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2014-05-23 RE-ISSUED FOR BUILDING PERMIT AND ISSUED FOR CONSTRUCTION
2013-09-13 BUILDING PERMIT 2013-08-16 75% COORDINATION 2013-08-07 50% COORDINATION 0 2013-09-13 REV. YYYY-MM-DD ISSUED FOR PERMIT REVISION / DRAWING ISSUE CONSULTANT

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10950 - 119 Street, Edmonton, Alberta, T5H 3P5 TEL (780) 452-1800 FAX (780) 453-5205 HEI# E13053-10

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IHUMAN FACILITY RENOVATION

9625 102A AVE, EDMONTON, ALBERTA, CANADA

DRAWING TITLE

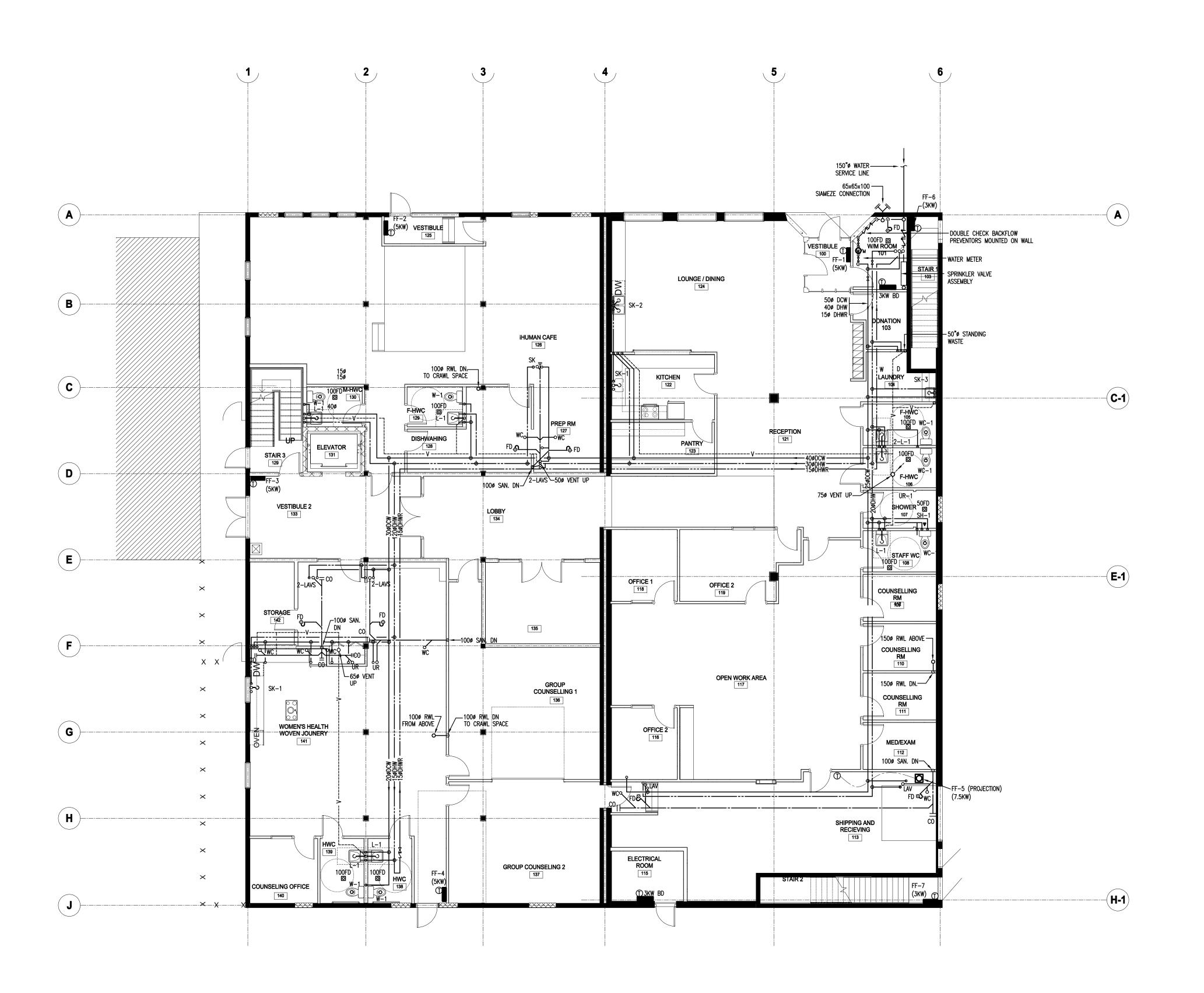
CRAWL SPACE & FOUNDATION PLAN

DRAWING ISSUE

ISSUED FOR PERMIT/ CONSTRUCTION MAY 23, 2014

2014-05- DRAWN PROJECT NO. E13053 AS SHOWN REVIEWED DRAWING NO. REVISION

M3.01







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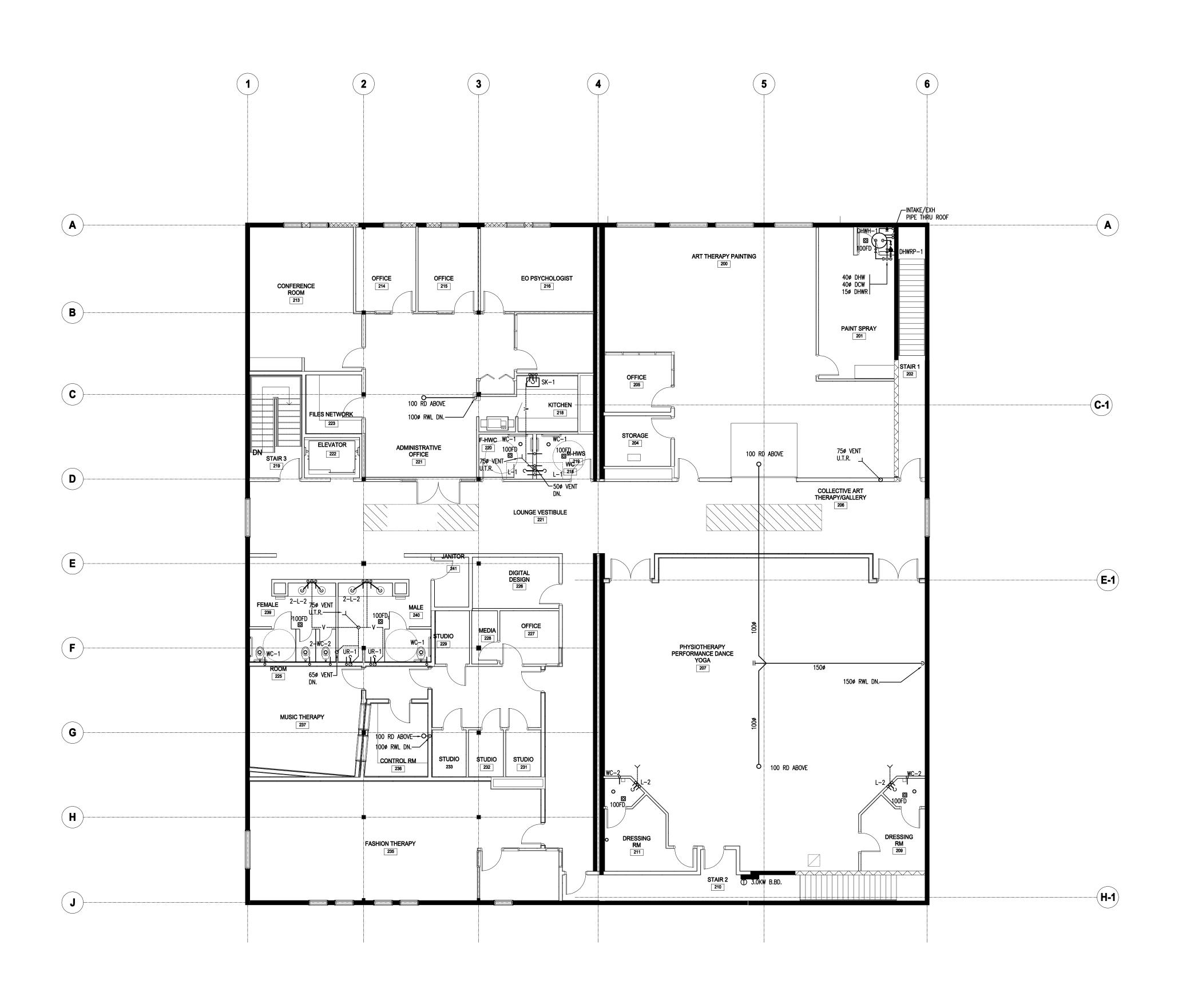
GROUND FLOOR PLUMBING

DRAWING ISSUE

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2014-05- DRAWN PROJECT NO. E13053 AS SHOWN REVIEWED SCALE DRAWING NO. REVISION

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SECOND FLOOR PLUMBING

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PROJECT NO.

E13053

PLOT DATE

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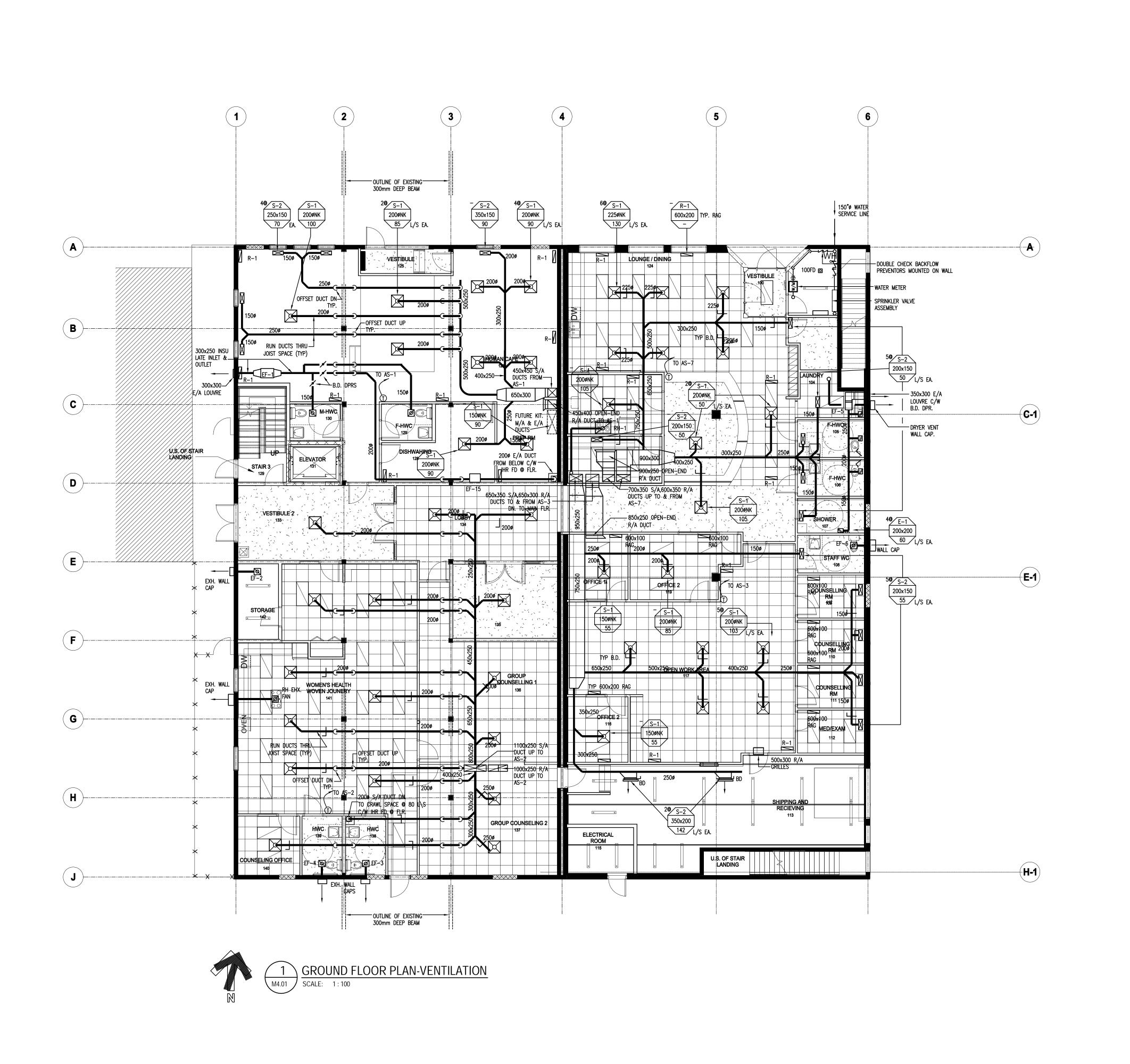
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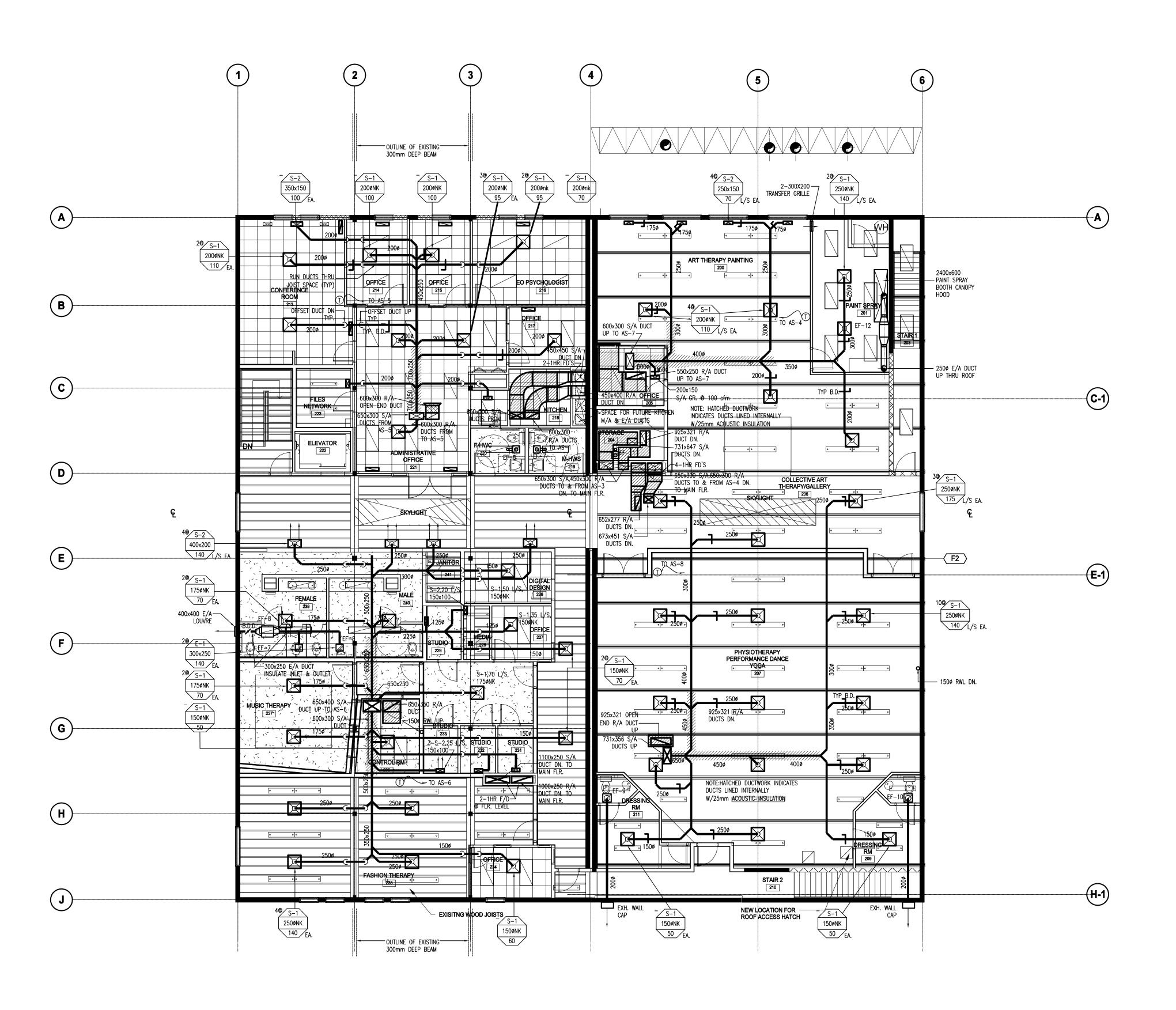
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GROUND FLOOR VENTILATION

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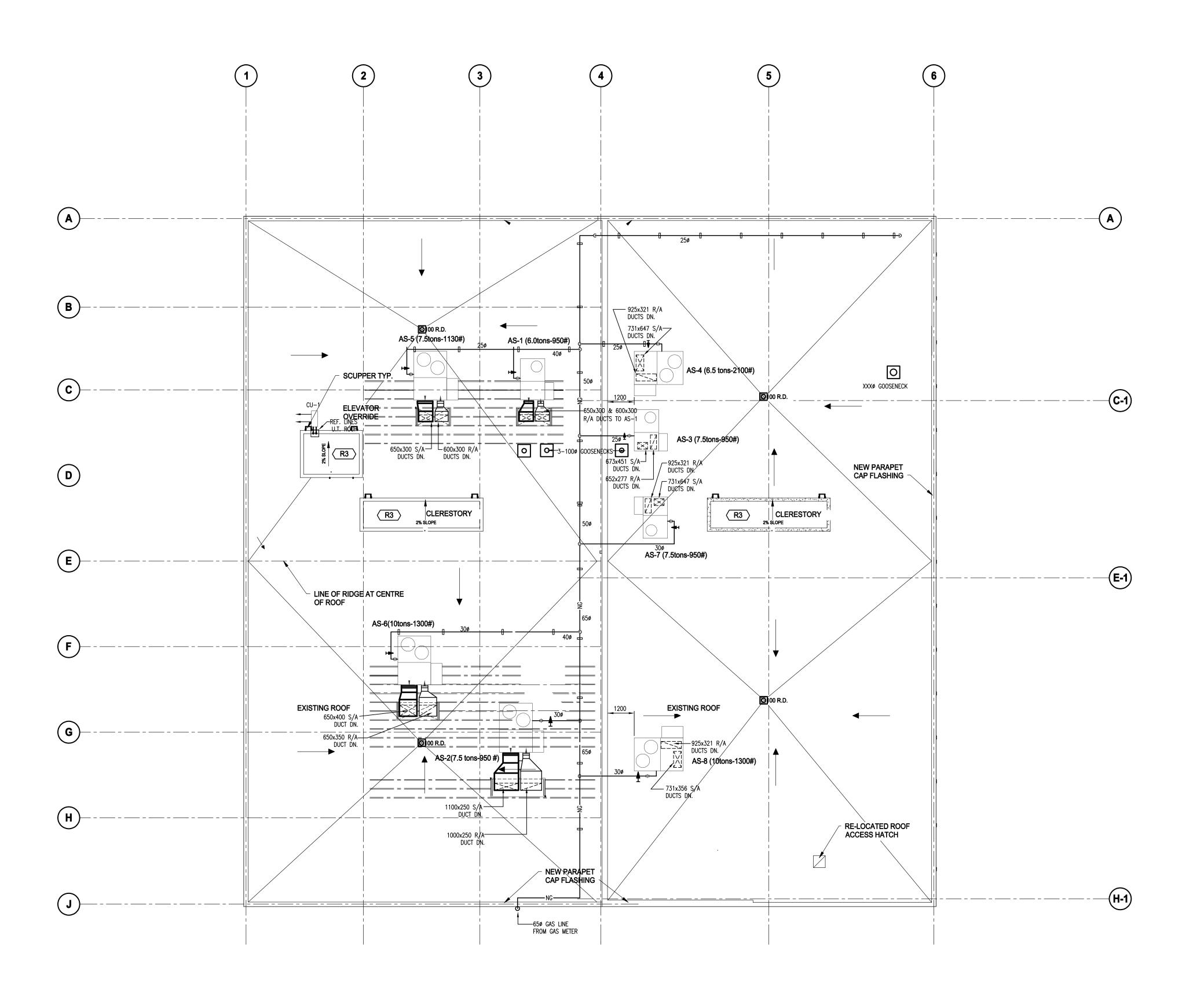
SECOND FLOOR **VENTILATION**

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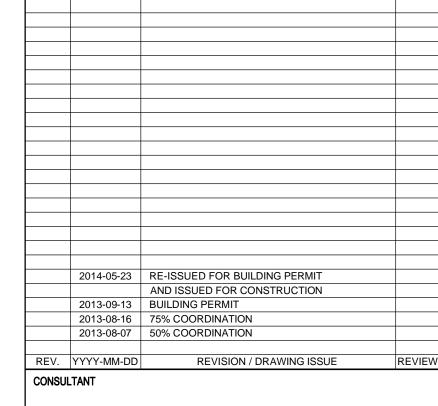
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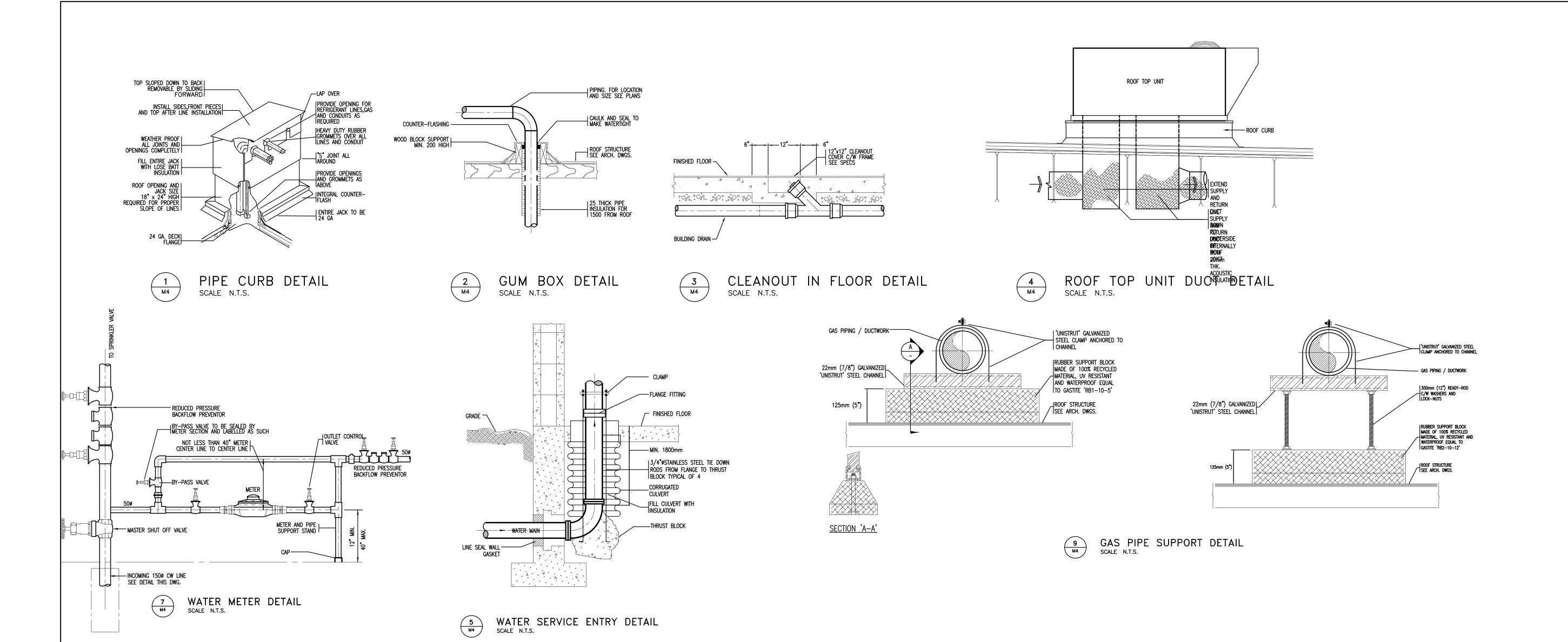
MECHANICAL ROOF PLAN

DRAWING ISSU

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SCHEDULE OF ROOF TOP UNITS														
UNIT TAG	AREA SERVED	MANUFACTURER	ALTERNATE MANUFACTURER	MODEL	S/A FLOW (CFM)	R/A FLOW (CFM)	EXT. S.P. (in.)	HEATING CAP. (MBH)	COOLING CAP. (MBH)	S/A FAN MOTOR (HP)	COMP. MOTOR (HP)	COND. FAN MOTOR (HP)	POWER SUPPLY	REMARKS
AS-1	GRD. FLR.	CARRIER	TRANE.ALLIED.ENGA	48TCFA07A2M5-0A0A1	2400	2100	1.0	150	72.0	3.0	AS REQ'D	AS REQ'D	208/3ø/60	
AS-2	GRD. FLR.	CARRIER		48TCD08A2M5-0A01	3510	2850	1.0	225	72.0	3.0	AS REQ'D	AS REQ'D	208/3ø/60	
AS-3	GRD. FLR.	CARRIER		48TCFD08A2M5-0B0A1	2575	2285	1.0	225	72.0	3.0	AS REQ'D	AS REQ'D	208/3ø/60	
AS-4	GRD. FLR.	TRANE	ENG A	OA1D072A3-D1A100EG-A1 G0000000-001B00000	2420	1365	1.0	250	78.0	3.0	AS REQ'D	AS REQ'D	208/3ø/60	
AS-5	2ND FLR.	CARRIER		48TCD08A2M5-0A01	2350	2065	1.0	225	72.0	3.0	AS REQ'D	AS REQ'D	208/3ø/60	
AS-6	2ND FLR.	CARRIER		48TCFD1A2M5-0A0A1	4000	3227	1.0	250	120.0	3.0	AS REQ'D	AS REQ'D	208/3ø/60	
AS-7	2ND FLR.	CARRIER		48TCFD08A2M5-0B0A1	3050	2440	1.0	225	72.0	3.0	AS REQ'D	AS REQ'D	208/3ø/60	
AS-8	2ND FLR.	CARRIER		48TCFD12A2M5-0B0A1	4375	3755	1.0	250	120.0	3.0	AS REQ'D	AS REQ'D	208/3ø/60	

SCHEDI	SCHEDULE OF SUPPLY,RETURN & EXHAUST DIFFUSERS & GRILLES										
UNIT TAG	SYSTEM	MODEL	VOLUME CONTROL	MATERIAL	REMARKS						
S-1	SUPPLY AIR	600x600 SCDA	YES	STEEL	C/W DUCT COLLAR FOR AREAS WITH NO CEILING						
S-2	SUPPLY AIR	EH PRICE LBP16B/1000/B12	-	ALUMINUM							
R-1	RETURN AIR	EGGCRATE	_	_							
E-1	EXHAUST AIR	SERIES 80	_	ALUMINUM							

NOTES: 1) ALL ROOF CURBS FOR AS-1,2,3 & 4 BY BUILDING SUPPLIER.
2) AS-5,6,7 & 8 SUPPPLIED WITH ROOF CURBS
3) ALL AIR SYSTEM C/W ECONOMIZER & PROGRAMMBLE THERMOSTAT.

UNIT NO.	AREA SERVED	LOCATION	MANUFACTURER	UNIT	AIR FLOW	E.S.P. (IN W.C.)	MOTOR	REMARKS
				MODEL NO	(CFM)	<u> </u>	HP ea.	
EF-1	M-HWS130,F-HWC129,CRAWL SPACE	iHUMAN CAFE	GREENHECK	BSQ-70-4	410	0.25	1/3	INTERLOCK WITH AS-1 & AS-
EF-2	STORAGE 142	STORAGE 142	NUTONE/BROAN	_	100	_	FRAC.	INTERLOCK WITH AS-2
EF-3	HWC 138	HWC 138	NUTONE/BROAN	_	140	_	FRAC.	ON/OFF SWITCH
EF-4	HWC 139	HWC 139	NUTONE/BROAN	_	140	_	FRAC.	ON/OFF SWITCH
EF-5	LAUNDRY104,HWC 105,106, SHOWER 107	LAUNDRY 104	GREENHECK	BSQ-80-4	520	0.25	1/4	ON/OFF SWITCH
EF-6	M-HWC 219	M-HWC 219	NUTONE/BROAN	_	120	_	FRAC.	ON/OFF SWITCH
EF-7	M-HWC 220	M-HWC 220	NUTONE/BROAN	_	120	_	FRAC.	ON/OFF SWITCH
EF-8	FEMALE 239,MALE 240	FEMALE 239	GREENHECK	BSQ-80-4	640	0.25	1/4	ON/OFF SWITCH
EF-9	DRESSING 211	DRESSING 211	NUTONE/BROAN	_	220	_	FRAC.	ON/OFF SWITCH
EF-10	DRESSING 209	DRESSING 209	NUTONE/BROAN	_	220	_	FRAC.	ON/OFF SWITCH
EF-11	STORAGE 204	STORAGE 204	NUTONE/BROAN	_	100	_	FRAC.	ON/OFF SWITCH
EF-12	PAINT SPRAY 201	PAINT SPRAY 201	GREENHECK	BSQ-80-7	800	1.0	3/4	INTERLOCK WITH AS-4

NOTES: 1) PROVIDE NEOPRENE VIBRATION ISOLATORS FOR CEILING HUNG FANS.

2) ALL FANS C/W BACKDRAFT DAMPERS.

SCHEDULE OF FORCE-FLO									
UNIT	MANUFACTURER	LOCATION	CAPACITY ELEC. (KW)	MODEL	HP	REMARKS			
FF-1	QUELLETE	VESTIBULE 100	5.0	OCAU05038	FRAC	SURFACE FLOOR MOUNTED,D2 ARRGMT. C/W BUILT-IN THERMOSTAT, 208/10/60			
FF-2	QUELLETE	VESTIBULE 125	5.0	OCAU03000	FRAC	SURFACE FLOOR MOUNTED,D2 ARRGMT. C/W BUILT-IN THERMOSTAT, 208/10/60			
FF-3	QUELLETE	VESTIBULE 2	5.0	OCAU03000	FRAC	SURFACE FLOOR MOUNTED,D2 ARRGMT. C/W BUILT-IN THERMOSTAT, 208/10/60			
FF-4	QUELLETE	REAR ENTRY VEST	5.0	OCAU03000	FRAC	SURFACE FLOOR MOUNTED,D2 ARRGMT. C/W BUILT-IN THERMOSTAT, 208/10/60			
FF-5	QUELLETE	SHIPPING 113	5.0	OCAU03000	FRAC	PROJECTION TYPE, CEILING MOUNTED, 208/3ø/60			
FF-6	QUELLETE	STAIR 01	3.0	OACPU4808	FRAC	SURFACE FLOOR MOUNTED,D2 ARRGMT. C/W BUILT-IN THERMOSTAT, 208/10/60			
FF-7	QUELLETE	STAIR 02	3.0	OCAU03000	FRAC	SURFACE FLOOR MOUNTED,D2 ARRGMT. C/W BUILT-IN THERMOSTAT, 208/10/60			

NOTES: DHWH-1: USE AO SMITH CYCLONE XHE MODEL BTH-150,100 GAL. CAPACITY @100° RISE. 150 MBH INPUT. PROVIDE DOM. HW RECIRC PUMP (DHRP-1) AT 2 GPM, 208v/60/1ø



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SCHEDULE OF EQUIPMENT AND DETAILS

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- 1. GENERAL
- 1 1 INTENT

.1 THE INTENT OF THIS SPECIFICATION AND DRAWINGS IS TO PROVIDE A COMPLETE AND FULLY OPERATING MECHANICAL LAYOUT IN COMPLETE ACCORD WITH THE 2006 ALBERTA BUILDING CODE AND REFERENCED STANDARDS. MAKE PROVISIONS FOR ALL LABOUR, MATERIAL AND EQUIPMENT NECESSARY TO COMPLETE THE MECHANICAL WORK.

.2 DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY TO EACH OTHER AND WHAT IS CALLED FOR BY ONE IS TO BE BINDING AS IF CALLED FOR BY BOTH. SHOULD ANY DISCREPANCY APPEAR BETWEEN DRAWINGS AND SPECIFICATIONS WHICH LEAVES DOUBT AS TO THE TRUE INTENT AND MEANING, OBTAIN A RULING FROM THE ENGINEER BEFORE SUBMITTING TENDER.

.3 MECHANICAL DRAWINGS INDICATE GENERAL LOCATION AND ROUTE TO BE FOLLOWED BY MECHANICAL SYSTEMS AND DO NOT SHOW ALL STRUCTURAL AND ELECTRICAL DETAILS. IN SOME CASES, MECHANICAL SYSTEMS SHOWN DIAGRAMMATICALLY IN SCHEMATIC DESIGNATION. INSTALL MECHANICAL SYSTEMS TO PROVIDE A COMPLETE OPERATING SYSTEM. INSTALL TO CONSERVE HEADROOM, USE FURRING SPACES, ETC. DO NOT INSTALL ANY PIPING, DUCTWORK OR OTHER MECHANICAL COMPONENTS WITHOUT PRIOR CONSULTATION AND APPROVAL BY THE ENGINEER.

.4 CONFORM TO MANUFACTURER'S INSTRUCTIONS, DETAILS AND PROCEDURES FOR EQUIPMENT INSTALLATIONS.
INSTALL EQUIPMENT IN LOCATIONS AND ROUTES SHOWN, CLOSE TO BUILDING STRUCTURE WITH MINIMUM INTERFERENCE WITH OTHER SERVICES OR FREE SPACE. REMOVE AND REPLACE IMPROPERLY INSTALLED EQUIPMENT.

- 1.2 LIABILITY
- .1 ASSUME RESPONSIBILITY FOR LAYOUT WORK AND FOR DAMAGE CAUSED TO THE OTHERS BY IMPROPER EXECUTION OF WORK.
- .2 PROTECT FINISHED AND UNFINISHED WORK FROM DAMAGE.
- .3 TAKE RESPONSIBILITY FOR CONDITION OF MATERIALS AND EQUIPMENT SUPPLIED AND PROTECT UNTIL WORK IS COMPLETED AND ACCEPTED.

.4 VERIFY ALL BUILDING AND SITE DIMENSIONS AND MILLWORK COMPONENTS PRIOR TO ANY FABRICATION AND INSTALLATION OF EQUIPMENT OR MATERIALS. NO INCREASE IN CONTRACT COST WILL BE CONSIDERED FOR FAILURE TO VERIFY THESE DIMENSIONS ON SITE.

1.3 CERTIFICATES

JURISDICTION.

.1 GIVE NOTICES, OBTAIN PERMITS AND PAY FEES SO WORK SPECIFIED MAY BE CARRIED OUT. FURNISH CERTIFICATES, IF REQUESTED, AS EVIDENCE THAT WORK CONFORMS WITH LAWS AND REGULATIONS OF AUTHORITIES HAVING

1.4 CUTTING AND PATCHING

.1 LOCATE ALL LOCATION OF HOLES FOR MECHANICAL EQUIPMENT AND PROVIDE SLEEVES REQUIRED FOR THE MECHANICAL INSTALLATIONS.

.2 BE RESPONSIBLE FOR THE COORDINATION OF CUTTING AND PATCHING OF BUILDING STRUCTURE REQUIRED BY MECHANICAL WORK UNLESS OTHERWISE INDICATED. REVIEW EXISTING BASE BUILDING STRUCTURAL SYSTEM PRIOR TO COMMENCEMENT OF CORING AND OBTAIN APPROVAL FROM STRUCTURAL CONSULTANT IF REQUIRED FOR SPECIAL CONDITIONS (I.E. POST TENSION STRUCTURAL SLABS).

.3 X-RAY FOR LOCATION OF IN-FLOOR REBAR AND CONDUIT.

- 4 E TECTINO
- .1 TEST EQUIPMENT AND MATERIALS WHERE SPECIFIED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION TO DEMONSTRATE PROPER AND SAFE OPERATION. PROVIDE NOTICE TO ENGINEER BEFORE TESTS.
- .2 TEST PROCEDURES SHALL BE IN ACCORDANCE WITH APPLICABLE PORTIONS OF ASME, ASHRAE, SMACNA, NFPA, CSA AND OTHER RECOGNIZED TEST CODES AS FAR AS FIELD CONDITIONS PERMIT.

PROVIDE A WRITTEN GUARANTEE WARRANTING APPARATUS FURNISHED TO REMAIN IN SERVICEABLE CONDITION FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE BY THE LANDLORD AND THE TENANT.

- 1.7 STANDARD OF MATERIALS AND WORKMANSHIP
- .1 MATERIALS SHALL BE NEW AND OF UNIFORM PATTERN THROUGHOUT.
- .2 WORKMANSHIP SHALL FOLLOW THE BEST TRADITION AND TRADESMANSHIP. EMPLOY ONLY TRADESMEN PROPERLY LICENSED FOR WORK REQUIRING TRADESMAN WITH SPECIAL SKILL.
- .3 MAKE AND QUALITY OF MATERIALS AND WORKMANSHIP ARE SUBJECT TO APPROVAL BY THE ENGINEER AND THE TENANT. REMOVE CONDEMNED MATERIALS AND INSTALL SUITABLE MATERIALS IN THEIR PLACE.
- 1.8 SHOP DRAWINGS, ALTERNATIVE MATERIALS AND EQUIPMENT
- .1 CONTRACT DOCUMENTS ARE BASED ON MATERIALS AND EQUIPMENT SPECIFIED. APPROVAL BY ENGINEER OF EQUIPMENT SUBMITTED BY THE MECHANICAL TRADE AS EQUAL TO THAT SPECIFIED DOES NOT RELIEVE THE MECHANICAL TRADE OF ANY RESPONSIBILITY.
- .2 THE MECHANICAL TRADE IS RESPONSIBLE FOR DETERMINING THAT EVERY ITEM INCLUDED IN THE TENDER COMPLIES IN ALL RESPECTS WITH THE SPECIFICATIONS AND DRAWINGS. AFTER AWARD OF TENDER, ANY ITEM OF EQUIPMENT FOUND BY THE ENGINEER NOT TO COMPLY WITH THE SPECIFICATIONS AND DRAWINGS, TO BE REPLACED AT NO ADDITIONAL COST WITH AN ITEM OR UNIT OF ENGINEER'S CHOICE.
- .3 REVISIONS REQUIRED TO ADAPT ALTERNATIVES SHALL BE INCLUDED IN SUCH PROPOSALS. NO INCREASE IN THE CONTRACT PRICE WILL BE CONSIDERED TO ACCOMMODATE THE USE OF EQUIPMENT OTHER THAN THAT SPECIFIED.
- .4 SUBMIT SHOP DRAWINGS TO ENGINEER ON ALL EQUIPMENT SPECIFIED IN SPECIFICATIONS OR DRAWINGS FOR ENGINEER'S REVIEW. DO NOT ORDER EQUIPMENT OR MATERIALS UNTIL ENGINEER HAS REVIEWED SHOP DRAWINGS.

1.9 RECORD DRAWINGS

- .1 KEEP ON SITE AN EXTRA SET OF WHITE PRINTS AND SPECIFICATIONS, RECORDING CHANGES AND DEVIATIONS DAILY.
- 1.10 DIVISION 16 ELECTRICAL
- .1 SUBMIT MOTOR LIST TO THE ELECTRICAL SUBTRADE WHICH OUTLINES ALL ELECTRICAL CONNECTIONS THAT ARE REQUIRED TO SERVICE MECHANICAL EQUIPMENT, INCLUDING VOLTAGE, PHASE AND MOTOR HORSEPOWER.
- .2 REVIEW ALL EQUIPMENT REQUIRING ELECTRICAL HOOK-UP WITH ELECTRICAL SUBTRADE PRIOR TO ORDERING EQUIPMENT. ENSURE PROPER ELECTRICAL CHARACTERISTICS ARE DETERMINED FOR ALL AFFECTED AND RELATED WORK.

 .3 COORDINATE INSTALLATION OF CEILING ELEMENTS WITH THE CONTRACTOR AND ELECTRICAL SUBTRADE.

1.11 INSPECTIONS

- .1 ADVISE ENGINEER TWO (2) DAYS PRIOR TO THE DATE FINAL INSPECTION IS DESIRED. ALL SYSTEMS TO BE FULLY OPERATIONAL AND ANY DEFICIENCIES SHOULD BE NOTED TO THE ENGINEER.
- .2 ALL DEFICIENCIES SHALL BE COMPLETED WITHIN TWO (2) WEEKS AFTER FINAL INSPECTION AND LETTER SUBMITTED TO ENGINEER WITHIN THAT TIME ADVISING THAT THE WORK IS COMPLETE. FAILURE TO COMPLETE WORK WILL RESULT IN WORK BEING DONE BY THE LANDLORD AND THE COST DEDUCTED FROM FINAL PAYMENT. ADDITIONAL INSPECTION COSTS SHALL BE BORNE BY THE CONTRACTOR AT A RATE OF \$85.00 PER HOUR.

1.12 MAINTENANCE MANUALS

- PROVIDE THREE (3) COPIES OF ALL SHOP DRAWINGS AND MAINTENANCE DATA IN 3-RING BINDERS.
- 2. HEATING AND VENTILATION
- 2.1 GENERAL
- .1 DUCTWORK SHALL BE GALVANIZED STEEL, LOCK FORMING QUALITY. FABRICATE IN ACCORDANCE WITH SMACNA DUCT MANUALS AND ASHRAE HANDBOOKS. DUCTWORK SHALL MEET THE REQUIREMENTS OF NFPA 90A AND 91 AND CONFORM TO APPLICABLE CODES.
- .2 SEALANTS AND GASKETING TO BE WATER RESISTANT, FIRE RESISTANT AND COMPATIBLE WITH MATING MATERIALS. SEAL ALL DUCT JOINTS TO MEET SMACNA STANDARDS.
- .3 NO DUCT TAPE SHALL BE ALLOWED FOR SEALING DUCTS.
- .4 PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACES AND HEIGHTS AND CONFLICTIONS WITH OTHER TRADES AND CONFIRM DUCT ROUTING CAN BE INSTALLED AS SHOWN ON THE DRAWINGS. NOTIFY THE ENGINEER IF ANY CONFLICTION WILL PREVENT THE INSTALLATION TO PROCEED AS SHOWN ON THE DRAWINGS.
- .5 DUCT SIZES ARE DEFINED ON THE DRAWINGS AS INSIDE CLEAR DIMENSIONS. WHERE DUCTS ARE DEFINED TO BE INSTALLED WITH ACOUSTIC LINING OR INTERNAL INSULATION, MAINTAIN INSIDE CLEAR DIMENSIONS CONSISTENT WITH THE DUCT SIZING DESIGNATED ON THE DRAWINGS.
- .6 PROVIDE ADEQUATELY SIZED ACCESS PANELS TO MANUAL DAMPERS, EQUIPMENT, FIRE DAMPERS AND VALVES. PROVIDE COLOURED IDENTIFICATION TABS ON SUSPENDED CEILING TILES TO LOCATE ACCESS TO MECHANICAL COMPONENTS.
- .7 FIRE DAMPERS SHALL BE ULC LISTED AND CONSTRUCTED IN ACCORDANCE WITH ULC STANDARD S112 "FIRE DAMPERS". FUSIBLE LINKS SHALL BE CONSTRUCTED TO ULC STANDARD S505.
- .8 PROVIDE BALANCING DAMPERS WHERE INDICATED ON DRAWINGS AND AT POINTS ON LOW PRESSURE SUPPLY, RETURN AND EXHAUST DUCTS WHERE BRANCHES ARE TAKEN FROM LARGER DUCTS.

 .9 WHERE SPACE PERMITS, ROUND DUCTWORK MAY BE USED WHERE DRAWINGS HAVE DEFINED RECTANGULAR DUCTS THAT ARE NOT ACOUSTIC LINED.
- .10 SIZE ROUND DUCTS FROM ASHRAE TABLE OF EQUIVALENT RECTANGULAR ROUND DUCTS. NO VARIATION OF DUCT CONFIGURATION OR SIZES PERMITTED EXCEPT BY PERMISSION FROM ENGINEER.
- .11 ROUND DUCTWORK TO BE SPIRAL LOCK SEAM TYPE ONLY.
- .12 PROVIDE AND INSTALL 3/8" (MIN) SPACING (OR TENANT APPROVED ALTERNATES) FOR ALL ROOF OPENINGS IN EXCESS OF 12"x12" (i.e. ROOF TOP OPENINGS) COOORDINATE TYPE AND INSTALLATION WITH TENANT DRAWINGS
- .13 ALL ROOF OPENINGS ARE TO BE COMPLETE WITH INSULATED CURBS eg. ROOFTOP UNITS, EXHAUST FANS AND CURBS FOR FUTURE TENANT ROOF MOUNTED EQUIPMENT.

2.2 LOW VELOCITY DUCTWORK

ROUND DUCTWORK

DUCT DIAMETER

.1 THE MINIMUM SHEET METAL THICKNESS FOR LOW PRESSURE DUCTS INCLUDING FITTINGS, ACCESS DOORS AND OTHER ACCESSORIES SHALL BE AS FOLLOWS:

RECTANGULAR DUCTWORK
MAXIMUM WIDTH GAUGE

UP TO 305 MM WIDE .55 MM
330 MM TO 760 MM WIDE .70 MM

UP TO 330 MM .55 MM 35 MM TO 560 MM .70 MM

.2 FIBROUS GLASS DUCT IS NOT ACCEPTABLE.

.3 WHERE LOW PRESSURE DUCTS ARE CONNECTED TO FAN EQUIPMENT, OR ANY OTHER APPARATUS, A SCREWED OR BOLTED FLEXIBLE GASKETED JOINT SHALL BE PROVIDED BETWEEN THE DUCTWORK AND THE EQUIPMENT.

.4 SEAL ALL DUCT JOINTS TO PROVIDE AN AIRTIGHT SYSTEM.

2.3 ELECTRIC FORCE AIR CABINET HEATER

.1 CONSTRUCTION: 18 GAUGE STEEL EPOXY/POLYESTER POWDER COATED STANDARD WHITE, EXTRUDED ALUMINUM BAR GRILLES, DIRECT DRIVE TWO SPEED FAN, TUBULAR HEATING ELEMENT WITH FINS, CEILING MOUNTED COMPLETE WITH

2.4 PACKAGE ROOF TOP HEATING/COOLING UNITS

.1 QUALITY ASSURANCE

- .1 CSA AND/OR CGA APPROVED AND COMPLY WITH PROVINCIAL STATUTES AND CODES. CONSTRUCT TO CGA 2.91 AND ANSI Z21.40.1 AND CAN 1-2.21 PLUS AMENDMENTS.
- .2 PROVIDE UNITS OF MANUFACTURERS WITH LOCAL SERVICE PERSONNEL.
- .3 UNIT SHALL BE SUITABLE FOR OPERATION AT -40°C AMBIENT.

.2 SUBMITTALS

- .1 SUBMIT SHOP DRAWINGS
- .2 SHOP DRAWINGS SHALL INCLUDE ALL OF THE FOLLOWING INFORMATION:
- .1 FAN PERFORMANCE CURVES SHOWING DESIGN OPERATION POINT, R/MIN, HORSEPOWER, ETC.
- .2 DIMENSIONAL DATA, INCLUDING WEIGHTS, OPENINGS REQUIRED, SERVICE SPACE AND CLEARANCE REQUIREMENTS.
- .3 ELECTRICAL CIRCUIT DIAGRAMS INCLUDING FIELD WIRED COMPONENTS AND REQUIREMENTS FOR THE SPECIFIC LOCATION.
- ELECTRICAL CIRCUIT DIRICHARD INCESSING TILLS WINLES COM CREATE AND REQUIREMENTS FOR
- .4 ELECTRICAL VOLTAGES, PHASE AND POWER REQUIREMENTS.
- .5 COMPLETE INSTALLATION INSTRUCTIONS.
- .3 ACCEPTABLE MANUFACTURERS AND PRODUCTS
- .1 CARRIER, ALLIED COMMERCIAL, TRANE, ENG A

.4 TYPE

- .1 PROVIDE ROOF MOUNTED UNITS WITH GAS BURNER AND ELECTRIC REFRIGERATION.
- .2 UNITS: SELF CONTAINED, PACKAGED, FACTORY ASSEMBLED AND PREWIRED CONSISTING OF A CABINET AND FRAME, SUPPLY FAN POWER EXHAUSTER, HEAT EXCHANGER AND BURNER, CONTROLS WITH CO2 SENSORS, AIR FILTER, REFRIGERANT COOLING COILS AND COMPRESSOR, CONDENSER COIL AND FAN.

.5 CONSTRUCTION

- .1 CABINET; HEAVY GAUGE STEEL WITH BAKED ENAMEL FINISH, HINGED ACCESS DOORS. STRUCTURAL FRAMING MEMBERS SHALL BE MINIMUM 1.2mm WITH REMOVABLE PANELS MINIMUM 0.9 mm.
- .2 INSULATION; MINIMUM 25mm THICK BITUMINOUS COATED GLASS FIBER ON SURFACES WHERE CONDITIONED AIR IS HANDLED. PROTECT EDGES FROM EROSION.
- .3 HEAT EXCHANGERS; ALUMINIZED STEEL OF WELDED CONSTRUCTION.
- .4 SUPPLY FAN; CENTRIFUGAL TYPE RUBBER MOUNTED V-BELT DRIVE, ADJUSTABLE VARIABLE PITCH MOTOR PULLEY, RUBBER INSULATED HINGE MOUNTED MOTOR.
- .5 AIR FILTERS; 50mm THICK GLASS FIBER DISPOSABLE MEDIA IN METAL FRAMES ARRANGED FOR EASY REPLACEMENT (FARR, TYPE DC-2) AVERAGE EFFICIENCY 79%.

.6 BURNER

- .1 GAS BURNER; FORCED OR INDUCED DRAFT BURNER WITH ADJUSTABLE COMBUSTION AIR SUPPLY, PRESSURE REGULATOR, GAS VALVES, MANUAL SHUT-OFF, ELECTRONIC SPARK IGNITION, FLAME SENSING DEVICE AND AUTOMATIC 100% SHUT-OFF.
- .2 GAS BURNER SAFETY CONTROLS; ENERGIZE IGNITION, LIMIT TIME FOR ESTABLISHMENT OF FLAME, PREVENT OPENING OF GAS VALVE UNTIL PILOT FLAME IS PROVEN. STOP GAS FLOW ON IGNITION FAILURE. ENERGIZE BLOWER MOTOR. AFTER AIR FLOW PROVEN AND SLIGHT DELAY, GAS VALVE IS ALLOWED TO OPEN.
- .3 HIGH LIMIT CONTROL WITH FIXED STOP AT MAXIMUM PERMISSIBLE SETTING, DE-ENERGIZES BURNER ON EXCESSIVE BONNET TEMPERATURE AND ENERGIZES BURNER WHEN TEMPERATURE DROPS TO LOWER SAFE VALVE.
- .1 PROVIDE COPPER TUBE ALUMINUM FIN COIL ASSEMBLY WITH GALVANIZED DRAIN PAN AND CONNECTION, CAPILLARY TUBES UP TO 3.5 kw CAPACITY AND EXPANSION VALVES FOR 5.5 kw CAPACITYAND GREATER.
- .1 PROVIDE COPPER TOBE ALUMINOM PIN COIL ASSEMBLE WITH GALVANIZED DIVIN PAN AND CONNECTION, CAPILLARY TOBES OF TO 3.5 KW CAPACITIAND GREATER.

 8 COMPRESSOR
- .1 PROVIDE HERMETIC OR SEMI-HERMITIC COMPRESSOR, 3600 R/MIN MAXIMUM, RESILIENTLY MOUNTED WITH POSITIVE LUBRICATION, CRANKCASE HEATER, HIGH AND LOW PRESSURE SAFETY CONTROLS, MOTOR OVERLOAD PROTECTION,
- .2 TIMED OFF CIRCUIT SHALL LIMIT NUMBER OF COMPRESSOR STARTS TO 12 PER HOUR.
- .3 OUTDOOR THERMOSTAT SHALL ENERGIZE COMPRESSOR ABOVE 14°C AMBIENT.
- .4 PROVIDE STEP CAPACITY CONTROL BY CYCLING THE COMPRESSORS.

.9 CONDENSER

.7 EVAPORATOR COIL

- .1 PROVIDE COPPER TUBE ALUMINUM FIN COIL ASSEMBLY WITH SUB-COOLING ROWS.
- .2 PROVIDE DIRECT DRIVE AXIAL FANS, RESILIENTLY MOUNTED WITH FAN GUARD, MOTOR OVERLOAD PROTECTION, WIRED TO OPERATE WITH COMPRESSOR.

.10 SUPPLY AND RETURN CASING

SERVICE VALVES AND FILTER DRIER.

- .1 PROVIDE OUTSIDE, RETURN AND RELIEF DAMPERS WITH POWER EXHAUSTER, DAMPER OPERATOR AND CONTROL PACKAGE TO AUTOMATICALLY VARY OUTSIDE AIR QUANTITY. OUTSIDE AIR DAMPER SHALL FAIL TO CLOSED POSITION.
- .2DAMPERS SHALL BE 1.6 MM GALVANIZED STEEL OR EXTRUDED ALUMINUM MULTIPLE BLADE MOUNTED IN 2.8 MM STEEL OR EXTRUDED ALUMINUM FLANGED FRAME. INDIVIDUAL BLADES SHALL NOT EXCEED 150 MM IN WIDTH OR 1200 MM IN LENGTH WITH INTERLOCKING EDGES AND NYLON BEARINGS WITH ADDITIONAL THRUST BEARINGS FOR VERTICAL BLADES. PRIME COAT STEEL DAMPERS.
- .3 MIXING DAMPERS ARRANGED TO MIX STREAMS. PROVIDE PILOT POSITIONERS ON MIXED AIR DAMPER MOTORS WHERE DAMPERS ARE NOT MECHANICALLY LINKED. DAMPERS, MAXIMUM 1/2% LEAKAGE.
- .4DAMPER OPERATOR: 24 VOLT, SPRING RETURN WITH MOTOR AND GEAR TRAIN SEALED IN OIL.
- .5 MIXED AIR CONTROLS: MAINTAIN SELECTED MIXED AIR ENTHALPY LOCKOUT COMPRESSOR BELOW APPROXIMATELY 14°C AMBIENT, RETURN DAMPERS TO MINIMUM POSITION ABOVE APPROXIMATELY 14°C AMBIENT.

 .11 OPERATING CONTROLS

.TI OI EINAIING CONTROLS

- .1MIXED AIR CONTROLS: MAINTAIN SELECTED MIXED AIR TEMPERATURE THRU MODULATING THERMOSTAT WITH CAPILLARY BULB SENSOR LOCATED IN THE SUPPLY FAN DISCHARGE. DAMPER CONTROL SHALL BE SEQUENCED WITH UNIT HEATING AND COOLING FUNCTIONS. COMPRESSOR SHALL BE LOCKED OUT BELOW 14°C AMBIENT. ABOVE 14°C AMBIENT, COOLING CONTROL CIRCUIT IS ENERGIZED AND OUTSIDE AIR DAMPERS TURN TO MINIMUM POSITION.

 .2TEMPERATURE CONTROLS:
- PROVIDE SOLID STATE, DEMAND ORIENTED CONTROL SYSTEM WITH 2 STAGE COOLING, 2 STAGE HEATING AND FULLY INTEGRATED ECONOMIZER CONTROL. PRIMARY CONTROL SHALL BE ROOM SENSOR WITH INTEGRAL SETPOINT.
- A SECONDARY DISCHARGE AIR TEMPERATURE LIMIT CONTROL SHALL RESET THE CONTROL SYSTEM IN RESPONSE TO THE COOLING DEMAND

.3 AUXILIARY CONTROLS

- .1 NIGHT SETBACK CONTROL (LOCK OFF COOLING, CYCLE HEATING AND FAN ON DEMAND, CLOSE OUTSIDE DAMPER, RESET THERMOSTAT TEMPERATURE) WITH 12 HOUR OVERRIDE TIMER.
- .2 375 DAY DIGITAL PROGRAMMABLE THERMOSTAT WITH BATTERY CARRYOVER AND 12- HOUR OVERRIDE TIMER.
- .3 Low discharge air temperature limit with auto reset and bypass timer.
- .4 INTERSTAGE TIMERS ON COMPRESSOR TO REGULATE HEATING.



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.12 INSTALLATION
    .1 MOUNT UNITS ON FACTORY FABRICATED INSULATED ROOF MOUNTING FRAME PROVIDING WATERTIGHT ENCLOSURE TO PROTECT DUCTWORK AND UTILITY SERVICES.
    .1 UNIT MANUFACTURER SHALL PROVIDE FAN COMPONENTS AND MOTORS CAPABLE OF DELIVERING THE SPECIFIED AIR VOLUMES, TAKING INTO CONSIDERATION THAT ACTUAL EXTERNAL STATIC PRESSURES AFTER INSTALLATION MAY
     VARY \pm 15\% OF THAT SPECIFIED.
 .14 REFER TO SCHEDULE ON DRAWING
2.6 DUCT INSULATION
 .1 EXPOSED RECTANGULAR DUCTS: 25 MM RIGID FIBROUS GLASS INSULATION, "K" VALUE AT 24°C MAXIMUM 0.035 W/M°C WITH FACTORY APPLIED REINFORCED ALUMINUM FOIL VAPOUR BARRIER.
.2 ROUND DUCTS AND CONCEALED RECTANGULAR DUCTS: 25 MM FLEXIBLE FIBROUS GLASS INSULATION, "K" VALUE AT 24°C MAXIMUM 0.038 W/M°C WITH FACTORY APPLIED REINFORCED ALUMINUM FOIL VAPOUR BARRIER.
.3 ACOUSTIC LINING: 25 MM FIBROUS INSULATION WITH "K" VALUE AT 24°C MAXIMUM 0.035 W/M°C ABSOLUTE ROUGHNESS OF EXPOSED SURFACE NOT TO EXCEED 0.033 COATED TO PREVENT FIBRE EROSION AT AIR VELOCITIES UP TO
      20.0 M/S, 24 KG/M3 FOR PLENUMS.
.4 ENSURE SURFACE AND INSULATION IS CLEAN AND DRY PRIOR TO AND DURING INSTALLATION.
.5 ENSURE INSULATION IS CONTINUOUS THROUGH INSIDE PARTITIONS.
.6 FINISH AND SEAL INSULATION NEATLY AT HANGERS, SUPPORTS, ACCESS DOORS, FIRE DAMPERS AND OTHER PROTRUSIONS.
 .7 MATERIALS SHALL MEET FIRE AND SMOKE HAZARD RATINGS AS DEFINED IN ALBERTA HEATING, VENTILATION AND & AIR CONDITIONING CODE.
                                             INSULATION
         DUCTS TO BE INSULATED
                                            THICKNESS MM
          EXHAUST DUCTS WITHIN 3 M
         OF EXTERIOR OPENINGS
          SUPPLY DUCTS
          INTERNAL ACOUSTIC LINING
\frac{2.7 \text{ BALANCING}}{\text{.1 ADJUST}} and Balance Rooftop units and , exhaust fans to provide flow air rates with 10% \pm of those specified.
     .2 BALANCING FIRM SHALL REPORT ANY DEFECTS OR DEFICIENCIES THAT AFFECT OBTAINING SPECIFIED FLOW RATES PRIOR TO ISSUING FINAL REPORTS TO ENGINEER.
     .3 PREPARE REPORT IN ACCORDANCE WITH PROCEDURES, FORMAT AND INFORMATION REQUIRED WITHIN THE CURRENT EDITION OF AABC GUIDELINE AND SUBMIT TWO (2) COPIES TO ENGINEER FOR REVIEW. PROVIDE INFORMATION
       ON EXISTING EQUIPMENT IF REQUIRED.
     .4 MECHANICAL CONTRACTOR, SHEET METAL AND CONTROL SUB-TRADES SHALL COOPERATE WITH BALANCING FIRM WHEN BALANCING IN PROGRESS.
     .5 IF REPORT IS REJECTED DUE TO IMPROPER BALANCING PROCEDURES, SYSTEM SHALL BE RE-BALANCED AT NO EXTRA COST.
 CONTROLS
3.1 THERMOSTATS
     .1 PROVIDE NEW THERMOSTATS WHERE INDICATED.
     .2 PROVIDE THERMOSTAT WITH EACH ROOFTOP AND UNIT HEATER WITH 100 FEET OF WIRE COILED AND SUSPENDED ADJACENT TO UNIT FOR FUTURE MOUNTING.
 4. PLUMBING
 4.1 VALVES
     .1 FOR SHUT-OFF SERVICE, USE BALL VALVES UNLESS NOTED OTHERWISE.
     .2 FOR GAS SERVICE, USE PLUG COCK TYPE VALVES.
     .1 PROVIDE ALL NECESSARY PIPING, MATERIAL AND LABOUR FOR THE SYSTEM AS INDICATED AND TO CONFORM TO THE NATIONAL PLUMBING CODE OF CANADA.
     .2 GAS PIPING TO CONFORM TO CANADIAN GAS CODE CAN/CGA B149.1-10.
     .3 GAS PIPING INSTALLED ON ROOF TO BE MOUNTED ON UV RESISTANT POLYPROPYLENE SUPPORT BLOCKS WITH POLYSTYRENE BASE EQUAL TO ?QUICK BLOCK? MANUFACTURED BY PIPE-EASE INC.
     .4 DRAINAGE AND VENT PIPING ABOVE GRADE SHALL BE TYPE "M" OR TYPE "DWV" HARD COPPER OR CAST IRON WITH MECHANICAL JOINTS.
     .5 DRAINAGE AND VENT PIPING BELOW GRADE:
       .1 PIPE:
.1 ABS PLASTIC PIPE: TO CAN3 B181.1.
              .2 PVC PLASTIC PIPE: TO CAN3 B181.2
              .3 PVC SDR 35: TO CAN B182.2 (STORM SEWER BELOW GRADE ONLY)
              .1 ABS SOCKET TYPE, SCHEDULE 40: TO ASTM D2468.
              .2 ABS THREADED TYPE, SCHEDULE 80: TO ASTM D2465.
             .1 SOLVENT CEMENT AND PRIMER FOR PVC FITTINGS: TO ASTM D2564. VOC (VOLATILE ORGANIC COMPOUND) LIMITS TO CONFORM TO SCAQMD RULE 1168.
              .2 SOLVENT CEMENT AND PRIMER FOR ABS FITTINGS: TO ASTM D2235. VOC (VOLATILE ORGANIC COMPOUND) LIMITS TO CONFORM TO SCAQMD RULE 1168.
              .3 SOLVENT CEMENT AND PRIMER FOR TRANSITION JOINTS BETWEEN ABS AND PVC: TO ASTM D3138. VOC (VOLATILE ORGANIC COMPOUND) LIMITS TO CONFORM TO SCAQMD RULE 1168.
     .6 DOMESTIC WATER PIPING ABOVE GRADE:
       .1 PIPE:
.1 COPPER TUBE: TYPE ?L? TO ASTM B88M FOR NOMINAL PIPE DIAMETERS UP TO AND INCLUDING 50 MM.
        .2 FITTINGS:
.1 WROUGHT COPPER: SOLDER JOINT TYPE TO ANSI B16.22.
              .2 CAST COPPER: SOLDER JOINT TYPE TO ANSI B16.8.
        .3 JOINTS:
              .1 SOLDER: 95/5 (95% TINE, 5% OTHER METALS; LEAD FREE TO ASTM B32).
                           PREVENT DIRT, DEBRIS AND OTHER FOREIGN MATERIALS FROM ENTERING PIPING SYSTEM DURING CONSTRUCTION.
     .8 ALL NEW COLD PIPING TO BE INSULATED WITH FACTORY APPLIED VAPOUR BARRIER JACKET, MOULDED TO CONFORM TO PIPING, "K" VALUE AT 24 DEGREES CELSIUS MAXIMUM 0.035 W/M DEGREES CELSIUS.
         PIPING
TO BE INSULATED
                                                   PIPE SIZ S THICKNESS MM
         DOMESTIC COLD WATER
                                                   ALL SIZ S
         VENTS WITHIN 2 LINEAR
          METRES OF ROOF OUTLET
                                                   ALL SIZES
                                                                   25MM INSULATION TO ALL
         STORM SEWER PIPIG
         ABOVE GRADE
                                                                    DRAIN BODIES AND ALL
4.3 VIDEO SCOPE

.1 PROVIDE A VIDEO RECORD AND REPORT DOCUMENTING THE CONDITION OF THE COMPLETE SANITARY SYSTEM, STARTING FROM THE MUNICIPAL CONNECTION AND TERMINATING AT THE MOST REMOTE DRAIN CONNECTION WITHIN THE BUILDING — ENSURING THAT ALL DRAIN CONNECTIONS ARE INCLUDED IN THE VIDEO RECORD AND REPORT.
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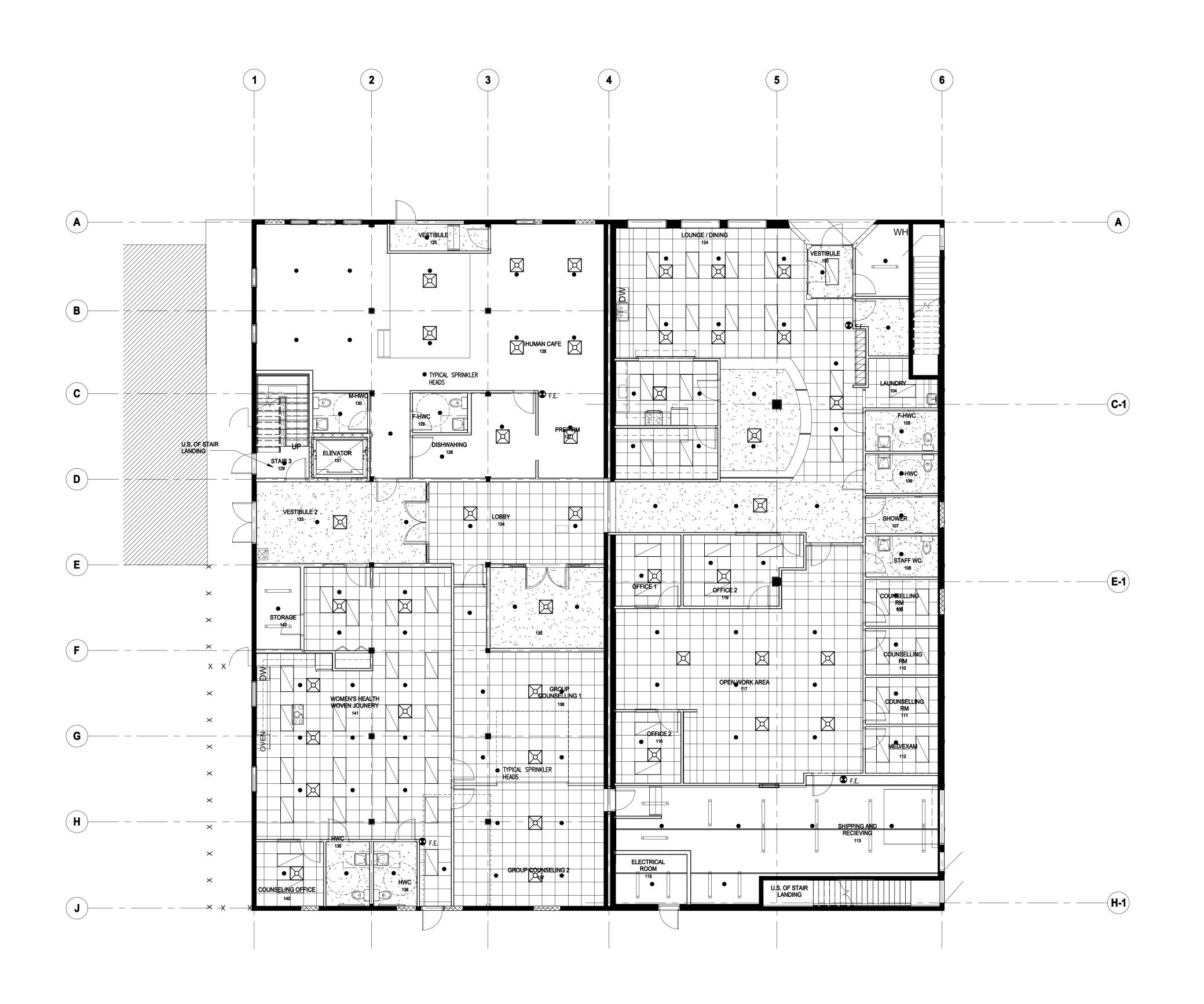
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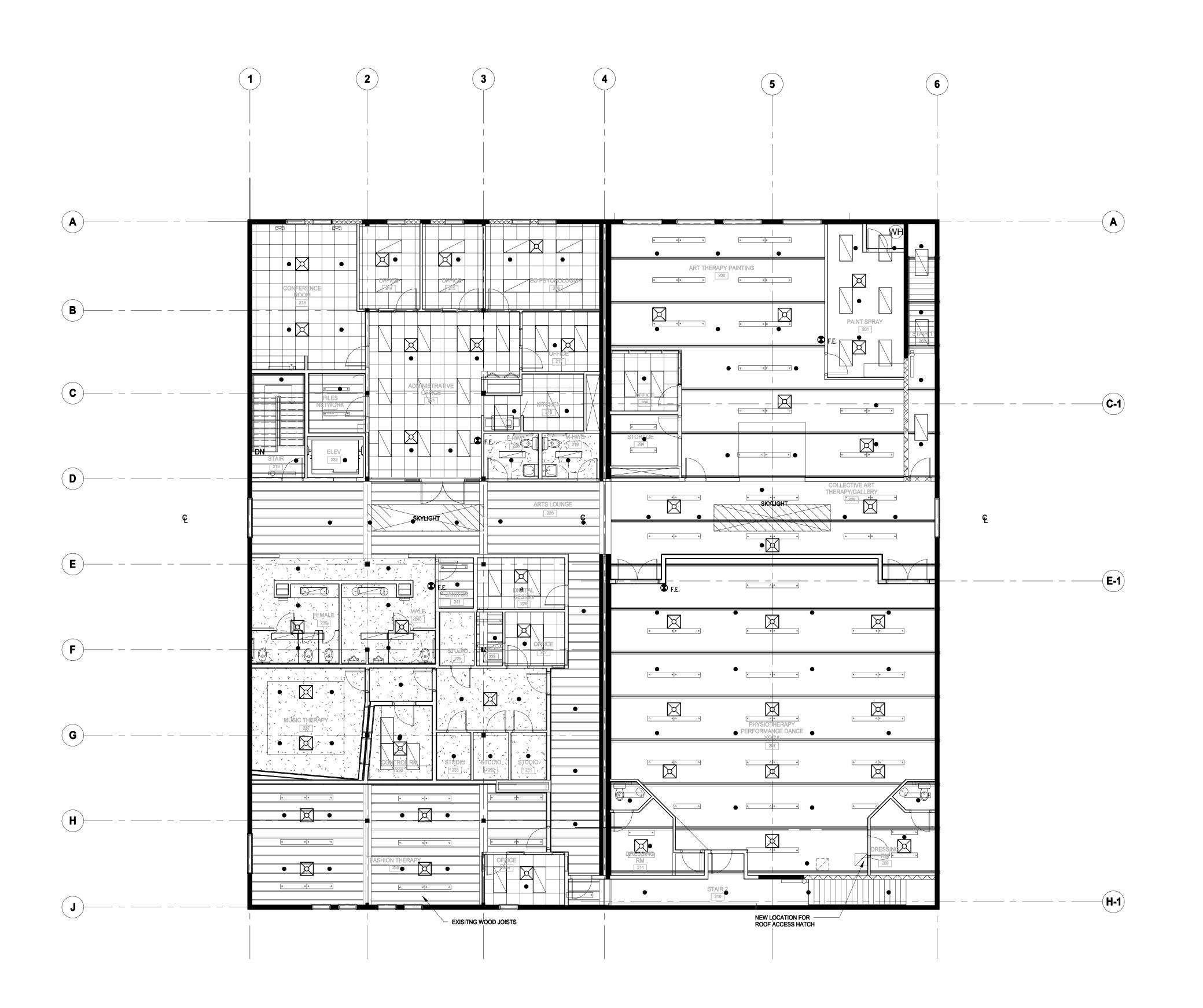
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