COOPER UNIVERSITY HEALTH CARE – CENTER FOR HEALING (CCFH) / PSYCH

MEP BASIS OF DESIGN DOCUMENT SUBMISSION

WSP PROJECT NO: B2305287.000 DATE: FINAL OCTOBER 24, 2023

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GENERAL INFORMATION

Project Description: Cooper University Healthcare (CUHC) has entered into an extended lease agreement with the landlord of an existing three-story Building located at 808 Market Street in Camden, NJ. Cooper intends to take over the entire 2nd Floor totaling approximately 16,000 SF to support the needs of a new Integrated Care Space - Perinatal SUD Center of Excellence Clinic – also to be called the Cooper Center for Healing (CCFH).

The scope of the project will consist of a complete interior renovation of the 2nd Floor of the existing building, to accommodate a new Integrated Care Space: Perinatal SUD Center of Excellence Clinic. Additional program information is outlined below and for the development of this MEP Systems Basis of Design Document, we have utilized the floor plan layout as represented in Figure No. 1:

a. 16 exam rooms minimum – 20 ideal (8 OB/Primary Care/Peds capable exam rooms + 4 Addiction exam rooms + 4 pain/interventional exam rooms)

b. 8 Consult rooms (psych, behavioral health, navigators, nurses)

c. Peds development eval space

d. Group Room Space (1-2 group rooms)

e. Childcare Space

f. Provider work room

g. Storage (for baby items + clothing)

h. Lab + patient restrooms with specimen pass through window samples

i. Patient waiting/community space with kitchenette

j. Ideally co-located with Peds/Adolescent BH + Peds Development Specialists

The space will be classified as a Business Use Group and will not need to meet FGI requirements for an outpatient healthcare space nor will it require anti-ligature system design requirements. The project will be permitted through local Authority Having Jurisdiction (AHJ) and will not need to be submitted to NJ Department of Community Affairs (NJDCA) and NJDOH. In addition, the existing occupied spaces within this existing building are not sprinklered and it is understood that providing sprinklers on the 2nd Floor to support the Cooper space is not required.

We understand that the Landlord will demolish the existing branch MEP systems on the 2nd Floor space in advance of this project starting. With that said, it is assumed that the existing normal electrical service and gear, the existing incoming water service and the existing outgoing sanitary service are all adequate to support this project.

Purpose: The purpose of this document submission is to conceptually identify the MEP Engineered System approach that will be implemented in support of this project.


Cooper University Health Care
FEDERAL STREET
ADDICTION MEDICINE
PSYCHIATRY & BEHAVIORAL HEALTH
MARKET STREET
FLOOR PLAN - SCHEMATIC DESIGN PLAN
NOT TO SCALE
e4h ENVIRONMENTS FOR HEALTH ARCHITECTURE
COOPER UNIVERSITY HEALTH CARE
CENTER FOR HEALING/PSYCH
SCHEMATIC DESIGN PLAN
9/05/2023

Figure No. 1

DESIGN CRITERIA

Codes and Standards: The following codes and standards have been referenced and utilized in the development of this document:

- New Jersey Uniform Construction Code
- International Building Code (IBC) 2021
- International Energy Conservation Code (IECC) 2021
- International Plumbing Code (IPC) 2021
- International Fire Code (IFC) 2021 – as it applies to the scope of this project
- NFPA 70, The National Electrical Code
- NFPA 90A, Installation of Air Conditioning and Ventilating Systems
- The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Handbooks
- The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 170-2018
- National Standard Plumbing Code
- Local Code Authorities, State of NJ

Outdoor Design Conditions: The following outdoor design conditions, taken from ASHRAE, will be utilized in the development of systems in support of this project:

- Exterior Winter: 10°F DB (ASHRAE 99% Condition)
- Exterior Summer: 90.1°F DB / 74.5°F WB (ASHRAE 1% Condition)

Indoor Design Conditions: The following indoor design conditions will be utilized in the development of the systems in support of this project:

- Winter: 72°F DB +/- 2°F with no humidity control
- Summer: 75°F DB +/- 2°F with no humidity control

Ventilation Requirements: The spaces will be ventilated in accordance with current ASHRAE standards according to the following:

- People: 5 CFM per Person overall, 7.5 CFM per Person in Laboratory
- Program: 0.06 CFM per SF overall, and greater for break, storage and specialized rooms as required.

EXISTING CONDITIONS

Initial Observations: The existing building is three stories high plus a basement. The 3rd floor is currently occupied but we understand that the current 3rd floor tenant is being relocated to the 1st floor and the 1st floor tenant is being relocated to the 3rd floor. The second floor is currently being demolished for use by Cooper. The first floor is currently under construction and is substantially completed. Most of the 1st Floor space is based on an open ceiling concept to maximize head space due to the tight floor-to-floor height. The landlord on site technician noted that the 1st Floor tenant has expressed concerns about the quantity of 2nd Floor plumbing system penetrations into their space.

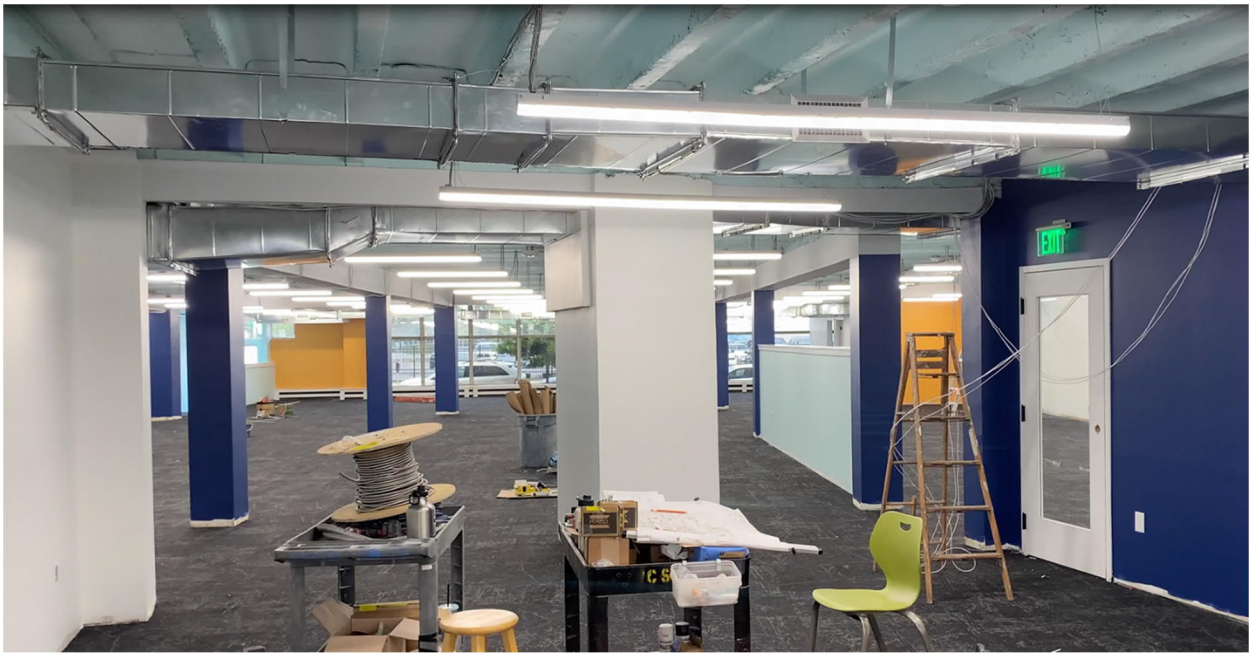


Photo No. 1: Existing 1st Floor Conditions with No Ceilings and Exposed Ductwork

The 2nd Floor is currently being demolished but there are still tenants occupying space. Existing ceiling height is 7'-4" to the drop/ACT ceiling, with a 9'-5" plaster ceiling above concealing the concrete slab above on the second floor. Ductwork is run tight to that 7'-4" ceiling due to concrete beam conditions (low ceilings). Need to be cautious of intended ceiling heights. Our approach may need to utilize exposed ceilings similar to the first floor. The landlord site technician made a note that the beams cannot be penetrated and therefore our mechanical, electrical, and plumbing systems will need to be routed beneath the elevation of the beams.

Photo No. 2: Existing 2nd Floor Dual Ceiling with Low Ductwork Conditions

HVAC Systems:

- Building Heating - There is one natural gas fired Burnham steam boiler located in the basement which serves heating coils in the air conditioning units on multiple floors. There is one LAARS natural gas fired hot water boiler located in the basement that serves perimeter baseboard heating elements on multiple floors. Both boilers have been recently installed (vintage 2022). As such, they are in good shape. An evaluation of capacity relative to supporting the Cooper project needs to be completed.
- 2nd Floor – The 2nd floor HVAC systems consists of two York constant volume split system air conditioning units with steam heating coils which are located in an enclosed Mechanical Equipment Room (MER) on the second floor (located on the west wall at the middle of the building). Each AC unit is associated with a dedicated rooftop condensing unit with refrigerant piping running to and from each unit respectively. Supply air is ducted through the space above the ceilings but in some cases the main supply air duct is located below the ceiling level. Return is brought back to the MER through large return air louvers located at the Corridor wall of the MER, louvers in the door going into the MER. It is obvious that the return air path is through the Corridors below the ceilings which is in violation of current codes.

- We also observed that the existing outside air intake louvers were boarded up on the inside of the louver within the MER. This installation does not allow for any outside air to be introduced into an occupied space which is required by code.
- There are hot water baseboard heaters running continuously along the perimeter below the windows. We did not observe any hot water reheat coils in the ductwork.
- There are bathroom exhaust fans exhausting out to the exterior wall (~60' run) at the 2nd floor level. This exhaust does not go up through the roof. We will need to exhaust the new toilet rooms up through the 3rd Floor and through the roof.

Electrical Systems:

- Building – The building main electrical consists of 120/208, 3 phase service. The main switchboard is located in a basement electrical room. There is a main disconnect. The main basement switchboard feeds all the electrical loads of the building. The basement switchboard directly feeds most large HVAC electrical loads and feeds all other electrical panels. Because the electrical service is at 120/208V 3-phased, there are no step-down transformers, but most circuits are larger to accommodate the smaller voltage.
- 2nd Floor – There are two electrical panels on the 2nd Floor. One is located near the mechanical room and the other is in the elevator lobby. They are "Pushmatic" Panels dating back to the 1950's. They are no longer manufactured, and we recommend that these panels be removed, and new panels be installed for the following reasons:
    - These panels are old and beyond the end of useful life.
    - Replacement breakers are available but cost much more than modern circuit breakers for modern panels.
    - "Pushmatic" circuit breakers in general require more maintenance, and if not greased regularly, they tend to become "stuck" where it is difficult to tell if the circuit breaker is closed or open. These "stuck" breakers fail to open during faults and become a fire hazard.

Plumbing Systems:

- Building – The building water service is a 4" diameter combined service that splits into a 4" diameter sprinkler service to feed the basement and a 2" diameter cold water service up to the building meter. After the building water meter, the cold-water line increased to 2-1/2" diameter. The system does not include a backflow prevention device on the cold-water service.
- We observed that there is a small in-line domestic cold-water pump that is not operating and has been bypassed. We observed the pressure gauge in the basement that read out 45 psi of pressure. We are concerned about the incoming water

pressure and will be requesting that pressure measurements be taken immediately to inform our team of the actual incoming pressure.

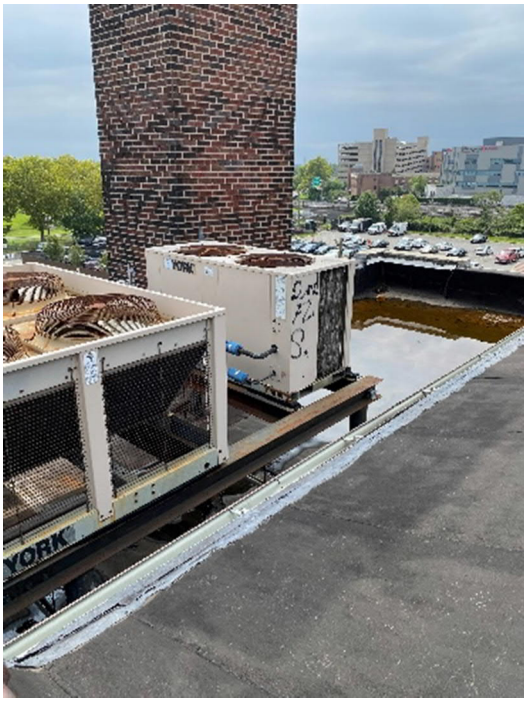
- We were not able to observe the existing sanitary line exiting the building. Additional survey will be required.
- 2nd Floor – There is an electric 50-gallon tank type hot water heater installed in an existing Janitor's closet located on the 2nd Floor. We did observe 4" diameter cast iron sanitary piping extending down into the 1st Floor from the floor mounted tank type water closets located toward the interior of the building on the 2nd Floor. It should be noted that the existing tenant was still located in about 20% of the existing 2nd Floor space so we were not able to survey the total area. There may be some additional water heaters located in this area.
- There are only approximately four existing locations with plumbing fixtures. Upon review of the planning documents presented this week, it appears that there will be many more fixtures thus there will be many more sanitary drain points that go down into the 1st floor and potentially into the basement and vents that will need to travel up through the 3rd floor and the roof.
- New plumbing runs will need to be managed very carefully underneath beams and will need extra attention for penetrations from floor to floor. The 1st Floor tenant will be impacted!

Fire Protection Systems:

- Building – The only sprinklered space is the basement.
- 2nd Floor – The 2nd Floor is currently not sprinklered (note that the 1st Floor is also not sprinklered)

Initial Concerns: The following represent a summary of our initial concerns following our first survey visit:

- The existing HVAC Units presently installed in the 2nd Floor MER are over 21 years old and have reached the end of their useful service life. In addition, it would appear that the current design utilized the occupied space as a path for return air to get back to these units through large registers located on the walls of the MER. Utilizing the corridor as a return air plenum is not code compliant. Based on age, condition and type of the existing systems, we are proposing that new HVAC systems be provided to support this project.
- The existing low floor-to-floor height will present problems with duct distribution thus impacting ceiling heights throughout the space and most likely requiring several strategic ceiling soffits located throughout the space.



The low floor to floor height will drive our new HVAC system selection.

- The rooftop condensers appear to have a lot of water collecting underneath them. This should be investigated.
- The roof membrane itself appears to be collecting some water ('waterbed' condition). This should be investigated.
- The existing electrical gear is old and may not be suitable for upgrades – we recommend that an electrical contractor be engaged to make an assessment.
- The existing electrical panels on the 2nd Floor are old and no longer manufactured.
- The existing domestic cold water booster pump is non-operational. We have concerns about the existing water pressure. This should be tested.
- There does not appear to be a code compliant back-flow prevention device on the incoming water service and on the fire water service.

PROPOSED MEP SYSTEM APPROACH

Mechanical Systems Demolition: With the exception of the perimeter baseboard hot water heating, the existing Heating Ventilating and Air-Conditioning (HVAC) systems currently serving the second floor are beyond their end of life and are unsuitable to serve Cooper's Center for Healing. These systems must be demolished in their entirety to accommodate Cooper's needs, including but not limited to:

- Two air handling units located in the mechanical room along with all related accessories.
- Two rooftop condensing units
- HVAC duct distribution systems and air terminal devices
- Existing controls
- Toilet exhaust fans, exhaust ductwork and exterior wall discharge outlets

Mechanical Systems New Work: The proposed HVAC system is based on a Variable Refrigerant Flow (VRF) system supported by a Dedicated Outdoor Air (DOAS) unit. In addition, exhaust air fans shall serve toilet rooms, labs and similar spaces.

The VRF system shall include but not limited to:

- Rooftop heat pump condensing unit.
- Concealed VRF fan coil units with integrated coil condensate lift pump - Similar spaces shall be grouped into zones and served by a single ducted VRF fan-coil units. Supply and return ductwork shall extend from the VRD fan coil unit to each space. Outdoor air shall be connected to return ductwork through a ducted system served by the DOAS unit.
- Spaces requiring individual control such as group meeting rooms, work rooms and reception areas will be served by wall hung or ceiling suspended VRF fan-coil units with integrated coil condensate lift pump.
- Multi-port change-over boxes in quantities required to serve each fan coil unit configured for cooling, heat pump and heat recovery.
- Three pipe refrigerant distribution piping system to interconnect rooftop units with change-over boxes and space VRF fan coil units.
- Manufacturer provided Programmable wired zone controller for each individually controlled zone or space.
- One manufacturer provided central controller.
- Interconnecting control wiring.

Note that Outdoor split Condensing Unit's are approx. 20 weeks and Air Handling Units are approx. 42 weeks

The New Jersey Uniform Construction Code and ASHRAE standard Outdoor air required ventilation shall be provided by the DOAS unit configured as follows:

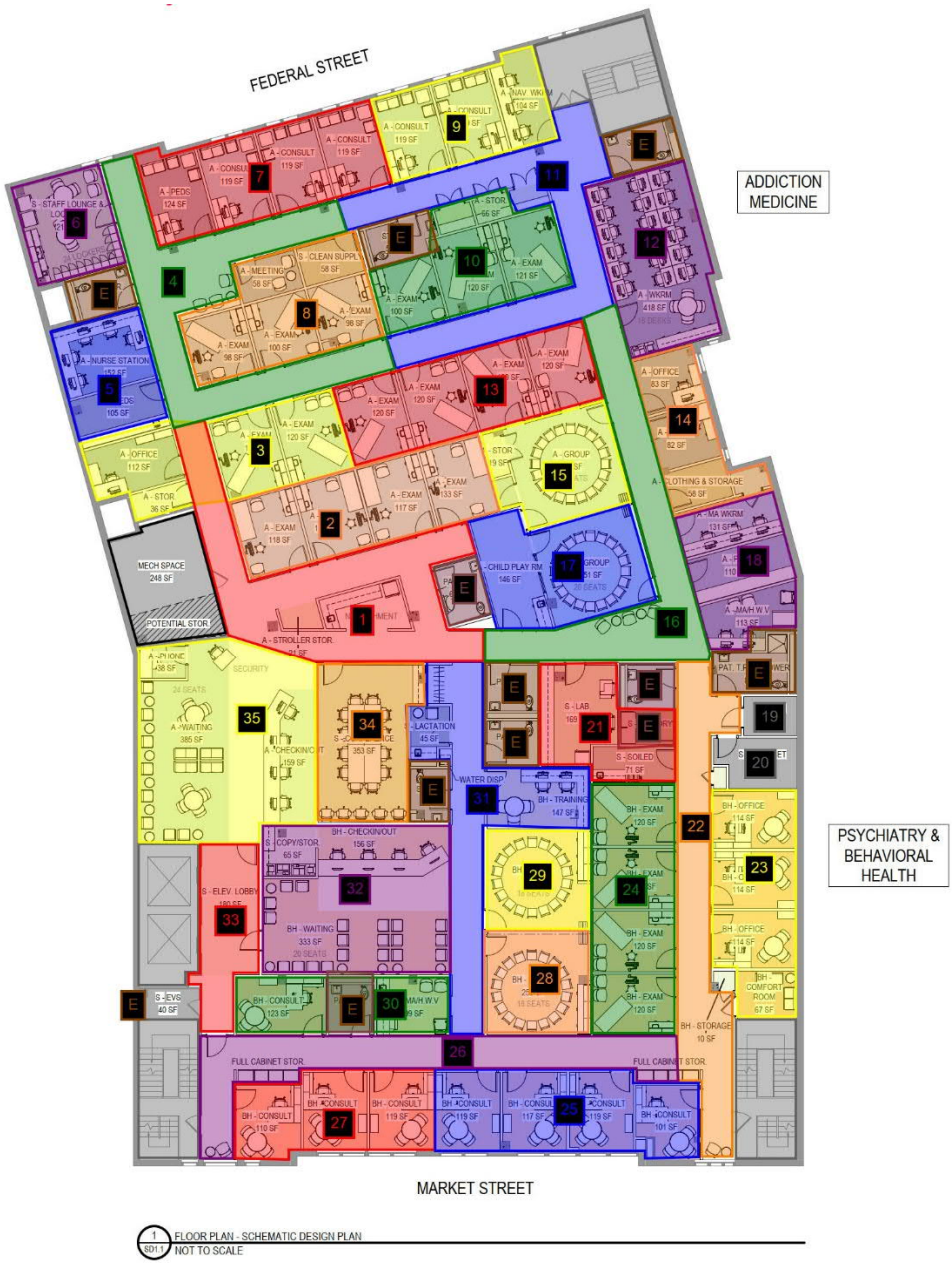
- Indoor air handling unit configured with Merv 8 filters, steam pre-heat coil, DX cooling coil and fan wall type supply air fans. DOAS Unit proposed installation into the existing 2nd floor mechanical room with connections to the existing outside air intake louver.

- ADD ALTERNATE M-1: Provide a steam-to-steam humidifier similar to DRI-STEEM Model STS with appropriate components and controls to make for a complete system. Provide steam piping from the humidifier (located in the MER on the 2nd Floor) to the dispersion tube(s) to be located in the supply air ductwork downstream of the new DOAS unit or within the new DOAS. Ductwork housing the dispersion tube(s) shall be constructed of aluminum or stainless steel for at least 3 feet upstream and 5 feet downstream of the dispersion tube(s). This ductwork shall be sloped to a low point with a drain connection to the nearest floor drain (typical).
- Rooftop condensing unit(s) with a capacity of approximately 25 tons configured to provide refrigerant hot gas reheat and low ambient controls to 0 deg F.
- Condensing unit(s) may be by the VRF system manufacturer, integrated into the central VRF system and interconnected to the DOAS unit utilizing VRF manufacturer's DX-Kit for general AHU connection.
- The rooftop condensing and DOAS units shall be interconnected with refrigerant piping and controls.
- Outside air shall be distributed through ductwork extending from the DOAS unit to the fan-coil unit inlets or directly to the occupied spaces.

IT closet conditioning:

- Provide approx. 1.5-ton ductless split-system air conditioning unit, wall mounted fan coil unit, roof-mounted condensing unit.
- Provide condensate pump, piping as required.

Refer to Figure No. 2 which identifies a suggested zoning plan (35 zones are proposed at this time) for the new VRF system:



WSP - PRELIMINARY HVAC ZONING PLAN

Figure No. 2

A new fully digital control system consisting of a front-end computer capable of controlling the devices installed as part of this project plus 20% spare capacity will be provided. Provide full graphics package and all electronic control devices and actuators and the capability of remote signaling to Cooper Main Hospital Campus control system.

Refer to appendix for preliminary performance schedules and general system diagram.

Electrical Systems Demolition: Fused disconnect switches located in the existing main switchboard in the basement shall be replaced. If they are not replaced (pending

engineering review), the switches should be rehabilitated for the new installation with existing fuses discarded and replaced with new fuses.

The existing "Pushmatic" panels on the 2nd floor shall be removed and discarded. All circuits (conductors and conduits) from these panels are to be removed and discarded. Feeders and conduits for the 2nd floor electrical panels shall be removed from the main switchboard to the panels and discarded.

The associated electrical power circuits (conductors and conduits) and disconnect switches for any existing HVAC and plumbing equipment that is to be demolished shall be removed and discarded. Any power circuits for HVAC or plumbing equipment fed from a panel that is to remain shall be prepared as to have these power circuits extended to the new panel locations. Refer to the Mechanical and Plumbing system narratives for more information.

All existing lighting fixtures, lighting switches, receptacles are to be removed and discarded.

All existing fire alarm systems for the floor shall be removed and discarded. This will include all the fire alarm control panels, smoke detectors, heat detectors, manual pull stations, combination visual and audio notifications devices, etc.

Electrical Systems New Work: The two existing electrical panels that are being removed as part of demolition for the 2nd floor will be replaced by (2) 42-circuit double panels. One double panel will consist of one electrical panel with a main 200-amp circuit breaker, 200-amp bus and a pass-through lug termination and another panel with main lug terminations and 200-amp bus. The two panels will be connected to one another with (4) #4/0 Copper conductors via the pass-through lug and the main lug. This will allow for 84 circuits for each double panel set. The panel manufacturer shall be Square D.

New 200-amp fused disconnect switches (unless otherwise provided) shall be connected to (2) sets of (5) #4/0 copper conductors to feed the (2) double panels. This design is pending engineering, due to the number of expected circuits and the expected power load associated with the new circuits. In the event that additional circuits must be powered from the new 2nd floor panels, these panel bus sizes, their feeders, their feeder conduits and circuit location in the main switchboard will change and increase in size and/or location.

One double panel will go into the existing mechanical space (assuming that there is space for this panel adjacent to the new HVAC unit) and the other double panel will go into the new electrical closet. Additional investigation is required to confirm that the electrical chase for the existing panels is in the area of the existing mechanical room. This report assumes that a 2-1/2" electrical conduit will need to go from the existing mechanical room to the new electrical closet. Due to low ceiling heights, the simplest path for this feeder conduit is to go through the central corridor between the Addiction Medicine and the Psychiatry & Behavioral Health areas.

Any new HVAC and plumbing equipment originally fed directly from the basement switchboard shall have new fused disconnect switches in the basement switchboard and will also have new feeder and conduit from the basement switchboard. Any power circuits for HVAC or plumbing equipment feed from a panel that is to remain shall be its power circuits extended to the new panel locations (to be determined). Local Square D manufactured disconnect switches shall be provided for the new & existing HVAC and plumbing equipment.

All new LED lighting fixtures will be installed within the spaces. Lighting occupancy sensors will be installed at designated areas for designated fixtures (to be determined). Lighting fixtures will be determined by others in accordance with the Cooper University Hospital

design standards. Lighting fixtures most likely to be surface mounted or short pendant style. Egress and Emergency lighting will be combination of two head lighting fixtures and battery backup normal lighting fixtures (to be determined). All new receptacles shall be installed as required by code and appliance.

Most conduits and cables will be installed in the inside walls but due to the low ceiling heights most of these conduits will exit one wall to enter another wall, or they will be run across the ceiling of the corridors (to be determined).

A new fire alarm system will be installed to integrate with the existing building fire alarm system. The new fire alarm system will consist of smoke detectors, heat detectors, manual pull stations, audio/visual notification devices, fire alarm control panel, fire alarm annunciator panel, etc (to be determined). Second floor fire alarm control panel shall communicate with main building fire alarm control panels, which will activate the fire alarm for the rest of the building, activate the elevator recall function, and contact the local fire department.

Plumbing Systems Demolition: All existing Plumbing fixtures currently located within the 2nd floor leased space shall be removed in its entirety. Existing fixtures to be expected to be removed including but not limited to Water closets, Lavatories, Kitchen sinks, Janitor sinks and Floor drains.

All existing domestic cold water, domestic hot water, sanitary and vent piping systems associated with the fixtures that are being removed shall be removed in its entirety back to their respective main systems where the connection shall be valved and capped. Removal of these systems shall be done in a code compliant manner back to active mains so as not to leave any dead ends/legs in the existing plumbing systems.

All existing water heaters serving the 2nd floor leased space shall be removed in their entirety. The existing water heaters are presumed to be of the Electric type variety. It is assumed based on the current landlord lease agreement that all removals shall be conducted by the Landlord prior to the commencement of this project. All existing risers feeding the 3rd floor that become exposed due to the removals of existing walls shall be rerouted as part of this project behind new wall locations to avoid having exposed piping running through the 2nd floor leased space. Coordination between the architect and the landlord shall be required for all cases where this situation is identified to exist.

Plumbing Systems New Work: The new plumbing scope shall consist of extending new domestic Cold water, Domestic hot water, Domestic hot water return, Sanitary and Vent piping systems to support the new installed plumbing fixtures located throughout the floor according to the latest architectural backgrounds.

The new plumbing fixtures are proposed to consist of at least the following: Water closets with hardwired flushometers, Lavatories with sensor type battery operated faucets, Exam room sinks with manual faucets, Stall showers, floor drains, janitor sinks.

The new Domestic cold-water system shall be a 2-1/2” tap connected to a point directly downstream of the existing water meter in the Basement floor. This tap shall be extended from the basement floor to the 2nd floor for distribution to all new plumbing fixtures.

The new domestic hot water system shall be generated from a new hybrid electric/heat pump hot water heater which will be located within a room on the 2nd floor. The proposed make and model of this water heater is AO SMITH CAHP 120. The proposed recovery and capacity of this unit is 120 Gallons at 90 GPH. The anticipated lead time for this unit at this

current time is 4 months.

In conjunction with this unit, there will be an Expansion tank and Hot water return circulation pump installed. The proposed make and model number for the expansion tank is AMTROL ST-42VC-DD. The anticipated lead time for this unit at this current time is 2 months. The proposed make and model of the circulation pump is Bell & Gossett PL-55. The anticipated lead time for this unit at this current time is 3 days. The proposed storage temperature shall be 140 degrees Fahrenheit. The proposed distribution temperature shall be 120 degrees Fahrenheit via a Central mixing valve. Additionally, local mixing valves shall be provided at each plumbing fixture.

The domestic water distribution system piping is proposed to consist of Tyle L hard drawn Copper tubing with press on fittings. At the time of the development of this report, it was observed that the current water pressure in the incoming water service located in the basement was 45 PSI. Water pressure readings in the Basement and 2nd floor are required to determine what pressure is available to the tenant in order to make adequate plumbing fixture selections (i.e. flushometers for water closets require 35 PSI to function properly).

The new sanitary system shall serve the new plumbing fixtures on the 2nd floor and shall be installed and run in the ceiling of the 1st floor. Based on the quantity and location of the new sanitary drain points, it is currently proposed that the new sanitary system shall be extending from the ceiling of the first floor down into the basement to points of connections to be field verified and determined during the design phase of this project. Based on the configuration of the structural system in the 1st floor ceiling and the lack of a drop ceiling (i.e. all piping shall be exposed), new plumbing runs will need to be managed very carefully underneath beams and will need extra attention for penetrations from floor to floor. It should be noted that the 1st floor shall be occupied at the time of construction of this project and careful coordination will be needed to complete this work in a timely manner.

The new vent system shall serve the new fixtures on the 2nd floor and shall be installed in the ceiling of the 2nd floor. Based on the quantity and location of the new venting points, it is currently proposed that the new vent system shall be extending from the ceiling of the 2nd floor up through the 3rd floor to new vents through the roof (VTRs) at the existing roof. The locations of the new VTRs are to be field verified and determined during the design phase of this project. It should be noted that the 3rd floor shall be occupied at the time of construction of this project and careful coordination will be needed to complete this work in a timely manner.

The new sanitary/vent piping systems are proposed to be schedule 40 no hub cast iron piping with No Hub fittings. Currently there is no Gas or Stormwater work proposed as a part of this project.

AIR HANDLING UNIT PERFORMANCE SCHEDULE																							
NUMBER	SERVICE	TOTAL CFM	OA CFM	HOT GAS RE-HEAT COIL				DIRECT EXPANSION COOLING COIL								SUPPLY FAN - DIRECT DRIVE ARRAY					FINAL FILTER MERV 14 SQ.FT.	NOTES	COMMENTS
				CFM	RISE °F	MBH	MAX SP IN WG	CFM	EAT °F DB	EAT °F WB	LAT °F DB	LAT °F WB	TOTAL MBH	SENS MBH	MAX SP IN WG	CFM	SP IN.WG	MIN QTY	HP TOTAL	ELECT			
DOAS-1	VENTILATION AIR TO 2ND FLOOR	4,000	4,000	4,000	15.0	70	0.1	4,000	92.7	75.6	55.0	54.9	281	160	1.0	4,000	3.0	TBD	TBD	480V-3Ph-60Hz	TBD	SEE BELOW	BASIS OF DESIGN: YORK (JCI) SOLUTION INDOOR CUSTOM AHU WITH SPLIT CONDENSING UNIT (CU-02-02) ON ROOF

NOTES:

1 CONFIGURE UNITS FOR FIELD ERECTION USING POST AND PANEL CONSTRUCTION
2 INTAKE AIR PLENUM
3 RELIEF AIR SECTION
4 OUTSIDE AIR / MIXING SECTION
5 COMPLETE DDC PACKAGE COMPATIBLE WITH JOHNSON CONTROLS BUILDING MANAGEMENT SYSTEM (BMS)
6 PROVIDE UNIT WITH HOT GAS BYPASS CAPABILITY

DIRECT EXPANSION - VARIABLE REFRIGERANT FLOW - CONDENSING UNIT																					
SYMBOL	LOCATION	SERVICE	CAPACITY MBH	REFRIGERATION		COMPRESSOR				OUTDOOR COIL			CONDENSER FANS		ELECTRICAL (UNIT A + UNIT B)				OPERATING WEIGHT(S) (UNIT A + UNIT B) LB.	BASIS OF DESIGN	COMMENTS
				TYPE	MIN CIRCUITS	NO	TYPE	RLA EA	MCC EA	ROWS	FPI	MIN AREA SQ FT	QTY	HP EACH	VOLTS	PHASE	MCA	MOCP			
CU-02-01	ROOF	FCU CIRCUITS	312	R-410A	TBD	2	INVERTER	TBD	TBD	TBD	TBD	TBD	4	TBD	480	3	34+30	40+35	860+737	YORK SERIES YVAHR	REFER TO NOTES
CU-02-02	ROOF	DOAS CIRCUITS	312	R-410A	TBD	2	INVERTER	TBD	TBD	TBD	TBD	TBD	4	TBD	480	3	34+30	40+35	860+737	YORK SERIES YVAHR	REFER TO NOTES

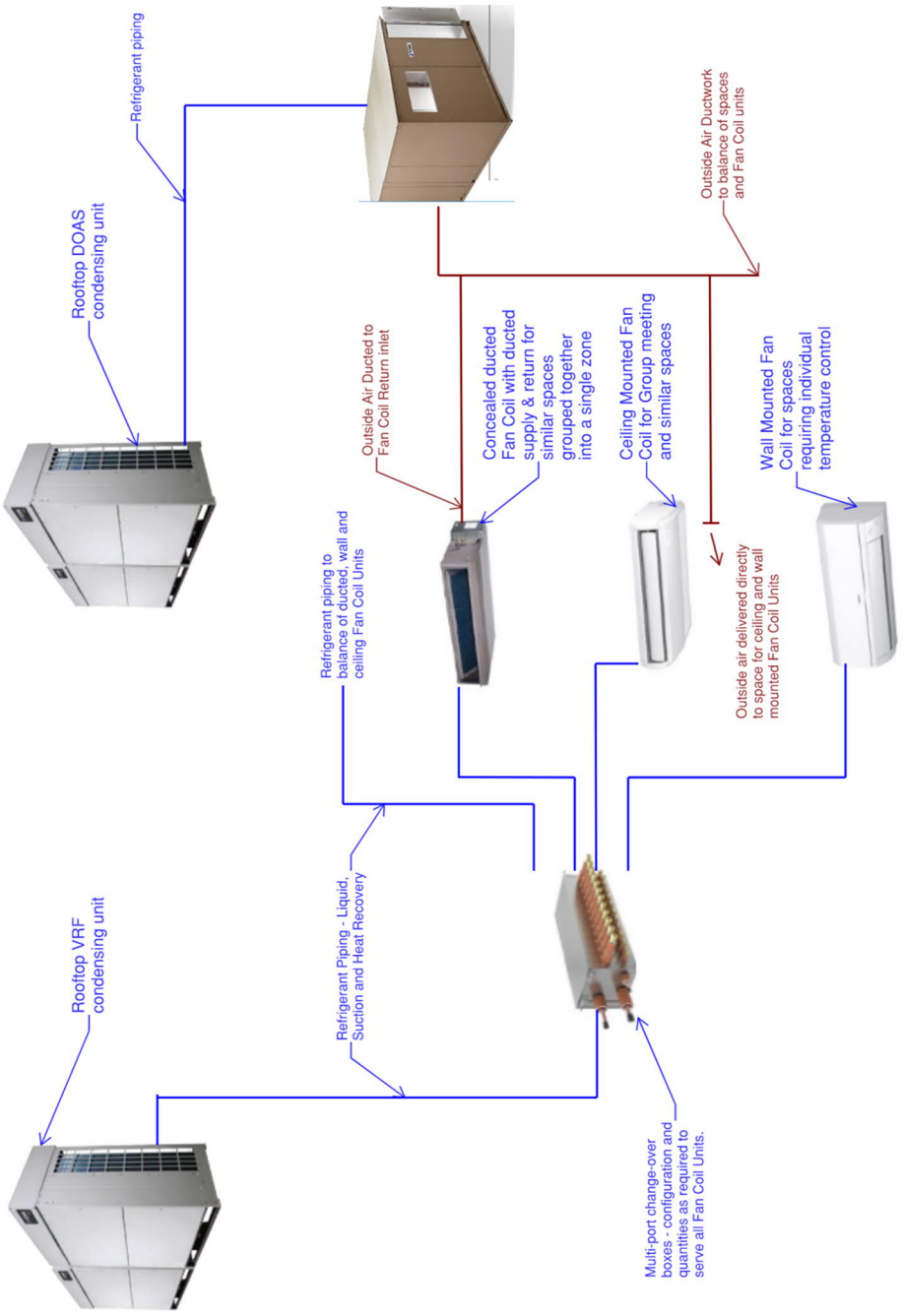
NOTES:

1. UNIT MATCHED TO VRF SYSTEM
2. SINGLE POINT POWER CONNECTION
3. PROVIDE LOW AMBIENT CONTROL TO 0 DEG F
4. PROVIDE HOT GAS BYPASS TO DOAS UNIT
5. PROVIDE LOCAL DISCONNECT
6. PROVIDE ROOFTOP EQUIPMENT SUPPORT RAILS
7. CONDENSING UNIT RATINGS ARE AT 45 DEG F SATURATED SUCTION TEMPERATURE AND 95 F ENTERING-AIR TEMPERATURE.

DIRECT EXPANSION - VARIABLE REFRIGERANT FLOW - FAN COIL UNIT SCHEDULE

SYMBOL	LOCATION	SERVICE	TOTAL CFM	FILTER		FAN		COOLING COIL							REFRIGERANT	OPERATING WEIGHT LBS	BASIS OF DESIGN	COMMENTS
				TYPE	TYPE	EXT. SP IN.WG	ELECT	EAT °F DB	EAT °F WB	LAT °F DB	LAT °F WB	TOTAL MBH	SENS MBH	MIN FAC AREA SQFT				
FCU-02-01	CORRIDOR	CORRIDOR, NOURISHMENT	550	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	8.8	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-02	A-EXAM	(4)A-EXAM	430	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	9.2	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-03	A-EXAM	(2)A-EXAM, A-OFFICE, A-STOR	385	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	6.6	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-04	CORRIDOR	CORRIDOR	465	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	8.2	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-05	S-MEDS	S-MEDS, A-NURSE STATION	235	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	4.4	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-06	S-STAFF LOUNGE & LOCKERS	S-STAFF LOUNGE & LOCKERS	605	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	97.0	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-07	A-PEDS	A-PEDS, (3)A-CONSULT	1,095	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	17.9	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-08	A-EXAM	(3)A-EXAM, A-MTG, S-CLEAN SUPPLY	380	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	6.9	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-09	CORRIDOR	(2)A-CONSULT, A-NAV. WKR	785	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	12.9	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-10	STOR	STOR, (3)A-EXAM	360	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	7.2	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-11	CORRIDOR	CORRIDOR	415	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	7.2	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-12	A-WKRM	A-WKRM	650	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	7.8	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-13	CORRIDOR	(4)A-EXAM	450	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	9.5	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-14	CLOTH & STOR	CLOTH & STOR, (2)A-OFFICE	280	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	4.7	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-15	A-GROUP	A-GROUP, A-STORE	850	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	4.0	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-16	CORRIDOR	CORRIDOR	335	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	3.1	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-17	A-CHILD PLAY	A-CHILD PLAY, A-GROUP	850	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	4.9	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-18	A-POC	A-POC, (2)A-MA WKRM	270	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	4.7	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-19	S-ELEC	S-ELEC	1,050	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	18.0	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-20	S-IT CLOSET	S-IT CLOSET	1,050	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	18.0	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-21	S-LAB	S-LAB, S-SOILED, S-LAUNDRY	1,050	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	16.0	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-22	CORRIDOR	CORRIDOR	385	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	6.5	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-23	BH-COMFORT	BH-COMFORT, (3)BH-OFFICE	420	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	7.1	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-24	CORRIDOR	(4)BH-EXAM	435	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	9.3	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-25	CORRIDOR	(4)BH-CONSULT	710	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	11.8	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-26	CORRIDOR	CORRIDOR	485	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	8.1	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-27	CORRIDOR	(3)BH-CONSULT	550	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	9.1	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-28	BH-GROUP	BH-GROUP	600	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	12.0	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-29	BH-GROUP	BH-GROUP	800	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	12.0	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-30	CORRIDOR	BH-CONSULT, BH-MA WKRM	200	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	3.9	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-31	CORRIDOR	CORRIDOR, BH-TRAIN, S-LACTATION	425	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	4.6	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-32	BH-WAITING	BH-WAITING, BH-CHECK IN/OUT, S-COPY	775	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	12.8	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-33	S-ELEV LOBBY	S-ELEV LOBBY	600	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	9.6	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-34	S-CONF	S-CONF	285	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	5.0	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES
FCU-02-35	A-WAITING	A-WAITING, A-CHECK IN/OUT, A-PHONE	665	2" PLEATED	MERV 8	0.6	208/230V-3Ph-60Hz	TBD	TBD	TBD	TBD	TBD	11.3	TBD	R-410A	TBD	YORK YID SERIES	REFER TO NOTES

Notes:
1. SINGLE POINT POWER CONNECTION
2. COMPLETE CONTROLS WITH JOHNSON CONTROLS, INC BMS INTERCONNECTION
3. PROVIDE MOTOR, MOTOR, MOTOR DRIVE AND MOTOR OVERLOAD KIT
4. PROVIDE DISCHARGE AIR PLENUM WITH HORIZONTAL BLOW SUPPLY AIR REGISTERS.
5. PROVIDE CORRESPONDING SPLIT SYSTEM CONDENSING UNIT(S)


Refrigerant piping
Rooftop DOAS condensing unit
Outside Air Ductwork to balance of spaces and Fan Coil units
Outside Air Ducted to Fan Coil Return inlet
Concealed ducted Fan Coil with ducted supply & return for similar spaces grouped together into a single zone
Ceiling Mounted Fan Coil for Group meeting and similar spaces
Wall Mounted Fan Coil for spaces requiring individual temperature control
Refrigerant piping to balance of ducted, wall and ceiling Fan Coil Units
Outside air delivered directly to space for ceiling and wall mounted Fan Coil Units
Rooftop VRF condensing unit
Refrigerant Piping - Liquid, Suction and Heat Recovery
Multi-port change-over boxes - configuration and quantities as required to serve all Fan Coil Units.
General Variable Flow Refrigerant & Outside Air System Diagram