

M.3.3. PROVIDE DUCT INSULATION IN ACCORDANCE WITH TABLES OF ASHRAE 90.1, TABLES 6.8.2A, 6.8.2B.			
ALL DUCT WORK SHALL BE INSULATED TO THE CLIMATE ZONE 7 REQUIREMENTS OF THE ATTACHED TABLE 6.8.2B. USE OWENS-CORNING FIBERGLASS 1.5" (38MM) FACED FLEXIBLE ALL-SERVICE DUCT WRAP INSULATION OR AN EQUAL PRODUCT, WITH A DENSITY OF 0.75 LB./CU.FT. (12.0 KG./CU.M.) AND AN RFK FINISH FOR ALL DUCTWORK WHERE INDICATED ON THE DRAWINGS. ADHERE INSULATION WITH 4" (100MM) STRIPS OF BONDING ADHESIVE AT 8" (200MM) ARC. ALL PIN PENETRATIONS OR PUNCTURES AND ALL CIRCUMFERENTIAL AND LONGITUDINAL JOINTS IN THE JACKET SHALL BE TAPE WITH EITHER PLAIN FOIL OR RFK BACKING STOCK.	M.3.2. CONTRACTOR SHALL RETAIN, COORDINATE AND PAY FOR THE SERVICES OF A QUALIFIED, LICENSED, UNDERGROUND CONTRACTOR TO COMPLETE THE EXCAVATION, AND BACK-FILLING OF ALL REQUIRED UNDERGROUND SERVICES WITHIN THE SCOPE OF THE PROJECT.	M.4.6. CONTRACTOR SHALL MAKE THEMSELVES AVAILABLE WITHOUT ADDITIONAL CHARGES, AND AT ALL AGREABLE TIMES, TO ASSIST THE MECHANICAL CONTRACTING (OR OTHERWISE) TEAM TO FULLY COMMISSION THE COMPLETE SYSTEM.	M.6.0. NORTHSTAR IS COMMITTED TO THE HIGHEST STANDARD OF ENGINEERING EXCELLENCE FOR OUR WORK. HOWEVER, WE DO NOT INCLUDE IN OUR FEE EXTENDED ENGINEERING SUPPORT TO ASSIST WITH SOLVING OR SUPPORTING ISSUES ARRIVING FROM FAULTY OR SUB-STANDARD WORK BY CONTRACTING RELATED TO THIS PROJECT.
WHERE INSULATION IS EXPOSED ON ROUND DUCTWORK IN ALL LOCATIONS, PROVIDE OWENS-CORNING OR EQUAL PVC JACKETING AND MOLDED FITTINGS OVER ALL INSULATION AND FITTINGS, SECURE FITTING COVERS WITH 1.5" (38MM) WIDE WHITE VINYL TAPE IN THE THROAT AND AROUND EACH END OF THE FITTING.	M.3.53. CONTRACTOR SHALL ATTEND ALL SITE MEETINGS AND COORDINATION REVIEWS AS WELL AS GENERAL REVIEW SITE INSPECTIONS TO BE CONDUCTED BY NORTHSTAR AT A MUTUALLY AGREEABLE APPOINTMENT TIME. THE CONTRACTOR SHALL MAKE AVAILABILITY TO NORTHSTAR STAFF ONSITE, THE SAFE ACCESS TO ALL AREAS OF THE CONSTRUCTION SITE TO BE ABLE TO REVIEW THE INSTALLATION. THE CONTRACTOR SHALL REMOVE CEILING TILES AND ACCESS PANELS AS NEEDED TO FACILITY OUR REVIEW.	M.4.7. CONTRACTOR TO PREPARE AND DELIVER A COMPLETE MAINTENANCE MANUAL FOR THE PROJECT IN HARD COPY AS WELL AS ELECTRONIC FORMATS. REFER TO SECTION 26 01 10, ELECTRICAL OPERATION AND MAINTENANCE DATA AND SECTION 26 01 11 'ELECTRICAL OPERATION AND MAINTENANCE MANUAL'.	M.6.1. DATES OF MAJOR EQUIPMENT WARRANTY TO BEGIN ONCE THE EQUIPMENT IS COMMISSIONED.
ALL INSULATION SHALL BE APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. ALL INSULATION AND COMPONENTS SHALL HAVE MAXIMUM FLAME AND SMOKE SPREAD RATINGS OF 25 AND 50 RESPECTIVELY.	M.3.54. CONTRACTOR SHALL COOPERATE WITH NORTHSTAR TO PROVIDE INFORMATION AND PHOTOS, VIDEOS AND COMMENTARY DURING THE COURSE OF THE CONSTRUCTION AS PER OUR REQUESTS. NORTHSTAR RESERVES THE RIGHT TO RECORD ANY CONVERSATION HELD RELATED TO THE PROJECT FOR THE PURPOSES OF ACCURACY AND STAFF TRAINING.	M.4.8. CONTRACTOR SHALL PREPARE A PROFESSIONAL, DETAILED TRAINING COURSE FOR THE OWNER'S MAINTENANCE AND OPERATIONAL STAFF. THE COURSE SHALL BE ADMINISTERED TO THE OWNER'S TEAM BASED ON AN AGREABLE SCHEDULE AND BEFORE THE BUILDING PROJECT IS HANDED OVER TO THE OWNER. ALL REQUIRED SPECIALISTS ARE TO BE IN ATTENDANCE. A WRITTEN RECORD OF ATTENDEES IS TO BE PROVIDED AS PROOF TO NORTHSTAR THAT THIS PROJECT REQUIREMENT IS COMPLETE. NOTE: MULTIPLE SESSIONS MAY BE REQUIRED TO FULLY EXPLAIN AND TRAIN THE OWNER ON THE SAFE OPERATION OF THE BUILDING SYSTEMS.	M.6.2. FURNISH A SIGNED WRITTEN GUARANTEE TO THE OWNER STATING: (i). THAT ALL WORK WILL BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE WORK AS DEFINED BY THE ENGINEER OF RECORD & NORTHSTAR. (ii). THIS SECTION AGREES TO REPAIR AND REPLACE AT OWN EXPENSE, ALL SUCH DEFECTIVE WORK AND OTHER WORK DAMAGED WHICH FAILS OR BECOMES DEFECTIVE DURING THE TERM OF THE GUARANTEE PROVIDED THAT SUCH FAILURE IS NOT CAUSED BY IMPROPER USAGE. (iii). THE PERIOD OF THE GUARANTEE SPECIFIED ABOVE SHALL IN NO WAY SUPPLANT ANY OTHER GUARANTEE OF A LONGER PERIOD BUT SHALL BE BINDING ON WORK NOT OTHERWISE SPECIFIED.
ALL SUPPLY DUCTS CARRYING OUTDOOR AIR THAT IS NOT TEMPERED OR NOT MIXED WITH INDOOR AIR THAT PASSES THROUGH HEATED SPACE SHALL BE INSULATED TO NOT LESS THAN RSI 0.5 OR AS STATED IN THE APPLICABLE CODE HAVING JURISDICTION OVER THE BUILDING.	M.3.55. AT THE COMPLETION OF EACH DAY'S WORK AND AT PROJECT COMPLETION, REMOVE FROM THE AREA OF WORK ALL DIRT, RUBBISH, SURPLUS MATERIAL, AND EQUIPMENT ASSOCIATED WITH THE MECHANICAL SYSTEMS INSTALLATION AND NOT REQUIRED IN THE FINISHED WORK.	M.4.9. CONTRACTOR TO REMOVE ALL SHIPPING MATERIALS AND REFUSE FROM THE SITE AND CLEAN ALL WORK AREAS THOROUGHLY. THIS INCLUDES CLEANING ALL MECHANICAL CONTROL DEVICES, MECHANICAL ROOMS AS WELL AS THE GENERAL SITE.	M.6.3. CONTRACTOR TO RESPOND TO ALL CLIENT REQUESTS FOR SERVICE REVIEWS IN A TIMELY MANNER AND CARBON COPY NORTHSTAR ON ANY ACTIVITY RELATED TO SERVICE AND WARRANTY CLAIMS.
INSULATION FOR PIPING, FITTINGS, ETC., SHALL BE OWENS-CORNING FIBERGLASS SSL-II PIPE INSULATION OR AN EQUAL PRODUCT WITH A FACTORY-APPLIED KRAFT REINFORCED FOIL VAPOR RETARDER JACKET AND DOUBLE ADHESIVE LONGITUDINAL JACKET LAP SEAL HAVING A POSITIVE TWO COMPONENT BUTT STRIP SEAL. JACKETS SHALL BE NON-COMBUSTIBLE WITH FLAME SPREAD AND SMOKE DEVELOPED RATINGS OF 25 AND 50 RESPECTIVELY OR LESS. INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND TAPE ALL JOINTS. FOR VALVES AND FITTINGS, USE PRE-FORMED FITTINGS OR MITERED SEGMENTS TO MATCH ADJACENT PIPE INSULATION AND COMPONENTS. WHERE INSULATION IS TO BE COVERED WITH PVC COVERS, INSULATION FOR FITTINGS MAY BE REVISED TO OWENS-CORNING FIBERGLASS FACED FLEXIBLE ALL-SERVICE DUCT WRAP INSULATION OR EQUAL, 0.75 LB./CU.FT. (12.0 KG./CU.M.) DENSITY, WITH RFK FINISH.	M.3.56. BE RESPONSIBLE FOR ANY DAMAGE DONE TO THE WORK AND MATERIALS OF ALL TRADES AND TO OWNER'S MATERIALS AND PROPERTY. REPLACE, AT NO EXPENSE TO THE OWNER, ALL MATERIALS, PROPERTY AND WORK DAMAGED TO SUCH AN EXTENT THAT THEY CANNOT BE RESTORED TO THEIR ORIGINAL CONDITION. TO CONSULTANT'S SATISFACTION, DAMAGED WORK SHALL BE MADE GOOD BY TRADE WHO PERFORMED THE WORK ORIGINALLY, OR AN EXPERT IN THE PARTICULAR WORK, AT THE EXPENSE OF THE TRADE WHO CAUSED THE DAMAGE. IF IT IS NOT KNOWN WHO CAUSED THE DAMAGE, SAID WORK SHALL BE MADE GOOD AT NO EXPENSE TO THE OWNER.	M.4.10. CONTRACTOR TO ENSURE THAT ALL DEVICES & EQUIPMENT WHICH ARE SUBJECT TO DAMAGE DUE TO LOW AMBIENT TEMPERATURES ARE PROPERLY WARMED IN SUCH A MANNER AS TO NOT BE DAMAGED AT START-UP.	M.4.11. CAN/ULC S100 COORDINATION WILL NOT BE PROVIDED BY NORTHSTAR. THE OWNER OR PRIME CONTRACTOR IS TO RETAIN A CERTIFIED, PROFESSIONAL TO PROVIDE THIS SERVICE AND SUBSEQUENT REPORT. THIS IS TO BE COMPLETED AT THE FINAL STAGE OF THE PROJECT AND IS TO BE COORDINATED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE THE NECESSARY LABOUR TO SUPPORT ALL TESTING AND COMMISSIONING OF THE INTEGRATED SYSTEMS.
THE UNDERSIDE OF ROOF DRAIN BODIES SHALL BE INSULATED WITH FIBERGLASS AF-530 OR EQUAL, 3 LB./CU.FT. (48.1 KG./CU.M.) DENSITY RIGID VAPOR SEAL DUCT INSULATION WITH RFK FINISH. PROVIDE CANVAS COVERING, DLC LISTED PLAIN WEAVE COTTON FABRIC, 6.5 OZ/SQ.YD. (220G/SQ.M.) WHICH SHALL BE APPLIED WITH WASHABLE ADHESIVE, FOSTER 30-36 ASBESTOS-FREE APPLIED AT A RATE OF 51.0 SQ.FT./USG (1.25 SQ.M./L).	M.3.57. TAKE ALL SAFETY PRECAUTIONS AND FURNISH AND INSTALL WHERE REQUIRED, GUARDS, FENCES, ETC., AT COMPLETION OF WORK OR AS REQUIRED, FOLLOW THE REQUIREMENTS OF ALL LOCAL LABOUR AUTHORITY REGULATIONS AS WELL AS THAT OF THE OWNER.	M.4.12. CONTRACTOR TO INCLUDE IN THE COST TO PROVIDE SUPPORT FOR ANY ADJUSTMENTS AND SETTINGS FOR ALL EQUIPMENT & SYSTEMS WITHIN THE PROJECT. COORDINATE WITH THE CLIENT A SCHEDULE OF MAINTENANCE AND SERVICE DURING THE WARRANTY PERIOD SO AS TO NOT CREATE DUPLICATION AND INADVERTENT ALTERATIONS AND CHANGES TO THE SETTING AND SYSTEM CONFIGURATION.	M.4.12. CONTRACTOR TO INCLUDE IN THE COST TO PROVIDE SUPPORT FOR ANY ADJUSTMENTS AND SETTINGS FOR ALL EQUIPMENT & SYSTEMS WITHIN THE PROJECT. COORDINATE WITH THE CLIENT A SCHEDULE OF MAINTENANCE AND SERVICE DURING THE WARRANTY PERIOD SO AS TO NOT CREATE DUPLICATION AND INADVERTENT ALTERATIONS AND CHANGES TO THE SETTING AND SYSTEM CONFIGURATION.
ALL EXPOSED FITTINGS SHALL BE COVERED WITH OWENS-CORNING OR EQUAL PVC MOLDED FITTINGS. SECURE COVERS WITH 1.5" (38MM) WIDE WHITE VINYL TAPE IN THE THROAT AND AROUND EACH END OF THE FITTING.	M.3.58. CONTRACTOR TO PROVIDE ALL REQUIRED FIRE WATCHES FOR ANY HOT WORK PLANNED.	M.4.13. CONTRACTOR TO REMOVE ALL SHIPPING MATERIALS AND REFUSE FROM THE SITE AND CLEAN ALL WORK AREAS THOROUGHLY.	M.4.13. CONTRACTOR TO REMOVE ALL SHIPPING MATERIALS AND REFUSE FROM THE SITE AND CLEAN ALL WORK AREAS THOROUGHLY.
MAINTAIN THE INTEGRITY OF THE VAPOR BARRIER JACKET FOR DOMESTIC COLD WATER AND STORM WATER PIPING SYSTEMS. FOR THESE SYSTEMS, PROTECT INSULATION BY GRINNELL FIG. 167 PROTECTION SHIELDS OR 18-GAUGE (1.24MM THICK) GALVANIZED SHEET STEEL SHIELDS WHERE SUCH INSULATION IS SUPPORTED BY HANGERS OR OTHER TYPES OF SUPPORTS. INSTALL HIGH-DENSITY INSULATION UNDER THE SHIELD OF THE SAME THICKNESS AS INSULATION FOR PIPE 5" (125MM) DIAMETER AND OVER, FLEXIBLE FOAM TYPE INSULATION WILL NOT BE PERMITTED FOR THIS PROJECT.	M.3.59. CONTRACTOR TO COORDINATE THE DE-ENERGIZATION OF ALL MECHANICAL EQUIPMENT LISTED TO BE DEMOLISHED WITH THE OWNER AND MECHANICAL CONTRACTOR.	M.4.14. CONTRACTOR TO DEMONSTRATE THAT THE NEWLY INSTALLED EQUIPMENT & SYSTEMS TO THE ENGINEER & OWNER AT THE COMPLETION OF THE PROJECT.	M.4.14. CONTRACTOR TO REMOVE ALL SHIPPING MATERIALS AND REFUSE FROM THE SITE AND CLEAN ALL WORK AREAS THOROUGHLY.
INSULATION THICKNESSES SHALL BE AS FOLLOWS: COLD & HOT WATER: 0.5" (13MM) PIPE INSULATION, INSULATE THE HOT WATER PIPING FROM DOMESTIC WATER HEATERS AND ALL COLD WATER PIPING. BETWEEN THE HEAT TRAP AND THE HEATER WITH 1" (25MM) INSULATION RATHER THAN THE 0.5" (13MM) INSULATION AS SPECIFIED, HORIZONTAL STORM PIPING: 0.5" (13MM) PIPE INSULATION.D.	M.3.60. PROVIDE A HOLSTER OR STORAGE/MOUNT FOR ALL HVAC REMOTE CONTROL THERMOSTATS. CONFIRM WITH THE OWNER THE REQUIRED LOCATION.	M.4.15. PROVIDE THREE COPIES OF MANUFACTURERS' MAINTENANCE DATA AND OPERATING INSTRUCTIONS FOR ALL EQUIPMENT AND CONTROLS IN INDEXED THREE-RING HARD COVER BINDERS. INCLUDE ALL SHOP DRAWINGS, PERMITS, APPROVALS, WIRING DIAGRAMS, LETTERS OF GUARANTEE, AND CERTIFICATES IN THIS MANUAL. ALL DATA SHALL BE NEATLY TYPED/WRITTEN. THE CONTRACTOR SHALL INSTRUCT THE OWNER ON-SITE TO THE FULL SATISFACTION OF THE CONSULTANT ON THE OPERATION AND MAINTENANCE OF ALL MECHANICAL SYSTEMS.	M.4.15. PROVIDE THREE COPIES OF MANUFACTURERS' MAINTENANCE DATA AND OPERATING INSTRUCTIONS FOR ALL EQUIPMENT AND CONTROLS IN INDEXED THREE-RING HARD COVER BINDERS. INCLUDE ALL SHOP DRAWINGS, PERMITS, APPROVALS, WIRING DIAGRAMS, LETTERS OF GUARANTEE, AND CERTIFICATES IN THIS MANUAL. ALL DATA SHALL BE NEATLY TYPED/WRITTEN. THE CONTRACTOR SHALL INSTRUCT THE OWNER ON-SITE TO THE FULL SATISFACTION OF THE CONSULTANT ON THE OPERATION AND MAINTENANCE OF ALL MECHANICAL SYSTEMS.
M.3.41. PROVIDE PROPER CHROME-PLATED STEEL ESCUTCHEON PLATES FOR EXPOSED UNINSULATED PIPING PENETRATING WALLS, EXCEPT WHERE OPENINGS AROUND PIPING HAVE BEEN FILLED TO THE APPROVAL OF THE CONSULTANT. PIPE ESCUTCHEONS SHALL BE ONE-PIECE TYPE WITH SETSCREWS FOR INSTALLATION AT PLUMBING FIXTURES. ELSEWHERE, USE CHROME-PLATED SLIT TYPE WITH SUBSTANTIAL HINGES, POSITIVE LATCHES, AND SETSCREWS. SIZE PLATES SO THAT THEY ARE TIGHT AGAINST THE WALL; OUTSIDE DIAMETER TO COVER OPENING OR SLEEVE, AND INSIDE SIZE TO FIT AROUND FINISHED PIPE.	M.4.1. CONTRACTOR TO PROVIDE PERMANENT MARKINGS AND LABELS FOR ALL EQUIPMENT, PANELS, DISCONNECTS, JUNCTION BOXES, MOTORS, SWITCHES AND DEVICES WITHIN THE PROJECT. ALL MARKINGS TO BE TYPED/WRITTEN, PERMANENT, DURABLE VISIBLE AND MATCH THE PLANS.	M.4.16. LAMACOID OR SS IDENTIFICATION PLATES SHALL BE ENGRAVED TWO-PLY PLASTIC, 0.125" (3MM) THICK, 0.5" (12MM) HIGH WITH 3/8" (10MM) WHITE CHARACTERS ON A BLACK BACKGROUND AND LENGTH AS REQUIRED. ALLOW AN AVERAGE OF 25 LETTERS PER NAMEPLATE. LOCATE IN A CONSPICUOUS LOCATION AND SECURE AT EQUIPMENT WITH SELF-TAPPING SHEET METAL SCREWS OR AT WALLS WITH DOUBLE-SIDED ADHESIVE TAPE. ALL SCREWS USED OUTSIDE SHALL BE STAINLESS STEEL. PLATES SHALL BEAR THE TYPE OF EQUIPMENT AND NUMBER AND SHALL BE CONSISTENT WITH THE IDENTIFICATION SYSTEM PROVIDED BY THE ELECTRICAL CONTRACTOR.	M.4.16. LAMACOID OR SS IDENTIFICATION PLATES SHALL BE ENGRAVED TWO-PLY PLASTIC, 0.125" (3MM) THICK, 0.5" (12MM) HIGH WITH 3/8" (10MM) WHITE CHARACTERS ON A BLACK BACKGROUND AND LENGTH AS REQUIRED. ALLOW AN AVERAGE OF 25 LETTERS PER NAMEPLATE. LOCATE IN A CONSPICUOUS LOCATION AND SECURE AT EQUIPMENT WITH SELF-TAPPING SHEET METAL SCREWS OR AT WALLS WITH DOUBLE-SIDED ADHESIVE TAPE. ALL SCREWS USED OUTSIDE SHALL BE STAINLESS STEEL. PLATES SHALL BEAR THE TYPE OF EQUIPMENT AND NUMBER AND SHALL BE CONSISTENT WITH THE IDENTIFICATION SYSTEM PROVIDED BY THE ELECTRICAL CONTRACTOR.
M.3.46. ALL MECHANICAL EQUIPMENT TO BE INSTALLED SO AS TO PROVIDE CLEAR, UN-OBSTRUCTED MAINTENANCE, REPAIR & SERVICE ACCESS FOR THE LIFE OF THE INSTALLATION.	M.4.2. CONTRACTOR TO SUPPLY & INSTALL ALL PERMANENT SIGNAGE WITHIN THE PROJECT. ALL MARKINGS TO BE STANDARDS OFFICIAL APPROVED AND INCLUDE VISIBLE TYPED/WRITTEN MESSAGES; ARE PERMANENT, FIXED TO THE WALL IN A VISIBLE LOCATION AND DURABLE TO MATCH THE PLANS AS WELL AS THE REQUIREMENTS OF ALL APPLICABLE STANDARDS AND CODES WITHIN THE SCOPE OF THE PROJECT.	M.4.17. PROVIDE ALL OF THE REQUIRED AND SPECIFIED NEW REMOTE CONTROL HAND-HELD UNITS TO THE OWNER AT THE SUBSTANTIAL COMPLETION STAGE. ALL REMOTE UNITS TO BE TESTED AT THE COMMISSIONING STAGE.	M.4.17. PROVIDE ALL OF THE REQUIRED AND SPECIFIED NEW REMOTE CONTROL HAND-HELD UNITS TO THE OWNER AT THE SUBSTANTIAL COMPLETION STAGE. ALL REMOTE UNITS TO BE TESTED AT THE COMMISSIONING STAGE.
M.3.47. CONTRACTOR TO CARRY THE COST AND COORDINATION AND MAKE SUBMISSION OF ANY REFRIGERATION PIPING, BOILERS, PRESSURE VESSELS OR PRESSURE PIPING PLANS TO TSSA FOR REVIEW.	M.4.3. CONTRACTOR TO PROVIDE PROFESSIONAL HVAC COMMISSIONING REPORTS FOR EACH MAJOR PIECE OF EQUIPMENT WITHIN THE PROJECT.	M.4.18. CONTRACTOR TO CARRY THE COST OF PROFESSIONAL CLEANING SERVICES FOR ALL MECHANICAL EQUIPMENT INSIDE & OUT, INCLUDING ALL NEW & EXISTING DUCTWORK (FROM CONSTRUCTION DUST).	M.4.18. CONTRACTOR TO CARRY THE COST OF PROFESSIONAL CLEANING SERVICES FOR ALL MECHANICAL EQUIPMENT INSIDE & OUT, INCLUDING ALL NEW & EXISTING DUCTWORK (FROM CONSTRUCTION DUST).
M.3.48. CONTRACTOR TO PROVIDE ADEQUATE EXPANSION TANKS FOR ALL PIPING SYSTEMS WITHIN THE PROJECT INCLUDE DOMESTIC AND HEATING AND COOLING WATER PIPING SYSTEMS. AS PER 7.3.3.9. (1) THE DESIGN AND INSTALLATION OF EVERY PIPING SYSTEM SHALL, WHERE NECESSARY, INCLUDE MEANS TO ACCOMMODATE EXPANSION AND CONTRACTION OF THE PIPING SYSTEM CAUSED BY TEMPERATURE CHANGE OR BUILDING SHRINKAGE.	M.4.4. CANULC THIRD PARTY FIRE ALARM MONITORING IS TO BE IN PLACE PRIOR TO OCCUPANCY. ALL WORK MUST BE IN ACCORDANCE WITH CAN/CSA S-561. THIS CONTRACTOR TO SUPPORT THE INSTALLATION AND PROVIDE ANY LOW-VOLTAGE (< 50V) INTERLOCKS NECESSARY FOR THE SYSTEM TO OPERATE.	M.4.19. EACH MECHANICAL PIECE OF EQUIPMENT IS TO BE FURNISHED WITH NEW, FRESH FILTERS AT THE COMPLETION OF THE COMMISSIONING PHASE.	M.4.19. EACH MECHANICAL PIECE OF EQUIPMENT IS TO BE FURNISHED WITH NEW, FRESH FILTERS AT THE COMPLETION OF THE COMMISSIONING PHASE.
M.3.49. CONTRACTOR TO PROVIDE ADEQUATE PROVISIONS TO ARREST WATER HAMMER EFFECTS FOR ALL PIPING SYSTEMS WITHIN THE PROJECT. AS PER 7.6.1.14. WATER HAMMER (1) PROVISION SHALL BE MADE TO PROTECT THE WATER DISTRIBUTION SYSTEM FROM THE ADVERSE EFFECTS OF WATER HAMMER.	M.4.5. CONTRACTOR SHALL OBTAIN - AT THEIR OWN EXPENSE - FROM NORTHSTAR A SET OF WHITE PRINTS FOR MARKING UP AS WELL AS A SET OF FILES REPRESENTING THE ELECTRONIC VERSION OF THE PROJECT DRAWINGS. UPON COMPLETION OF THE WORK (AND BEFORE FINAL PAYMENT IS MADE TO THE CONTRACTOR), THE CONTRACTOR SHALL RETAIN AND PAY A COMPETENT DRAFTING SERVICE TO TRANSCRIBE ALL CHANGES AND RELEVANT INFORMATION FROM THE NORTHSTAR DOCUMENTATION TO THE ELECTRONIC CAD FILES. INCLUDED ARE ANY CHANGES TO THE ORIGINAL TENDER DRAWINGS COVERED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, JOB CONDITIONS. THESE DRAWINGS ARE TO BE NON-AUTHENTICATED AND BE MARKED "FIELD RECORD" DRAWINGS WITH A DATE. ELECTRONIC RECORD DRAWINGS SHALL BE TURNED OVER TO NORTHSTAR FOR REVIEW.	CONTRACTOR TO DEMONSTRATE ALL SYSTEMS TO BE FUNCTIONAL FOR THE INTENDED PURPOSE TO THE OWNER / PROJECT MANAGER.	CONTRACTOR TO DEMONSTRATE ALL SYSTEMS TO BE FUNCTIONAL FOR THE INTENDED PURPOSE TO THE OWNER / PROJECT MANAGER.
M.3.50. CONTRACTOR TO FURNISH TO THE ENGINEER ALL PIPING PRESSURE TEST REPORTS FOR REVIEW.	ELECTRONIC RECORD DRAWINGS ARE TO BE SUBMITTED IN AUTO-CAD 2014 FORMAT TO NORTHSTAR AT THE CLOSING OF THE PROJECT. RECORD ON THIS SET ALL CHANGES ASSOCIATED WITH THE WORK. ALL CONDUIT, WIRE COUNTS AND SIMILAR DATA ON FIELD RECORD DRAWINGS. WHERE A ROOM IS BEING RENOVATED OR MODIFIED, ALSO INDICATE EXISTING MECHANICAL INFORMATION.	FURNISH DEMONSTRATION AND TRAINING IN ACCORDANCE WITH THIS DOCUMENT & THE MANUFACTURERS INSTALLATION MANUAL. THIS IS TO INCLUDE ONE, 4-HOUR TRAINING SESSION FOR OPERATING PERSONNEL, INSTRUCTING THEM ON INSTALLATION, CARE, MAINTENANCE, TESTING, AND OPERATION OF THE MECHANICAL SYSTEMS.	FURNISH DEMONSTRATION AND TRAINING IN ACCORDANCE WITH THIS DOCUMENT & THE MANUFACTURERS INSTALLATION MANUAL. THIS IS TO INCLUDE ONE, 4-HOUR TRAINING SESSION FOR OPERATING PERSONNEL, INSTRUCTING THEM ON INSTALLATION, CARE, MAINTENANCE, TESTING, AND OPERATION OF THE MECHANICAL SYSTEMS.
M.3.51. CONTRACTOR SHALL SUPPLY & INSTALL ALL REQUIRED ISOLATION DISCONNECTS FOR ALL HVAC EQUIPMENT HAVING MOTORS AND EQUIPMENT WITHIN THE SCOPE OF THE PROJECT AS LISTED IN THE NORTHSTAR SCHEDULES - I.E.) PROVIDE A SUITABLE, RATED FUSED OR BREAKER BOX WITH AN ISOLATION DISCONNECT AS PER CEC.	M.4.6. NORTHSTAR IS COMMITTED TO THE HIGHEST STANDARD OF ENGINEERING EXCELLENCE FOR OUR WORK. HOWEVER, WE DO NOT INCLUDE IN OUR FEE EXTENDED ENGINEERING SUPPORT TO ASSIST WITH SOLVING OR SUPPORTING ISSUES ARRIVING FROM FAULTY OR SUB-STANDARD WORK BY CONTRACTING RELATED TO THIS PROJECT.	M.6.0. NORTHSTAR IS COMMITTED TO THE HIGHEST STANDARD OF ENGINEERING EXCELLENCE FOR OUR WORK. HOWEVER, WE DO NOT INCLUDE IN OUR FEE EXTENDED ENGINEERING SUPPORT TO ASSIST WITH SOLVING OR SUPPORTING ISSUES ARRIVING FROM FAULTY OR SUB-STANDARD WORK BY CONTRACTING RELATED TO THIS PROJECT.	M.6.0. NORTHSTAR IS COMMITTED TO THE HIGHEST STANDARD OF ENGINEERING EXCELLENCE FOR OUR WORK. HOWEVER, WE DO NOT INCLUDE IN OUR FEE EXTENDED ENGINEERING SUPPORT TO ASSIST WITH SOLVING OR SUPPORTING ISSUES ARRIVING FROM FAULTY OR SUB-STANDARD WORK BY CONTRACTING RELATED TO THIS PROJECT.
04322 PROJECT DRAWING REGISTER			
Sheet #	Sheet Name		
E1/M1/P1	Project Cover		
E2/M2/P2	Project Cover		
M-3	HVAC - Specifications		
M-4	HVAC - Specifications		
M-5	HVAC - Scope of Work		
M-6	HVAC - Scope of Work		
M-7	HVAC - Bldg.1		
M-8	HVAC - Bldg. 2		
M-9	HVAC - Bldg. 3		
M-10	HVAC - Bldg.4		
M-11	HVAC - Bldg. 5		
M-12	HVAC - Bldg. 4		
M-13	HVAC - Isometric & Elevation Views		
M-14	HVAC Details		
P-3	Plumbing - Specifications		
P-4	Plumbing - Specifications		
P-5	Plumbing - Site Plan		
P-6	Plumbing - Bldg. 1		
P-7	Plumbing - Bldg. 2		
P-8	Plumbing - Bldg. 3		
P-9	Plumbing - Bldg. 4		
P-10	Plumbing - Bldg. 5		
P-11	Plumbing - Bldg. 6		
P-12	Plumbing - Typical Building		
P-13	Plumbing - Details		
P-14	Plumbing - Water Schematic		
P-15	Plumbing - Sanitary Schematic		
E-3	Elec. Power - Specifications		
E-4	Elec. Power - Specifications		
E-5	Elec. Power - Scope of Work		
E-6	Electrical Site Plan		
E-7	Elec. - SLD		
E-8	Power/Comm - Bldg. 1		
E-9	Elec. Lighting - Bldg 1		
E-10	Power/Comm - Bldg. 2		
E-11	Elec. Lighting - Bldg 2		
E-12	Power/Comm - Bldg. 3		
E-13	Elec. Lighting - Bldg 3		
E-14	Power/Comm - Bldg. 4		
E-15	Elec. Lighting - Bldg 4		
E-16	Power/Comm - Bldg. 5		
E-17	Elec. Lighting - Bldg 5		
E-18	Power/Comm - Bldg. 6		
E-19	Elec. Lighting - Bldg 6		
E-20	Elec. Typical Building		
E-21	Electrical Schedules		
E-22	Electrical Details		





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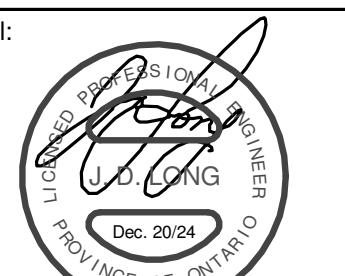
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GENERAL DRAWING / DESIGNER NOTES:

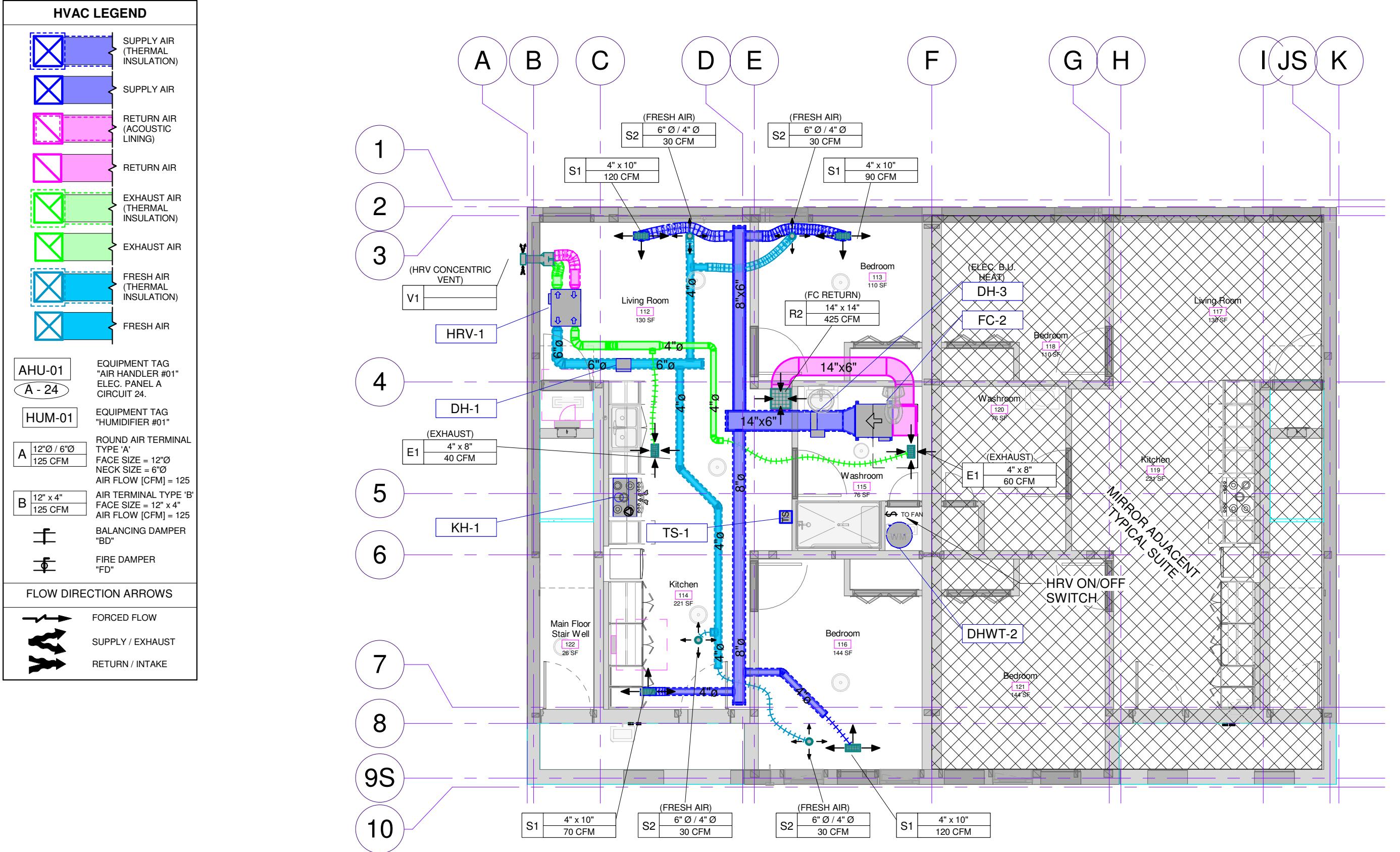
- [1] ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S "BUILDING CODE", LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
- [2] THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
- [3] DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. EXACT DETAILS OF INSTALLATIONS ARE TO BE PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
- [4] CONTRACTOR/AGENT/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
- [5] PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".
- [6] THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.
- [7] THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.
- [8] **SHOP DRAWINGS:**
BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR FROM ESPOSIBILITY TO MAKE A FEASIBLE WORKING SYSTEM. THESE SHOP DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS.
ALLOW MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).
- [9] THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
- [10] RESPONSIBILITY FOR ANY FINAL ASSEMBLY(S) THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
- [11] REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
- [12] SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
- [13] MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
- [14] REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURPOSE OF TENDERING PURPOSES BY ANY CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
- [15] TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
- [16] ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM (1) ONE WEEK TO REVIEW AND RESPOND TO CHANGE

DRAWING REVISIONS

Engineer's S



Client:	WW Inc.		
Address:	Minden, ON		
Project Name:	Gull River Affordable Housing		
Dwg. Name:	HVAC - Scope of Work		
NSET Project #:	04322		
Drawn by:	Northstar Eng.	Checked by:	J.D.L.
Scale:	12" = 1'-0"	Revision #:	6.0
Drawing #:	M-6		
Project Date:	Jan. 14/22		
	Arch-D (24" x 36")		



2 (04322) Building 1 - Level 1 - RCP HVAC - New
1 : 75

FIRE DAMPERS

ALL DUCTS PENETRATING FIRE SEPARATIONS DEFINED ON ARCHITECTURAL DRAWINGS REQUIRE RATED, LISTED AND APPROVED FIRE DAMPERS.

DIV. 23, DIV. 26 RESPONSIBILITIES

DIV. 26 TO SUPPLY: ELECTRICAL RESISTANCE HEATERS

ALL CONTROL AND ELECTRICAL POWER DEVICES OVER 50 VOLTS (ALSO TO BE INSTALLED, WIRED, & TESTED BY DIV. 26 CONT.)

DIV. 23 TO SUPPLY: HEATING / COOLING UNITS, GAS FIRED HVAC EQUIPMENT, EXHAUST FANS, HVAC ELECTRICAL CONTROL DEVICES UNDER 50 VOLTS (ALSO TO BE INSTALLED, WIRED & TESTED BY DIV. 23 CONT.)

EXHAUST TERMINALS

ALL EXHAUST DUCTING FROM TERMINALS & FANS TO BE THEMALLY INSULATED A MIN. 10 ft. (3m) FROM EXTERIOR PENETRATION WITH 1" FOIL WRAPPED INSULATION. BACK-DRAFT DAMPER REQUIRED AT FAN OR PENETRATION.

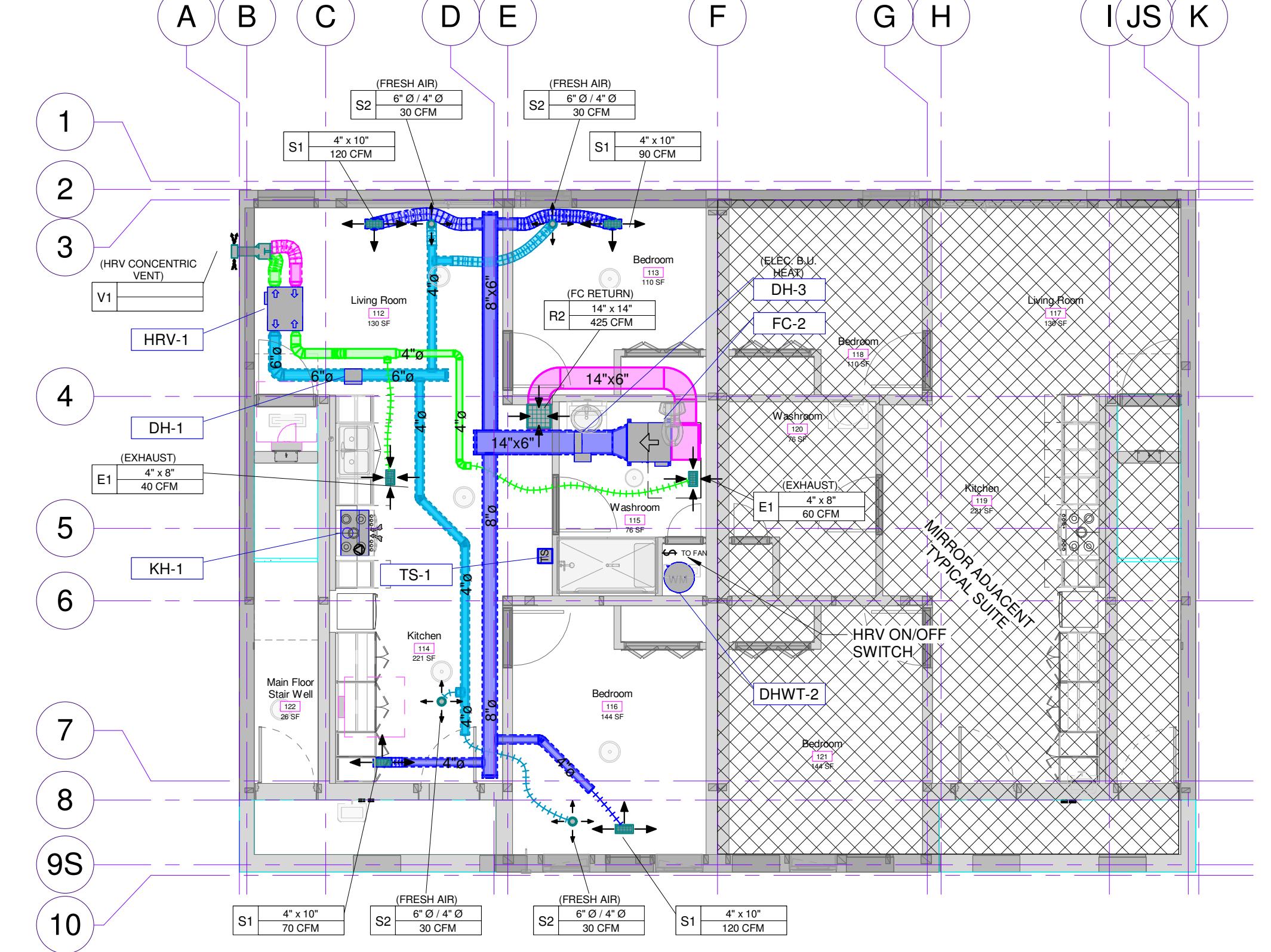
HVAC ELEC. DISCONNECTS

SEPARATE, WEATHER-PROOF ELEC. POWER DISCONNECTS TO BE SUPPLIED FOR OUTDOOR MECH. UNIT (I.E. NOT INCLUDED WITH EQUIP.) BY DIV. 26 CONTRACTOR.

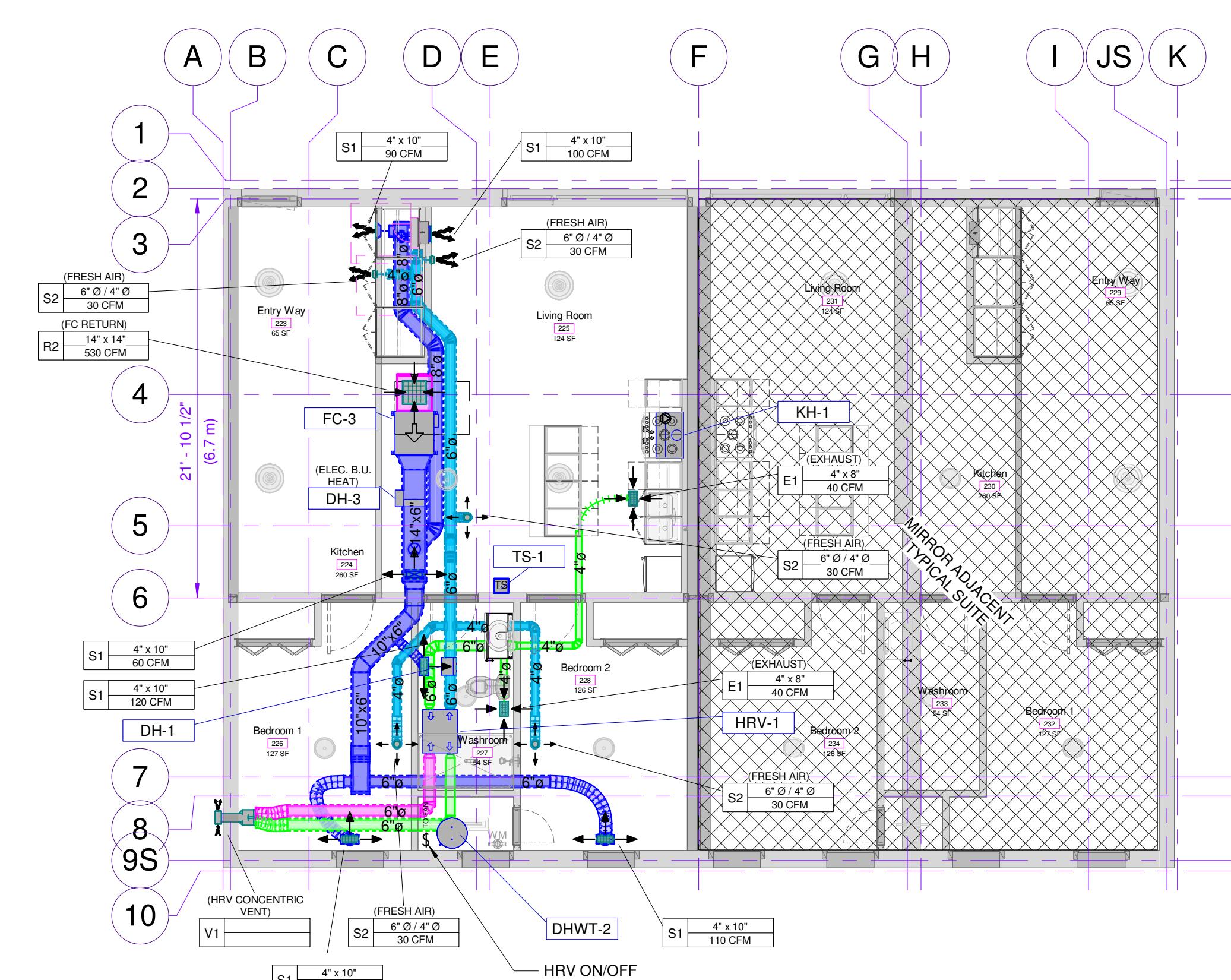
MOUNTING & WIRING TO BE BY DIV. 26 CONTRACTOR INCLUDING PERMANENT TYPE LAMAQOID® LABELS TO IDENTIFY MECH. UNIT AND ELEC. CIRCUIT AS PER DESIGN.

REFRIGERANT PIPING & INSTALLATION

IMPORTANT INSTALLATION NOTE:
COMPLETE INSTALLATION TO BE PROVIDED BY CONTRACTOR THAT HAS COMPLETED FACTORY TRAINING ON SPECIFIED SYSTEMS. ONLY USE MFG. APPROVED, INSULATED LINE-SETS AND FITTINGS.
SUCTION AND LIQUID LINES SHALL BE TYPE AGR COPPER WITH SOLDER TYPE FITTINGS USING 5/8" SILVER SOLDER. EVACUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREON TO MANUFACTURERS SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.



1 (04322) Building 1 - Basement - RCP HVAC - New
1 : 75



3 (04322) Building 1 - Level 2 - RCP HVAC - New
1 : 75

04322 PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details



- GENERAL DRAWING / DESIGNER NOTES:**
- ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE PROVISIONS OF THE PROVINCE OF ONTARIO'S BUILDING CODE, LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
 - THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. FEES WILL BE ADDED FOR ALL CONSTRUCTION COSTS ARISING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
 - DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILS ARE PROVIDED BY THE CONTRACTOR. DO NOT SCALE DRAWINGS.
 - CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
 - PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".
 - THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.
 - THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.
 - SHOP DRAWINGS:
BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW THE SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR FROM THE RESPONSIBILITY FOR THE COMPLETE WORKING SYSTEM. THESE SHOP DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS, ALLOW
 - THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OWN DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
 - REQUEST FOR ANY FOR ANY FULL ASSEMBLY THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
 - REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
 - SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
 - MINIMUM FORTY (40) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
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DRAWING REVISIONS

No.	Description	Date
1	Preliminary	May 19/22
2	Issued for Review	Apr. 22/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 16/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

PROFESSIONAL ENGINEERING
PROVINCE OF ONTARIO
Dec 2024

Client: WW Inc.
Address: Minden, ON
Project Name:

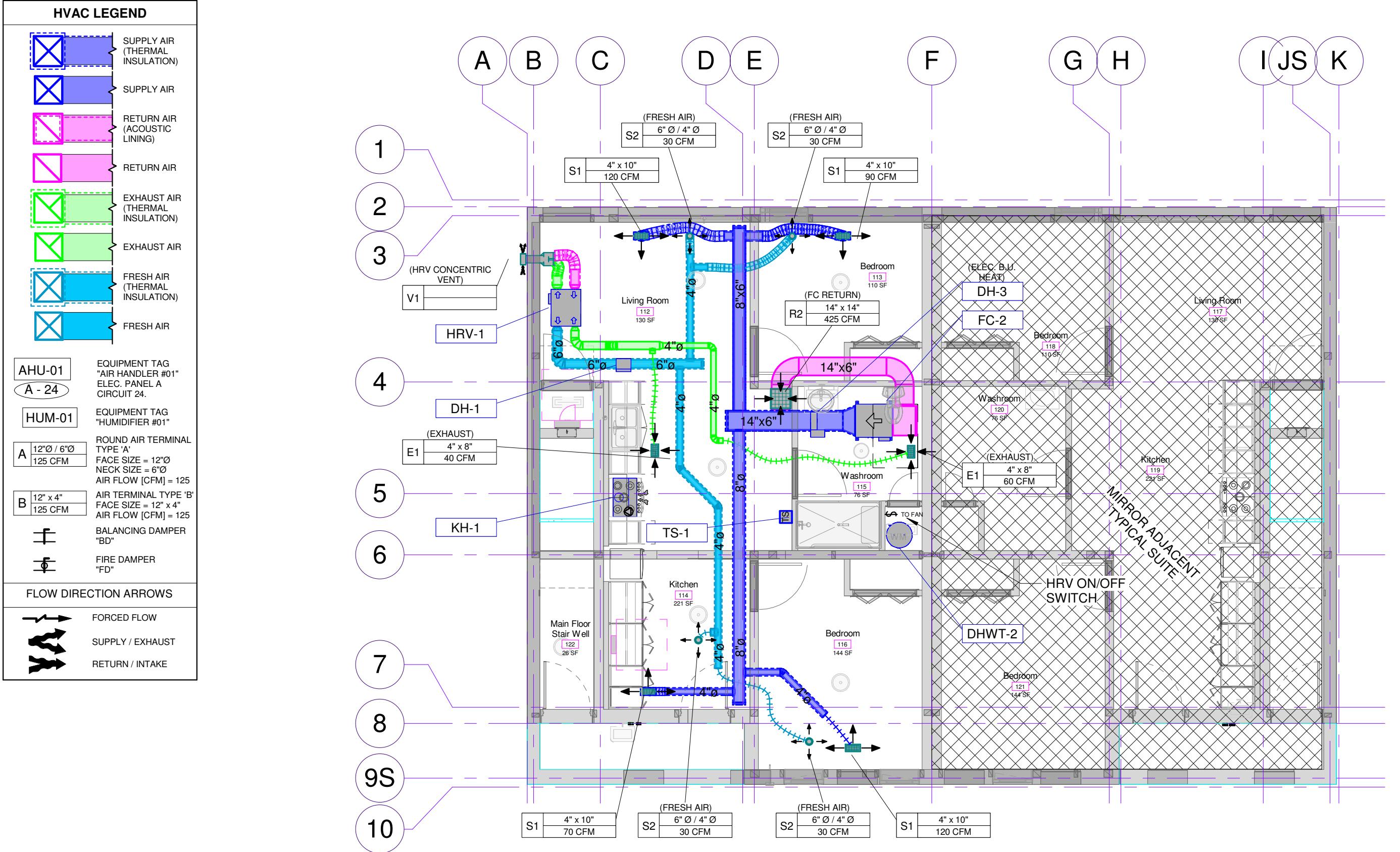
Gull River Affordable Housing
Dwg. Name: HVAC - Bldg. 1
NSET Project #: 04322
Drawn by: Northstar Eng. Checked by: J.D.L.
Scale: As indicated Revision #: 6.0
Drawing #: M-7
Project Date: Jan. 14/22 Arch-D (24" x 36")

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Typical Suites						
Type Mark	Description	Manufacturer	Model	Length	Width	Neck Dia.
E1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"	
R1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	80 / F / A / B12	14"	8"	
R2	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	80 / F / A / B12	14"	14"	
S1	GRILLE / SUPPLY / LOUVERED / DBL. DFLL / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	520D / F / L / A / B12	10"	4"	
S2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE			4"
V1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"Ø	TANDEM TRANSITION	14690			

(04322) Electric Heat Schedule - (New) Typical Suites						
Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase
DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208 V	1
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208 V	1
Grand total					37,534	Btu/h

(04322) Thermostat Schedule - (New) Typical Suites						
Type Mark	Description	Manufacturer	Model	Supplied By		
TS-1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	HYXE-VA01	DIV. 23		
Grand total						

(04322) Mechanical Equipment Schedule - (New) Typical Suites										
Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h		0 Btu/h		208 V	1	60
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09UX25AH	11,300 Btu/h	100	11,300 Btu/h	9,600 Btu/h	280 CFM	0.300 in-wg	208 V
FC-2	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	17,100 Btu/h	100					



2 (04322) Building 2 - Level 1 - RCP HVAC - New
1 : 75

FIRE DAMPERS

ALL DUCTS PENETRATING FIRE SEPARATIONS DEFINED ON ARCHITECTURAL DRAWINGS REQUIRE RATED, LISTED AND APPROVED FIRE DAMPERS.

DIV. 23, DIV. 26 RESPONSIBILITIES

DIV. 26 TO SUPPLY: ELECTRICAL RESISTANCE HEATERS

ALL CONTROL AND ELECTRICAL POWER DEVICES OVER 50 VOLTS (ALSO TO BE INSTALLED, WIRED, & TESTED BY DIV. 26 CONT.)

DIV. 23 TO SUPPLY: HEATING / COOLING UNITS, GAS FIRED HVAC EQUIPMENT, EXHAUST FANS, HVAC ELECTRICAL CONTROL DEVICES UNDER 50 VOLTS (ALSO TO BE INSTALLED, WIRED & TESTED BY DIV. 23 CONT.)

EXHAUST TERMINALS

ALL EXHAUST DUCTING FROM TERMINALS & FANS TO BE THEMALLY INSULATED A MIN. 10 ft. (3m) FROM EXTERIOR PENETRATION WITH 1" FOIL WRAPPED INSULATION. BACK-DRAFT DAMPER REQUIRED AT FAN OR PENETRATION.

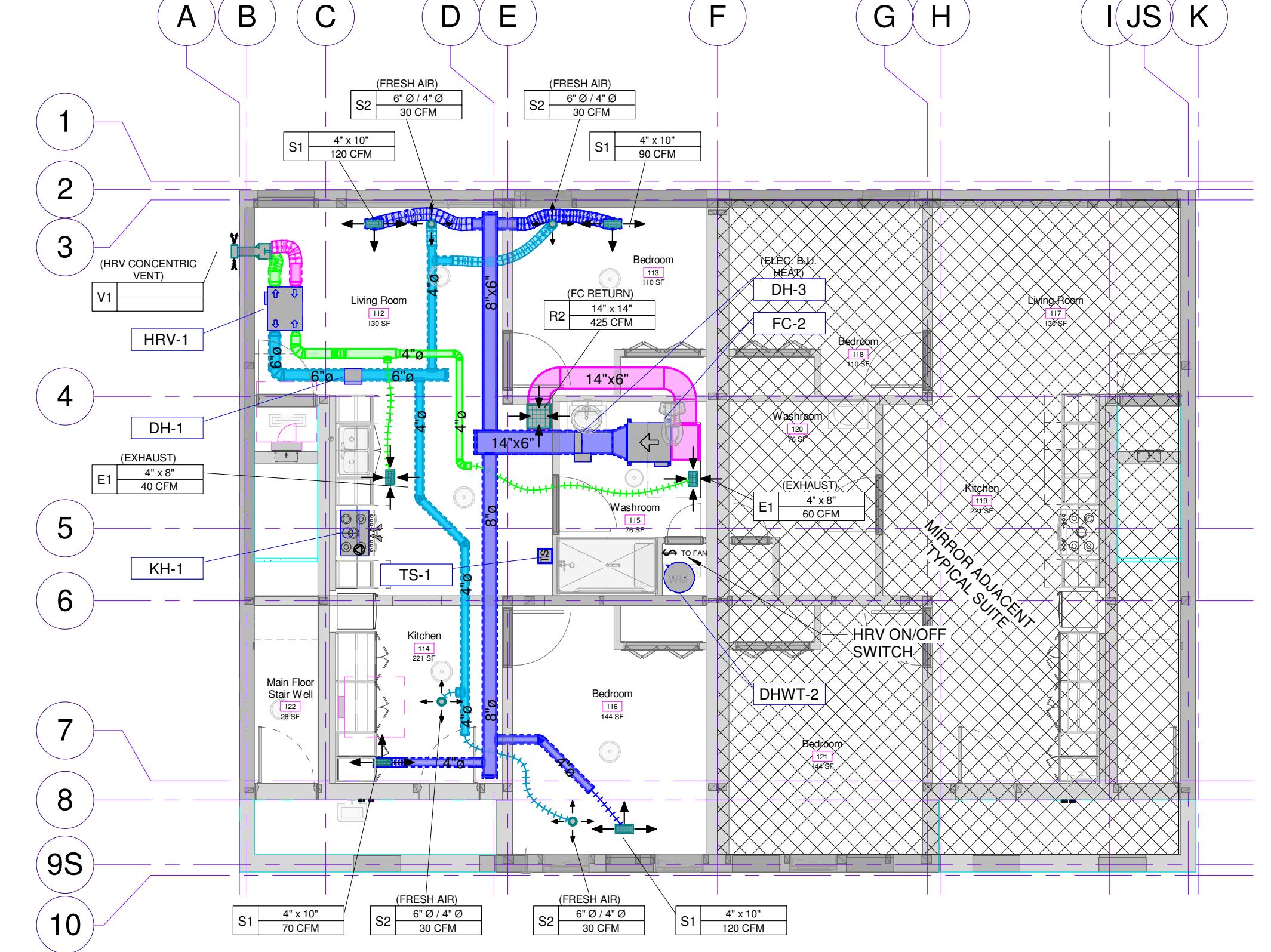
HVAC ELEC. DISCONNECTS

SEPARATE, WEATHER-PROOF ELEC. POWER DISCONNECTS TO BE SUPPLIED FOR OUTDOOR MECH. UNIT (I.E. NOT INCLUDED WITH EQUIP.) BY DIV. 26 CONTRACTOR.

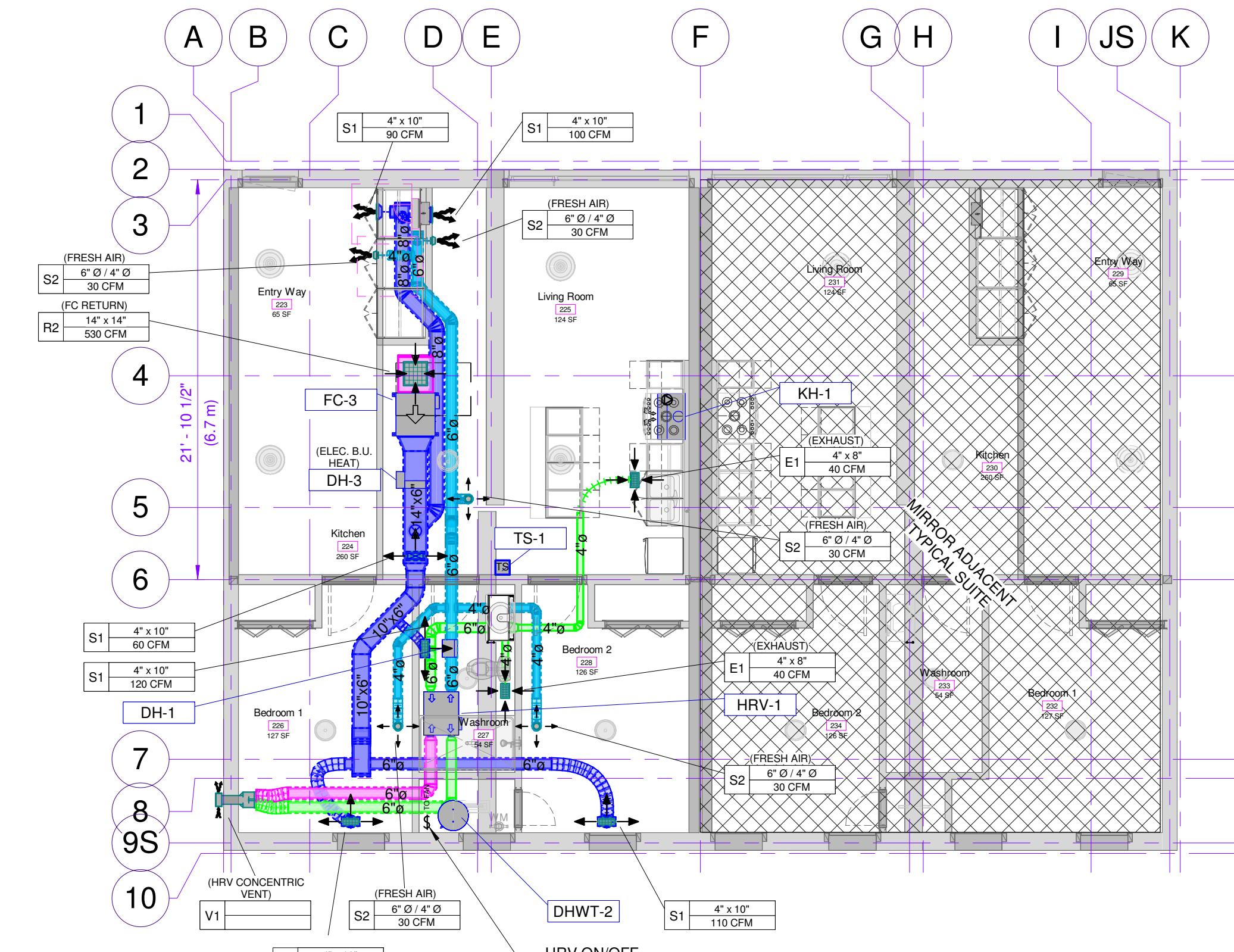
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SUCTION AND LIQUID LINES SHALL BE TYPE AGR COPPER WITH SOLDER TYPE FITTINGS USING 65/30 SILVER SOLDER. EVACUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREON TO MANUFACTURERS SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.



1 (04322) Building 2 - Basement - RCP HVAC - New
1 : 75



3 (04322) Building 2 - Level 2 - RCP HVAC - New
1 : 75

04322 PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
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M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
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P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
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E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

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 - THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
 - REQUEST FOR QUOTATION FOR ANY FINAL ASSEMBLY/VIAT THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
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DRAWING REVISIONS

No.	Description	Date
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2	Issued for Review	Apr. 22/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 16/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

Client: WW Inc.

Address: Minden, ON

Project Name: Gull River Affordable Housing

Dwg. Name: HVAC - Bldg. 2

NSET Project #: 04322

Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

Drawing #: M-8

Project Date: Jan. 14/22

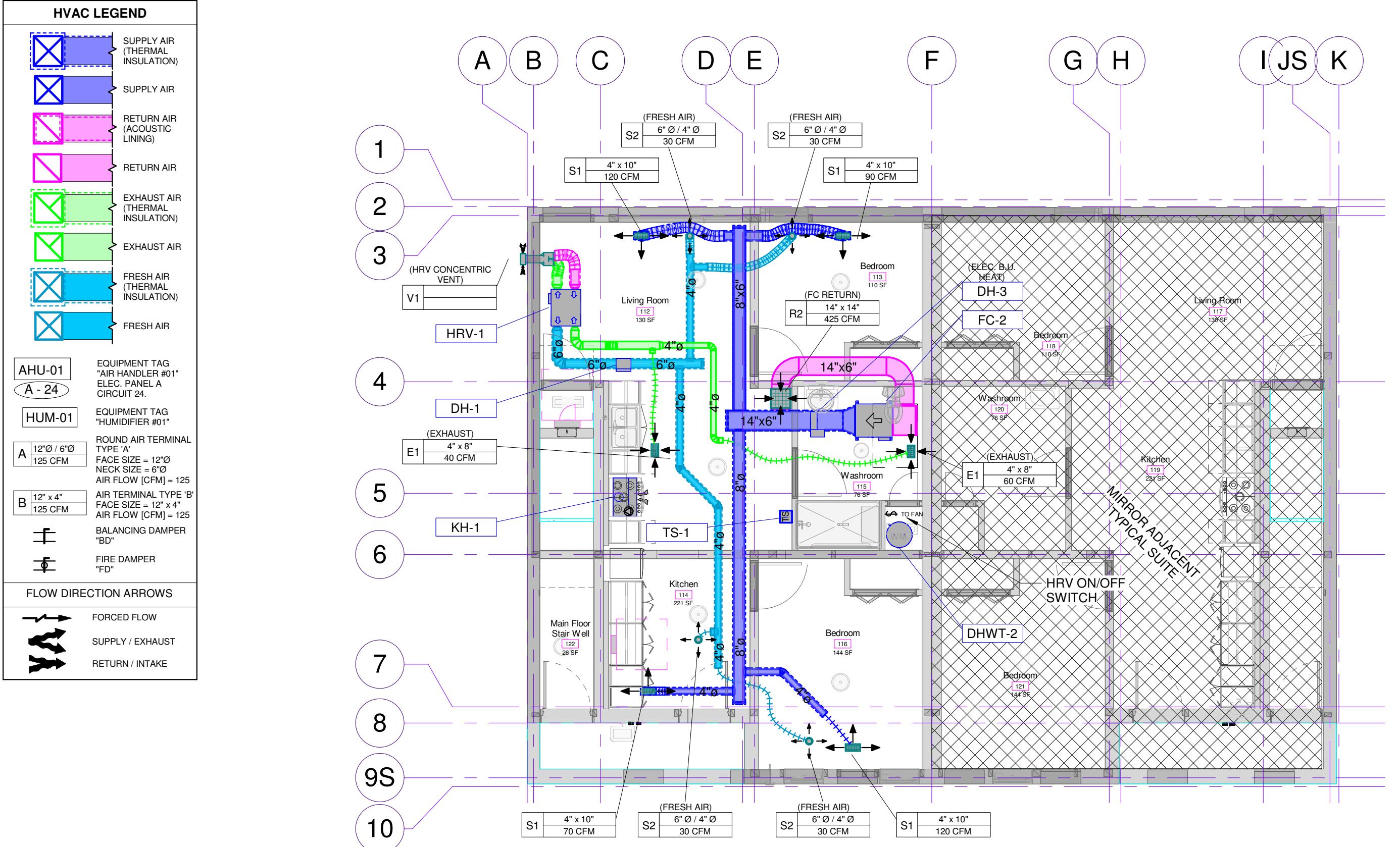
Arch-D (24" x 36")

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Typical Suites						
Type Mark	Description	Manufacturer	Model	Length	Width	Neck Dia.
E1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"	
R1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	80 / F / A / B12	14"	8"	
R2	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	80 / F / A / B12	14"	14"	
S1	GRILLE / SUPPLY / LOUVERED / DBL. DFLL / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	520D / F / L / A / B12	10"	4"	
S2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE			4"
V1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"	TANDEM TRANSITION	14690			

(04322) Electric Heat Schedule - (New) Typical Suites						
Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase
DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	TERMOLEC	TER-6-1120	ELEC.	120 V	1
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	TERMOLEC	MSC0-02LS	ELEC.	208 V	1
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	TERMOLEC	MSC0-03LS	ELEC.	208 V	1
Grand total						
					37,534	Btu/h

(04322) Thermostat Schedule - (New) Typical Suites						
Type Mark	Description	Manufacturer	Model			
TS-1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	HYXE-VA01			
Grand total						

(04322) Mechanical Equipment Schedule - (New) Typical Suites											
Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h	0 Btu/h	9,600 Btu/h	280 CFM	0.300 in-wg	208 V	1	60
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09UX25AH	11,300 Btu/h	100	11,300 Btu/h	9,600 Btu/h	0 Btu/h	208 V	1	60
FC-2	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	17,100 Btu/h	100						



2 (04322) Building 4 - Level 1 - RCP HVAC - New
M-10 1 : 75

FIRE DAMPERS

ALL DUCTS PENETRATING FIRE SEPARATIONS DEFINED ON ARCHITECTURAL DRAWINGS REQUIRE RATED, LISTED AND APPROVED FIRE DAMPERS.

DIV. 23, DIV. 26 RESPONSIBILITIES

DIV. 26 TO SUPPLY: ELECTRICAL RESISTANCE HEATERS

ALL CONTROL AND ELECTRICAL POWER DEVICES OVER 50 VOLTS (ALSO TO BE INSTALLED, WIRED, & TESTED BY DIV. 26 CONT.)

DIV. 23 TO SUPPLY:
HEATING / COOLING UNITS, GAS FIRED HVAC EQUIPMENT, EXHAUST FANS, HVAC ELECTRICAL CONTROL DEVICES UNDER 50 VOLTS (ALSO TO BE INSTALLED, WIRED & TESTED BY DIV. 23 CONT.)

EXHAUST TERMINALS

ALL EXHAUST DUCTING FROM TERMINALS & FANS TO BE THEMALLY INSULATED A MIN. 10 ft. (3m) FROM EXTERIOR PENETRATION WITH 1" FOIL WRAPPED INSULATION. BACK-DRAFT DAMPER REQUIRED AT FAN OR PENETRATION.

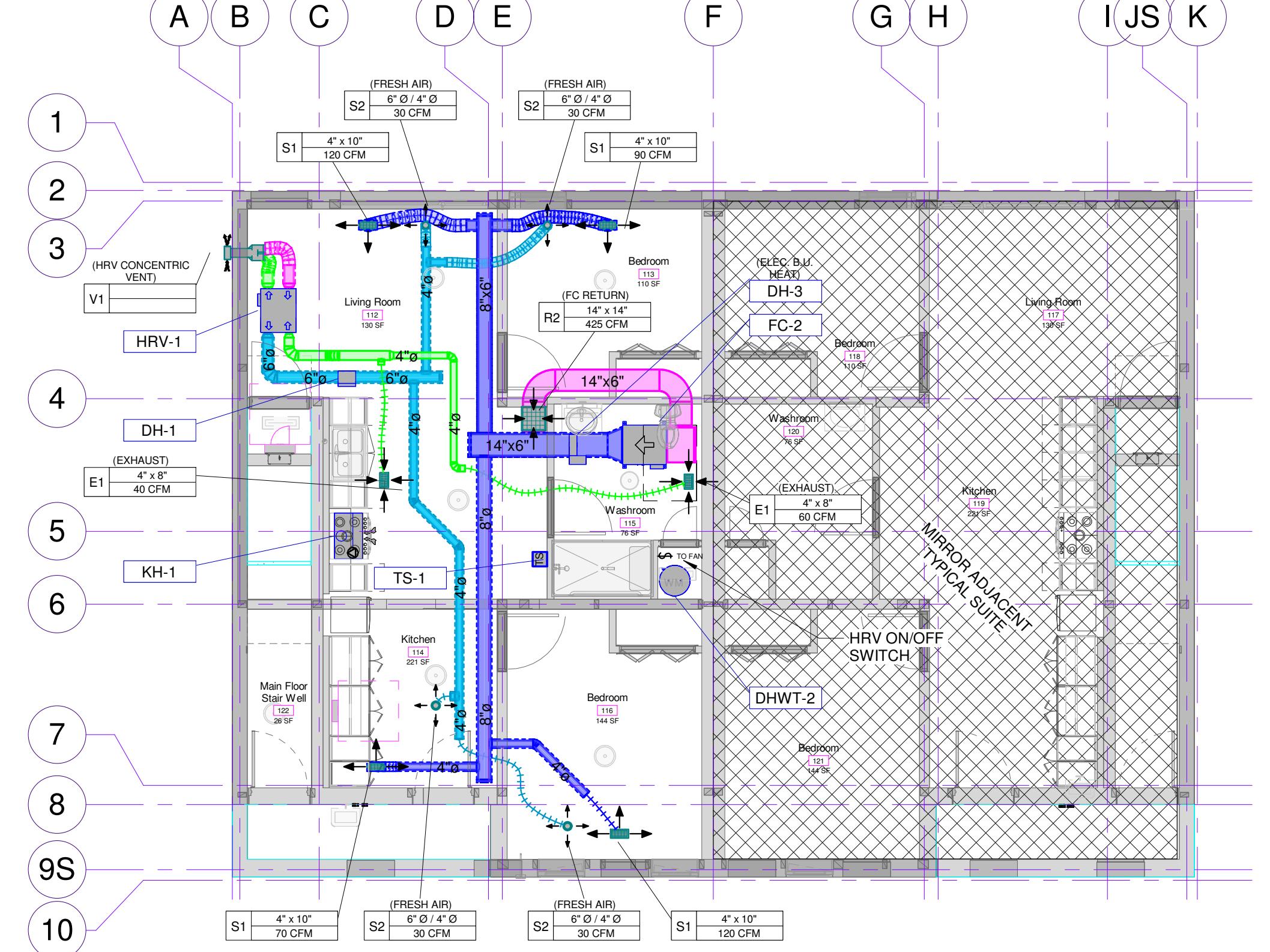
HVAC ELEC. DISCONNECTS

SEPARATE, WEATHER-PROOF ELEC. POWER DISCONNECTS TO BE SUPPLIED FOR OUTDOOR MECH. UNIT (I.E. NOT INCLUDED WITH EQUIP.) BY DIV. 26 CONTRACTOR.

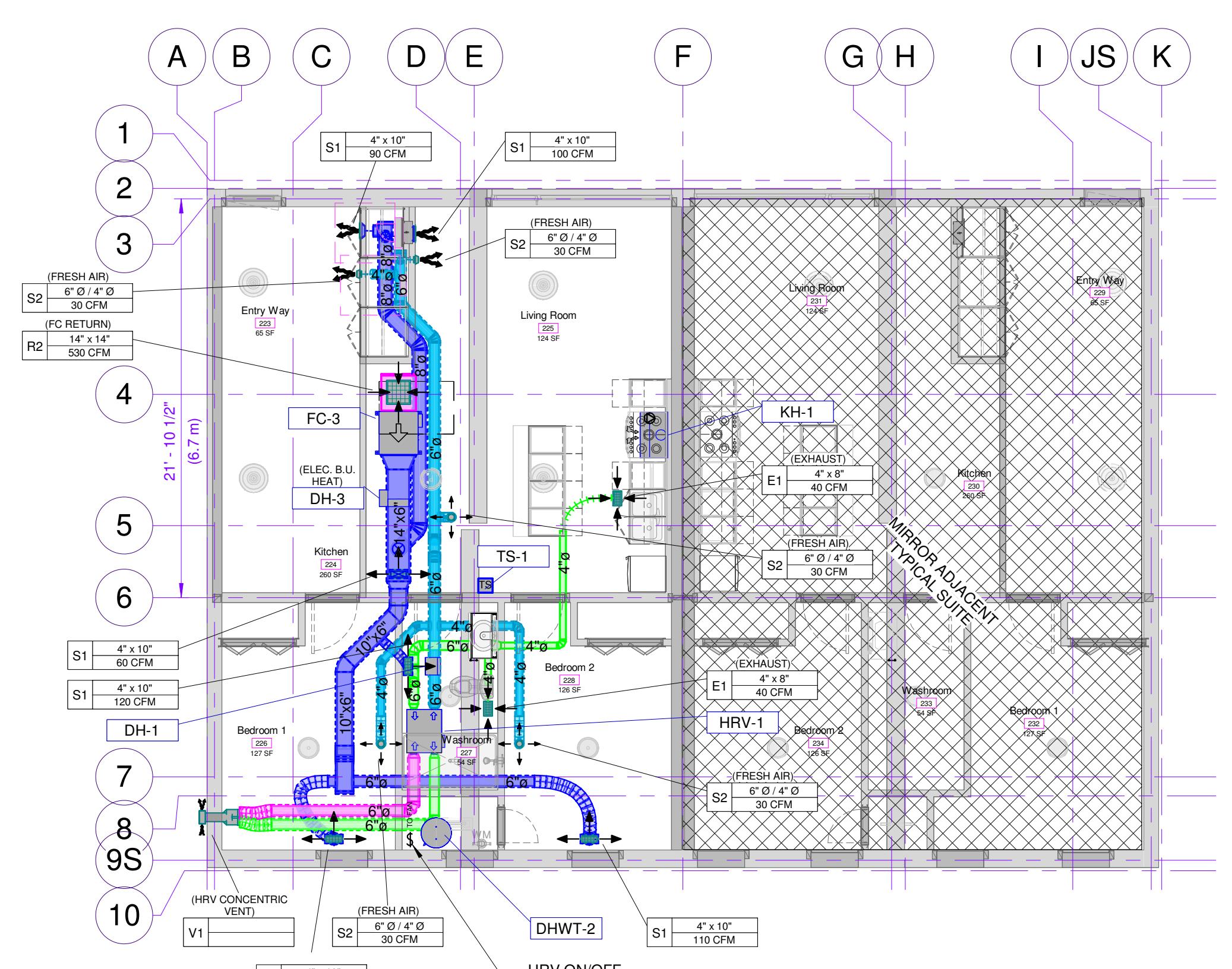
MOUNTING & WIRING TO BE BY DIV. 26 CONTRACTOR INCLUDING PERMANENT TYPE LAMAQOID® LABELS TO IDENTIFY MECH. UNIT AND ELEC. CIRCUIT AS PER DESIGN.

REFRIGERANT PIPING & INSTALLATION

IMPORTANT INSTALLATION NOTE:
COMPLETE INSTALLATION TO BE PROVIDED BY CONTRACTOR THAT HAS COMPLETED FACTORY TRAINING ON SPECIFIED SYSTEMS. ONLY USE MFG. APPROVED, INSULATED LINE-SETS AND FITTINGS.
SUCTION AND LIQUID LINES SHALL BE TYPE AGR COPPER WITH SOLDER TYPE FITTINGS USING 5/8" SILVER SOLDER. EVACUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREON TO MANUFACTURERS SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.



1 (04322) Building 4 - Basement - RCP HVAC - New
M-10 1 : 75



3 (04322) Building 4 - Level 2 - RCP HVAC - New
M-10 1 : 75

04322 PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
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E-21	Electrical Schedules
E-22	Electrical Details



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 - THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. FEES WILL BE ADDED FOR ALL CONSTRUCTION COSTS ARISING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
 - DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILS, OMISSIONS OR DISCREPANCIES ARE PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
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 - MINIMUM FORTY (40) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
 - REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR PURCHASE, TRANSFER, LICENSE OR RELEASE TO CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
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DRAWING REVISIONS

No.	Description	Date
1	Preliminary	May 19/22
2	Issued for Review	Apr. 22/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 16/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

Client: WW Inc.

Address: Minden, ON

Project Name: Gull River Affordable Housing

Dwg. Name: HVAC - Bldg.4

NSET Project #: 04322

Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

Drawing #: M-10

Project Date: Jan. 14/22

Arch-D (24" x 36")

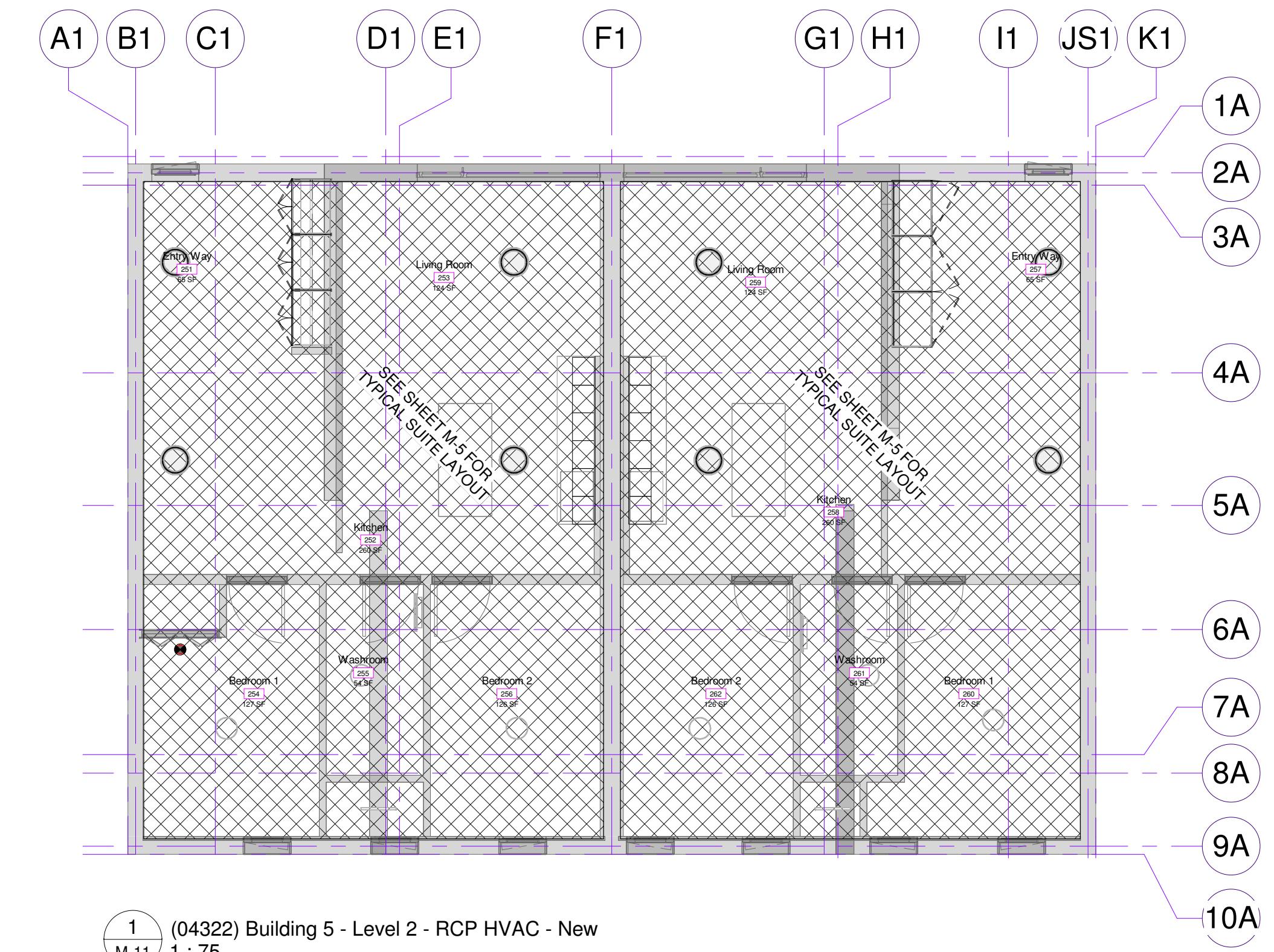
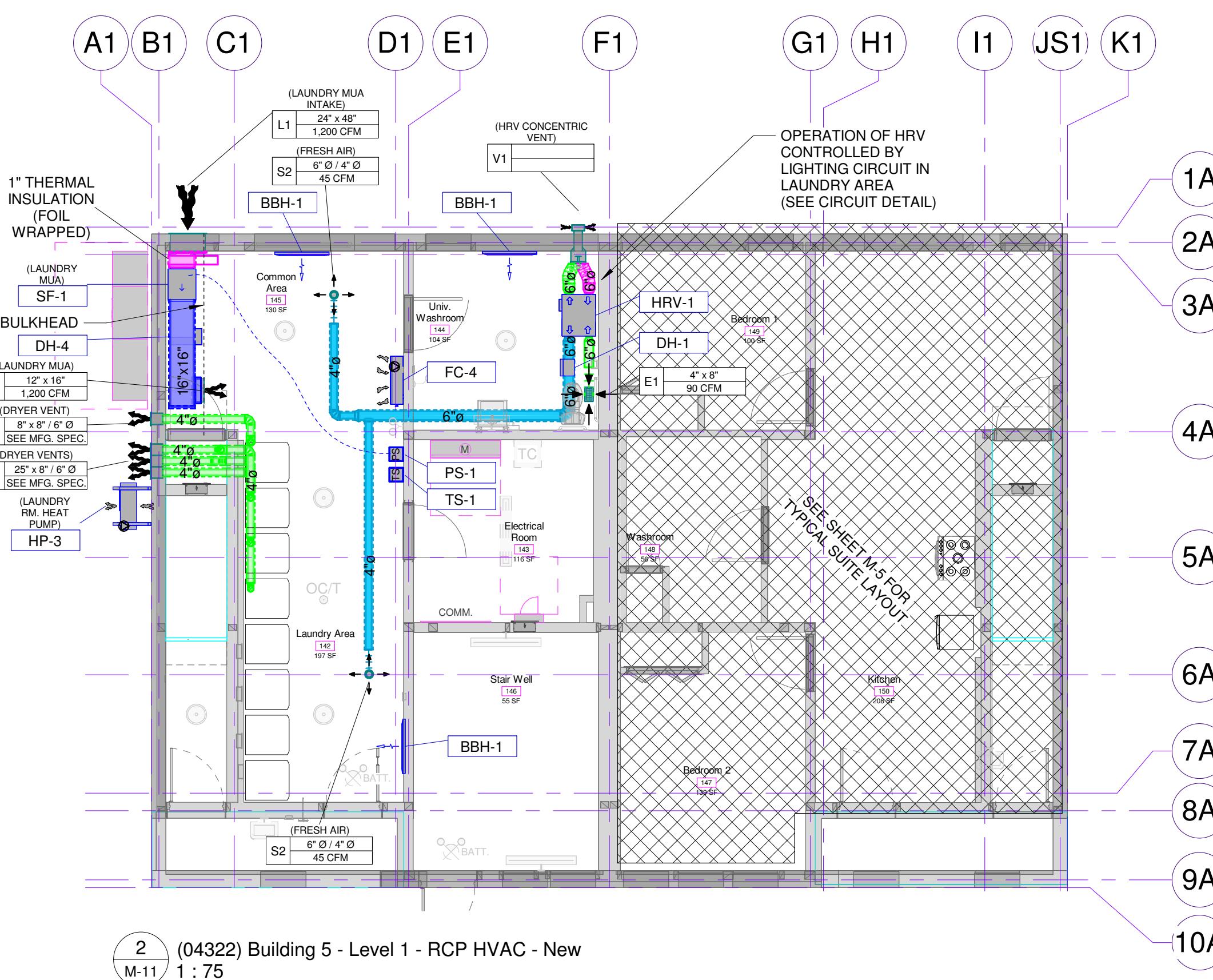
Type Mark	Description	Manufacturer	Model	Length	Width	Neck Dia.
E1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"	
R1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	80 / F / A / B12	14"	8"	
R2	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	80 / F / A / B12	14"	14"	
S1	GRILLE / SUPPLY / LOUVERED / DBL. DFLL / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	520D / F / L / A / B12	10"	4"	
S2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE			4"
V1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"Ø	TANDEM TRANSITION	14690			

Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase
DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208 V	1
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208 V	1
Grand total						
					37,534	Btu/h

Type Mark	Description	Manufacturer	Model	Supplied By		
TS-1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	HYXE-VA01	DIV. 23		
Grand total						

(04322) Mechanical Equipment Schedule - (New) Typical Suites										
Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h	0 Btu/h	9,600 Btu/h	280 CFM	0.300 in-wg	208 V	1
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09UX25AH	11,300 Btu/h	100	11,300 Btu/h	9,600 Btu/h	1	60	14.4 A
FC-2	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	17,100 Btu/h	100	17,1				

HVAC LEGEND	
	SUPPLY AIR (THERMAL INSULATION)
	SUPPLY AIR
	RETURN AIR (ACOUSTIC LINING)
	RETURN AIR
	EXHAUST AIR (THERMAL INSULATION)
	EXHAUST AIR
	FRESH AIR (THERMAL INSULATION)
	FRESH AIR



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NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

92 Caplan Ave, Suite #517
Barrie, Ontario L4N 9J2
Tel. (705) 719-1003 Fax (705) 719-0490
www.nsct.ca

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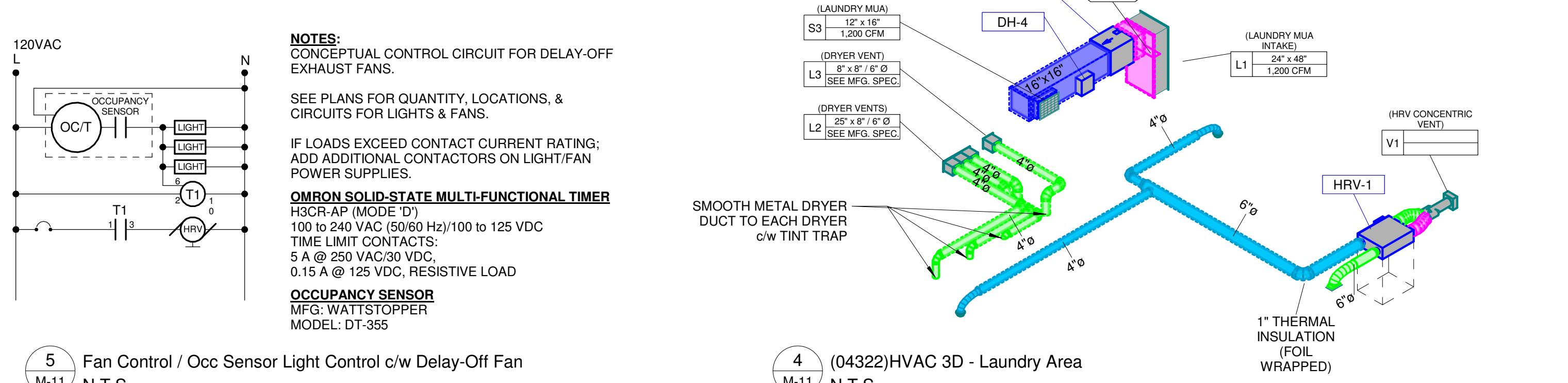
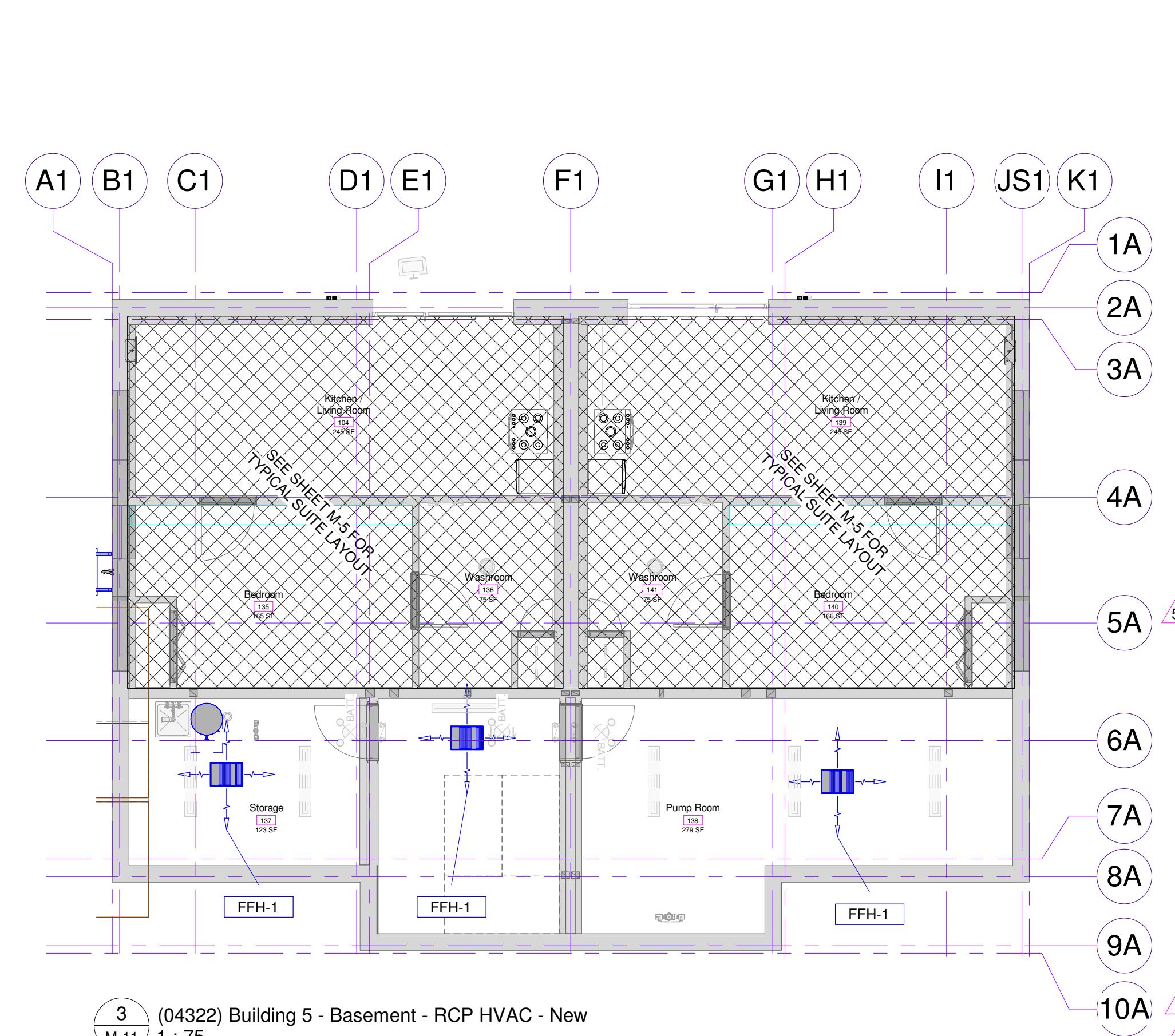
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3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 18/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

Client:
WW Inc.
Address:
Minden, ON
Project Name:
Gull River Affordable Housing
Dwg. Name:
HVAC - Bldg. 5

NSET Project #:
04322
Drawn by: Northstar Eng. Checked by: J.D.L.
Scale: As indicated Revision #: 6.0
Drawing #: **M-11**
Project Date: Jan. 14/22 Arch-D (24" x 36")

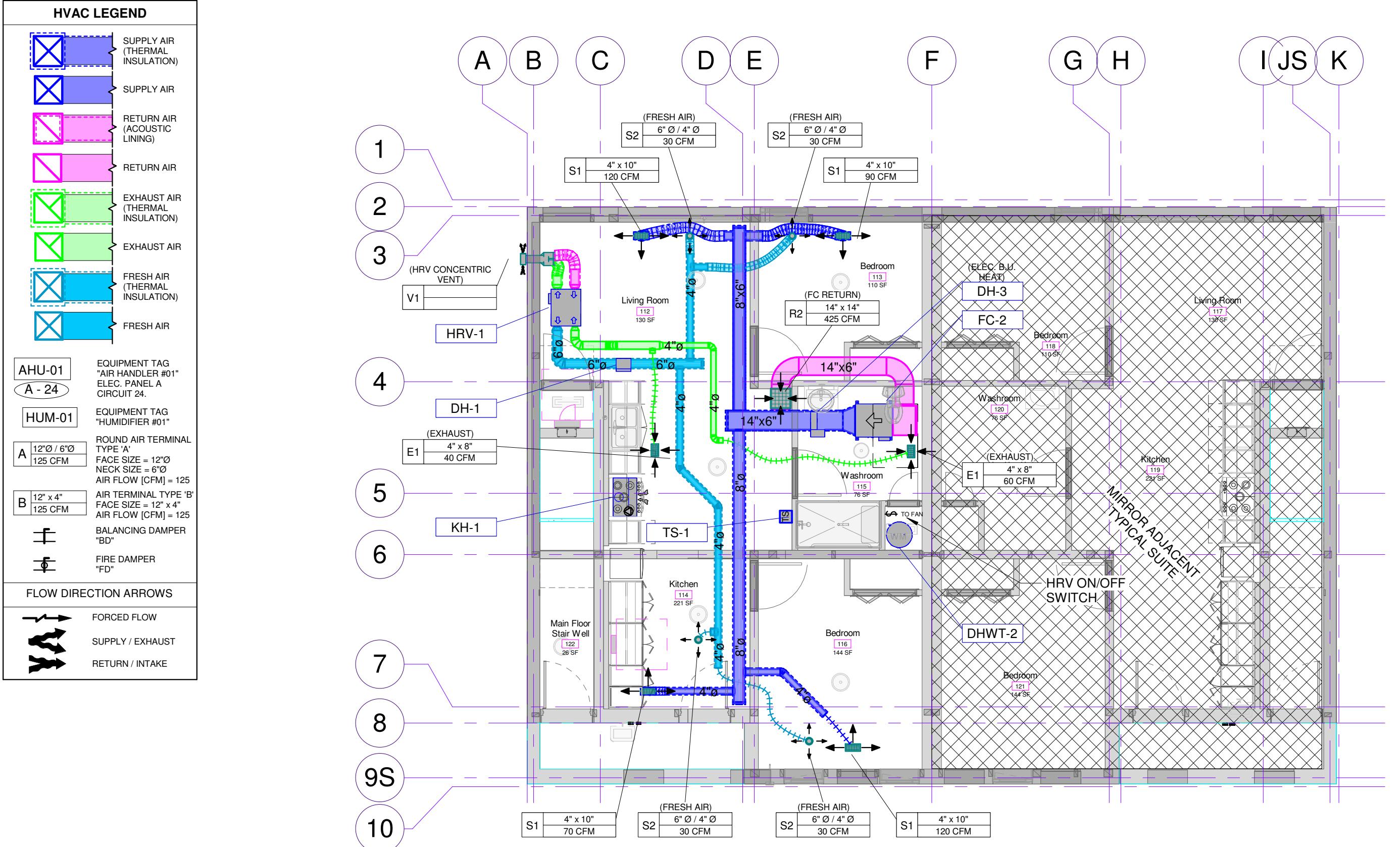


(04322) Electric Heat Schedule - (New) Service & Common Areas							
Type Mark	Qty.	Description	Mfg.	Model	Voltage	Phase	VA
BBH-1	3	BASEBOARD HEATER / 750W / 208V 1P	OUELLET	OFM075BL	208 V	1	2,250
DH-1	1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	120 V	1	996
DH-4	1	DUCT HEATER / 30kW / 16"x16" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-30LS	208 V	3	30,010
FFH-1	3	HEATER / FAN FORCED / CEILING / SURFACE / 240V 10 / 1500W / WHITE c/w BUILT-IN THERMOSTAT	OUELLET	OACP1500-BL & KIT-OAC-BS1	208 V	1	4,500
	8						102,364 Btu/h
							128,808 Btu/h

(04322) Thermostat Schedule - (New) Service & Common Areas							
Type Mark	Qty.	Description	Manufacturer	Model	Qty.	Supplied By	
TS-1	1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	HYXE-VA01	1	DIV. 23	

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Service & Common Areas									
Type Mark	Qty.	Description	Manufacturer	Model	Length	Width	Air Terminal - Dia.	Neck Dia.	Comments
E1	1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"			(LAUNDRY MUA INTAKE)
L1	1	LOUVER / INTAKE / 39" BLADE / DRAINABLE BLADE	EH PRICE	DE439	48"	24"			
L2	1	WALL BOX / TRIPLE / 8" DEEP c/w EXTRUDED ALUMINUM GRILLE	REVERSOMATIC	TWB-8 (ALUM. GRILLE)	8"	25"	6"		(DRYER VENTS)
L3	1	WALL BOX / 8" DEEP c/w EXTRUDED ALUMINUM GRILLE	REVERSOMATIC	SWB-8 (ALUM. GRILLE)	8"	8"	6"		(DRYER VENT)
S2	2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFE BREATH	TECHIGRILLE			6"	4"	(FRESH AIR)
S3	1	GRILLE / SUPPLY / LOUVERED / DBL. DEFL. / SURFACE MNT. / LONG BLADES / COUNTERSUNK	EH PRICE	520 / F / L / A / B12	16"	12"			(LAUNDRY MUA)
V1	1	HRV CONCENTRIC VENT c/w WALL CAP / 6"Ø	TANDEM TRANSITION	14690					(HRV CONCENTRIC VENT)
	8								

(04322) Mechanical Equipment Schedule - (New) Service & Common Areas													
Type Mark		Description	Manufacturer	Model #	Qty.	Energy Source	Heating Capacity (Input)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	
FC-4		FAN COIL / SPLIT HP / INDOOR UNIT / 1 TON / WALL MINT. / c/w CONDENSATE PUMP / c/w WIRED REMOTE	HISENSE	AS-12UW3SVEDC01	1	ELEC	13,000 Btu/h	12,000 Btu/h	2,000 CFM	208 V	1	60	
HP-3		OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 1 TON / 240V 1Ø c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AS-12UW3SXEDC-0	1	ELEC	13,000 Btu/h	12,000 Btu/h	2,080 CFM	208 V	1	60	
HRV-1		ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	1		0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60
	3	</											



2 (04322) Building 6 - Level 1 - RCP HVAC - New
M-12 1 : 75

FIRE DAMPERS

ALL DUCTS PENETRATING FIRE SEPARATIONS DEFINED ON ARCHITECTURAL DRAWINGS REQUIRE RATED, LISTED AND APPROVED FIRE DAMPERS.

DIV. 23, DIV. 26 RESPONSIBILITIES

DIV. 26 TO SUPPLY:

ELECTRICAL RESISTANCE HEATERS
ALL CONTROL AND ELECTRICAL POWER DEVICES OVER 50 VOLTS (ALSO TO BE INSTALLED, WIRED, & TESTED BY DIV. 26 CONT.)

DIV. 23 TO SUPPLY:

HEATING / COOLING UNITS, GAS FIRED HVAC EQUIPMENT, EXHAUST FANS, HVAC ELECTRICAL CONTROL DEVICES UNDER 50 VOLTS (ALSO TO BE INSTALLED, WIRED & TESTED BY DIV. 23 CONT.)

EXHAUST TERMINALS

ALL EXHAUST DUCTING FROM TERMINALS & FANS TO BE THEMALLY INSULATED A MIN. 10 ft. (3m) FROM EXTERIOR PENETRATION WITH 1" FOIL WRAPPED INSULATION. BACK-DRAFT DAMPER REQUIRED AT FAN OR PENETRATION.

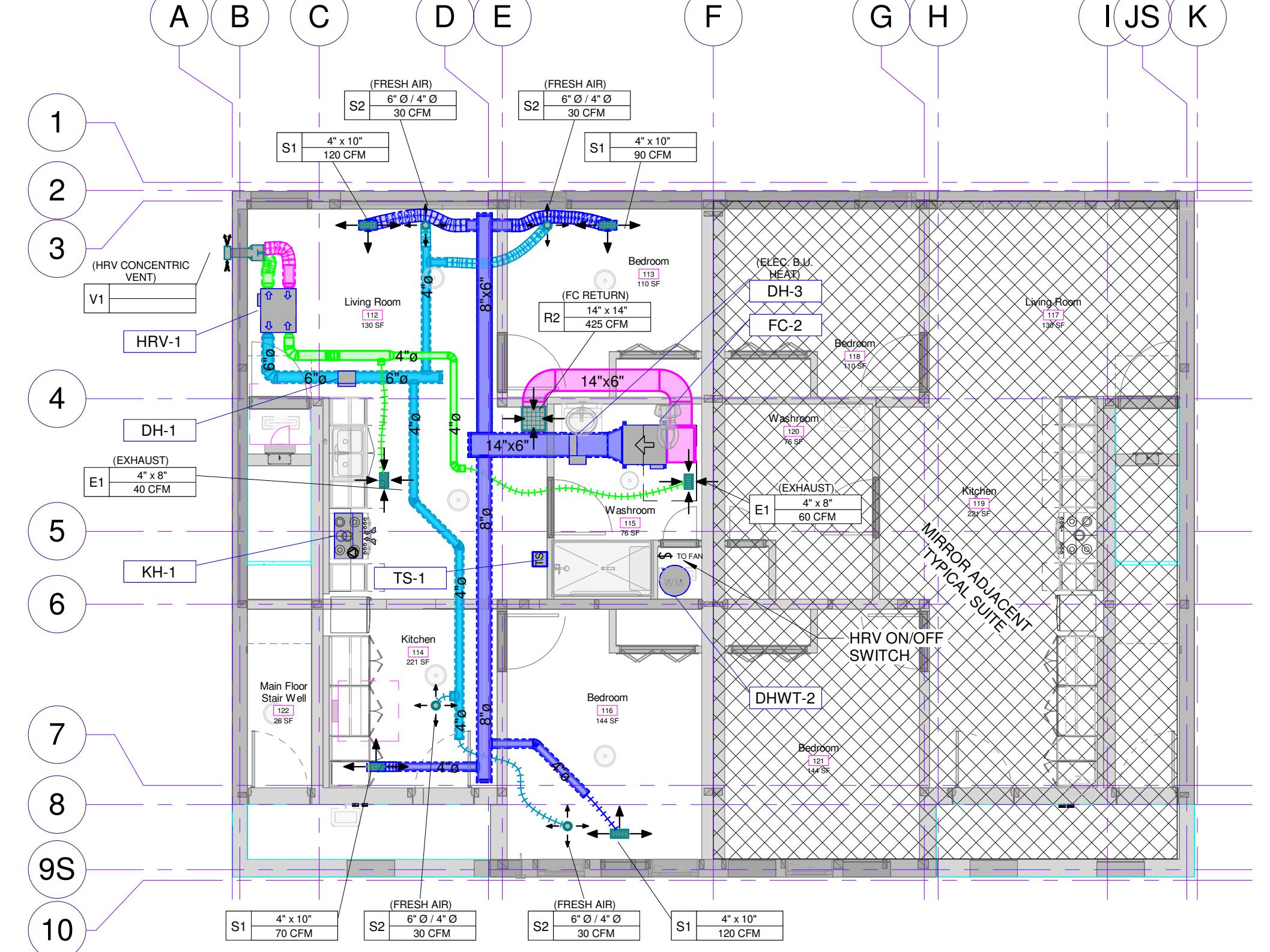
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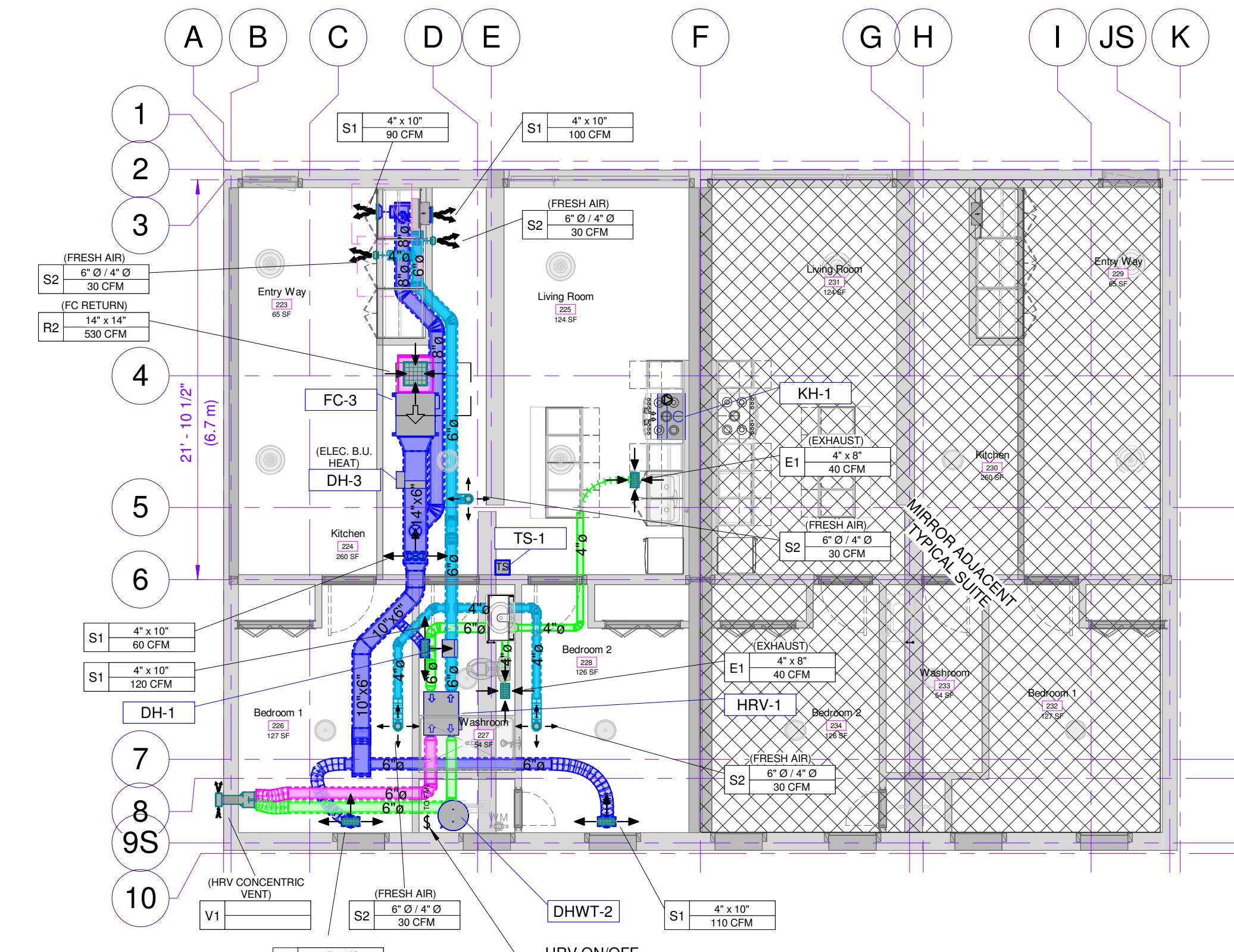
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M-12 1 : 75



3 (04322) Building 6 - Level 2 - RCP HVAC - New
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E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

92 Caplan Ave, Suite #517
Barrie, Ontario L4N 9J2
Tel. (705) 719-1003 Fax (705) 719-0490
www.nset.ca

GENERAL DRAWING / DESIGNER NOTES:

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- THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. FEES WILL BE ADDED FOR ALL CONSTRUCTION COSTS ARISING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
- DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILS, DIMENSIONS AND SPECIFICATIONS PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
- CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
- PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".
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DRAWING REVISIONS

No.	Description	Date
1	Preliminary	May 19/22
2	Issued for Review	Apr. 22/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 16/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

Client: WW Inc.

Address: Minden, ON

Project Name: Gull River Affordable Housing

Dwg. Name: HVAC - Bldg.6

NSET Project #: 04322

Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

Drawing #: M-12

Project Date: Jan. 14/22 Arch-D (24" x 36")

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Typical Suites						
Type Mark	Description	Manufacturer	Model	Length	Width	Neck Dia.
E1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"	
R1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	80 / F / A / B12	14"	8"	
R2	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	80 / F / A / B12	14"	14"	
S1	GRILLE / SUPPLY / LOUVERED / DBL. DFLL / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLE / WHITE	EH PRICE	520D / F / L / A / B12	10"	4"	
S2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE			4"
V1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"	TANDEM TRANSITION	14690			

(04322) Electric Heat Schedule - (New) Typical Suites						
Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase
DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208 V	1
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208 V	1
Grand total					37,534	Btu/h

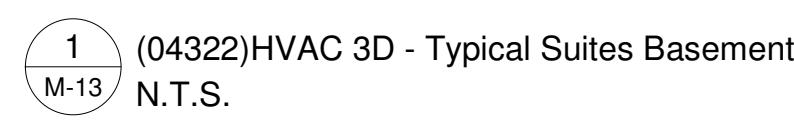
(04322) Thermostat Schedule - (New) Typical Suites						
Type Mark	Description	Manufacturer	Model	Supplied By	Phase	
TS-1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	HYXE-VA01			
Grand total						

(04322) Mechanical Equipment Schedule - (New) Typical Suites										
Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h		0 Btu/h	280 CFM	0.300 in-wg	208 V	1
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09UX25AH	11,300 Btu/h	100	11,300 Btu/h				

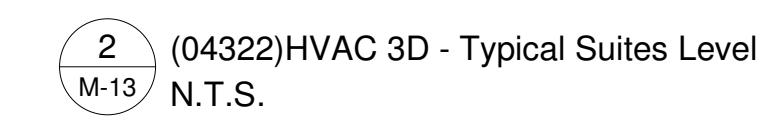
HVAC LEGEND	
	SUPPLY AIR (THERMAL INSULATION)
	SUPPLY AIR
	RETURN AIR (ACOUSTIC LINING)
	RETURN AIR
	EXHAUST AIR (THERMAL INSULATION)
	EXHAUST AIR
	FRESH AIR (THERMAL INSULATION)
	FRESH AIR

AHU-01
A - 24
HUM-01
A 1200 650
TYPE K
FACE SIZE = 12" x 12"
AIR FLOW (CFM) = 125
B 12" x 4"
TYPE B
FACE SIZE = 12" x 4"
AIR FLOW (CFM) = 125
BALANCING DAMPER "BD"
FIRE DAMPER "FD"
FLOW DIRECTION ARROWS
FORCED FLOW
SUPPLY / EXHAUST
RETURN / INTAKE

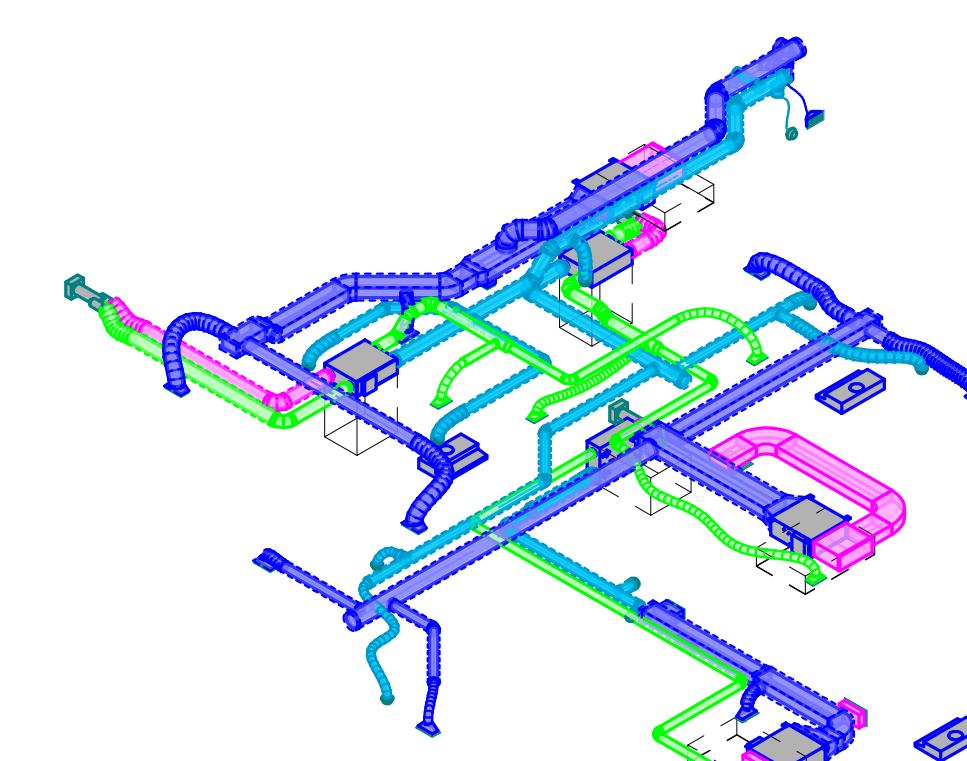
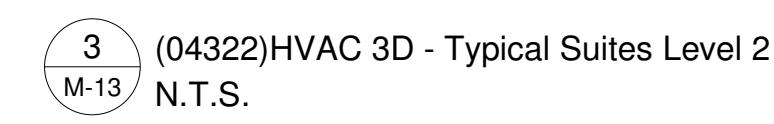
1 (04322) HVAC 3D - Typical Suites Basement
N.T.S.



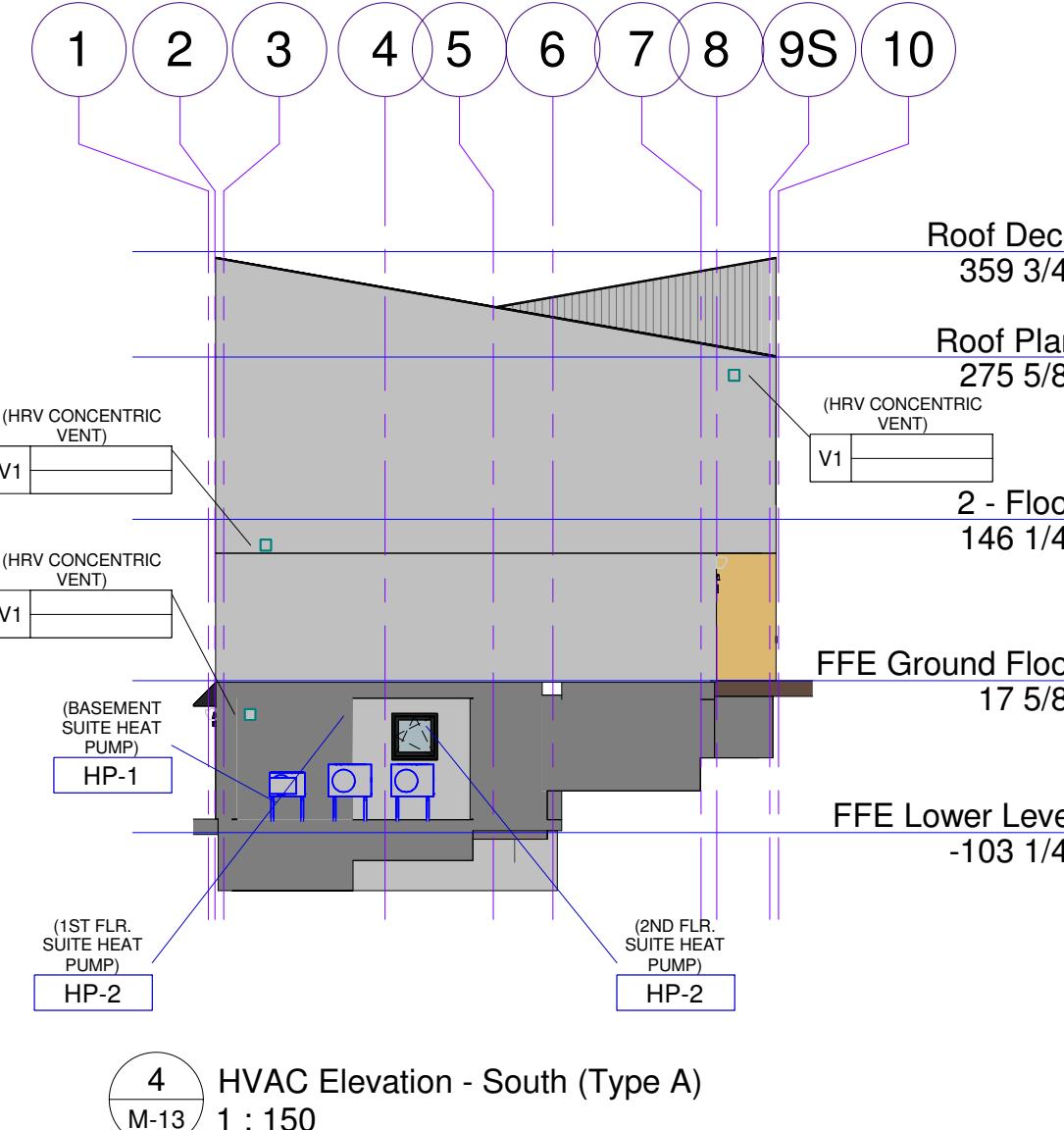
2 (04322) HVAC 3D - Typical Suites Level 1
N.T.S.



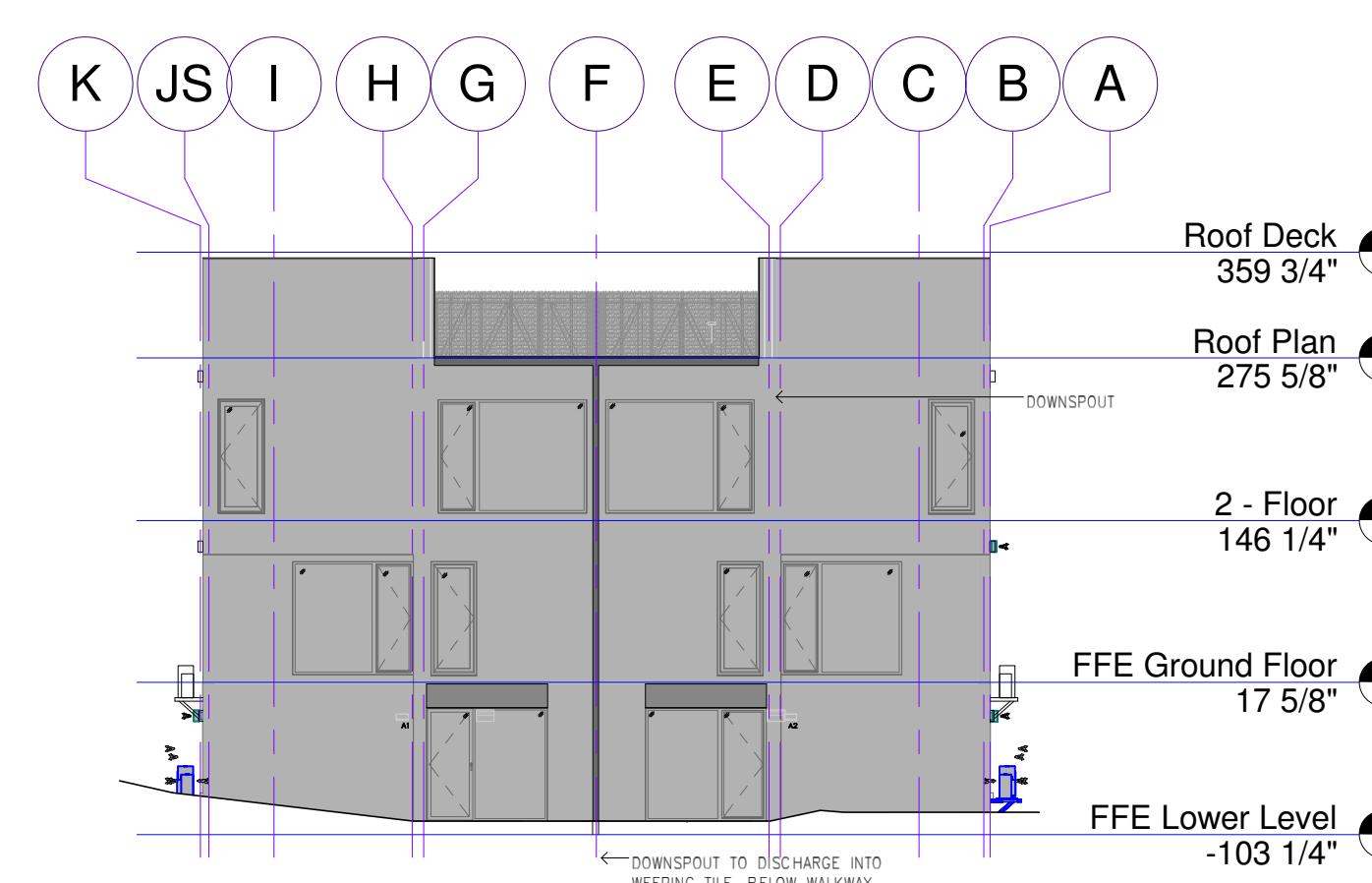
3 (04322) HVAC 3D - Typical Suites Level 2
N.T.S.



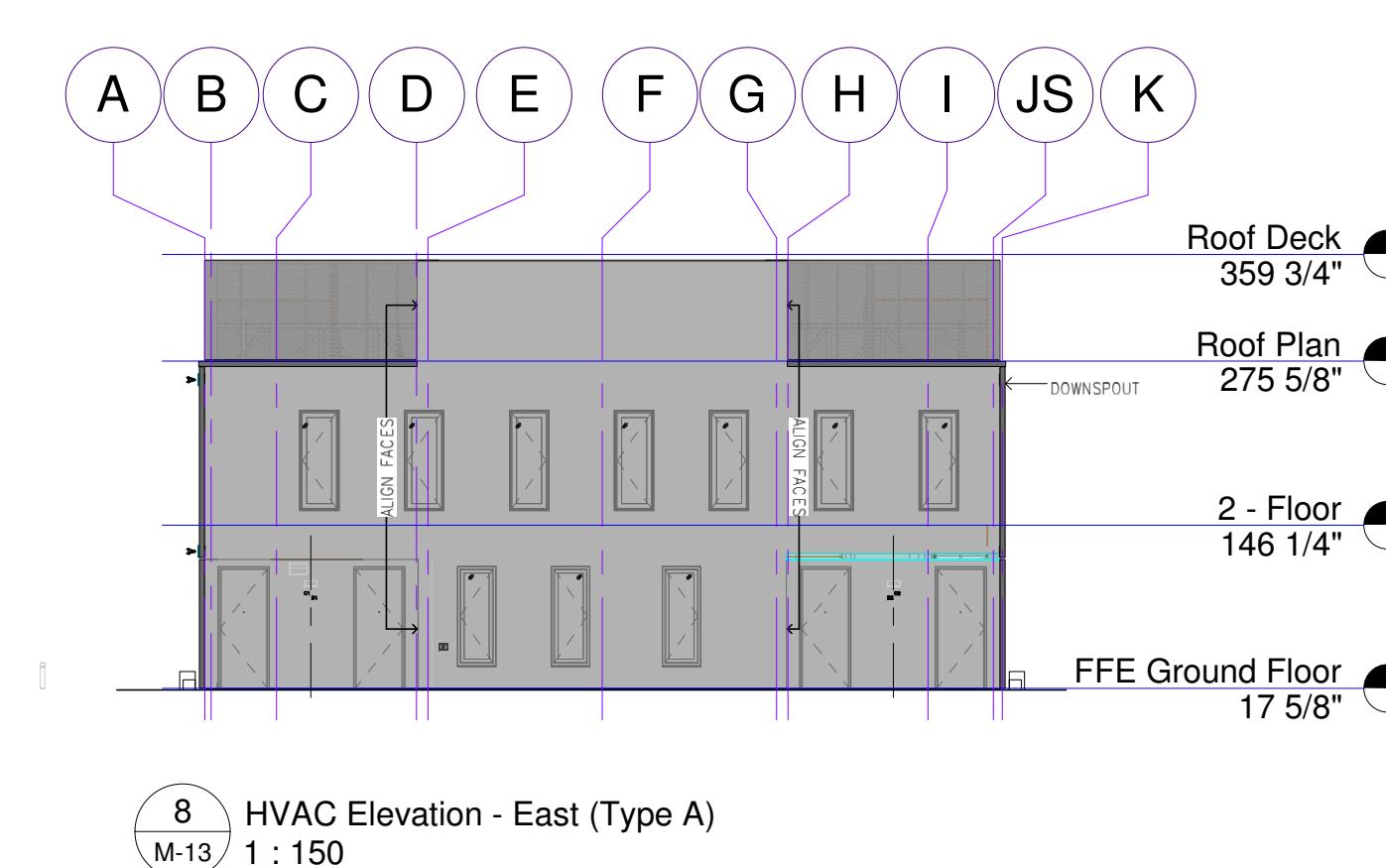
12 (04322) 3D HVAC (Air Side) - Full Building - New
M-13



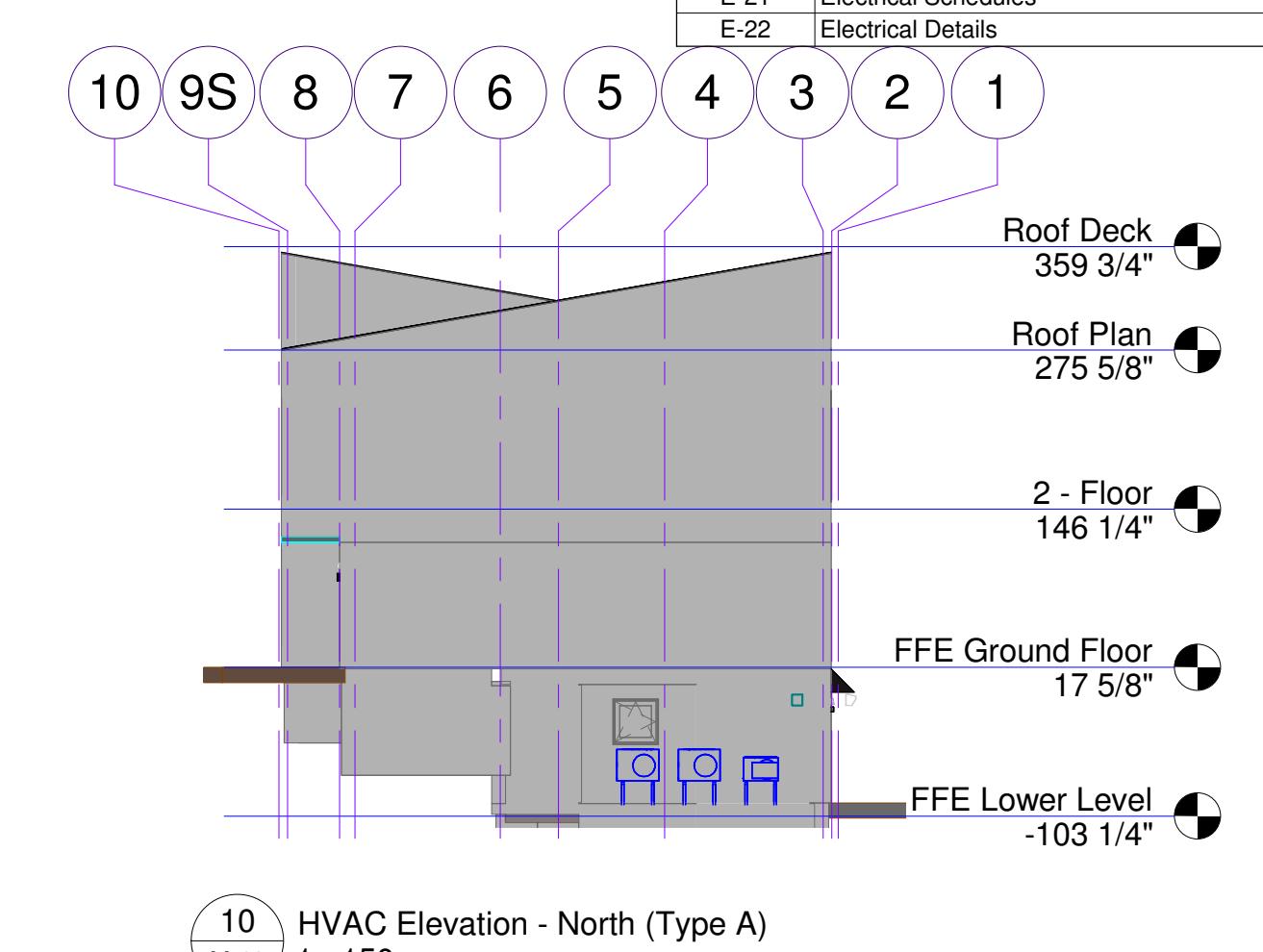
4 HVAC Elevation - South (Type A)
M-13 1 : 150



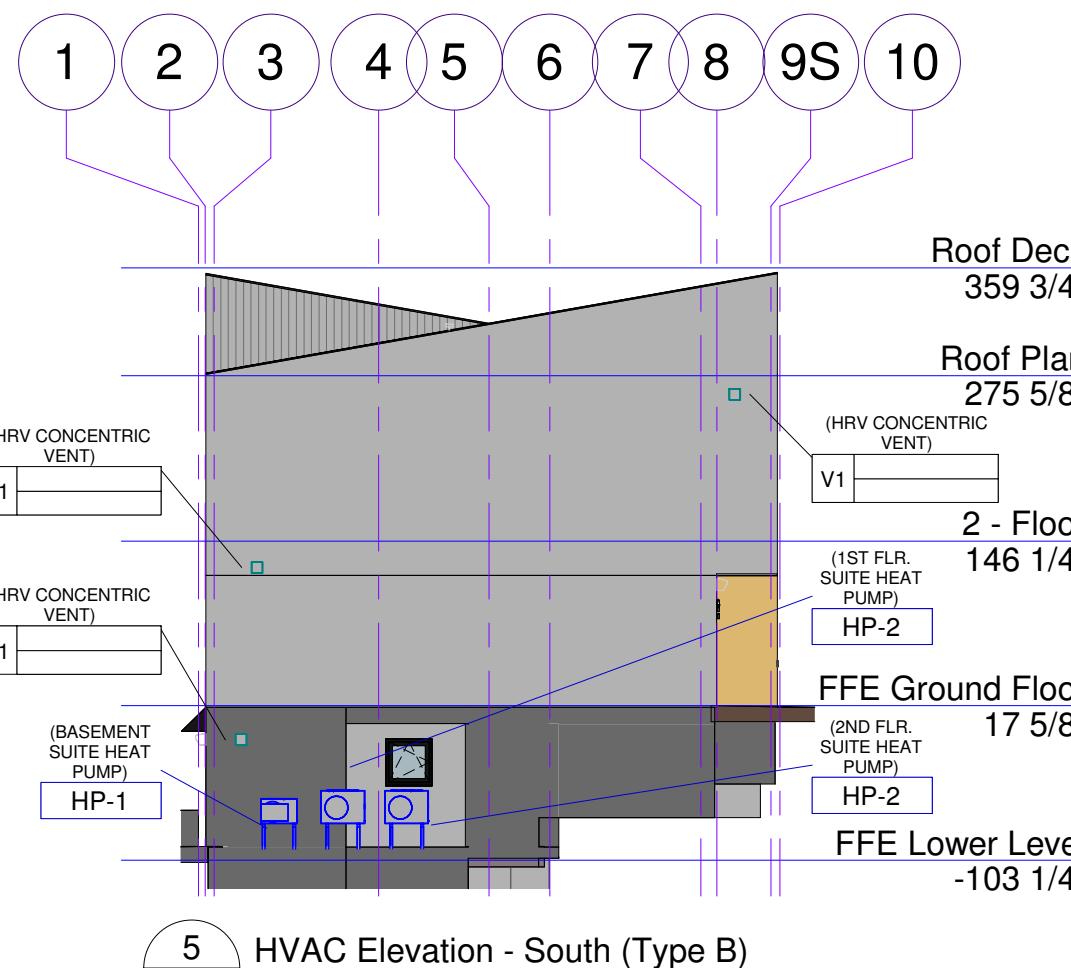
6 HVAC Elevation - West (Type A)
M-13 1 : 150



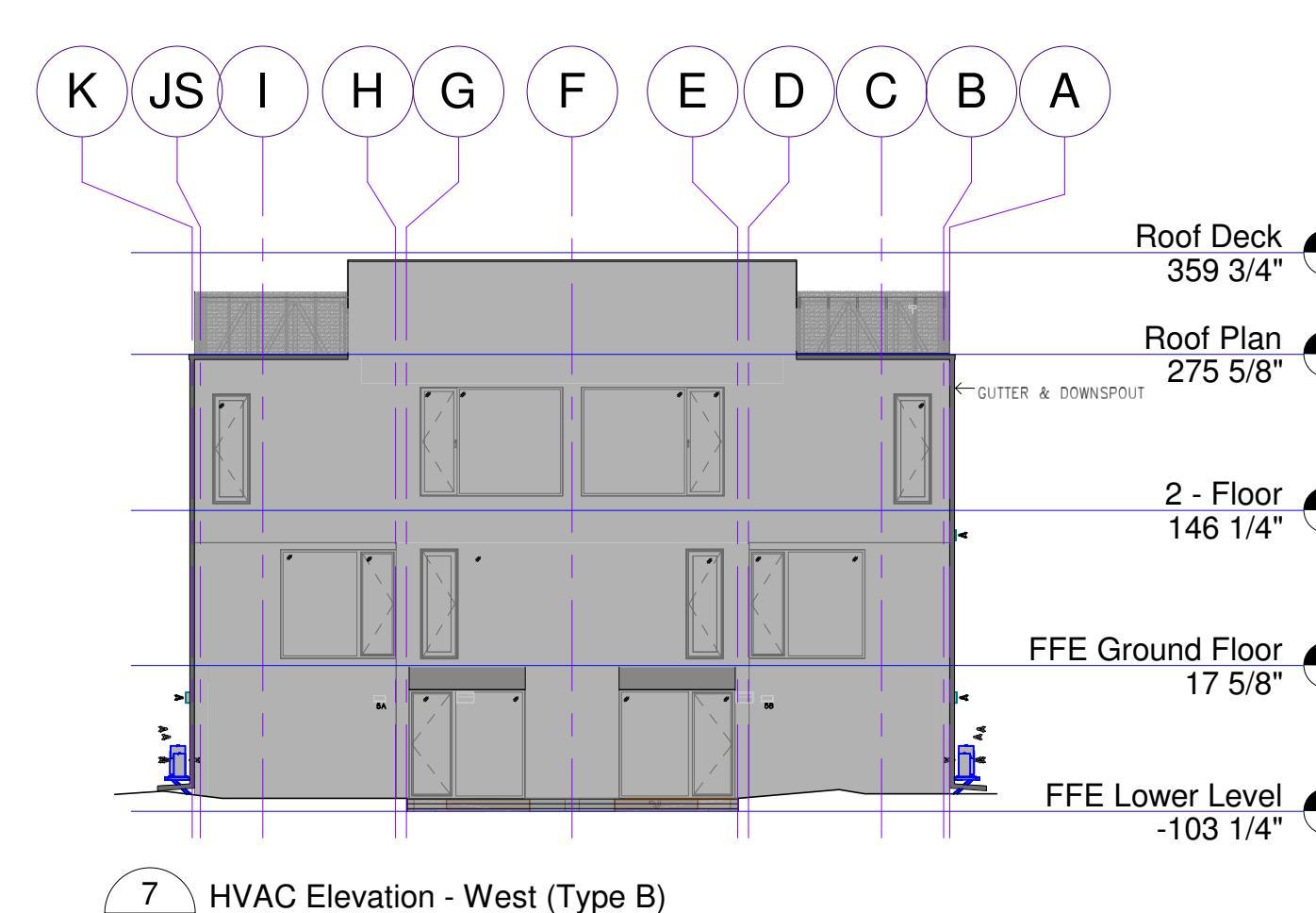
8 (04322) HVAC Elevation - East (Type A)
M-13 1 : 150



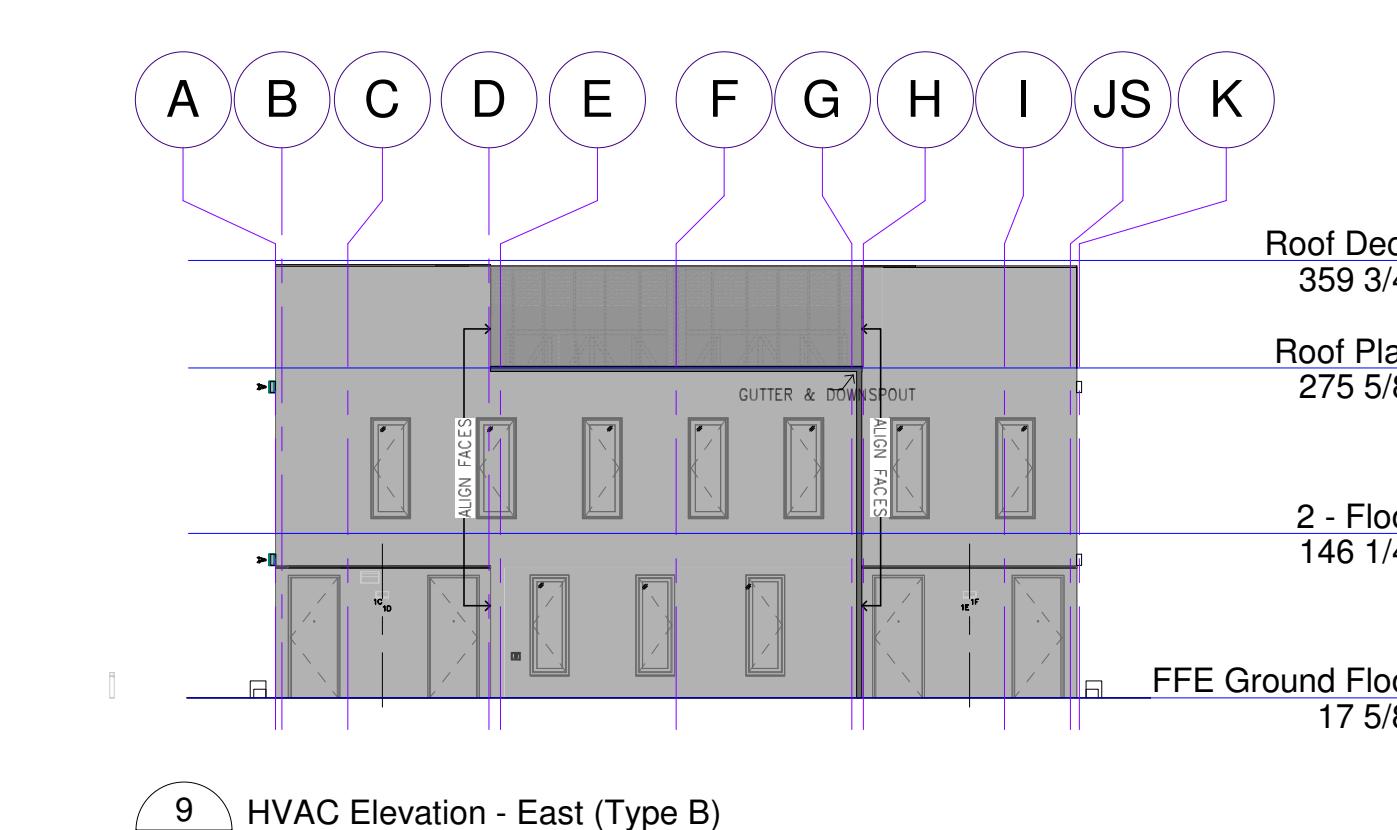
10 (04322) HVAC Elevation - North (Type A)
M-13 1 : 150



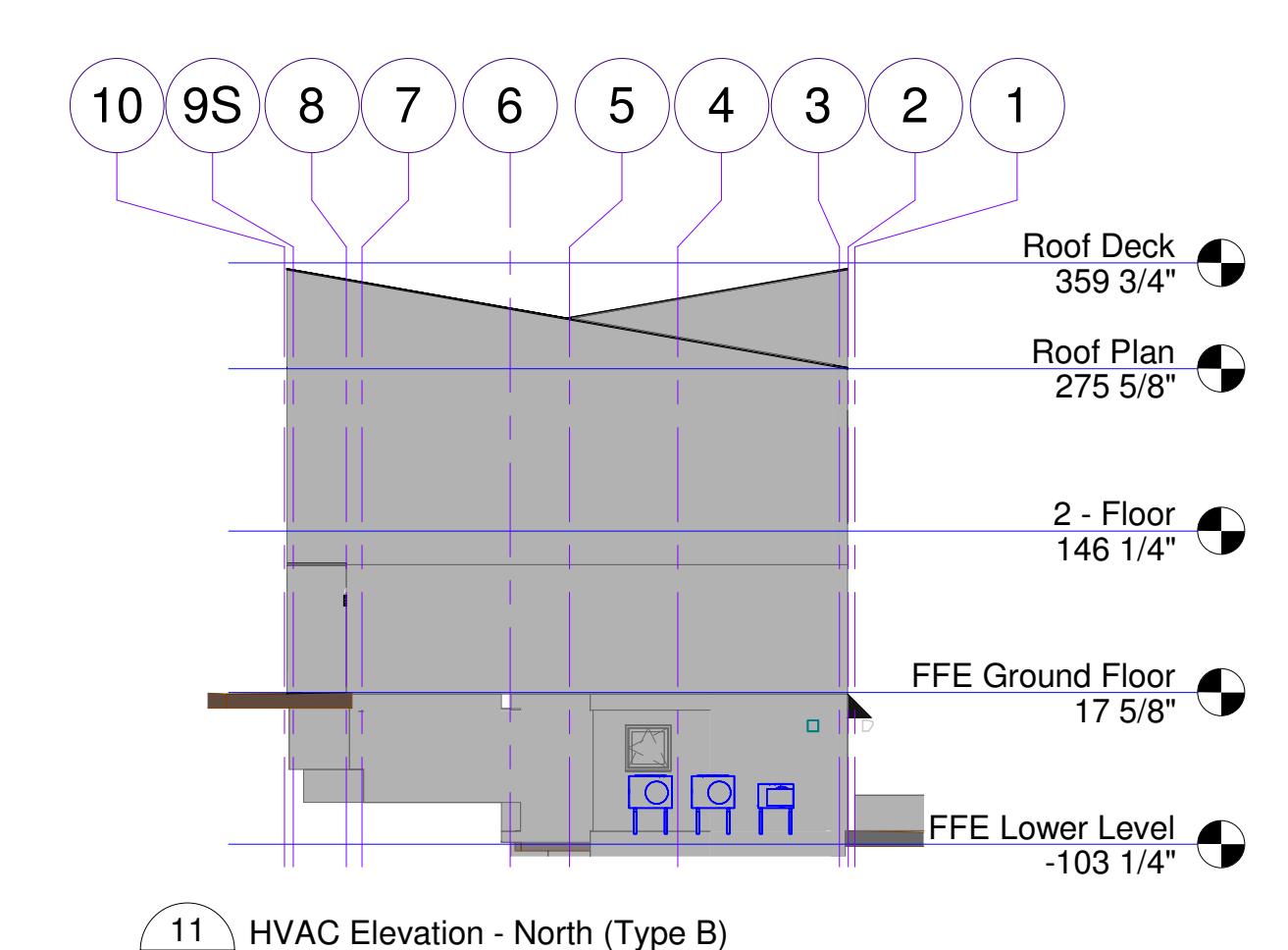
5 HVAC Elevation - South (Type B)
M-13 1 : 150



7 (04322) HVAC Elevation - West (Type B)
M-13 1 : 150



9 (04322) HVAC Elevation - East (Type B)
M-13 1 : 150



11 (04322) HVAC Elevation - North (Type B)
M-13 1 : 150

(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
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E-16	Power/Comm - Bldg. 5
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92 Caplan Ave, Suite #517 Barrie, Ontario L4N 9J2 Tel. (705) 719-1003 Fax (705) 719-0490 dlong@nset.ca www.nset.ca	

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3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
6	Re-issued for Tender	Dec. 20/24

Engineer's Seal:



Client:	WW Inc.
Address:	Minden, ON
Project Name:	Gull River Affordable Housing
Dwg. Name:	HVAC - Isometric & Elevation Views
NSET Project #:	04322
Drawn by:	Northstar Eng.
Checked by:	J.D.L.
Scale:	As indicated
Revision #:	6.0
Drawing #:	M-13
Project Date:	Jan. 14/22
Arch-D (24" x 36")	

(04322) PROJECT DRAWING REGISTER

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DRAWING REVISIONS

No.	Description	Date
2	Issued for Review	Apr. 22/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 18/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

Client: WW Inc.

Address: Minden, ON

Project Name: Gull River Affordable Housing

Dwg. Name: HVAC Details

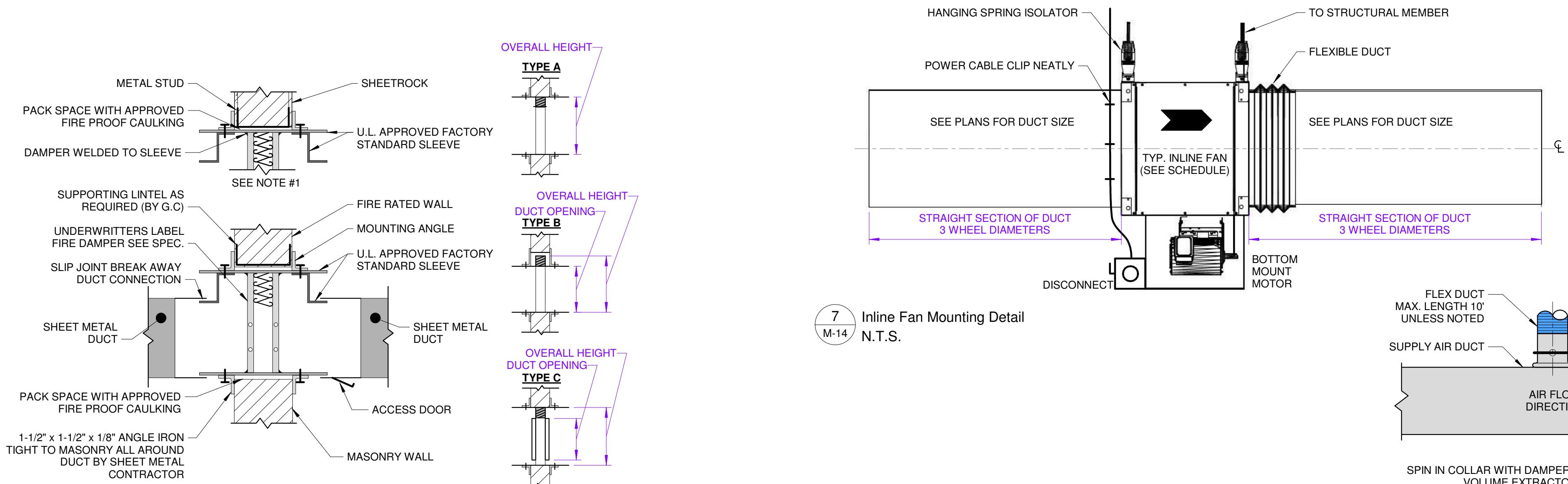
NSET Project #: 04322

Drawn by: Northstar Eng. Checked by: J.D.L.

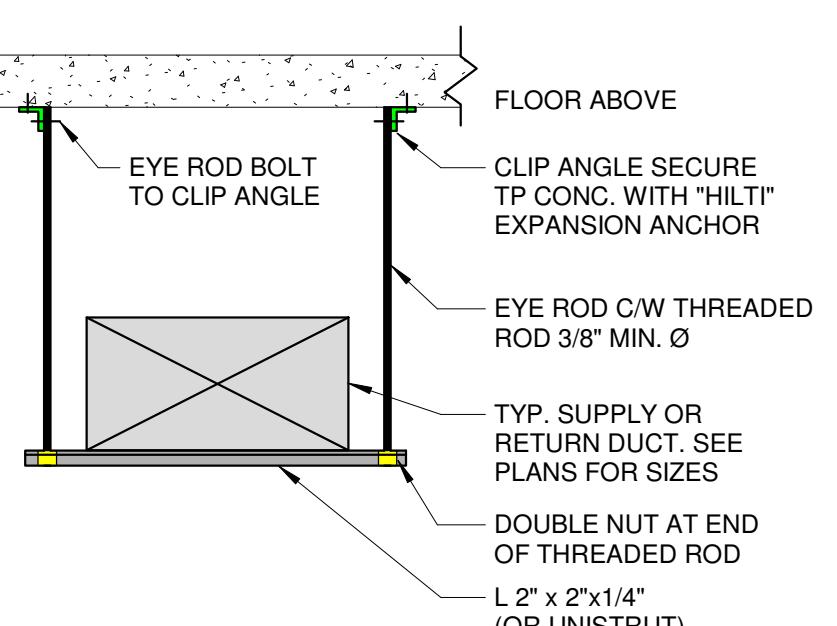
Scale: As indicated Revision #: 6.0

Drawing #: M-14

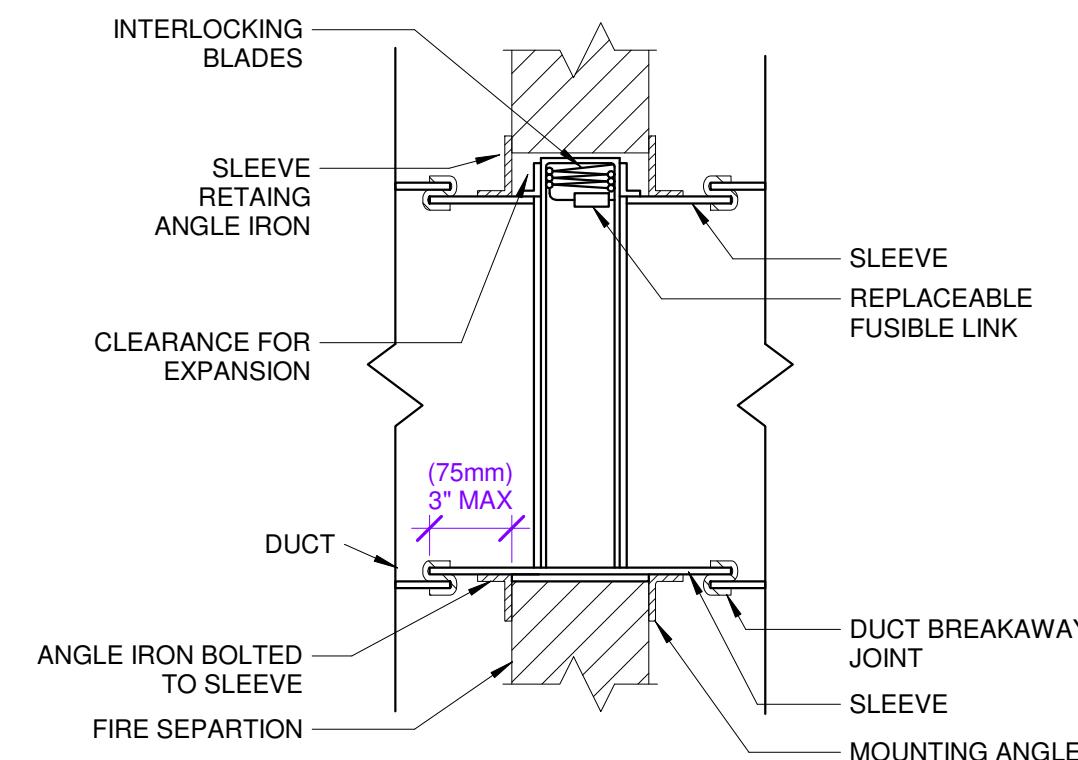
Project Date: Jan. 14/22 Arch-D (24" x 36")



6 Fire Damper / Install
N.T.S.
M-14



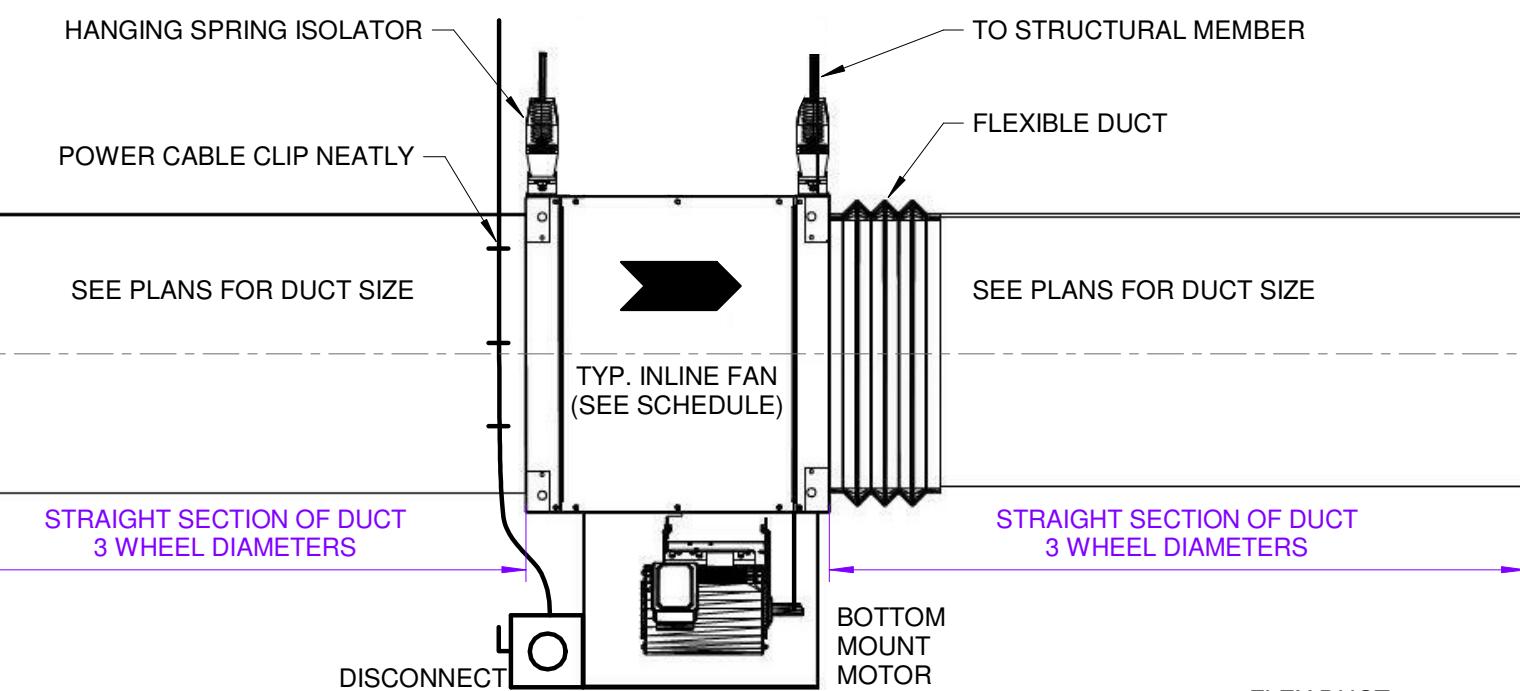
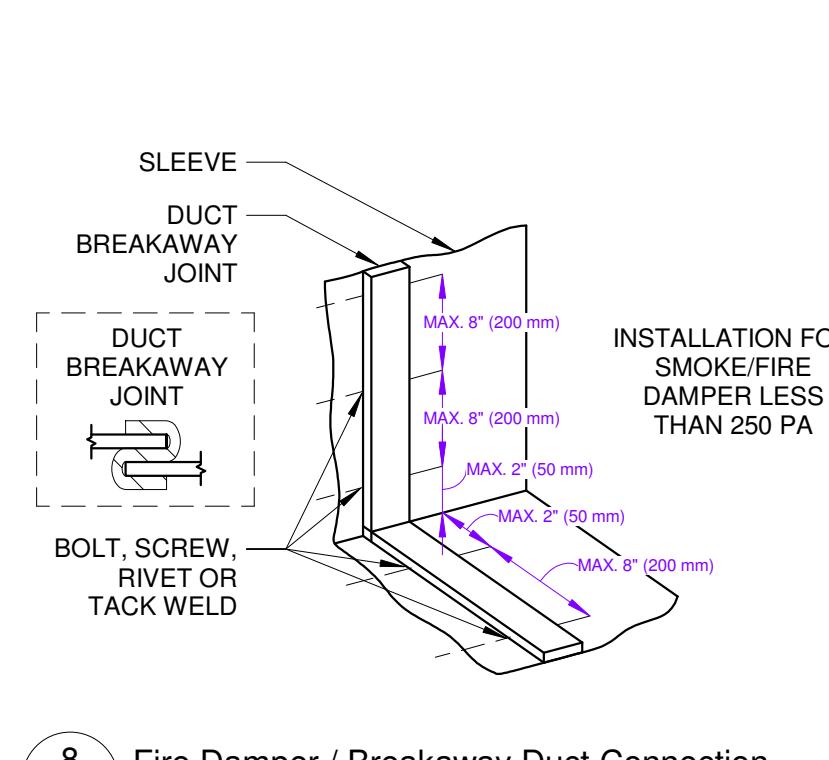
4 Typical Rectangular Duct Support Detail
N.T.S.
M-14



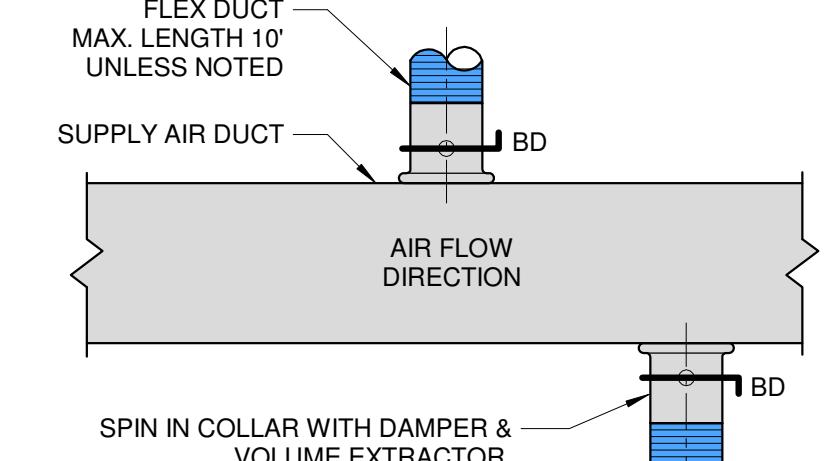
NOTES:
 INSTALLATION SHALL COMPLY WITH THE MANUFACTURERS
 INSTALLATION INSTRUCTIONS

PROVIDE PROVISIONS TO MANUALLY RE-SET DAMPER

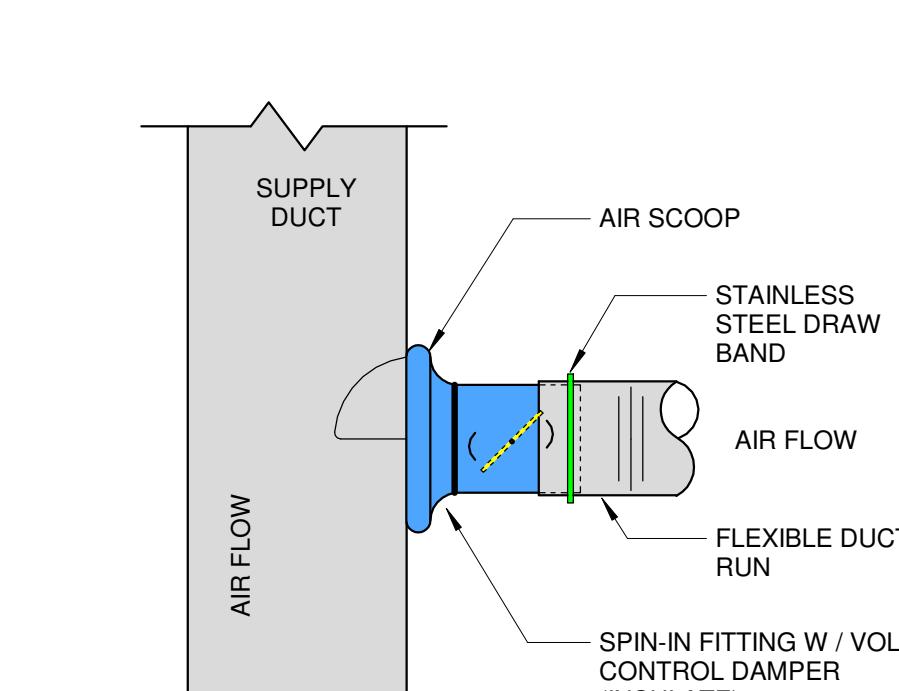
5 Fire Damper Installation
N.T.S.
M-14



7 Inline Fan Mounting Detail
N.T.S.
M-14



2 Typical Branch Take-off
N.T.S.
M-14



3 Typical Flexible Duct Connection
N.T.S.
M-14

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Quantities per Suite Type						
Suite Type / Area Served	Type Mark	Qty.	Description	Manufacturer	Model	Length
Level 2 Typical Suite	E1	2	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"
Level 2 Typical Suite	R2	1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	80 / F / A / B12	14"
Level 2 Typical Suite	S1	6	GRILLE / SUPPLY / LOUVERED / DBL DEF. / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	520D / F / L / A / B12	10"
Level 2 Typical Suite	S2	5	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE	6"
Level 2 Typical Suite	V1	1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"	TANDEM TRANSITION	14690	4"
Level 2 Typical Suite: 15		15				
Level 1 Typical Suite	E1	2	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"
Level 1 Typical Suite	R2	1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	80 / F / A / B12	14"
Level 1 Typical Suite	S1	4	GRILLE / SUPPLY / LOUVERED / DBL DEF. / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	520D / F / L / A / B12	10"
Level 1 Typical Suite	S2	4	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE	6"
Level 1 Typical Suite	V1	1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"	TANDEM TRANSITION	14690	4"
Level 1 Typical Suite: 12		12				
Laundry/Service Area	E1	1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"
Laundry/Service Area	L1	1	LOUVER / INTAKE / 39" BLADE / DRAINABLE BLADE	EH PRICE	DE439	48"
Laundry/Service Area	L2	1	WALL BOX / TRIPLE / 6" DEEP / c/w EXTRUDED ALUMINUM GRILLE	REVERSOMATIC	TWB-8 (ALUM. GRILLE)	24"
Laundry/Service Area	L3	1	WALL BOX / 8" DEEP / c/w EXTRUDED ALUMINUM GRILLE	REVERSOMATIC	SWB-8 (ALUM. GRILLE)	25"
Laundry/Service Area	S2	2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE	6"
Laundry/Service Area	S3	1	GRILLE / SUPPLY / LOUVERED / DBL DEF. / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	520 / F / L / A / B12	12"
Laundry/Service Area	V1	1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"	TANDEM TRANSITION	14690	4"
Laundry/Service Area: 8		8				
Basement Typical Suite	E1	1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"
Basement Typical Suite	R1	1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	80 / F / A / B12	14"
Basement Typical Suite	S1	3	GRILLE / SUPPLY / LOUVERED / DBL DEF. / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	520D / F / L / A / B12	10"
Basement Typical Suite	S2	2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE	6"
Basement Typical Suite	V1	1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"	TANDEM TRANSITION	14690	4"
Basement Typical Suite: 8		8				

(MASTER-M) Mechanical Equipment Schedule - (New) - Quantities per Suite Type

Suite Type / Area Served	Type Mark	Description	Manufacturer	Model #	Qty.	Heating Capacity (Input)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	Hz.	MCA	VA	Weight	Supplied By
Level 2 Typical Suite	DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	1	3,410 Btu/h	0 Btu/h			208 V	1	60	8.3 A	996	12,398	DIV. 23
Level 2 Typical Suite	DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	1	10,240 Btu/h	0 Btu/h			208 V	1	60	14.5 A	3,006		
Level 2 Typical Suite	DHW-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	1	0 Btu/h	0 Btu/h			208 V	1	60	14.4 A	3,000	110 lb	DIV. 2

22.00 COMMON WORK RESULTS FOR PLUMBING

22.00 - 1.0 PLUMBING INSTALLATION

1. SUPPLY & INSTALL COMPLETE PLUMBING SYSTEMS INCLUDING ALL NECESSARY LABOUR, SERVICES, PRODUCTS, MATERIALS & EQUIPMENT.
2. CONSTRUCTION & INSTALLATION METHODS SHALL COMPLY WITH THE CURRENT EDITION OF THE APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS. ALL TRADES SHALL ALSO COMPLY WITH OTHER CODES, STANDARDS & REGULATIONS REFERRED TO IN THE DRAWINGS. MANUFACTURER'S INSTALLATION MANUALS & DOCUMENTS AND ADOPTED BY THE AUTHORITIES HAVING JURISDICTION.
3. THE SCOPE OF WORK IS AS DESCRIBED HEREIN & SHOWN ON THE DRAWINGS.

22.00 - 2.0 DRAWINGS & SPECIFICATIONS

1. DRAWINGS ARE DIAGRAMMATIC & SHOW APPROXIMATE LOCATIONS OF EQUIPMENT / FIXTURES & CONNECTING SERVICES. ANY INFORMATION REGARDING ACCURATE MEASUREMENT OF THE BUILDING ARE TO BE TAKEN AT THE SITE. DO NOT SCALE THE DRAWINGS, & DO NOT USE THE DRAWINGS FOR PREFABRICATION WORK.
2. READ THE PLUMBING DRAWINGS IN CONJUNCTION WITH ALL OTHER STRUCTURAL, ARCHITECTURAL, SITE CIVIL, LANDSCAPE, SPRINKLER, MECHANICAL, ELECTRICAL ETC. DRAWINGS. PROPERLY PLAN, COORDINATE, & ESTABLISH THE LOCATIONS & ROUTING OF SERVICES WITH ALL SUBCONTRACTORS AFFECTED PRIOR TO INSTALLATION SUCH THAT THE SERVICES WILL CLEAR EACH OTHER AS WELL AS ANY OBSTRUCTIONS, INCLUDING STRUCTURAL COMPONENTS OF THE BUILDING.
3. THE DRAWINGS ARE INTENDED TO CONVEY THE SCOPE OF WORK & DO NOT SHOW ARCHITECTURAL & STRUCTURAL DETAILS. PLUMBING CONTRACTOR SHALL PROVIDE, AT PLUMBING CONTRACTOR'S COST, ALL OFFSETS, FITTINGS, & SIMILAR PRODUCTS REQUIRED AS A RESULT OF OBSTRUCTIONS & OTHER ARCHITECTURAL & STRUCTURAL DETAILS BUT NOT SHOWN ON THE DRAWINGS.
4. THE DRAWINGS & SPECIFICATIONS ARE COMPLEMENTARY & INTENDED TO BE COOPERATIVE. PERFORM ALL WORK THAT IS SHOWN, SPECIFIED, OR REASONABLY IMPLIED ON THE DRAWINGS BUT NOT MENTIONED IN THE SPECIFICATION, OR VICE-VERSA, AS THOUGH FULLY COVERED BY BOTH.
5. SHOULD ANY DISCREPANCY APPEAR BETWEEN THE DRAWINGS & SPECIFICATIONS WHICH LEAVES THE PLUMBING CONTRACTOR IN DOUBT AS TO THE TRUE INTENT & MEANING OF THE PLANS & SPECIFICATIONS, A RULING SHALL BE OBTAINED FROM THE ENGINEER. IF THIS IS NOT DONE, IT WILL BE ASSUMED THAT THE MOST EXPENSIVE ALTERNATE HAS BEEN ALLOWED FOR.

22.00 - 3.0 PERMITS, FEES, & CERTIFICATES

1. CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED, ARRANGE FOR INSPECTION OF THE WORK BY INSPECTION AUTHORITY & PAY ALL FEES PROVIDED FINAL CERTIFICATE TO THE OWNER.

22.00 - 4.0 EXAMINATION OF THE SITE

1. PRIOR TO SUBMITTING THEIR TENDER, THE PLUMBING CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE & ASCERTAIN ALL CONDITIONS, WHICH SHALL AFFECT HIS TRADE. REPORT TO THE CONSULTANT, PRIOR TO BID SUBMITTAL, ANY EXISTING SITE CONDITION THAT WILL OR MAY AFFECT PERFORMANCE OF THE WORK AS PER THE DRAWINGS & SPECIFICATIONS. FAILURE TO DO SO WILL NOT BE GROUNDS FOR ADDITIONAL COSTS.

22.00 - 5.0 STANDARD OF MATERIAL & WORKMANSHIP

1. ALL MATERIALS & EQUIPMENT / FIXTURES SHALL BE NEW, CSA APPROVED, BEAR CSA STAMP & BE OF THE BEST COMMERCIAL QUALITY OBTAINABLE FOR THE PURPOSE.
2. ALL WORK SHALL BE EXECUTED IN A NEAT & WORKMANLIKE MANNER BY JOURNEYMAN TRADESMEN WHO PERFORM ONLY THE WORK THAT THEIR CERTIFICATES PERMIT, OR BY APPRENTICE TRADESMEN UNDER DIRECITON ON SITE SUPERVISION OF AN EXPERIENCED JOURNEYMAN TRADESMAN.
3. WORKMANSHIP SHALL BE OF THE HIGHEST STANDARDS THROUGHOUT & SHALL BE MINIMUM OF THE CURRENT TRADE PRACTICES FOR PLUMBING INSTALLATIONS IN THIS BUILDING.
4. UNLESS OTHERWISE SPECIFIED ALL EQUIPMENT / FIXTURES TO BE INSTALLED IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS & INSTRUCTIONS, & REQUIREMENTS OF GOVERNING CODES, STANDARDS, & REGULATIONS, GOVERNING CODES, STANDARDS, & REGULATIONS TAKE PRECEDENCE OVER MANUFACTURER'S INSTRUCTIONS.
5. ENSURE THAT PROPER ACCESS & SERVICE CLEARANCES ARE MAINTAINED AROUND EQUIPMENT & WHERE APPLICABLE, ACCESS SPACE FOR FUTURE EQUIPMENT REMOVAL OR REPLACEMENT IS NOT IMPOSED. REMOVE & REPLACE ANY EQUIPMENT WHICH DOES NOT MEET THIS REQUIREMENT.
6. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ALL WORK COMPLETED CONTRARY TO THE INTENT OF THE DRAWINGS & SPECIFICATIONS. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE OWNER OR ANY OF THE OTHER TRADES BY IMPROPER LOCATION OR CARRYING OUT OF HIS WORK.
7. PROVIDE A CERTIFICATE OF GUARANTEE OF WORKMANSHIP & MATERIAL FOR ONE YEAR FROM DATE OF ACCEPTANCE.

22.00 - 6.0 COORDINATION OF THE WORK

1. REVIEW ALL THE CONTRACT DOCUMENTS & COORDINATE THE WORK WITH THE WORK OF ALL OTHER TRADES.
2. PROPERLY PLAN, COORDINATE, & ESTABLISH THE LOCATIONS & ROUTING OF SERVICES WITH ALL SUBCONTRACTORS AFFECTED PRIOR TO INSTALLATION SUCH THAT THE SERVICES WILL CLEAR EACH OTHER AS WELL AS ANY OBSTRUCTIONS, INCLUDING STRUCTURAL COMPONENTS OF THE BUILDING.
3. COORDINATE THE LOCATIONS OF THE PLUMBING FIXTURES WITH THE ARCHITECTURAL, MILLWORK & BUILDING INTERIOR DRAWINGS. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL DRAWINGS SECTIONS & ELEVATIONS FOR LOCATIONS PRIOR TO ROUGH-IN. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES.

22.00 - 7.0 PENETRATIONS

1. ANY OR ALL CUTTING, CORING & PATCHING SHALL BE VERIFIED WITH THE OWNER PRIOR TO PERFORMING WORK. PAYMENT FOR SUCH SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY PENETRATION OF STRUCTURAL MEMBERS, FLOORS OR CEILINGS TO BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD.
2. THIS DIVISION SHALL PREPARE SLEEVING DRAWINGS INDICATING THE SIZE & LOCATIONS OF OPENINGS REQUIRED IN CONCRETE FLOOR SLABS, ROOF SLABS/DECKS & WALLS FOR REVIEW BY THE STRUCTURAL ENGINEER & ARCHITECT.

4. CONTRACTORS SHALL NOTIFY THE OWNER OR GENERAL CONTRACTOR (& OTHER CONTRACTORS WHO ARE INVOLVED) OF ALL OPENINGS, FOUNDATION WORK, HANGERS, INSERTS, ANCHORS, OR OTHER PROVISIONS NECESSARY IN THEIR WORK FOR THE INSTALLATION OF HIS WORK, & SHALL FURNISH ALL INFORMATION & NECESSARY MATERIALS IN AMPLE TIME SO THAT PROPER PROVISIONS CAN BE MADE FOR SAME, & SHALL SUPPLY & CORRECTLY, ACCURATELY PLACE ALL INSERTS, SLEEVES, ANCHORS, ETC.
5. FAILURE TO COMPLY WITH THESE REQUIREMENTS ON THE PART OF THIS CONTRACTOR WILL RENDER HIM RESPONSIBLE FOR THE COST OF CUTTING OPENINGS, INSTALLING HANGERS & OTHER PROVISIONS AT A LATER DATE, & THE SUBSEQUENT PATCHING, ETC., THEREBY REQUIRED.
6. NO CUTTING SHALL BE DONE WITHOUT PERMISSION. ALL SUCH WORK SHALL BE DONE BY TRADESMEN SKILLED IN & CERTIFIED FOR THIS PARTICULAR TRADE.
7. ALL PENETRATIONS TO BE APPROVED BY THE ARCHITECT OR LANDLORD IN WRITING.

22.05 - 8.0 ACCESS DOORS

1. SUPPLY ACCESS DOORS TO GIVE ACCESS TO ALL PLUMBING WORK WHICH MAY NEED MAINTENANCE, REPAIR OR SHUT OFF VALVES, CLEANOUTS LOCATIONS BUT WHICH IS CONCEALED IN INACCESSIBLE CONSTRUCTION, EXCEPT AS OTHERWISE SPECIFIED HEREIN OR ON THE DRAWINGS.

22.05 - 9.0 FIRE STOPPING

1. WHERE PLUMBING WORK PENETRATES FIRE RATED CONSTRUCTION, PROVIDE ULC LISTED & LABELED FIRESTOPPING & SMOKE SEAL MATERIALS INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF CAN-S115 (RATINGS F, FT, FH, AND FTH AS REQUIRED), CAN/ULC-S101, & ALL OTHER GOVERNING AUTHORITIES TO SEAL THE PENETRATIONS.

22.05 - 10.0 MOUNTING HEIGHTS

1. IF MOUNTING HEIGHT OF PLUMBING FIXTURES ARE NOT SPECIFIED OR INDICATED, VERIFY BEFORE PROVING WITH INSTALLATION.

2. FOR BARRIER-FREE MOUNTING HEIGHTS FOR FIXTURES, CONFORM TO REQUIREMENTS OF THE GOVERNING CODE OR REGULATION.

3. COORDINATE & CONFIRM THE MOUNTING HEIGHTS WITH THE ARCHITECT PRIOR TO ROUGH-IN.

4. INSTALL PLUMBING FIXTURES AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE:

- LAVATORY - WALL HUNG - BARRIER FREE: 33" (840 MM) FROM FINISHED FLOOR TO FRONT RIM OF BASIN

- LAVATORY - WALL HUNG - STANDARD: 31" (787 MM) TO 33" (840 MM) FROM FINISHED FLOOR TO FRONT RIM OF BASIN

- URINAL - WALL HUNG - BARRIER FREE: MAX. 17" (430 MM) FROM FINISHED FLOOR TO FRONT RIM OF BASIN, 19-3/8" (1000 MM) TO CENTER OF BASIN

- URINAL - WALL HUNG - STANDARD: MAX. 24" (610 MM) FROM FINISHED FLOOR TO FRONT RIM OF BASIN

- SHOWER CONTROL - BARRIER FREE: 42" (1067 MM) FROM FINISHED FLOOR TO CENTER OF VALVE

- SHOWER CONTROL - STANDARD: 42" (1067 MM) FROM FINISHED FLOOR TO CENTER OF VALVE

- DRAINKING FAUCET - BARRIER FREE: 30" (762 MM) FROM FINISHED FLOOR TO OFFICE

- DRAINKING FAUCET - STANDARD: 33" (838 MM) FROM FINISHED FLOOR TO OFFICE

- EMERGENCY EYEWASH STATION: WATER FLOW PATTERN IS POSITIONED BETWEEN 33" (838 MM) & 53" (1346 MM) FROM FINISHED FLOOR

- HOSE BIB: 36" (914 MM) TO 42" (1066 MM) FROM FINISHED FLOOR/ GRADE

22.05 - 10.0 CONSTRUCTION SCHEDULE

1. OWNER (OR OWNER'S REPRESENTATIVE) TO PROVIDE THE ENGINEER WITH ACCURATE CONSTRUCTION SCHEDULE AT THE OUTSET OF CONSTRUCTION & INCLUDE UPDATES AS APPLICABLE.
2. THIS CONTRACTOR SHALL SCHEDULE & PERFORM HIS WORK TO MEET THE COMPLETION SCHEDULE, NOTED ABOVE, AS SET OUT BY THE CLIENT.

22.05 - 11.0 CHANGES OR REVISIONS & EXTRAS

1. NO ADDITIONAL MONEY OVER THE CONTRACT PRICE SHALL BE PAID UNLESS AN APPROVED CHANGE ORDER IS ISSUED BY THE ENGINEER.
2. CLAIMS FOR EXTRAS SHALL BE SUBMITTED WITH A COMPLETE BREAKDOWN OF MATERIAL, LABOUR, HOURLY RATES, ETC.
3. THERE SHALL BE NO EXTRA CLAIM FOR RELOCATION OF ANY EQUIPMENT / FIXTURES WITHIN 10 FEET FROM ORIGINAL LOCATION.

4. WHENEVER THE CONSULTANT PROPOSES IN WRITING TO MAKE A CHANGE OR REVISION TO THE DESIGN ARRANGEMENT, QUANTITY OR TYPE OF ANY WORK FROM THAT REQUIRED BY THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SUBMIT A QUOTATION FOR APPROVAL, A QUOTATION BEING THE ELECTRICAL CONTRACTOR'S PROPOSED COST FOR EXECUTING THE CHANGE OR REVISION.

5. RELOCATING ANY MECHANICAL EQUIPMENT LESS THAN 10 FEET IS NOT TO BE CONSIDERED AN EXTRA IN THE PROJECT.

6. CONTRACTOR TO PROVIDE PRICING ON ALL NORTHLSTAR ISSUED OFFICIAL CHANGE ORDERS IN THE FORMAT REQUESTED BASED ON THE SPECIFIC ITEM NUMBERS LISTED ON THE NORTHLSTAR CHANGE REQUEST DOCUMENT. ONE PRICE FOR EACH ITEM LISTED. PRICING TO INCLUDE ALL LABOUR AND MATERIALS REQUIRED FOR THE SCOPE REQUESTED. NORTHLSTAR WILL NOT NECESSARILY APPROVE PRICING BASED UPON INDUSTRY PRICE GUIDES SUCH AS "ALL-IN" OR "PER LINEAR FOOT". PRICING SHALL BE REVIEWED BASED ON MARKET CONDITIONS. CONTRACTOR TO PROVIDE CHANGE ORDER PRICING IN A TIMELY MANNER FOR NORTHLSTAR'S REVIEW. NO WORK SHALL PROCEED UNTIL OFFICIAL WRITTEN ACCEPTANCE IS ISSUED BY NORTHLSTAR.

22.05 - 12.0 SHOP DRAWINGS:

1. BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS.
2. THESE SHOP DRAWINGS SHALL INCLUDE BUT NOT LIMITED TO PLUMBING FIXTURES, PLUMBING DEVICES, PIPING & ACCESSORIES. ALLOW 10 BUSINESS DAYS TO RETURN REVIEWED SHOP DRAWINGS. (BASED ON COMPLETENESS).
3. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS. THE ENGINEER'S REVIEW OF SHOP DRAWINGS SHALL BE FOR GENERAL DESIGN ONLY & SHALL NOT RELIEVE THE PLUMBING CONTRACTOR OR SUPPLIER FROM THEIR RESPONSIBILITY FOR ERRORS, PROPER FITTING, & CONSTRUCTION OF THE WORK & FURNISHING OF MATERIALS. THE REVIEW SHALL NOT BE CONSTRUED AS APPROVING DEPARTURES FROM THE CONTRACT DOCUMENT REQUIREMENTS IF SUCH DEPARTURES ARE NOT SPECIFICALLY NOTED IN A COVERING LETTER ACCOMPANYING SUCH DRAWINGS.

22.05 - 13.0 SUBSTITUTIONS

1. FIXTURE / EQUIPMENT SUBSTITUTIONS, IF INITIATED BY THE CONTRACTOR, SHALL BE MADE SO AS TO ENSURE OPERATING PERFORMANCE IS NOT REDUCED. RE-REVIEW OF SPECIFICATIONS FOR SUBSTITUTED EQUIPMENT MAY RESULT IN ADDITIONAL CHARGES BY THIS CONSULTANT. ALL CORRESPONDENCE FOR CLARIFICATION OF DESIGN FEATURES, SPECIFICATIONS, & EQUIPMENT SUBSTITUTIONS SHALL BE MADE IN WRITING, INCLUDING APPROVED SHOP DRAWINGS OF NEW PRODUCTS. ALLOW FOR A 1 WEEK RESPONSE TIME FROM CONSULTANT. ANY ADDITIONAL COSTS RELATED TO EQUIPMENT SUBSTITUTIONS TO BE ABSORBED BY THE CONTRACTOR.

22.05 - 14.0 PLUMBING WORK TESTING REQUIREMENTS

1. PIPING, FIXTURES OR EQUIPMENT SHALL NOT BE CONCEALED OR COVERED UNTIL INSPECTED & APPROVED BY THE AUTHORIZED INSPECTION AGENCY & THE ENGINEER. PROVIDE WRITTEN NOTICE (TWO WORKING DAYS) TO THE CONSULTANT BEFORE TESTS.
2. SATISFACTORILY PERFORM ALL TESTING REQUIRED BY GOVERNING AUTHORITIES, CODES, REGULATION. RESULTS OF SUCH TESTS SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE BUILDING CODE & SHALL BE TO THE SATISFACTION OF THE AUTHORIZED INSPECTION AGENCY & THE ENGINEER.

22.05 - 15.0 CLEANING AND WASTE REMOVAL

1. CLEAN ALL PLUMBING FIXTURES, PIPING THAT HAS BEEN EXPOSED TO CONSTRUCTION DUST & DIRT, INSIDE & OUT, PRIOR TO TURN OVER TO OWNER. EQUIPMENT IS SUBJECT TO REVIEW BY ENGINEER'S REPRESENTATIVE & OR OWNER.
2. CONTRACTOR IS RESPONSIBLE FOR REMOVING THEIR OWN WASTE FROM THE SITE. ALL RE-USABLE MATERIALS SHALL BE RECYCLED.

22.05 - 16.0 DEMONSTRATION OF THE SYSTEM

1. DEMONSTRATE THE FUNCTION & OPERATION OF EACH SYSTEM TO THE OWNER.

22.05 - 17.0 PROJECT CLOSEOUT SUBMITTALS

- PRIOR TO APPLICATION FOR SUBSTANTIAL PERFORMANCE, SUBMIT ALL REQUIRED ITEMS AND DOCUMENTATION SPECIFIED, INCLUDING THE FOLLOWING:
1. RECORD "AS-BUILT" DRAWINGS: AS-BUILT DRAWINGS SHALL BE CLEARLY MARKED IN RED INCLUDING ALL CHANGES TO THE ORIGINAL TENDER DRAWINGS COVERED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, JOB CONDITIONS, ETC.

22.06 - 00 SCHEDULES FOR PLUMBING

22.05-40.13 PLUMBING FIXTURE SCHEDULE

1. REFER TO PLANS & DRAWINGS.

2. SUPPLY & INSTALL ALL FIXTURES LISTED IN SCHEDULES & ALL REQUIRED ACCESSORIES TO COMPLETE A WORKING SYSTEM.

22.07 - 00 PLUMBING INSULATION

1. ALL PLUMBING INSULATION MATERIALS & INSTALLATION IN ACCORDANCE TO ASHRAE 90.1.

2. INSULATE EQUIPMENT DRAINS CARRYING LIQUIDS AT 38°C (100°F) OR HIGHER TEMPERATURE, & SAFETY VALVE/WENT PIPING TO A HEIGHT OF 2.4M (8 FT.) ABOVE ANY FLOOR, STEP, CATWALK, OR PLATFORM FROM WHICH PERSONNEL WOULD BE WITHIN REACH OF SUCH PIPING WITH 25MM (1") THICK INSULATION.

3. INSULATE HEAT PUMPS, CONDENSATE DRAIN LINES WITH 25MM THICK PIPE INSULATION.

4. APPLY INSULATION NEATLY & TIGHTLY IN UNBROKEN LENGTHS & WITH ENDS OF SECTIONS FIRMLY & SQUARELY BUTTED OR ENGAGED TOGETHER. INSULATE FLANGES, VALVES, & FITTINGS WITH SEGMENTS OF INSULATION OF THE SAME TYPE & THICKNESS AS THE PIPING. SECURE INSULATION WITH SOFT ANNEALED GALVANIZED WIRE, FINISH WITH INSULATING & FINISHING CEMENT, AND COTTON WRAPPING APPLIED WHILE THE CEMENT IS STILL WET.

5. COVER EXPOSED INSULATED VALVES AND FITTINGS IN BOILER ROOMS, MECHANICAL ROOMS, EQUIPMENT ROOMS, & AREAS WHERE VEHICULAR TRAFFIC, ETC. COULD DAMAGE THE INSULATION, WITH 220G/M2 (6 OZ.) CANVAS.

22.07 - 19 PLUMBING PIPING INSULATION

1. ALL PLUMBING INSULATION MATERIALS & INSTALLATION IN ACCORDANCE TO ASHRAE 90.1.

2. ALL DOMESTIC COLD & HOT WATER, NON POTABLE WATER PIPING SHALL BE INSULATED THROUGH: FIBROUS GLASS SPLICE SECTIONAL PIPE INSULATION OF 25MM (1") THICKNESS WITH FACTORY APPLIED VAPOUR BARRIER JACKET & SELF-SEAL LAP JOINT.

3. ALL SOIL, WASTE AND RAINFOOTER PIPING SHALL BE SIMILARLY INSULATED.

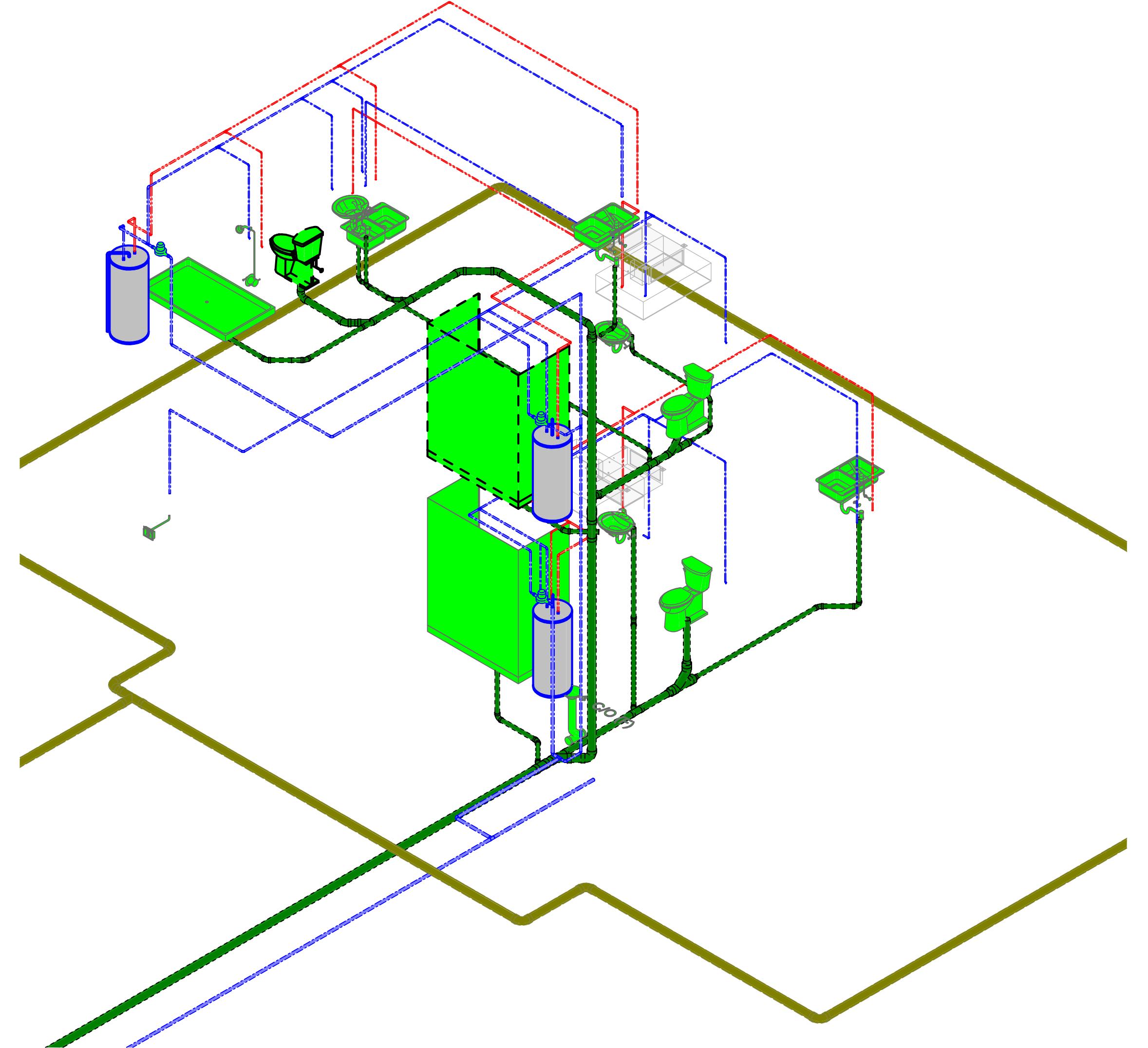
4. DO NOT APPLY INSULATION UNTIL PIPING & HEAT TRACING (IF APPLICABLE), HAS BEEN TESTED, INSPECTED, VERIFIED & ACCEPTED.

5. APPLY INSULATION NEATLY & TIGHTLY IN UNBROKEN LENGTHS & WITH ENDS OF SECTIONS FIRMLY & SQUARELY BUTTED OR ENGAGED TOGETHER. LAP CANVAS OR OTHER SPECIFIED WRAPPING OVER ALL JOINTS & THOROUGHLY CEMENT DOWN WITH ADHESIVE, EXTEND INSULATION THROUGH SLEEVES IN WALLS (EXCEPT FIRE WALLS) OR OTHER OPENINGS IN BUILDING TO MAKE INSULATION & VAPOUR BARRIER CONTINUOUS & OF UNIFORM DIAMETER.

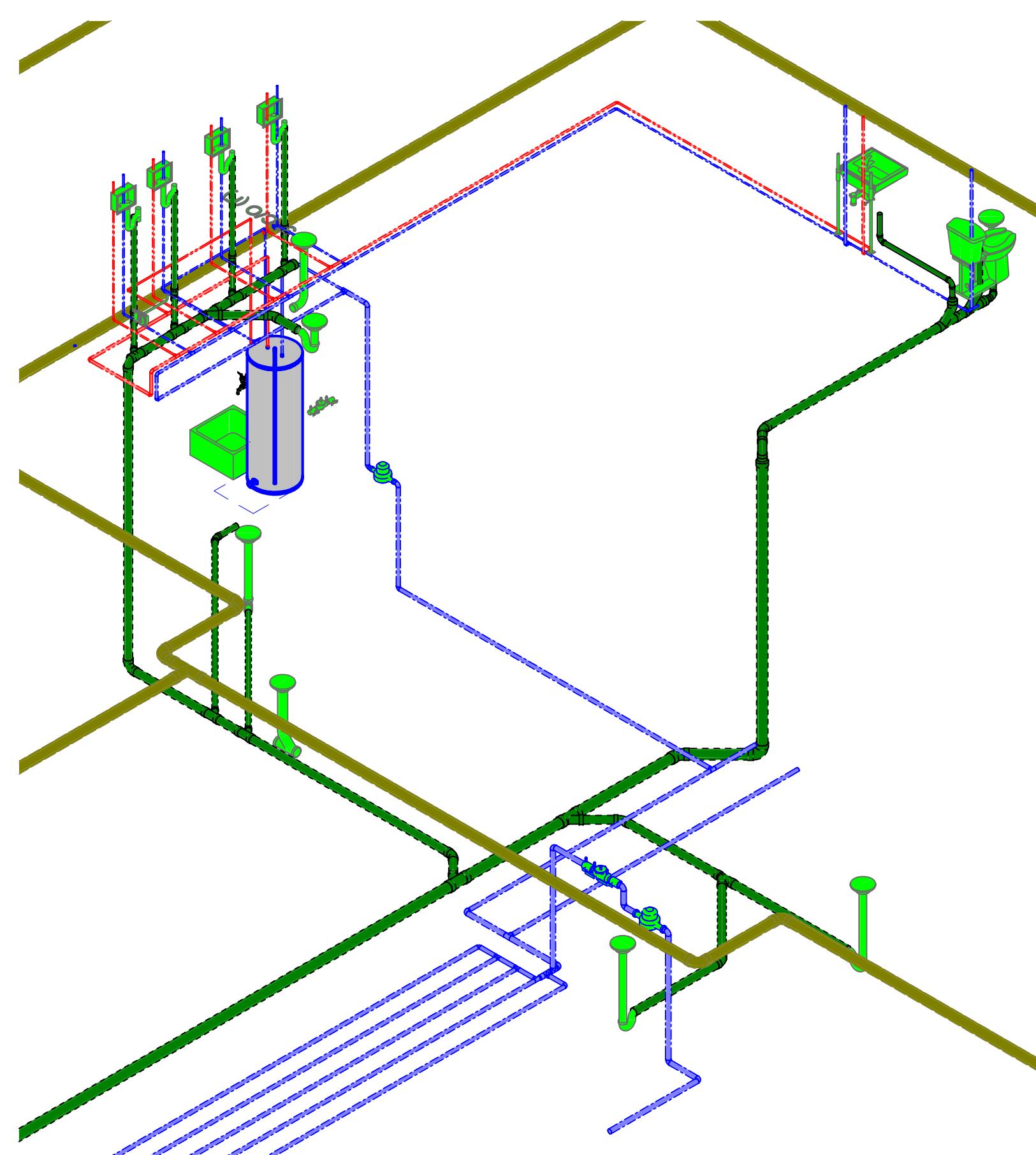
6. AT EXPANSION JOINTS IN PIPING, APPLY INSULATION OVER A SLEEVE 10MM (16 GAUGE) METAL, FABRICATED TO FIT AROUND EXPANSION JOINT WITHOUT RESTRICTING ITS MOVEMENT. FABRICATE SLEEVE SO IT CAN BE REMOVED TO ALLOW FOR THE REPACKING & L-UBILICATION OF EXPANSION JOINT WITHOUT DAMAGING THE ADJOINING INSULATION. EXTEND SLEEVES A MINIMUM OF 2MM (3") LONGER THAN EXPANSION JOINT, FIT WITH INSULATION RETAINING FLANGES & WITH A MEANS OF MAINTAINING THE POSITION OF SLEEVE OVER EXPANSION JOINT.

7. WHERE PIPING IS SPEC

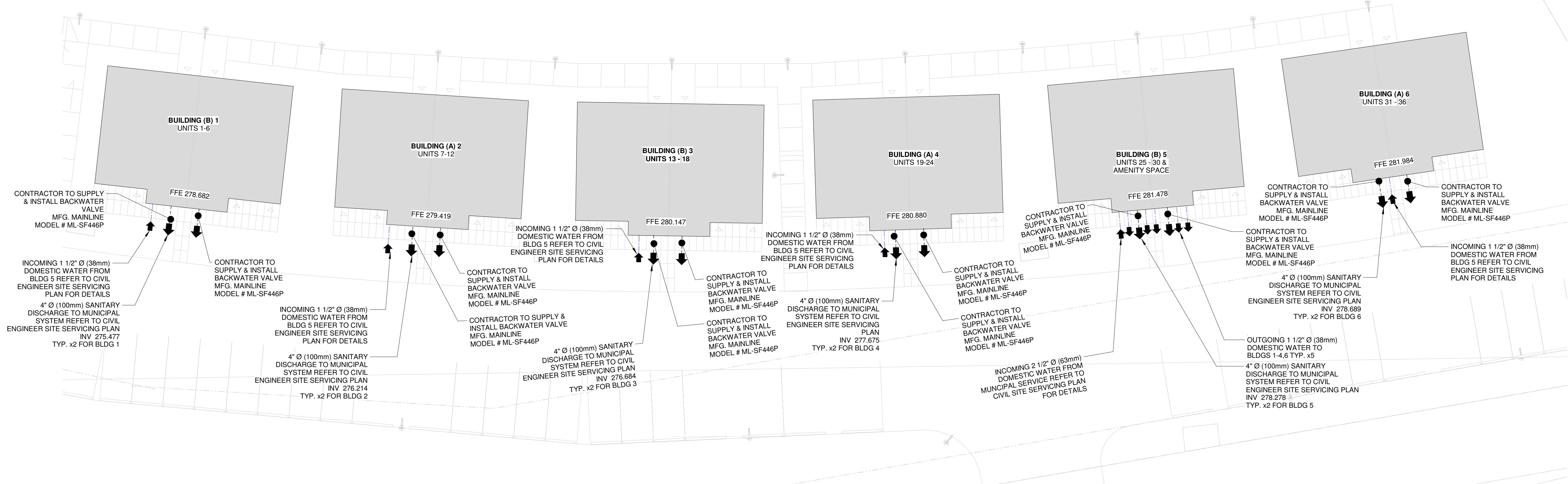
22 14 00 FACILITY STORM DRAINAGE	22 13 19.13 SANITARY DRAINS	22 14 26.13 ROOF DRAINS	22 41 19 RESIDENTIAL BATHTUBS	PLUMBING SCOPE OF WORK:	PLUMBING REPORTS REQUIRED FOR SIGN-OFF:	(04322) PROJECT DRAWING REGISTER	
1. ALL PIPING, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	ALL DRAIN FIXTURES & INSTALLATION MUST COMPLY TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	1. ALL ROOF DRAINS, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	1. BATHTUB, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	CONTRACTOR TO VISIT THE SITE & FAMILIARIZE THEMSELVES WITH THE REQUIREMENTS OF THIS DESIGN. REFER TO SPECIFICATION & GENERAL PROJECT NOTES & DETAILS INCLUDED IN THIS SET OF DWGS.	1. PIPING PRESSURE TEST REPORT - SANITARY & VENTING.	Sheet #	
STORM PIPING & FITTINGS UNDER GROUND:	2. WHERE REQUIRED BY CODE OR WHERE SHOWN, DRAINS SHALL BE TRAPPED, VENTED & HAVE TRAP SEAL PRIMERS INSTALLED. PROVIDE AUTOMATIC TRAP SEAL PRIMER, ANCON NO. MS-810 OR APPROVED EQUAL FOR EVERY FLOOR DRAIN, HUB DRAIN, & COMBINATION DRAINS. TRAP SEAL PRIMER SHALL BE CONNECTED TO NEAREST WATER SUPPLY. WHERE SEVERAL TRAPS WITH PRIMER REQUIREMENTS ARE LOCATED IN CLOSE VICINITY, THE USE OF A PROPERLY SIZED FLUSH TANK IS ACCEPTABLE.	2. ROOF DRAINS ARE TO BE FROM THE ACCEPTABLE MANUFACTURERS LISTED BELOW OR A COMPARABLE APPROVED EQUAL:	2. BATHTUB FAUCET FLOW RATE MUST COMPLY WITH ASHRAE / IEEE 90.1 AT A MAX OF 5.7LPM	THE WORK SHALL CONSIST OF, BUT SHALL NOT BE LIMITED TO THE FOLLOWING:	2. PIPING PRESSURE TEST REPORT - DOMESTIC WATER.	Sheet Name	
PLASTIC ASTM F628, "(ABS) SCHEDULE 40 PLASTIC DRAIN WASTE & VENT PIPE"	CAN/CSA-B181.1, "ABS DRAIN, WASTE & VENT PIPE FITTINGS" CAN/CSA-B181.2, "PVC DRAIN, WASTE & VENT PIPE FITTINGS"	ZURN WATTS J.R. SMITH MI FAB	3. BARRIER FREE BATHTUBS MUST COMPLY WITH CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.	TENDER PHASE	3. BACKFLOW PREVENTER TEST CERTIFICATES.	E1/M1/P1 Project Cover	
FERROUS CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"	CAN/CSA-B182.1, "PLASTIC DRAIN & SEWER PIPE & FITTINGS" CAN/CSA-B182.2, "PVC SEWER PIPE & FITTINGS, (PSM TYPE)" CAN/CSA-B182.4, "PROFILE (RIBBED) PVC SEWER PIPE & FITTINGS" CAN/CSA-B182.6, "PROFILE POLYETHYLENE SEWER PIPE & FITTINGS"	4. ALL FLOOR SURFACES TO SLOPE TO DRAINS UNDER PLUMBING & MECHANICAL EQUIPMENT. ALL FLOOR DRAINS & PENETRATIONS IN FLOOR SURFACES AS WELL AS FLOOR TO WALL INTERFACES IN MECHANICAL ROOMS ABOVE FINISHED SPACES TO BE SEALED & WATER TIGHT.	4. PROVIDED AIR GAP OR USE REDUCED PRESSURED PRINCIPLE BACKFLOW PREVENTION DEVICE FOR TRAP SEAL PRIMING	1. DWGS ARE GENERAL LAYOUT - CONTRACTOR TO PROVIDE A COMPLETE WORKING SYSTEM.	4. CONTRACTOR WARRANTY & COMPLETION LETTER.	E2/M2/P2 Project Cover	
5. CLEANOUTS SHALL BE FULL SIZE FOR PIPES UP TO 100 MM (4") & NOT LESS THAN 100 MM (4") FOR LARGER SIZES.	5. LOCATE CLEANOUTS TO BE READILY ACCESSIBLE WITH SUFFICIENT CLEARANCES FOR RODDING & CLEANING	6. LOCATE CLEANOUTS TO BE FULL SIZE FOR PIPES UP TO 100 MM (4") & NOT LESS THAN 100 MM (4") FOR LARGER SIZES.	6. SUPPLY & INSTALL ALL NECESSARY ACCESSORIES FOR A COMPLETE INSTALLATION	2. ALL QUESTIONS RELATED TO MISSING OR UNCLEAR DESIGN DETAILS TO BE COMMUNICATED IMMEDIATELY TO THE ENGINEER VIA THE GENERAL CONTRACTOR USING THE RFI PROCESS. (NORTHSTAR GENERALLY WILL NOT PROVIDE VERBAL DIRECTIVES ON THIS PROJECT)	M-3 HVAC - Specifications	M-3 HVAC - Specifications	
3. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 75 MM (3") UNLESS NOTED ON PLANS.	7. INSTALL CLEANOUTS IN SANITARY DRAINAGE PIPING IN THE FOLLOWING LOCATIONS:	7. ALL AREA DRAINS, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	7. SHOWER, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.	3. VISIT THE SITE TO REVIEW THE EX. CONDITIONS.	M-4 HVAC - Specifications	M-4 HVAC - Specifications	
4. MINIMUM PIPE SLOPE TO BE 2.0%, MAXIMUM 8.0% (SEE OPSD - 1006-10, 1006-020). • 75mm (3") & LESS - GRADE DOWN 1:50 (1/4" PER FT.) • 100mm (4") & OVER - GRADE DOWN 1:100 (1/8" PER FT.)	• CHANGES OF DIRECTION MORE THAN 45 DEGREES, ON HORIZONTAL BRANCHES & MAIN DRAINS AT INTERVALS NOT EXCEEDING 15 METERS (50') FOR 100 MM (4") & SMALLER & 30 METERS (100') FOR 150 MM (6") & LARGER.	8. AREA DRAINS ARE TO BE FROM THE ACCEPTABLE MANUFACTURERS LISTED BELOW OR A COMPARABLE APPROVED EQUAL:	4. SHOWER HEAD FLOW RATE MUST COMPLY WITH ASHRAE / IEEE 90.1 AT A MAX OF 5.7LPM	4. PROVIDE ANY QUESTIONS TO THE BID ADMINISTRATOR IN WRITING	M-5 HVAC - Scope of Work	M-5 HVAC - Scope of Work	
5. PROVIDE ALL EXCAVATION & BACKFILL REQUIRED FOR BURIED PIPES	• DRAIN FROM SINK, KITCHEN PIPING OR GREASE WASTE PIPING, AT INTERVALS NOT EXCEEDING 6 METERS (20') FOR ALL SIZES OF PIPE. • ABOVE EACH DRAIN, CLAMPING COLLAR & CLAMP TO MEMBRANE OR PROVIDE LEAD FLASHING TO SUIT.	9. WHERE REQUIRED BY CODE OR WHERE SHOWN, DRAINS SHALL BE TRAPPED, VENTED & HAVE TRAP SEAL PRIMERS INSTALLED. PROVIDE AUTOMATIC TRAP SEAL PRIMER, ANCON NO. MS-810 OR APPROVED EQUAL FOR EVERY FLOOR DRAIN, HUB DRAIN, & COMBINATION DRAINS. TRAP SEAL PRIMER SHALL BE CONNECTED TO NEAREST WATER SUPPLY.	5. BARRIER FREE SHOWERS MUST COMPLY WITH CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.	5. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-6 HVAC - Scope of Work	M-6 HVAC - Scope of Work	
6. PRESSURE TEST BURIED SYSTEM BEFORE BACKFILLING.	10. WHERE CLEANOUT PASS THROUGH WATERPROOF FLOOR OR ARE EXPOSED IN UNFINISHED BASEMENT AREA, PIPE TUNNEL, ACCESSIBLE CRAWL SPACE OR MECHANICAL ROOM.	11. ON OUTSIDE DRAINS, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	6. CLEANOUTS SHALL BE FULL SIZE FOR PIPES UP TO 100 MM (4") & NOT LESS THAN 100 MM (4") FOR LARGER SIZES.	6. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-7 HVAC - Bldg. 1	M-7 HVAC - Bldg. 1	
22 14 16 RAIN WATER LEADERS	11. ON ALL PIPING, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	12. ALL CLEANOUTS IN FINISHED AREAS SHALL BE THE SAME SHAPE (SQUARE OR ROUND), ACCEPTABLE MANUFACTURERS: JAY R. SMITH, MI FAB, ZURN, WATTS. SEE DETAILED SPECIFICATION	7. CLEANOUTS SHALL BE FULL SIZE FOR PIPES UP TO 100 MM (4") & NOT LESS THAN 100 MM (4") FOR LARGER SIZES.	7. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-8 HVAC - Bldg. 2	M-8 HVAC - Bldg. 2	
1. ALL PIPING, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	8. EXTEND CLEANOUTS TO FINISHED FLOOR OR WALL UNLESS EXPOSED IN UNFINISHED BASEMENT AREA, PIPE TUNNEL, ACCESSIBLE CRAWL SPACE OR MECHANICAL ROOM.	13. COVER CLEANOUT CONCEALED BEHIND FINISHED WALLS WITH ROUND CHROMED BRONZE OF STAINLESS ACCESS PLATE SECURED TO CLEANOUT WITH 6 MM (1/4") DIA. COUNTER SUNK MACHINE SCREW. COVERPLATE SHALL BE SUFFICIENTLY LARGE FOR ACCESS & RODDING. INSTALL CLEANOUT NO MORE THAN 25 MM (1") BEHIND FACES OF FINISHED WALLS.	8. SUPPLY & INSTALL REQUIRED BACKFLOW PREVENTERS ON BOTH DW & DHW LINES UPSTREAM OF EMERGENCY MIXING VALVE	8. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-9 HVAC - Bldg. 3	M-9 HVAC - Bldg. 3	
STORM PIPING & FITTINGS ABOVE GROUND:	9. IN WET FLOOR AREAS, EXTEND CLEANOUTS TO WALLS OR PROVIDE WITH GASKETTED WATERPROOF TOP.	10. WHERE CLEANOUT PASS THROUGH WATERPROOF FLOOR OR ARE EXPOSED IN UNFINISHED BASEMENT AREA, PIPE TUNNEL, ACCESSIBLE CRAWL SPACE OR MECHANICAL ROOM.	9. SUPPLY & INSTALL REQUIRED BACKFLOW PREVENTERS ON BOTH DW & DHW LINES UPSTREAM OF EMERGENCY MIXING VALVE	9. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-10 HVAC - Bldg. 4	M-10 HVAC - Bldg. 4	
PLASTIC ASTM F628, "(ABS) SCHEDULE 40 PLASTIC DRAIN WASTE & VENT PIPE"	10. WHERE CLEANOUT PASS THROUGH WATERPROOF FLOOR OR ARE EXPOSED IN UNFINISHED BASEMENT AREA, PIPE TUNNEL, ACCESSIBLE CRAWL SPACE OR MECHANICAL ROOM.	11. ON OUTSIDE DRAINS, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	10. SUPPLY & INSTALL ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.	10. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-11 HVAC - Bldg. 5	M-11 HVAC - Bldg. 5	
FERROUS CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"	11. ON ALL PIPING, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	12. ALL CLEANOUTS IN FINISHED AREAS SHALL BE THE SAME SHAPE (SQUARE OR ROUND), ACCEPTABLE MANUFACTURERS: JAY R. SMITH, MI FAB, ZURN, WATTS. SEE DETAILED SPECIFICATION	11. ALL FIXTURES TO BE CAULKED & SEALED.	11. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-12 HVAC - Bldg. 6	M-12 HVAC - Bldg. 6	
2. CLEANOUTS: LOCATE DRAINAGE CLEANOUT FITTINGS IN DRAINAGE PIPING: • AT BASE OF EACH RAINWATER LEADER • AS REQUIRED TO COMPLY WITH APPLICABLE PLUMBING CODE • VERIFY THAT CLEANOUT RODS CAN PROBE AS FAR AS THE NEXT CLEANOUT, AT LEAST.	12. ALL CLEANOUTS IN FINISHED AREAS SHALL BE THE SAME SHAPE (SQUARE OR ROUND), ACCEPTABLE MANUFACTURERS: JAY R. SMITH, MI FAB, ZURN, WATTS. SEE DETAILED SPECIFICATION	13. COVER CLEANOUT CONCEALED BEHIND FINISHED WALLS WITH ROUND CHROMED BRONZE OF STAINLESS ACCESS PLATE SECURED TO CLEANOUT WITH 6 MM (1/4") DIA. COUNTER SUNK MACHINE SCREW. COVERPLATE SHALL BE SUFFICIENTLY LARGE FOR ACCESS & RODDING. INSTALL CLEANOUT NO MORE THAN 25 MM (1") BEHIND FACES OF FINISHED WALLS.	12. TEST ALL PIPING SYSTEMS FOR LEAKS PRIOR TO OPERATION.	12. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-13 HVAC - Isometric & Elevation Views	M-13 HVAC - Isometric & Elevation Views	
3. BACKWATER VALVES ARE TO BE PROVIDED WHERE SHOWN.	13. COVER CLEANOUT CONCEALED BEHIND FINISHED WALLS WITH ROUND CHROMED BRONZE OF STAINLESS ACCESS PLATE SECURED TO CLEANOUT WITH 6 MM (1/4") DIA. COUNTER SUNK MACHINE SCREW. COVERPLATE SHALL BE SUFFICIENTLY LARGE FOR ACCESS & RODDING. INSTALL CLEANOUT NO MORE THAN 25 MM (1") BEHIND FACES OF FINISHED WALLS.	14. EMERGENCY FIXTURE MUST BE TESTED AND FLUSHED ONCE A WEEK.	13. TEST & COMMISSION ALL FIXTURES AS PER LOCAL AUTHORITY.	13. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	M-14 HVAC Details	M-14 HVAC Details	
4. PROVIDE VERTICAL EXPANSION JOINTS NEAR TOP OF DRAINAGE PIPE RISERS WHERE TOTAL RISER HEIGHT EXCEEDS 10 METRES FROM GROUND LEVEL.	15. SEE SCHEDULES & DETAILS FOR EACH EMERGENCY FIXTURE	16. PROVIDE ALL WIRING TO ELECTRICALLY OPERATED UNITS FROM OUTLETS PROVIDED BY DIVISION 26.	14. EMERGENCY FIXTURE MUST BE TESTED AND FLUSHED ONCE A WEEK.	14. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	P-3 Plumbing - Specifications	P-3 Plumbing - Specifications	
5. PROVIDE HORIZONTAL EXPANSION JOINTS ON SUSPENDED DRAINAGE PIPE WHICH IS WELDED OR CROSSES A BUILDING EXPANSION JOINT	17. SUPPLY & INSTALL ALL NECESSARY ACCESSORIES FOR COMPLETE INSTALLATION	18. PROVIDE ALL WIRING TO ELECTRICALLY OPERATED UNITS FROM OUTLETS PROVIDED BY DIVISION 26.	15. SEE SCHEDULES & DETAILS FOR EACH EMERGENCY FIXTURE	15. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	P-4 Plumbing - Specifications	P-4 Plumbing - Specifications	
6. SUPPORT ALL OVERHEAD PIPES TO APPROVAL.	19. SUPPLY & INSTALL ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION	20. SUPPLY & INSTALL ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.	16. SEE SCHEDULES & DETAILS FOR EACH EMERGENCY FIXTURE	16. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, RELEVANT REQUEST.	P-5 Plumbing - Site Plan	P-5 Plumbing - Site Plan	
22 13 00 FACILITY SANITARY SEWERAGE	22 13 19.33 BACKWATER VALVES	22 40 00 PLUMBING FIXTURES	22 41 20.00 RESIDENTIAL PLUMBING FIXTURES	PLANNING & MOBILIZATION PHASE	GENERAL DRAWING / DESIGNER NOTES:	DRAWING REVISIONS	
1. PIPE & FITTINGS: ALL PIPING, MATERIALS & INSTALLATION TO MEET THE REQUIREMENTS OF APPLICABLE BUILDING CODE. ALL PVC OR ABS TYPE PIPING TO BE USED ABOVE GROUND SHALL BE CONFIRMED TO BE ACCEPTABLE BY THE AUTHORITY HAVING JURISDICTION.	2. PROVIDE AIR GAP OR USE REDUCED PRESSURED PRINCIPLE BACKFLOW PREVENTION DEVICE FOR TRAP SEAL PRIMING.	3. EXCAVATING AND BACKFILLING	1. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR & SHALL OBTAIN ALL PERMITS, INSPECTIONS, ETC. AS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION OVER THIS WORK AND SHALL PAY FOR SAME REVIEW SITE CONDITIONS AGAIN TO CONFIRM THE VIABILITY OF THE DESIGN.	GENERAL DRAWING / DESIGNER NOTES:	No.	Description	Date
SANITARY PIPING & FITTINGS UNDER GROUND:	3. BACKFLOW PREVENTERS MUST BE TESTED & APPROVED	4. EXCAVATING AND BACKFILLING	2. ALL PERMITS SHALL BE DELIVERED TO THE OWNERS REPRESENTATIVE AS SOON AS THEY BECOME AVAILABLE & PRIOR TO PROJECT COMPLETION.	[1] ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE REQUIREMENTS OF THE PROVINCE OF ONTARIO'S BUILDING CODE, LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.	1	Preliminary	May 19/22
PLASTIC ASTM F628, "(ABS) SCHEDULE 40 PLASTIC DRAIN WASTE & VENT PIPE"	4. PROTECT FIXTURES AGAINST USE & DAMAGE DURING CONSTRUCTION.	5. REVIEW THE SITE & ALL DRAWINGS PRIOR TO COMMENCEMENT OF THE WORK AND IDENTIFY ITEMS REQUIRING CLARIFICATION, IN ADVANCE.	3. REVIEW THE SITE & ALL DRAWINGS PRIOR TO COMMENCEMENT OF THE WORK AND IDENTIFY ITEMS REQUIRING CLARIFICATION, IN ADVANCE.	[2] THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. THE CONSULTANT MAY ADJUST TOTAL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	3	Preliminary for Review	Sep. 09/22
FERROUS CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"	5. SUPPLY & INSTALL REQUIRED EQUIPMENT FOR SANITARY SEWAGE PUMP CONTROL PANEL & ALARM	6. PROVIDE SHOP DWGS FOR THE ENGINEER TO REVIEW.	4. REPORT ANY CONFLICTS TO THE ENGINEER IN WRITING	[3] DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILED DESIGN INFORMATION IS NOT PROVIDED.	4	Issued for Permit	Oct. 05/22
2. CLEANOUTS: LOCATE DRAINAGE CLEANOUT FITTINGS IN DRAINAGE PIPING: • AT BASE OF EACH RAINWATER LEADER • AS REQUIRED TO COMPLY WITH APPLICABLE PLUMBING CODE • VERIFY THAT CLEANOUT RODS CAN PROBE AS FAR AS THE NEXT CLEANOUT, AT LEAST.	6. SUPPLY & INSTALL ALL COMPONENTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.	7. PROVIDE SHOP DWGS WHICH WILL NOT CONSTITUTE A CHANGE IN CONCEPT OR COORDINATION WITH OTHER TRADES. THIS TYPE OF CHANGE WILL COME IN THE FORM OF AN OFFICIAL CHANGE NOTICE THROUGH THE PROJECT COORDINATOR.	5. PROVIDE SHOP DWGS FOR THE ENGINEER TO REVIEW.	[4] CONTRACTOR OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.	5	Issued for Tender	May 18/23
3. BACKFLOW PREVENTERS MUST BE TESTED & APPROVED	7. VERIFY MOUNTING HEIGHT OF ALL FIXTURES WITH ARCHITECT BEFORE ROUGH-IN. ADDITIONAL FLUSH VALVES TO PROVIDE ADEQUATE FLUSH WITH MINIMUM WATER.	8. THE GENERAL CONTRACTOR AND/OR CLIENT PROJECT COORDINATOR TO FACILITATE TO ATTEND AN ALL TRADES PROJECT KICK-OFF ON SITE (OWNER IN ATTENDANCE).	6. PROVIDE SHOP DWGS WHICH WILL NOT CONSTITUTE A CHANGE IN CONCEPT OR COORDINATION WITH OTHER TRADES. THIS TYPE OF CHANGE WILL COME IN THE FORM OF AN OFFICIAL CHANGE NOTICE THROUGH THE PROJECT COORDINATOR.	[5] DRAWINGS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURCHASE, REVIEW & APPROVAL BY THE CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.	6	Re-Issued for Tender	Dec. 20/24
22 13 29 SANITARY PUMPS	8. PROVIDE FLOOR SUPPORTED CHAIR CARRIER FOR ALL WALL MOUNTED UNITS.	9. THIS TRADE SHALL REVIEW THE TOGETHER WITH THE MECHANICAL CONTRACTOR THE CONTROLS & POWER.	7. THIS TRADE SHALL REVIEW THE TOGETHER WITH THE MECHANICAL CONTRACTOR THE CONTROLS & POWER.	[6] TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION".			
1. ALL SANITARY SEWERAGE PUMP, PIPING, MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS. INSTALLATION MUST CONFORM TO RELEVANT ASME & CSA REGULATIONS.	9. PROVIDE ALL WIRING TO ELECTRICALLY OPERATED UNITS FROM OUTLETS PROVIDED BY DIVISION 26.	10. PROVIDE CONDENSATE DRAINS FROM ALL MECHANICAL EQUIPMENT TO STACK DRAIN VIA INDIRECT CONNECTION.	8. THIS TRADE SHALL ATTEND MEETINGS ON SITE CIVIL, ARCHITECTURAL & STRUCTURAL DWGS.	[7] ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM ONE WEEK TO REVIEW AND RESPOND TO CHANGE REQUESTS.			
SANITARY PIPING & FITTINGS UNDER GROUND:	10. SUPPLY & INSTALL ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.	11. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONES WITH THE DESIGN REQUIREMENTS. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.	9. THIS TRADE SHALL ATTEND MEETINGS ON SITE CIVIL, ARCHITECTURAL & STRUCTURAL DWGS.				
PLASTIC ASTM F628, "(ABS) SCHEDULE 40 PLASTIC DRAIN WASTE & VENT PIPE"	11. SUPPLY & INSTALL REQUIRED EQUIPMENT FOR SANITARY SEWAGE PUMP CONTROL PANEL & ALARM	12. PROVIDE CONDENSATE DRAINS FROM ALL MECHANICAL EQUIPMENT TO STACK DRAIN VIA INDIRECT CONNECTION.	10. CONTRACTOR TO ENGAGE THE WATER UTILITY TO FINALIZE ALL DETAILS OF PROVIDING A NEW WATER METER FOR THE ENTIRE BUILDING AT THE POSITION SHOWN ON THE PLANS. CONTRACTOR TO LIAISON & COORDINATE ALL UTILITY REQUIREMENTS FOR THE INSTALLATION.				
FERROUS CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"	12. SUPPLY & INSTALL ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.	13. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONES WITH THE DESIGN REQUIREMENTS. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.	11. SUPPLY & INSTALL NEW DOMESTIC WATER METER & APPROVED BACKFLOW PREVENTER AS PER AHJ.				
3. BACKFLOW PREVENTERS MUST BE TESTED & APPROVED	13. TEST ALL PIPING SYSTEMS FOR LEAKS PRIOR TO OPERATION.	14. EXCAVATIONS ARE TO BE KEPT FREE OF WATER.	12. SUPPLY & INSTALL DOMESTIC WATER HEATERS c/w MASTER THERMOSTATIC MIXING VALVE AS SHOWN.				
22 13 00 SANITARY SEWERAGE	14. TEST & COMMISSION ALL FIXTURES AS PER LOCAL AUTHORITY.	15. EXCAVATIONS ARE TO BE KEPT FREE OF WATER.	13. SUPPLY & INSTALL ALL DOMESTIC WATER PLUMBING AS SHOWN ON DRAWINGS.				
1. PIPE & FITTINGS: ALL PIP							



2 (04322) 3D Plumbing - Typ. Suites Bldg. 1-4,6
P-5



3 (04322) 3D Plumbing - Common Area Bldg. 5
P-5



1 (04322) Site - Plumbing Plan - New
P-5
1 : 175

04322 PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

- GENERAL DRAWING / DESIGNER NOTES:**
- [1] ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE REQUIREMENT OF THE PROVINCE OF ONTARIO'S BUILDING CODE, LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
 - [2] THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION COSTS ARISING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
 - [3] DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILED DESIGN IS PROVIDED BY THE DESIGNER. CONTRACTOR(S) DO NOT SCALE DRAWINGS.
 - [4] CONTRACTOR/AGENT/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
 - [5] PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".
 - [6] THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.
 - [7] THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.
 - [8] **SHOP DRAWINGS:** BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW AND APPROVE DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR TO BEGIN CONSTRUCTION. THE CONTRACTOR SHALL WORKING SYSTEMS THESE SHOP DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS. ALLOW MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).
 - [9] THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OWN DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
 - [10] REQUESTS FOR ANY FINAL ASSEMBLY THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
 - [11] REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
 - [12] SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
 - [13] MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
 - [14] REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURCHASE, TRANSFER, LEASE OR PROCESS TO A CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
 - [15] TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
 - [16] ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM ONE WEEK TO REVIEW AND RESPOND TO CHANGE REQUESTS.

DRAWING REVISIONS

No.	Description	Date
1	Preliminary	May 19/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 18/23
6	Re-Issued for Tender	Dec. 20/24

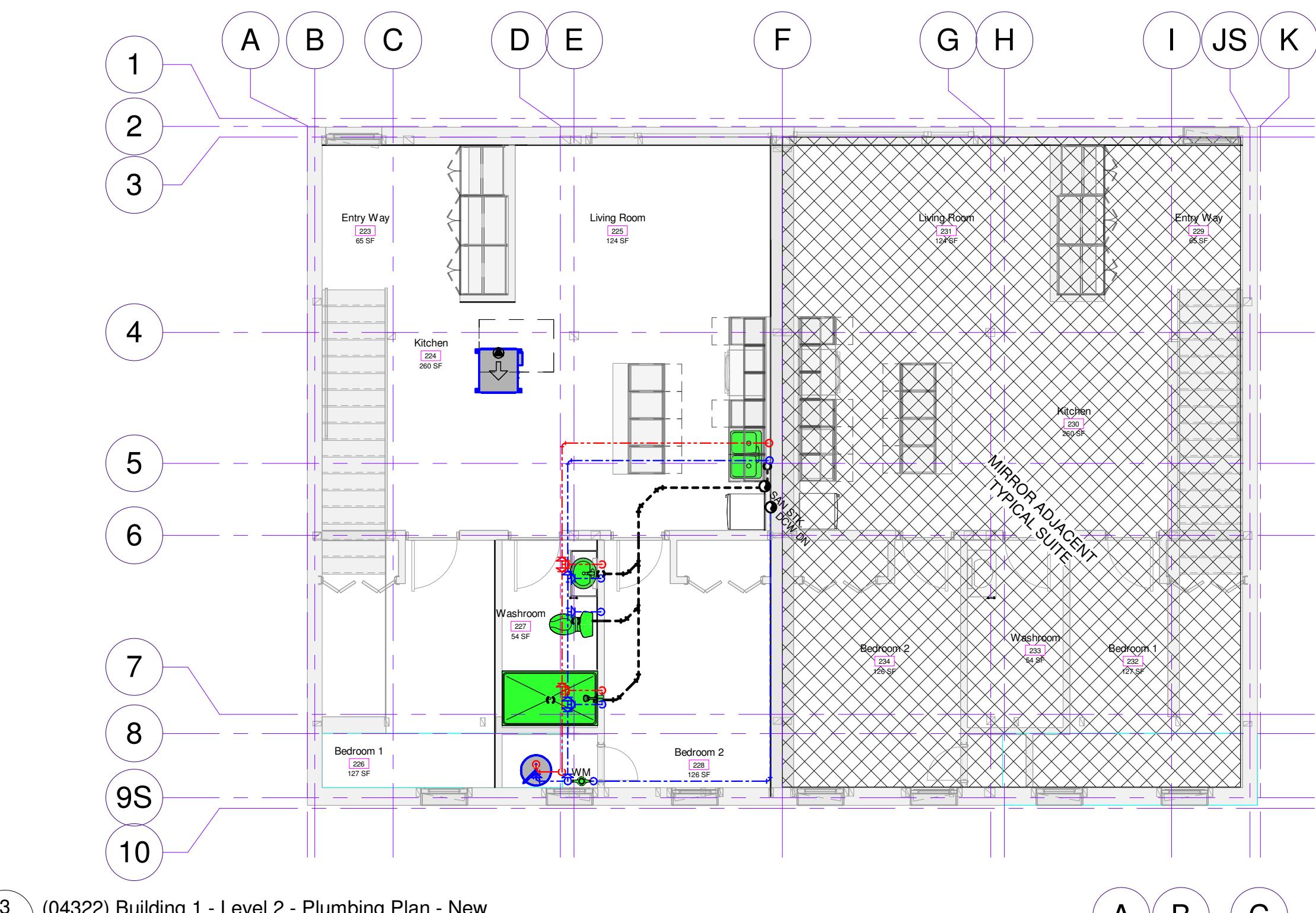
Engineer's Seal:

Client:	WW Inc.		
Address:	Minden, ON		
Project Name:	Gull River Affordable Housing		
Dwg. Name:	Plumbing - Site Plan		
NSET Project #:	04322		
Drawn by:	Northstar Eng.	Checked by:	J.D.L.
Scale:	As indicated	Revision #:	6.0
Drawing #:	P-5		
Project Date:	Jan. 14/22		
Arch-D:	(24" x 36")		

PLUMBING LEGEND									
	CLEANOUT / STACK								
	CLEANOUT / RUN								
	CLEANOUT / FITTING								
	FLOOR DRAIN								
	RUNNING TRAP & TRAP SEAL PRIMER								
	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER								
	VALVE / BALL								
	VALVE / GLOBE								
	VALVE / GATE								
	VALVE / SOLENOID								
	VALVE / BALANCING								
	VALVE / REDUCING								
	VALVE / CHECK								
	VALVE / THERMOSTATIC MIXING								
	REDUCED PRESSURE ZONE / RPZ								
	DOUBLE CHECK VALVE ASSEMBLY / DCVA								
	CAP / FITTING								
	UNION								
	CIRCULATING PUMP								
	WATER SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK								
	WATER SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK								
	SANITARY SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK								
	FIXTURE TAG 'XXX' DENOTES TYPE MARK								
	STACK • SAN - SANITARY • VTR - VENT TO ROOF • RWL - RAIN WATER LEADER • DOH - DOMESTIC COLD WATER • DHWR - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER • READING • NGAS - NATURAL GAS								
	TEE / DROP REFER TO PIPE TYPE								
	TEE / RISE REFER TO PIPE TYPE								
	ELBOW / DROP REFER TO PIPE TYPE								
	ELBOW / RISE REFER TO PIPE TYPE								
	DOMESTIC COLD WATER / DCW								
	DOMESTIC HOT WATER / DHW								
	DOMESTIC HOT WATER RECIRCULATING / DHWR								
	VENT								
	SANITARY DRAINAGE / UNDERGROUND								
	SANITARY DRAINAGE / ABOVE GROUND								
	STORM DRAINAGE / UNDERGROUND								
	STORM DRAINAGE / ABOVE GROUND								
	WEPPING TILE PIPING								
	NATURAL GAS PIPING								
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS									

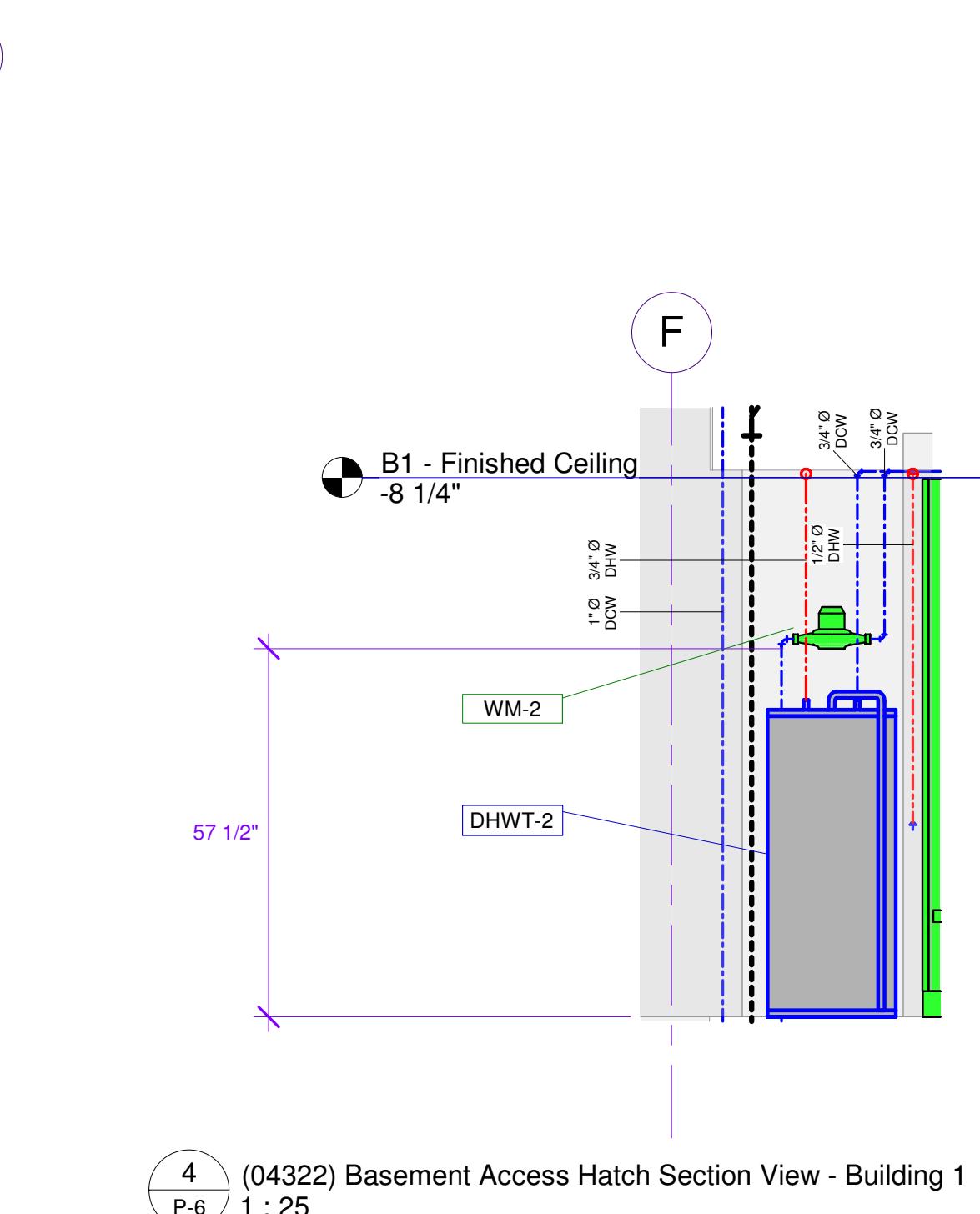
(04322) Plumbing Fixture Schedule - (New) Typical Suite											
Level	Type Mark	Barrier-Free (Blank = N/A)	Qty.	Description	Manufacturer	Model	Accessory 1	Accessory 2	Supplied By	Comments (Controls)	Group ID_NSET
FFE Lower Level	CO-4F	1	1	4" O/C FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.	HEAD: MOEN 52236GBM15 c/w CONTROL; MOEN# T8370 c/w	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Lower Level	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	REMOTE READOUT			DIV. 22	Typ. Suites	
			6								
FFE Ground Floor	HB-1	1	1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22	Typ. Suites	
FFE Ground Floor	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL; MOEN# T8370 c/w	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	REMOTE READOUT			DIV. 22	Typ. Suites	
			6								
2 - Floor	SH-2	No	1	SHOWER/ c/w HEAD & CONTROLS	LONGEVITY	ALPINE 2260	HEAD: MOEN 52236GBM15 c/w CONTROL; MOEN# T8370 c/w	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
2 - Floor	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
2 - Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
2 - Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
2 - Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	REMOTE READOUT			DIV. 22	Typ. Suites	
			5								
Grand total											17

NOTE: THIS SCHEDULE DEPICTS THE FIXTURES FOR ONE TYPICAL SUITE ON EACH LEVEL
SK-1 MODEL # FOR MIRRORED SUITES IS #OCLA2031R/8

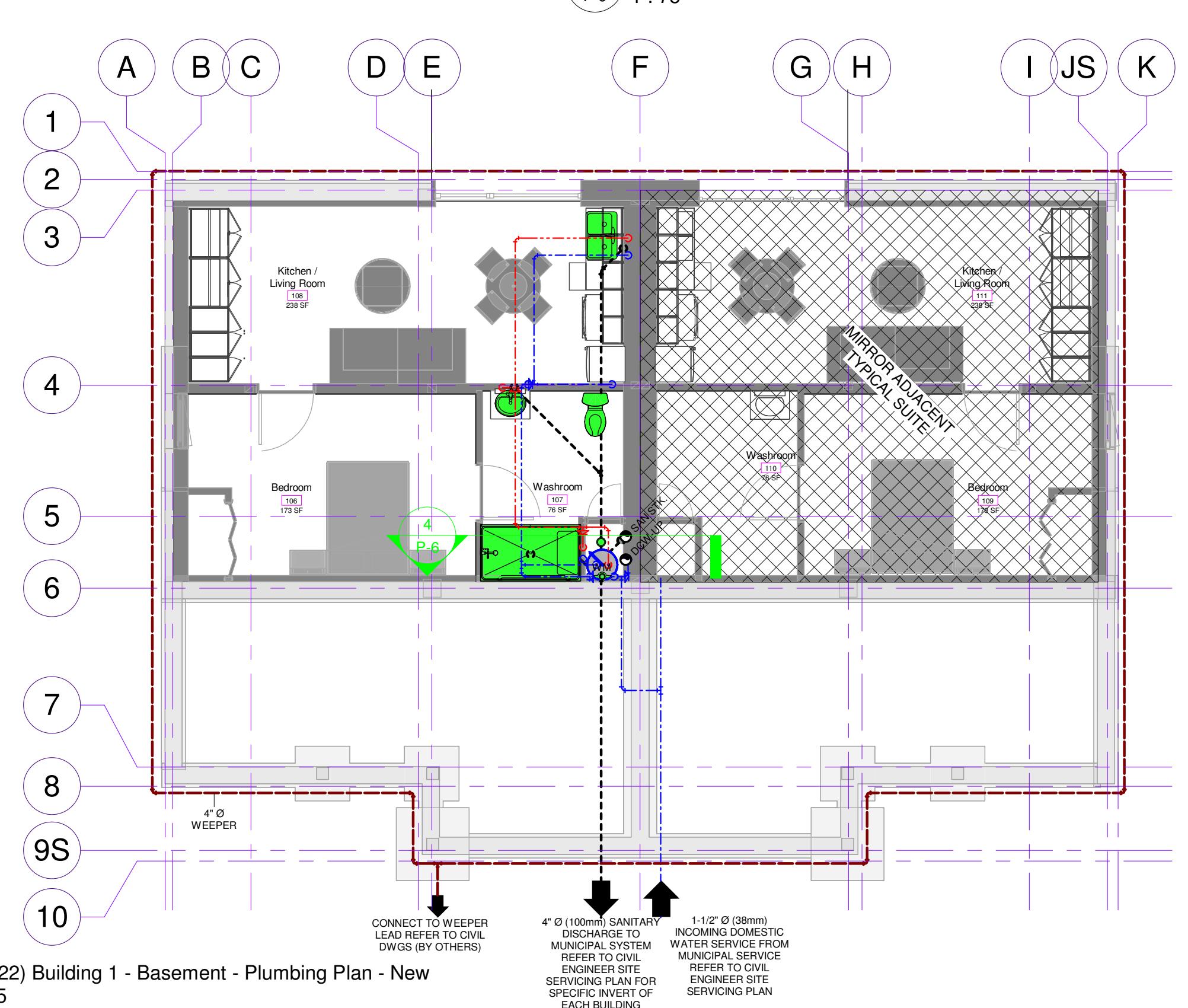


(04322) Building 1 - Level 2 - Plumbing Plan - New

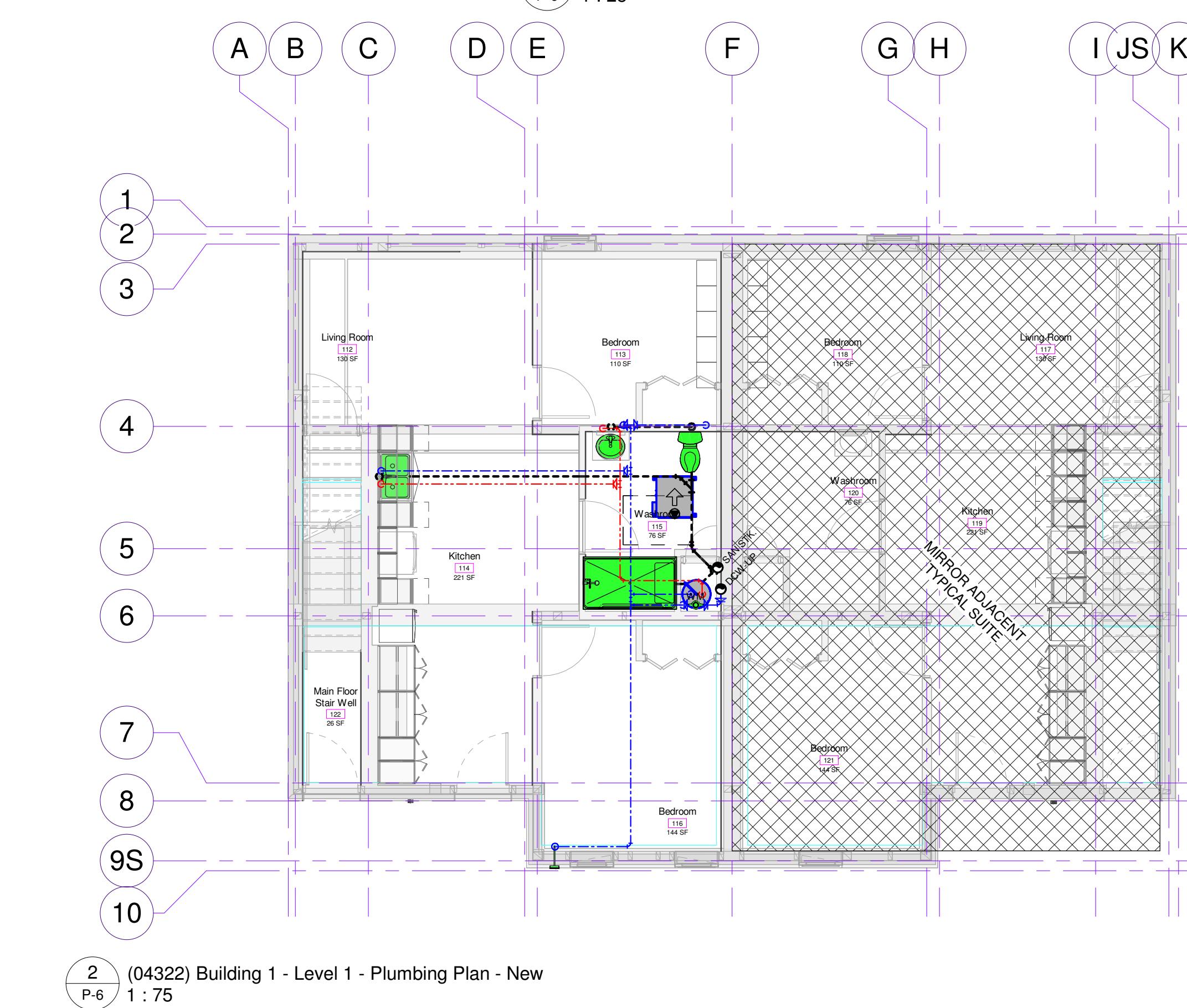
3 P-6 1 : 75



4 P-6 1 : 25



1 P-6 1 : 75



2 P-6 1 : 75

(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	

PLUMBING LEGEND										
	CLEANOUT / STACK									
	CLEANOUT / RUN									
	CLEANOUT / FITTING									
	FLOOR DRAIN / C/W P-TRAP & TRAP SEAL PRIMER									
	RUNNING TRAP / C/W CLEANOUT & TRAP SEAL PRIMER									
	VALVE / BALL									
	VALVE / GLOBE									
	VALVE / GATE									
	VALVE / SOLENOID									
	VALVE / BALANCING									
	VALVE / REDUCING									
	VALVE / CHECK									
	VALVE / THERMOSTATIC MIXING									
	RPZ / REDUCED PRESSURE ZONE / RPZ									
	DCVA / DOUBLE CHECK VALVE ASSEMBLY / DCVA									
	CF / CAP / FITTING									
	U / UNION									
	CIRCULATING PUMP									
	WS / WATER SCHEMATIC FIXTURE / XX DENOTES FIXTURE TYPE MARK									
	WS / WATER SCHEMATIC FIXTURE / XX DENOTES FIXTURE TYPE MARK									
	SS / SANITARY SCHEMATIC FIXTURE / XX DENOTES FIXTURE TYPE MARK									
	FT / FIXTURE TAG / XXX DENOTES TYPE MARK									
	SD / STACK / XXX DENOTES:									
	• SAN - SANITARY									
	• VTR - VENT TO ROOF									
	• RWL - RAIN WATER LEADER									
	• DCW - DOMESTIC COLD WATER									
	• DHWR - DOMESTIC HOT WATER									
	• DHWR - DOMESTIC HOT WATER RECYCLING									
	• RGAS - NATURAL GAS									
	TP / TEE / DROP REFER TO PIPE TYPE									
	TR / TEE / RISE REFER TO PIPE TYPE									
	DP / ELBOW / DROP REFER TO PIPE TYPE									
	DR / ELBOW / RISE REFER TO PIPE TYPE									
	DCW / DOMESTIC COLD WATER / DCW									
	DHW / DOMESTIC HOT WATER / DHWR									
	DHW / DOMESTIC HOT WATER RECYCLING / DHWR									
	VENT									
	SD / SANITARY DRAINAGE / UNDERGROUND									
	SD / SANITARY DRAINAGE / ABOVE GROUND									
	SD / STORM DRAINAGE / UNDERGROUND									
	SD / STORM DRAINAGE / ABOVE GROUND									
	WT / WEPPING TILE PIPING									
	NG / NATURAL GAS PIPING									
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS										

(04322) Plumbing Fixture Schedule - (New) Typical Suite											
Level	Type Mark	Barrier-Free (Blank = N/A)	Qty.	Description	Manufacturer	Model	Accessory 1	Accessory 2	Supplied By	Comments (Controls)	Group ID_NSET
FFE Lower Level	CO-4F	1	1	4" O/C / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.	HEAD: MOEN 52236GBM15 c/w CONTROL; MOEN# T8370 c/w	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Lower Level	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	BY CONTRACTOR	REMOTE READOUT	DIV. 22	Typ. Suites	
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR				DIV. 22	Typ. Suites	
			6								
FFE Ground Floor	HB-1	1	1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22	Typ. Suites	
FFE Ground Floor	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL; MOEN# T8370 c/w	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	BY CONTRACTOR	REMOTE READOUT	DIV. 22	Typ. Suites	
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR				DIV. 22	Typ. Suites	
			6								
2 - Floor	SH-2	No	1	SHOWER / c/w HEAD & CONTROLS	LONGEVITY	2260	HEAD: MOEN 52236GBM15 c/w CONTROL; MOEN# T8370 c/w	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
2 - Floor	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
2 - Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
2 - Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
2 - Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR		REMOTE READOUT		DIV. 22	Typ. Suites	
			5								
Grand total											17

NOTE: THIS SCHEDULE DEPICTS THE FIXTURES FOR ONE TYPICAL SUITE ON EACH LEVEL
SK-1 MODEL # FOR MIRRORED SUITES IS #OCLA2031R8

(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	

PLUMBING LEGEND									
	CLEANOUT / STACK								
	CLEANOUT / RUN								
	CLEANOUT / FITTING								
	FLOOR DRAIN / P-TRAP & TRAP SEAL PRIMER								
	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER								
	VALVE / BALL								
	VALVE / GLOBE								
	VALVE / GATE								
	VALVE / SOLENOID								
	VALVE / BALANCING								
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	VALVE / CHECK								
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	RPZ REDUCED PRESSURE ZONE / RPZ								
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	WATER SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK								
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	FIXTURE TAG XXX DENOTES TYPE MARK								
	STACK • SAN - SANITARY • VTR - VENT TO ROOF • RWL - RAIN WATER LEADER • DOV - DOMESTIC COLD WATER • DHW - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER RECIRCULATING • NGAS - NATURAL GAS								
	TEE / DROP REFER TO PIPE TYPE								
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	DOMESTIC COLD WATER / DCW								
	DOMESTIC HOT WATER / DHW								
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	STORM DRAINAGE / UNDERGROUND								
	STORM DRAINAGE / ABOVE GROUND								
	WEPPING TILE PIPING								
	NATURAL GAS PIPING								
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS									

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FFE Lower Level	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	BY CONTRACTOR	REMOTE READOUT	DIV. 22	Typ. Suites	
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR				DIV. 22	Typ. Suites	
			6								
FFE Ground Floor	HB-1		1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22	Typ. Suites	
FFE Ground Floor	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	BY CONTRACTOR	REMOTE READOUT	DIV. 22	Typ. Suites	
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR				DIV. 22	Typ. Suites	
			6								
2 - Floor	SH-2	No	1	SHOWER/ c/w HEAD & CONTROLS	LONGEVITY	2260	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
2 - Floor	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
2 - Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
2 - Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	BY CONTRACTOR	REMOTE READOUT	DIV. 22	Typ. Suites	
			6								
NOTE: THIS SCHEDULE DEPICTS THE FIXTURES FOR ONE TYPICAL SUITE ON EACH LEVEL/TYPE READOUT											
SK-1 MODEL # FOR MIRRORED SUITES IS #OCLA2031R/8											
Grand total											17

(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

<table border="1

PLUMBING LEGEND									
	CLEANOUT / STACK								
	CLEANOUT / RUN								
	CLEANOUT / FITTING								
	FLOOR DRAIN / TRAP SEAL PRIMER								
	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER								
	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER								
	VALVE / BALL								
	VALVE / GLOBE								
	VALVE / GATE								
	VALVE / SOLENOID								
	VALVE / BALANCING								
	VALVE / REDUCING								
	VALVE / CHECK								
	VALVE / THERMOSTATIC MIXING								
	REDUCED PRESSURE ZONE / RPZ								
	DOUBLE CHECK VALVE ASSEMBLY / DCVA								
	CAP / FITTING								
	UNION								
	CIRCULATING PUMP								
	WATER SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK								
	WATER SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK								
	SANITARY SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK								
	FIXTURE TAG XXX DENOTES TYPE MARK								
	STACK • SAN - SANITARY • VTR - VENT TO ROOF • RWL - RAIN WATER LEADER • DOV - DOMESTIC COLD WATER • DHWR - DOMESTIC HOT WATER • DHWT - DOMESTIC HOT WATER • REG - REGULATOR • NGAS - NATURAL GAS								
	TEE / DROP REFER TO PIPE TYPE								
	TEE / RISE REFER TO PIPE TYPE								
	ELBOW / DROP REFER TO PIPE TYPE								
	ELBOW / RISE REFER TO PIPE TYPE								
	DOMESTIC COLD WATER / DCW								
	DOMESTIC HOT WATER / DHW								
	DOMESTIC HOT WATER RECIRCULATING / DHWR								
	VENT								
	SANITARY DRAINAGE / UNDERGROUND								
	SANITARY DRAINAGE / ABOVE GROUND								
	STORM DRAINAGE / UNDERGROUND								
	STORM DRAINAGE / ABOVE GROUND								
	WEPPING TILE PIPING								
	NATURAL GAS PIPING								
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS									

(04322) Plumbing Fixture Schedule - (New) Typical Suite											
Level	Type Mark	Barrier-Free (Blank = N/A)	Qty.	Description	Manufacturer	Model	Accessory 1	Accessory 2	Supplied By	Comments (Controls)	Group ID_NSET
FFE Lower Level	CO-4F	1	1	4" O/C FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.	INTERGRAL VACUUM BREAKER	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Lower Level	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT	REMOTE READOUT	DIV. 22	Typ. Suites	
FFE Ground Floor	HB-1	1	1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Ground Floor	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT	REMOTE READOUT	DIV. 22	Typ. Suites	
NOTE: THIS SCHEDULE DEPICTS THE FIXTURES FOR ONE TYPICAL SUITE ON EACH LEVEL/TYPE READOUT											
SK-1 MODEL # FOR MIRRORED SUITES IS #OCLA2031R/8											
Grand total											
17											

(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
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P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
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P-12	Plumbing - Typical Building
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P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

NORTHSTAR ENGINEERING & TECHNOLOGIES LTD.
92 Caplan Ave, Suite #517
Barrie, Ontario L4N 9J2
Tel. (705) 719-1003 Fax (705) 719-0490
www.nsset.ca

GENERAL DRAWING / DESIGNER NOTES:

- [1] ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE REQUIREMENTS OF THE PROVINCE OF ONTARIO'S BUILDING CODE, LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
- [2] THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. THE CONSULTANT WILL NOT BE HELD RESPONSIBLE FOR INCREASED CONSTRUCTION COSTS ARISING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
- [3] DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILS ARE PROVIDED BY THE CONTRACTOR. DRAWINGS PROVIDED BY THE DESIGNER ARE FOR INFORMATION ONLY.
- [4] CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
- [5] PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS ISSUED FOR CONSTRUCTION.
- [6] THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.
- [7] THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.
- [8] SHOP DRAWINGS: BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW THE SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR FROM THE CONTRACTUAL OBLIGATIONS. THESE DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS, MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).
- [9] THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNERS WORK IN ASSOCIATION WITH THIS PROJECT.
- [10] REQUESTS FOR ANY FINAL ASSEMBLY THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
- [11] REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
- [12] SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
- [13] MIN

PLUMBING LEGEND									
	CLEANOUT / STACK								
	CLEANOUT / RUN								
	CLEANOUT / FITTING								
	FLOOR DRAIN c/w P-TRAP & TRAP SEAL PRIMER								
	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER								
	VALVE / BALL								
	VALVE / GLOBE								
	VALVE / GATE								
	VALVE / SOLENOID								
	VALVE / BALANCING								
	VALVE / REDUCING								
	VALVE / CHECK								
	VALVE / THERMOSTATIC MIXING								
	REDUCED PRESSURE ZONE / RPZ								
	DOUBLE CHECK VALVE ASSEMBLY / DVA								
	CAP / FITTING								
	UNION								
	CIRCULATING PUMP								
	WATER SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK								
	WATER SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK								
	SANITARY SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK								
	FIXTURE TAG XXX DENOTES TYPE MARK								
	STACK XX DENOTES: • SAN - SANITARY • VTR - VENT TO ROOF • RWL - RAIN WATER LEADER • DCW - DOMESTIC COLD WATER • DHWR - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER • REEFER - REEFER • NGAS - NATURAL GAS								
	TEE / DROP REFER TO PIPE TYPE								
	TEE / RISE REFER TO PIPE TYPE								
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	STORM DRAINAGE / ABOVE GROUND								
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	NATURAL GAS PIPING								
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS									

(04322) Plumbing Fixture Schedule - (New) Service & Common Areas

Level	Type Mark	Barrier-Free (Blank = N/A)	Qty.	Description	Manufacturer	Model	Accessory 1	Accessory 2	Supplied By	Comments (Controls)	Group ID_NSET
FFE Lower Level	BF-1		1	BACKFLOW PREVENTER / "DCVA" TYPE / 2" CONN., HORIZ. MNT.	WATTS	007-M1-QT			DIV. 22	Service	
FFE Lower Level	BF-2		1	BACKFLOW PREVENTER / "DCVA" TYPE / 1" CONN., HORIZ. MNT.	WATTS	007-M1-QT			DIV. 22	Service	
FFE Lower Level	CO-4F		1	4" Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.	DIV. 22		Service		
FFE Lower Level	FD-3F		2	FLOOR DRAIN / 3" / FINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.	SEE PROJECT SPEC.	DIV. 22		Service		
FFE Lower Level	FD-3U		1	FLOOR DRAIN / 3" / UNFINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.	SEE PROJECT SPEC.	DIV. 22		Service		
FFE Lower Level	MS-1		1	SINK / JANITOR / FLOOR MNT. / PRECAST TERRAZZO / 24"x24"x12" / 3" DRAIN	FIAT	#MSB-2424	FAUCET: FIAT PRODUCTS #830-AA		DIV. 22	Service	
FFE Lower Level	WM-1	Yes	1	WATER METER	BY AHJ	BY AHJ			BY AHJ	Service	
FFE Lower Level	WM-3	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22	Service	
			9								
FFE Ground Floor	CO-3F		1	3" Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.			DIV. 22	Service	
FFE Ground Floor	FD-2F		1	FLOOR DRAIN / 2" / FINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.	SEE PROJECT SPEC.			DIV. 22	Service	
FFE Ground Floor	FD-3F		1	FLOOR DRAIN / 3" / FINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.	SEE PROJECT SPEC.			DIV. 22	Service	
FFE Ground Floor	SNK-3	Yes	1	LAVATORY / B.F. / WALL MNT. @ 34" TO RIM / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	9141011.020	FAUCET: MOEN #L64600 STRAINER: Z8746-PC CARRIER: WATTS# CA-421 / COVERING: MCGUIRE #PW2000		DIV. 22	Service	
FFE Ground Floor	WB-1		4	WALL BOX / LAUNDRY / LEAD FREE / 1/2" SUPPLIES / c/w WATER HAMMER ARRESTOR	OATEY	38542	WATER HAMMER ARRESTOR		DIV. 22	Service	
FFE Ground Floor	WC-1	Yes	1	TOILET / B.F. / PUBLIC / BOWL, ELONG. 16 1/2" AFF / FLOOR MNT. / LINED TANK / OPEN SEAT NO COVER	AMERICAN STD.	"CADET PRO" "RIGHT HEIGHT" #215AA.104.020	TANK: GRAVITY / LINED SEAT: CENTOCO #500STSCC.001		DIV. 22	Service	
			9								
			18								
NOTE: SCHEDULE ABOVE IS FOR SERVICE & COMMON AREAS ONLY											

(04322) PROJECT DRAWING REGISTER	
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E1/M1/P1	Project Cover
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GENERAL DRAWING / DESIGNER NOTES:

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- [3] DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILS ARE PROVIDED BY THE CONTRACTOR. DRAWINGS PROVIDED BY THE DESIGNER DO NOT SCALE DRAWINGS.
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- [8] SHOP DRAWINGS: BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW THE SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG ISSUED WILL NOT RELEASE THE CONTRACTOR FROM THE CONTRACTUAL OBLIGATIONS OF THE PIPELINE SYSTEM. THESE SHOP DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS, MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).
- [9] THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OWN DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
- [10] REQUESTS FOR ANY FINAL ASSEMBLY THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
- [11] REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
- [12] SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
- [13] MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
- [14] REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURCHASE, TRANSFER, EXCHANGE OR RELEASE TO A CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
- [15] TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
- [16] ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM ONE WEEK TO REVIEW AND RESPOND TO CHANGE REQUESTS.

DRAWING REVISIONS		
No.	Description	Date

PLUMBING LEGEND									
	CLEANOUT / STACK								
	CLEANOUT / RUN								
	CLEANOUT / FITTING								
	FLOOR DRAIN & TRAP SEAL PRIMER								
	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER								
	VALVE / BALL								
	VALVE / GLOBE								
	VALVE / GATE								
	VALVE / SOLENOID								
	VALVE / BALANCING								
	VALVE / REDUCING								
	VALVE / CHECK								
	VALVE / THERMOSTATIC MIXING								
	REDUCED PRESSURE ZONE / RPZ								
	DOUBLE CHECK VALVE ASSEMBLY / DCVA								
	CAP / FITTING								
	UNION								
	CIRCULATING PUMP								
	WATER SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK								
	WATER SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK								
	SANITARY SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK								
	FIXTURE TAG 'XXX' DENOTES TYPE MARK								
	STACK • SAN - SANITARY • VTR - VENT TO ROOF • RWL - RAIN WATER LEADER • DOH - DOMESTIC COLD WATER • DHWR - DOMESTIC HOT WATER • RDHW - REVERSE DOMESTIC HOT WATER • REGAS - REGASIFICATION • NGAS - NATURAL GAS								
	TEE / DROP REFER TO PIPE TYPE								
	TEE / RISE REFER TO PIPE TYPE								
	ELBOW / DROP REFER TO PIPE TYPE								
	ELBOW / RISE REFER TO PIPE TYPE								
	DOMESTIC COLD WATER / DCW								
	DOMESTIC HOT WATER / DHW								
	DOMESTIC HOT WATER RECIRCULATING / DHWR								
	VENT								
	SANITARY DRAINAGE / UNDERGROUND								
	SANITARY DRAINAGE / ABOVE GROUND								
	STORM DRAINAGE / UNDERGROUND								
	STORM DRAINAGE / ABOVE GROUND								
	WEPPING TILE PIPING								
	NATURAL GAS PIPING								
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS									

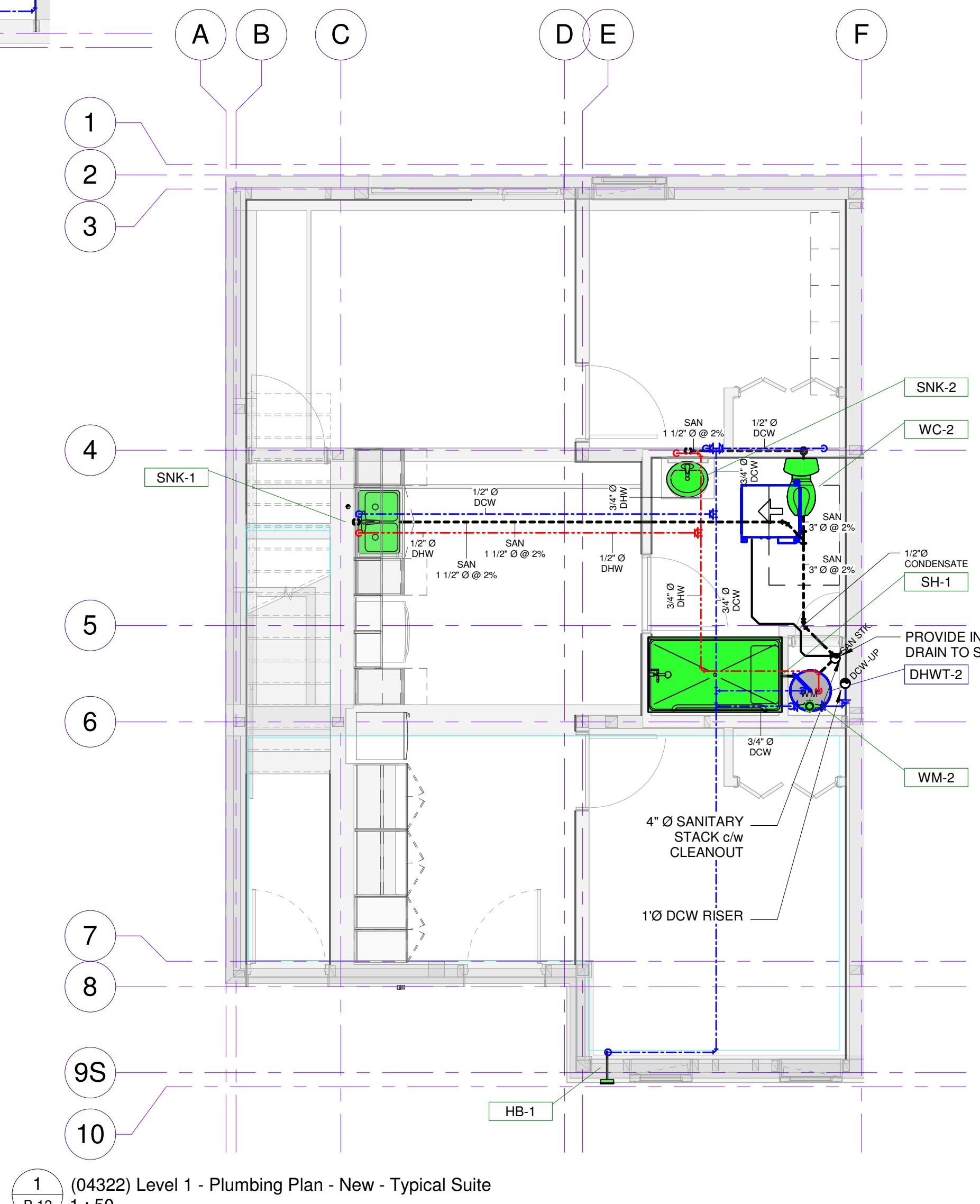
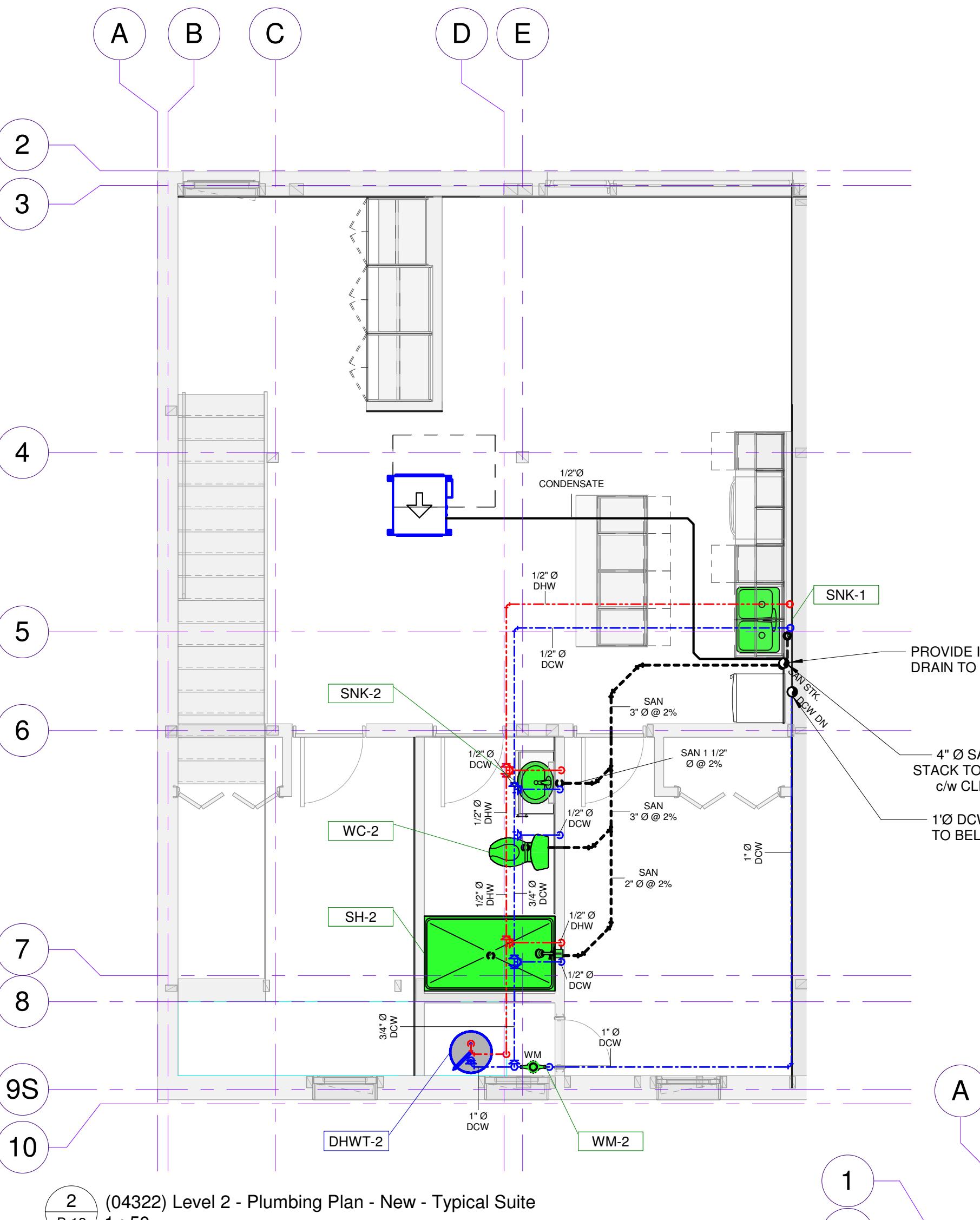
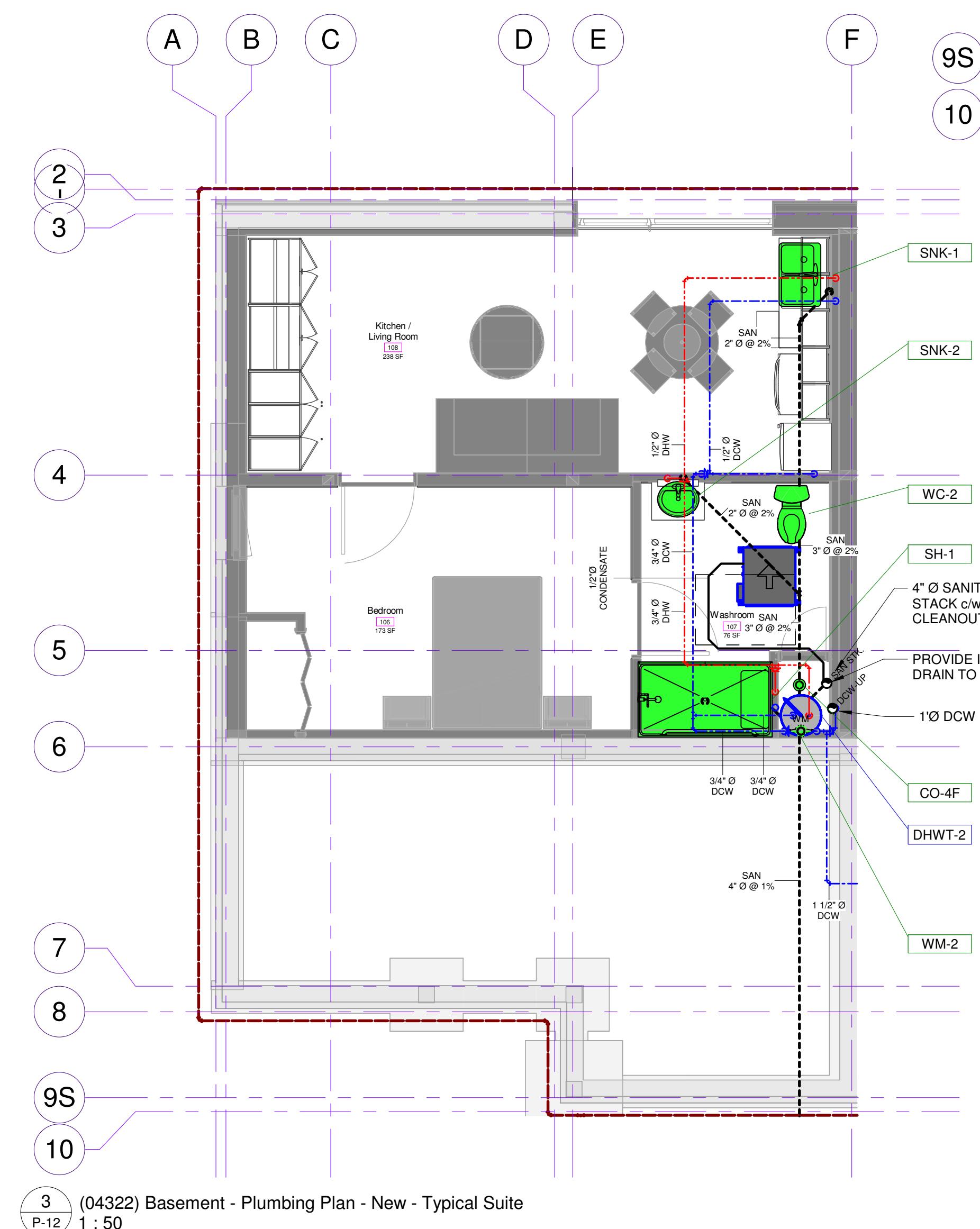
(04322) Plumbing Fixture Schedule - (New) Typical Suite											
Level	Type Mark	Barrier-Free (Blank = N/A)	Qty.	Description	Manufacturer	Model	Accessory 1	Accessory 2	Supplied By	Comments (Controls)	Group ID_NSET
FFE Lower Level	CO-4F	1	1	4"Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.	HEAD: MOEN 52236GBM15 c/w CONTROL: MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Lower Level	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	REMOTE READOUT			DIV. 22	Typ. Suites	
			6								
FFE Ground Floor	HB-1	1	1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22	Typ. Suites	
FFE Ground Floor	SH-1	Yes	1	SHOWER/ 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL: MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	REMOTE READOUT			DIV. 22	Typ. Suites	
			6								
2 - Floor	SH-2	No	1	SHOWER / c/w HEAD & CONTROLS	LONGEVITY	2260	HEAD: MOEN 52236GBM15 c/w CONTROL: MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22	Typ. Suites	
2 - Floor	SNK-1	1	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	OCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22	Typ. Suites	
2 - Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22	Typ. Suites	
2 - Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22	Typ. Suites	
2 - Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	REMOTE READOUT			DIV. 22	Typ. Suites	
			5								
Grand total											17

NOTE: THIS SCHEDULE DEPICTS THE FIXTURES FOR ONE TYPICAL SUITE ON EACH LEVEL
SK-1 MODEL # FOR MIRRORED SUITES IS #QCLA2031R/8

(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

GENERAL DRAWING / DESIGNER NOTES:	
[

PLUMBING LEGEND	
●	CLEANOUT / STACK
●	CLEANOUT / RUN
●	CLEANOUT / FITTING
●	FLOOR DRAIN c/w TRAP & TRAP SEAL PRIMER
●	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER
●	VALVE / BALL
●	VALVE / GLOBE
●	VALVE / GATE
●	VALVE / SOLENOID
●	VALVE / BALANCING
●	VALVE / REDUCING
●	VALVE / CHECK
●	VALVE / THERMOSTATIC MIXING
●	REDUCED PRESSURE ZONE / RPZ
●	DOUBLE CHECK VALVE ASSEMBLY / DCVA
●	CAP / FITTING
●	UNION
●	CIRCULATING PUMP
●	WATER SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK
●	WATER SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK
●	SANITARY SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK
●	Fixture Tag 'XXX' DENOTES TYPE MARK
●	Stack 'XXX' DENOTES:
●	- SAN - SANITARY
●	- VTR - VENT TO ROOF
●	- RWL - RAIN WATER LEADER
●	- DOV - DRAIN OVERFLOW
●	- DHW - DOMESTIC HOT WATER
●	- DHWR - DOMESTIC HOT WATER RECIRCULATING
●	- NGAS - NATURAL GAS
●	TEE / DROP REFER TO PIPE TYPE
●	TEE / RISE REFER TO PIPE TYPE
●	ELBOW / DROP REFER TO PIPE TYPE
●	ELBOW / RISE REFER TO PIPE TYPE
●	DOMESTIC COLD WATER / DCW
●	DOMESTIC HOT WATER / DHW
●	DOMESTIC HOT WATER RECIRCULATING / DHWR
●	VENT
●	SANITARY DRAINAGE / UNDERGROUND
●	SANITARY DRAINAGE / ABOVE GROUND
●	STORM DRAINAGE / UNDERGROUND
●	STORM DRAINAGE / ABOVE GROUND
●	WEEPING TILE PIPING
●	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	



(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
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M-8	HVAC - Bldg. 2
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M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

GENERAL DRAWING / DESIGNER NOTES:	
[1]	ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE REQUIREMENT OF THE PROVINCE OF ONTARIO'S BUILDING CODE, LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
[2]	THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
[3]	DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILS ARE PROVIDED BY THE CONTRACTOR. DRAWINGS PROVIDED BY THE CONTRACTOR ARE THE PROPERTY OF THE CONTRACTOR. CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
[4]	PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS ISSUED FOR CONSTRUCTION.
[5]	THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.
[6]	THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.
[7]	SHOP DRAWINGS: BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW THE SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR FROM THE CONTRACTUAL OBLIGATIONS. THESE DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS, ALLOW MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).
[8]	THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNERS WORK IN ASSOCIATION WITH THIS PROJECT.
[9]	REQUESTS FOR ANY FOR FINAL ASSEMBLY THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
[10]	REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
[11]	SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
[12]	MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
[13]	REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURCHASE OF EQUIPMENT OR ACCESSORIES BY THE CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
[14]	TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
[15]	ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM ONE WEEK TO REVIEW AND RESPOND TO CHANGE REQUESTS.

DRAWING REVISIONS		
No.	Description	Date
5	Issued for Tender	May 18/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

Client: WW Inc.
Address: Minden, ON
Project Name: Gull River Affordable Housing
Dwg. Name: Plumbing -Typical Building
NSET Project #: 04322
Drawn by: Northstar Eng. Checked by: J.D.L.
Scale: As indicated Revision #: 6.0
Drawing #: P-12
Project Date: Jan. 14/22 Arch-D (24" x 36")

(04322) Hot Water Tank Schedule Typical Suite - (New)																		
Level	Mark	Type Mark	Description	Manufacturer	Model #	Qty.	Energy Source	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Voltage	Phase	Hz	MCA	VA	Weight	Accessory 1	Supplied By
2- Floor	DHWT-02	DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	1		0 Btu/h		0 Btu/h	208 V	1	60	14.4 A	3,000	110 lb	MIXING VALVE: WATSS LFM430	DIV. 23
FFE Ground Floor	DHWT-01	DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	1				208 V	1	60	14.4 A	3,000	110 lb	MIXING VALVE: WATSS LFM430	DIV. 23	
FFE Lower Level	DHWT-03	DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	1				208 V	1	60	14.4 A	3,000	110 lb	MIXING VALVE: WATSS LFM430	DIV. 23	
						1		0 Btu/h		0 Btu/h						3,000		
						3		0 Btu/h		0 Btu/h						9,000		

NOTE: HOT WATER TANK SCHEDULE IS FOR ONE TYPICAL SUITE ON EACH LEVEL

(04322) Hot Water Tank Schedule Shared Laundry Area - (New)																		
Level	Mark	Type Mark	Description	Manufacturer	Model #	Qty.	Energy Source	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Voltage	Phase	Hz	MCA	VA	Weight	Accessory 1	Supplied By
FFE Lower Level	FC-1-25	DHWT-1	HOT WATER TANK / ELECTRIC / 66 US GAL. (250L) TOP ENTRY / DUAL ELEMENT / 24 GPH FHR @100F	A.O. SMITH	DEN-66	1	ELEC.			208 V	3	60	28.8 A	6,000	176 lb	MIXING VALVE: WATSS LFM430	DIV. 22	
						1		0 Btu/h		0 Btu/h						6,000		
						1		0 Btu/h		0 Btu/h						6,000		

NOTE: HOT WATER TANK SCHEDULE IS FOR BUILDING 5 COMMUNAL AREA ONLY

(04322) PROJECT DRAWING REGISTER

Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing - Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing - Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Elec. Electrical Site Plan
E-7	Elec. - SLD
E-8	Elec. Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Elec. Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Elec. Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Elec. Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Elec. Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Elec. Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

92 Caplan Ave. Suite #517
Barrie, Ontario L4N 9J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

- GENERAL DRAWING / DESIGNER NOTES:
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 - [3] DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILED DESIGN AND SPECIFICATIONS PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
 - [4] CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
 - [5] PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".
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 - [9] THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OWN DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
 - [10] REQUEST FOR ANY FOR FINAL ASSEMBLY THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
 - [11] REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
 - [12] SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
 - [13] MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
 - [14] REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR PURCHASE, TRANSFER, LICENSE OR PROCESS IS TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
 - [15] TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
 - [16] ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM ONE WEEK TO REVIEW AND RESPOND TO CHANGE REQUESTS.

DRAWING REVISIONS

No.	Description	Date
1	Preliminary	May 19/22
2	Issued for Review	Apr. 22/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 16/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:



Client: WW Inc.

Address: Minden, ON

Project Name: Gull River Affordable Housing

Dwg. Name: Plumbing - Details

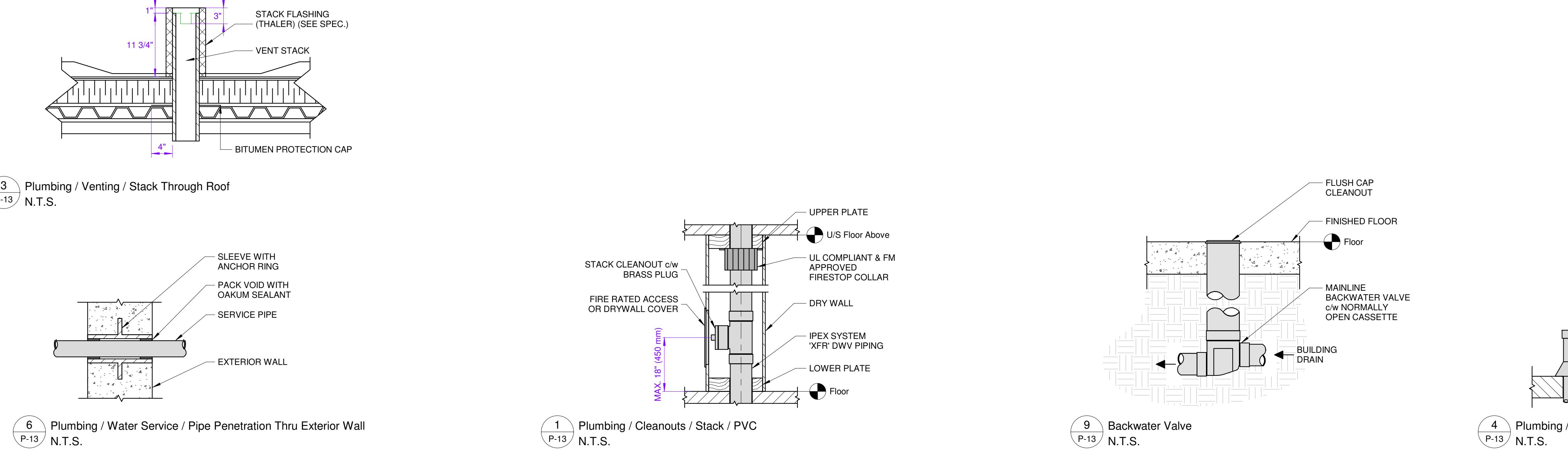
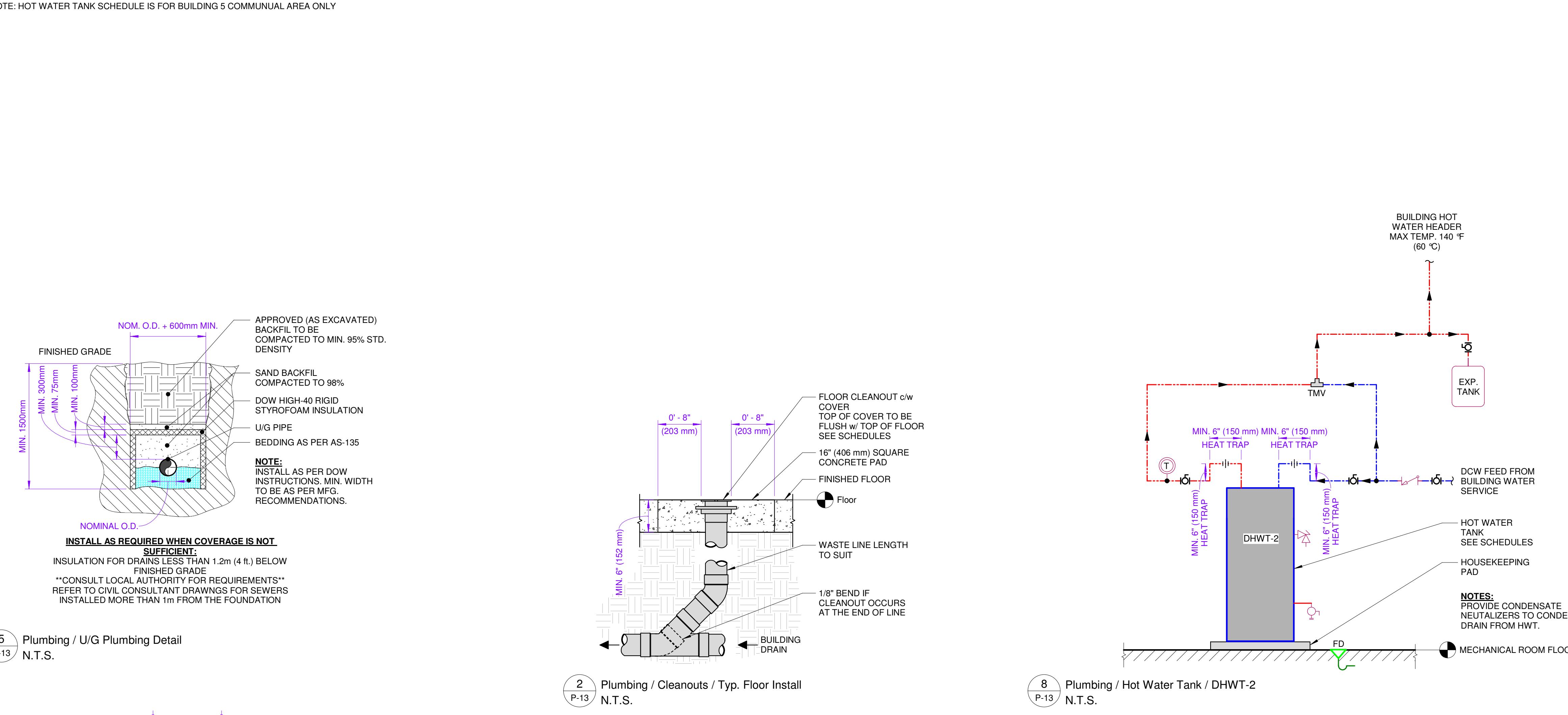
NSET Project #: 04322

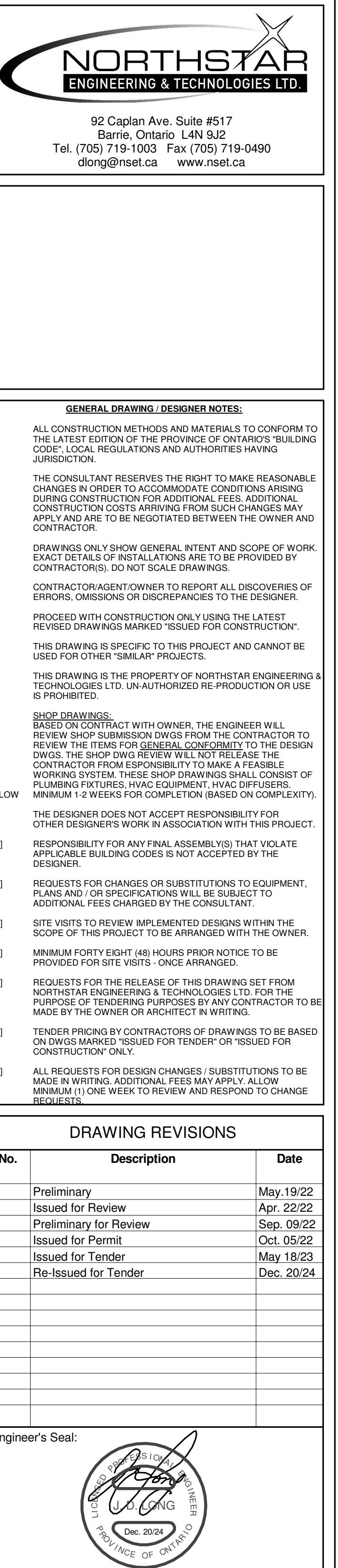
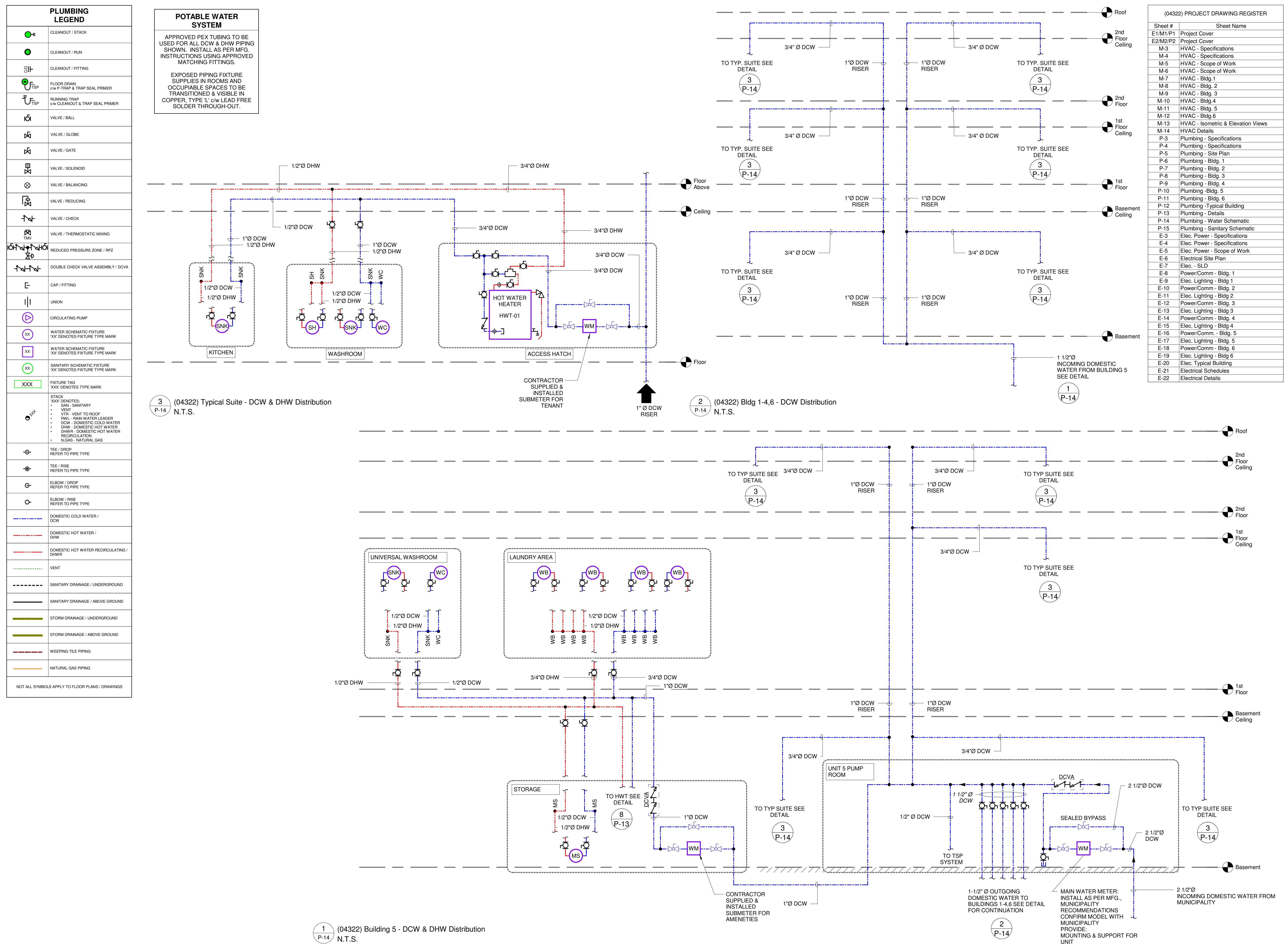
Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

Drawing #: P-13

Project Date: Jan. 14/22 Arch-D (24" x 36")

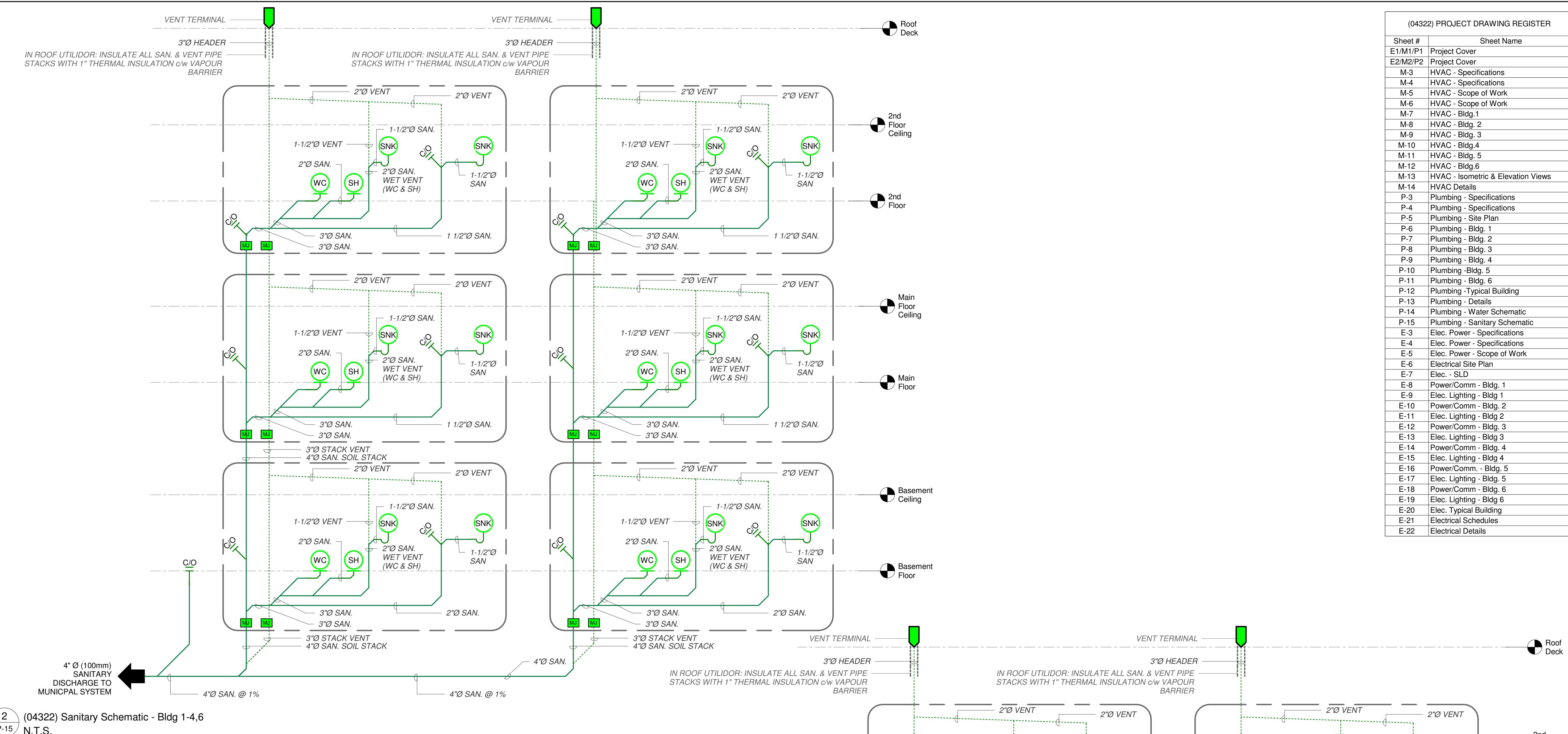




lient:	WW Inc.
ddress:	Minden, ON
roject Name:	Gull River Affordable Housing
wg. Name:	Plumbing - Water Schematic
SET Project #:	04322
rrawn by: Northstar Eng.	Checked by: J.D.L.
cale: 12" = 1'-0"	Revision #: 6.0
rawing #:	P-14
roject Date: Jan. 14/22	Arch-D (24" x 36")

PLUMBING LEGEND	
	CLEANOUT / STACK
	CLEANOUT / RUN
	CLEANOUT / FITTING
 TSP	FLOOR DRAIN c/w P-TRAP & TRAP SEAL PRIMER
 TSP	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER
	VALVE / BALL
	VALVE / GLOBE
	VALVE / GATE
	VALVE / SOLENOID
	VALVE / BALANCING
	VALVE / REDUCING
	VALVE / CHECK
 TMV	VALVE / THERMOSTATIC MIXING
 RPZ	REDUCED PRESSURE ZONE / RPZ
	DOUBLE CHECK VALVE ASSEMBLY / DCVA
	CAP / FITTING
	UNION
	CIRCULATING PUMP
 XX	WATER SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK
 XX	WATER SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK
 XX	SANITARY SCHEMATIC FIXTURE 'XX' DENOTES FIXTURE TYPE MARK
 XXX	FIXTURE TAG 'XXX' DENOTES TYPE MARK
 XXX	STACK 'XXX' DENOTES: <ul style="list-style-type: none"> • SAN - SANITARY • VENT • VTR - VENT TO ROOF • RWL - RAIN WATER LEADER • DCW - DOMESTIC COLD WATER • DHW - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER RECIRCULATION • N,GAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / DCW
	DOMESTIC HOT WATER / DHW
	DOMESTIC HOT WATER RECIRCULATING / DHWR
	VENT
	SANITARY DRAINAGE / UNDERGROUND
	SANITARY DRAINAGE / ABOVE GROUND
	STORM DRAINAGE / UNDERGROUND
	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING

NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS



(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg.1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg.4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg.6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
P-10	Plumbing -Bldg. 5
P-11	Plumbing - Bldg. 6
P-12	Plumbing -Typical Building
P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg 4
E-16	Power/Comm. - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

92 Caplan Ave. Suite #517
Barrie, Ontario L4N 9J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

- GENERAL DRAWING / DESIGNER NOTES:**
- ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S "BUILDING CODE", LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
- THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
- DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. EXACT DETAILS OF INSTALLATIONS ARE TO BE PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
- CONTRACTOR/AGENT/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
- PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".
- THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.
- THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.
- SHOP DRAWINGS:**
- BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW WILL NOT RELEASE THE CONTRACTOR FROM ESPOSIBILITY TO MAKE A FEASIBLE WORKING SYSTEM. THESE SHOP DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS. MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).
- THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
- RESPONSIBILITY FOR ANY FINAL ASSEMBLY(S) THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
- REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
- SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
- MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
- REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURPOSE OF TENDER PURPOSES BY ANY CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
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A circular professional engineer's seal. The outer ring contains the text "PROFESSIONAL ENGINEER" at the top and "LICENCED TO PRACTICE IN ONTARIO" at the bottom. In the center, the name "J.D. LONG" is written in a stylized font. Below the name, a rectangular box contains the date "Dec. 20/24".

ent:
WW Inc.
dress:
Minden, ON

Project Name:	Gull River Affordable Housing
Mgr. Name:	

Lumber - Sanitary Schematic

ET Project #: **04322**

Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: 12" = 1'-0"	Revision #: 6.0
Drawing #:	

P-15

Project Date: Jan. 14/22 Arch-D (24" x 36")

