

BURKE MOUNTAIN DISCOVERY CENTRE + COFFEE HOUSE

LEGAL DESCRIPTION: LOT 1 SECTION 18 TOWNSHIP 40 PLAN EPP92199 PID - 030-902-291
PROJECT ADDRESS: 3537 PRINCETON AVENUE, COQUITLAM, BC

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DATE	REVISION
20/04/17	ISSUED FOR 75% DESIGN REVIEW
20/06/30	ISSUED FOR 95% DESIGN REVIEW
20/07/15	ISSUED FOR BP
20/08/26	ISSUED FOR RFP
20/09/18	RE-ISSUED FOR BP
20/10/02	ISSUED FOR COFFEE HOUSE RFP

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3537 PRINCETON AVENUE
COQUITLAM, BC

COVER SHEET & DRAWING LIST

N.T.S.

LE-184476 MJ

M-0

MECHANICAL SPECIFICATIONS

A. General

- 1. Intent**

It is the intention of these specifications and drawings to provide a complete mechanical system to call for finished works, to be tested and ready for operation. Minor details not usually shown or specified but necessary for proper installation and operation shall be included in the works, the same as if herein specified or shown. The mechanical contractor shall ensure provision for labor, materials, and all equipment required to complete the work. Any discrepancies found in the specifications and drawings that requires clarification shall be brought to the attention of the engineer before submission for tender. Drawings provided are not for installation details and are diagrammatic only where minor details and accessories required for complete installation may not be shown or specified but are to be provided in the finished works.
- 2. Responsibility**
 - a) Visit the site during the tendering period to verify all measurements and examine all local and existing conditions on which the works are dependent.
 - b) No consideration will be granted for failure to visit the site, or for any misunderstanding of equipments and materials to be furnished or works to be done.
 - c) The contractor shall advise the architect, should he believe any equipments or materials to be inadequate or unsuitable, in violation of laws, ordinances, rules, or regulations of authorities having jurisdiction, or should any necessary items or works be omitted.
 - d) The contractor shall advise the architect, should he believe that any equipment as part of his scope of work will not fit within the space provided or along the path of transport for installation.
 - e) Check drawings of all trades to verify space and headroom limitations for works to be installed. Make changes to facilitate a more satisfactory installation. Deviations from drawings, altering the design intent or involving additional expense, shall not be made without the architect's approval.
 - f) The contractor shall review any and all architectural, mechanical, electrical and structural drawings available as related to the scope of work before ordering equipment.
 - g) Where installed work interferes with or modifies architectural design, make necessary changes as directed by the architect.
 - h) Place no unusual erection loads on the building structure without the architect's approval.
 - i) Ensure that equipments do not transmit excess noise and/or vibration to other parts of the building. Any noise or vibration that, in the opinion of the architect, is objectionable shall be corrected in an approved manner.
 - j) The entire work including all piping and ductwork throughout shall be first class and workmanlike and present a neat and clean appearance on completion.
 - k) The contractor shall be responsible for layout of works and for any damages caused by improper execution of said works to the owner and other tenants if applicable.

3. Codes and Permits

All works to be performed in accordance with the latest B.C. Building Code, B.C. Plumbing Code, Gas Code and other provincial regulations and local by-laws. Submit plans and specifications for approval to authorities having jurisdictions. Obtain permits and pay all necessary fees. All work shall be completed in full compliance with NECB 2015 and relevant SMACNA guidelines and manuals, and with all equipment to be installed to comply with the energy performance standards of NECB 2015 in compliance with latest BC Building Code or City of Coquitlam Building Bylaw energy requirements if applicable.

4. C.S.A. and C.G.A. Approval

All electrical motors, equipments, and components shall bear a C.S.A. approval label. All gas fired equipments shall bear a C.G.A. approval label.

5. Tests

All piping shall be tested as required, including plumbing, soil, waste, vent, and drainage pipings.

6. Cutting, Patching & Waterproofing

- a) Arrange with general contractor and be responsible for all cutting and patching required.
- b) Opening through structural members must be approved by the Structural Engineer.
- c) Counterflashing and caulking of openings and all flashing of pipes shall be furnished and installed by the individual trade.
- d) Required installations of sleeves, inserts, supports, curbs, frames, access doors and openings shall be coordinated with all applicable related trades.
- e) The area of any opening shall not be larger than is absolutely necessary.
- f) No penetrations through floor slabs permitted without x-rays and landlord prior approval. X-ray works to be performed outside of normal working hours with approval and coordination from owner/Structural Engineer.

7. Standard of Materials and Workmanship

Make and quality of materials used are subject to approval by the engineer and are to be removed and replaced with suitable if deemed unacceptable. Materials installed shall be new and uniform throughout unless noted otherwise.

8. Inspection Departments' Requirements

- a) All work shall be installed in accordance with all laws, regulations and all authorities having jurisdiction within the municipality and province. All provisions to ensure the work complies with these requirements shall be included without any additional cost to the contract, if it reasonably could have been foreseen at the time of tender.
- b) All certificates of approval, acceptance and compliance provided by authorities having jurisdiction shall be forwarded to the consultant. The work shall not be considered complete until such documents are received by the consultant.
- c) Acceptance by local inspection authorities is not a substitute for acceptance by the engineer.

9. Penetrations Of Fire Rated Separations

- a) All piping, tubing, ducts, wiring, conduit, etc., passing through rated fire separations shall be smoke and fireproofed with ULC approved materials and which meet the requirements of the latest BC Building Code.
- b) Fire resistance rating of the installed firestopping assembly shall not be less than the fire resistance rating of the surrounding assembly, as indicated on architectural drawings.
- c) All smoke and fire stopping shall be installed by a qualified contractor who shall submit a letter certifying that all work is complete and in accordance with this specification.
- d) Install fire stopping and smoke seal material in accordance with ULC certification and manufacturer's instructions in formed, sleeved or cored penetrations.
- e) Use ULC approved fire stop sealant at all fire dampers to caulk all joints between the fire damper sleeve angles and the sleeves, and between the fire damper sleeve angles and the fire separation. Check with fire damper manufacturer to ensure that the application of fire stop sealant will not void the listing of the damper.

10. Service Penetrations in Non-Rated Separations

All piping, tubing, ducts, wiring, conduits, etc. passing through non-rated fire separations and non-rated walls and floors shall be tightly fitted and sealed on both sides of the separation with silicon sealant to prevent the passage of smoke and/or transmission of sound.

11. Protection

- a) Protect the building and structure from damage due to carrying out of this work.
- b) Protect all mechanical work from damage and construction dirt/debris. Securely plug and cap all openings in pipe, equipment and fixtures to prevent obstructions.
- c) Supervise the layout of the work and arrange it in co-operation with others working on the site. Protect the finished and unfinished work on the site until complete work has been accepted. Assume full responsibility for laying out work and for any damage or extra cost caused by improper location or carrying out of the work.

12. Alternate Materials and Equipment

Contract pricing shall be based on specified materials and equipment. Any alternative approved by engineer as submitted by the mechanical trade does not relieve said trade of any responsibilities related to the material or equipment scope. Any revisions required to adapt approved alternates shall be included in the contract price.

13. Shop Drawings

- a) Prior to fabrication or ordering of any equipment, submit shop drawings to the consultant for review and approval.
- b) Manufacturer shop drawings shall detail equipment assemblies with dimensions, weights, loadings, required clearances, and location and size of each field connection.
- c) Electronic shop drawings are permitted and are to be submitted for engineer approval as long as they are properly annotated. Generic cut sheets without applicable project name and project address, equipment numbers, options, accessories, etc., will be rejected. Equipment tags on shop drawings must match these drawings.
- d) Corrections or comments made on the contractor's shop drawings by the consultant shall not relieve the contractor from compliance with the contract documents and specifications. Shop drawings will be reviewed only for conformance with the design intent and general compliance to contract documents. The contractor will be responsible for quantity takeoffs, confirming dimensions, fabrication processes and techniques, coordinating the work with other trades, and for the safe performance of the work.
- e) Provision shall be made by contractor for all requirements by manufacturers shown on shop drawings to be included in the completed work.

14. Coordination with Electrical Division

Contractor to review all equipment requiring electrical connections with electrical contractor and to reference all electrical drawings prior to ordering equipment.

15. Coordination of Services

Coordinate with the owner to shut down, disconnect, reroute, or make connection to existing services.

16. Site Review

- a) The representatives of the consultant will make periodic visits to the site during construction to ascertain that the work is being executed according to the intent of all plans and specifications but will not execute quality control at all times. Contractor(s) shall maintain their own quality control throughout the project. Correct all deficiencies immediately as noted during field reviews.
- b) Request in writing that a final review of the mechanical systems be made. Do not issue this request until all deficiencies have been corrected, and all systems have been tested, balanced, and are ready for operation.
- c) Mechanical systems, particularly plumbing systems, must not be concealed without the consent of the engineer. Below-slab and pre-boarded site reviews are mandatory, and fill and pressure tests should be applied at this acceptance of plumbing systems by the local plumbing inspector does not guarantee acceptance by the engineer. Systems concealed without the consent of the mechanical engineer will become the responsibility of the contractor.

17. Seismic Restraints

Supply and install seismic restraints for all new equipment and ductwork as required to meet the latest editions of the BC building code and SMACNA seismic restraint guide. Provide an engineer's review and acceptance of seismic restraints for all equipment and piping installed under this contract. This engineer shall provide original copies of the necessary Letters of Assurance (Schedules B & CB or Schedule SC as applicable) directly to the authority having jurisdiction through the Architect.

18. Building Envelope

All mechanical penetrations of the building envelope necessary to complete the work shall be governed by the requirements of the architect and/or building envelope engineer. The drawings of the mechanical consultant are not intended to instruct the contractor on methods and/or materials used to effectively seal building envelope penetrations, or how to prevent ingress or infiltration of moisture or precipitation.

19. Record Drawings

An extra set of current prints and specifications shall be on site at all times with relevant changes and deviations recorded directly on said print daily as necessary. Upon completion of work, submit final record drawings to the engineer. Final record drawings to be completed in an acceptable manner that is legible.

20. Substantial Completion & Issue of Engineer's Acceptance

- a) The project shall not be considered complete until such time as all equipment and systems are fully operational, calibrated, adjusted, and balanced.
- b) Prior to requesting mechanical engineer's Schedule CB, submit the following documentation to the engineer:
 - i) Start-up and commissioning report for all major pieces of equipment, including but not limited to air handling and conditioning systems, boiler and chiller systems, kitchen ventilation systems, and hydronic pumping systems.
 - ii) Written confirmation that all fire stopping of mechanical penetrations is completed.
 - iii) Final acceptance certificate from plumbing inspector.
 - iv) BOCB Letters of Assurance (Schedules B and CB or Schedule SC as applicable for seismic restraint of mechanical equipment and systems).
 - v) Air balance report.

21. Project Completion

- a) Where equipment has an extended manufacturer's warranty, these documents shall be registered in the owner's name and turned over at the time of the building acceptance.
- b) Provide three complete bound maintenance and operation brochures for all maintenance and operation for all equipment. Provide on-site instructions to operation staff or owner regarding function, general maintenance and operation of all equipment.

HEATING, VENTILATING, & AIR CONDITIONING NOTES

1. Building Heating and Air Conditioning

The commercial unit shall be heated by split type heat pump units.

2. Ventilation

Exhaust fans provided for all the washrooms where required, if applicable.

3. Controls

All line voltage control wirings by electrical contractor, and low voltage control wirings, relays, contactors, flow switches, etc. by mechanical contractor.

4. Ductworks

- a) Ductworks shall be constructed of galvanized sheet metal in accordance with SMACNA standards for low pressure ductworks.
- b) Round ductworks shall be galvanized spiral duct with back seam.
- c) Flexible ductworks shall be Flexmaster type or equal consisting of 3 layers of fibreglas cloth, each coated with neoprene supported by a spring steel wire helix. The outer vapor barrier jacket shall be seamless, tear resistant metalized polyester.
- d) Install and make all necessary connections required for the complete supply, return, and exhaust air system indicated on the drawings, including all ductworks, grille collars, connections, fasteners, hangers, and other items required.
- e) Install ductwork to allow for maximum headroom.
- f) Properly seam, brace, stiffen, and support ducts to make mechanically airtight per SMACNA standards.
- g) Duct dimensions and sizing may be changed upon approval and if cross sectional area is maintained.
- h) Provide all necessary transition pieces, and flexible fabric connections for ductwork connected to air handling equipment or air inlet and outlet devices. Flexible connections shall be Duron as manufactured by Duro Dyne or equal.
- i) Duct strap hangers shall be same material as ducts. Threaded rod type hangers shall be mild low carbon steel with 2 removable nuts each end for positioning and locking rod in place. Shop coat with metal primer unless rods are stainless steel, galvanized or cadmium plated.

5. Duct Sealing

- a) All supply return and exhaust duct joints, longitudinal as well as transverse, shall be sealed using:
 - Slip joints: Apply heavy brush-on high pressure duct sealant. Apply second application after the first application has completely dried out. Where metal clearance exceeds 1/6" (1.5 mm) use heavy mastic type sealant.
 - Flanged joints: Soft elastomer butyl or extruded form of sealant between flanges followed by an application of heavy brush-on high pressure duct sealant.
 - Other joints: Heavy mastic type sealant.
- b) All duct sealants shall be CSA and ULC approved.
- c) Duct tapes as sealing method are not permitted.
- d) Surfaces to receive sealant should be free from oil, dust, dirt, moisture, rust and other substances that inhibit or prevent bonding.
- e) Do not insulate any section of the ductwork until duct sealant has set.

6. Duct Accessories

- a) Provide all grilles, registers, and diffusers as indicated on drawings. Confirm exact t-bar spacing before ordering if applicable.
- b) Unless otherwise specified, fabricate grille and register faces and frames of steel with factory applied baked-on enamel. Colour shall be white, unless specified otherwise by architect.
- c) Fabricate grille and register faces and frames of aluminum with factory acrylic coated finish when installed in dishwashing, food serving and dining rooms, and kitchens. Colour shall be white, unless specified otherwise by architect.
- d) Install gasketed access doors in ductwork at all balancing dampers, fire and/or smoke dampers, and in all locations where operating parts of any kind are installed and elsewhere as indicated.

5. Balancing Dampers

Single blade with quadrant operator for ducts 10" deep or less. Squeeze type dampers with quadrant operators for ducts over 10" in depth.

6. Fire Dampers

- a) Fire dampers shall be installed where ducts penetrate fire rated walls and ceilings or as required by local authority and codes. Ensure dampers are accessible after construction is completed, and provide duct access doors to suit.
- b) Fire dampers shall be ULC listed and dynamic type unless noted otherwise. Dampers shall be galvanized steel offset multi blade hinged with blades out of airstream, weighted or spring loaded to close and lock in position when released by fusible link, all sized to maintain full flow cross section.
- c) Fire dampers to match the rating of the fire separation penetrated with minimum of 1-1/2 hour rating.

7. Roof Installation

- a) Provide curbs, flash and counter flash where mechanical equipment passes through weather or waterproofed walls, floors and roofs.
- b) Install roof mounted equipment on factory supplied roof curbs.

8. Insulation Installation

- a) Ensure duct surfaces are clean and dry before installing insulation.
- b) Install insulation over entire surface of duct for full run including portions of duct passing penetrations through walls and floors.
- c) Locate finished seams in least visible location.
- d) Do not insulate ductwork with external thermal insulation where acoustic duct insulation has been specified.
- e) Install insulation at ambient temperatures within acceptable ratings for tapes, sealants and adhesives.

9. Identification

Identify all equipment (i.e. hvac units, fans, starters, etc.) with securely fastened black lamicaid nameplates with 3/8" engraved white letters.

10. Controls

- a) All temperature control equipment shall be the product of one manufacturer, unless otherwise specified.
- b) Install complete control wiring systems in accordance with Div. 16 specifications and the Canadian electrical code.

11. Balancing and Commissioning

- a) The mechanical contractor shall provide the services of an accredited air balancing and commissioning specialist to co-ordinate the commissioning of the equipment and systems specified and/or modified by the mechanical divisions.
- b) Test, commission, adjust, and balance air and water systems to within 10% of design air volumes and provide a written report to the consultant.
- c) Allow for a minimum of two visits to the site, one to review and report existing conditions to the engineer, and the second to finalize air balance settings after any required corrective work is undertaken (at the direction of the engineer).
- d) Test the operation of the individual components and systems. Review the step by step sequence of operation and verify that each component operates correctly. Confirm proper operation of all thermostats, timers, manual switches, dampers, and interlocks. Document test results for reporting to the owner and mechanical engineer.
- e) Install new filters, if required.
- f) Set operating controls at correct settings and program thermostats.

PLUMBING NOTES

1. Code Compliance

All plumbing works will be as per BC Plumbing Code, 2018 Edition.

2. Site Review

- a) Check and confirm connections, invert elevations and all services including water, gas and sanitary sewer with existing utilities prior to commencing any work on the site.
- b) Storm and sanitary inverts at connection points shall be confirmed by excavation before commencement of underground installation works so that connections to the on-site and off-site services will be achieved by gravity.

3. Piping

- a) All sanitary sewers and vent pipes to be cast iron with mechanical joints, System 15 pipes or XFR with mechanical joints or equivalent approved in jurisdiction with permission of authorities having jurisdiction.
- b) All domestic water pipes to be type 'L' copper with lead free non-corrosive solders.

4. Insulation

All hot and cold water pipes to be insulated. All piping insulation shall be complete with factory-applied all service jacket in mechanical rooms and where installed in truss spaces. Ensure insulation is continuous through interior walls and packed with fire-proof materials. Seal all exposed ends of piping insulation.

Hot water piping:

- i) 1" rigid fibreglas insulation c/w vapor barrier, pre-moulded type and joints sealed for pipe sizes up to and including 1-1/4".

Cold water piping:

- i) 1" rigid fibreglas insulation c/w vapor barrier, pre-moulded type and joints sealed for all pipe sizes

Rainwater leaders:

- i) 1" rigid fibreglas insulation c/w vapor barrier
- ii) The entire length of roof drain pipes shall be insulated.

5. Roof Drains

Supply and install roof drains with at least 38" offset from the vertical rain water leaders to allow for expansion. Slope at 2% minimum.

6. Valves

- a) Quarter turn ball valves to be provided for all domestic water isolation valves 2" and smaller. Gate valves to be provided for larger sizes.
- b) Check valves to be bronze, swing disc, solder or screwed ends.
- c) Union and shut-off valves required at all equipment locations connected to water lines.

7. Hangers

- a) Provide hangers and supports to fasten piping in place, prevent vibration, and to prevent damage due to thermal expansion.
- b) Hanger spacing shall be in compliance with BC Plumbing Code. Do not suspend one pipe from another.
- c) Use of perforated straps is not permitted for pipe hangers.
- d) Provide ring type hangers for piping up to 1-1/2" and clevis type hangers for piping over 1-1/2".

8. Plumbing Accessories

- a) Cleanouts to be same size as the pipe up to 4", and not smaller than 4" for larger pipe sizes. Cleanouts shall be easily accessible with minimum clearance of 24" and shall be gas tight and watertight.
- b) Floor drains to be provided complete with caulking flange for connection to cast iron pipe, screwed or no hub outlets for connection to steel pipe or unless otherwise specified. Provide membrane clamp and extensions as required, where installed in connection with waterproof membrane.
- c) All floor drains shall be equipped with trap seal primer.
- d) Traps to be provided on all sanitary branch waste connections from fixtures or equipment without built-in traps. Concealed traps may be same material as connected pipe. Traps shall correspond to fittings on cast iron soil pipe, and size shall be as required by connected service or fixture.
- e) Approved backflow prevention device shall be provided at any point in the plumbing system where the potable water supply comes in contact with a potential source of contamination or as per authority having jurisdiction. All backflow preventors shall be selected and installed in accordance with CAN/CSA-B64.10.

9. Testing

- a) All domestic water and drainage systems shall be fill and pressure tested to the requirements of BC Building Code, Section 7.
- b) Pressure test water piping to 1.5 times expected working pressure or 150 psi. and measured at the low point of the system for a minimum of 4 hours.
- c) Drainage piping to be tested with minimum 10 feet of hydrostatic head pressure for a minimum period of 8 hours.
- d) Do not make final connection to landlord's domestic water system until pressure testing is completed and the installation accepted by the consultant and local/district plumbing inspector.
- e) Fill and pressure tests must be witnessed by the local/district plumbing inspector.

10. Piping Installation

- a) Install all piping parallel to building lines if possible and with distribution in reasonable manner, make neat.
- b) No dissimilar metals to be in contact.
- c) Where possible in domestic water systems, grade all lines to facilitate drainage. provide drain valves at bottom of risers.
- d) All unnecessary traps in circulating lines shall be avoided.
- e) Install branch piping for water, waste and natural gas, from the respective piping systems and connect to all fixtures, valves, cocks, outlets, casework, cabinets and equipment, including those furnished or specified in other sections.
- f) All pipe runs shall be laid out to avoid interference with other works.

22. Access Doors

- a) Access doors for maintenance of all mechanical equipment to be provided as required. Finish to be approved by architect.
- b) Where equipment is concealed, supply access doors of design to suit the surface in which they are to be installed.
- c) When located in walls or floors forming a fire separation, provide with ULC label.

23. Pipe Identification

Identify piping with labels and flow arrows. Provide identification at 50 ft maximum intervals, before and after pipes passing through walls, at all sides of tests, behind access doors.

24. Wall/Floor Separations

- a) No penetrations through floor slabs permitted without x-rays and landlord/structural engineer prior approval.
- b) Only cast iron and copper pipes permitted within fire separation walls.
- c) Firestop all penetrations through fire-rated separations. Firestopping assemblies to be approved by architect.



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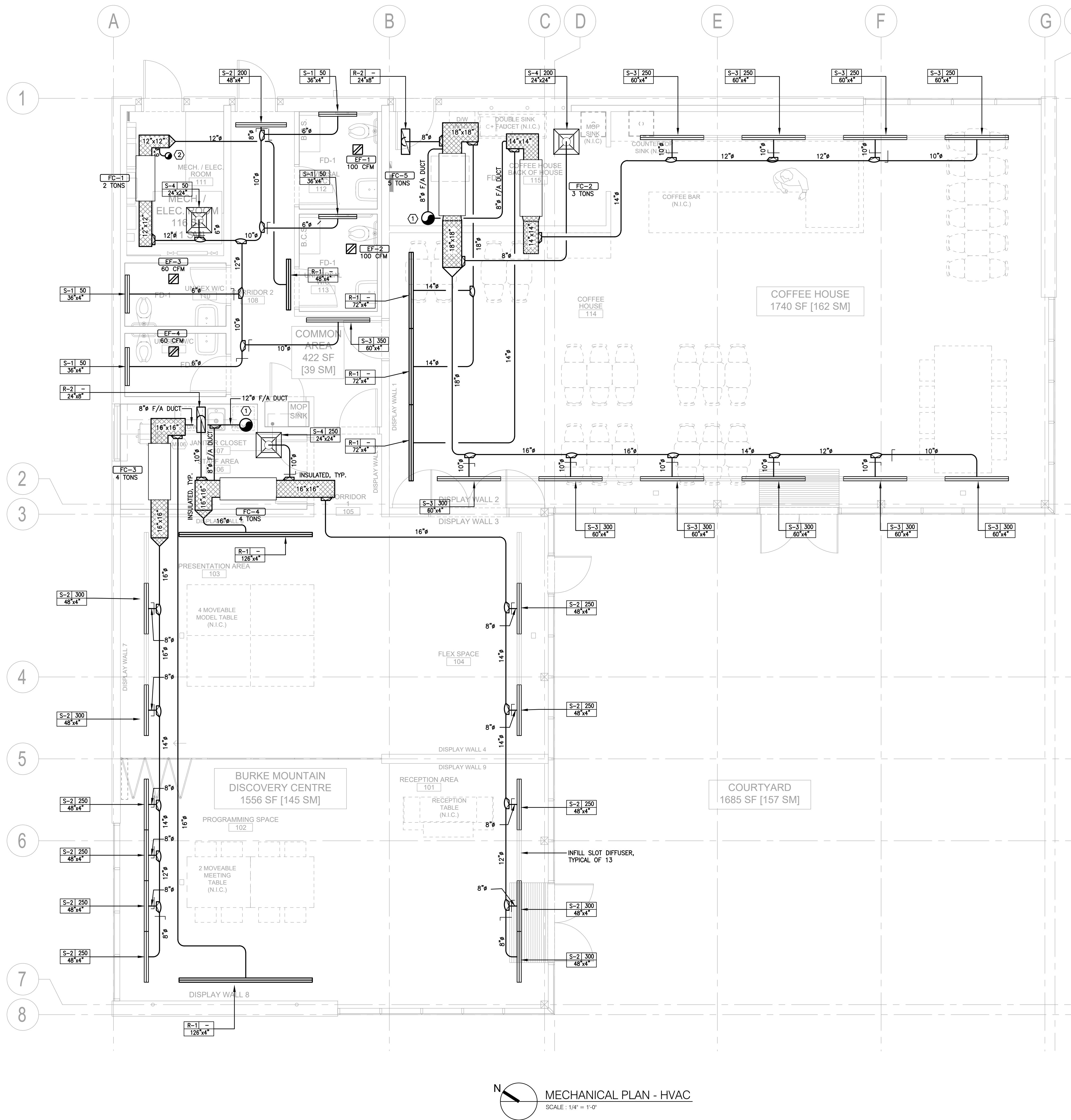
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MECHANICAL SPECIFICATIONS

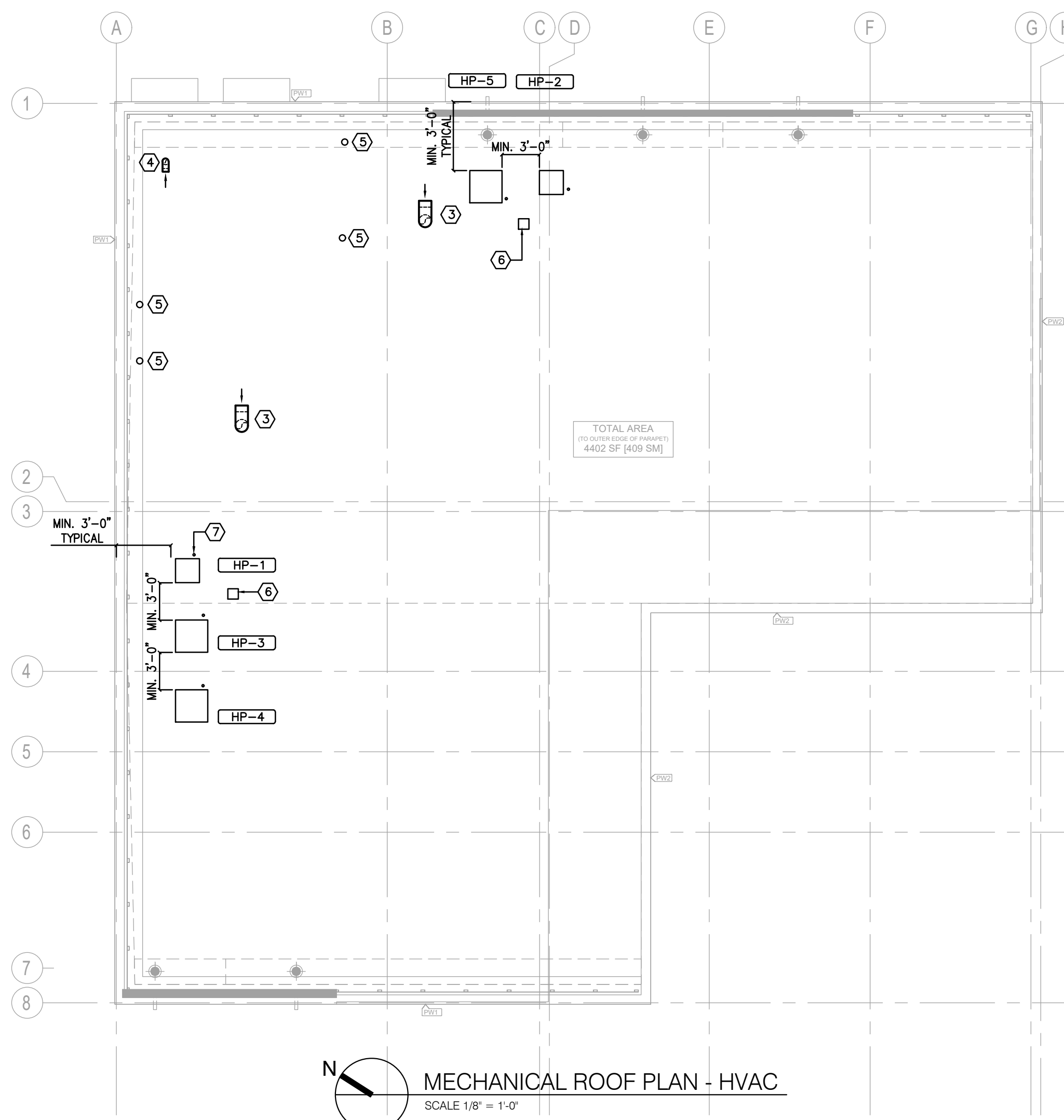
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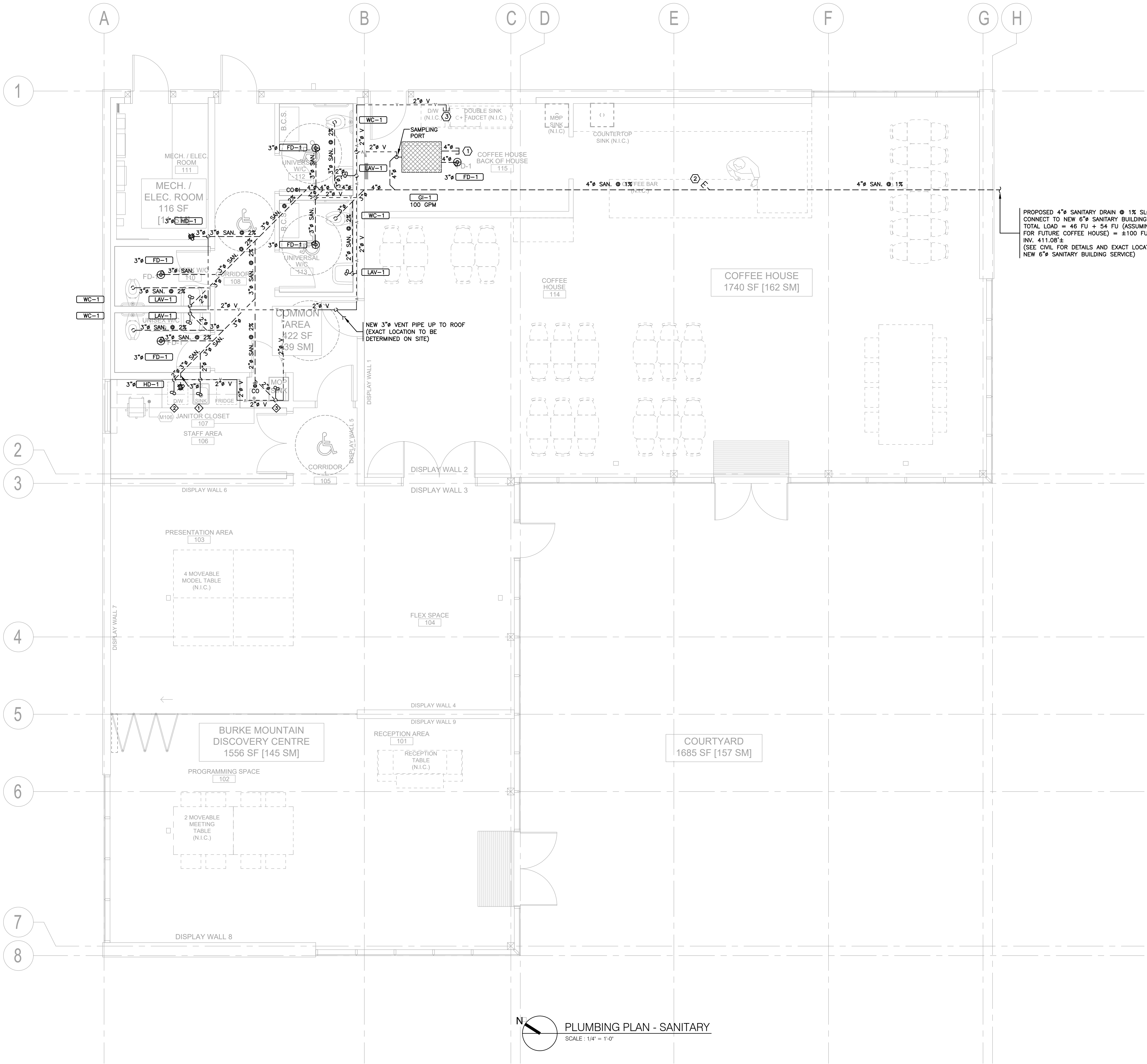
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EQUIPMENT SCHEDULE				
CATEGORY	ITEM NO.	DESCRIPTION	QTY.	NOTES
HVAC	HP-1	SPLIT SYSTEM HEAT PUMP UNIT	1	HEAT PUMP UNIT 2 TONS (800 CFM) CARRIER SPLIT SYSTEM C/W INFINITY TOUCH CONTROL MODEL SYSTXCCITN01 OUTDOOR UNIT: INFINITY 18VS VARIABLE SPEED HEAT PUMP MODEL 25VNA824 NOMINAL COOLING CAPACITY: 2 TONS HEATING CAPACITY: 24,400 BTU @ 47°F / 15,600 BTU @ 17°F VOLTS/PHASE: 208/1 WT = 162 LBS FLA = 6.58 MCA = 13.5 TO BE MOUNTED ON ROOF OR REAR EXTERIOR WALL, FINAL LOCATION TBD ON SITE INDOOR UNIT: BLOWER/COIL AIR HANDLER MODEL FEANF02 NOMINAL COOLING CAPACITY: 2 TONS AIRFLOW: 800 CFM FAN HP: 1/2 HP FLA: 4.3 WT = 135 LBS NOTES: RUN REFRIGERANT LINES TO OUTDOOR UNIT, CONNECT 3/4" CONDENSATE DRAIN TO NEAREST SINK AND CONNECT ABOVE P-TRAP
	FC-1			
	HP-2	SPLIT SYSTEM HEAT PUMP UNIT	1	HEAT PUMP UNIT 3 TONS (1,200 CFM) CARRIER SPLIT SYSTEM C/W INFINITY TOUCH CONTROL MODEL SYSTXCCITN01 OUTDOOR UNIT: INFINITY 18VS VARIABLE SPEED HEAT PUMP MODEL 25VNA836 NOMINAL COOLING CAPACITY: 3 TONS HEATING CAPACITY: 34,200 BTU @ 47°F / 23,000 BTU @ 17°F VOLTS/PHASE: 208/1 WT = 190 LBS FLA = 1.20 MCA = 24.4 TO BE MOUNTED ON ROOF OR REAR EXTERIOR WALL, FINAL LOCATION TBD ON SITE INDOOR UNIT: BLOWER/COIL AIR HANDLER MODEL FEANF03 NOMINAL COOLING CAPACITY: 3 TONS AIRFLOW: 1200 CFM FAN HP: 1/2 HP FLA: 4.3 WT = 150 LBS SUPPLEMENTARY ELEC HEAT: 5 KW VOLTS/PHASE: 208/3 NOTES: RUN REFRIGERANT LINES TO OUTDOOR UNIT, CONNECT 3/4" CONDENSATE DRAIN TO NEAREST SINK AND CONNECT ABOVE P-TRAP
	FC-2			
	HP-3 HP-4	SPLIT SYSTEM HEAT PUMP UNIT	2	HEAT PUMP UNIT 4 TONS (1,600 CFM) CARRIER SPLIT SYSTEM C/W INFINITY TOUCH CONTROL MODEL SYSTXCCITN01 OUTDOOR UNIT: INFINITY 18VS VARIABLE SPEED HEAT PUMP MODEL 25VNA848 NOMINAL COOLING CAPACITY: 4 TONS HEATING CAPACITY: 50,500 BTU @ 47°F / 35,200 BTU @ 17°F VOLTS/PHASE: 208/1 WT = 257 LBS FLA = 1.20 MCA = 31.4 TO BE MOUNTED ON ROOF OR REAR EXTERIOR WALL, FINAL LOCATION TBD ON SITE INDOOR UNIT: BLOWER/COIL AIR HANDLER MODEL FEANF05 NOMINAL COOLING CAPACITY: 4 TONS AIRFLOW: 1600 CFM FAN HP: 1/2 HP FLA: 4.3 WT = 172 LBS SUPPLEMENTARY ELEC HEAT: 5 KW VOLTS/PHASE: 208/3 NOTES: RUN REFRIGERANT LINES TO OUTDOOR UNIT, CONNECT 3/4" CONDENSATE DRAIN TO NEAREST SINK AND CONNECT ABOVE P-TRAP
	FC-3 FC-4			
	HP-5	SPLIT SYSTEM HEAT PUMP UNIT	1	HEAT PUMP UNIT 5 TONS (2,000 CFM) CARRIER SPLIT SYSTEM C/W INFINITY TOUCH CONTROL MODEL SYSTXCCITN01 OUTDOOR UNIT: INFINITY 18VS VARIABLE SPEED HEAT PUMP MODEL 25VNA860 NOMINAL COOLING CAPACITY: 5 TONS HEATING CAPACITY: 60,000 BTU @ 47°F / 44,500 BTU @ 17°F VOLTS/PHASE: 208/1 WT = 285 LBS FLA = 1.40 MCA = 40.8 TO BE MOUNTED ON ROOF OR REAR EXTERIOR WALL, FINAL LOCATION TBD ON SITE INDOOR UNIT: BLOWER/COIL AIR HANDLER MODEL FEANF06 NOMINAL COOLING CAPACITY: 5 TONS AIRFLOW: 2000 CFM FAN HP: 3/4 HP FLA: 6.8 WT = 207 LBS SUPPLEMENTARY ELEC HEAT: 5 KW VOLTS/PHASE: 208/3 NOTES: RUN REFRIGERANT LINES TO OUTDOOR UNIT, CONNECT 3/4" CONDENSATE DRAIN TO NEAREST SINK AND CONNECT ABOVE P-TRAP
	FC-5			
	S-1 80 49	S-1 DIFFUSER	4	EH PRICE LINEAR SLOT DIFFUSER SDS 50 WITH SDB PLENUM, 1-SLOT, 1/2" SLOT, 3'-0" LENGTH C/W BALANCE DAMPER AND AIR PATTERN ADJUSTMENT CONCEALED PLASTER FRAME APPLICATION
	S-2 280 89	S-2 DIFFUSER	12	EH PRICE LINEAR SLOT DIFFUSER SDS 75 WITH SDB PLENUM, 3-SLOT, 3/4" SLOT, 4'-0" LENGTH C/W BALANCE DAMPER AND AIR PATTERN ADJUSTMENT CONCEALED PLASTER FRAME APPLICATION
	S-3 300 109	S-3 DIFFUSER	11	EH PRICE LINEAR SLOT DIFFUSER SDS 75 WITH SDB PLENUM, 3-SLOT, 3/4" SLOT, 5'-0" LENGTH C/W BALANCE DAMPER AND AIR PATTERN ADJUSTMENT CONCEALED PLASTER FRAME APPLICATION
WASHROOM EXHAUST	S-4 280 89	S-4 DIFFUSER	3	EH PRICE SCD SQUARE DIFFUSER, T-BAR LAY-IN
	R-1 - -	R-1 RETURN GRILLE	6	EH PRICE LINEAR SLOT DIFFUSER SDR 75, 3-SLOT, 3/4" SLOT CONCEALED PLASTER FRAME APPLICATION, SIZE SHOWN ON PLAN
	R-2 - 259	R-2 RETURN GRILLE	2	EH PRICE 80 SERIES 1/2" x 12" x 12" GRID EGGGRATE C/W CHANNEL BORDER, T-BAR LAY-IN
	EF-1	CEILING WASHROOM EXHAUST FAN	4	6"Ø WASHROOM EXHAUST DUCT TO ROOF CAP C/W SCREEN VOLUME SHOWN ON PLAN
	EF-2 EF-3 EF-4			



- NOTE**
THIS COFFEE HOUSE WILL NOT PRODUCE ANY GREASE LOOEN VAPORS
- KEYNOTES**
① INSULATED 12" FRESH AIR DUCT UP TO ROOF
② INSULATED 6" FRESH AIR DUCT UP TO ROOF
③ 12" GOOSENECK FRESH AIR DUCT OPENING C/W WIRE MESH SCREEN AND MOTORIZED DAMPER, INTERLOCK TO FAN COIL CONTROL
④ 6" GOOSENECK FRESH AIR DUCT OPENING C/W WIRE MESH SCREEN AND MOTORIZED DAMPER, INTERLOCK TO FAN COIL CONTROL
⑤ 6" WASHROOM EXHAUST DUCT ROOF CAP
⑥ PIPE CURB/DOGHOUSE FOR REFRIGERANT PIPING, MAX. 10"x10" HVAC CONTRACTOR TO CONFIRM
⑦ 2" GOOSENECK FOR ELECTRICAL CONNECTION SEE ELEC. DRAWING FOR DETAILS AND EXACT LOCATION, TYP. OF 5



SANITARY FIXTURE LOAD CALCULATION TABLE				
TAG	FIXTURE	No. OF FIXTURES	SANITARY LOAD (FU)	TOTAL SANITARY LOAD (FU)
WC-1	WATER CLOSET	4	4	16
LAV-1	LAVATORY	4	1	4
S.S. SINK	S.S. SINK	1	1.5	1.5
DISHWASHER	DISHWASHER c/w RPBP	1	3	3
HUB DRAIN	HUB DRAIN	2	1.5	1.5
FLOOR DRAIN	FLOOR DRAIN	5	3	15
GI-1	GREASE INTERCEPTOR 100 GPM, DUAL INLET, WATTS MODEL WD-210-DI-ALC FULLY RECESSED			
GRAND TOTALS:				
SANITARY DRAINAGE LOAD: 51 FU				

- SANITARY KEYNOTES**
- ① 4" GREASE WASTE CAP-OFF FOR FUTURE COFFEE HOUSE.
 - ② 4" SANITARY CAP-OFF FOR FUTURE COFFEE HOUSE.
 - ③ 2" VENT CAP-OFF FOR FUTURE COFFEE HOUSE AT HIGH CEILING.

PLUMBING FIXTURE SCHEDULE			
TAG	FIXTURE	DESCRIPTION	ACCESSORIES
WC-1	WATER CLOSET	SLOAN ELONGATED FLOOR MOUNTED ADA WATER CLOSET 2172029-ST-2029-STG	SLOAN ROYAL SENSOR FLUSHOMETER MODEL 111.128-ESS-TWO (3450055)
LAV-1	LAVATORY	SLOAN VITROUS WALL MOUNTED LAVATORY MODEL SS-3165 STG (ONE HOLE)	CHICAGO LAVATORY FAUCETS MANUAL SINK FAUCETS MODEL 410-E2805ABOP
S.S. SINK	S.S. SINK	STEEL QUEEN STAINLESS STEEL SINK 101.0045.229 MODEL QSL-2020-8-1	P-TRAP MODEL MCOURE 8912C & OLETO KITCHEN SINK FAUCET MODEL KPF-2620
DISHWASHER	DISHWASHER	LG SEMI-INTEGRATED DISHWASHER MODEL LDF5445ST	
MOP SINK	MOP SINK	ELKAY STAINLESS STEEL MOP SINK MODEL FLR-1X	CHICAGO FAUCETS MANUAL SINK FAUCETS MODEL 897-RCF
HOSE BIBB	HOSE BIBB	WATTS EXTERIOR HOSE BIBB MODEL H-725-14-SS & H-725-6-SS	PROVIDE HEAT TRACE CHROMALOX HEATING CABLE PIPE FREEZE PROTECTION MODEL CP15-1GR
HUB DRAIN	HUB DRAIN	WATTS FLOOR DRAIN WITH OVAL FUNNEL MODEL FD-100-EG	PROVIDE TRAP SEAL PRIMER & REDUCING COUPLING TRAP SEAL PRIMER: P.P.P. MODEL PR-500 REDUCING COUPLING: NIBCO 600R 2X1-1/2 CXC, COPPER
FLOOR DRAIN	FLOOR DRAIN	WATTS FLOOR DRAIN WITH ROUND STRAINER MODEL FD-103NH-C-A5-1	PROVIDE TRAP SEAL PRIMER FOR ALL FLOOR DRAINS TRAP SEAL PRIMER: P.P.P. MODEL PR-500
ROOF DRAIN	ROOF DRAIN	MENZIES METAL PRODUCTS CLAMP-TITE SPUN COPPER DRAIN MODEL 300-3166	

GREASE INTERCEPTOR CALCULATION	
Grease Interceptor GI-1	
Work Hour Use	
Future 1 compartment prep sink fixture content = 22" (w) x 20" (l) x 14"(d) = 6160 cubic inches /231 = 26 gpm	
Future 2 compartment sink fixture content = 2 compartments x 20" (w) x 20" (l) x 12"(d) = 2 compartments x 4800 cubic inches = 9600 cubic inches /231 = 42 gpm	
Future dishwasher drain peak flow rate = 8 gpm	
Future espresso machine drain peak flow rate = 15 gpm	
100% of fixture capacity to be used as drain load Total gpm = (26 + 42 + 8 + 15) gpm = 91 gpm Therefore, at approximately 1 minute drainage period, 100 gpm grease trap is acceptable.	
Off Hour Use (Non-simultaneous)	
Future mop sink = 22" (w) x 22" (l) x 9"(d) = 4356 cubic inches /231 = 19 gpm	
Floor drain = 3" drain = 37.5 gpm	
100% of fixture capacity to be used as drain load Total gpm = (19 + 37.5) gpm = 56.5 gpm Therefore, at approximately 1 minute drainage period, 100 gpm grease trap is acceptable.	
PLUMBING FIXTURES IN FUTURE COFFEE HOUSE TO BE CONFIRMED BY FUTURE TENANT	

PLUMBING PLAN - SANITARY
SCALE: 1/4" = 1'-0"

DATE	REVISION
20/03/06	ISSUED FOR 50% DESIGN REVIEW
20/04/03	ISSUED FOR 65% DESIGN REVIEW
20/04/17	ISSUED FOR 75% DESIGN REVIEW
20/06/30	ISSUED FOR 85% DESIGN REVIEW
20/07/15	ISSUED FOR BP
20/08/26	ISSUED FOR RFP
20/09/18	RE-ISSUED FOR BP
20/09/22	ISSUED FOR RFP ADDENDUM #3
20/09/29	ISSUED FOR RFP ADDENDUM #4
20/09/29	RE-ISSUED FOR BP
20/10/02	ISSUED FOR COFFEE HOUSE RFP

DATE	REVISION

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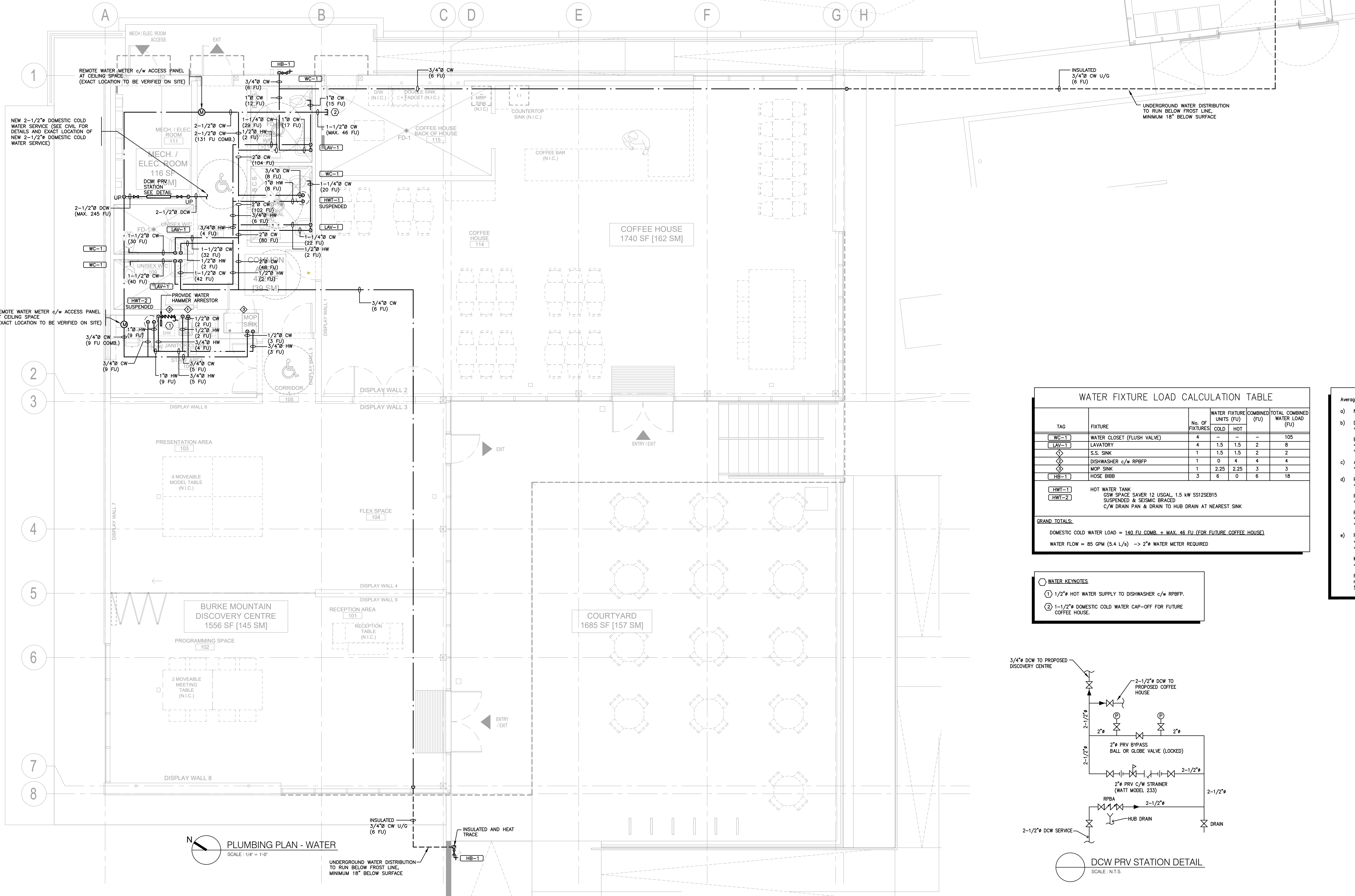
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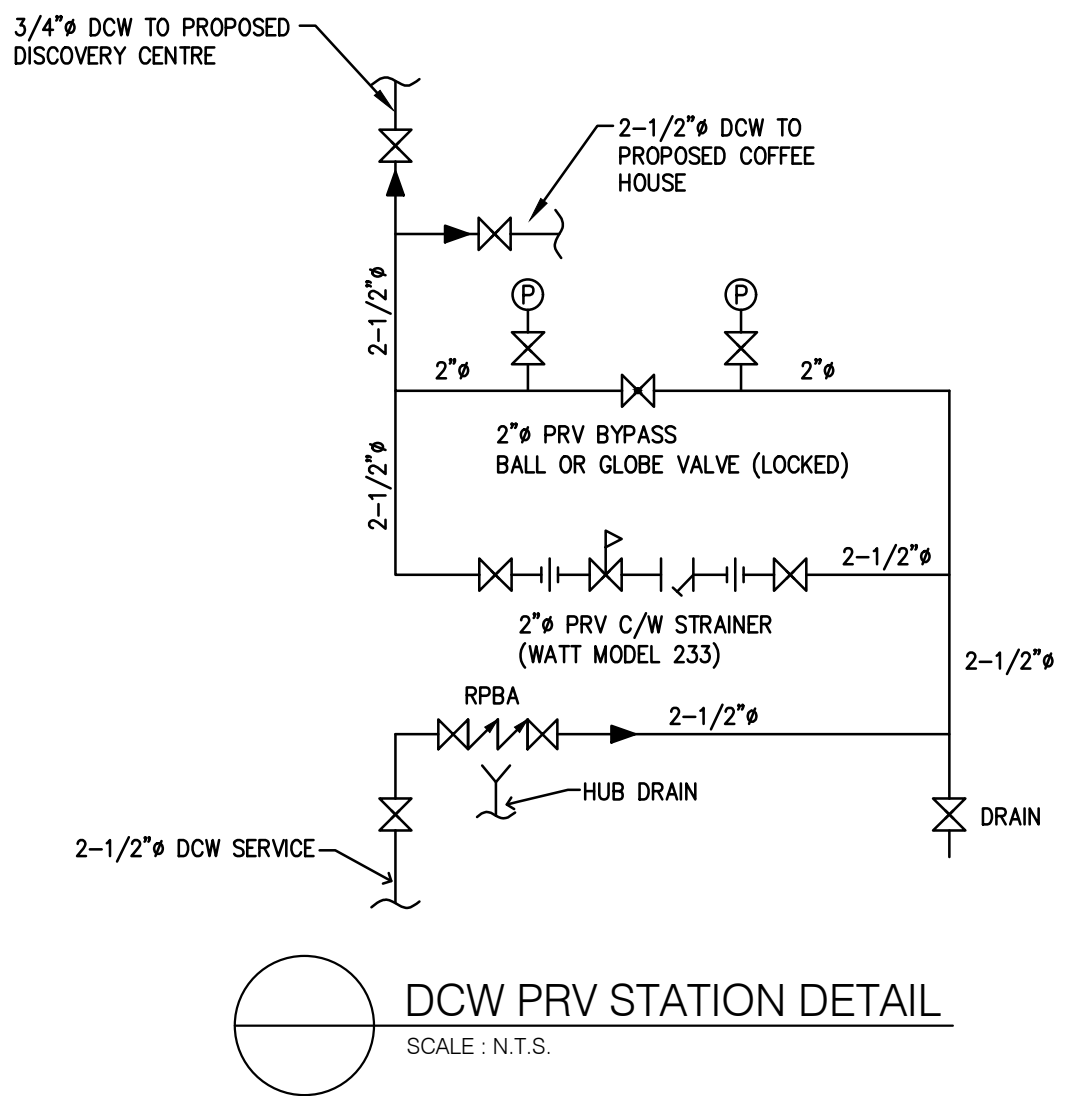


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WATER FIXTURE LOAD CALCULATION TABLE						
TAG	FIXTURE	No. OF FIXTURES	WATER FIXTURE UNITS (FU)		COMBINED (FU)	TOTAL COMBINED WATER LOAD (FU)
			COLD	HOT		
WC-1	WATER CLOSET (FLUSH VALVE)	4	—	—	—	105
LAV-1	LAVATORY	4	1.5	1.5	2	8
◇	S.S. SINK	1	1.5	1.5	2	2
◇	DISHWASHER C/W RPBP	1	0	4	4	4
◇	MOP SINK	1	2.25	2.25	3	3
HB-1	HOSE BIBB	3	6	0	6	18
HWT-1	HOT WATER TANK GSW SPACE SAVER 12 USGAL, 1.5 kW SS12SEB15 SUSPENDED & SEISMIC BRACED C/W DRAIN PAN & DRAIN TO HUB DRAIN AT NEAREST SINK					
HWT-2						
GRAND TOTALS:						
DOMESTIC COLD WATER LOAD = 140 FU COMB. + MAX. 46 FU (FOR FUTURE COFFEE HOUSE)						
WATER FLOW = 85 GPM (5.4 L/s) → 2" WATER METER REQUIRED						

- WATER KEYNOTES
- ① 1/2" HOT WATER SUPPLY TO DISHWASHER c/w RPBP.
 - ② 1-1/2" DOMESTIC COLD WATER CAP-OFF FOR FUTURE COFFEE HOUSE.



- Average Pressure Loss Method Calculations
- a) New DCW main is 2-1/2" HDPE.
 - b) Developed length from service entry point to the most remote outlet = 42 m
 - Equivalent length = 42 m x 1.5 = 63 m
 - c) Adjusted pressure at water service entry = 440 kPa
 - d) Pressure loss due to change of elevation = no change
 - Pressure needed at the outlet = 103.4 kPa
 - Pressure available for friction loss = 440 kPa - 103.4 kPa = 336.6 kPa
 - e) Friction loss per metre = 336.6 kPa / 63 m = 5.34 kPa/m
 - Minimum friction loss per metre required = 2.62 kPa/m
 - Friction loss per metre is greater than minimum friction loss per metre required 5.34 kPa/m > 2.62 kPa/m

DATE	REVISION
20/03/06	ISSUED FOR 50% DESIGN REVIEW
20/04/03	ISSUED FOR 65% DESIGN REVIEW
20/04/17	ISSUED FOR 75% DESIGN REVIEW
20/04/30	REVISION
20/06/30	ISSUED FOR 85% DESIGN REVIEW
20/07/15	ISSUED FOR BP
20/08/26	ISSUED FOR RFP
20/09/18	RE-ISSUED FOR BP
20/09/29	ISSUED FOR RFP ADDENDUM #4
20/09/29	RE-ISSUED FOR BP
20/10/02	ISSUED FOR COFFEE HOUSE RFP

DATE	REVISION

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PLUMBING PLAN - WATER

1/4" = 1'-0"

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(Blank handwriting practice area)

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