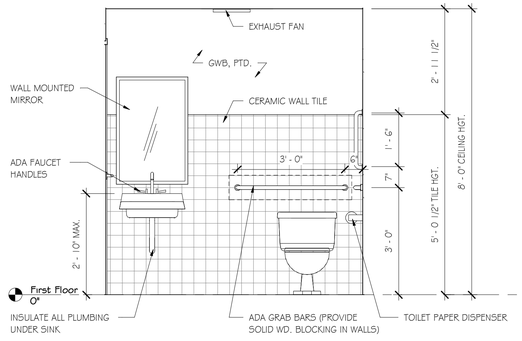
CONSTRUCTION 3/2/2021 8:54:14 AM

Printed on: 3/2/2021 8:54:14 AM

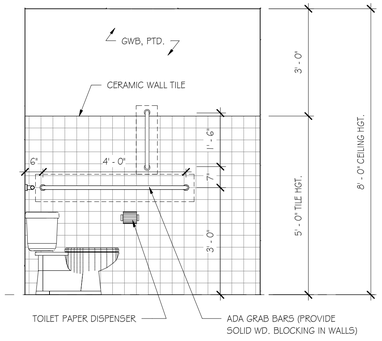
T:\3 Projects\20047-Agilyx Renovation\20047_A.rvt



1 ENLARGED REST ROOM FLOOR PLAN
1/2" = 1'-0"



2 REST ROOM INT. ELEVATION "A"
1/2" = 1'-0"



3 REST ROOM INT. ELEVATION "B"
1/2" = 1'-0"

TIW DESIGNS LLC
254 DRAKE HILL RD. STRAFFORD, NH
P: 603.664.2181 | F: 603.664.9508

LICENSED ARCHITECT
JOHN M. TUTTLE
No. 04015
THE STATE OF NEW HAMPSHIRE

March

CONSTRUCTION 3/2/2021 8:54:14 AM

T:\3 Projects\20047-Agilyx Renovation\20047_A.rvt

No.	Description	Date

Revision Schedule

Project Info:

Agilyx Tenant Fit-Up

124 Heritage Drive Portsmouth, NH

Sheet Status:

Latest Release:
Issued For: Construction
Org. Issue Date: Jan 5th, 2021

JOB NO: 20047
DRAFTED: MLN
CHECKED: JMT

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

Sheet Title:

Enlarged Rest Room Plan & Interior Elevations

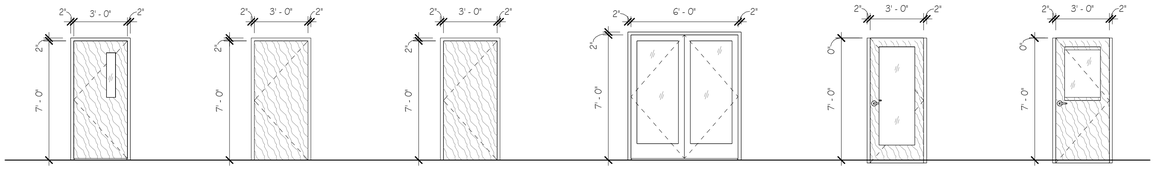
Sheet Number:

A2.1

Printed on: 3/2/2021 8:54:14 AM

Door Schedule

Mark	Type Mark	Operation	Width	Height	Thickness	Door Material	Door Finish	Fire Rating	Frame Material	Frame Type	Frame Finish	Comments
102	B	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD	CLEAR FINISH	N/A	METAL	H.M.K.D.	PTD.	ADA HARDWARE
103	B	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD	CLEAR FINISH	N/A	METAL	H.M.K.D.	PTD.	ADA HARDWARE
104	B	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD	CLEAR FINISH	N/A	METAL	H.M.K.D.	PTD.	ADA HARDWARE
105	E	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD / GLASS	CLEAR FINISH	N/A	METAL	H.M.K.D.	PTD.	ADA HARDWARE, FULL LITE
106	E	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD / GLASS	CLEAR FINISH	N/A	METAL	H.M.K.D.	PTD.	ADA HARDWARE, FULL LITE
107A	A	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD	CLEAR FINISH	N/A	METAL	H.M.K.D.	PTD.	AUTO CLOSER, ADA HARDWARE, VISION LITE
107B	C	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD	CLEAR FINISH	1 HR.	METAL	H.M.K.D.	PTD.	AUTO CLOSER, ADA HARDWARE
109A	F	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD / GLASS	CLEAR FINISH	N/A	METAL	H.M.K.D.	PTD.	AUTO CLOSER, ADA HARDWARE, HALF LITE
109B	D	SWING	6' - 0"	7' - 0"	1 3/4"	METAL / GLASS	PTD.	N/A	METAL	H.M.K.D.	PTD.	AUTO CLOSER, ADA HARDWARE, FULL LITE, PANIC HARDWARE @ EA. LEAF, PUNCH CODE ENTRY
110	D	SWING	6' - 0"	7' - 0"	1 3/4"	METAL / GLASS	PTD.	N/A	METAL	H.M.K.D.	PTD.	AUTO CLOSER, ADA HARDWARE, FULL LITE, PANIC HARDWARE @ EA. LEAF, PUNCH CODE ENTRY
E101A	EXG.	SWING	3' - 0"	7' - 0"	1 3/4"	N/A	N/A	N/A	N/A	N/A	N/A	EXG. DOOR TO REMAIN
E101B	C	SWING	3' - 0"	7' - 0"	1 3/4"	WOOD	CLEAR FINISH	1 HR.	METAL	H.M.K.D.	PTD.	AUTO CLOSER, ADA HARDWARE - NEW DOOR @ EXG. OPENING - V.I.F. FIRE RATING OF EXG.
E108A	EXG.	SWING	2' - 10"	7' - 0"	1 3/4"	N/A	N/A	N/A	N/A	N/A	N/A	EXG. DOOR TO REMAIN
E108B	EXG.	OVERHEAD	8' - 4"	8' - 0"	3"	N/A	N/A	N/A	N/A	N/A	N/A	EXG. DOOR TO REMAIN



"A"
FLUSH BIRCH WOOD DOOR
CLEAR NATURAL FINISH
SOLID CORE
PTD. HOLLOW MTL. FRAME
VISION LITE
TEMPERED GLASS
INSULATED CORE
CLOSER
ADA HARDWARE

"B"
FLUSH BIRCH WOOD DOOR
CLEAR NATURAL FINISH
SOLID CORE
PTD. HOLLOW MTL. FRAME
INSULATED CORE
ADA HARDWARE

"C"
FLUSH BIRCH WOOD DOOR
CLEAR NATURAL FINISH
SOLID CORE
PTD. HOLLOW MTL. FRAME
INSULATED CORE
AUTO CLOSER
ADA HARDWARE
1 HR. FIRE RATED

"D"
FLUSH METAL DOOR
FULL LITES
PAINTED
PTD. HOLLOW MTL. FRAME
TEMPERED GLASS
INSULATED CORE
AUTO CLOSER
ADA HARDWARE
PANIC HARDWARE
PUNCH CODE ENTRY

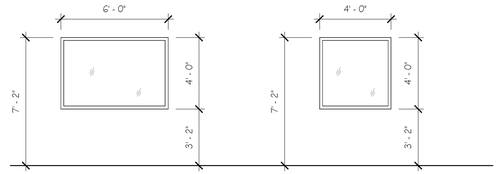
"E"
FLUSH BIRCH WOOD DOOR
CLEAR NATURAL FINISH
SOLID CORE
FULL LITE
TEMPERED GLASS
PTD. HOLLOW MTL. FRAME
INSULATED CORE
ADA HARDWARE

"F"
FLUSH BIRCH WOOD DOOR
CLEAR NATURAL FINISH
SOLID CORE
HALF LITE
TEMPERED GLASS
PTD. HOLLOW MTL. FRAME
INSULATED CORE
ADA HARDWARE

DOOR TYPE LEGEND
1/4" = 1'-0"

Window Schedule

Type Mark	Description	Width	Height	Head Height	Comments
A	FIXED GLASS	6' - 0"	4' - 0"	7' - 2"	
B	FIXED GLASS	4' - 0"	4' - 0"	7' - 2"	



"A"
INTERIOR FIXED GLASS PICTURE WINDOW
TEMPERED GLASS
HOLLW MTL. FRAME

"B"
INTERIOR FIXED GLASS PICTURE WINDOW
TEMPERED GLASS
HOLLW MTL. FRAME

WINDOW TYPE LEGEND
1/4" = 1'-0"

Room Finish Schedule

Name	Number	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
OFFICE / CLASS RM.	101	ROLL OUT CARPET	VINYL WALL BASE	GWB, PTD.	EXG. EXPOSED STRUCTURE	
WOMENS	102	CERAMIC TILE	CERAMIC TILE BASE	CERAMIC TILE & GWB, PTD.	2X2 ACT	CERAMIC TILE UP TO 5' - 0" @ WET WALLS ONLY W/ GWB, PTD. ABOVE 5' - 0". - GWB, PTD. @ REAR WALL & DOOR WALL
MENS	103	CERAMIC TILE	CERAMIC TILE BASE	CERAMIC TILE & GWB, PTD.	2X2 ACT	CERAMIC TILE UP TO 5' - 0" @ WET WALLS ONLY W/ GWB, PTD. ABOVE 5' - 0". - GWB, PTD. @ REAR WALL & DOOR WALL
MECH.	104	EXG. EXPOSED CONC. S.O.G.	VINYL WALL BASE	GWB, PTD.	EXG. EXPOSED STRUCTURE	
OFFICE 1	105	ROLL OUT CARPET	VINYL WALL BASE	GWB, PTD.	2X2 ACT	
OFFICE 2	106	ROLL OUT CARPET	VINYL WALL BASE	GWB, PTD.	2X2 ACT	
OPEN OFFICE	107	ROLL OUT CARPET	VINYL WALL BASE	GWB, PTD.	EXG. EXPOSED STRUCTURE	
WAREHOUSE	108	EXG. EXPOSED CONC. S.O.G.	VINYL WALL BASE	EXG. CMU WALLS, PTD.	EXG. EXPOSED STRUCTURE	
LAB # 1	109	EPOXY COATED FLOOR	VINYL WALL BASE	EXG. CMU WALLS, PTD. & GWB, PTD.	EXG. EXPOSED STRUCTURE	EPOXY COATING SHALL BE INTERNATIONAL COATINGS, INC. - ICO HI-GUARD COATING
LAB #2	110	EPOXY COATED FLOOR	VINYL WALL BASE	EXG. CMU WALLS, PTD. & GWB, PTD.	EXG. EXPOSED STRUCTURE	EPOXY COATING SHALL BE INTERNATIONAL COATINGS, INC. - ICO HI-GUARD COATING

FINISH NOTES:

1) CARPET TO BE 20oz. STAIN RESISTANT COMMERCIAL GRADE, G.C. TO COORDINATE SELECTION W/ OWNER
2) CERAMIC TILE TO BE SLIP RESISTANT @ FLOOR, G.C. TO COORDINATE SELECTION W/ OWNER
3) VINYL BASE TO BE 4" COVE BASE, G.C. TO COORDINATE SELECTION W/ OWNER
4) ACOUSTIC CEILING TILE TO BE ARMSTRONG "CLEAN ROOM VL & VL" 15/16" LAY-IN 2X2 CEILING TILES ON SUSPENDED GRID SYSTEM (OR APPROVED EQ.)
5) ALL GYPSUM WALL BOARD SHALL BE SANDED & PREPPED TO RECEIVE PAINT
6) ALL PAINT SHALL BE A LATEX (1) COAT PRIMER AND (2) COATS FINISH PAINT SYSTEM
7) LAB FLOOR EPOXY COATING SHALL BE INTERNATIONAL COATINGS, INC. - ICO HI-GUARD COATING FOR ITS ABILITY TO RESIST THE OCCASIONAL SPILL FROM THE FOLLOWING CHEMICALS:
   - HYDROCHLORIC ACID (HCl)
   - SODIUM HYDROXIDE (NaOH)
   - ACETONE (C3H6O)
   - DENATURED ALCOHOL
   - TOLUENE (C7H8)

TW DESIGNS LLC
254 DRAKE HILL RD. STRAFFORD, NH
P: 603.664.2181 | F: 603.664.9508

LICENSED ARCHITECT
JOHN M. TUTTLE
No. 04015
STATE OF NEW HAMPSHIRE

No.	Description	Date

Revision Schedule

Project Info:

Agilyx Tenant Fit-Up

124 Heritage Drive Portsmouth, NH

Sheet Status:

Latest Release:
Issued For: Construction
Org. Issue Date: Jan 5th, 2021

JOB NO: 20047
DRAFTED: MLN
CHECKED: JMT

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

Sheet Title:

Door & Window Schedule & Legend, Room Finish Schedule

Sheet Number:

A6.1

CONSTRUCTION 3/2/2021 8:54:15 AM

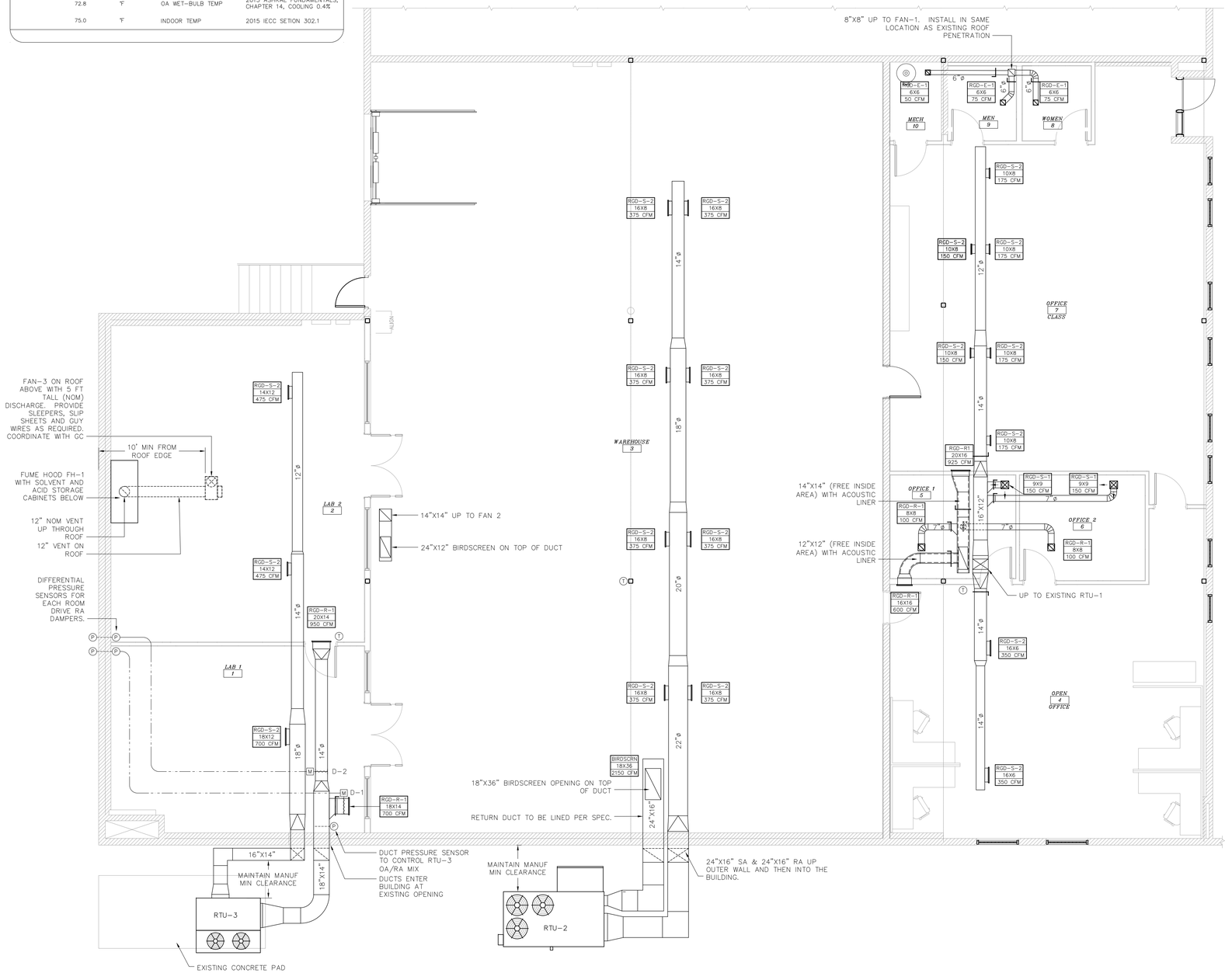
Printed on: 3/2/2021 8:54:15 AM

T:\3 Projects\20047-Agilyx Renovation\20047_A.rvt

PROJECT DESIGN CONDITIONS:

ASHRAE WEATHER STATION: PORTSMOUTH, NEW HAMPSHIRE

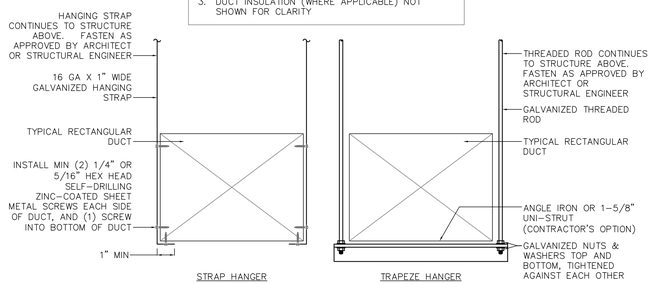
SEASON	VALUE	UNITS	DESCRIPTION	SOURCE
WINTER	-15.3	°F	OA TEMP	ASHRAE EXTREME ANNUAL DESIGN CONDITIONS (50 YR)
	72.0	°F	INDOOR TEMP	2015 IECC SETION 302.1
SUMMER	89.6	°F	OA DRY-BULB TEMP	2013 ASHRAE FUNDAMENTALS, CHAPTER 14, COOLING 0.4%
	72.8	°F	OA WET-BULB TEMP	2013 ASHRAE FUNDAMENTALS, CHAPTER 14, COOLING 0.4%
	75.0	°F	INDOOR TEMP	2015 IECC SETION 302.1



1 / M-1 FIT-UP HVAC PLAN

3/16"=1'-0"

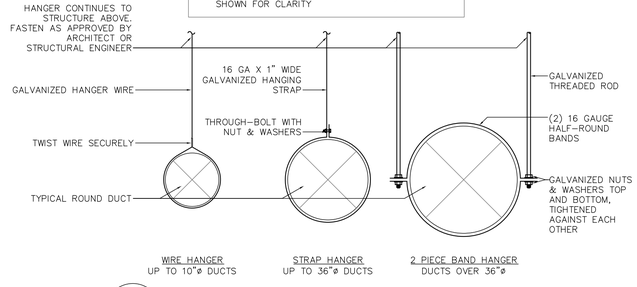
NOTES:
1. REFER TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS FOR ACCEPTABLE APPLICATIONS OF EACH HANGER TYPE SHOWN
2. HANGER SPACING SHALL BE GOVERNED BY DUCT METAL GAUGE AND JOINT LENGTH ACCORDING TO SMACNA STANDARDS.
3. DUCT INSULATION (WHERE APPLICABLE) NOT SHOWN FOR CLARITY



2 / M-1 TYPICAL HANGERS - RECTANGULAR DUCT

NOT TO SCALE

NOTES:
1. REFER TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS FOR ACCEPTABLE APPLICATIONS OF EACH HANGER TYPE SHOWN
2. HANGER SPACING SHALL BE GOVERNED BY DUCT METAL GAUGE AND JOINT LENGTH ACCORDING TO SMACNA STANDARDS.
3. DUCT INSULATION (WHERE APPLICABLE) NOT SHOWN FOR CLARITY



3 / M-1 TYPICAL HANGERS - ROUND DUCT

NOT TO SCALE

DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

HVAC PROJECT MANAGER:
DAVID C. MAGNUSON
EMAIL: DAVEM@DESIGNDAYMECH.COM
PHONE: (603) 463-1086
ADDRESS: 65 OLD CENTER RD, DEERFIELD, NH 03037

STATE OF NEW HAMPSHIRE ANDREW W. ARSENAULT No. 7099 LICENSED PROFESSIONAL ENGINEER

PROJECT:
AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:
TW DESIGNS
STRAFFORD, NEW HAMPSHIRE

FIT-UP
HVAC PLAN
AND DETAILS

REVISIONS:
1 Q4/12/2021 REMOVED HOOD 2 & FAN
2 4/9/2021 HOOD TO VARIABLE SPEED

DESIGNED BY: DCM
DRAWN BY: MRM
CHECKED BY: AWA

DDM JOB #: 2053
SCALE: AS NOTED

DATE: 12/23/2020

M-1

Agilyx - Portsmouth, NH	Per 2015 IMC Chapter 4 & ASHRAE 62.1-2013	
Ventilation Calculations & Airflows		

			IMC Requirements									Supply				
		Occupancy	Rp	Pz	Rp*Pz	Ra	Az	Ra*Az	Vbz		Voz	Vpz		Return	Exhaust	
Room #	Room Name	Classification	cfm/p	# Occ	cfm	cfm/sf	Ft2	cfm	cfm	Ez	cfm	cfm	Zp	cfm	cfm	Notes:
4	Open Office	Office	5.0	4	20	0.06	775	47	67	0.8	83	700	0.12	600		
5	Office 1	Office	5.0	2	10	0.06	120	7	17	0.8	22	150	0.14	100		
6	Office 2	Office	5.0	2	10	0.06	120	7	17	0.8	22	150	0.14	100		
7	Office/Class	Office	5.0	10	50	0.06	1,025	62	112	0.8	139	1,000	0.14	925		
8	Women	Toilet					47								75	
9	Men	Toilet					47								75	
10	Mech	Janitor					38								50	
		Existing RTU-1 Total		**18**	**90**		**2,172**	**122**		**0.8**	**266**	**2,000**	**0.14**	**1,725**	**200**	
		Actual Total People At Any One Time		**18**			**IMC Requirements**				**Actual**					
						Ev	**D**	**Vou**	**Vot**		**Min OA**					
						1.0	1.00	266	**266**		**400**					
1	Lab 1	Manufacturing	10.0	1	10	0.18	427	77	87	0.8	109	700	0.16	700		
2	Lab 2	Manufacturing	10.0	2	20	0.18	742	134	154	0.8	192	950	0.20		950	
		New RTU-3 Total		**3**	**30**		**1,169**	**210**		**0.8**	**301**	**1,650**	**0.20**	**700**	**950**	
		Actual Total People At Any One Time		**3**			**IMC Requirements**				**Actual**					
						Ev	**D**	**Vou**	**Vot**		**Min OA**					
						0.9	1.00	301	**334**		**950**					
3	Warehouse	Manufacturing	10.0	2	20	0.18	3,632	654	674	0.8	842	3,000		2,150	900	
		New RTU-2 Total		2	150		337	61		0.8	**850**				**900**	

FAN SCHEDULE (FAN)

MARK	SERVES	MAKE	MODEL	CFM	ESP (IN. WC)	RPM	BHP	MHP	AMPS	VOLT/PH	SONES	NOTES
FAN-1	BATH EXHAUSTS	GREENHECK	G-070-VG	200	0.25	1367	0.02	1/15	-	115/1	3.2	1
FAN-2	WAREHOUSE	GREENHECK	G-095-VG	900	0.25	1595	0.12	1/6		115/1	9.3	1
FAN-3	FUME HOOD	LABCONCO	7181813	950	0.625			1		115/1		2,3

NOTES:
1. DISCONNECT, EC MOTOR, SPEED CONTROL FOR BALANCING, GRAVITY DAMPER, 12" FLAT ROOF CURB
2. PROVIDED BY OWNER, INSTALLED BY MC
3. VARIABLE SPEED BLOWER TRACKS SASH OPENING. FIBERGLASS CONSTRUCTION

REGISTER GRILLE DIFFUSER SCHEDULE (RGD)

MARK	MAKE	MODEL	DAMPER	PATTERN	NECK SIZE	FRAME STYLE	MATERIAL	DESCRIPTION	NOTES
RGD-S-1	PRICE	SMD	YES	SEE DWGS	SEE DWGS	AS NEEDED	STEEL	SUPPLY	1
RGD-S-2	PRICE	SDG-ST	YES	SPIRAL DUCT GRILLE	SEE DWGS	AS NEEDED	STEEL	SUPPLY	1
RGD-R-1	PRICE	530	YES	45° FIXED	SEE DWGS	AS NEEDED	STEEL	RETURN	1
RGD-E-1	PRICE	530	YES	45° FIXED	SEE DWGS	AS NEEDED	STEEL	EXHAUST	1

NOTES:
1. RGD MOUNTED DAMPERS ARE TO BE USED FOR TRIM ONLY. PRIMARY VOLUME DAMPERS ARE TO BE INSTALLED IN THE DUCTS.

FUME HOOD SCHEDULE (FH)

MARK	MAKE	MODEL	WIDTH	SASH HEIGHT	FPM	CFM	ESP	NOTES
FH-1	LABCONCO	PROTECTOR PREMIER I-S	6 FT	28 IN	80	950	0.26	1,2

NOTES:
1. HOOD, FAN, VENTING MATERIALS, SOLVENT CABINET AND ACID CABINETS PROVIDED BY OWNER AND INSTALLED BY MC.
2. INSTALL VENT KITS TO VENT LOWER STORAGE CABINETS INTO HOOD PER MANUFACTURER'S INSTRUCTIONS

GAS/ELECTRIC ROOF TOP UNIT SCHEDULE (RTU)

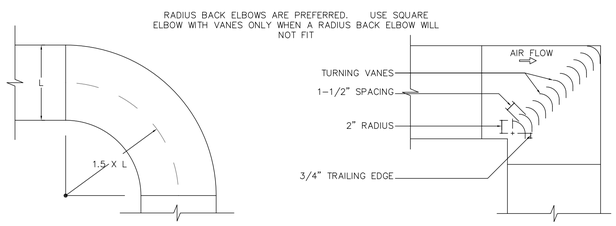
MARK	MAKE	MODEL	NOM TONS	SUPPLY (CFM)	ESP (IN. WC)	MIN OA(CFM)	COOLING (BASED ON MAX OCC OA)							HEATING (BASED ON MAX OCC OA)						ELECTRICAL				NOTES
							TOTAL (MBH)	SENSIBLE (MBH)	EFFICIENCY (EER / SEER)	EDB	EWB	LDB	LWB	INPUT (MBH)	OUTPUT (MBH)	EFFICIENCY	FUEL	EAT	LAT	BHP	VOLT/PH	MCA	MOCP	
RTU-1	CARRIER	EXISTING - 48HJE006	5	2,000	1.00	400	59.0		11.9 EER	77.9	64.6			115	93	81.0	NAT GAS	51.3		-	208/3	29.0	35	6
RTU-2	CARRIER	48LCR008	7.5	3,000	1.00	850	94.2	74.2	12.8 EER	79.1	65.4	56.2	55.1	180	146	81.0	NAT GAS	44.4	89.6	1.69	208/3	47.0	60	1,2,3
RTU-3	CAPTIVE AIRE	CASRTU1-I.200-15-7.5T-DOAS	7.5	1,650	1.00	950	83.1	56.3	18.6 IEER	83.8	68.8	51.8	51.8	171	137	80.0	DX/GAS	18.0	83.0	1.07	208/3	38.1	40	2,3,4,5

NOTES:
1. DUAL ENTHALPY ECONOMIZER, POWER EXHAUST
2. NON-FUSED DISCONNECT, 7 DAY PROGRAMMABLE THERMOSTAT, UNPOWERED CONVENIENCE OUTLET, HORIZONTAL INLET/OUTLET
3. STAINLESS STEEL HEAT EXCHANGER, E-COATING ON COILS
4. RETURN MOUNTED PRESSURE SENSOR. SEE DRAWINGS M-4 THROUGH M-6 FOR ADDITIONAL INFORMATION
5. PROVIDE SA AND RA SMOKE DETECTORS

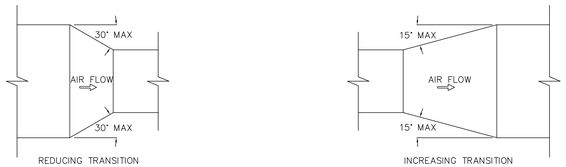
DAMPER SCHEDULE (D)

MARK	MAKE	MODEL	SIZE (IN.) W x H	CFM	VELOCITY (FPM)	APD (IN WC)	MATERIAL	NOTES
D-1	GREENHECK	VCD-23	18X14	700	400	0.01	STEEL	1
D-2	GREENHECK	VCDR-53	14" DIA	950	950	0.06	STEEL	1

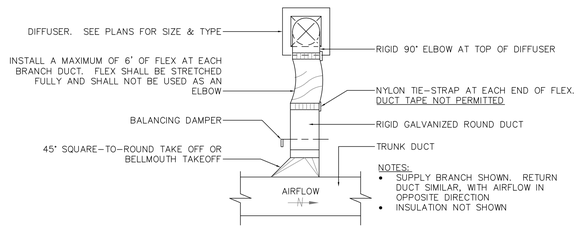
NOTES:
1. 24V ACTUATOR, MODULATING



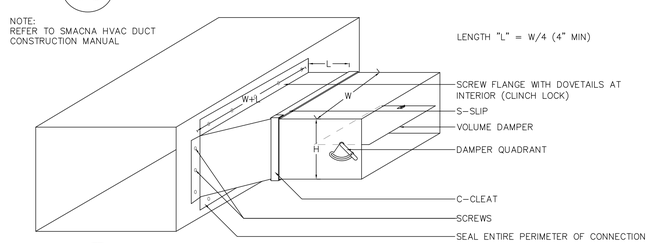
1 / M-2 TYPICAL RECTANGULAR ELBOW
NOT TO SCALE



2 / M-2 TYPICAL DUCT TRANSITION
NOT TO SCALE



3 / M-2 TYPICAL ROUND BRANCH DUCT & DIFFUSER
NOT TO SCALE



4 / M-2 TYPICAL RECTANGULAR BRANCH TAKEOFF
NOT TO SCALE

DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

HVAC PROJECT MANAGER:
DAVID C. MAGNUSON
EMAIL: DAVEM@DESIGNDAYMECH.COM
PHONE: (603) 463-1086
ADDRESS: 65 OLD CENTER RD, DEERFIELD, NH 03037

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
LICENSED PROFESSIONAL ENGINEER

PROJECT:
AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:
TW DESIGNS
STRAFFORD, NEW HAMPSHIRE

VENTILATION CALCULATIONS, SCHEDULES AND DETAILS

REVISIONS:
1 09/12/2021 REMOVED HOOD 2 & FAN
2 4/9/2021 HOOD TO VARIABLE SPEED

DESIGNED BY: DCM
DRAWN BY: MRM
CHECKED BY: AWA

DDM JOB #: 2053
SCALE: AS NOTED

DATE: 12/23/2020

M-2

DIVISION 23 – HVAC SPECIFICATIONS

I) GENERAL

A) WORK INCLUDED:

1) THESE SPECIFICATIONS INCLUDE GENERAL REQUIREMENTS FOR ALL WORK REPRESENTED ON THESE DRAWINGS. NOT ALL SYSTEMS OR SYSTEM COMPONENTS DESCRIBED IN THESE SPECIFICATIONS ARE NECESSARILY INCLUDED AS A PART OF THIS PROJECT.

2) THE HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) CONTRACTOR SHALL HEREAFTER BE DESCRIBED AS "THE CONTRACTOR" IN THIS HVAC SPECIFICATION. THE CONTRACTOR SHALL PROVIDE, INSTALL, PIPE, DUCT, AND WIRE, AS REQUIRED, HVAC SYSTEMS AS DESCRIBED BELOW, AND SHOWN OR DESCRIBED ON THESE PLANS AND SPECIFICATIONS.

B) QUALITY ASSURANCE:

1) THE INTERNATIONAL MECHANICAL CODE (IMC) 2015, AND THE INTERNATIONAL ENERGY CONSERVATION CODE (IEEC) 2015 ARE THE GOVERNING CODES FOR ALL HVAC WORK. THE CODES AND STANDARDS REFERENCED IN THE MECHANICAL CODE SHALL BE CONSIDERED A PART OF THE REQUIREMENTS OF CODE TO THE PRESCRIBED EXTENT OF EACH SUCH REFERENCE. WHERE DIFFERENCES OCCUR BETWEEN PROVISIONS OF THE CODE AND THE REFERENCED STANDARDS, THE PROVISIONS OF THE CODE SHALL APPLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE REQUIREMENTS OF ALL CODES AS THEY HAVE BEEN ADOPTED BY THE STATE AND LOCAL JURISDICTIONS.

2) EXCEPT AS SPECIFICALLY DESCRIBED OTHERWISE IN THESE SPECIFICATIONS, ALL COMPONENTS ALLOWED WITHIN THE ABOVE REFERENCED CODES SHALL BE ALLOWED AS A PART OF THE WORK.

3) THE WORKMANSHIP AND MATERIALS COVERED BY THESE SPECIFICATIONS SHALL CONFORM TO ALL ORDINANCES AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO, ALL APPLICABLE REGULATIONS OF THE CITY, COUNTY, AND STATE.

4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR HVAC PERMITS, TAXES, CONNECTION AND INSPECTION FEES AS REQUIRED FOR THE COMPLETE INSTALLATION OF THE HVAC SYSTEM. THE CONTRACTOR SHALL PROVIDE TO THE OWNER ALL CERTIFICATES OF INSPECTION ISSUED BY THE JURISDICTION.

5) THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL CONDITIONS AFFECTING THE PROPER EXECUTION OF THE CONTRACT, VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.

6) DURING THE PROGRESS OF THE WORK, THE CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF ALL CHANGES MADE IN THE HVAC INSTALLATION FROM THE LAYOUT AND MATERIALS CONTAINED IN THE APPROVED DRAWINGS AND SPECIFICATIONS.

7) DRAWINGS AND CATALOG CUTS, SHOWING ALL HVAC EQUIPMENT AND SYSTEM COMPONENTS, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. FIELD MEASURE AND COORDINATE WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS AND ALL OTHER TRADES THE PROPOSED LOCATIONS FOR NEW EQUIPMENT AND COMPONENTS BEFORE PRODUCING SUBMITTALS. NO ITEMS SHALL BE PURCHASED OR ORDERED BEFORE APPROVAL IS GIVEN BY THE ENGINEER IN WRITING.

8) THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES.

C) RELATED DOCUMENTS:

1) THE GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTAL GENERAL CONDITIONS OF THE CONTRACT AND DIVISION 1 SPECIFICATION SECTIONS PROVIDED BY THE ARCHITECT, AND ALL OTHER DRAWINGS AND SPECIFICATIONS PROVIDED AS A PART OF THIS PROJECT, APPLY TO THIS DIVISION 23 AND TO ALL CONTRACTORS, SUBCONTRACTORS, OR OTHER PERSONS SUPPLYING MATERIALS AND/OR LABOR, ENTERING INTO THE PROJECT SITE AND/OR PREMISES, DIRECTLY OR INDIRECTLY.

2) THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO BE COMPLEMENTARY. A PARTICULAR SECTION, PARAGRAPH OR HEADING IN A DIVISION MAY NOT DESCRIBE EACH AND EVERY DETAIL CONCERNING WORK TO BE DONE AND MATERIALS TO BE FURNISHED. THE DRAWINGS ARE DIAGRAMMATIC AND MAY NOT SHOW ALL OF THE WORK REQUIRED OR ALL CONSTRUCTION DETAILS. DIMENSIONS ARE SHOWN FOR CRITICAL AREAS ONLY AS AN AID TO THE CONTRACTOR; ALL DIMENSIONS AND ACTUAL PLACEMENTS ARE TO BE VERIFIED IN THE FIELD. IT IS TO BE UNDERSTOOD THAT THE BEST TRADE PRACTICES OF THE DIVISION WILL PREVAIL.

3) ALL TRADE SUBCONTRACTORS ARE TO NOTE THAT THE ORGANIZATION OF SPECIFICATIONS INTO DIVISIONS, AND LIKEWISE THE ARRANGEMENT OF THE DRAWINGS, IS SET UP FOR THE CONVENIENCE OF UNDERSTANDING THE SCOPE OF THE WORK ONLY. THIS STRUCTURING SHALL NOT CONTROL THE GENERAL CONTRACTOR IN DIVIDING THE WORK AMONG TRADE SUBCONTRACTORS OR IN ESTABLISHING THE EXTENT OF THE WORK TO BE PERFORMED BY ANY TRADE. REFER TO GENERAL CONDITIONS.

II) PRODUCTS

A) GENERAL MECHANICAL MATERIALS:

1) FIRESTOPPING/FIRE-RESISTANT SEALANT: WHERE REQUIRED, PROVIDE A FIRESTOP SYSTEM APPROPRIATE FOR THE ASSEMBLY PENETRATED AND THE PENETRATING ELEMENT. USE ONLY FIRESTOP PRODUCTS THAT HAVE BEEN UL 1479 OR ASTM E 814 TESTED FOR SPECIFIC FIRE-RATED CONDITIONS CONFORMING TO CONSTRUCTION ASSEMBLY TYPE, PENETRATING ITEM TYPE, ANNULAR SPACE REQUIREMENT AND FIRE-RATING INVOLVED FOR EACH SEPARATE INSTANCE. SUBMIT MANUFACTUER'S SPECIFIC DETAIL FOR EACH TYPE OF PENETRATION.

2) ACCESS DOORS: WHERE REQUIRED FOR PROPER SERVICE AND MAINTENANCE OF ALL MECHANICAL COMPONENTS, PROVIDE STEEL ACCESS DOORS AND FRAMES, FACTORY-FABRICATED AND ASSEMBLED UNITS, COMPLETE WITH ATTACHMENT DEVICES AND FASTENERS SUITABLE FOR THE SERVICE.

3) ROOF PENETRATIONS SHALL BE THROUGH 12"(MIN.) HIGH CURBS OR TALL CONE FLASHINGS.

B) ELECTRICAL REQUIREMENTS OF MECHANICAL WORK:

1) BASIC ELECTRICAL COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO ALL REQUIRED STARTERS, DISCONNECT SWITCHES, CONTROL DEVICES, AND MOTORS. IT INCLUDES MOTORS THAT ARE FACTORY-INSTALLED AS PART OF EQUIPMENT AND APPLIANCES AS WELL AS FIELD-INSTALLED MOTORS.

2) STARTERS AND DISCONNECTS: WHERE AVAILABLE, PROVIDE FACTORY MOUNTED DISCONNECTS AND STARTERS, OR, WHEN FACTORY MOUNTED STARTERS AND DISCONNECTS ARE NOT AVAILABLE PROVIDE COMBINATION STARTERS AND DISCONNECT SWITCHES, OR, WHERE COMBINATION STARTERS AND DISCONNECT SWITCHES ARE NOT SUITABLE OR AVAILABLE, PROVIDE SEPARATE STARTERS AND DISCONNECTS FOR ALL HVAC EQUIPMENT, AS REQUIRED FOR PROPER INSTALLATION AND OPERATION OF EQUIPMENT.

C) MECHANICAL IDENTIFICATION:

1) PROVIDE EQUIPMENT MARKERS COMPLYING WITH ANSI A13.1 FOR LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS, AND INSTALLED VIEWING ANGLES OF IDENTIFICATION DEVICES.

2) PLASTIC EQUIPMENT MARKERS: PROVIDE MANUFACTURER'S STANDARD LAMINATED PLASTIC, COLOR CODED EQUIPMENT MARKERS.

3) LETTERING AND GRAPHICS: COORDINATE NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN MECHANICAL IDENTIFICATION WORK, WITH CORRESPONDING DESIGNATIONS SHOWN, SPECIFIED OR SCHEDULED. PROVIDE NUMBERS, LETTERING AND WORDING AS INDICATED OR, IF NOT OTHERWISE INDICATED, AS RECOMMENDED BY MANUFACTURERS OR AS REQUIRED FOR PROPER IDENTIFICATION AND OPERATION/MAINTENANCE OF MECHANICAL SYSTEMS AND EQUIPMENT.

D) VIBRATION CONTROL AND SEISMIC RESTRAINTS:

1) FIBERGLASS PADS AND SHAPES, NEOPRENE PADS, VIBRATION ISOLATION SPRINGS, PAD-TYPE ISOLATORS, PLATE-TYPE ISOLATORS, DOUBLE-PLATE-TYPE ISOLATORS, THREADED DOUBLE-PLATE-TYPE ISOLATORS, ALL-DIRECTIONAL ANCHORS, NEOPRENE MOUNTINGS, FREE STANDING SPRING ISOLATORS, HOUSED SPRING ISOLATORS, VERTICALLY-RESTRAINED SPRING ISOLATORS, EARTHQUAKE-RESISTANT SPRING ISOLATORS, SEISMIC SNUBBERS, THRUST RESTRAINTS, EQUIPMENT RAILS, FABRICATED EQUIPMENT BASES, INERTIA BASE FRAMES, ROOF-CURB ISOLATORS, ISOLATION HANGERS, RISER ISOLATORS, FLEXIBLE PIPE CONNECTORS SHALL BE PROVIDED AS REQUIRED AND AS SUITABLE FOR USE AND SERVICE.

2) WHERE SEISMIC RESTRAINTS ARE REQUIRED, THE CONTRACTOR SHALL PROVIDE CALCULATIONS, DETAILS AND LOCATIONS THAT ARE STAMPED BY A PROFESSIONAL ENGINEER.

E) DUCTWORK:

1) UNLESS OTHERWISE SPECIFIED, ALL RIGID DUCTWORK SHALL BE SHEET METAL MATERIALS AS SPECIFIED IN ASTM A700, WITH GALVANIZED SHEET STEEL: LOCK-FORMING QUALITY, ASTM A527, COATING DESIGNATION G60; MILL PHOSPHATIZED FINISH.

(a) ALL DUCTWORK ASSOCIATED WITH POOLS, SHOWERS, DISHWASHERS OR ANY OTHER MOISTURE SOURCES SHALL BE ALUMINUM OR STAINLESS STEEL. WHERE CONDENSATION CAN FORM INSIDE THE DUCT, JOINTS MUST BE SEALED OR WELDED WATERTIGHT.

(b) ALL DUCTWORK WHICH WILL BE PAINTED SHALL BE GALVANEALED.

2) PRESSURE CLASS AND SEAL CLASS (PER SMACNA): 2"PRESSURE CLASS, SEAL CLASS A (ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS AND DUCT WALL PENETRATIONS).

3) RECTANGULAR DUCT FABRICATION: FABRICATE RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", TABLES 1-3 THROUGH 1-19, INCLUDING THEIR ASSOCIATED DETAILS. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.

4) WHERE DUCT SUPPORTS ARE REQUIRED BETWEEN THE BUILDING STRUCTURAL FRAMING, SUITABLE INTERMEDIATE STEEL FRAMING SHALL BE PROVIDED BY THE CONTRACTOR.

5) WATER BASED LIQUID RUBBER DUCT SEALANT OR FLANGED JOINT MASTICS SHALL BE ONE-PART, ACID- CURING, SILICONE ELASTOMERIC JOINT SEALANTS, COMPLYING WITH ASTM C920, TYPE S, GRADE NS, CLASS 25, USE O.

6) FLEXIBLE DUCT CONNECTORS SHALL BE INSTALLED AT POINTS AS CLOSE AS POSSIBLE TO AIR HANDLERS AND FANS. THE CONNECTOR SHALL BE AT LEAST FOUR (4") INCHES WIDE AND FABRICATED SPECIFICALLY FOR USE AS A FLEXIBLE CONNECTOR. ALL CONNECTIONS SHALL BE AIR TIGHT AND MADE SO THE CONNECTOR IS UNDAMAGED WHEN THE JOINT IS REMOVED.

7) FLEXIBLE DUCTS: LIMITED TO 6 FEET MAXIMUM STRAIGHT AND FULLY STRETCHED. DO NOT USE FLEX AS AN ELBOW.

(a) INTERNAL FABRIC SHALL BE ACOUSTICALLY RATED BLACK RESILIENT CALENDERED FILM WITH COATED STEEL WIRE HELIX, 2"FIBERGLASS BLANKET (R-6.0), AND FIBERGLASS SCRIM REINFORCED ALUMINIZED POLYESTER FILM VAPOR BARRIER AS EXTERIOR FACING. LISTED AND LABELED AS A CLASS 1 AIR DUCT PER UL STD 181. RATED FOR PRESSURE CLASS LISTED ABOVE. EQUIVALENT TO THERMAFLEX M-KE.

8) BELLMOUTH OR 45 DEGREE TAKEOFFS SHALL BE USED FOR DUCT TAKEOFFS TO MINIMIZE PRESSURE DROP.

9) MANUAL VOLUME DAMPERS SHALL BE INSTALLED AT ALL DUCT TAKEOFFS AND AS NEEDED ELSEWHERE TO PROPERLY BALANCE THE SYSTEMS.

10) DUCT LINER

(a) ACOUSTICAL DUCT LINER SHALL BE FIBER GLASS WITH REINFORCED COATING SIMILAR TO JOHNS MANVILLE LINACOUSTIC RC.

(b) SUPPLY AIR DUCTS SHALL BE LINED WITH 1-1/2"THICK LINER (R-6.3):

(1) FOR THE FIRST FIFTEEN (15) FEET FROM THE RTU.

(c) RETURN AIR DUCTS SHALL BE LINED WITH 1"THICK LINER):

(1) FOR THE FIRST FIFTEEN (15) FEET FROM THE RTU.

(d) TRANSFER DUCTS SHALL BE LINED WITH 1"THICK LINER.

(e) ADDITIONAL LINER REQUIREMENTS MAY BE SHOWN ON THE DRAWINGS.

11) FIRE, SMOKE, COMBINATION FIRE/SMOKE DAMPERS AND CEILING RADIATION DAMPERS

(a) FIRE DAMPERS: UL 555 LISTED TYPE "B" (OUT OF AIRSTREAM) 1-1/2 HOUR RATED FOR LESS THAN 3-HOUR FIRE-RESISTANCE RATED ASSEMBLIES AND 3 HOUR RATED FOR 3-HOUR OR GREATER FIRE-RESISTANCE RATED ASSEMBLIES

(1) DYNAMIC FIRE DAMPERS SHALL BE USED IN SYSTEMS DESIGNED TO OPERATE WITH FANS ON DURING A FIRE.

(2) STATIC FIRE DAMPERS MAY BE USED IN SYSTEMS NOT OPERATIONAL DURING A FIRE.

(b) SMOKE DAMPERS: UL 555S LISTED.

(1) VOLTAGE DETERMINED BY FIRE ALARM CONTRACTOR.

(c) COMBINATION FIRE/SMOKE DAMPERS: UL 555 AND UL 555S LISTED.

(1) VOLTAGE DETERMINED BY FIRE ALARM CONTRACTOR.

(d) CEILING RADIATION DAMPERS: UL 555C LISTED.

(e) REFER TO BOTH MECHANICAL AND ARCHITECTURAL DRAWINGS FOR THE LOCATION OF RATED ASSEMBLIES.

12) SMOKE DETECTORS IN AIR SYSTEMS GREATER THAN 2000 CFM SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR IN BOTH THE SUPPLY AND RETURN AIR DUCTWORK AS PER IMC AND NFPA 90A.

(a) IF THERE IS A FIRE ALARM SYSTEM IN THE BUILDING, THIS CONTRACTOR SHALL NOTIFY THE FIRE ALARM CONTRACTOR TO PROVIDE DUCT SMOKE DETECTORS WHERE REQUIRED.

F) AIR CONDITIONING CONDENSATE PIPING:

1) AIR CONDITIONING CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC.

(a) ROOF TOP UNITS SHALL DRAIN CONDENSATE ONTO ROOF.

2) PITCH WATER PIPING UP IN THE DIRECTION OF FLOW, 1 INCH PER 40 FEET MINIMUM. PROVIDE AN AIR VENT AT ALL HIGH POINTS AND A DRAIN VALVE AT ALL LOW POINTS.

3) CUT ALL HOLES OF SUFFICIENT SIZE AND HANG ALL PIPE SO THAT THERE WILL BE NO COPPER OR STEEL TO METAL CONTACT AND RESULTANT NOISE DURING PIPE EXPANSION AND CONTRACTION. PROVIDE EXPANSION LOOPS WITH ROLLERS, GUIDES AND ANCHORS WHERE STRAIGHT RUNS OF PIPE EXCEED 100 FEET.

G) INSULATION:

1) ALL INSULATION SHALL BE UL APPROVED FOR A FLAME SPREAD RATING OF NOT OVER 25 AND A SMOKE DEVELOPED RATING OF NOT OVER 50.

2) ALL INSULATION SHALL CONFORM TO THE REQUIREMENTS OF IECC 2015

3) DUCTWORK:

(a) INSIDE THE BUILDING THERMAL ENVELOPE – SUPPLY AND OUTDOOR AIR DUCTS AND PLENUMS (INCLUDING THOSE INSTALLED IN RETURN AIR PLENUMS) SHALL BE INSULATED WITH FORMALDEHYDE-FREE FIBERGLASS WITH FSK JACKET WITH AN INSTALLED MINIMUM R-6 VALUE, SIMILAR TO JOHNS MANVILLE MICROLITE FSK TYPE 75, 2-1/5"THICK. INTERNALLY LINED SUPPLY AIR DUCT WITH AN R-6 VALUE DOES NOT REQUIRE EXTERNAL INSULATION.

(1) RETURN AIR DUCTS ARE NOT INSULATED.

(2) EXPOSED SPIRAL SUPPLY DUCTS ARE NOT INSULATED

(3) EXHAUST AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH R-6 TO TEN (10) FEET BACK FROM BUILDING EXTERIOR.

(4) EXHAUST AIR DUCTS BEYOND TEN (10) FEET FROM BUILDING EXTERIOR ARE NOT INSULATED.

(b) OUTSIDE THE BUILDING THERMAL ENVELOPE – SUPPLY, OUTSIDE, RETURN AND EXHAUST AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH FORMALDEHYDE-FREE FIBERGLASS WITH FSK JACKET WITH AN INSTALLED MINIMUM R-12 VALUE, SIMILAR TO JOHNS MANVILLE MICROLITE FSK TYPE 75,4-2/5"THICK.

(c) ROOF MOUNTED SUPPLY, RETURN AND EXHAUST AIR DUCTS SHALL BE INSULATED WITH AN INSTALLED MINIMUM R-12 INSULATION, SIMILAR TO 2.5"THICK HUNTER H-SHIELD POLYISO OR JOHNS MANVILLE 814, 3"THICK, 3.0 PCF FIBERGLASS INSULATION BOARD WITH FSK JACKET.

(1) SLOPE TOP TO SHED WATER.

(2) COVER WITH VENTURECLAD 1577CW-E EMBOSSED ALUMINUM INSULATON JACKETING TAPE OR SIMILAR.

(d) ADDITIONAL DUCTWORK INSULATION REQUIREMENTS MAY BE SHOWN ON THE DRAWINGS.

III) EXECUTION

A) THE CONTRACTOR SHALL PROVIDE ALL SUPERVISION, LABOR, EQUIPMENT, MATERIAL, MACHINERY, PLANS, RIGGING, AND ANY AND ALL OTHER ITEMS NECESSARY TO COMPLETE THE MECHANICAL SYSTEM. SMALL DETAILS NOT USUALLY INDICATED ON THE DRAWINGS OR SPECIFIED, BUT WHICH ARE NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEM SHALL BE INCLUDED IN THE WORK AND IN THE CONTRACTOR'S ESTIMATE THE SAME AS IF HEREIN SPECIFIED OR SHOWN ON THE DRAWINGS.

B) THE CONTRACTOR SHALL INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THIS INCLUDES CHECKING THE MANUFACTURER'S INSTRUCTIONS TO DETERMINE WHAT TYPE OF GLYCOL SYSTEM MAY BE USED WITHI EQUIPMENT SO AS NOT TO VOID THE WARRANTY OR IMPAIR THE OPERATION OF THE EQUIPMENT. WHERE THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH THE MANUFACTURER'S RECOMMENDATIONS, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO BRING THIS TO THE ATTENTION OF THE ENGINEER.

C) THE HVAC EQUIPMENT MAY NOT BE USED FOR TEMPORARY HEAT DURING CONSTRUCTION. THE HVAC EQUIPMENT SHALL NOT BE STARTED AND TESTED UNTIL ALL CONSTRUCTION ACTIVITY THAT HAS THE POTENTIAL OF CREATING AIR BORNE PARTICULATES THAT COULD BE DRAWN INTO THE HVAC EQUIPMENT AND DUCTWORK SYSTEMS HAS BEEN COMPLETED. IN ADDITION, ALL DUCTWORK OPENINGS SHALL BE SEALED UNTIL THE TIME WHEN THE HVAC EQUIPMENT IS TO BE STARTED AND TESTED.

D) DUCTWORK AND FITTINGS SHALL HAVE ENDS COVERED WITH PLASTIC AT ALL TIMES.

E) UPON COMPLETION OF WORK, THE CONTRACTOR SHALL CLEAN, OIL AND GREASE (UNLESS FACTORY LUBRICATED) ALL FANS, PUMPS, MOTORS, ALL OTHER RUNNING EQUIPMENT AND APPARATUS AND MAKE CERTAIN THAT ALL SUCH APPARATUS AND MECHANISMS ARE IN PROPER WORKING ORDER AND MADE READY FOR TESTING.

F) REPLACE ALL FILTERS USED DURING CONSTRUCTION.

G) EQUIPMENT SHALL BE STARTED, TESTED, ADJUSTED AND PLACED IN SATISFACTORY OPERATING CONDITION BY THE CONTRACTOR.

H) THE CONTRACTOR SHALL INSTRUCT OWNER IN THE PROPER OPERATION OF EQUIPMENT, EXPLAIN THE PROPER OPERATING AND MAINTENANCE PROCEDURES AND SHALL FURNISH THE OWNER WITH ALL INSTRUCTION PAMPHLETS, BOOKS AND OTHER MATERIAL FURNISHED BY THE VARIOUS MANUFACTURERS

I) ALL VIBRATING EQUIPMENT NOT MOUNTED ON THE GROUND FLOOR SHALL BE MOUNTED ON OR SUSPENDED FROM VIBRATION ISOLATORS.

J) EQUIPMENT SHALL BE INSTALLED WITH CLEARANCE FOR PROPER MAINTENANCE. FILTERS, COILS, DRIVES, VALVES, AND CONTROLS SHALL BE ACCESSIBLE FOR SERVICING AND/OR REPLACEMENT.

K) EQUIPMENT SHALL BE COVERED FOR ONE YEAR FROM THE REVIEWING ENGINEER'S DATE OF ACCEPTANCE AND/OR THE DURATION OF THE MANUFACTURER'S GUARANTEE OR WARRANTY, WHICH EVER IS LONGER. THE CONTRACTOR SHALL FURNISH THE OWNER WITH ALL MANUFACTURER'S GUARANTEES OR WARRANTIES.

L) THE WATER AND AIR SYSTEMS SHALL BE BALANCED FROM -10% TO + 10% OF THE GPM AND CFM VALUES SHOWN ON THE APPROVED HVAC PLANS. BALANCING SHALL BE DONE IN ACCORDANCE WITH STANDARDS ESTABLISHED BY THE AABC OR NEBB USING REPORT SHEETS DEVELOPED BY THE AABC OR NEBB. SUBMIT REPORTS TO THE ENGINEER.

END OF DIVISION 23

LEGEND OF PIPING SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PIPE ELBOW UP		BALL VALVE
	PIPE ELBOW DOWN		BUTTERFLY VALVE
	PIPE TEE UP		GATE VALVE
	PIPE TEE DOWN		OS&Y GATE VALVE
	PIPE CROSS OVER		CHECK VALVE
	UNION	BFP	BACK FLOW PREVENTER
	FLEXIBLE PIPE CONNECTOR		TRIPLE-DUTY VALVE
	END CAP		TRIPLE-DUTY VALVE WITH MEASUREMENT PORTS
	PETE'S PLUG	M	2-WAY MOTORIZED VALVE
	HOSE THREAD DRAIN VALVE WITH CAP AND CHAIN	M	3-WAY MOTORIZED VALVE
	CIRCUIT SETTER	T	TEMPERING VALVE
	STRAINER		PRESSURE REDUCING VALVE
	STRAINER WITH BLOWDOWN		TEMPERATURE & PRESSURE RELIEF VALVE
	CIRCULATOR PUMP	ΔP	DIFFERENTIAL PRESSURE BYPASS VALVE
MV	MANUAL AIR VENT		SOLENOID VALVE
AV	AUTOMATIC AIR VENT		GAS COCK
AS	AIR SCOOP		DIRECTION OF FLOW
AS	AIR SCOOP WITH VENT		DIRECTION OF PITCH
			CONNECT TO EXISTING
AS	AIR SEPARATOR WITH VENT		PIPE CONTINUES
			THERMOMETER
MARK FEET	FIN TUBE IDENTIFICATION TAG		PRESSURE GAUGE WITH SHUTOFF & PIGTAIL
			VACUUM BREAKER
	FIN TUBE RADIATION WITH COVER		ELECTRIC HEAT TRACING

LEGEND OF DUCT SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MANUAL BALANCING DAMPER		RECTANGULAR RETURN OR EXHAUST DUCT UP
FD	FIRE DAMPER		ROUND RETURN OR EXHAUST DUCT UP
SD	SMOKE DAMPER		RECTANGULAR RETURN OR EXHAUST DUCT DOWN
SFD	SMOKE & FIRE DAMPER		ROUND RETURN OR EXHAUST DUCT DOWN
	CABLE OPERATED DAMPER		RECTANGULAR SUPPLY DUCT UP
	BACK DRAFT DAMPER		ROUND SUPPLY DUCT UP
M	MOTORIZED DAMPER		RECTANGULAR SUPPLY DUCT DOWN
	SUPPLY AIRFLOW		ROUND SUPPLY DUCT DOWN
	RETURN / EXHAUST AIRFLOW	MARK SIZE CFM	REGISTER, GRILLE AND DIFFUSER IDENTIFICATION TAG
	CONNECT TO EXISTING		

LEGEND OF CONTROL SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
T	THERMOSTAT	H	HUMIDISTAT
TS	TEMPERATURE SENSOR	P	PRESSURE SENSOR
CO	CARBON MONOXIDE SENSOR	SD	SMOKE DETECTOR
CO_2	CARBON DIOXIDE SENSOR	L	INDICATOR LAMP

DIVISION 25 – HVAC CONTROLS AND SEQUENCES OF OPERATION

I) GENERAL

A) REFER TO SPECIFICATION DIVISION 23 – HVAC SPECIFICATIONS, ESPECIALLY GENERAL FOR WORK INCLUDED, QUALITY ASSURANCE AND RELATED DOCUMENTS.

B) PROVIDE A COMPLETE ELECTRIC/ELECTRONIC CONTROL SYSTEM TO ACCOMPLISH ALL CONTROL SEQUENCES AS DESCRIBED BELOW.

C) ALL LINE AND LOW VOLTAGE CONTROL WIRING, TRANSFORMERS, DISCONNECTS, ETC REQUIRED FOR THE CONTROL SYSTEMS THAT IS NOT SHOWN ON THE ELECTRICAL DRAWINGS SHALL BE PROVIDED BY THE CONTROLS CONTRACTOR (HENCEFORTH CALLED "THE CONTRACTOR").

1) LINE VOLTAGE POWER FROM CIRCUIT BREAKERS IN ELECTRICAL PANELS TO CONTROL TRANSFORMERS OR CONTROL DEVICES SHALL BE INSTALLED BY THE CONTRACTOR.

2) COMPLY WITH DIVISION 26 REQUIREMENTS.

3) CONNECT VARIABLE FREQUENCY DRIVES (VFD) AND DUCT & AREA SMOKE DETECTORS (FURNISHED BY OTHERS) INTO CONTROL CIRCUITS TO ACCOMPLISH THE SEQUENCES OF OPERATION.

II) PRODUCTS

A) PROVIDE CONTROL PRODUCTS (IF NOT FACTORY PROVIDED BY HVAC EQUIPMENT MANUFACTURER) INCLUDING, BUT NOT LIMITED TO, CONTROL DAMPERS & VALVES, THERMOSTATS, TIMECLOCKS, SENSORS, RELAYS, CONTROLLERS, AND OTHER COMPONENTS AS REQUIRED FOR A COMPLETE INSTALLATION.

B) CONTROL DAMPERS SHALL BE LOW LEAKAGE DAMPERS WITH BLADE AND EDGE SEALS. CLASS 1 WITH LEAKAGE OF LESS THAN 4 CFM/SQFT AT 1.0"W.G. AND 8 CFM/SQFT AT 4.0"W.G.

C) CONTROL VALVES SHALL BE SELECTED FOR FLUID TYPE, TEMPERATURE AND PRESSURE CLASS WHICH MATCH PIPING MATERIALS AND END CONNECTIONS. CONTROL VALVES MUST CLOSE OFF AGAINST MAXIMUM SYSTEM PRESSURE.

D) DAMPER AND VALVE ACTUATORS SHALL BE ELECTRIC, SIZED TO SMOOTHLY OPERATE DAMPER OR VALVE WITH ADEQUATE TORQUE FOR TIGHT SHUTOFF AGAINST MAXIMUM SYSTEM PRESSURE.

1) ACTUATION REQUIREMENTS SHALL BE PER THE SEQUENCES OF OPERATION.

E) ROOM THERMOSTATS SHALL BE 7 DAY PROGRAMMABLE WITH A 5°F DEADBAND BETWEEN HEATING & COOLING AND SETBACK CAPABILITY (55°F HEATING & 85°F COOLING).

1) USER ADJUSTABLE SETPOINTS SHALL BE PROVIDED UNLESS NOTED OTHERWISE ON THE DRAWINGS.

III) EXECUTION

A) INSTALL SYSTEMS AND MATERIALS IN ACCORDANCE WITH MANUFACTURER INSTRUCITONS AND ROUGHING-IN DRAWINGS AND DETAILS ON THE DRAWINGS. INSTALL ELECTRICAL COMPONENTS AND USE ELECTRICAL PRODUCTS COMPLYING WITH REQUIREMENTS OF APPLICABLE DIVISION 26 SECTIONS. COORDINATE THE INSTALLATION IN ACCORDANCE WITH FINAL SHOP DRAWINGS, FIELD MEASUREMENTS, MANUFACTURER'S DATA AND AS SPECIFIED HEREIN.

B) MOUNT CONTROLLERS AT CONVENIENT LOCATIONS AND HEIGHTS. COORDINATE WITH ARCHITECT AND OTHER TRADES.

C) PROVIDE REMOTE CONTROL OF MANUAL RESET CONTROLLERS AS REQUIRED FOR USER ACCESSIBILITY. COORDINATE WITH OWNER.

D) THE TERM "CONTROL WIRING" IS DEFINED TO INCLUDE PROVIDING OF WIRE, CONDUIT AND MISCELLANEOUS MATERIALS AS REQUIRED FOR MOUNTING AND CONNECTING ELECTRIC CONTROL DEVICES.

E) INSTALL COMPLETE CONTROL WIRING SYSTEM FOR CONTROL SYSTEMS. CONCEAL WIRING, EXCEPT IN MECHANICAL ROOMS AND AREAS WHERE OTHER CONDUIT AND PIPING ARE EXPOSED. PROVIDE MULTI-CONDUCTOR INSTRUMENT HARNESS (BUNDLE) IN PLACE OF SINGLE CONDUCTORS WHERE A NUMBER OF CONDUCTORS CAN BE RUN ALONG A COMMON PATH. FASTEN FLEXIBLE CONDUCTORS BRIDGING CABINETS AND DOORS NEATLY ALONG HINGE SIDE AND PROTECT AGAINST ABRASION. TIE AND SUPPORT CONDUCTORS NEATLY.

F) INSTALL CIRCUITS OVER 25-VOLT WITH COLOR-CODED THWN/THHN WIRE IN EMT OR MC CABLE AS WHIPS TO EQUIPMENT CONNECTIONS. USE LIQUID-TITE CONDUIT IN EXTERIOR OR HAZARDOUS LOCATIONS.

G) INSTALL CIRCUITS UNDER 25-VOLT WITH COLOR-CODED NO. 18 WIRE WITH INSULATION ON EACH CONDUCTOR AND PLASTIC SHEATH OVER ALL. PROVIDE PLENUM RATED CABLE IN PLENUM CEILINGS.

H) INSTALL LOW VOLTAGE CIRCUITS WHICH ARE LOCATED IN CONCRETE SLABS OR IN MASONRY WALLS IN CONDUIT.

I) WHERE CONTROL WIRING MUST BE SURFACE MOUNTED IN OCCUPIED ROOMS AND IT IS NOT POSSIBLE TO CONCEAL WIRING, RUN WIRING IN WIREMOLD RACEWAY (COLOR BY ARCHITECT).

J) NUMBER-CODE OR COLOR-CODE CONDUCTORS APPROPRIATELY FOR IDENTIFICATION AND SERVICING OF THE CONTROL SYSTEM.

K) DEMONSTRATE CONTROL SYSTEM TO AND TRAIN OWNER'S PERSONNEL IN OPERATION AND MAINTENANCE OF CONTROL SYSTEM.

IV) SEQUENCES OF OPERATION

A) ROOF TOP UNITS –

1) RTU-1 AND RTU-2

(a) THE RTU FAN SHALL OPERATE CONTINUOUSLY DURING OCCUPIED TIMES.

(1) DURING UNOCCUPIED TIMES, THE FAN SHALL ONLY RUN ON A CALL FOR HEATING OR COOLING.

(b) DURING OCCUPIED TIMES, THE OA DAMPER SHALL OPEN TO ROOM PORTION MIN OA POSITION WHEN THE RTU FAN IS OPERATING.

(c) THE ASSOCIATED 7-DAY PROGRAMMABLE THERMOSTAT SHALL INCLUDE OCCUPIED AND UNOCCUPIED HEATING AND COOLING SETPOINTS WITH A DEADBAND OF 5°F.

(1) OCCUPIED SETPOINTS SHALL BE 70°F HEATING AND 75°F COOLING.

(2) UNOCCUPIED SETPOINTS SHALL BE 55°F HEATING AND 85°F COOLING.

(d) RTUS EXCEEDING 54 MBH COOLING SHALL INCLUDE AN INTEGRATED DIFFERENTIAL ENTHALPY ECONOMIZER. WHEN OA ENTHALPY IS LESS THAN RA ENTHALPY AND COOLING IS CALLED FOR, MODULATE THE OA DAMPER OPEN AND THE RA DAMPER CLOSED TO SATISFY THE CALL FOR COOLING BEFORE MECHANICAL COOLING IS ENGAGED.

2) RTU-3

(a) THE RTU FAN SHALL OPERATE CONTINUOUSLY.

(b) THE ASSOCIATED 7-DAY PROGRAMMABLE THERMOSTAT SHALL INCLUDE OCCUPIED AND UNOCCUPIED HEATING AND COOLING SETPOINTS WITH A DEADBAND OF 5°F.

(1) OCCUPIED SETPOINTS SHALL BE 70°F HEATING AND 75°F COOLING.

(c) UNOCCUPIED SETPOINTS SHALL BE 55°F HEATING AND 85°F COOLING.

(d) PRESSURE SENSOR IN THE RETURN DUCT SHALL MODULATE THE OA/RA MIXING DAMPER AS REQUIRED TO MAINTAIN CONSTANT PRESSURE

(e) SEE CAPTIVE AIR DRAWINGS FOR FURTHER INFORMATION

B) DAMPERS (D)

1) DAMPERS D-1 AND D-2 SHALL BE CONTROLLED BY DIFFERNTIAL PRESSURE SENSORS.

2) EACH LAB SPACE SHALL BE CONTROLLED TO REMAIN AT A NEUTRAL PRESSURE RELATIVE TO THE OUTDOORS

(a) IF A LAB SPACE DEVELOPS A POSITIVE PRESSURE, THE ASSOCIATED RETURN DAMPER SHALL MODULATE TOWARDS THE OPEN POSITION

(b) IF A LAB SPACE DEVELOPS A NEGATIVE PRESSURE, THE ASSOCIATED RETURN DAMPER SHALL MODULATE TOWARDS THE CLOSED POSITION

C) FANS (FAN)

1) FAN-1 SHALL OPERATER DURING OCCUPIED HOURS

2) FAN-2 SHALL OPERATE WHENEVER RTU-2 OA DAMPER IS OPEN

3) FAN-3 SHALL OPERATE CONTINUOUSLY. SASH SENSORS IN THE FUME SHALL MODULATE FAN SPEED TO MAINTAIN CONSTANT VELOCITY AT SASH OPENING

END OF DIVISION 25

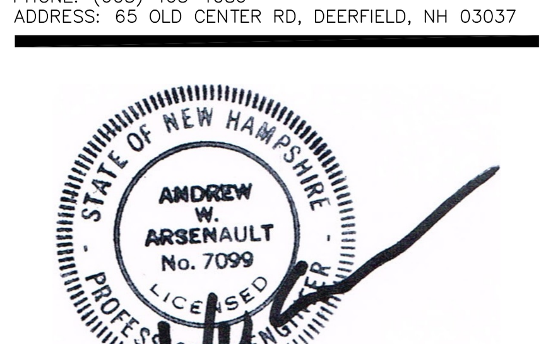
MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	EAT	ENTERING AIR TEMPERATURE	HRV	HEAT RECOVERY VENTILATOR	MPT	MALE PIPE THREAD
AMP	AMPACITY	EC	ELECTRICAL CONTRACTOR	HW	HOT WATER	NA	NOT APPLICABLE
APD	AIR PRESSURE DROP	EER	ENERGY EFFICIENCY RATIO	HWUH	HOT WATER UNIT HEATER	NC	NORMALLY CLOSED
ATC	AUTOMATIC TEMP. CONTROL	EFT	ENTERING FLUID TEMPERATURE	HWCUH	HOT WATER CABINET HEATER	NO	NORMALLY OPEN
BTU/H	BRITISH THERMAL UNITS/HOUR	ERV	ENERGY RECOVERY VENTILATOR	HWR	HOT WATER RETURN	OA	OUTSIDE AIR
CAP	CAPACITY	ESP	EXTERNAL STATIC PRESSURE	HWS	HOT WATER SUPPLY	OD	OUTSIDE DIAMETER
CH	CHILLED	ET	EXPANSION TANK	HX	HEAT EXCHANGER	PD	PRESSURE DROP
CHW	CHILLED WATER	EWT	ENTERING WATER TEMPERATURE	ID	INSIDE DIAMETER	PG	PROPYLENE GLYCOL
C/HWR	CHILLED & HOT WATER RETURN	F	FAHRENHEIT	IN	INCHES	PSI	POUNDS PER SQUARE INCH
C/HWS	CHILLED & HOT WATER SUPPLY	FA	FRESH AIR	KW	KILOWATTS	PH/ø	PHASE
CHWR	CHILLED WATER RETURN	FPD	FLUID PRESSURE DROP	LAT	LEAVING AIR TEMPERATURE	R	RETURN
CHWS	CHILLED WATER SUPPLY	FPM	FEET PER MINUTE	LB/#	POUNDS	RA	RETURN AIR
COND	CONDENSATE	FPT	FEMALE PIPE THREAD	LFT	LEAVING FLUID TEMPERATURE	RTU	ROOFTOP UNIT
CONN	CONNECT OR CONNECTION	FT HD	FEET HEAD	LPS	LOW PRESSURE STEAM	SF	SQUARE FEET
CONV	CONVECTOR	FTR	FIN TUBE RADIATION	LWT	LEAVING WATER TEMPERATURE	SQ IN	SQUARE INCHES
CP	CIRCULATOR PUMP	FW	FRESH WATER	M	MINUTES	S	SUPPLY
CW	COLD WATER	GC	GENERAL CONTRACTOR	MAX	MAXIMUM	SA	SUPPLY AIR
CWR	CONDENSER WATER RETURN	GHWS	GLYCOL & WATER SUPPLY	MBH	THOUSANDS OF BTU/H	TEMP	TEMPERATURE
CWS	CONDENSER WATER SUPPLY	GHWR	GLYCOL & WATER RETURN	MC	MECHANICAL CONTRACTOR	V	VOLTS
DB	DRY BULB	GPM	GALLONS PER MINUTE	MCA	MINIMUM CIRCUIT AMPACITY	W	WATTS
DN	DOWN	HP	HORSEPOWER	MIN	MINUTE OR MINIMUM	WPD	WATER PRESSURE DROP
DX	DIRECT EXPANSION	HPS	HIGH PRESSURE STEAM	MOCP	MAX OVERCURRENT PROTECTION	WB	WET BULB
EA	EXHAUST AIR	HR	HOUR	MPS	MEDIUM PRESSURE STEAM	WC	WATER COLUMN

DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW: PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

HVAC PROJECT MANAGER:
DAVID C. MAGNUSON
EMAIL: DAVEM@DESIGNDAYMECH.COM
PHONE: (603) 463-1086
ADDRESS: 65 OLD CENTER RD, DEERFIELD, NH 03037



PROJECT:

AGILYX TENANT FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:

TW DESIGNS
STRAFFORD, NEW HAMPSHIRE

SPECIFICATIONS, LEGENDS AND SEQUENCES OF OPERATION

REVISIONS:

1 — 01/12/2021 REMOVED HOOD 2 & FAN

2 — 4/9/2021 HOOD TO VARIABLE SPEED

DESIGNED BY: DCM
DRAWN BY: MRM
CHECKED BY: AWA

DDM JOB #: 21053
SCALE: AS NOTED

DATE: 12/23/2020

M-3

DOAS/RTU FAN SCHEDULE – JOB#4658880

FAN UNIT NO	TAG	QTY	DOAS/RTU MODEL #	MANUFACTURER	BLOWER	RETURN AIR CFM	MAX OUTSIDE AIR CFM	TOTAL CFM	ESP	HP	BHP	ø	VOLT	MCA	MOCP	WEIGHT (LBS)
1		1	CASRTU1-1.200-15-7.5T-DOAS	CAPTIVEAIRE	15P-1	660	990	1650	1.000	2.000	1.0730	3	208	38.1A	40A	1432

DOAS/RTU COOLING SCHEDULE

FAN UNIT NO	TAG	COMPRESSOR			OUTDOOR FAN				INDOOR COIL		OUTSIDE AIR DB TEMP	OUTSIDE AIR WB TEMP	MIXED AIR DB TEMP	MIXED AIR WB TEMP	LEAVING DB TEMP	LEAVING WB TEMP	LEAVING DP TEMP	TOTAL CAPACITY	SENSIBLE CAPACITY	LATENT CAPACITY	REHEAT LEAVING DB TEMP	REHEAT LEAVING WB TEMP	DESIRED REHEAT CAPACITY	MAX REHEAT CAPACITY	REHEAT LEAVING RELATIVE HUMIDITY	MOISTURE REMOVAL RATE	IEER
		TONNAGE	VOLTAGE	ø	MOTOR VOLTAGE	MOTOR ø	MOTOR FREQUENCY	MOTOR QTY	ROWS	FACE AREA																	
1		7.5	190-240	3	200-240	3	60	2	5	6.2 SQFT	89.6°F	72.8°F	83.8°F	68.8°F	51.8°F	51.8°F	51.9°F	83.1 MBH	56.3 MBH	26.8 MBH	70.0°F	59.3°F	33.8 MBH	60 MBH	53	24.7 LBS/HR	18.6

DOAS/RTU HEATING SCHEDULE

FAN UNIT NO	TAG	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
1		171976	137581	65°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	80

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1		1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU. QNTY 1 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "E2" OPTION PREWIRE MUST BE SELECTED. DO NOT PROVIDE SUPPLY STARTER IN PREWIRE.
		1	LOW AMBIENT COOLING OPERATION.
		1	2" MERV 13 FILTERS FOR SIZE 1 RTU. QTY. 4.
		1	2" MERV 8 FILTERS SIZE 1 RTU. QTY 4.
		1	OVERHEAT STAT.
		1	VFD FACTORY MOUNTED AND WIRED IN COMMERCIAL CONTROL VESTIBULE FOR RTU.
		1	INLET PRESSURE GAUGE, 0-35".
		1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE.
		1	CONTROL PANEL ENCLOSURE HEATER. RECOMMENDED FOR WINTER DESIGN TEMPERATURE LESS THAN 0°F. PCB CONTROLS.
		1	RTU SIZE 1 SIDE DISCHARGE.
		1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK (SUPPLIED BY OTHERS).
		1	HEATED DRAIN KIT FOR RTU. REQUIRED FOR WINTER DESIGN TEMP OF 0 DEGREES F AND LOWER.
		1	CLOGGED FILTER SWITCH WITH NOTIFICATION ON HMI.
		1	SIZE 1 RTU CONVENIENCE OUTLET (GFCI), 15 AMP - REQUIRES SEPARATE 120V CONNECTION. INCLUDES RECEPTACLE, COVER AND J BOX.
		1	RTU 1 HAIL GUARD.
		1	7.5 TON MODULATING COOLING OPTION WITH HEAT PUMP, 208/230V. R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS.
		1	7.5 TON MODULATING REHEAT OPTION WITH HEAT PUMP. SPACE DEWPOINT CONTROL.
		1	RTU SIZE 1 SIDE RETURN.
		1	VAV PACKAGE W/ MANUAL/DDC CONTROL (571 VFD INCLUDED).
		1	ECOATING FOR SIZE 1 RTU 7.5T CONDENSER COIL.
		1	ECOATING FOR SIZE 1 RTU 7.5T EVAP COIL.
		1	ECOATING FOR SIZE 1 RTU 7.5T REHEAT COIL.
		1	OCCUPIED SCHEDULING.
		1	FREEZESTAT.
		1	SIZE 1 RTU CURB DUCT HANGER.
		1	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED.
		1	RTU SCHEDULED OA PERCENTAGE INTAKE/RETURN DAMPER CONTROL.

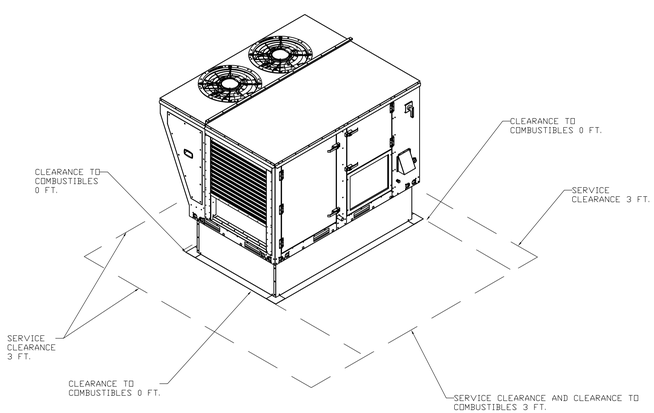
CURB ASSEMBLIES

NO	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	82 LBS	CURB	41.000"W X 71.000"L X 20.000"H INSULATED.

UNIT SOUND DATA

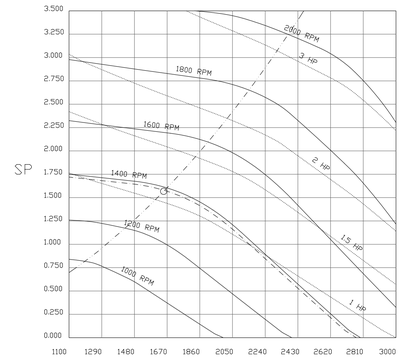
FAN UNIT NO	TAG	MOTOR	SOUND DATA			OCTAVE BAND SOUND DATA								
			LWA	SONES @ 5 FT	DBA @ 5 FT	DISTANCE (FT)	63 HZ	125 HZ	250 HZ	500 HZ	1 KHZ	2 KHZ	4 KHZ	8 KHZ
1		SUPPLY	80.6	19.5	70.1	5	81.8	81.6	78.1	75.4	75.7	72.2	69.6	71.6

Note: Sound data across operational range. Tested in accordance to AHRI Standard 270/370.



FAN#1 - HEATER PERFORMANCE CURVES.

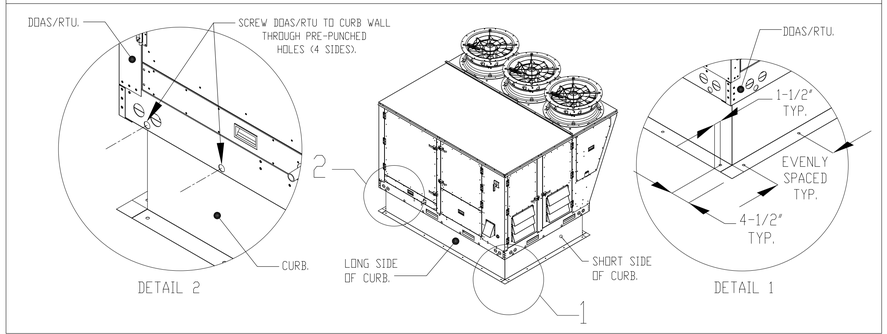
1650 CFM, 1.568 SP @ 1388 RPM AND 1.073 BHP AT 38 FEET AND -15 DEG F.
* PLEASE NOTE THAT THESE CURVES WERE ADJUSTED FOR JOB SPECIFIC TEMPERATURE AND ALTITUDE.



TYPICAL DOAS/RTU ROOF MOUNTING INSTALLATION INSTRUCTIONS

1. SECURE THE CURB TO THE ROOF FRAMING MEMBERS BY DRILLING 1/4" PILOT HOLES IN THE CURB FLANGES AT LOCATIONS SHOWN IN THE DIAGRAM BELOW. USING 3/8" X 2" ZINC PLATED STEEL LAG BOLTS, AND ZINC PLATED WASHERS, SCREW THROUGH THE CURB FLANGES AND INTO THE ROOF FRAMING MEMBERS. A MINIMUM OF (5) LAG BOLTS ON EACH SHORT SIDE, AND (7) LAG BOLTS ON EACH LONG SIDE IS REQUIRED.

2. SECURE THE UNIT BASE TO THE SIDE WALLS OF THE CURB USING (24) 1/4"-14 X 2" SELF-DRILLING, STEEL ZINC PLATED SCREWS. PRE-PUNCHED HOLES HAVE BEEN PROVIDED FOR EACH SCREW LOCATION.



REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

CAPTIVEAIRE
VT / NH Mechanical
9A Lafayette Road, Suite 6, North Hampton, NH, 03862 PHONE: (603) 505-4847 FAX: (919) 516-8711 EMAIL: reg111@captiveaire.com
www.captiveaire.com

Agilyx r.1
PORTSMOUTH, NH, 03803

DATE: 12/17/2020

DWG.#: 4658880

DRAWN BY: KCD-111

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

MASTER DRAWING

SHEET NO. 1

DDM DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

HVAC PROJECT MANAGER:
DAVID C. MAGNUSON
EMAIL: DAVEM@DESIGNDAYMECH.COM
PHONE: (603) 463-1086
ADDRESS: 65 OLD CENTER RD, DEERFIELD, NH 03037

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
LICENSED
PROFESSIONAL ENGINEER

PROJECT:
AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:
TW DESIGNS
STRAFFORD, NEW HAMPSHIRE

CAPTIVEAIRE INFORMATION

REVISIONS:
1 09/12/2021 REMOVED HOOD 2 & FAN
2 4/9/2021 HOOD TO VARIABLE SPEED

DESIGNED BY: DCM
DRAWN BY: MRM
CHECKED BY: AWA

DDM JOB #: 2053
SCALE: AS NOTED

DATE: 12/23/2020

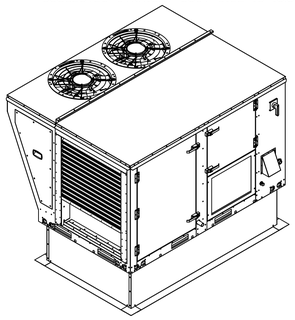
M-4

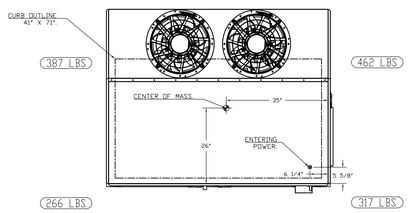
FAN #1 CASRTU1-I.200-15-7.5T-DOAS - HEATER

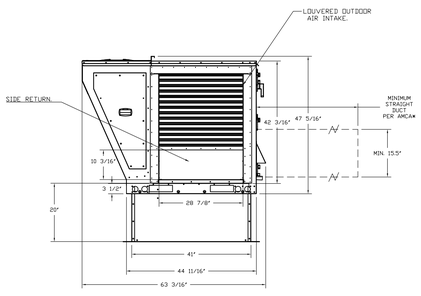
NOTES:

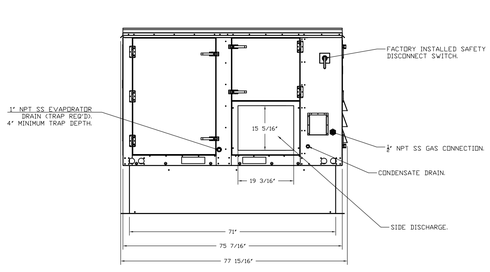
1. DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
2. ( ) DENOTES CORNER WEIGHT.
3. ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 15.5" x 19.25".









OPTIONS

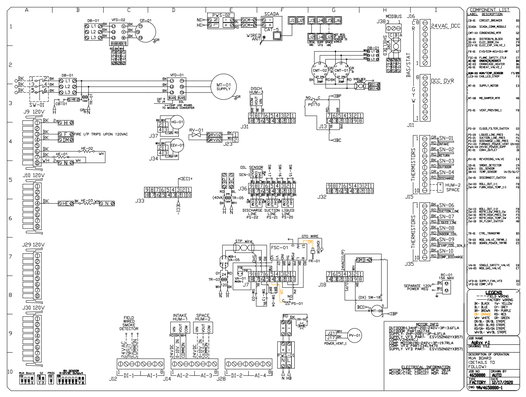
1. SINGLE POINT ELECTRICAL CONNECTION FOR RTU. QNTY 1 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "E2" OPTION PREWIRE MUST BE SELECTED. DO NOT PROVIDE SUPPLY STARTER IN PREWIRE.
2. LOW AMBIENT COOLING OPERATION.
3. 2" MERV 13 FILTERS FOR SIZE 1 RTU. QTY. 4.
4. 2" MERV 8 FILTERS SIZE 1 RTU. QTY 4.
5. OVERHEAT STAT.
6. VFD FACTORY MOUNTED AND WIRED IN COMMERCIAL CONTROL VESTIBULE FOR RTU.
7. INLET PRESSURE GAUGE, 0-35".
8. MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE.
9. CONTROL PANEL ENCLOSURE HEATER. RECOMMENDED FOR WINTER DESIGN TEMPERATURE LESS THAN 0°F. PCB CONTROLS.
10. RTU SIZE 1 SIDE DISCHARGE.
11. COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK (SUPPLIED BY OTHERS).
12. HEATED DRAIN KIT FOR RTU. REQUIRED FOR WINTER DESIGN TEMP OF 0 DEGREES F AND LOWER.
13. CLOGGED FILTER SWITCH WITH NOTIFICATION ON HMI.
14. SIZE 1 RTU CONVENIENCE OUTLET (GFCI), 15 AMP - REQUIRES SEPARATE 120V CONNECTION. INCLUDES RECEPTACLE, COVER AND J BOX.
15. RTU 1 HAIL GUARD.
16. 7.5 TON MODULATING COOLING OPTION WITH HEAT PUMP, 208/230V. R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS.
17. 7.5 TON MODULATING REHEAT OPTION WITH HEAT PUMP. SPACE DEWPOINT CONTROL.
18. RTU SIZE 1 SIDE RETURN.
19. VAV PACKAGE W/ MANUAL/DDC CONTROL (571 VFD INCLUDED).
20. ECOATING FOR SIZE 1 RTU 7.5T CONDENSER COIL.
21. ECOATING FOR SIZE 1 RTU 7.5T EVAP COIL.
22. ECOATING FOR SIZE 1 RTU 7.5T REHEAT COIL.
23. OCCUPIED SCHEDULING.
24. FREEZESTAT.
25. SIZE 1 RTU CURB DUCT HANGER.
26. CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED.
27. RTU SCHEDULED OA PERCENTAGE INTAKE/RETURN DAMPER CONTROL.

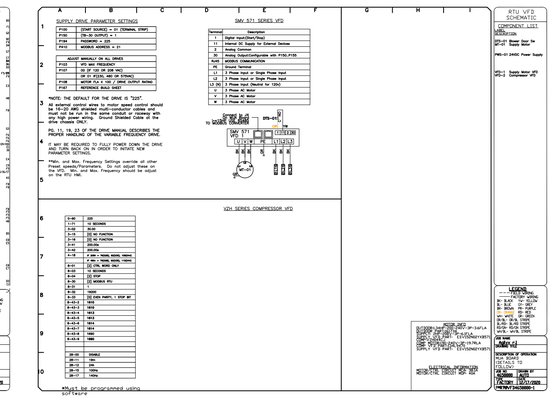
SYSTEM DESIGN VERIFICATION (SDV)

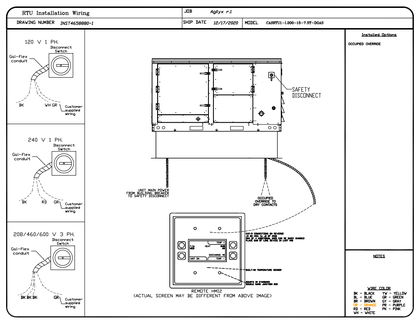
IF ORDERED, CAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRADES ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF CAS SERVICE HAS TO RESOLVE A DISCREPANCY THAT IS A FIELD ISSUE, THE GENERAL CONTRACTOR WILL BE NOTIFIED AND BILLED FOR THE WORK. SHOULD A RETURN TRIP BE REQUIRED DUE TO ANY FIELD RELATED DISCREPANCY THAT CANNOT BE RESOLVED DURING THE SDV, THERE WILL BE ADDITIONAL TRIP CHARGES.

DURING THE SDV, CAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.







REVISIONS

	DESCRIPTION	DATE:
△		
△		
△		
△		

CAPTIVEAIRE

VT / NH Mechanical

9A Lafayette Road, Suite 6, North Hampton, NH, 03862 PHONE: (603) 505-4847 FAX: (919) 516-8711 EMAIL: reg111@captiveaire.com

www.captiveaire.com

Agilyx r.1
PORTSMOUTH, NH, 03803

DATE: 12/17/2020

DWG.#: 4658880

DRAWN BY: KCD-111

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

MASTER DRAWING

SHEET NO. 2

DDM DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

HVAC PROJECT MANAGER:

DAVID C. MAGNUSON
EMAIL: DAVEM@DESIGNDAYMECH.COM
PHONE: (603) 463-1086
ADDRESS: 65 OLD CENTER RD, DEERFIELD, NH 03037

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
PROFESSIONAL ENGINEER

PROJECT:

AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:

TW DESIGNS
STRAFFORD, NEW HAMPSHIRE

CAPTIVEAIRE INFORMATION

REVISIONS:

1 Q1/12/2021 REMOVED HOOD 2 & FAN
2 4/9/2021 HOOD TO VARIABLE SPEED

DESIGNED BY:	DCM
DRAWN BY:	MRM
CHECKED BY:	AWA
DDM JOB #:	2053
SCALE:	AS NOTED

DATE: 12/23/2020

M-5

MODEL: CASRTU SPECIFICATIONS

SECTION 23 74 33
FACTORY FABRICATED PACKAGED, 100% OUTDOOR, HEATING AND COOLING
MAKEUP AIR UNITS

SPECIFICATIONS
TAG: DOAS-1

PART 1 - GENERAL

1.1 SUMMARY

A. THIS SECTION INCLUDES PACKAGED HEATING AND COOLING UNITS CAPABLE OF SUPPLYING UP TO 100 PERCENT OUTDOOR AIR.

1.2 SUBMITTALS

A. THE MANUFACTURER ASSUMES NO LIABILITY FOR THE USE OR RESULTS OF USE OF THIS DOCUMENT. THIS SPECIFICATION IS TO BE REVIEWED BY THE ENGINEER TO CONFIRM REQUIREMENTS OF THE PROJECT AND BUILDING CODES ARE MET.

B. AS THE MANUFACTURER CONTINUES PRODUCT DEVELOPMENT, IT RESERVES THE RIGHT TO CHANGE DESIGN AND SPECIFICATIONS WITHOUT NOTICE.

1.3 SEISMIC DESIGN

A. SHOULD PROJECT BE LOCATED WITHIN A SEISMIC ZONE REQUIRING SPECIAL PROVISIONS FOR SUPPORT AND RESTRAINT OF EQUIPMENT, COMPONENTS, AND PIPING, SEE SECTION 23 00 01 - SEISMIC, WIND, AND FLOOD LOAD DESIGN FOR ADDITIONAL REQUIREMENTS.

1.4 WIND LOAD DESIGN

A. REFER TO SECTION 23 00 01, SEISMIC, WIND, FLOOD LOAD DESIGN FOR ADDITIONAL REQUIREMENTS.

B. MIAMI DADE RATED UP TO ±150PSF PER TAS 201, 202 & 203 PAIRED WITH 20" CURB OR SHORTER.

1.5 QUALITY ASSURANCE

A. ALL MODELS SHALL BE ETL LISTED AND COMPLY WITH SAFETY STANDARDS UL 1995, AND CSA STD. C22.2, NO. 236-11. UNITS OUTFITTED WITH INDIRECT FIRED HEATERS SHALL ALSO COMPLY WITH ANSI Z83.8-2013, AND CSA 2.6-2013.

B. THIS UNIT HAS BEEN TESTED IN ACCORDANCE TO THE FOLLOWING STANDARDS:
- ANSI/AHRI STANDARD 340/360
- ANSI/ASHRAE STANDARD 37
- AHRI STANDARD 270/370

1.6 WARRANTY

A. ALL UNITS SHALL BE PROVIDED WITH THE FOLLOWING STANDARD WARRANTIES:

1. 10-YEAR (NON-PRORATED) PARTS WARRANTY COVERING THE ENTIRE UNIT WHEN ACCOMPANIED BY A COMPANY PROVIDED SERVICE PLAN. 5-YEAR (NON-PRORATED) PARTS WARRANTY COVERING THE ENTIRE UNIT OTHERWISE.
2. 25-YEAR (NON-PRORATED) PARTS WARRANTY FOR SS HEAT EXCHANGER ON INDIRECT FIRED UNITS.

B. THIS WARRANTY SHALL NOT APPLY IF:

1. THE EQUIPMENT IS NOT INSTALLED BY A QUALIFIED INSTALLER PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS SHIPPED WITH THE PRODUCT.
2. THE EQUIPMENT IS NOT INSTALLED IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL CODES AND REGULATIONS.
3. THE EQUIPMENT IS MISUSED OR NEGLECTED, OR NOT MAINTAINED PER THE MANUFACTURER'S MAINTENANCE INSTRUCTIONS.
4. THE EQUIPMENT IS NOT OPERATED WITHIN ITS PUBLISHED CAPACITY.
5. THE INVOICE IS NOT PAID WITHIN THE TERMS OF THE SALES AGREEMENT.

C. THE MANUFACTURER SHALL NOT BE LIABLE FOR INCIDENTAL AND CONSEQUENTIAL LOSSES AND DAMAGES POTENTIALLY ATTRIBUTABLE TO MALFUNCTIONING EQUIPMENT. SHOULD ANY PART OF THE EQUIPMENT PROVE TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP WITHIN THE 10 YEAR PERIOD, UPON EXAMINATION BY THE MANUFACTURER, SUCH PART WILL BE REPAIRED OR REPLACED BY MANUFACTURER AT NO CHARGE. THE BUYER SHALL PAY ALL LABOR COSTS INCURRED IN CONNECTION WITH SUCH REPAIR OR REPLACEMENT. EQUIPMENT SHALL NOT BE RETURNED WITHOUT MANUFACTURER'S PRIOR AUTHORIZATION AND ALL RETURNED EQUIPMENT SHALL BE SHIPPED BY THE BUYER, FREIGHT PREPAID TO A DESTINATION DETERMINED BY THE MANUFACTURER.

PART 2 _ PRODUCTS

2.1. GENERAL

A. SUPPLY SINGLE ZONE ONE PIECE PACKAGED UNITS THAT ARE COMPLETE AS PER THE FOLLOWING SPECIFICATION, DELIVER ALL CAPACITIES SCHEDULED, AND CONFORM TO DESIGN INDICATED HEREIN. ALTERNATE LAYOUTS OR DIMENSIONAL CHANGES WILL NOT BE ACCEPTED.

2.1. CABINET

A. UNIT(S) SHALL BE CONSTRUCTED OF MINIMUM 24GA. IN CABINET SIZE 1 OR 20GA. IN CABINET SIZES 2, 3 OR 4 G-90 GALVANIZED STEEL RIVETED TOGETHER VIA STRUCTURAL POP-RIVETS. ALL METAL SHALL BE CNC BENT FOR PRECISE ASSEMBLY.

1. RIGGING PROVISIONS: THE UNIT SHALL HAVE A STRUCTURAL BASE CONSTRUCTED OF MINIMUM 18 GA. IN CABINET SIZE 1 AND 14GA. IN CABINET SIZES 2, 3 & 4 G-90 GALVANIZED STEEL, AND INCLUDE FULL SIZED FORK POCKETS AND LIFTING POINTS ON ALL FOUR SIDES.
2. ROOF CONSTRUCTION: THE LIDS SHALL BE FABRICATED BY FORMING A DOUBLE-STANDING, SELF-LOCKING SEAM THAT REQUIRES NO ADDITIONAL SUPPORT. ROOF SHALL BE PITCHED TO ALLOW FOR PROPER DRAINAGE.
3. EXTERIOR WALL CONSTRUCTION: ALL EXTERIOR WALLS SHALL CONSIST OF A DOUBLE WALL, G-90 GALVANIZED STEEL CONSTRUCTION. SIZE 1 CABINETS SHALL BE INSULATED WITH 1IN. THICK, R4.3 FIBER GLASS DUCT BOARD INSULATION. CABINET SIZES 2, 3 & 4 SHALL BE INSULATED WITH 2IN. THICK, R13 CLOSED CELL FOAM.
4. SERVICE ACCESS DOORS: ALL DOOR JAMBS SHALL BE GASKETED AROUND THEIR PERIMETER, AND ALLOW FOR DOORS TO BE MOUNTED VIA REMOVABLE, SPRING ACTUATED, STAINLESS STEEL HINGES WITH STAINLESS STEEL RIVETS, AND SELF-COMPRESSING LATCHES. EACH COMPARTMENT SHALL HAVE REMOVABLE ACCESS PANELS TO ALLOW FOR EASE OF SERVICE AND MAINTAINABILITY. ELECTRICAL CABINET ACCESS DOORS SHALL HAVE A DOOR HOLD INSTALLED TO PROP DOORS OPEN. ALL DOORS SHALL HAVE STAINLESS STEEL LATCHES WHICH ARE PAD LOCKABLE. ELECTRICAL CABINET DOORS SHALL BE OUTFITTED WITH SCHEMATIC/MANUAL POUCHES FORMED INTO THE DOOR, ALONG WITH WIRING DIAGRAM ATTACHED TO THE INDOOR OF THE DOOR FROM THE FACTORY.

B. ENTIRE INTERIOR AND EXTERIOR CASING SHALL BE CONSTRUCTED OF MINIMUM 20 GA G90 GALVANIZED STEEL WITH NO PAINTING, AND SHALL HAVE UNDERGONE A SALT SPRAY CORROSION TEST AS PER ASTM B 117.

C. ENTIRE UNIT SHALL BE MIAMI-DADE WIND RATED UP TO ±150PSF PER TAS 201, 202 & 203 ON ANY UNITS UTILIZING A 20" OR SHORTER FACTORY PROVIDED ROOF CURB.

2.1. AIRFLOW CONFIGURATIONS

A. UNIT SHALL BE CONFIGURABLE FOR BOTH DOWN (VERTICAL) DISCHARGE THROUGH BASE OF UNIT, OR SIDE DISCHARGE THROUGH THE CABINET. UNIT SHALL ALSO BE CONFIGURABLE TO BOTH DOWN (VERTICAL) RETURN OR SIDE RETURN INTO THE CABINET.

B. UNIT INTAKE AIRFLOW CONFIGURATION SHALL BE THROUGH USE OF A FRESH/OUTDOOR AND RETURN AIR DAMPER.

1. DAMPER: SHALL EXCEED AMCA CLASS 1A STANDARD FOR LOW LEAKAGE. DAMPER ASSEMBLY SHALL BE A SINGLE ASSEMBLY, AND OUTFITTED WITH AN INTEGRAL BIRD SCREEN AND LOUVER/GUTTER SYSTEM TO DIVERT ANY DRAINAGE THROUGH THE BASE OF THE UNIT - INTAKE AIR HOOD NOT REQUIRED.
2. ACTUATOR: A SINGLE DIRECT DRIVE DAMPER ACTUATOR SHALL BE USED WITH SPRING RETURN TO ENSURE THAT THE OUTDOOR AIR SECTION CLOSES WHEN NOT POWERED.

2.1. SUPPLY AIR BLOWER AND MOTOR

A. ALL SUPPLY FANS SHALL BE DIRECT DRIVE (BELT-DRIVEN NOT ACCEPTABLE) VARIABLE SPEED PLENUM FANS.

B. BLOWER MOTOR: MOTOR SHALL BE A PREMIUM EFFICIENCY MOTOR AVAILABLE AS:

1. OPEN DRIP PROOF (ODP) OR TOTALLY ENCLOSED FAN COOLED (TEFC) MOTOR DRIVEN BY A VARIABLE FREQUENCY DRIVE.
2. ELECTRONICALLY COMMUTATED MOTOR (ECM).

C. FANS TO BE SELECTED AT OR NEAR EFFICIENCY PEAK. (SUBMIT FAN CURVES.)

D. BLOWER AND MOTOR ASSEMBLY SHALL BE DYNAMICALLY BALANCED. THE ENTIRE BLOWER AND MOTOR ASSEMBLY SHALL BE MOUNTED ON RUBBER VIBRATION ISOLATORS. WHEELS BALANCED AS PER AMCA 204-96, BALANCE QUALITY AND VIBRATION LEVELS FOR FANS.

2.1. REFRIGERATION SYSTEM

A. UNIT SHALL UTILIZE A VARIABLE SPEED INVERTER DUTY SCROLL COMPRESSOR WITH THE FOLLOWING FEATURES:

1. MODULATION: COMPRESSOR SHALL BE CAPABLE OF COMPRESSOR SPEED MODULATION FROM 15%-100% ON 5, 6, 7.5, 8, 10, & 12.5 TON UNITS, AND 25%-100% ON 15, 20, 22, 25, & 30 TON UNITS.
2. REFRIGERANT: UNIT SHALL BE FACTORY CHARGED WITH R410A REFRIGERANT.
3. VIBRATION ISOLATION: COMPRESSOR AS WELL AS BLOWER ASSEMBLY SHALL EACH BE MOUNTED ON RUBBER VIBRATION ISOLATORS TO REDUCE TRANSMISSION OF VIBRATION TO THE BUILDING STRUCTURE.
4. INTERNAL OVERLOAD PROTECTION: COMPRESSOR SHALL INCLUDE INTERNAL THERMAL OVERLOAD PRODUCTION TO PROTECT AGAINST EXCESSIVE MOTOR TEMPERATURES.
5. CRANKCASE HEATER: COMPRESSOR SHALL INCLUDE A CRANKCASE HEATER TO PROTECT AGAINST LIQUID FLOOD-BACK AND ELIMINATION OF OIL FOAMING ON STARTUP. THE CRANKCASE HEATER MUST REMAIN POWERED WHEN COMPRESSOR IS NOT IN OPERATION.
6. OIL MANAGEMENT: UNIT SHALL UTILIZE BOTH PASSIVE AND ACTIVE OIL RETURN MANAGEMENT USING OIL LEVEL SENSOR AND SCHEDULED OIL BOOSTS.
7. MONITORED ENVELOPE: UNIT SHALL MONITOR ALL CRITICAL REFRIGERATION POINTS TO ENSURE COMPRESSOR DOES NOT OPERATE OUTSIDE OF SAFE OPERATING ENVELOPE.
8. THROTTLING LOGIC: UNIT SHALL ALLOW FOR HIGH HEAD PRESSURE MONITORING THROTTLE MODE FOR HIGH AMBIENT OPERATION, AND LOW SUCTION PRESSURE THROTTLE MODE FOR LOW CAPACITY OPERATION OR ANY CONDITIONS RESULTING IN LOW SUCTION PRESSURE.
9. PUMP-DOWN: ACTIVE PUMP-DOWN MODE WITH DISCHARGE LINE CHECK VALVE TO PROTECT AGAINST LIQUID MIGRATION INTO COMPRESSOR DURING IDLE TIMES.
10. DEFROST MODE IN OPTIONAL HEAT PUMP: WHEN OUTDOOR COILS ARE DEEMED AT RISK OF FREEZING, THE UNIT SHALL SIMULTANEOUSLY TURN ON AUXILIARY HEAT WHILE RUNNING THE HEAT PUMP IN "COOLING" MODE TO HELP DEFROST OUTDOOR COILS AS NEEDED WHILE STILL MAINTAIN DESIRED LEAVING AIR TEMPERATURES.

B. THE UNIT SHALL BE OUTFITTED WITH THE FOLLOWING:

1. INDOOR COIL: INDOOR COIL SHALL BE A HIGH EFFICIENCY 4-7 ROW COIL DESIGN WITH ALUMINUM FINS MECHANICALLY BONDED TO COPPER TUBES. COIL IS STAGGERED TO INCREASE TURBULENCE, REDUCE THE COIL BYPASS FACTOR, AND ULTIMATELY INCREASE THE TIME THE AIR STAYS WITHIN THE COIL.
2. ELECTRONIC EXPANSION VALVE: EACH REFRIGERATION CIRCUIT WILL BE OUTFITTED WITH AN ELECTRONIC EXPANSION VALVE METERING DEVICE WHICH CAN BE THROTTLED FROM 0-100% OPEN TO ALLOW FOR PRECISE SUPERHEAT CONTROL.
3. INDOOR COIL DRAIN PAN: THE INDOOR COIL SHALL BE OUTFITTED WITH A SLOPED STAINLESS STEEL DRAIN PAN. THIS PAN SHALL BE INSULATED ALONG THE ENTIRE BASE TO PREVENT CONDENSATION, AND OUTFITTED WITH A SAFETY OVERFLOW SWITCH WHICH WILL AUTOMATICALLY SHUT DOWN COOLING OPERATION PRIOR TO WATER OVERFLOWING THE DRAIN PAN IN THE EVENT OF A DRAIN CLOG. THE ENTIRE DRAIN PAN SHALL BE 20 GA STAINLESS STEEL CONSTRUCTION AND WRAP BENEATH THE ENTIRE COIL WITH FLASHING ON ENTERING SIDE OF COIL TO ENSURE CAPTURE OF ALL CONDENSATE. DRAIN PAN DISCHARGE PIPE SHALL ALSO BE STAINLESS STEEL CONSTRUCTION. DRAIN PAN SHALL BE PITCHED TO EXCEED ASHRAE 62.1 STANDARD.
4. BASE OF THE CONDENSING COIL CABINET SHALL BE PITCHED AWAY FROM THE UNIT AS A SAFETY TO ENSURE ALL DRAINING EXITS AWAY FROM THE CURB.
5. OPTIONAL HOT GAS REHEAT COIL: THE UNIT SHALL INCLUDE AN OPTIONAL COPPER TUBE AND ALUMINUM FIN HOT GAS REHEAT COIL MOUNTED DOWNSTREAM OF THE INDOOR COIL. THIS COIL SHALL BE CONTROLLED VIA FULLY MODULATING HOT GAS REHEAT VALVE TO PROVIDE PRECISE REHEAT TEMPERATURE CONTROL. THIS COIL SHALL INCLUDE THE ADDITION OF AN EVAPORATIVE COIL LEAVING CONDITION SENSOR TO MAINTAIN A COIL DEW POINT. THIS ALSO PREVENTS OPERATION OF A DEHUMIDIFICATION CALL WHEN INTAKE DEW POINT CONDITIONS ARE FOUND TO BE BELOW SPACE DEW POINT CONDITIONS, PREVENTING WASTED ENERGY.
6. OUTDOOR (CONDENSER) COIL: OUTDOOR COIL SHALL BE A HIGH EFFICIENCY COIL DESIGN WITH ALUMINUM FINS MECHANICALLY BONDED TO COPPER TUBES. THE COIL SHALL BE DOWNWARD SLOPED TO PROTECT COIL FROM HAIL DAMAGE. OPTIONAL HAIL GUARDS MAY ALSO BE OUTFITTED TO THE OUTDOOR COIL FOR ADDED PROTECTION FROM HAIL BOUNCING OFF OF THE ROOF OF THE UNIT UP THE COIL.
7. OUTDOOR FANS: THE OUTDOOR COIL SHALL HAVE A VERTICAL DISCHARGE OUTFITTED WITH QUIET, EFFICIENT, FULLY MODULATING ELECTRONICALLY COMMUTATED MOTOR (ECM) CONDENSING FANS. THESE FANS SHALL MODULATE TO MAINTAIN A TEMPERATURE DIFFERENTIAL BETWEEN OUTSIDE AIR AND THE OUTDOOR COIL.

C. TO HELP MITIGATE ANY LONG-TERM POTENTIAL FOR LEAKS OR HARDWARE FAILURES, THE UNIT SHALL BE OUTFITTED WITH THE FOLLOWING PROTECTION MEASURES:

1. SUCTION LINE ACCUMULATOR FOR ADDED PROTECTION AGAINST LIQUID ENTERING SUCTION LINE OF COMPRESSOR.
2. BI-FLOW, LOW PRESSURE DROP, FILTER DRIER.
3. ELECTRONIC EXPANSION VALVE (EEV) FOR PRECISE SUPERHEAT CONTROL. EEV SHALL OPEN PARTIALLY ALLOWING SYSTEM PRESSURE EQUALIZATION PRIOR TO ACTIVATION OF THE COMPRESSOR.
4. ON OPTIONAL HEAT PUMP UNITS, USE OF A SINGLE 3-WAY REHEAT VALVE TO PREVENT OBSTRUCTIONS DUE TO VALVE FAILURE.
5. PROTECTIVE RUBBER SLEEVES INSTALLED ON ALL DISTRIBUTION LINES OF INDOOR COIL TO PREVENT WEAR FROM RUBBING.
6. ALL REFRIGERATION PORTS SHALL BE SHORT-STUB ASSEMBLY AND ANY ACCESS PORT WITH A TRANSDUCER OR SWITCH IS MOUNTED VERTICALLY TO MITIGATE RISK OF BENT/CRACKED STUB JOINTS.
7. REFRIGERATION CIRCUIT SHALL BE MECHANICALLY CNC PRE-BENT TUBING WHEREVER POSSIBLE WITH MINIMAL BRAZED JOINTS TO MINIMIZE POINTS FOR POTENTIAL REFRIGERATION LEAKS.
8. FACTORY TESTED FOR LEAKS VIA HIGH PRESSURE NITROGEN DECAY AND HELIUM TRACER GAS TESTING.
9. SUCTION LINE TEMPERATURE SENSOR FAILURE DETECTION.
10. PREVENTATIVE FAILURE ALERTS THROUGH A MANUFACTURER PROVIDED, CLOUD BASED, CELLULAR REMOTE MONITORING SYSTEM.

2.1. HEATING SYSTEM

A. THE GAS BURNER SHALL BE AN INDIRECT-FIRED, PUSH-THROUGH TYPE, USING (NATURAL) (LP) GAS AT AN INLET-SUPPLY PRESSURE TO THE UNIT OF 7"W.C. MINIMUM NAT. GAS, (11"W.C. MINIMUM LP GAS).

BURNER SHALL BE A TUBULAR IN-SHOT FIRED DESIGN CAPABLE OF USING NATURAL OR LP TYPE GAS. EACH BURNER IGNITION SHALL BE OF THE DIRECT-SPARK DESIGN WITH REMOTE FLAME SENSING AT INLET OF THE LAST FIRING TUBE OF THE GAS MANIFOLD.

B. DIRECT-SPARKING SEQUENCE SHALL LAST THROUGH THE COMPLETE DURATION OF THE TRIAL FOR IGNITION PERIOD FOR GUARANTEED LIGHT-OFF. BURNER SHALL ALWAYS BE LIT AT MAXIMUM GAS FLOW AND COMBUSTION AIRFLOW FOR GUARANTEED LIGHT-OFF. EACH BURNER IGNITION MODULE SHALL HAVE LED INDICATORS FOR TROUBLESHOOTING AND A SET OF EXPOSED PRONGS FOR TESTING FLAME INDICATION SIGNAL.

C. ALL FURNACES SHALL BE CONTROLLED BY AN ELECTRONIC VERNIER-TYPE FULLY MODULATING CONTROL SYSTEM CAPABLE OF ACHIEVING 80% COMBUSTION EFFICIENCY OVER THE ENTIRE GAS FIRING RANGE OF THE UNIT.

D. EACH FURNACE SHALL HAVE:

1. A MINIMUM TURNDOWN RATIO OF 6:1 FOR NATURAL GAS AND 5:1 FOR LP GAS WHILE MAINTAINING A CONSTANT 80% EFFICIENCY (90% FOR HIGH EFFICIENCY FURNACE OPTION). NO COLD AIR BYPASS OF THE HEAT EXCHANGER.
2. EACH FURNACE HEAT EXCHANGER SHALL BE A BENT-TUBE STYLE DESIGN MADE ENTIRELY OF STAINLESS STEEL.
3. STAINLESS STEEL QUICK SEAL CONNECTION FOR GAS CONNECTION.
4. MANIFOLD AND INPUT GAS PRESSURE GAUGES.
5. FACTORY PIPED CONDENSATE DRAIN TO EXTERIOR OF CABINET.
6. A COMBUSTION FLUE TO BE INSTALLED ON ADJACENT SIDE AS COMBUSTION INTAKE WITH INTEGRATED HIGH VELOCITY WIND CAP.
7. A BLOCKED VENT SAFETY AIRFLOW SWITCH WITH HIGH TEMPERATURE SILICONE TUBING OPERATING OFF OF ABSOLUTE PRESSURE MEASURED INSIDE OF THE POWER-VENT BLOWER HOUSING.
8. A HIGH TEMPERATURE AUTO-RECYCLING LIMIT WITH A MAXIMUM NON-ADJUSTABLE SET POINT.
9. A MANUAL RESET HIGH TEMPERATURE FLAME ROLL OUT SWITCH WITH A NON-ADJUSTABLE SET POINT.
10. EACH FURNACE COMPARTMENT SHALL HAVE A REMOVABLE POST AND PANEL THAT ALLOWS THE FURNACE TO BE EASILY REMOVED FOR SERVICE AND MAINTAINABILITY.
11. A POWER-VENT ASSEMBLY FOR EXHAUSTING FLUE GASES WITH A PSC OR ECM TYPE MOTOR THAT IS SECURELY MOUNTED AND EASILY ACCESSIBLE/REMOVABLE FOR SERVICE.
12. A 0-10"W.C. GAS PRESSURE GAUGE INSTALLED ON THE GAS MANIFOLD.

E. EACH ELECTRIC HEATER SHALL HAVE:

1. SCR ELECTRIC INSERTS FOR SIDE OR DISCHARGE SUPPLY.
2. ELECTRIC COILS ARE CONTROLLED USING SCR CONTROLS. SCR IS A TIME PROPORTIONING TYPE CONTROLLER THAT MODULATES THE HEATER AND SUPPLIES THE EXACT AMOUNT OF POWER TO MATCH THE HEAT DEMAND WITH A 10:1 TURNDOWN PER STAGE WITH FULL MODULATION BETWEEN MINIMUM TURNDOWN AND MAX OUTPUT.

2.1. FILTERS

A. PROVIDE FILTERS AS PART OF UNIT. ALL FILTERS SHALL BE FURNISHED AND INSTALLED TO MEET THE PERFORMANCE REQUIREMENTS SET FORTH IN THE SCHEDULE AND AS SPECIFIED UNDER ANOTHER SECTION OF THIS WORK.

B. ALL FILTERS SHALL BE INSTALLED ON TRACKS FOR EASY REMOVAL FROM THE UNIT.

C. UP TO 3 LAYERS OF OUTDOOR AIR FILTRATION INSTALLED. UNIT SHALL SHIP WITH A 2" WASHABLE METAL MESH OUTDOOR AIR FILTER. MIXED AIR SHALL HAVE OPTIONAL 2" MERV-8 AND MERV-13 FILTERS , 4" MERV-15 OR 4" MERV-17 HEPA FILTER BANKS FACTORY INSTALLED.

D. UNIT SHALL HAVE AN OPTIONAL ADJUSTABLE PRESSURE DIFFERENTIAL SENSOR FOR THE FILTER BANK TO ALERT IN THE EVENT OF A CLOGGED FILTER.

2.1. ELECTRICAL

A. ALL CONTROLS SHALL BE PRE-WIRED AND HOUSED IN AN INSULATED ELECTRICAL CABINET WITHIN THE UNIT TO PROTECT AGAINST RISK OF CONDENSATION.

B. ALL INDIRECT FIRED AND COOLING ONLY UNITS SHALL BE PROVIDED WITH SINGLE POINT ELECTRICAL CONNECTION.

C. UNIT SHALL BE PROVIDED WITH A DOOR SAFETY SWITCH THAT DE-ENERGIZES THE SUPPLY FAN WHEN THE DOOR IS OPENED.

D. UNIT SHALL BE PROVIDED WITH A FACTORY MOUNTED AVERAGING SUPPLY AIR TEMPERATURE SENSOR TO ALLOW FOR ACCURATE DISCHARGE TEMPERATURE READINGS WITHIN UNIT WHEN A DOWNSTREAM SENSOR IS NOT INSTALLED. FIELD MOUNTED AND WIRED DISCHARGE AIR SENSORS WILL NOT BE ACCEPTED.

E. UNIT SHALL BE PROVIDED WITH A FACTORY MOUNTED AVERAGING INTAKE AIR TEMPERATURE SENSOR TO ALLOW FOR ACCURATE INTAKE TEMPERATURE READING REGARDLESS OF HOW THE OA/RA DAMPERS ARE POSITIONED.

F. THE ELECTRICAL CABINET SHALL BE OUTFITTED WITH THE FOLLOWING:

1. LED ELECTRICAL CABINET SERVICE LIGHT WITH AUTOMATIC ACTIVATION UPON DOOR SWITCH.
2. COLOR WIRING SCHEMATICS, LAMINATED TO THE INTERIOR WALL OF THE CABINET DOORS.
3. FACTORY MOUNTED DISCONNECT WITH UNIT BOTTOM KNOCKOUTS.
4. A LED BACKLIT, LCD HUMAN-MACHINE INTERFACE (HMI) SHALL BE MOUNTED WITHIN THE UNIT'S CONTROL CABINET TO ALLOW FOR ALL SET POINTS CONFIGURATION AND REFRIGERATION SYSTEM MONITORING AT THE UNIT.
5. UP TO 4 ADDITIONAL SPACE MOUNTED HMIS AVAILABLE. ADDITIONAL HMIS SHALL ALLOW FOR FULL PROGRAMMING CAPABILITIES AND ARE OUTFITTED WITH INTEGRAL TEMPERATURE AND HUMIDITY SENSORS. ADDITIONAL HMIS SHALL BE CAPABLE OF BEING INDIVIDUALLY AVERAGED FOR SPACE TEMPERATURE/HUMIDITY READINGS. ALL HMIS SHALL BE WIRED USING STANDARD CAT5/6 CABLES.
6. OPTIONAL 120V, 15A UNIT POWERED OR UNPOWERED CONVENIENCE OUTLET.

G. ALL SENSORS SHALL BE WIRED BACK TO THE MAIN CONTROL BOARD THAT CONTINUOUSLY MONITORS ALL CRITICAL COMPONENTS AND MAKES DECISIONS BASED ON PRE-DETERMINED LOGIC TO ACCURATELY CONTROL THE FOLLOWING:

1. PID LOGIC TO CONTROL HEATER MODULATION ENSURING PRECISE DISCHARGE/SPACE TEMPERATURE CONTROL.
2. PID LOGIC TO CONTROL COMPRESSOR SPEED TO PROVIDE PRECISE CONTROL OVER EVAPORATIVE COIL TEMPERATURES, LEAVING DEW POINT, AND DISCHARGE/SPACE TEMPERATURES.
3. PID LOGIC FOR OUTDOOR FAN MODULATION TO MAINTAIN AN OPTIMAL OUTDOOR COIL TEMPERATURE.
4. PID LOGIC FOR ELECTRONIC EXPANSION VALVE (EEV) POSITION TO MAINTAIN A PRECISE SUPERHEAT TEMPERATURE
5. PID LOGIC FOR MODULATING REHEAT VALVE TO LIMIT SUPPLY AIR TEMPERATURE AND RELATIVE HUMIDITY BASED OFF OF SPACE OR DISCHARGE CONDITIONS.

2.1. CONTROLS

A. UNIT SHALL BE OUTFITTED WITH A CONTROL BOARD TO ALLOW FOR FULL CONTROL OF THE ENTIRE UNIT.

B. PROVIDE AIR FLOW SWITCH ON THE SUPPLY FAN SYSTEM TO SENSE AIR FLOW WITH AVAILABLE SET OF CONTACTS FOR CONNECTION TO BMS FOR AIRFLOW ALERTS.

C. ALL UNIT CONTROLS SHALL BE COMPATIBLE WITH BACNET AND LONWORKS BASED BUILDING MANAGEMENT SYSTEMS.

D. ALL UNITS SHALL BE OUTFITTED WITH CASLINK CLOUD BASED MONITORING, WHICH MONITORS EVERY POINT OF OPERATION. PROVIDES CONFIGURABLE AUTOMATED FAULT ALERT E-MAILS, AND REMOTE CONTROL CAPABILITIES.

E. INTEGRATED CELLULAR MODULE TO PROVIDE REMOTE CONNECTION TO MONITORING SERVICES TO VIEW BOTH REAL TIME AND HISTORICAL UNIT OPERATION. DATA SHALL BE STORED A MINIMUM OF 3 YEARS ON THE CLOUD. DATA SAMPLE RATE SHALL BE A MAXIMUM OF 60 SECONDS.

F. TEMPERATURE CONTROL SYSTEM

1. LOW-AMBIENT COOLING: UNIT IS FACTORY OUTFITTED WITH LOGIC ALLOWING FOR LOW-AMBIENT OPERATION OF THE DX SYSTEM DOWN TO 15F OUTDOOR TEMPERATURES PURELY THROUGH SOFTWARE UTILIZING THE STANDARD FACTORY MODULATING COMPONENTS.
2. DISCHARGE TEMP CONTROL (HEATING)
UNIT MODULATES THE BURNER FLAME (CURRENT SUPPLY IN THE CASE OF ELECTRIC HEATING) TO ACCURATELY MAINTAIN THE DESIRED DISCHARGE TEMPERATURE SET POINT AND COMPENSATE FOR FLUCTUATIONS IN ENTERING AIR TEMPERATURE, AIR VOLUME AND % OF OA USING HEATING PID CONTROLS DESIGNED SPECIFICALLY FOR THE DOAS.
3. DISCHARGE TEMP CONTROL (COOLING)
UNIT MODULATES THE COMPRESSOR FREQUENCY TO ACCURATELY MAINTAIN THE DESIRED DISCHARGE TEMPERATURE SET POINT AND COMPENSATE FOR FLUCTUATIONS IN ENTERING AIR TEMPERATURE, AIR VOLUME AND % OF OA USING PROPRIETARY COOLING PID CONTROLS DESIGNED SPECIFICALLY FOR THE DOAS.
4. DISCHARGE TEMP CONTROL (HEAT PUMP)
UNIT MODULATES THE COMPRESSOR FREQUENCY TO ACCURATELY MAINTAIN THE DESIRED DISCHARGE TEMPERATURE SET POINT AND COMPENSATE FOR FLUCTUATIONS IN ENTERING AIR TEMPERATURE, AIR VOLUME AND % OF OA USING HEATING PID CONTROLS DESIGNED SPECIFICALLY FOR THE DOAS. MINIMUM AND MAXIMUM DISCHARGE SET POINTS CAN BE SET TO LIMIT THE TEMPERATURE ENTERING THE SPACE. WHEN AMBIENT TEMPERATURES DROP BELOW A USER CONFIGURABLE MINIMUM OUTDOOR AIR TEMPERATURE SET POINT, OR THE UNIT IS NOT ABLE TO MAINTAIN A USER CONFIGURABLE MINIMUM DISCHARGE TEMP FOR 5 MINUTES TIME, THE HEAT PUMP WILL INITIATE ITS BACKUP HEAT SOURCE. INITIATION OF BACKUP HEATER OPERATION SHALL ENSURE DISCHARGE TEMPS ARE MAINTAINED PRIOR TO DISABLING HEAT PUMP TO MAKE SURE DISCHARGE TEMPS ARE NEVER IMPACTED DURING CHANGEOVER. AN OPTIONAL ADDITIONAL HMI OR ROOM THERMOSTAT CAN BE USED TO DETERMINE THE SPACE TEMPERATURE. IN THE CASE THAT NO TEMPERATURE SENSOR IS AVAILABLE IN THE SPACE, THE UNIT WILL USE AN INTERNAL RETURN TEMPERATURE SENSOR.
5. DISCHARGE HUMIDITY CONTROL (DEHUMIDIFICATION)
UNIT MODULATES THE COMPRESSOR FREQUENCY TO ACCURATELY MAINTAIN A DESIRED EVAPORATIVE COIL DEW POINT MEASURED VIA A COIL MOUNTED TEMPERATURE SENSOR BETWEEN THE EVAPORATIVE AND HOT GAS REHEAT COILS. A FULLY MODULATING HOT GAS REHEAT VALVE SHALL UTILIZE EXCESS WASTE HEAT FROM THE CONDENSING SECTION FEED THE HOT GAS REHEAT COIL WITH THE PRECISE AMOUNT OF HEAT NEEDED TO ACCURATELY REHEAT THE AIRSTREAM IN ORDER TO MAINTAIN A DESIRED DISCHARGE TEMPERATURE COMPENSATING FOR FLUCTUATIONS IN ENTERING AIR TEMPERATURE, AIR VOLUME AND % OF OA USING PROPRIETARY DEHUMIDIFICATION PID CONTROLS DESIGNED SPECIFICALLY FOR THE DOAS.
6. SPACE TEMP CONTROL (HEATING)
UNIT MODULATES THE BURNER FLAME (CURRENT SUPPLY IN THE CASE OF ELECTRIC HEATING) TO ACCURATELY MAINTAIN THE DESIRED SPACE TEMPERATURE SET POINT AND COMPENSATE FOR FLUCTUATIONS IN ENTERING AIR TEMPERATURE, AIR VOLUME AND % OF OA USING HEATING PID CONTROLS DESIGNED SPECIFICALLY FOR THE DOAS. MINIMUM AND MAXIMUM DISCHARGE SET POINTS CAN BE SET TO LIMIT THE TEMPERATURE ENTERING THE SPACE. AN OPTIONAL ADDITIONAL HMI OR ROOM THERMOSTAT CAN BE USED TO DETERMINE THE SPACE TEMPERATURE. IN THE CASE THAT NO TEMPERATURE SENSOR IS AVAILABLE IN THE SPACE, THE UNIT WILL USE AN INTERNAL RETURN TEMPERATURE SENSOR.
7. SPACE TEMP CONTROL (COOLING)
UNIT MODULATES THE COMPRESSOR FREQUENCY TO ACCURATELY MAINTAIN THE DESIRED SPACE TEMPERATURE SET POINT AND COMPENSATE FOR FLUCTUATIONS IN ENTERING AIR TEMPERATURE, AIR VOLUME AND % OF OA USING COOLING (HEATING WHEN IN HEAT PUMP MODE) PID CONTROLS DESIGNED SPECIFICALLY FOR THE DOAS. MINIMUM AND MAXIMUM DISCHARGE SET POINTS CAN BE SET TO LIMIT THE TEMPERATURE ENTERING THE SPACE. AN OPTIONAL ADDITIONAL HMI OR ROOM THERMOSTAT CAN BE USED TO DETERMINE THE SPACE TEMPERATURE. IN THE CASE THAT NO TEMPERATURE SENSOR IS AVAILABLE IN THE SPACE, THE UNIT WILL USE AN INTERNAL RETURN TEMPERATURE SENSOR.
8. SPACE TEMP CONTROL (HEAT PUMP)
UNIT MODULATES THE COMPRESSOR FREQUENCY TO ACCURATELY MAINTAIN THE DESIRED SPACE TEMPERATURE SET POINT AND COMPENSATE FOR FLUCTUATIONS IN ENTERING AIR TEMPERATURE, AIR VOLUME AND % OF OA USING HEATING PID CONTROLS DESIGNED SPECIFICALLY FOR THE DOAS. MINIMUM AND MAXIMUM DISCHARGE SET POINTS CAN BE SET TO LIMIT THE TEMPERATURE ENTERING THE SPACE. WHEN AMBIENT TEMPERATURES DROP BELOW A USER CONFIGURABLE MINIMUM OUTDOOR AIR TEMPERATURE SET POINT, OR THE UNIT IS NOT ABLE TO MAINTAIN A USER CONFIGURABLE MINIMUM DISCHARGE TEMP FOR 5 MINUTES TIME, THE HEAT PUMP WILL INITIATE ITS BACKUP HEAT SOURCE. INITIATION OF BACKUP HEATER OPERATION SHALL ENSURE DISCHARGE TEMPS ARE MAINTAINED PRIOR TO DISABLING HEAT PUMP TO MAKE SURE DISCHARGE TEMPS ARE NEVER IMPACTED DURING CHANGEOVER. AN OPTIONAL ADDITIONAL HMI OR ROOM THERMOSTAT CAN BE USED TO DETERMINE THE SPACE TEMPERATURE. IN THE CASE THAT NO TEMPERATURE SENSOR IS AVAILABLE IN THE SPACE, THE UNIT WILL USE AN INTERNAL RETURN TEMPERATURE SENSOR.
9. SPACE HUMIDITY CONTROL (DEHUMIDIFICATION)
UNIT MODULATES THE COMPRESSOR FREQUENCY TO ACCURATELY MAINTAIN A DESIRED EVAPORATIVE COIL DEW POINT MEASURED VIA A COIL MOUNTED TEMPERATURE SENSOR BETWEEN THE EVAPORATIVE AND HOT GAS REHEAT COILS. A FULLY MODULATING HOT GAS REHEAT VALVE SHALL UTILIZE EXCESS WASTE HEAT FROM THE CONDENSING SECTION FEED THE HOT GAS REHEAT COIL WITH THE PRECISE AMOUNT OF HEAT NEEDED TO ACCURATELY REHEAT THE AIRSTREAM IN ORDER TO MAINTAIN A DESIRED SPACE TEMPERATURE COMPENSATING FOR FLUCTUATIONS IN ENTERING AIR TEMPERATURE, AIR VOLUME AND % OF OA USING PROPRIETARY DEHUMIDIFICATION PID CONTROLS DESIGNED SPECIFICALLY FOR THE DOAS.
10. ADVANCED TOTAL UNIT ECONOMIZER: THE CONTROL SYSTEM IS OUTFITTED STANDARD, WITHOUT NEED FOR ANY ADDITIONAL HARDWARE, WITH AN ADVANCED TOTAL UNIT ECONOMIZER WHICH WILL TAKE MAXIMUM ADVANTAGE OF AS MUCH ENERGY AVAILABLE IN THE OUTDOOR AIR CONDITIONS IN ORDER TO RUN THE COMPRESSOR THE MINIMUM AMOUNT REQUIRED AT ANY GIVEN INCOMING AIR CONDITIONS. IF THE OUTDOOR ENTHALPY (TEMPERATURE AND RELATIVE HUMIDITY) PERMITS, THE UNIT WILL BE CAPABLE OF COMPLETELY MODULATING AND SHUTTING OFF COMPRESSOR TO PROVIDE "FREE" COOLING AND DEHUMIDIFICATION AS THE OUTDOOR AIR CONDITIONS ALLOW.

G. ACTIVATION CONTROLS:

1. ACTIVATE BASED ON INTAKE (HEATING)
UNIT WILL ACTIVATE HEATING WHEN THE INTAKE TEMPERATURE DROPS BELOW THE DESIRED SET POINT.
2. ACTIVATE BASED ON INTAKE (COOLING)
UNIT WILL ACTIVATE COOLING WHEN THE INTAKE TEMPERATURE RISES ABOVE THE DESIRED SET POINT.
3. ACTIVATE BASED ON INTAKE (DEHUMIDIFICATION)
UNIT WILL ACTIVATE DEHUMIDIFICATION WHEN THE INTAKE CONDITIONS RISE ABOVE THE DESIRED INTAKE SET POINT, WITH ACTIVATION SET POINTS CONFIGURED TO A DEW POINT, RELATIVE HUMIDITY OR A COMBINATION OF DEW POINT/RELATIVE HUMIDITY.
4. ACTIVATE BASED ON SPACE (HEATING)
UNIT WILL ACTIVATE HEATING WHEN THE SPACE TEMPERATURE DROPS BELOW THE DESIRED SET POINT.
5. ACTIVATE BASED ON SPACE (COOLING)
UNIT WILL ACTIVATE COOLING WHEN THE SPACE TEMPERATURE RISES ABOVE THE DESIRED SET POINT.
6. ACTIVATE BASED ON SPACE (DEHUMIDIFICATION)
UNIT WILL ACTIVATE DEHUMIDIFICATION WHEN THE SPACE SET POINT RISES ABOVE THE DESIRED SPACE SET POINT, WITH ACTIVATION SET POINTS CONFIGURED TO A DEW POINT, RELATIVE HUMIDITY OR A COMBINATION OF DEW POINT/RELATIVE HUMIDITY.
7. ACTIVATE BASED ON BOTH (HEATING)
UNIT WILL ACTIVATE HEATING WHEN THE SPACE AND INTAKE TEMPERATURE DROP BELOW THE DESIRED SET POINT.
8. ACTIVATE BASED ON BOTH (COOLING)
UNIT WILL ACTIVATE COOLING WHEN THE SPACE AND INTAKE TEMPERATURE RISE ABOVE THE DESIRED SET POINT.
9. ACTIVATE BASED ON BOTH (DEHUMIDIFICATION)
UNIT WILL ACTIVATE DEHUMIDIFICATION WHEN THE SPACE AND INTAKE SET POINT RISE ABOVE THE DESIRED SPACE AND INTAKE SET POINT, WITH ACTIVATION SET POINTS CONFIGURED TO A DEW POINT, RELATIVE HUMIDITY OR A COMBINATION OF DEW POINT/RELATIVE HUMIDITY.
10. ACTIVATE BASED ON EITHER (HEATING)
UNIT WILL ACTIVATE HEATING WHEN THE SPACE OR INTAKE TEMPERATURE DROPS BELOW THE DESIRED SET POINT.
11. ACTIVATE BASED ON EITHER (COOLING)
UNIT WILL ACTIVATE COOLING WHEN THE SPACE OR INTAKE TEMPERATURE RISES ABOVE THE DESIRED SET POINT.
12. ACTIVATE BASED ON EITHER (DEHUMIDIFICATION)
UNIT WILL ACTIVATE DEHUMIDIFICATION WHEN THE SPACE OR INTAKE SET POINT RISES ABOVE THE DESIRED SPACE OR INTAKE SET POINT, WITH ACTIVATION SET POINTS CONFIGURED TO A DEW POINT, RELATIVE HUMIDITY OR A COMBINATION OF DEW POINT/RELATIVE HUMIDITY.
13. ACTIVATE BASED ON STAT (HEATING)
UNIT WILL ACTIVATE HEATING WHEN THE SPACE THERMOSTAT SENDS A 24V SIGNAL TO W AND G ON THE MAIN CONTROL BOARD. UNIT WILL MODULATE TO MAINTAIN A CONSTANT DISCHARGE HEAT SET POINT.
14. ACTIVATE BASED ON STAT (COOLING)
UNIT WILL ACTIVATE COOLING WHEN THE SPACE THERMOSTAT SENDS A 24V SIGNAL TO Y AND G ON THE MAIN CONTROL BOARD. UNIT WILL MODULATE TO MAINTAIN A CONSTANT DISCHARGE COOL SET POINT.

2.1. ROOF CURB

A. UNIT SHALL BE FACTORY ASSEMBLED, AND CONSTRUCTED OF 18GA GALVANIZED STEEL, WITH OPTIONAL 16GA AVAILABLE.

B. CURB SHALL BE FULLY INSULATED WITH 1" ACOUSTICAL AND THERMAL INSULATION.

C. CURB SHALL BE FACTORY OUTFITTED WITH DUCT SUPPORT HANGERS.

2.1. VARIABLE FREQUENCY DRIVES

A. PROVIDE VARIABLE FREQUENCY DRIVE FOR THE COMPRESSOR AS PART OF THE AC UNIT. VFD SHALL BE FURNISHED AND INSTALLED TO MEET THE PERFORMANCE SET FORTH IN THE SCHEDULE AND AS SPECIFIED UNDER ANOTHER SECTION OF THIS WORK.

1. ACCESSORIES TO BE FURNISHED AND MOUNTED BY THE DRIVE MANUFACTURER AND CONTAINED IN A SINGLE ENCLOSURE. (THE USE OF MORE THAN ONE ENCLOSURE IS NOT ACCEPTABLE).

B. PROVIDE VARIABLE FREQUENCY DRIVE FOR SPEED CONTROL ON ALL NON-ECM DIRECT DRIVE SUPPLY FANS.

C. ALL VFDS SHALL PROVIDE THE FOLLOWING INHERENT PROTECTIONS:

1. PHASE PROTECTION
2. BROWNOUT PROTECTION
3. OVERLOAD/OVERHEAT PROTECTION
4. SOFT STARTS TO PROTECT BEARINGS/HARDWARE.
5. LOW & HIGH VOLTAGE & OVER-TORQUE PROTECTIONS.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE AREAS AND CONDITIONS UNDER WHICH PACKAGED UNITS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

3.2 INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, DRAWINGS, WRITTEN SPECIFICATIONS, MANUFACTURER'S INSTALLATION MANUAL AND ALL APPLICABLE BUILDING CODES.

3.3 CONNECTIONS

A. PIPING INSTALLATION REQUIREMENTS ARE SPECIFIED IN OTHER DIVISION 23 SECTIONS. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF PIPING, FITTINGS, AND SPECIALTIES. INSTALL PIPING TO ALLOW SERVICE AND MAINTENANCE.

B. DUCT INSTALLATION REQUIREMENTS ARE SPECIFIED IN OTHER DIVISION 23 SECTIONS. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF DUCTS.

C. ELECTRICAL: CONFORM TO APPLICABLE REQUIREMENTS IN DIVISION 26 SECTIONS.

3.4 SYSTEM START-UP

A. SYSTEM START UP IS PERFORMED BY A FACTORY TRAINED SERVICE TECHNICIAN

END OF SECTION 23 74 33
FAN SHALL BE MODEL CASRTU AS MANUFACTURED BY CAPTIVEAIRE SYSTEMS.

REVISIONS	
DESCRIPTION	DATE:

CAPTIVEAIRE
VT / NH Mechanical
www.captiveaire.com
9A Lafayette Road, Suite 6, North Hampton, NH, 03862 PHONE: (603) 505-4847 FAX: (919) 516-8711 EMAIL: reg111@captiveaire.com

Agilyx r.1
PORTSMOUTH, NH, 03803

DATE: 12/17/2020

DWG.#: 4658880

DRAWN BY: KCD-111

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

MASTER DRAWING

SHEET NO. 3

DDMI DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW: PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

HVAC PROJECT MANAGER:
DAVID C. MAGNUSON
EMAIL: DAVEM@DESIGNDAYMECH.COM
PHONE: (603) 463-1086
ADDRESS: 65 OLD CENTER RD, DEERFIELD, NH 03037

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
LICENSED PROFESSIONAL ENGINEER

PROJECT:
AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:

TW DESIGNS
STRAFFORD, NEW HAMPSHIRE

CAPTIVEAIRE
INFORMATION

REVISIONS:
1 01/12/2021
REMOVED HOOD 2 & FAN
2 4/9/2021
HOOD TO VARIABLE SPEED

DESIGNED BY: DCM
DRAWN BY: MRM
CHECKED BY: AWA

DDM JOB #: 21053
SCALE: AS NOTED

DATE: 12/23/2020

M-6

LUMINAIRE SCHEDULE							
SYMBOL	LABEL	MANUF	CATALOG NUMBER	DESCRIPTION	LAMP	LAMP LUMENS	WATTS
	A			4' LINEAR WAREHOUSE LIGHT FIXTURE. EXISTING, TO REMAIN IN WAREHOUSE			
	B	BROWNLEE	2630 24 XX XX H63 WHA 40K	PENDANT ROUND, 24" DIA.. DETERMINE FINISH AND SUSPENSION REQUIREMENTS	LED	6689	63
	C	LITHONIA	ENVX 2x2 HRG 4000LM 80CRI 35K MIN1O	2x2, CURVED LINEAR PRISMATIC LENS, 3500K CCT, DLC PREMIUM RATED	LED	4112	36
	D	LITHONIA	ZLIN L48 3000LM FST MVOLT 40K 80 CRI	LED LINEAR 48" STRIP, SURFACE OR PENDANT MOUNTED, DLC PREMIUM RATED	LED	3293	25
	E	LITHONIA	OLVTWM	UTILITY LIGHT FOR HVAC EQUIPMENT, MVOLT, 4000K	LED	600	15

RECEPTACLES AND FIXED EQUIPMENT CONNECTIONS

- DUPLEX CONVENIENCE RECEPTACLE - 18" A.F.F
- WP / GFI — DUPLEX RECEPTACLE GROUND FAULT INTERRUPT, - 18" A.F.F. (WP INDICATES WEATHERPROOF)
- C — DUPLEX RECEPTACLE - 18" A.F.F LOCATED ABOVE COUNTER
- QUADPLEX CONVENIENCE RECEPTACLE - 18" A.F.F
- E / 48 — DUPLEX RECEPTACLE EXISTING, 48" A.F.F.
- POWER PANEL, SURFACE MOUNTED
- POWER PANEL, RECESSED
- J — JUNCTION BOX - CEILING MOUNTED
- J — JUNCTION BOX - WALL MOUNTED
- SAFETY SWITCH - REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR RATING
- SAFETY SWITCH WITH FUSE - REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR RATING
- P1-1,3 — HOMERUN TO PANEL "P1" CIRCUITS 1 & 3 - DIAGONAL LINES INDICATE NUMBERS OF CONDUCTORS WHEN MORE THAN TWO.
- M — ELECTRIC METER

GENERAL NOTES

1. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, RECTILINEAR TO BUILDING STRUCTURE.
2. ALL COMPONENTS SHOWN ON RISER DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
3. ALL RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
4. CONTRACTOR SHALL REVIEW ALL TRADES' CONTRACT DOCUMENTS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR ELECTRICAL EQUIPMENT. COORDINATE EXACT MOUNTING LOCATIONS WITH THE ARCHITECT.
5. ALL LIGHTING AND GENERAL POWER BRANCH CIRCUITS SHALL INCLUDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH AND EVERY CIRCUIT UNLESS SPECIFICALLY NOTED OTHERWISE.
6. IF THERE IS A CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS, USE THE HIGHER STANDARD.
7. COORDINATE LOCATION OF ALL EQUIPMENT SHOWN ON ELECTRICAL DRAWINGS WITH ARCHITECT OR OWNER.

EMERGENCY LIGHTING & EXIT SIGN SCHEDULE NOTE: WIRE EACH EMERGENCY LIGHTING UNIT AND EXIST SIGN TO THE LIGHTING CIRCUIT WITHIN THE SPACE. WIRE TO THE UNSWITCHED SIDE OF THE LIGHTING CIRCUIT.				
SYMBOL	LABEL	MANUFACTURER	CATALOG NUMBER	DESCRIPTION
	EB	LITHONIA	ELM2-LED	LED EMERGENCY LIGHT
	EBEX	LITHONIA	LHQM-LED-R-HO	LED EMERGENCY LIGHT WITH EXIT SIGN AND HIGH OUTPUT FOR ADDITIONAL BATTERY CAPACITY FOR REMOTE HEAD
	RH	LITHONIA	ELA-LED-T-WP-M12	SINGLE LED REMOTE HEAD, WEATHER-PROOF
WALL MOUNTED EXIT SIGN. CEILING MOUNTED SINGLE FACE EXIT SIGN. CEILING MOUNTED SINGLE FACE EXIT SIGN WITH DIRECTIONAL ARROW. CEILING MOUNTED DOUBLE FACE EXIT SIGN WITH DIRECTIONAL ARROW.		LITHONIA		EXR

TYPICAL NAMEPLATE DETAIL

3 1/8" × 1 1/2"

PANEL A
400A 208Y/120V
FED FROM MAIN
ELECTRIC RM

1/4" LETTERS (TYPICAL)

NOTES:
1. NAMEPLATE TO BE 1/16" THICK PLASTIC WITH WHITE CENTER LAMINATION. FACE SHALL BE BLACK, ENGRAVED LETTERS SHALL BE WHITE.
3. SECURE NAMEPLATE TO SURFACES WITH HIGH STRENGTH ADHESIVE CEMENT. UTILIZE MECHANICAL FASTENERS FOR ALL EXTERIOR LOCATIONS.
4. TYPICAL FOR "STARTERS", "DISCONNECTS", AND "TRANSFORMERS".

FIRE ALARM

NOTE: FIRE ALARM CONTRACTOR TO PROVIDE SUBMITTALS WITH RISER DIAGRAM, DEVICE ADDRESSES, BATTERY CALCULATIONS & SEQUENCE OF OPERATION
SUBSCRIPT E INDICATES EXISTING DEVICE

- FACP — FIRE ALARM CONTROL PANEL WITH 2 DEDICATED PHONE LINES FOR MONITORING
- FAA — FIRE ALARM ANNUNCIATOR
- PS — PULL STATION WITH MONITOR MODULE
- SD — SMOKE DETECTOR
- HS — HORN/STROBE
- S — STROBE C = CEILING MOUNTED

SWITCHES

- \$ — SINGLE POLE SWITCH
- $\$_3$ — THREE WAY SWITCH
- $\$_4$ — FOUR WAY SWITCH
- $\$_{os}$ — OCCUPANCY SENSOR & SWITCH WALL MOUNTED
- $\$_D$ — DIMMER SWITCH
- $\$_{os_D}$ — OCCUPANCY SENSOR & SWITCH WALL MOUNTED, WITH DIMMER
- $\$_{3os_D}$ — THREE WAY SWITCH WITH OCCUPANCY SENSOR & DIMMER
- $\$_{4os_D}$ — FOUR WAY SWITCH WITH OCCUPANCY SENSOR & DIMMER
- OS — OCCUPANCY SENSOR CEILING MOUNTED

SECURITY & COMMUNICATIONS

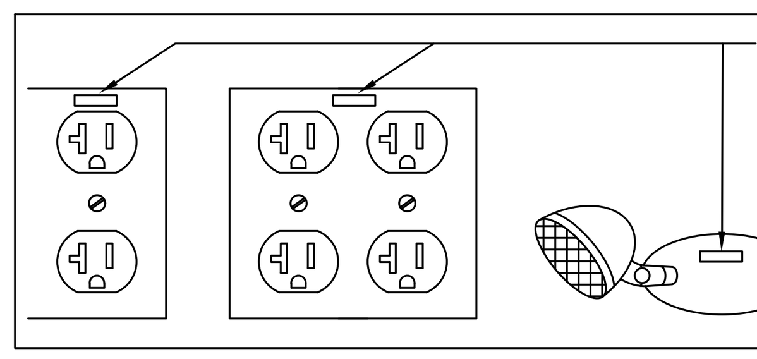
- VOICE/DATA OUTLET - CENTERLINE 18" A.F.F
- TV — CABLE TV - CENTERLINE 18" A.F.F

BRANCH CIRCUITS SCHEDULE

120 Volt, 1-Phase, 2W, Circuits	
Circuit Breaker	Conductor
30A - 1P	2#10, 1#10G, 3/4"C
40A - 1P	2#8, 1#10G, 3/4"C
50A - 1P	2#6, 1#10G, 3/4"C
60A - 1P	2#6, 1#10G, 3/4"C
208 Volt, 1-Phase, 2W, Circuits	
20A - 2P	2#12, 1#12G, 3/4"C
30A - 2P	2#10, 1#10G, 3/4"C
40A - 2P	2#8, 1#10G, 3/4"C
50A - 2P	2#6, 1#10G, 3/4"C
60A - 2P	2#6, 1#10G, 3/4"C
120/208 Volt, 1-Phase, 3W, Circuits	
20A - 2P	3#12, 1#12G, 3/4"C
30A - 2P	3#10, 1#10G, 3/4"C
40A - 2P	3#8, 1#10G, 3/4"C
50A - 2P	3#6, 1#10G, 3/4"C
60A - 2P	3#6, 1#10G, 3/4"C
208 Volt, 3-Phase, 3W, Circuits	
20A - 3P	3#12, 1#12G, 3/4"C
30A - 3P	3#10, 1#10G, 3/4"C
40A - 3P	3#8, 1#10G, 3/4"C
50A - 3P	3#6, 1#10G, 3/4"C
60A - 3P	3#6, 1#10G, 3/4"C
120/208 Volt, 3-Phase, 4W, Circuits	
20A - 3P	4#12, 1#12G, 3/4"C
30A - 3P	4#10, 1#10G, 3/4"C
40A - 3P	4#8, 1#10G, 3/4"C
50A - 3P	4#6, 1#10G, 1"C
60A - 3P	4#6, 1#10G, 1"C

Note:
1. Type MC cable shall include full size insulated ground conductor sized as indicated in schedule.

RECEPTACLE AND E. LIGHTING LABEL REQUIREMENTS



LABEL ALL RECEPTACLES AND E. LIGHTING WITH PANEL DESIGNATION AND CIRCUIT NUMBER.

GENERAL ABBREVIATIONS

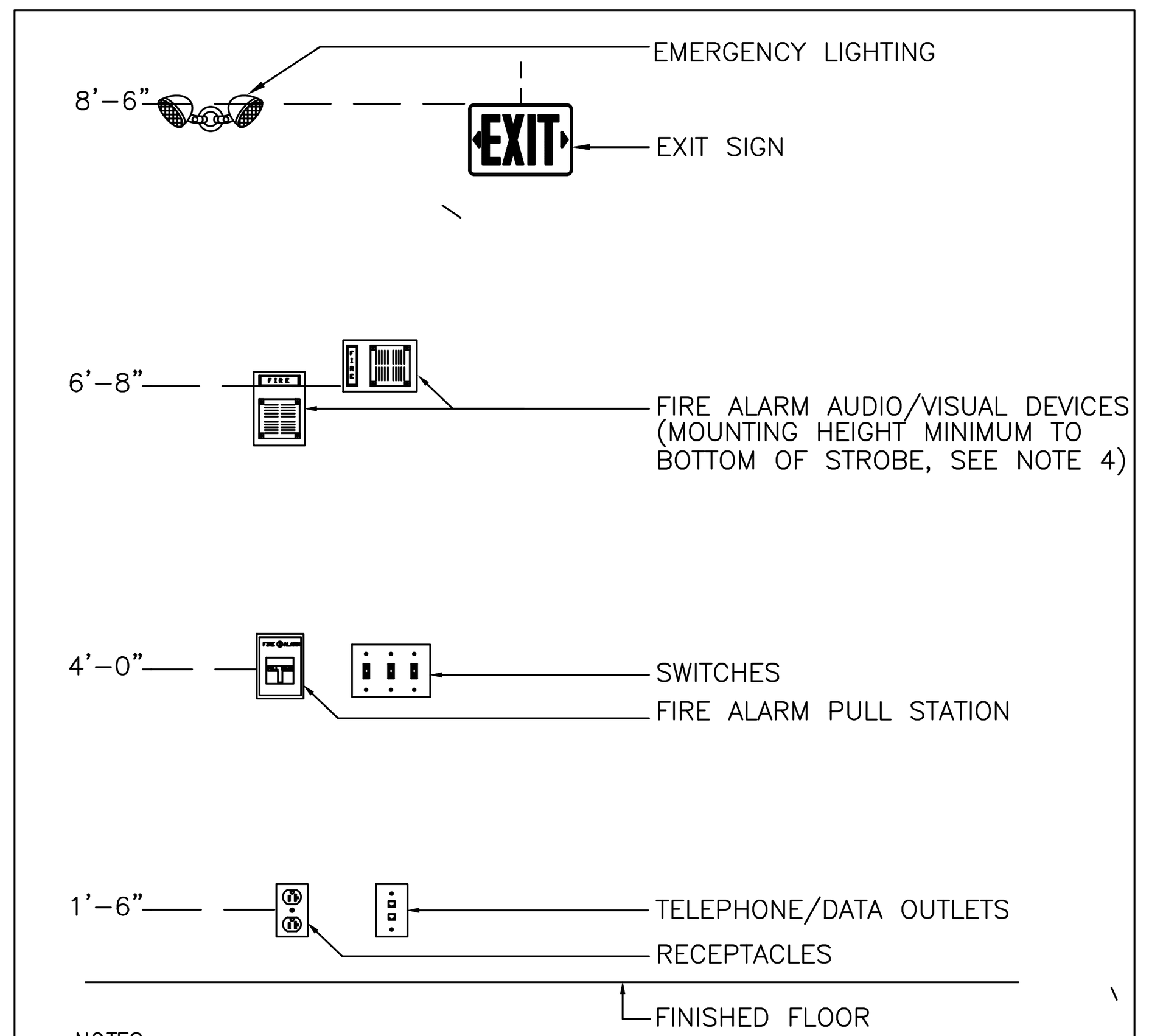
A	AMPERES
ADA	AMERICANS WITH DISABILITIES AT
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ANSI	AMERICAN NAT'L STANDARDS INSTITUTE
ARCH	ARCHITECT
ATS	AUTOMATIC TRANSFER SWITCH
ATC	AUTOMATIC TEMPERATURE CONTROL
AWG	AMERICAN WIRE GAUGE
BFG	BELOW FINISH GRADE
BLDG	BUILDING
C	CONDUIT
CAT	CATALOG
CB	CIRCUIT BREAKER
CL	CENTERLINE
CLF	CURRENT LIMITING FUSE
COL	COLUMN
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
F	FUSE
FA	FIRE ALARM
FLA	FULL LOAD AMPERES
FMC	FLEXIBLE METAL CONDUIT
FT	FEET
GND	GROUND OR GROUNDING
GRMC	GALVANIZED RIGID METALLIC CONDUIT
HOA	***H... OFF,*** AUTOMATIC SWITCH
HCFW	HEALTH CARE FACILITY WIRING
HGAC	HOSPITAL GRADE ARMORED CABLE
IEEE	INSTITUTE OF ELECTRICAL & ELECTRONIC ENGINEERS
IMC	INTERMEDIATE METAL CONDUIT
INT	INTERLOCK
KMC	THOUSAND CIRCULAR MILS

KVA	KILOVOLT AMPERES
K	KILOWATTS
LTG	LIGHTING
LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
MC	METAL CLAD CABLE
MCB	MAIN CIRCUIT BREAKER
MC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NFPA	NATIONAL FIRE PROTECTION ASSOC.
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
P	POLE
PB	PUSH BUTTON
PNL	PANEL
POS	PROVIDED UNDER OTHER SECTIONS
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
REQ'D	REQUIRED
RMC	RIGID METAL CONDUIT
RMS	ROOT MEAN SQUARED
RNMC	RIGID NON-METALIC CONDUIT
RTU	ROOF TOP UNIT
SP	SPARE
SW	SWITCH
SYM	SYMMETRICAL
TEL	TELEPHONE
TMCB	THERMAL MAGNETIC CIRCUIT BREAKER
UG	UNDERGROUND OR UNDERGRADE
UL	UNDERWRITERS LABORATORIES
V	VOLT
VT	VOLTAGE TRANSFORMER
W	WIRE
WH	WATER HEATER
WP	WEATHER PROOF
XFMR	TRANSFORMER
Δ	DELTA
Y	***WYE***
Ø	PHASE

SINGLE HEAVY DUTY RECEPTACLE WITH CORD AND CAP; 36" AFF EXCEPT AS NOTED

NOTE: "L" INDICATES TWIST-LOCK RECEPTACLE

1	20A-125V, 2P, 3W, (5-20R)(2#12 TO 20A-1P.)
2	30A-125V, 2P, 3W, (5-30R)(2#10 TO 30A-1P.)
2L	30A-125V, 2P, 3W, (L5-30R)(2#10 TO 30A-1P.)
3	50A-125V, 2P, 3W, (5-50R)(2#6 TO 50A-1P.)
4	20A-250V, 2P, 3W, (2#12 TO 20A-2P.)
5	30A-250V, 2P, 3W, (6-30R)(2#10 TO 30A-2P.)
5L	30A-250V, 2P, 3W, (L6-30R)(2#10 TO 30A-2P.)
6	50A-250V, 2P, 3W, (6-50R)(2#6 TO 50A-2P.)
7	30A-125/250V, 3P, 3W, (10-30R)(3#10 TO 30A-2P.)
8	50A-125/250V, 3P, 3W, (10-50R)(3#6 TO 50A-2P.)
9	30A-125/250V, 3P, 4W, (14-30R)(3#10 TO 30A-2P.)
9L	30A-125/250V, 3P, 4W, (L14-30R)(3#10 TO 30A-2P.)
10	50A-125/250V, 3P, 4W, (14-50R)(3#6 TO 50A-2P.)
11	50A-125/250V, 3P, 4W, (15-50R)(3#6 TO 50A-3P.)
12	15A-125V, 2P, 3W, (5-15R)(2#12 TO 15A-1P.)
12L	15A-125V, 2P, 3W, (L5-15R)(2#12 TO 15A-1P.)
13	30A-250V, 4P, 5W, (21-30R)(5#10 TO 30A-3P.)
13L	30A-250V, 4P, 5W, (L21-30R)(5#10 TO 30A-3P.)



NOTES:
1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE EXCEPT EXIT SIGNS, CLOCKS, EMERGENCY LIGHTING AND FIRE ALARM A/V DEVICES.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.
4. STROBE HEIGHT ILLUSTRATED AT MAXIMUM HEIGHT. STROBE SHALL BE 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.

TYPICAL DEVICE MOUNTING HEIGHTS DETAIL

DRAWING LIST		
DWG NO.	DRAWING NAME	REV.
E1	ELECTRICAL SYMBOLS, LEGEND, NOTES, LIGHTING SCHEDULES	1
E1A	SCOPE OF WORK, SPECIFICATIONS, DEMO NOTES	1
E1B	CIRCUIT SCHEDULES - EXISTING & NEW	1
E2	POWER RISER DIAGRAM, MECHANICAL SCHEDULE	1
E3	FLOOR PLAN - POWER	1
E4	FLOOR PLAN - LIGHTING	1
FA1	FLOOR PLAN - FIRE ALARM	1
FA2	FIRE ALARM RISER DIAGRAM	1

Permit Set, Rev One 01-13-2021

Architect:
T/W DESIGN
P.O. Box 69
Strafford, NH 03884
603–664–2181

STATE OF NEW HAMPSHIRE · LEE D. CONSAVAGE · No. 12231 · LICENSED · PROFESSIONAL ENGINEER

Date	Revision Description	By

SCE Seacoast Consulting Engineers, LLC
261 Jennie Lane
Eliot, Maine 03903
207–370–7230
www.SeacoastEngineers.com

Designed By: LDC
Drawn By: VIP
Checked By: LDC
Project No. 2020–142 | SCALE As Noted | DATE 11–20–2020

Agilyx Tenant Fit-up
124 Heritage Road
Portsmouth, NH

Electrical Symbols, Legend, Notes, Lighting Schedule

E1

ELECTRICAL SPECIFICATIONS

PART 1 - GENERAL

1. GENERAL PROVISIONS: DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK IN CONTRACT. REFER TO ALL DRAWINGS ASSOCIATED WITH THIS PROJECT (EACH TRADE) FOR EXACT LOCATION OF ALL EQUIPMENT AND REQUIRED MOUNTING HEIGHTS.

2. SCOPE: PERFORM WORK AND PROVIDE NEW MATERIAL AND EQUIPMENT AS SHOWN ON DRAWINGS AND AS SPECIFIED IN THIS SECTION OF THE SPECIFICATIONS. PROVIDE ALL COMPONENTS AND MATERIALS, WHETHER SPECIFICALLY SHOWN OR NOT, THAT ARE NECESSARY TO MAKE THE SYSTEMS COMPLETE AND FULLY OPERATIONAL. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO:

   A) DEMO AND SCRAP LIGHT FIXTURES AND ANY ELECTRICAL COMPONENTS RENDERED USELESS BY THIS FIT-UP. EXISTING POWER DISTRIBUTION SYSTEM TO REMAIN AS IS, AS MUCH AS PRACTICLE, INCLUDING RECEPTACLES AND WIRING TO EXISTING PANELBOARDS. FIRE ALARM SYSTEM TO REMAIN AS MUCH AS PRACTICAL. WIRE NEW DEVICES TO EXISTING LOOPS. PROVIDE ALL NEW LIGHTING.

   B) INSTALLATION OF NEW POWER DISTRIBUTION, LIGHTING AND FIRE ALARM SYSTEM AS ILLUSTRATED ON THESE DRAWINGS,

   C) INSTALLATION OF THE TELEPHONE AND DATA SYSTEM AS ILLUSTRATED ON THESE DRAWINGS,

   D) ALL TESTING AND CERTIFICATIONS NECESSARY FOR COMPLIANCE AND ANY REQUIRED REMEDIAL ACTIONS AND RETESTING DUE TO FAILURE.

3. SITE VISIT: VISIT AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS THAT MAY AFFECT WORK OF THIS SECTION BEFORE SUBMITTING BID. NO EXTRA PAYMENT WILL BE ALLOWED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY DISCERNED.

4. RELATED WORK: THE FOLLOWING WORK IS NOT INCLUDED IN THIS SECTION AND WILL BE PROVIDED UNDER OTHER SECTIONS: 1) TEMPORARY LIGHTING AND POWER FOR USE DURING CONSTRUCTION AND TESTING UNLESS SPECIFICALLY NOTED IN OTHER SPECIFICATION SECTIONS, 2) TELECOMMUNICATIONS WIRING AND DEVICES UNLESS SPECIFICALLY NOTED ON THE DRAWINGS 3) AUTOMATIC TEMPERATURE CONTROL AND DIRECT DIGITAL COMMUNICATIONS WIRING UNLESS SPECIFICALLY NOTED ON THE DRAWINGS AND 4) PAINTING.

5. CODES, STANDARDS, AUTHORITIES AND PERMITS: ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STATE BUILDING CODE, THE STATE ELECTRICAL CODE, NFPA, ANSI/NECA INSTALLATION STANDARDS AND OTHER APPLICABLE CODES, REGULATIONS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENT, OTHER AUTHORITIES HAVING JURISDICTION AND APPLICABLE BASE BUILDING STANDARDS AND SPECIFICATIONS. CODES, LAWS AND ORDINANCES PROVIDE A BASIS FOR THE MINIMUM INSTALLATION CRITERIA. THESE DRAWINGS AND SPECIFICATIONS ILLUSTRATE THE SCOPE REQUIRED FOR THIS PROJECT, WHICH MAY EXCEED MINIMUM CODE, LAW AND STANDARDS CRITERIA. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY BACKCHARGES AND OBTAIN NECESSARY APPROVALS FROM UTILITY COMPANIES AND AUTHORITIES HAVING JURISDICTION AS REQUIRED FOR THE EXECUTION OF ALL WORK ASSOCIATED WITH THIS PROJECT.

6. INTERPRETATION OF DOCUMENTS: ADVISE THE ENGINEER IN WRITING (RFI) PRIOR TO PROCEEDING WITH PROCUREMENT OR INSTALLATION THAT THE DESIGN INTENT IS UNCLEAR OR THAT CONSTRUCTION DOCUMENTS DO NOT COINCIDE WITH MANUFACTURER'S RECOMMENDATIONS. ALL COSTS FOR REWORK NECESSARY TO RESOLVE DISCREPANCIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

7. REQUEST FOR INFORMATION: RFI ISSUED TO RESOLVE A CONFLICT OR DISCREPANCY SHALL BE PROVIDED WITH THE PREFERRED SOLUTION VIA WRITTEN DESCRIPTION OR SKETCH.

8. SUBMITTALS: PROVIDE SPECIFIED MATERIALS AND EQUIPMENT UNLESS "EQUAL" OR "APPROVED EQUAL" IS EXPLICITLY INDICATED ON THE DRAWINGS. DEVIATIONS TO SPECIFIED MATERIALS SHALL BE AT THE SOLE RISK OF THE CONTRACTOR, WHO SHALL BE RESPONSIBLE FOR ALL ASSOCIATED CHANGES TO THIS AND OTHER TRADES. SUBMITTALS SHALL INDICATE REVIEW AND APPROVAL BY THE RESPONSIBLE CONTRACTOR. SUBMIT FOR REVIEW (6) SETS OF MANUFACTURER'S PRODUCT DATA FOR DEVICES (RECEPTACLES AND SWITCHES) AND PLATES; PANELBOARDS, CIRCUIT BREAKERS; DISCONNECT SWITCHES. ALLOW ENGINEER A MINIMUM OF 10 WORKING DAYS FOR PROCESSING AND REVIEW OF EACH SUBMISSION.

9. OPERATION AND MAINTENANCE DATA: SUBMIT (3) SETS OF OPERATING AND MAINTENANCE MANUALS INCLUDING SYSTEM DESCRIPTION, WIRING DIAGRAMS, WRITTEN WARRANTY, RECOMMENDED SPARE PARTS AND ROUTINE MAINTENANCE REQUIREMENTS WITH RECOMMENDED INTERVALS FOR ALL SUPPLIED EQUIPMENT.

10. RECORD DRAWINGS: CAD RECORD DRAWING FILES SHALL BE SUBMITTED AT THE COMPLETION OF THE PROJECT SHOWING THE "AS-BUILT" CONDITION INCLUDING WORK INSTALLED AND ALL MODIFICATIONS OR ADDITIONS TO ORIGINAL DESIGN. OBTAIN THE AUTOCAD FILES FOR PREPARATION OF AS-BUILT DRAWINGS FROM THE ARCHITECT. THE ARCHITECT AND ENGINEER ARE NOT GRANTING ANY OWNERSHIP OR PROPERTY INTEREST IN THE CAD DRAWINGS BY THE DELIVERY OF THE CAD FILES. THE RIGHTS TO USE THE CAD FILES AND DRAWINGS ARE LIMITED TO USE FOR THE SOLE PURPOSE OF ASSISTING IN THE PERFORMANCE OF CONTRACTUAL OBLIGATIONS WITH RESPECT TO THIS PROJECT. ANY REUSE AND/OR OTHER USE WILL BE AT THE CONTRACTOR'S SOLE RISK AND WITHOUT LIABILITY TO THE ARCHITECT AND ENGINEER.

11. WARRANTIES: WARRANTY INSTALLATION IN WRITING FOR ONE YEAR FROM DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. REPAIR, REPLACE OR PROVIDE TEMPORARY ACCOMMODATIONS FOR DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN 24 HOURS OF NOTIFICATION. WARRANTY SHALL INCLUDE A CONTACT PERSON (NAME AND 24 HOUR TELEPHONE NUMBER) FOR SERVICE REQUESTS. CORRECT DAMAGE CAUSED WHILE MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY PERIOD AT NO ADDITIONAL COST.

12. COORDINATION: CONFER WITH ALL OTHER TRADES RELATIVE TO LOCATION OF ALL APPARATUS AND EQUIPMENT TO BE INSTALLED AND SELECT LOCATIONS SO AS NOT TO CONFLICT WITH OR HINDER PROGRESS OF WORK OF OTHER SECTIONS. WORK INSTALLED THAT CREATES INTERFERENCE OR RESTRICTS ACCESS REQUIRED BY CODE OR TO CONDUCT MAINTENANCE AND/OR ADJUSTMENTS SHALL BE MODIFIED AT NO ADDITIONAL COST TO THE OWNER.

13. SUPPORTS: INCLUDE ALL STRUCTURAL STEEL SUPPORTS, HANGER BRACKETS, ETC., REQUIRED FOR THE EXECUTION OF THE WORK OF THIS SECTION. HANGERS SHALL BE PREFINISHED CHANNEL AND THREADED ROD USED WITH APPROVED CLAMPS, HARDWARE, ETC. CHANNEL INSTALLED IN EXTERIOR LOCATIONS SHALL BE GALVANIZED STEEL WITH STAINLESS STEEL HARDWARE.

14. CUTTING AND PATCHING: INCLUDE ALL CORING, CUTTING, PATCHING AND FIREPROOFING NECESSARY FOR THE EXECUTION OF THE WORK OF THIS SECTION. STRUCTURAL ELEMENTS SHALL NOT BE CUT WITHOUT WRITTEN APPROVAL OF THE ARCHITECT. PROVIDE FIRE STOPPING TO MAINTAIN THE FIRE RATING OF THE FIRE RESISTANCE-RATED ASSEMBLY. ALL PENETRATIONS AND ASSOCIATED FIRE STOPPING SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE STOPPING MANUFACTURER'S LISTED INSTALLATION DETAILS AND BE LISTED BY UL OR FM.

15. HOISTING, SCAFFOLDING AND PLANKING: INCLUDE THE FURNISHING, SET-UP AND MAINTENANCE OF ALL HOISTING MACHINERY, CRANES, SCAFFOLDS, STAGING AND PLANKING AS REQUIRED FOR THE EXECUTION OF WORK FOR THIS SECTION.

16. SAFETY PRECAUTIONS: LIFE SAFETY AND ACCIDENT PREVENTION SHALL BE A PRIMARY CONSIDERATION. COMPLY WITH ALL OF THE SAFETY REQUIREMENTS OF THE OWNER AND OSHA THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. FURNISH, PLACE AND MAINTAIN PROPER GUARDS AND ANY OTHER NECESSARY CONSTRUCTION REQUIRED TO SECURE SAFETY OF LIFE AND PROPERTY.

17. ACCESSIBILITY: ALL WORK PROVIDED UNDER THIS SECTION OF THE SPECIFICATION SHALL BE SO THAT PARTS REQUIRING PERIODIC INSPECTION, MAINTENANCE AND REPAIR ARE READILY ACCESSIBLE. WORK OF THIS TRADE SHALL NOT INFRINGE UPON CLEARANCES REQUIRED BY EQUIPMENT OF OTHER TRADES,

18. PROTECTION OF WORK AND PROPERTY: THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE AND PROTECTION OF ALL WORK INCLUDED UNDER THIS SECTION UNTIL THE COMPLETION AND FINAL ACCEPTANCE OF THIS PROJECT. PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE FROM ALL CAUSES INCLUDING, BUT NOT LIMITED TO, FIRE VANDALISM AND THEFT. ALL MATERIALS AND EQUIPMENT DAMAGED OR STOLEN SHALL BE REPAIRED OR REPLACED WITH EQUAL MATERIAL OR EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER. PROTECT ALL EQUIPMENT, OUTLETS AND OPENINGS, AND ROOF PENETRATIONS WITH TEMPORARY PLUGS, CAPS AND COVERS. PROTECT WORK AND MATERIALS OF OTHER TRADES FROM DAMAGE THAT MIGHT BE CAUSED BY WORK OR WORKMEN UNDER THIS SECTION AND MAKE GOOD DAMAGE THUS CAUSED. DAMAGED MATERIALS ARE TO BE REMOVED FROM THE SITE; NO SITE STORAGE OF DAMAGED MATERIALS WILL BE ALLOWED. ANY DAMAGE TO EXISTING SYSTEMS AND EQUIPMENT CAUSED BY THIS CONTRACTOR DURING INSTALLATION SHALL BE REPAIRED AND/OR REPLACED AT THIS CONTRACTOR'S EXPENSE TO THE COMPLETE SATISFACTION OF THE BUILDING OWNER.

19. PROJECT CLOSEOUT: A CERTIFICATE OF COMPLETION SHALL BE ISSUED BY THE CONTRACTOR INDICATING THAT THE INSTALLATION IS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND ALL APPLICABLE LOCAL, STATE AND FEDERAL STATUTES AND CODES. PRIOR TO REQUEST FOR COMPLETION CERTIFICATES, ALL PUNCH LIST ITEMS MUST BE COMPLETED TO THE SATISFACTION OF THE OWNER OR OWNER'S REPRESENTATIVE. THE CONTRACTOR MUST VERIFY THAT ALL SEQUENCES OF OPERATIONS AND CONTROLS HAVE BEEN INCORPORATED AND ALL SYSTEMS AND EQUIPMENT ARE WORKING PER THE SPECIFIED SEQUENCES OF OPERATIONS. FINAL OBSERVATION/WALK-THROUGH BY THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE CONDUCTED AFTER RECEIPT OF THE CERTIFICATE OF COMPLETION.

PART 2 - PRODUCTS

1. IDENTIFICATION: NAMEPLATES SHALL INDICATE EQUIPMENT TAG, VOLTAGE CHARACTERISTICS AND SOURCE OF POWER. REFER TO NAMEPLATE DETAIL FOR ADDITIONAL INFORMATION.

2. RACEWAYS AND CONDUIT: RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE UTILIZED WITH THREADED FITTINGS ONLY. ELECTRICAL METALLIC TUBING (EMT) SHALL BE UTILIZED WITH COMPRESSION COUPLINGS. PROVIDE CONDUIT EXPANSION FITTINGS WITH EXTERNAL BONDING JUMPERS EQUAL TO OZ GEDNEY TYPE EX FOR RGS AND TYPE TX FOR EMT WHEN CROSSING EXPANSION JOINTS. UL LISTED LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC) AND FLEXIBLE METAL CONDUIT (FMC) SHALL BE USED FOR FINAL CONNECTIONS TO EQUIPMENT WHERE FLEXIBILITY OR VIBRATION ISOLATION ARE REQUIRED. LFMC SHALL BE UV RESISTANT WHEN INSTALLED IN AN EXTERIOR LOCATION. PVC SCHEDULE 40 CONDUIT MAY BE USED FOR SITE WORK, EXCEPT IN AREAS UNDER ROADWAYS AND PARKING LOTS, WHICH REQUIRE PVC SCHEDULE 80 CONDUIT.

3. WIRE AND CABLE: ALL CONDUCTORS SHALL BE TYPE THHN/THWN OR XHHW, COPPER, RATED 75°/90°C, 600 VOLT INSULATION UNLESS OTHERWISE NOTED. MINIMUM SIZE CONDUCTOR SHALL BE #12 AWG COPPER. CONDUCTORS #10 AWG AND LARGER SHALL BE STRANDED; #12 AWG AND SMALLER SHALL BE SOLID. EACH BRANCH CIRCUIT AND FEEDER SHALL BE PROVIDED WITH AN INSULATED GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC TABLE 250.122. CONDUCTOR COLOR CODING SHALL BE IN ACCORDANCE WITH THE DETAILS ON THESE DRAWINGS. COLOR CODING SHALL BE CONSISTENT THROUGHOUT NCLUDING CONDUCTORS INSTALLED IN RACEWAYS AND IN ALL CABLE ASSEMBLIES (MC AND/OR AC). FLEXIBLE METAL CLAD (MC) CABLE SHALL BE UL LISTED WITH INSULATED THHN PHASE AND GROUND CONDUCTORS WITHIN A GALVANIZED STEEL OR ALUMINUM INTERLOCKING ARMOR.

4. SAFETY DISCONNECT SWITCHES: DISCONNECT SWITCHES SHALL BE THREE-POLE HEAVY DUTY TYPE RATED FOR 600 VOLT IN NEMA 1 (INTERIOR DRY APPLICATIONS) AND NEMA 3R (EXTERIOR APPLICATIONS) ENCLOSURES UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL SWITCHES SHALL BE HORSEPOWER RATED AND SUITABLE FOR SERVICE ENTRANCE USE WHERE INDICATED ON THE DRAWINGS. PROVIDE WITH SOLID NEUTRAL WHERE FOUR WIRE CIRCUITS ARE ILLUSTRATED. MANUAL MOTOR STARTERS SHALL HAVE QUICK MAKE, QUICK BREAK TOGGLE MECHANISMS WITH ALLOWANCE FOR UP TO 10% FIELD ADJUSTMENT TO NOMINAL OVERLOAD HEATER VALUES. MANUAL MOTOR STARTERS SHALL BE SINGLE PHASE AND MAY BE USED FOR APPLICATIONS UP TO 1 HP AT 277 VOLT. ACCEPTABLE MANUFACTURERS SHALL BE SQUARE D, GE, SIEMENS OR EATON CUTLER-HAMMER.

5. PANELBOARDS SHALL BE CIRCUIT BREAKER TYPE WITH THERMAL MAGNETIC BOLT-ON MOLDED CASE CIRCUIT BREAKERS AND COPPER BUSSES. MINIMUM INTERRUPTING CAPACITY SHALL BE 10,000 AMPS SYMMETRICAL AT 208 VOLT AND 14,000 AIC AT 480 VOLT. REFER TO PANEL SCHEDULES FOR EXACT AIC RATINGS OF EQUIPMENT. PANELBOARD COVERS SHALL BE DOOR-IN-DOOR DESIGN UP TO AND INCLUDING 400A. ACCEPTABLE MANUFACTURERS SHALL BE SQUARE D, GE, SIEMENS OR EATON CUTLER-HAMMER.

6. FIRE ALARM SYSTEM. NEW DEVICES SHALL BE COMPATIBLE WITH EXISTING SYSTEM. EVALUATE CAPACITY OF EXISTING FIRE ALARM SYSTEM TO ENSURE IT CAN ACCEPT NEW DEVICES. INCREASE CAPACITY IF NECESSARY.

7. CIRCUIT BREAKERS. PROVIDE NEW CIRCUIT BREAKERS AS SHOWN ON SHEET E1B. SHORT CIRCUIT RATING AND BREAKER TYPE TO MATCH OR BE COMPATIBLE WITH EXISTING PANELBOARDS.

PART 3 EXECUTION

1. GENERAL: ALL INTERRUPTIONS AND SHUTDOWNS OF EXISTING ELECTRICAL SYSTEMS AND SERVICES SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE OWNER AND ENGINEER. THE CONTRACTOR SHALL INCLUDE ALL PREMIUM TIME ASSOCIATED WITH THE SYSTEM AND SERVICE INTERRUPTIONS AND SHUTDOWNS.

2. IDENTIFICATION: FURNISH AND INSTALL NAMEPLATES ON ALL ELECTRICAL EQUIPMENT INCLUDING PANELS, JUNCTION BOXES, DISCONNECT SWITCHES, TRANSFORMERS AND STARTERS.

3. RACEWAYS AND CONDUIT: REFER TO POWER AND LIGHTING DRAWINGS FOR ALLOWABLE WIRING METHODS. EMT MAY BE USED WITH SET SCREW FITTINGS IN CONCEALED AND EXPOSED LOCATIONS WHERE NOT EXPOSED TO PHYSICAL DAMAGE OR MOISTURE. USE RIGID GALVANIZED STEEL WITH THREADED FITTINGS WHERE EMT PROHIBITED. ALL RACEWAYS, WHICH PASS THROUGH BUILDING EXPANSION JOINTS, SHALL BE EQUIPPED WITH EXPANSION FITTINGS. ALL CONDUITS SHALL BE SUPPORTED IN AN APPROVED MANNER TO THE BUILDING STRUCTURE. SUPPORT FROM CONDUITS, DUCTWORK, PIPING, ETC. WILL NOT BE PERMITTED. RACEWAYS SHALL BE RUN CONCEALED UNLESS NOTED OTHERWISE, PERPENDICULAR AND/OR PARALLEL TO THE BUILDING STRUCTURE. NECA STANDARDS SHALL DEFINE MINIMUM QUALITY LEVEL FOR INSTALLATION WHERE APPLICABLE.

4. WIRE AND CABLE: PROVIDE COMPLETE WIRING SYSTEM TO MEET ILLUSTRATED INTENT. CONDUIT HOMERUNS SHOWN ON THE DRAWINGS WITH MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGRAMMATICALLY. THE INSTALLATION OF MORE THAN 3 CURRENT CARRYING CONDUCTORS IN A COMMON RACEWAY SHALL REQUIRE THE DERATING OF ALL ASSOCIATED CONDUCTORS. ALL CIRCUITS SHALL CONTAIN A FULL SIZE,

5. SAFETY DISCONNECT SWITCHES: FUSES SHALL BE CLASS RK-1 SIZED PER DRAWING AND NAMEPLATE REQUIREMENTS. INSTALL REJECTION CLIPS TO PROHIBIT INSTALLATION OF OTHER THAN CURRENT LIMITING FUSES.

6. PANELBOARDS: THE CONTRACTOR SHALL BALANCE PANELBOARD LOADS TO WITHIN 10% PHASE TO PHASE. PROVIDE NEW AND OR UPDATED TYPEWRITTEN DIRECTORIES OF BRANCH CIRCUITS IN ALL PANELBOARDS, NEW AND EXISTING, WHICH ARE MODIFIED UNDER THIS CONTRACT. INDICATE CIRCUIT CHANGES IN AS-BUILT RECORD DRAWINGS.

7. EQUIPMENT TESTING AND CLEANING:

CLEAN THE INTERIOR AND EXTERIOR OF ALL EQUIPMENT AT PROJECT COMPLETION OF ALL CONSTRUCTION DEBRIS AND RESIDUE. DAMAGED SURFACES SHALL BE REPAIRED AND FINISHES TOUCHED UP PAINT TO MATCH THE MANUFACTURER'S FINISH. EXTENSIVELY DAMAGED ENCLOSURES SHALL BE REPLACED.

TEST THE INSULATION RESISTANCE BETWEEN EACH PHASE AND GROUND OF ALL FEEDERS ILLUSTRATED ON THE ONE LINE DIAGRAM. PROVIDE A TEST REPORT INDICATING THE RESULTS. REPLACE ALL CONDUCTORS THAT FAIL TO COMPLY WITH NETA TESTING STANDARDS.

VERIFY VOLTAGE AT THE ASSOCIATED PANELBOARD UNDER LOAD AND ADJUST TAP SETTINGS AS REQUIRED TO DELIVER NOMINAL VOLTAGE DURING NORMAL AND LIGHTLY LOADED CONDITIONS.

Permit Set, Rev One 01-13-2021

Architect:
T/W DESIGN
P.O. Box 69
Strafford, NH 03884
603-664-2181

STATE OF NEW HAMPSHIRE
LEE D. DONSAGE
No. 12237
LICENSED PROFESSIONAL ENGINEER

By	Revision / Description	Date

SCE Seacoast Consulting Engineers, LLC
261 Jannie Lane
Eliot, Maine 03903
207-370-7230
www.SeacoastEngineers.com

Designed By: LDC
Drawn By: VP
Checked By: LDC
Date: 11-20-2020
Scale: As Noted
Project No. 2020-142

Agilyx Tenant Fit-up
124 Heritage Road
Portsmouth, NH

Scope of Work & Specifications

E1A

PANEL A (EXISTING) 400A, 3-PHASE, 4-WIRE 208Y/120VAC ITE Panelboard, Type CDP-7, Series 8A, Date 0485			
20A/1P Warehouse Lights	1	2	20A/1P Warehouse Outlets
20A/1P Dock Heater	3	4	20A/1P Office Lights
20A/1P Warehouse Heater	5	6	20A/1P Spare
20A/1P Spare	7	8	20A/1P Spare
20A/1P Spare	9	10	40A/3P RTU, A/C & Heat
20A/1P Bathrooms	11	12	
20A/1P Spare	13	14	
20A/1P Office Outlets	15	16	60A/3P Disconnect B
15A/1P Spare	17	18	
20A/1P Spare	19	20	
20A/1P Spare	21	22	60A/3P Disconnect C
20A/1P Spare	23	24	
20A/1P Warehouse Outlets	25	26	
60A/3P Disconnect A	27	28	100A/3P Spare
	29	30	
	31	32	
??A/3P Spare	33	34	20A/2P Spare
	35	36	
	37	38	20A/1P Warehouse Lights
20A/2P Spare	39	40	SPACE
	41	42	

PANEL B (EXISTING) 200A, 3-PHASE, 4-WIRE 208Y/120VAC Siemens Cat No. G3042ML3200 CU, Series B			
20A/1P (QTY=2) Spare*	1	2	20A/1P (QTY=2) Spare*
20A/1P (QTY=2) Spare*	3	4	20A/1P Fire Alarm Panel
20A/1P (QTY=2) Spare*	5	6	20A/1P Spare
20A/1P Spare	7	8	20A/1P Spare
20A/1P	9	10	20A/1P Spare
20A/1P	11	12	20A/1P Spare
20A/1P (QTY=2) Spare*	13	14	20A/1P Spare
20A/1P Spare	15	16	20A/1P Spare
20A/1P Spare	17	18	30A/2P Hot Water
20A/1P Spare	19	20	
20A/1P Spare	21	22	20A/1P (QTY=2) Spare*
20A/1P Spare	23	24	20A/1P (QTY=2) Spare*
20A/3P Spare	25	26	20A/2P Spare
	27	28	
	29	30	20A/1P (QTY=2) Spare*

* Indicates 2 Half-size Circuit Breakers Occupy One Slot.
Replace with Full-size 20A/1P Circuit Breaker

PANEL A (EXISTING, MODIFIED) 400A, 3-PHASE, 4-WIRE 208Y/120VAC ITE Panelboard, Type CDP-7, Series 8A, Date 0485			
20A/1P Ltg-Labs	1	2	20A/1P Warehouse Outlets
20A/1P Dock Heater	3	4	20A/1P Office Lights
20A/1P Warehouse Heater	5	6	20A/1P Recpt-Balance Eqpt (L)(M)
20A/1P Recpt-Lab #2 Ctr	7	8	20A/1P Recpt-Entry Wall
20A/1P Recpt-Lab #2 Ctr	9	10	40A/3P RTU, A/C & Heat, RTU-1 (EXISTING)
20A/1P Recpt-	11	12	
20A/1P Sink Pump (Q) (Same as SKP-1)	13	14	
20A/1P Office Outlets	15	16	60A/3P RTU-2
15A/1P Recpt-Side Counter	17	18	
20A/1P Hood (A)	19	20	
20A/1P Recpt-Side Counter	21	22	60A/3P RTU-3
20A/1P Recpt-Side Counter	23	24	
20A/1P Warehouse Outlets	25	26	
60A/3P Spare	27	28	100A/3P PANEL C
	29	30	
	31	32	
30A/2P WH-1 Water Heater	33	34	20A/2P Oven (D)
	35	36	
20A/1P Recpt-Back Wall	37	38	20A/1P Warehouse Lights
20A/2P Hood Blower (B)	39	40	20A/1P Recpt-Lab #1
	41	42	20A/1P Recpt-Lab #1

PANEL B (EXISTING, MODIFIED) 200A, 3-PHASE, 4-WIRE 208Y/120VAC Siemens Cat No. G3042ML3200 CU, Series B			
1 20A/1P Spare	1	2	20A/1P Spare
20A/1P Spare	3	4	20A/1P Fire Alarm Panel
20A/1P Recpt-Ware, N Wall	5	6	20A/1P Spare
20A/1P Recpt-Ware, NE Wall	7	8	20A/1P Spare
20A/1P Recpt-Ware, S Wall	9	10	20A/1P Spare
20A/1P FAN-2	11	12	20A/1P Spare
1 20A/1P SEP-1	13	14	20A/1P Spare
20A/1P FAN-4	15	16	20A/1P Spare
20A/1P Recpt/Light at HVAC Units	17	18	30A/2P Spare 1
20A/1P Spare	19	20	
20A/1P Spare	21	22	20A/1P (QTY=2) Spare*
20A/1P Spare	23	24	20A/1P (QTY=2) Spare*
20A/3P Spare	25	26	20A/2P Spare
	27	28	
	29	30	20A/1P (QTY=2) Spare*

* Indicates 2 Half-size Circuit Breakers Occupy One Slot.
Replace with Full-size 20A/1P Circuit Breaker

PANEL C (NEW) 200A, 3-PHASE, 4-WIRE 208Y/120VAC			
20A/1P Recpt-Restrooms	1	2	20A/1P Ltg-Office/Class
20A/1P Recpt-Kitchen Ctr	3	4	20A/1P Ltg-Open Office
20A/1P Recpt-Kitchen Area	5	6	20A/1P Recpt for Water Fountain
20A/1P Recpt-Entry	7	8	35A/1P WH-2 (Men's) 1
20A/1P Recpt-Side Wall	9	10	
20A/1P Recpt-Back Wall	11	12	35A/1P WH-2 (Women's)
20A/1P Recpt-Office 2	13	14	
20A/1P Recpt-Office 1	15	16	20A/1P
20A/1P Recpt-Open Office	17	18	20A/1P
20A/1P Recpt-Open Office	19	20	
20A/1P Recpt-Open Office	21	22	20A/1P
20A/1P FAN-1	23	24	20A/1P
20A/3P Spare	25	26	20A/2P Spare
	27	28	
	29	30	20A/1P

Permit Set, Rev One 01-13-2021

Architect:
T/W DESIGN
P.O. Box 69
Strafford, NH 03884
603-664-2181

STATE OF NEW HAMPSHIRE
LEE D. CONSAVAGE
No. 12237
LICENSED PROFESSIONAL ENGINEER

By	Revision Description	Date

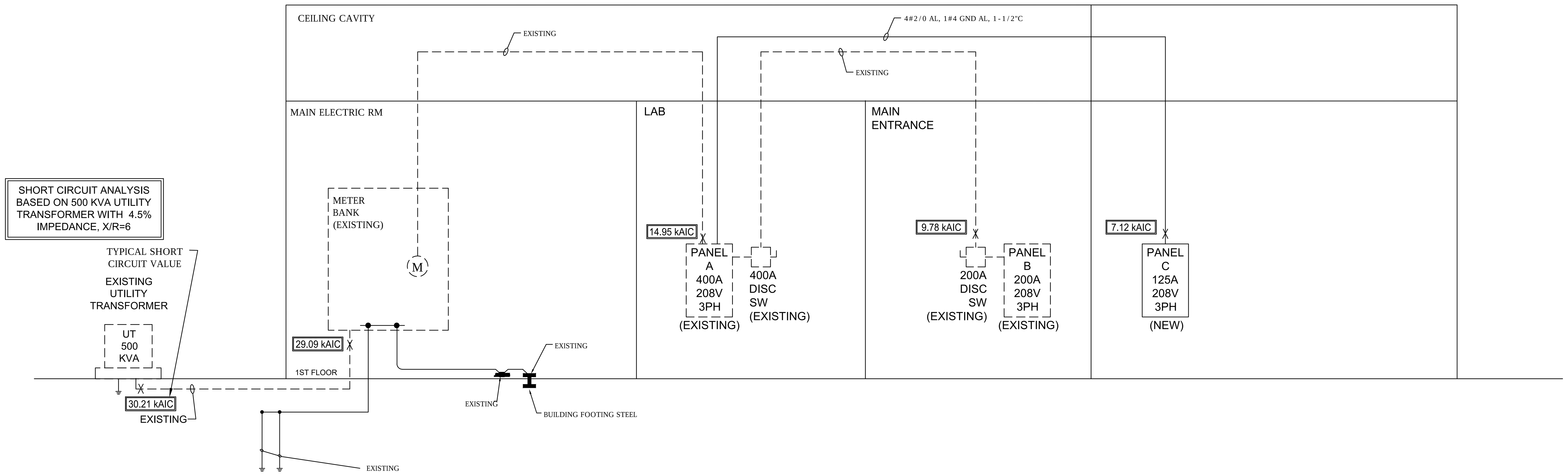
Seacoast Consulting Engineers, LLC
261 Jennie Lane
Eliot, Maine 03903
207-370-7230
www.SeacoastEngineers.com

Designed By: LDC
Drawn By: JJP
Checked By: LDC
Date: 11-20-2020
Scale: As Noted
Project No.: 2020-142

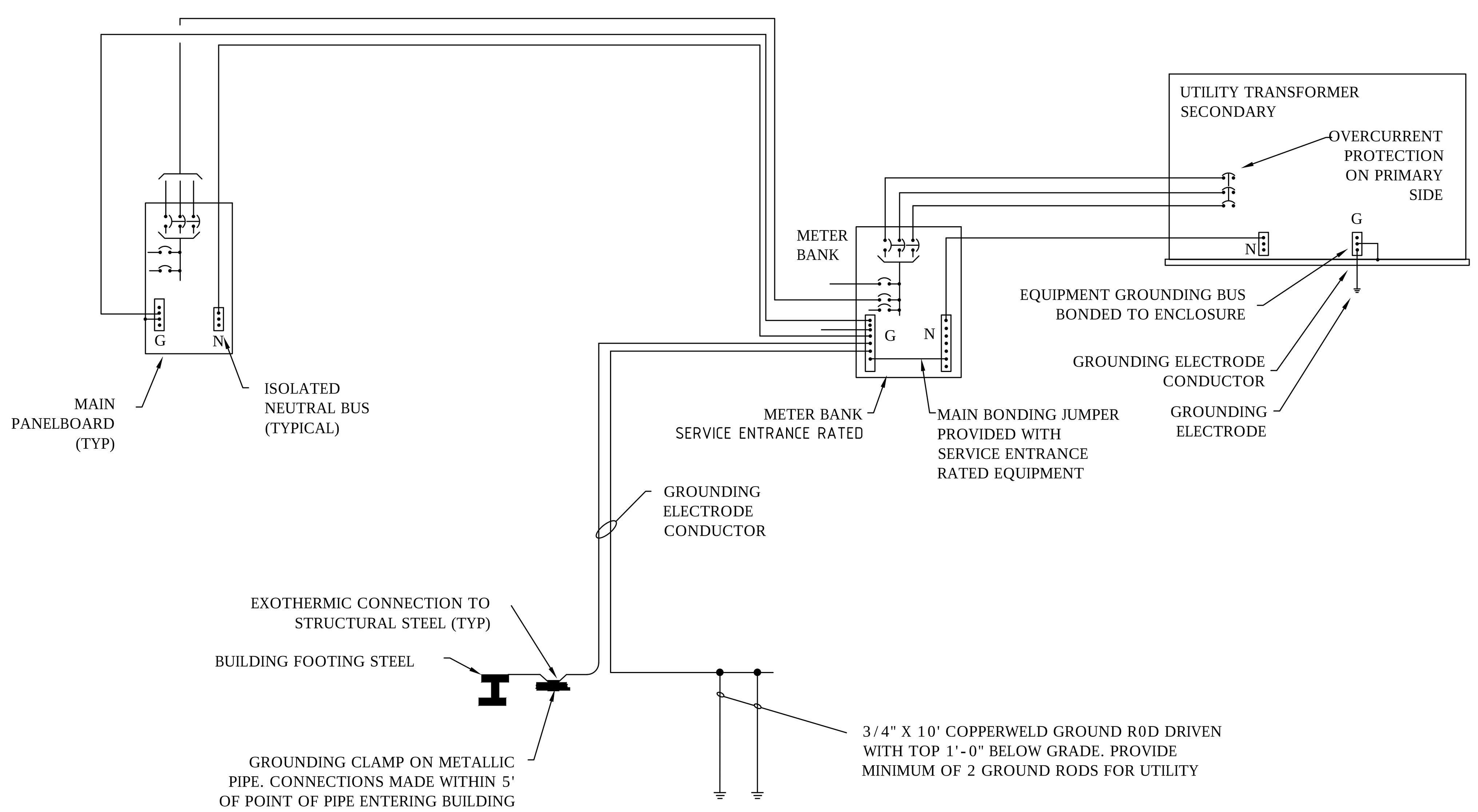
Agilyx Tenant Fit-up
124 Heritage Road
Portsmouth, NH

Circuit Schedules

E1B



1 / E2 **Power Riser Diagram**
Scale: None



2 / E2 **Typical Grounding Diagram**
Scale: None

MECHANICAL EQUIPMENT SCHEDULE

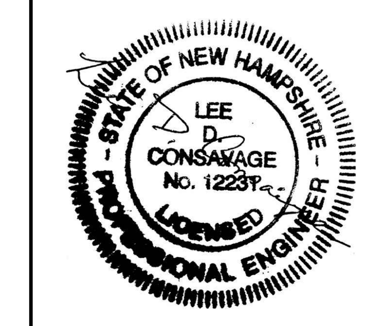
MARK	EQUIPMENT	MCA/ FLA	VOLTS	PHASE	PANEL (See Note 3)	AREA SERVED	DISCONNECT(240)V FUSE SIZE	DISCONNECT(240)V RATING	REMARKS
RTU 1	ROOF TOP UNIT	29 MCA	208	3	A	OFFICE (EXISTING)	35A	60A/3P	SEE NOTE 1, 2, 3, 4
RTU 2	ROOF TOP UNIT	47 MCA	208	3	A	WAREHOUSE	60A	60A/3P	SEE NOTE 1, 2, 3, 4
RTU 3	ROOF TOP UNIT	38.1 MCA	208	3	A	WAREHOUSE	40A	60A/3P	SEE NOTE 1, 2, 3, 4
FAN 1	EXHAUST FAN	2 FLA	120	1	C	RESTROOM	5A	20A/1P	SEE NOTE 1, 2, 3, 4
FAN 2	EXHAUST FAN	5 FLA	120	1	B	WAREHOUSE	10A	20A/1P	SEE NOTE 1, 2, 3, 4
FAN 4	EXHAUST FAN	6 FLA	120	1	B	FUME HOOD	10A	20A/1P	SEE NOTE 1, 2, 3, 4
WH 1	WATER HEATER	22 FLA	208	1	A	LAB #2	30A	30A/2P	SEE NOTE 1, 2, 3, 4
WH 2	INSTANT HOT WATER	28 FLA	208	1	C	RESTROOM	35A	60A/2P	SEE NOTE 1, 2, 3, 4
SKP 1	SINK PUMP (SAME AS (Q))	7.2 FLA	120	1	A	LAB #2	20A	20A/1P	SEE NOTE 1, 2, 3, 4
SEP 1	SEWAGE EJECTOR PUMP	9.8 FLA	120	1	B	LAB #2	20A	20A/1P	SEE NOTE 1, 2, 3, 4

MECHANICAL EQUIPMENT NOTES:

1. REFER TO MECHANICAL DRAWINGS FOR LOCATION OF EQUIPMENT. VERIFY ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT BEFORE OPERATING AND/OR WIRING ANY EQUIPMENT.
2. REFER TO CIRCUIT SCHEDULES FOR CIRCUITING.
3. ALL CONDUCTOR SIZES IDENTIFIED ARE FOR 75 C COPPER CONDUCTORS AND 75 C MINIMUM RATED EQUIPMENT CONNECTION TERMINALS. IF OTHER THAN 75 C COPPER CONDUCTORS, OR EQUIPMENT WITH TERMINALS RATED AT LESS THAN 75 C IS USED, THEN THIS MECHANICAL EQUIPMENT SCHEDULE DOES NOT APPLY.
4. THE CABLE SIZES SPECIFIED IN THIS MECHANICAL EQUIPMENT SCHEDULE ARE FOR NOT MORE THAN 3 CURRENT CARRYING CONDUCTORS IN EACH CONDUIT RUN/RACEWAY. IF MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE INSTALLED IN A CONDUIT RUN/RACEWAY, THEN THE CABLE SIZE SPECIFIED IN THIS MECHANICAL EQUIPMENT SCHEDULE MAY HAVE TO BE ADJUSTED IAW WITH THE REQUIREMENTS OF THE NEC.

Permit Set, Rev One 01-13-2021

Architect:
T/W DESIGN
P.O. Box 69
Strafford, NH 03884
603-664-2181



SCE Seacoast Consulting Engineers, LLC
261 Jennie Lane
Eliot, Maine 03903
207-370-7230
www.SeacoastEngineers.com

Designed By: LDC
Drawn By: VIP
Checked By: LDC
Project No. 2020-142 | SCALE As Noted | DATE 11-20-2020

Agilyx Tenant Fit-up
124 Heritage Road
Portsmouth, NH

Power Riser Diagram, Grounding Diagram

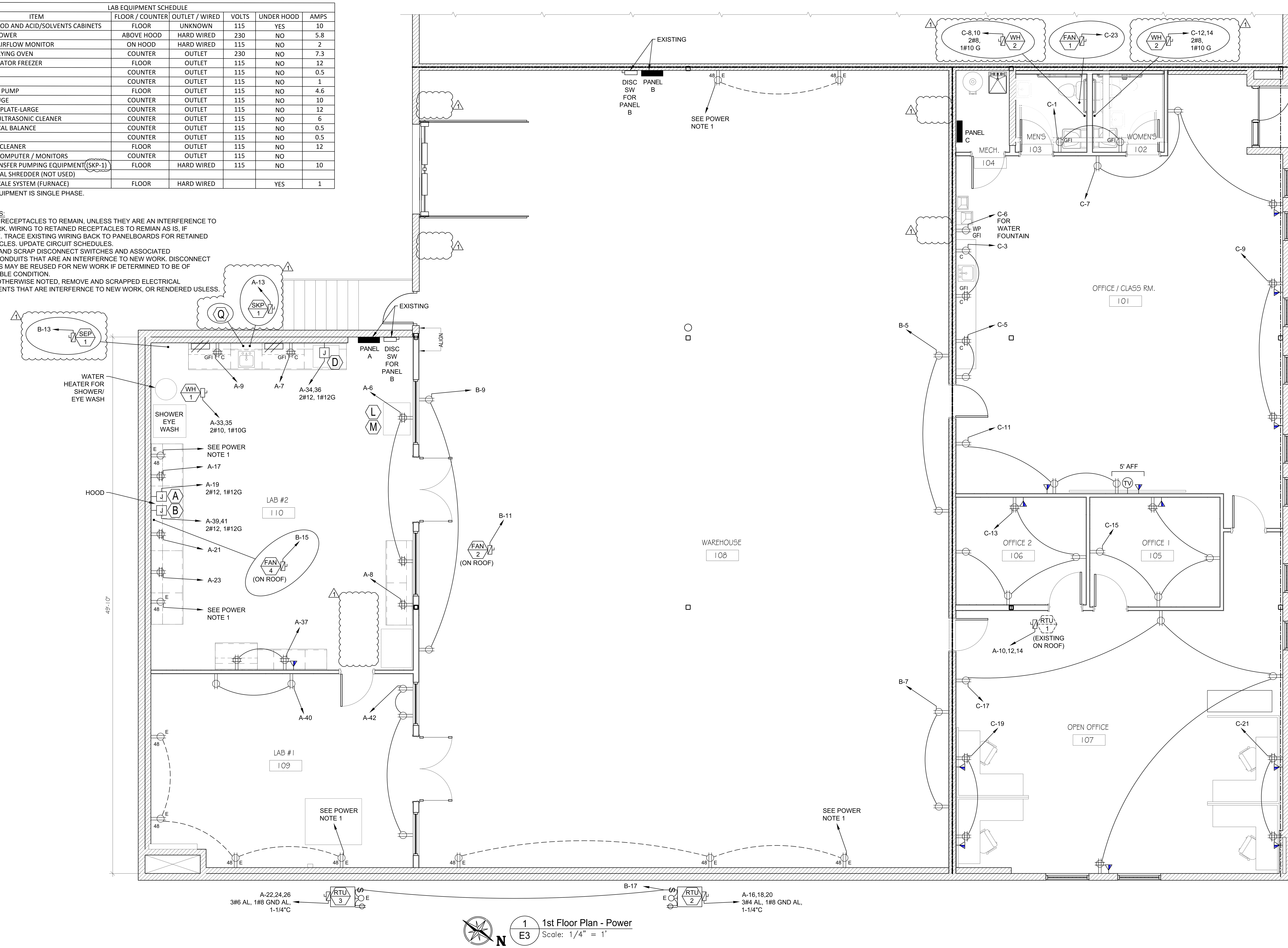
E2

LAB EQUIPMENT SCHEDULE						
MARK	ITEM	FLOOR / COUNTER	OUTLET / WIRED	VOLTS	UNDER HOOD	AMPS
A	FUME HOOD AND ACID/SOLVENTS CABINETS	FLOOR	UNKNOWN	115	YES	10
B	HOOD BLOWER	ABOVE HOOD	HARD WIRED	230	NO	5.8
C	DIGITAL AIRFLOW MONITOR	ON HOOD	HARD WIRED	115	NO	2
D	LARGE DRYING OVEN	COUNTER	OUTLET	230	NO	7.3
E	REFRIGERATOR FREEZER	FLOOR	OUTLET	115	NO	12
F	FTIR	COUNTER	OUTLET	115	NO	0.5
G	XRF	COUNTER	OUTLET	115	NO	1
H	VACUUM PUMP	FLOOR	OUTLET	115	NO	4.6
I	CENTRIFUGE	COUNTER	OUTLET	115	NO	10
J	HOT STIR PLATE-LARGE	COUNTER	OUTLET	115	NO	12
K	HEATED ULTRASONIC CLEANER	COUNTER	OUTLET	115	NO	6
L	ANALYTICAL BALANCE	COUNTER	OUTLET	115	NO	0.5
M	BALANCE	COUNTER	OUTLET	115	NO	0.5
N	VACUUN CLEANER	FLOOR	OUTLET	115	NO	12
P	LAPTOP COMPUTER / MONITORS	COUNTER	OUTLET	115	NO	
1 Q	SINK TRANSFER PUMPING EQUIPMENT (SKP-1)	FLOOR	HARD WIRED	115	NO	10
R	INDUSTRIAL SHREDDER (NOT USED)					
S	BENCH SCALE SYSTEM (FURNACE)	FLOOR	HARD WIRED		YES	1

NOTE: ALL EQUIPMENT IS SINGLE PHASE.

POWER NOTES:

1. EXISTING RECEPTACLES TO REMAIN, UNLESS THEY ARE AN INTERFERENCE TO NEW WORK. WIRING TO RETAINED RECEPTACLES TO REMIAN AS IS, IF POSSIBLE. TRACE EXISTING WIRING BACK TO PANELBOARDS FOR RETAINED RECEPTACLES. UPDATE CIRCUIT SCHEDULES.
2. REMOVE AND SCRAP DISCONNECT SWITCHES AND ASSOCIATED WIRING/CONDUITS THAT ARE AN INTERFERENCE TO NEW WORK. DISCONNECT SWITCHES MAY BE REUSED FOR NEW WORK IF DETERMINED TO BE OF ACCEPTABLE CONDITION.
3. UNLESS OTHERWISE NOTED, REMOVE AND SCRAPPED ELECTRICAL COMPONENTS THAT ARE INTERFERNCE TO NEW WORK, OR RENDERED USLESS.



1 E3 1st Floor Plan - Power
Scale: 1/4" = 1'

Permit Set, Rev One 01-13-2021

Architect:
T/W DESIGN
P.O. Box 69
Strafford, NH 03884
603-664-2181

LEE D. CONSAVAGE No. 12231 STATE OF NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER

SCE Seacoast Consulting Engineers, LLC
261 Jennie Lane
Eliot, Maine 03903
207-370-7230
www.SeacoastEngineers.com

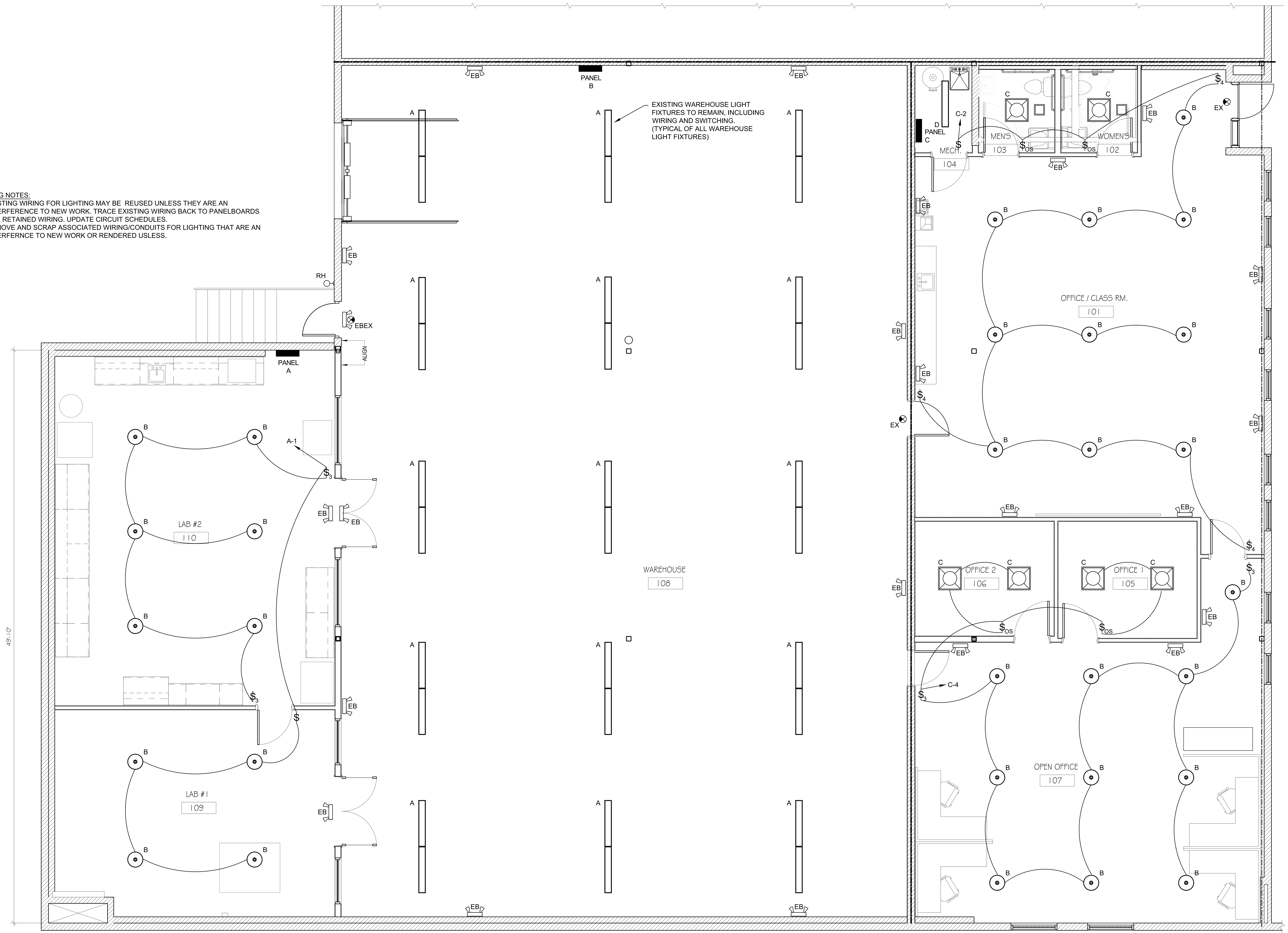
Designed By: LDC
Drawn By: VP
Checked By: LDC
Date: 11-20-2020
Scale: As Noted
Project No.: 2020-142

Agilyx Tenant Fit-up
124 Heritage Road
Portsmouth, NH

1st Floor Plan - Power

E3

LIGHTING NOTES:
1. EXISTING WIRING FOR LIGHTING MAY BE REUSED UNLESS THEY ARE AN INTERFERENCE TO NEW WORK. TRACE EXISTING WIRING BACK TO PANELBOARDS FOR RETAINED WIRING. UPDATE CIRCUIT SCHEDULES.
2. REMOVE AND SCRAP ASSOCIATED WIRING/CONDUITS FOR LIGHTING THAT ARE AN INTERFERNCE TO NEW WORK OR RENDERED USLESS.



1 E4 1st Floor Plan - Lighting
Scale: 1/4" = 1'

Permit Set, Rev One 01-13-2021

Architect:
T/W DESIGN
P.O. Box 69
Strafford, NH 03884
603-664-2181

SCE Seacoast Consulting Engineers, LLC
261 Jennie Lane
Eliot, Maine 03903
207-370-7230
www.SeacoastEngineers.com

Designed By: LDC
Drawn By: VIP
Checked By: LDC
Project No. 2020-142
SCALE As Noted
DATE 11-20-2020

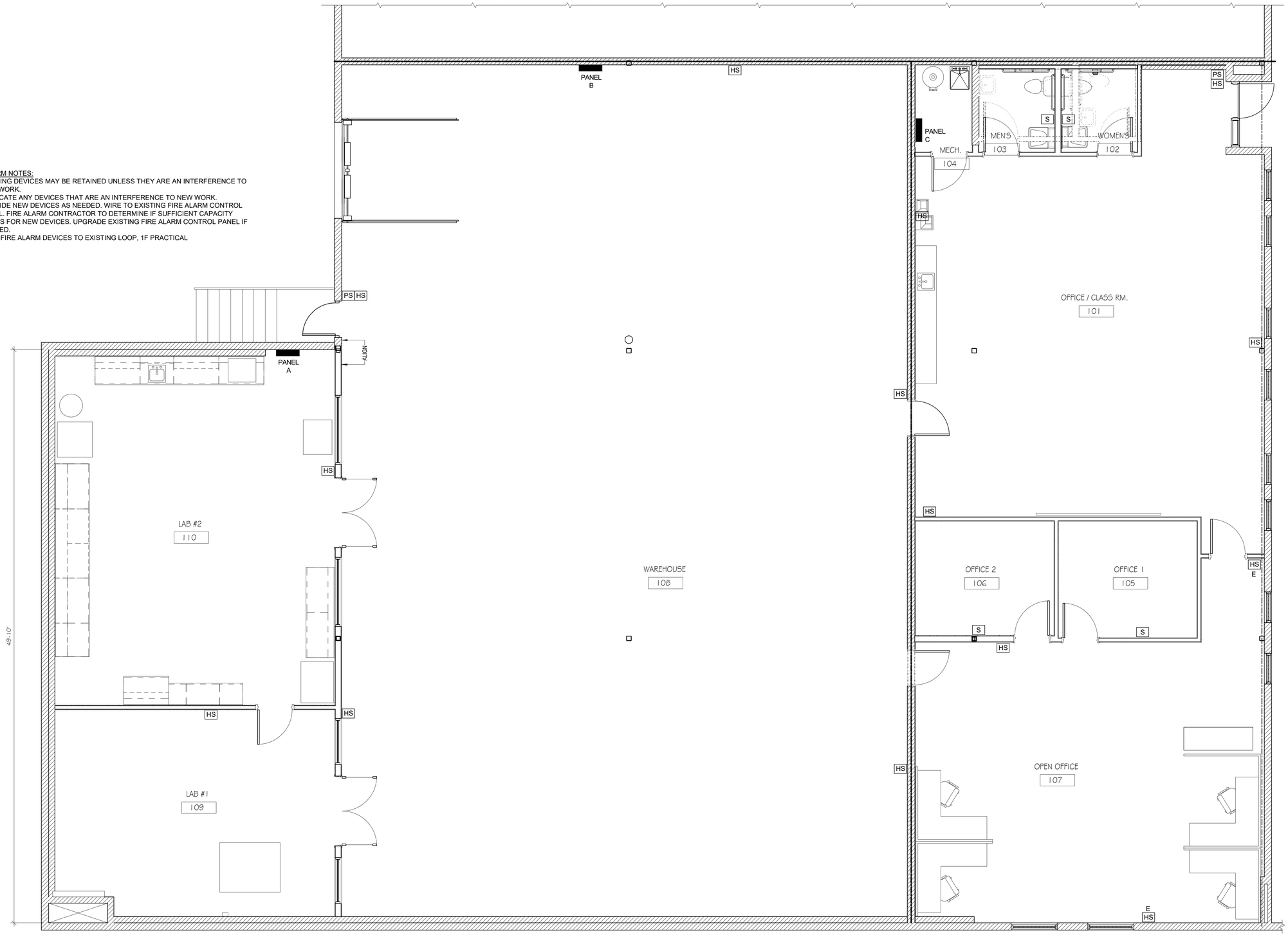
Agilyx Tenant Fit-up
124 Heritage Road
Portsmouth, NH

1st Floor Plan - Lighting

E4

FIRE ALARM NOTES:

1. EXISTING DEVICES MAY BE RETAINED UNLESS THEY ARE AN INTERFERENCE TO NEW WORK.
2. RELOCATE ANY DEVICES THAT ARE AN INTERFERENCE TO NEW WORK.
3. PROVIDE NEW DEVICES AS NEEDED. WIRE TO EXISTING FIRE ALARM CONTROL PANEL. FIRE ALARM CONTRACTOR TO DETERMINE IF SUFFICIENT CAPACITY EXISTS FOR NEW DEVICES. UPGRADE EXISTING FIRE ALARM CONTROL PANEL IF NEEDED.
4. WIRE FIRE ALARM DEVICES TO EXISTING LOOP, 1F PRACTICAL



N

1 / FA1 1st Floor Plan - Fire Alarm

Scale: 1/4" = 1'

Permit Set, Rev One 01-13-2021

Architect:
T/W DESIGN
P.O. Box 69
Strafford, NH 03884
603-664-2181

STATE OF NEW HAMPSHIRE
LEE D. CONSAVAGE
No. 12237
LICENSED PROFESSIONAL ENGINEER

Seacoast Consulting Engineers, LLC
261 Jennie Lane
Eliot, Maine 03903
207-370-7230
www.SeacoastEngineers.com

Designed By: LDC
Drawn By: VIP
Checked By: LDC
DATE: 11-20-2020
SCALE: As Noted
Project No. 2020-142

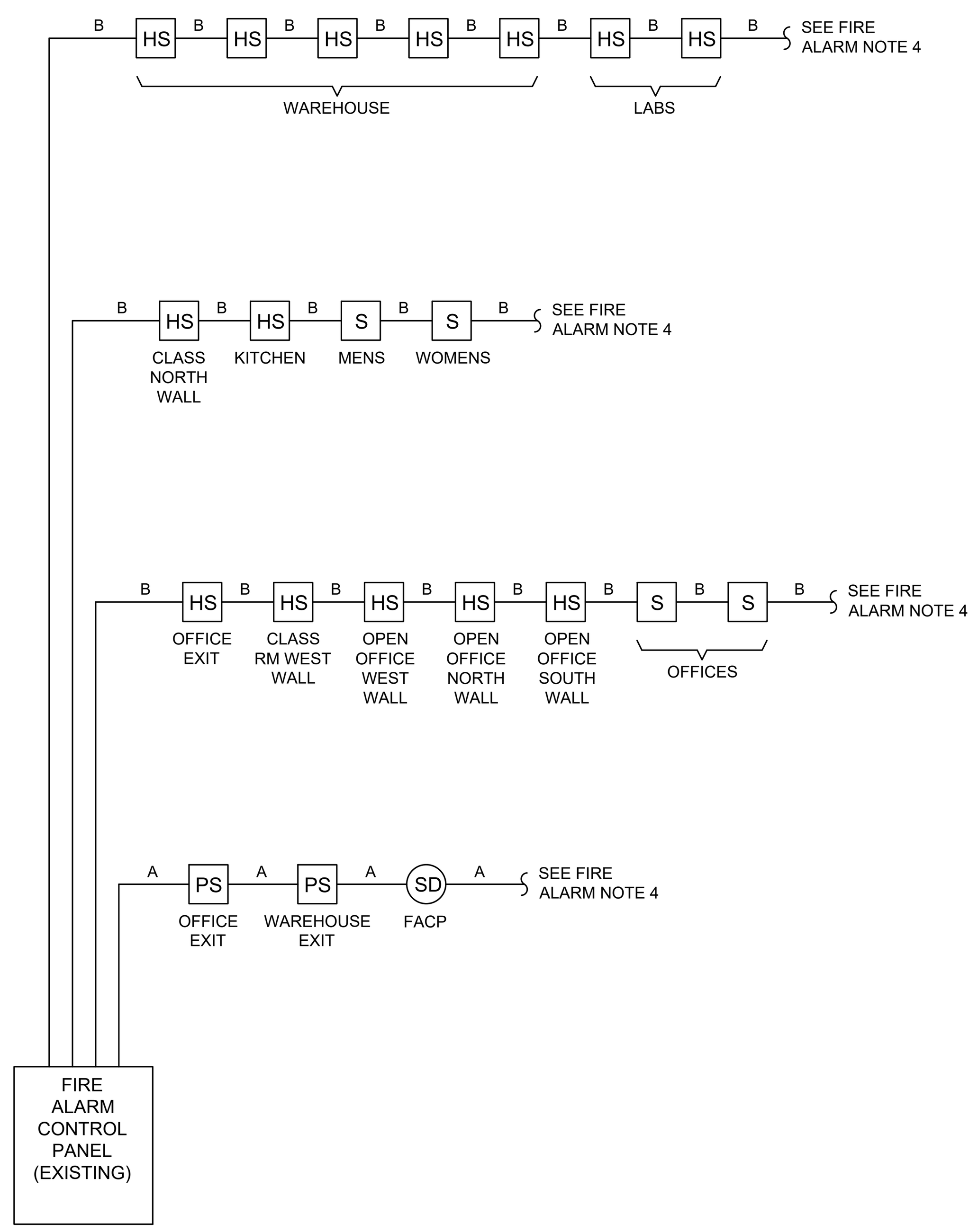
Agilyx Tenant Fit-up
124 Heritage Road
Portsmouth, NH

1st Floor Plan - Fire Alarm

FA1

FIRE ALARM WIRING LEGEND

A	1 PR #16 AWG TWISTED PAIR CABLE(Up to 4,500 ft)
B	1 PR #14 AWG FPL CABLE
C	1 CAT5 CABLE
D	2 PR #18 AWG FPL CABLE



1ST FLOOR

INSTALLATION NOTES:

FIELD WIRING SHALL BE INSTALLED FOLLOWING THE CURRENT EDITION OF **NFPA 70: NATIONAL ELECTRIC CODE(2020)**, ALL APPLICABLE **MUNICIPAL, COUNTY, & STATE CODES, REQUIREMENTS, AND REGULATIONS,** AS WELL AS ALL **MANUFACTURER GUIDELINES FOR INSTALLATION**.

CONTROL PANELS, DEVICES, AND ALL OTHER SYSTEM COMPONENTS SHALL BE INSTALLED FOLLOWING THE CURRENT EDITION OF **NFPA 72: NATIONAL FIRE ALARM AND SIGNALING CODE(2013)**, ALL APPLICABLE **MUNICIPAL, COUNTY, & STATE CODES, REQUIREMENTS, AND REGULATIONS,** AS WELL AS ALL **MANUFACTURER GUIDELINES FOR INSTALLATION**.

THE INSTALLER SHALL FOLLOW CORRECT CONDUCTOR POLARITY, INDICATED CIRCUIT DIVISIONS, PROPER GROUNDING AND SHIELDING WITHOUT EXCEPTION. IMPROPER INSTALLATION CAN RESULT IN INTERFERENCE, TRANSIENT VOLTAGE, OR SHORT CIRCUITS CAUSING UNDESIRED OPERATION OR DAMAGE TO THE CONTROL PANEL, DEVICES AND ANY OTHER INTEGRATED COMPONENTS.

THE GAUGE OF WIRE USED FOR THE SLC LOOP (IDENTIFIED AS “A” ON THIS PRINT), SHALL BE DETERMINED BY THE INSTALLER FOLLOWING GUIDELINES AND LIMITATIONS SET FORTH BY THE MANUFACTURER. THE SLC WIRING RISER IS SHOWN DIAGRAMMATICALLY ONLY TO ALLOW FOR VARIANCES IN ACTUAL WIRE DISTANCE, DEVICE PLACEMENT AND STRUCTURAL OR ENVIRONMENTAL REQUIREMENTS.

ANY T-TAPPING OF SLC WIRING SHALL FOLLOW ALL REQUIREMENTS IN NOTIFIER DOCUMENT #51253, *INTELLIGENT CONTROL PANEL SLC WIRING MANUAL*.

WIRE FOR THE NOTIFICATION APPLIANCE CIRCUITS (IDENTIFIED AS “B” ON THIS PRINT), SHALL FOLLOW THE SPECIFIC REQUIREMENTS OF THE **WIRING LEGEND**. THIS WAS DETERMINED BY THE AVAILABLE DIMENSIONED OR SCALED FLOOR PLAN DEVICE LAYOUT. PLEASE REFERENCE THE *VOLTAGE DROP CALCULATIONS* AND BATTERY CALCULATIONS AS DETERMEINED BY THE MANUFACTURER AND INCLUDED IN THE FIRE ALARM SUBMITTAL PACKAGE. ANY DISTANCES EXCEEDING THOSE IN THE *VOLTAGE DROP CALCULATIONS* MUST BE BROUGHT TO THE ATTENTION OF THE MANUFACTURER. TO ASSURE PROPER FUNCTIONALITY AND COMPLIANCE OF THE NOTIFICATION APPLIANCES.

THIS SYSTEM MEETS NFPA REQUIREMENTS FOR OPERATION AT 32-120°F AND A RELATIVE HUMIDITY OF 91-95% AT 87-93°F. HOWEVER, THE USEFUL LIFE OF THE SYSTEM'S STANDBY BATTERIES AND THE ELECTRONIC COMPONENTS MAY BE ADVERSELY AFFECTED BY EXTREME TEMPERATURE RANGES AND HUMIDITY. THEREFORE, IT IS RECOMMENDED THAT THIS SYSTEM AND ITS PERIPHERALS BE INSTALLED IN AN ENVIRONMENT WITH A NORMAL ROOM TEMPERATURE OF 60-80°F.

END OF LINE DEVICES MUST BE INSTALLED IN AN EASILY ACCESSIBLE LOCATION AND CLEARLY MARKED OR LABELED.

1 / FA2 Fire Alarm Riser Diagram
Scale: None

FIRE ALARM

NOTE: FIRE ALARM CONTRACTOR TO PROVIDE SUBMITTALS WITH RISER DIAGRAM, DEVICE ADDRESSES, BATTERY CALCULATIONS & SEQUENCE OF OPERATION
SUBSCRIPT E INDICATES EXISTING DEVICE

FACP	FIRE ALARM CONTROL PANEL WITH 2 DEDICATED PHONE LINES FOR MONITORING
FAA	FIRE ALARM ANNUNCIATOR
PS	PULL STATION WITH MONITOR MODULE
SD	SMOKE DETECTOR
HS	HORN/STROBE
S	STROBE C = CEILING MOUNTED

Architect:
T/W DESIGN
P.O. Box 69
Strafford, NH 03884
603-664-2181

Revision Description | Date

SCE Seacoast Consulting Engineers, LLC
261 Jennie Lane
Eliot, Maine 03903
207-370-7230
www.SeacoastEngineers.com

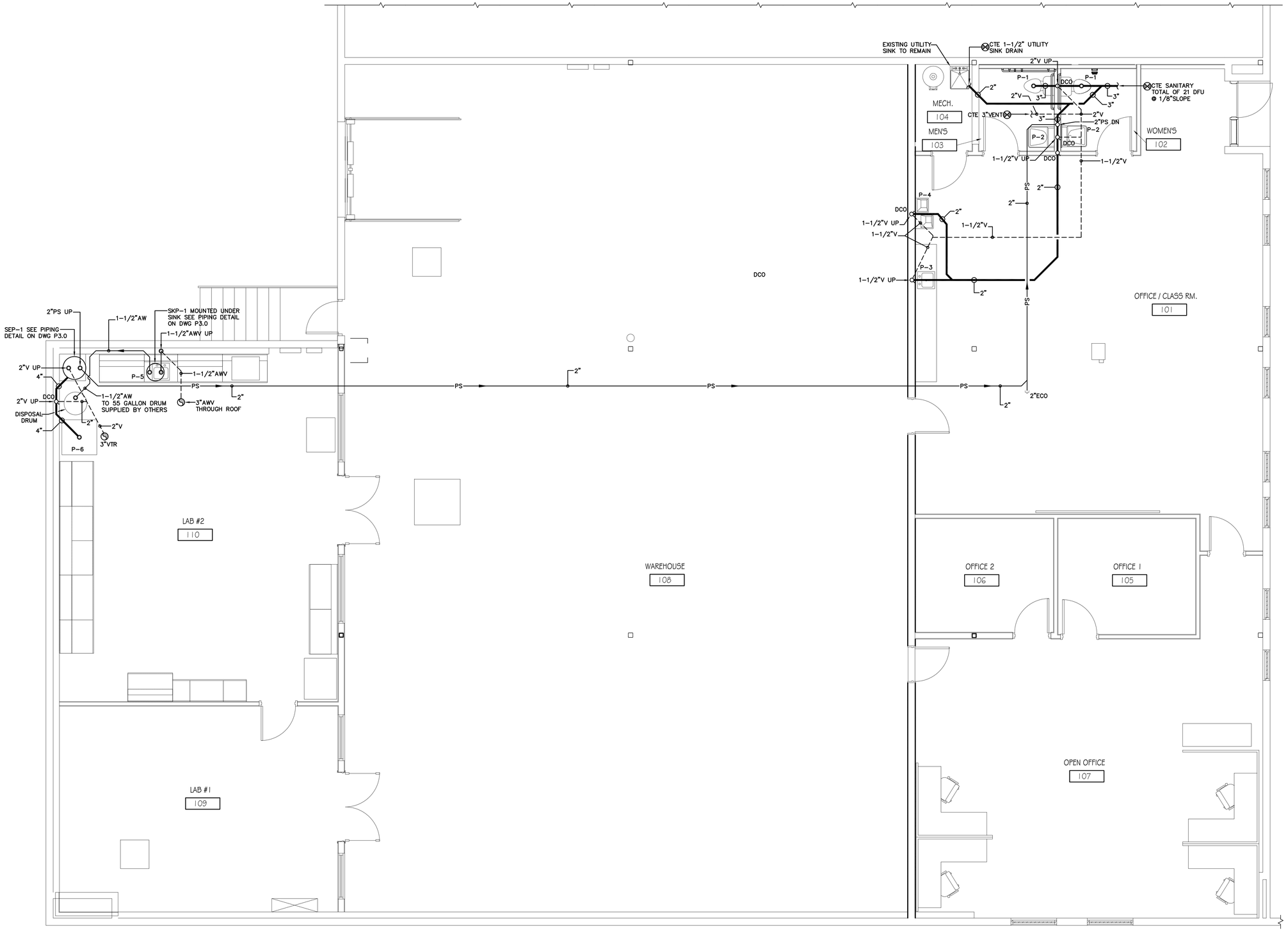
Designed By: LDC
Drawn By: VIP
Checked By: LDC
Project No. 2020-142
SCALE As Noted
DATE 11-20-2020

Agilyx Tenant Fit-up
124 Heritage Road
Portsmouth, NH

Fire Alarm Riser Diagram

FA2

Permit Set, Rev One 01-13-2021



1 / P-1 FIRST FLOOR SANITARY & VENT PIPING PLAN
1/4"=1'-0"

DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

PLUMBING PROJECT MANAGER:
MARK R. RENAUD
EMAIL: MARKR@DESIGNDAYMECH.COM
PHONE: (603) 234-8292
ADDRESS: 118 MAGNOLIA DR, GOFFSTOWN, NH 03045

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
LICENSED PROFESSIONAL ENGINEER

PROJECT:
AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:
TW DESIGNS
STRATFORD, NEW HAMPSHIRE

FIRST FLOOR SANITARY & VENT PIPING PLAN

REVISIONS:

DESIGNED BY: MRR
DRAWN BY: JKT
CHECKED BY: AWA

DDM JOB #: 20162
SCALE: 1/4"=1'-0"

DATE: 12/23/2020

P-1

LANDLORD TO PROVIDE 1-1/4" COLD WATER PIPE TO TENANT SPACE

1-1/4"C

1/2"C DN

1/2"C

BV

EXISTING HOT WATER HEATER TO REMAIN

EXISTING UTILITY SINK TO REMAIN

EXISTING 3/4"H

CTE 3/4"HOT WATER

MECH.
104

P-1

1-1/4"

WH-2

MEN'S
103

HW

P-2

3/4"C DN

WOMEN'S
102

CAP OFF 3/4" HOT WATER LINE

3/4"C

1/2"C DN

P-4

1/2"C

1/2"

HW

1/2" H&C DN

P-3

CW

1"

OFFICE / CLASS RM.
101

1/2"C

WH-1 SEE PIPING DETAIL ON DWG P3.0

1/2" H&C DN

P-5

1/2" H&C

1"H&C

1"H

1"C

CW

1"

CW

CW

1"

THERMOSTATIC MIXING VALVE (TMV) SET AT 90°F

P-6

LAB #2
110

WAREHOUSE
108

OFFICE 2
106

OFFICE 1
105

CTE GAS PIPNG

1-1/2"(X) GAS

CTE GAS PIPNG

2"(X) GAS

CAP OFF EXISTING 1-1/2"GAS

GAS

2"(X) GAS

OPEN OFFICE
107

LAB #
109

1-1/4"

1-1/4"

1-1/4"G DN

1-1/4"G DN

1-1/4"G

1-1/4"G

RTU-3
171 MBH

GAS PIPING SIZES ARE BASED ON A DEVELOPED LENGTH OF 150' PER 2015 NFPA 54 TABLE 6.2(b)

RTU-2
180 MBH

GAS

GAS

1 / P-2 FIRST FLOOR DOMESTIC WATE & GAS PIPING PLAN

1/4"=1'-0"

DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

PLUMBING PROJECT MANAGER:

MARK R. RENAUD
EMAIL: MARKR@DESIGNDAYMECH.COM
PHONE: (603) 234-8292
ADDRESS: 118 MAGNOLIA DR, GOFFSTOWN, NH 03045

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
LICENSED
PROFESSIONAL ENGINEER

PROJECT:

AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:

TW DESIGNS
STRATFORD, NEW HAMPSHIRE

FIRST FLOOR DOMESTIC WATER & GAS PIPING PLAN

REVISIONS:

DESIGNED BY:	MRR
DRAWN BY:	JKT
CHECKED BY:	AWA
DDM JOB #:	20162
SCALE:	1/4"=1'-0"

DATE: 12/23/2020

P-2

Agilyx - Portsmouth, NH
Domestic Water Calcs

Sizing per 2015 IPC Table E103.3(2)

Fixture	Occupancy	Qty	Cold Water Load Values	Cold Water Total	Hot Water Load Values	Hot Water Total	Total Load Values	Total Total
Bath Group, Tank Type	Private		2.7		1.5		3.6	
Bath Group, Flushometer	Private		6.0		3.0		8.0	
Bathtub	Private		1.0		1.0		1.4	
Bathtub	Public		3.0		3.0		4.0	
Bidet	Private		1.5		1.5		2.0	
Combination Fixture	Private		2.3		2.3		3.0	
Dishwashing Machine	Private				1.4		1.4	
Drinking Fountain	Offices, etc		0.3				0.3	
Kitchen Sink	Private	2	1.0	2.0	1.0	2.0	1.4	2.8
Kitchen Sink	Hotel, Restaurant		3.0		3.0		4.0	
Laundry Trays (1 to 3)	Private	1	1.0	1.0	1.0	1.0	1.4	1.4
Lavatory	Private		0.5		0.5		0.7	
Lavatory	Public	2	1.5	3.0	1.5	3.0	2.0	4.0
Service Sink	Offices, etc		2.3		2.3		3.0	
Shower Head	Public		3.0		3.0		4.0	
Shower Head	Private		1.0		1.0		1.4	
Urinal, 1" Flushometer	Public		10.0				10.0	
Urinal, 3/4" Flushometer	Public		5.0				5.0	
Urinal, Tank Type	Public		3.0				3.0	
Washing Machine (8 lb)	Private		1.0		1.0		1.4	
Washing Machine (8 lb)	Public		2.3		2.3		3.0	
Washing Machine (15 lb)	Public		3.0		3.0		4.0	
Water Closet, Flushometer	Private		6.0				6.0	
Water Closet, Tank Type	Private		2.2				2.2	
Water Closet, Flushometer	Public		10.0				10.0	
Water Closet, Tank Type	Public	2	5.0	10.0			5.0	10.0
Total WSFU				**16.0**		**6.0**		**18.2**
GPM (Predominantly Tank Type)				18.0		11.0		19.0
Added GPM	GPM	Qty	GPM	Total	GPM	Total	GPM	Total
Commercial Washers								
Total Predicted Flow (gpm)				**18.0**		**11.0**		**19.0**
Pipe Size				1 1/4"				1 1/4"
Velocity (fps)				4.5				4.6
Pressure Drop (psi/100 ft)				2.8				3.0

PLUMBING FIXTURE SCHEDULE

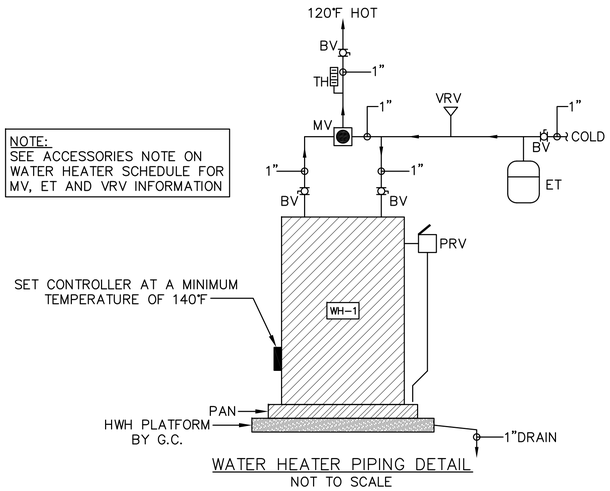
MARK	DESCRIPTION	MAKE	MODEL	FIXTURE CONNECTIONS SAN	VENT	TRAP	IW	COLD	HOT	140°F	ELECTRICAL	GAS	FLOW CONTROL	FIXTURE UNITS CW	HW	TOTAL	SAN	ACCESSORIES & NOTES	COLOR
P-1	WATER CLOSET	AMERICAN STANDARD	215AA.104.020	3"	2"	INTEGRAL	-	1/2"	-	-	-	-	1.28 GPF	5.00	-	5.00	4.00	CHURCH 295CT OPEN FRONT SEAT LESS COVER, CHROME PLATED STOP WITH BRAIDED FLEXIBLE SUPPLY, WAX RING AND BRASS CLOSET BOLTS	WHITE
P-2	WALL HUNG LAVATORY	AMERICAN STANDARD	0321.026.020	1-1/2"	1-1/2"	P-TRAP	-	1/2"	1/2"	-	-	-	0.5 GPM	1.50	1.50	2.00	1.00	SYMMONS S-20-0-0.5 FAUCET, CHROME PLATED GRID STRAINER, CHROME PLATED STOPS WITH BRAIDED FLEXIBLE SUPPLIES, CHROME PLATED P-TRAP AND TRUEBRO 102 E-Z LAV GUARD	WHITE
P-3	COUNTER SINK	ELKAY	LRAD252155-3	1-1/2"	1-1/2"	P-TRAP	-	1/2"	1/2"	-	-	-	2.2 GPM	1.00	1.00	1.40	2.00	SYMMONS S-23-3 FAUCET, STAINLESS STEEL BASKET STRAINER, CHROME PLATED STOPS WITH BRAIDED FLEXIBLE SUPPLIES AND PVC P-TRAP	SS
P-4	BI-LEVEL WATER COOLER	ELKAY	EZSTL8LC	1-1/2"	1-1/2"	P-TRAP	-	1/2"	-	-	120-1 VOLT, 4.0 AMPS	-	-	0.25	-	0.25	0.50	CHROME PLATED STOP WITH BRAIDED FLEXIBLE SUPPLY AND CHROME PLATED P-TRAP	GRAY
P-5	LAB SINK	BY OTHERS	-	1-1/2"	1-1/2"	P-TRAP	-	1/2"	1/2"	-	-	-	-	1.00	1.00	1.40	2.00	CHROME PLATED STOPS WITH BRAIDED FLEXIBLE SUPPLIES, CHEMDRAIN P-TRAP AND FITTINGS	-
P-6	EMERGENCY SHOWER	BY OTHERS	-	4"	2"	P-TRAP	-	1"	1"	-	-	-	-	-	-	-	6.00	PROVIDE GUARDIAN G6040 THERMOSTATIC MIXING VALVE	-

WATER HEATER SCHEDULE

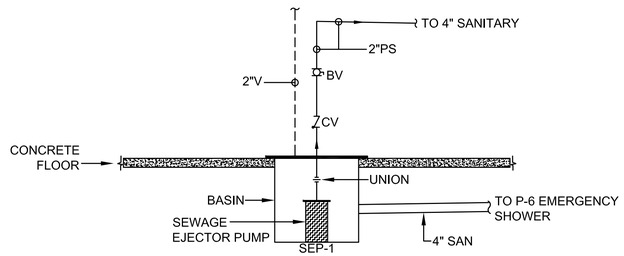
MARK	MAKE	MODEL	COLD	HOT	ELECTRIC VOLT/PH	ELECTRIC KW	GAS NG OR LG	GAS MBH INPUT	GAS THERM EFF %	STORAGE GALLONS	STORAGE TEMP (°F)	GPH RECOVERY (100°F)	ACCESSORIES & NOTES
WH-1	BRADFORD WHITE	LE150L3-3	3/4"	3/4"	208/1	4.5	-	-	-	50	140	18.0	HONEYWELL AM102-US-1LF THERMOSTATIC MIXING VALVE, AMTROL ST-8 EXPANSION TANK AND WATTS LFN36-M1 VACUUM RELIEF VALVE
WH-2	EEMAX	PR008240	1/2"	1/2"	208/1	5.8	-	-	-	ON DEMAND	105	-	-

PUMP SCHEDULE

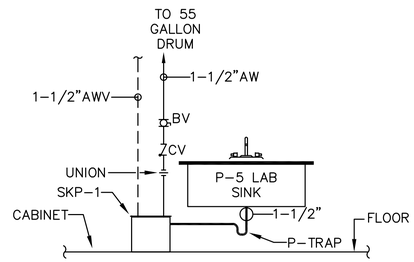
MARK	DESCRIPTION	MAKE	MODEL	GPM	HEAD (FT)	INLET (IN)	OUTLET (IN)	SAN (IN)	VENT (IN)	IW (IN)	ELECTRICAL VOLT/PH	ELECTRICAL HP	ACCESSORIES & NOTES
SKP-1	SINK PUMP	TOWN & COUNTRY	TCCA-427	10	20	-	1-1/2	-	1-1/2	-	115/1	1/3	-
SEP-1	SEWAGE EJECTOR PUMP	LIBERTY	P372LE51/A21	20	23	-	2	4	2	-	115/1	1/2	LIBERTY ARC18 RISER KIT



WATER HEATER PIPING DETAIL
NOT TO SCALE



SEWAGE EJECTOR PUMP (SEP-1) PIPING DETAIL
NOT TO SCALE



SINK PUMP (SKP-1) PIPING DETAIL
NOT TO SCALE

LEGEND & ABBREVATIONS

SAN	UG SANITARY
STORM	UG STORM
GW	GARAGE WASTE
GW	GARAGE WASTE
PS	UG PUMPED SANITARY
SAN	AG SANITARY
VENT	VENT
STORM	AG STORM
PS	AG PUMPED SANITARY
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RECIRC
AW	ACID WASTE
AWV	ACID WASTE VENT
G	GAS
CTE	CONNECT TO EXISTING
BV	BALL VALVE
MV	MIXING VALVE
ET	EXPANSION TANK
PRV	PRESSURE RELIEF VALVE
VRV	VACUUM RELIEF VALVE
BFP	BACKFLOW PREVENTER
TH	THERMOMETER
ECO	END CLEANOUT
DCO	DANDY CLEANOUT
TP	TRAP PRIMER
SA	SHOCK ABSORBER
AAV	AIR ADMITTANCE VALVE
BV	BALL VALVE
SAN	SANITARY
STM	STORM
W	WASTE
V	VENT
C OR CW	COLD WATER
H OR HW	HOT WATER
DN	DOWN
INV	INVERT
VTR	VENT THROUGH ROOF
UG	UNDER GROUND
AG	ABOVE GROUND
FD	FLOOR DRAIN
FS	FLOOR SINK
GT	GREASE TRAP
WH	WALL HYDRANT
RD	ROOF DRAIN
ORD	OVER FLOW ROOF DRAIN
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
PC	PLUMBING CONTRACTOR
GC	GENERAL CONTRACTOR
KEC	KITCHEN EQUIP.CONTRACTOR
NC	NORMALLY CLOSED
HWR	HOT WATER RETURN
FCV	FLOW CONTROL VALVE
HD	HUB DRAIN
G	GAS
HWH	HOT WATER HEATER
DHWP	DOMESTIC HOT WATER PUMP
AP	ACCESS PANEL
GW	GREASE WASTE
PSTM	PRIMARY STORM
SSTM	SECONDARY STORM

DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

PLUMBING PROJECT MANAGER:
MARK R. RENAUD
EMAIL: MARK@DESIGNDAYMECH.COM
PHONE: (603) 234-8282
ADDRESS: 118 MAGNOLIA DR, GOFFSTOWN, NH 03045

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
LICENSED PROFESSIONAL ENGINEER

PROJECT:
AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:
TW DESIGNS
STRATFORD, NEW HAMPSHIRE

WATER CALCS, LEGEND, SCHEDULES & DETAILS

REVISIONS:

DESIGNED BY: MRR
DRAWN BY: JKT
CHECKED BY: AWA

DDM JOB #: 20162
SCALE: AS NOTED

DATE: 12/23/2020

P-3

SHEET 3 OF 4

DIVISION 22 - PLUMBING SPECIFICATIONS

I) GENERAL

A) WORK INCLUDED:

1) THESE SPECIFICATIONS INCLUDE GENERAL REQUIREMENTS FOR ALL WORK REPRESENTED ON THESE DRAWINGS. NOT ALL SYSTEMS OR SYSTEM COMPONENTS DESCRIBED IN THESE SPECIFICATIONS ARE NECESSARILY INCLUDED AS A PART OF THIS PROJECT.

2) THE PLUMBING CONTRACTOR SHALL HEREAFTER BE DESCRIBED AS "THE CONTRACTOR" IN THIS PLUMBING SPECIFICATION. THE CONTRACTOR SHALL PROVIDE, INSTALL, PIPE AS REQUIRED, PLUMBING SYSTEMS AS DESCRIBED BELOW, AND SHOWN OR DESCRIBED ON THESE PLANS AND SPECIFICATIONS.

B) QUALITY ASSURANCE:

1) THE INTERNATIONAL PLUMBING CODE (IPC) 2015, NFPA 54-2015 NATIONAL FUEL GAS CODE, AND THE INTERNATIONAL ENERGY CONSERVATION CODE (IEEC) 2015 ARE THE GOVERNING CODES FOR ALL PLUMBING WORK. THE CODES AND STANDARDS REFERENCED IN THE PLUMBING CODE SHALL BE CONSIDERED A PART OF THE REQUIREMENTS OF CODE TO THE PRESCRIBED EXTENT OF EACH SUCH REFERENCE. WHERE DIFFERENCES OCCUR BETWEEN PROVISIONS OF CODE AND THE REFERENCED STANDARDS, THE PROVISIONS OF CODE SHALL APPLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE REQUIREMENTS OF ALL CODES AS THEY HAVE BEEN ADOPTED BY THE STATE AND THE LOCAL JURISDICTION.

2) EXCEPT AS SPECIFICALLY DESCRIBED OTHERWISE IN THESE SPECIFICATIONS, ALL COMPONENTS ALLOWED WITHIN THE ABOVE REFERENCED CODES SHALL BE ALLOWED AS A PART OF THE WORK.

3) THE WORKMANSHIP AND MATERIALS COVERED BY THESE SPECIFICATIONS SHALL CONFORM TO ALL ORDINANCES AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO, ALL APPLICABLE REGULATIONS OF THE CITY, COUNTY, AND STATE.

4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR PLUMBING PERMITS, TAXES, CONNECTION AND INSPECTION FEES AS REQUIRED FOR THE COMPLETE INSTALLATION OF THE PLUMBING SYSTEM. THE CONTRACTOR SHALL PROVIDE TO THE OWNER ALL CERTIFICATES OF INSPECTION ISSUED BY THE JURISDICTION.

5) THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE ALL CONDITIONS AFFECTING THE PROPER EXECUTION OF THE CONTRACT, VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.

6) DURING THE PROGRESS OF THE WORK, THE CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF ALL CHANGES MADE IN THE PLUMBING INSTALLATION FROM THE LAYOUT AND MATERIALS CONTAINED IN THE APPROVED DRAWINGS AND SPECIFICATIONS.

7) DRAWINGS AND CATALOG CUTS, SHOWING ALL PLUMBING EQUIPMENT AND SYSTEM COMPONENTS, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. FIELD MEASURE AND COORDINATE WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS AND ALL OTHER TRADES THE PROPOSED LOCATIONS FOR NEW EQUIPMENT AND COMPONENTS BEFORE PRODUCING SUBMITTALS. NO ITEMS SHALL BE PURCHASED OR ORDERED BEFORE APPROVAL IS GIVEN BY THE ENGINEER IN WRITING.

8) THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES.

C) RELATED DOCUMENTS:

1) THE GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTAL GENERAL CONDITIONS OF THE CONTRACT AND DIVISION 1 SPECIFICATION SECTIONS PROVIDED BY THE ARCHITECT, AND ALL OTHER DRAWINGS AND SPECIFICATIONS PROVIDED AS A PART OF THIS PROJECT, APPLY TO THIS DIVISION 22 AND TO ALL CONTRACTORS, SUBCONTRACTORS, OR OTHER PERSONS SUPPLYING MATERIALS AND/OR LABOR, ENTERING INTO THE PROJECT SITE AND/OR PREMISES, DIRECTLY OR INDIRECTLY.

2) THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO BE COMPLEMENTARY. A PARTICULAR SECTION, PARAGRAPH OR HEADING IN A DIVISION MAY NOT DESCRIBE EACH AND EVERY DETAIL CONCERNING WORK TO BE DONE AND MATERIALS TO BE FURNISHED. THE DRAWINGS ARE DIAGRAMMATIC AND MAY NOT SHOW ALL OF THE WORK REQUIRED OR ALL CONSTRUCTION DETAILS. DIMENSIONS ARE SHOWN FOR CRITICAL AREAS ONLY AS AN AID TO THE CONTRACTOR; ALL DIMENSIONS AND ACTUAL PLACEMENTS ARE TO BE VERIFIED IN THE FIELD. IT IS TO BE UNDERSTOOD THAT THE BEST TRADE PRACTICES OF THE DIVISION WILL PREVAIL.

3) ALL TRADE SUBCONTRACTORS ARE TO NOTE THAT THE ORGANIZATION OF SPECIFICATIONS INTO DIVISIONS, AND LIKEWISE THE ARRANGEMENT OF THE DRAWINGS, IS SET UP FOR THE CONVENIENCE OF UNDERSTANDING THE SCOPE OF THE WORK ONLY. THIS STRUCTURING SHALL NOT CONTROL THE GENERAL CONTRACTOR IN DIVIDING THE WORK AMONG TRADE SUBCONTRACTORS OR IN ESTABLISHING THE EXTENT OF THE WORK TO BE PERFORMED BY ANY TRADE. REFER TO GENERAL CONDITIONS.

II) PRODUCTS

A) GENERAL PLUMBING MATERIALS:

1) WATER HAMMER ARRESTORS: INSTALL APPROPRIATELY SIZED WATER HAMMER ARRESTORS AT FAST CLOSING POSITIVE SHUTOFF VALVES TO PREVENT WATER HAMMER.

2) ESCUTCHEONS: AT ALL FINISHED WALL PENETRATIONS, PROVIDE CHROME-PLATED SPLIT-RING ESCUTCHEON. INSIDE DIAMETER SHALL CLOSELY FIT PIPE OUTSIDE DIAMETER OR OUTSIDE OF PIPE INSULATION WHERE PIPE IS INSULATED. OUTSIDE DIAMETER SHALL COMPLETELY COVER THE OPENING IN FLOORS, WALLS, OR CEILINGS.

3) DIELECTRIC UNIONS: PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS FOR THE PIPE MATERIALS IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED), WHICH EFFECTIVELY ISOLATE DISSIMILAR METALS, TO PREVENT GALVANIC ACTION, AND STOP CORROSION.

4) SLEEVES: GALVANIZED STEELMETAL OR SCHEDULE 40 STEEL PIPE AS APPROPRIATE FOR THE WALL CONSTRUCTION.

5) DRIP PANS: WHERE REQUIRED, PROVIDE DRIP PANS FABRICATED FROM CORROSION-RESISTANT SHEET METAL WITH WATERTIGHT JOINTS, AND WITH EDGES TURNED UP A MINIMUM OF 2-1/2". REINFORCE TOP, EITHER BY STRUCTURAL ANGLES OR BY ROLLING TOP OVER 1/4" STEEL ROD. PROVIDE HOLE, GASKET, AND FLANGE AT LOW POINT FOR WATERTIGHT JOINT AND 1" DRAIN LINE CONNECTION.

6) FIRESTOPPING/FIRE-RESISTANT SEALANT: WHERE REQUIRED, PROVIDE A FIRESTOP SYSTEM APPROPRIATE FOR THE ASSEMBLY PENETRATED AND THE PENETRATING ELEMENT. USE ONLY FIRESTOP PRODUCTS THAT HAVE BEEN UL 1479 OR ASTM E 814 TESTED FOR SPECIFIC FIRE-RATED CONDITIONS CONFORMING TO CONSTRUCTION ASSEMBLY TYPE, PENETRATING ITEM TYPE, ANNULAR SPACE REQUIREMENT AND FIRE-RATING INVOLVED FOR EACH SEPARATE INSTANCE. SUBMIT MANUFACTUER'S SPECIFIC DETAIL FOR EACH TYPE OF PENETRATION.

7) ACCESS DOORS: WHERE REQUIRED FOR PROPER SERVICE AND MAINTENANCE OF ALL MECHANICAL COMPONENTS, PROVIDE STEEL ACCESS DOORS AND FRAMES, FACTORY-FABRICATED AND ASSEMBLED UNITS, COMPLETE WITH ATTACHMENT DEVICES AND FASTENERS SUITABLE FOR THE SERVICE.

8) VALVES: PRESSURE AND TEMPERATURE RATED AS REQUIRED TO SUIT SYSTEM PRESSURES AND TEMPERATURES. UNLESS OTHERWISE INDICATED, PROVIDE VALVES OF SAME SIZE AS UPSTREAM PIPE SIZE.

9) GAS PRESSURE REGULATING VALVES: GAS APPLIANCES SERVED BY ELEVATED GAS PIPING SYSTEMS SHALL INCLUDE EITHER GAS PRESSURE REGULATING VALVES WITH AN INDEPENDENT VENT PIPED TO OUTDOORS OR AN APPROVED GAS PRESSURE REGULATING VALVE AND VENT LIMITING MEANS COMBINATION.

10) THERMOMETERS: PROVIDE DIRECT MOUNT THERMOMETERS 9" ADJUSTABLE ANGLE TYPE, ALUMINUM CASE, ACRYLIC LENS, ORGANIC SPIRIT FILL OR SOLAR TYPE, SUITABLE FOR SERVICE REQUIRED. SELECT RANGE SUCH THAT NORMAL FLUID TEMPERATURES FALL WIITHIN THE MIDDLE THIRD OF THE DISPLAY. ACCURACY OF THERMOMETERS SHALL BE PLUS OR MINUS 1 PERCENT FULL SCALE. PROVIDE THERMOMETER WELLS, BRASS OR STAINLESS STEEL, PRESSURE RATED TO MATCH PIPING SYSTEM DESIGN PRESSURE.

11) PRESSURE GAUGES: PRESSURE GAUGES SHALL BE PHOSPHOR BRONZE BOURDON-TUBE TYPE, ALUMINUM OR BRASS CASE, GLASS LENS, SUITABLE FOR SERVICE REQUIRED. SELECT RANGE SUCH THAT NORMAL FLUID PRESSURES FALL WIITHIN THE MIDDLE THIRD OF THE DISPLAY. ACCURACY OF PRESSURE GAUGES SHALL BE PLUS OR MINUS 1 PERCENT FULL SCALE. PROVIDE PRESSURE GAUGE COCKS BETWEEN PRESSURE GAUGES AND GAUGE TEES, CONSTRUCTED OF BRASS WITH 1/4" FEMALE NPT ON EACH END, AND "T" HANDLE BRASS PLUG, WITH 1/4" BRASS BUSHING SNUBBER WITH CORROSION RESISTANT POROUS METAL DISC, THROUGH WHICH PRESSURE FLUID IS FILTERED. SELECT DISC MATERIAL FOR FLUID SERVED AND PRESSURE RATING.

12) SUPPORTS AND ANCHORS: HANGERS FOR PIPE UP TO AND INCLUDING 4" SHALL BE SWIVEL RING, SPLIT RING, WROUGHT PIPE CLAMP, BAND, ADJUSTABLE WROUGHT CLEVIS TYPE OR TRAPEZE. HANGERS FOR PIPES ABOVE 4" SHALL BE STANDARD CLEVIS, ROLLER OR TRAPEZE.

13) SADDLES AND SHIELDS: PROVIDE SADDLES AND SHIELDS UNDER PIPING HANGERS AND SUPPORTS, FACTORY-FABRICATED, FOR ALL INSULATED PIPING. SIZE SADDLES AND SHIELDS FOR EXACT FIT TO MATE WITH PIPE INSULATION.

B) IDENTIFICATION:

1) PROVIDE PIPE MARKERS, LINE MARKERS, VALVE TAGS, VALVE SCHEDULE FRAMES, AND EQUIPMENT MARKERS COMPLYING WITH ANSI A13.1 FOR LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS, AND INSTALLED VIEWING ANGLES OF IDENTIFICATION DEVICES.

2) SCHEDULES: SUBMIT VALVE SCHEDULE FOR EACH PIPING SYSTEM, TYPEWRITTEN AND REPRODUCED ON 8-1/2" X 11" BOND PAPER. TABULATE VALVE NUMBER, PIPING SYSTEM, SYSTEM ABBREVIATION (AS SHOWN ON TAG), LOCATION OF VALVE (ROOM OR SPACE), AND VARIATIONS FOR IDENTIFICATION (IF ANY), MARK VALVES WHICH ARE INTENDED FOR EMERGENCY SHUT-OFF AND SIMILAR SPECIAL USES, BY SPECIAL "FLAGS", IN MARGIN OF SCHEDULE.

3) PIPE MARKERS

(a) SNAP-ON TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, SEMI-RIGID, SNAP-ON, COLOR-CODED, PIPE MARKERS.

(b) PRESSURE-SENSITIVE TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, PERMANENT ADHESIVE, COLOR-CODED, PRESSURE-SENSITIVE VINYL PIPE MARKERS.

(c) INSTALL EVERY 40 FEET AND AT EACH CHANGE IN DIRECTION.

4) LINE MARKERS - UNDERGROUND TYPE: MANUFACTURER'S STANDARD PERMANENT, BRIGHT-COLORED, CONTINUOUS-PRINTED PLASTIC TYPE, INTENDED FOR DIRECT-BURIAL SERVICE; NOT LESS THAN 6" WIDE X 4 MILS THICK. PROVIDE TAPE WITH PRINTING WHICH MOST ACCURATELY INDICATES TYPE OF SERVICE OF BURIED PIPE.

5) VALVE TAGS: PROVIDE MANUFACTURER'S STANDARD BRASS OR PLASTIC VALVE TAGS WITH PRINTED ENAMEL LETTERING, WITH PIPING SYSTEM ABBREVIATION IN APPROXIMATELY 3/16" HIGH LETTERS AND SEQUENCED VALVE NUMBERS APPROXIMATELY 3/8" HIGH, AND WITH 5/32" HOLE FOR FASTENER.

6) VALVE TAG FASTENERS: MANUFACTURER'S STANDARD SOLID BRASS CHAIN (WIRE LINK OR BEADED TYPE), OR SOLID BRASS S-HOOKS OF THE SIZES REQUIRED FOR PROPER ATTACHMENT OF TAGS TO VALVES AND MANUFACTURED SPECIFICALLY FOR THAT PURPOSE.

7) VALVE SCHEDULES: PROVIDE VALVE SCHEDULES IN EITHER A 3-RING BINDER OR IN DISPLAY FRAMES, WITH SCREWS FOR REMOVABLE MOUNTING ON MASONRY WALLS. PROVIDE FRAMES OF EXTRUDED ALUMINUM OR PLASTIC WITH SSB-GRADE SHEET GLASS OR PLASTIC.

8) EQUIPMENT MARKERS: PROVIDE MANUFACTURER'S STANDARD LAMINATED PLASTIC, COLOR CODED EQUIPMENT MARKERS.

C) PIPE AND FITTINGS:

1) UNDERGROUND SANITARY AND STORM PIPE AND FITTINGS SHALL BE HUB AND SPIGOT, SERVICE (SV) CAST IRON OR SCHEDULE 40 PVC WITH DWV FITTINGS.

2) ABOVEGROUND SANITARY AND STORM PIPE AND FITTINGS SHALL BE NO HUB, SERVICE (SV) CAST IRON WITH NO HUB CLAMPS, SCHEDULE 40 PVC WITH DWV FITTINGS OR TYPE DWV COPPER PIPE AND FITTINGS.

3) ABOVEGROUND ACID WASTE DRAIN AND VENT PIPE AND FITTINGS SHALL BE CHARLOTTE SOLVENT WELD SCHEDULE 40 "CHEMDRAIN" WITH DWV FITTINGS. GLUE AND PRIMER SHALL BE AS SPECIFIED BY THE MANUFACTURER.

4) PRESSURE (EJECTOR OR SUMP PUMPS) SANITARY AND STORM PIPE AND FITTINGS SHALL BE NO HUB CAST IRON WITH NO HUB CLAMPS, TYPE DWV COPPER OR SCHEDULE 40 PVC PRESSURE PIPE AND FITTINGS.

5) ABOVEGROUND DOMESTIC COLD, HOT, AND HOT WATER RETURN WATER PIPE AND FITTINGS SHALL BE HARD DRAWN COPPER TUBE TYPE "L" WITH WROUGHT FITTINGS SOLDERED WITH LEAD FREE SOLDER OR COPPER PROPRESS FITTINGS, CPVC, OR ASTM F876/F877 SDR9 CROSSLINKED POLYETHYLENE (PEX-a) WITH ASTM F1960 COLD EXPANSION FITTINGS AND PEX REINFORCING RINGS INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

6) UNDERGROUND DOMESTIC WATER PIPE AND FITTINGS WITHIN THE BUILDING SHALL BE TYPE "K" ROLLED COPPER WITH NO FITTINGS BELOW SLAB OR ASTM F876/F877 SDR9 CROSSLINKED POLYETHYLENE (PEX-a) WITH ASTM F1960 COLD EXPANSION FITTINGS AND PEX REINFORCING RINGS INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

7) GAS PIPE AND FITTINGS SHALL BE SCHEDULE 40 BLACK STEEL WITH SCREWED MALLEABLE BLACK IRON FITTINGS OR MEGAPRESS G FOR SIZES 4 INCH & SMALLER AND WELDED STEEL FITTINGS FOR SIZES 5 INCH & LARGER.

8) PROVIDE AND INSTALL ISOLATION VALVES, UNIONS/FLANGES, MANUAL AIR VENTS, AND DRAIN VALVES AT ALL PIECES OF EQUIPMENT.

9) PROVIDE A DRAIN VALVE AT ALL LOW POINTS OF WATER PIPING.

10) CUT ALL HOLES OF SUFFICIENT SIZE AND HANG ALL PIPE SO THAT THERE WILL BE NO COPPER OR STEEL TO METAL CONTACT AND RESULTANT NOISE DURING PIPE EXPANSION AND CONTRACTION.

D) INSULATION:

1) ALL INSULATION SHALL BE UL APPROVED FOR A FLAME SPREAD RATING OF NOT OVER 25 AND A SMOKE DEVELOPED RATING OF NOT OVER 50.

2) ALL INSULATION SHALL CONFORM TO THE REQUIREMENTS OF THE ENERGY CODE.

3) PIPE INSULATION SHALL BE FIBERGLASS WITH ASJ AND PVC FITTING COVERS WITH FIBERGLASS INSERTS OR FLEXIBLE ELASTOMERIC THERMAL INSULATION (PROVIDE UV PROTECTIVE COATING ON ELASTOMERIC INSULATION THAT IS EXPOSED TO SUNLIGHT).

(a) COLD WATER PIPE INSULATION (CONDENSATION CONTROL)

(1) ½" THICK INSULATION FOR ALL COPPER PIPE SIZES.

(2) CPVC AND PEX COLD WATER PIPING DOES NOT REQUIRE INSULATION.

(b) HOT WATER AND HOT WATER RETURN (105-140F) PIPE INSULATION

(1) CIRCULATED SYSTEM COPPER, CPVC AND PEX PIPES

(i) 1" THICK INSULATION FOR 1-1/4" & SMALLER PIPE SIZES.

(ii) 1-1/2" THICK INSULATION FOR 1-1/2" & LARGER PIPE SIZES.

(2) NON-CIRCULATED RUNOUT COPPER, CPVC AND PEX PIPES

(i) PIPE UP TO EIGHT (8) FEET FROM CIRCULATED SYSTEM SHALL BE INSULATED AS ABOVE.

(ii) INSULATION IS NOT REQUIRED BEYOND EIGHT (8) FEET FROM CIRCULATED SYSTEM.

III) EXECUTION

A) EACH FIXTURE OR PIECE OR EQUIPMENT SHALL HAVE ISOLATION OR STOP VALVES.

B) ALL FIXTURES SHALL BE PROPERLY SUPPORTED WITH CARRIERS OR WALL HANGERS.

C) SANITARY SYSTEM SHALL BE PROPERLY TRAPPED, VENTED AND HYDROSTATICALLY TESTED WITH ACCESSIBLE CLEANOUTS IN ACCORDANCE WITH CODE REQUIREMENTS AND GOVERNING REGULATIONS.

D) THE CONTRACTOR SHALL PROVIDE ALL SUPERVISION, LABOR, EQUIPMENT, MATERIAL, MACHINERY, PLANS, RIGGING, AND ANY AND ALL OTHER ITEMS NECESSARY TO COMPLETE THE PLUMBING SYSTEM. SMALL DETAILS NOT USUALLY INDICATED ON THE DRAWINGS OR SPECIFIED, BUT WHICH ARE NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEM SHALL BE INCLUDED IN THE WORK AND IN THE CONTRACTOR'S ESTIMATE THE SAME AS IF HEREIN SPECIFIED OR SHOWN ON THE DRAWINGS.

E) THE CONTRACTOR SHALL INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. WHERE THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH THE MANUFACTURER'S RECOMMENDATIONS, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO BRING THIS TO THE ATTENTION OF THE ENGINEER.

F) THE CONTRACTOR SHALL INSTRUCT OWNER IN THE PROPER OPERATION OF EQUIPMENT, EXPLAIN THE PROPER OPERATING AND MAINTENANCE PROCEDURES AND SHALL FURNISH THE OWNER WITH ALL INSTRUCTION PAMPHLETS, BOOKS AND OTHER MATERIAL FURNISHED BY THE VARIOUS MANUFACTURERS

G) EQUIPMENT SHALL BE INSTALLED WITH CLEARANCE FOR PROPER MAINTENANCE. FILTERS, COILS, DRIVES, VALVES, AND CONTROLS SHALL BE ACCESSIBLE FOR SERVICING AND/OR REPLACEMENT.

H) EQUIPMENT SHALL BE COVERED FOR ONE YEAR FROM THE REVIEWING ENGINEER'S DATE OF ACCEPTANCE AND/OR THE DURATION OF THE MANUFACTURER'S GUARANTEE OR WARRANTY, WHICH EVER IS LONGER. THE CONTRACTOR SHALL FURNISH THE OWNER WITH ALL MANUFACTURER'S GUARANTEES OR WARRANTIES.

END OF DIVISION 22

DESIGN DAY Mechanicals Inc

THE PROJECT MANAGER FOR THIS PROJECT IS NOTED BELOW. PLEASE REFER ALL QUESTIONS, SUBMITTALS AND CORRESPONDENCE TO THE PROJECT MANAGER.

PLUMBING PROJECT MANAGER:
MARK R. RENAUD
EMAIL: MARK@DESIGNDAYMECH.COM
PHONE: (603) 234-8282
ADDRESS: 118 MAGNOLIA DR, GOFFSTOWN, NH 03045

STATE OF NEW HAMPSHIRE
ANDREW W. ARSENAULT
No. 7099
LICENSED
PROFESSIONAL ENGINEER

PROJECT:
AGILYX
TENANT
FIT-UP
124 HERITAGE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

FOR:
TW DESIGNS
STRATFORD, NEW HAMPSHIRE

REVISIONS:

FIRST FLOOR DOMESTIC WATER & GAS PIPING PLAN

DESIGNED BY: MRR
DRAWN BY: JKT
CHECKED BY: AWA

DDM JOB #: 20162
SCALE: NONE

DATE: 12/23/2020

P-4

SHEET 4 OF 4