

DIVISION 23 - (HVAC)

SEE HVAC PLANS FOR FULL SCHEDULES

(COVER-M) Mechanical Equipment Schedule Summary - (New)														
Level	Mark	Type Mark	Qty.	Description	Manufacturer	Model #	Voltage	Phase	Energy Source	Heating Capacity	Cooling Capacity	Air Flow	Supplied By	Controls Scheme / Comments
FFE Ground Floor	<varies>	BBH-1	3	BASEBOARD HEATER / 750W / 208V 1P	OUELLET	OFM0758BL	208 V	1	ELEC.	7,680 Btu/h	0.0 ton	DIV. 23		
<varies>	DH-1	4	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	120 V	1	ELEC.	13,650 Btu/h	0.0 ton	DIV. 23			
FFE Lower Level	FC-1-05	DH-2	1	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	208 V	1	ELEC.	6,820 Btu/h	0.0 ton	DIV. 23		
<varies>	DH-3	2	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	208 V	1	ELEC.	20,470 Btu/h	0.0 ton	DIV. 23			
FFE Ground Floor	FFH-21	DH-4	1	DUCT HEATER / 30kW / 16"x16" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-30LS	208 V	3	ELEC.	102,360 Btu/h	0.0 ton	DIV. 23		
FFE Lower Level	FC-1-25	DHWT-1	1	HOT WATER TANK / ELECTRIC / 66 US GAL. (250L) TOP ENTRY / DUAL ELEMENT / 24 GPH FHR @100F	A.O. SMITH	DEN-66	208 V	3	ELEC.	0 Btu/h	0.0 ton	DIV. 22		
<varies>	DHWT-2	3	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	208 V	1	ELEC.	0 Btu/h	0.0 ton	DIV. 23			
FFE Lower Level	FC-1-02	FC-1	1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09 LUXSAH	208 V	1		11,300 Btu/h	0.8 ton	280 CFM	DIV. 23	
1 - Finished Ceiling	FC-1-01	FC-2	1	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	208 V	1		17,100 Btu/h	1.3 ton	425 CFM	DIV. 23	
2 - Finished Ceiling	FC-1-09	FC-3	1	VRF / 1.6 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-19H3FCH	208 V	1		21,500 Btu/h	1.6 ton	530 CFM	DIV. 23	
FFE Lower Level	<varies>	HP-1	2	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 0.75 TON / 208V 1Ø / WINDGUARD / c/w WALL BRKT. (STRUCTURAL BY OTHERS)	HISENSE	AS-09UW3SVEDL-O	208 V	1	ELEC.	19,000 Btu/h	1.5 ton	2,000 CFM	DIV. 23	
FFE Lower Level	<varies>	HP-2	4	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 1 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AVW-28H3FH-MCO	208 V	1	ELEC.	108,000 Btu/h	9.0 ton	3,000 CFM	DIV. 23	
FFE Lower Level	FFH-22	HP-3	1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 1 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AS-12UW3SXEDL-O	208 V	1	ELEC.	13,000 Btu/h	1.0 ton	2,000 CFM	DIV. 23	
<varies>	HRV-1	4	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	120 V	1		0 Btu/h	0.0 ton	100 CFM	DIV. 23		
<varies>	KH-1	3	KITCHEN EXHAUST HOOD / DOMESTIC / UNDER CABINET / 30" / S.S. / c/w UNDER LIGHTS / DUCTLESS RECIRCULATING / c/w CHARCOAL FILTER	BROAN	BCS330SSC	120 V	1		0 Btu/h	0.0 ton	300 CFM	DIV. 23		
FFE Ground Floor	FFH-19	PS-1	1	ROOM STATIC PRESSURE SENSOR / WALL MOUNT / 0-10VDC	EH PRICE	ROOM STATIC	24 V			0 Btu/h	0.0 ton	DIV. 23		
										340,890 Btu/h	15.2 ton			

(COVER-M) Thermostat Schedule - (New)

Level	Mark	Type Mark	Qty.	Description	Manufacturer	Rm. #	Supplied By
FFE Lower Level	FC-1-21	TS-1	1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE		DIV. 23
FFE Ground Floor	<varies>	TS-1	2	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	<varies>	DIV. 23
2 - Floor	FFH-14	TS-1	1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	224	DIV. 23
Grand total			4				



DIVISION 22 - (PLUMBING)

SEE PLUMBING PLANS FOR FULL SCHEDULES

(COVER-P) Plumbing Fixture Schedule Summary - (New)												
Level	Type Mark	Qty.	Description	Manufacturer	Barrier-Free (Blank = N/A)	Supplied By						
FFE Lower Level	BF-1	1	BACKFLOW PREVENTER / "DCVA" TYPE / 2" CONN. / HORIZ. MNT.	WATTS		Div. 22						
FFE Lower Level	BF-2	1	BACKFLOW PREVENTER / "DCVA" TYPE / 1" CONN. / HORIZ. MNT.	WATTS		Div. 22						
FFE Ground Floor	CO-3F	1	3" Ø C/O / FINISHED	SEE PROJECT SPEC.		Div. 22						
FFE Ground Floor	CO-4F	2	4" Ø C/O / FINISHED	SEE PROJECT SPEC.		Div. 22						
FFE Ground Floor	FD-2F	1	FLOOR DRAIN / 2" / FINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.		Div. 22						
<varies>	FD-3F	3	FLOOR DRAIN / 3" / FINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.		Div. 22						
FFE Lower Level	FD-3U	1	FLOOR DRAIN / 3" / UNFINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.		Div. 22						
FFE Ground Floor	HB-1	2	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM / c/w VACUUM BREAKER / KEY LOCK	WATTS		Div. 22						
FFE Lower Level	MS-1	1	SINK / JANITOR / FLOOR MNT. / PRECAST TERRAZZO / 24"x24"x12" / 3" DRAIN	FIAT		Div. 22						
<varies>	SH-1	2	SHOWER/5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	Yes	Div. 22						
2 - Floor	SH-2	1	SHOWER / c/w HEAD & CONTROLS	LONGEVITY	No	Div. 22						
<varies>	SNK-1	3	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED		Div. 22						
<varies>	SNK-2	3	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	Yes	Div. 22						
FFE Ground Floor	SNK-3	1	LAVATORY / B.F. / WALL MNT. @34" TO RIM / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	Yes	Div. 22						
FFE Ground Floor	WB-1	4	WALL BOX / LAUNDRY / LEAD FREE / 1/2" SUPPLIES / c/w WATER HAMMER ARRESTOR	OATEY		Div. 22						
FFE Ground Floor	WC-1	1	TOILET / B.F. / PUBLIC / BOWL. ELONG., 16 1/2 AFF. / FLOOR MNT. / LINED TANK / OPEN SEAT no COVER	AMERICAN STD.	Yes	Div. 22						
<varies>	WC-2	3	TOILET / PRIVATE / BOWL. ELONG., 15" AFF. / FLOOR MNT. / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	Yes	Div. 22						
FFE Lower Level	WM-1	1	WATER METER	BY AHJ	Yes	BY AHJ						
<varies>	WM-2	3	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	Yes	Div. 22						
FFE Lower Level	WM-3	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	Yes	Div. 22						
Grand total		36										

NORTHSTAR PROJECT

HVAC, PLUMBING,
ELECTRICAL
DESIGN DRAWINGS

DIVISION 26 - (ELECTRICAL)

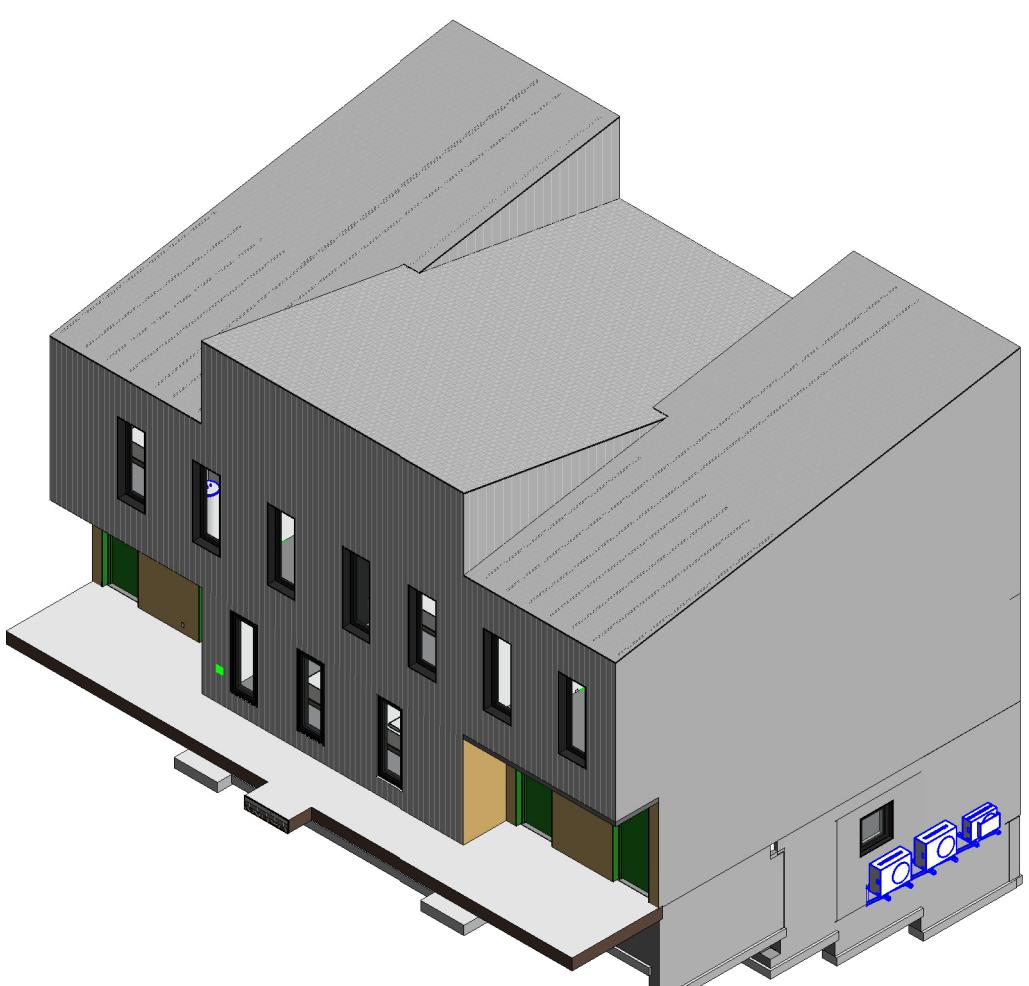
SEE ELECTRICAL PLANS FOR FULL SCHEDULES

(COVER-E) Lighting Fixture Schedule - (New)												
Level	Type Mark	Qty.	Description	Manufacturer	Voltage	Supplied By	Comments (Controls)					
1 - Finished Ceiling		1	OCCUPANCY SENSOR w/ TIMER / CEILING MOUNTED	WATTSTOPPER	120 V	DIV. 26						
<varies>	A1	4	LUMINAIRE / INDOOR / LINEAR / SURFACE / 24" LENGTH / LED DIRECT	LITHONIA LIGHTING	120 V	DIV. 26						
<varies>	A2	6	LUMINAIRE / INDOOR / LINEAR / SURFACE / 48" LENGTH / LED DIRECT	LITHONIA LIGHTING	120 V	DIV. 26						
<varies>	B	4	LUMINAIRE / INDOOR / VAN									

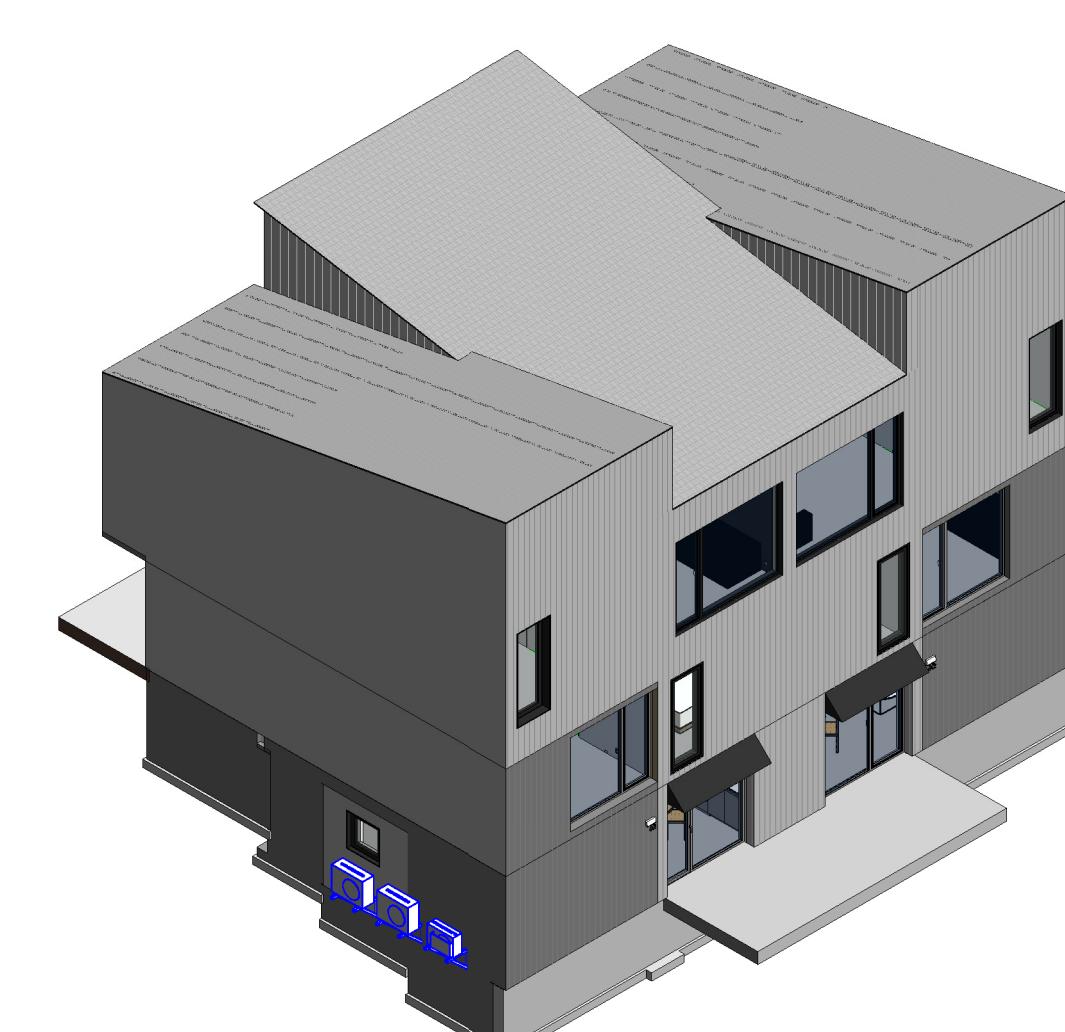


NORTHSTAR PROJECT

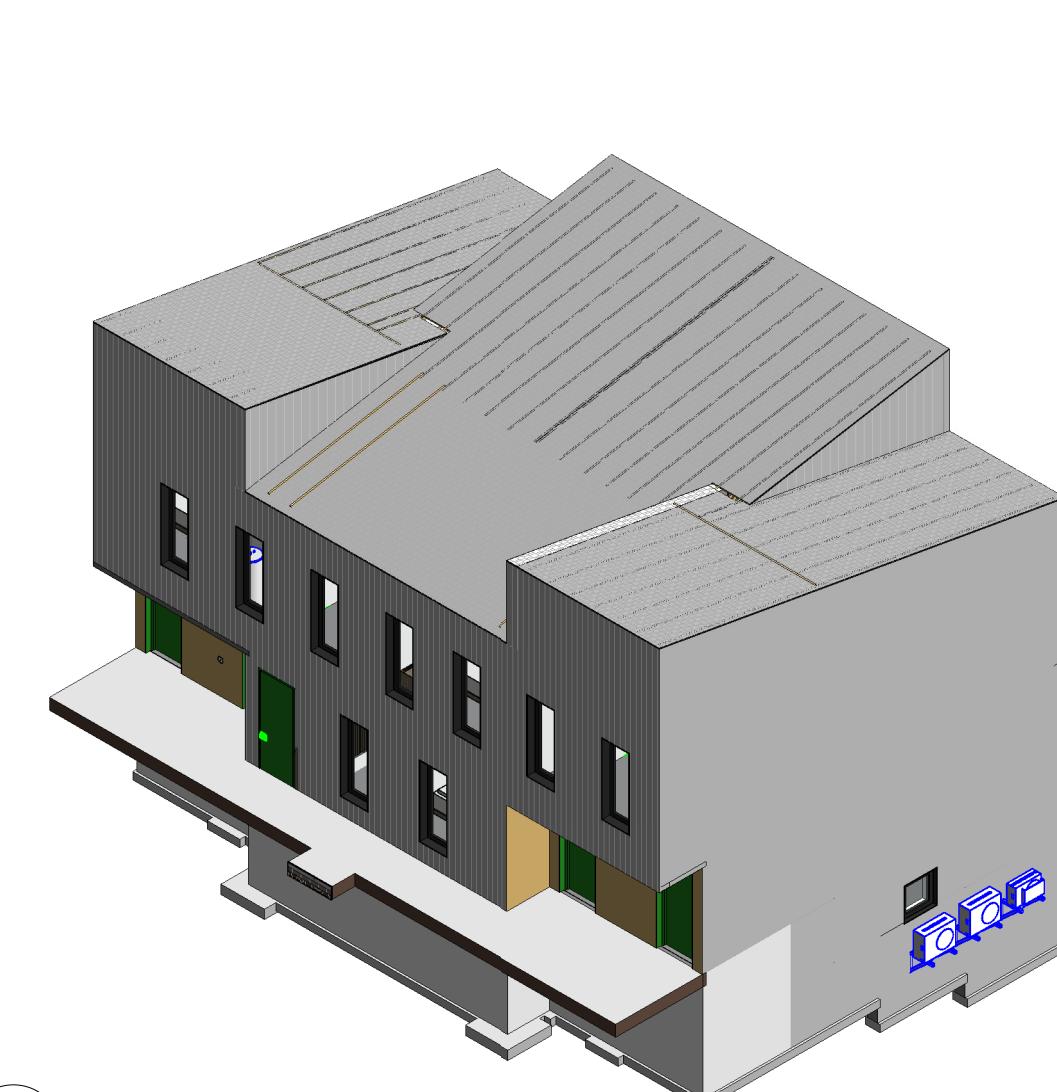
HVAC, PLUMBING,
ELECTRICAL & FIRE
PROTECTION
DESIGN DRAWINGS



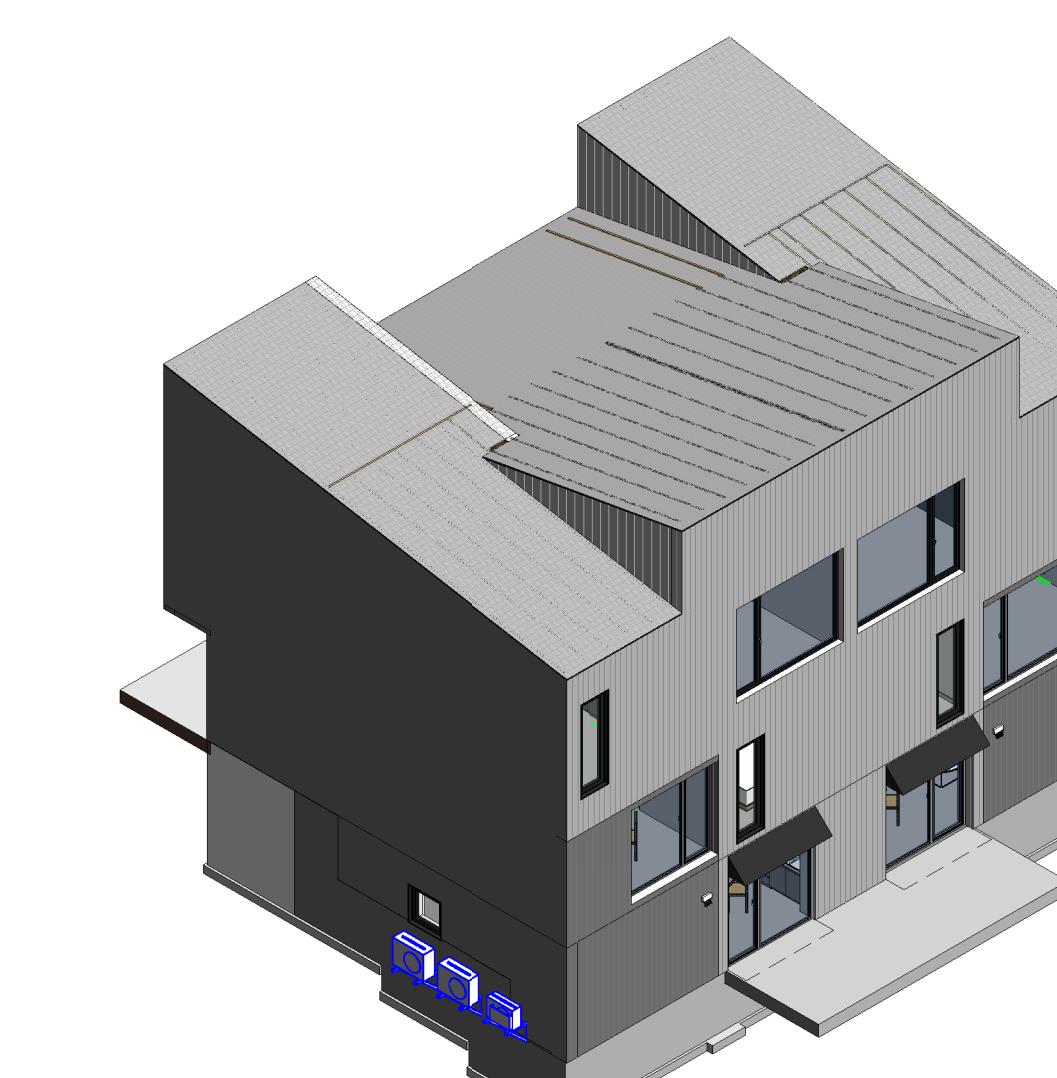
3 (04322) Bldg. Type A Front View
E2/M2/P2 N.T.S.



4 (04322) Bldg. Type A Rear View
E2/M2/P2 N.T.S.



5 (04322) Bldg. Type B Front View
E2/M2/P2 N.T.S.



6 (04322) Bldg. Type B Rear View
E2/M2/P2 N.T.S.

(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	Elec. Lighting - 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			
Client:	WW Inc.		
Address:	Minden, ON		
Project Name:	Gull River Affordable Housing		
Dwg. Name:	Project Cover		
NSET Project #:	04322		
Drawn by:	Northstar Eng.	Checked by:	Checker
Scale:	AS NOTED	Revision	5.0
Drawing #:	E2/M2/P2		
Project Date:	Jan. 14/22		
Arch-D	(24 x 36)		

26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

26 05 00 - 1.0 ELECTRICAL INSTALLATION

- SUPPLY & INSTALL ALL ITEMS, ARTICLES, MATERIAL OPERATIONS INCLUDING ALL LABOUR, EQUIPMENT, MATERIALS & TOOLS NECESSARY TO COMPLETE ALL SYSTEMS SHOWN ON THE DRAWINGS RENDERING A COMPLETE INSTALLATION.
- THE INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE CANADIAN ELECTRICAL CODE, THE ELECTRICAL SAFETY CODE & ALL RULES, BY-LAWS & AUTHORITIES HAVING JURISDICTION.
- THE SCOPE OF WORK IS AS DESCRIBED HEREIN & SHOWN ON THE DRAWINGS, AS WELL AS WORK ASSOCIATED ALL CURRENT, APPLICABLE STANDARDS & CODES AS WELL AS ALL BY-LAWS

26 05 00 - 2.0 DRAWINGS & SPECIFICATIONS

- DRAWINGS ARE DIAGRAMMATIC & SHOW APPROXIMATE LOCATIONS OF EQUIPMENT & 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.
- READ THE ELECTRICAL DRAWINGS IN CONJUNCTION WITH ALL OTHER STRUCTURAL, ARCHITECTURAL, SITE CIVIL, LANDSCAPE, SPRINKLER, MECHANICAL, 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.
- THE DRAWINGS ARE INTENDED TO CONVEY THE SCOPE OF WORK & DO NOT SHOW ARCHITECTURAL & STRUCTURAL DETAILS. ELECTRICAL CONTRACTOR SHALL PROVIDE, AT ELECTRICAL CONTRACTOR'S COST, ALL OFFSETS, FITTINGS, TRANSFORMATIONS, & SIMILAR PRODUCTS REQUIRED AS A RESULT OF OBSTRUCTIONS & OTHER ARCHITECTURAL & STRUCTURAL DETAILS BUT NOT SHOWN ON THE DRAWINGS.
- 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.
- SHOULD ANY DISCREPANCY APPEAR BETWEEN THE DRAWINGS & SPECIFICATIONS WHICH LEAVES THE ELECTRICAL CONTRACTOR IN DOUBT AS TO THE MEANING OF THE DRAWINGS & 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.

26 05 00 - 3.0 PERMITS, FEES, & CERTIFICATES

- CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED, ARRANGE FOR INSPECTION OF THE WORK BY INSPECTION AUTHORITY & PAY ALL FEES PROVIDED FINAL CERTIFICATE TO THE OWNER, WORK SHALL NOT COMMENCE ON THE INSTALLATION UNTIL ESA (ONTARIO ELECTRICAL SAFETY AUTHORITY) PLANS REVIEW AS WELL AS THE LOCAL UTILITY'S REVIEW COMMENTS HAVE BEEN RECEIVED & REVIEWED BY THE ENGINEER AS WELL AS THIS CONTRACTOR.

26 05 00 - 4.0 EXAMINATION OF THE SITE

- PRIOR TO SUBMITTING THEIR TENDER, THE ELECTRICAL 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.

26 05 00 - 5.0 STANDARD OF MATERIAL & WORKMANSHIP

- ALL MATERIALS & EQUIPMENT SHALL BE NEW, CSA APPROVED, BEAR CSA STAMP & BE OF THE BEST COMMERCIAL QUALITY OBTAINABLE FOR THE PURPOSE.
- 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 DIRECT ON SITE SUPERVISION OF AN EXPERIENCED JOURNEYMAN TRADESMAN.
- WORKMANSHIP SHALL BE OF THE HIGHEST STANDARDS THROUGHOUT & SHALL BE MINIMUM OF THE CURRENT TRADE PRACTICES FOR ELECTRICAL INSTALLATIONS IN THIS BUILDING.
- UNLESS OTHERWISE SPECIFIED ALL EQUIPMENT IS 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.
- ENSURE THAT PROPER ACCESS & SERVICE CLEARANCES ARE MAINTAINED AROUND EQUIPMENT & WHERE APPLICABLE, ACCESS SPACE FOR FUTURE EQUIPMENT REMOVAL OR REPLACEMENT IS NOT IMPEDED. REMOVE & REPLACE ANY EQUIPMENT WHICH DOES NOT MEET THIS REQUIREMENT.
- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ALL WORK COMPLETED CONTRARY TO THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. ELECTRICAL 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.
- PROVIDE A CERTIFICATE OF WORKMANSHIP & MATERIAL FOR ONE YEAR FROM DATE OF ACCEPTANCE.

26 05 00 - 6.0 COORDINATION OF THE WORK

- REVIEW ALL THE CONTRACT DOCUMENTS & COORDINATE THE WORK WITH THE WORK OF ALL OTHER TRADES.
- 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.
- COORDINATE THE LOCATIONS OF THE ELECTRICAL DEVICES WITH THE MILLWORK DRAWINGS. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL DRAWINGS & SECTIONS FOR LOCATIONS OF MILLWORK PRIOR TO ROUGH-IN. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES. CONFIRM FINAL LOCATION OF ALL DEVICES WITH THE ARCHITECT & OWNER IN WRITING.
- COORDINATE SIZE OF BREAKERS & FEEDERS WITH ALL MECHANICAL EQUIPMENT , FEEDERS ON DRAWINGS ARE BASED ON DESIGN LOADS PROVIDED IN MECHANICAL DRAWINGS. CONTRACTOR SHALL CONFIRM THE FEEDER SIZES & BREAKERS ON SHEET DRAWINGS PRIOR TO ROUGH-IN & PURCHASE OF MATERIAL/EQUIPMENT TO POWER UP MECHANICAL UNITS. DISCREPANCIES ARE TO BE NOTED TO THE ENGINEER.

26 05 00 - 7.0 PENETRATIONS

- 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.
- THIS DIVISION SHALL PREPARE SLEEVING DRAWINGS INDICATING THE SIZE & LOCATIONS OF OPENINGS REQUIRED IN CONCRETE FLOOR SLABS, ROOF SLABS/DECKS & WALLS FOR CONDUIT, BUS DUCTS & EQUIPMENT FOR REVIEW BY THE STRUCTURAL ENGINEER & ARCHITECT.
- 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.
- FAILURE TO COMPLY WITH THESE REQUIREMENTS ON THE PART OF THE 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.

26 05 00 - 13.0 SUBSTITUTIONS

- NO CUTTING SHALL BE DONE WITHOUT PERMISSION. ALL SUCH WORK SHALL BE DONE BY TRADESMEN SKILLED IN & CERTIFIED FOR THIS PARTICULAR TRADE.
- ALL PENETRATIONS TO BE APPROVED BY THE ARCHITECT OR LANDLORD IN WRITING.
- ANY EXTERIOR PENETRATION TO BE APPROPRIATELY FLASHED & WEATHER PROOFED WITH APPROVED SEALING METHODS.

26 05 00 - 8.0 ACCESS DOORS

- SUPPLY ACCESS DOORS TO GIVE ACCESS TO ALL ELECTRICAL WORK WHICH MAY NEED MAINTENANCE OR REPAIR BUT WHICH IS CONCEALED IN INACCESSIBLE CONSTRUCTION, EXCEPT AS OTHERWISE SPECIFIED HEREIN OR ON THE DRAWINGS.
- ACCESS DOORS IN FIRE RATED CONSTRUCTION ARE TO BE ULC LISTED & LABELED AND OF A RATING TO MAINTAIN THE FIRE SEPARATION INTEGRITY.

26 05 00 - 9.0 FIRE STOPPING

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

26 05 00 - 10.0 MOUNTING HEIGHTS

- MOUNTING HEIGHT OF EQUIPMENT IS FROM FINISHED FLOOR TO CENTERLINE OF EQUIPMENT UNLESS SPECIFIED OR INDICATED OTHERWISE.
- IF MOUNTING HEIGHT OF EQUIPMENT IS NOT SPECIFIED OR INDICATED, VERIFY BEFORE PROCEEDING WITH INSTALLATION.
- FOR BARRIER-FREE MOUNTING HEIGHTS FOR DEVICES, CONFORM TO REQUIREMENTS OF THE GOVERNING CODE OR REGULATION.
- INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE.

- LOCAL SWITCHES: 1200 MM (48 IN.).
- WALL RECEPTACLES - GENERAL: 450 MM (18 IN.).
- WALL RECEPTACLES - ABOVE TOP OF CONTINUOUS BASEBOARD HEATER: 200 MM (8 IN.).
- WALL RECEPTACLES - ABOVE TOP OF COUNTER OR COUNTER SPLASH BACKS: 175 MM (7 IN.).
- WALL RECEPTACLES - IN MECHANICAL ROOMS: 1200 MM (48 IN.).
- PANELBOARDS: 2000 MM (80 IN.) TO TOP OF PANEL.
- TELEPHONE AND INTERPHONE OUTLETS: 450 MM (18 IN.).
- WALL MOUNTED TELEPHONE AND INTERPHONE OUTLETS: 1200 MM (48 IN.).
- FIRE ALARM STATIONS: 1150 MM TO CENTRE.
- WALL MOUNTED FIRE ALARM HORNS: 2300 MM (90 IN.).
- TELEVISION OUTLETS: 450 MM (18 IN.).
- WALL MOUNTED SPEAKERS: 2100 MM (83 IN.).
- CLOCK: 2100 MM (83 IN.).
- BARRIER FREE PUSHBUTTONS: 1100 MM (43 IN.).
- WALL MOUNTED EXIT SIGNS - FOR 2400 MM (95 IN.) TO 2500 MM (100 IN.) CEILING AREAS: 2100 MM (83 IN.).
- WALL MOUNTED EXIT SIGNS - FOR ALL CEILINGS GREATER THAN 2500 MM (100 IN.) CEILING AREAS: 2400 MM (95 IN.).
- WALL MOUNTED BATTERY PACKS & EMERGENCY HEADS - FOR 2400 MM (95 IN.) TO 2500 MM (100 IN.) CEILING AREAS: 2100 MM (83 IN.).
- WALL MOUNTED BATTERY PACKS & EMERGENCY HEADS - FOR ALL CEILINGS GREATER THAN 2500 MM (100 IN.) CEILING AREAS: 2400 MM (95 IN.).
- WALL MOUNTED OCCUPANCY SENSORS: 1200 MM (48 IN.).
- WALL MOUNTED VISIBLE SIGNAL DEVICES, ENTIRE LENGTH SHALL BE NO LESS THAN 2000 MM (79 IN.) & NO MORE THAN 2400 MM (95 IN.).
- TOP OF REMOTE ANNUNCIATOR & PASSIVE GRAPHIC PANELS SHALL BE NO MORE THAN 1800MM (72 IN.) ABOVE FINISHED FLOOR.

26 05 00 - 10.0 CONSTRUCTION SCHEDULE

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

26 05 00 - 11.0 CHANGES OR REVISIONS & EXTRAS

- NO ADDITIONAL MONEY OVER THE CONTRACT PRICE SHALL BE PAID UNLESS AN APPROVED CHANGE ORDER IS ISSUED BY THE ENGINEER.
- CLAIMS FOR EXTRAS SHALL BE SUBMITTED WITH A COMPLETE BREAKDOWN OF MATERIAL, LABOUR, HOURLY RATES, ETC.
- THERE SHALL BE NO EXTRA CLAIM FOR RELOCATION OF ANY EQUIPMENT WITHIN 10 FEET FROM ORIGINAL LOCATION.
- WHENEVER THE CONSULTANT PROPOSES IN WRITING TO MAKE A CHANGE OR REVISION TO THE DESIGN ARRANGEMENT, QUANTITY OR TYPE, AND WHERE FREQUENT CHANGES ARE REQUIRED BY THE CONTRACT DOCUMENTS, PREPARE AND SUBMIT TO THE CONSULTANT FOR APPROVAL, A QUOTATION BEING THE ELECTRICAL CONTRACTOR'S PROPOSED COST FOR EXECUTING THE CHANGE OR REVISION.
- RELOCATING ANY MECHANICAL EQUIPMENT LESS THAN 10 FEET IS NOT TO BE CONSIDERED AN EXTRA IN THE PROJECT.
- CONTRACTOR TO PROVIDE PRICING ON ALL NORTHSTAR ISSUED OFFICIAL CHANGE ORDERS IN THE FORMAT REQUESTED BASED ON THE SPECIFIC ITEM NUMBERS LISTED ON THE NORTHSTAR CHANGE REQUEST DOCUMENT. ONE PRICE FOR EACH ITEM LISTED, PRICING TO INCLUDE ALL LABOUR AND MATERIALS REQUIRED FOR THE SCOPE REQUESTED. NORTHSTAR WILL NOT NECESSARILY APPROVE THE CHANGES BASED ON THE QUOTATION. PRICE CODES SUCH AS 'ALL PRICE' OR SIMILAR FORMATS WILL NOT BE REVIEWED BASED ON FAIR MARKET CONDITIONS. CONTRACTOR TO PROVIDE CHANGE ORDER PRICING IN A TIMELY MANNER FOR NORTHSTAR'S REVIEW. NO WORK SHALL PROCEED UNTIL OFFICIAL WRITTEN ACCEPTANCE IS ISSUED BY NORTHSTAR.

26 05 00 - 12.0 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.
- THESE SHOP DRAWINGS SHALL INCLUDE BUT NOT LIMITED TO DISTRIBUTION, LUMINAIRES, EXIT SIGNS, OCCUPANCY SENSORS, BATTERY PACKS, FIRE ALARM EQUIPMENT, TELECOMMUNICATIONS EQUIPMENT & CABLING. ALLOW MINIMUM 5 BUSINESS DAYS TO RETURN REVIEWED SHOP DRAWINGS (BASED ON COMPLEXITY).
- ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CERTIFYING DIMENSIONS, THE ENGINEER REVIEW OF SHOP DRAWINGS SHALL NOT RELEASE THE ELECTRICAL 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.
- CONDUCTORS TO & INCLUDING NO. 10 AWG ARE TO BE SOLID. CONDUCTORS LARGER THAN NO. 10 AWG ARE TO BE STRANDED. ALL CONDUCTORS ARE TO BE CONSTRUCTED FROM 98% CONDUCTIVE COPPER & ARE TO BE APPROVED FOR 600 VOLTS. CONDUCTORS ARE TO BE COATED COATED, FACTORY IDENTIFIED ON THE CONDUCTOR WITH THE MANUFACTURER'S NAME, CONDUCTOR SIZE & METAL, VOLTAGE RATING, CSA TYPE & DESIGNATION. CONDUCTORS ARE TO BE AS FOLLOWS UNLESS INDICATED OTHERWISE ON DRAWINGS:

4.

- FW-90, RW-U90 (XLPE), IN ACCORDANCE WITH CAN/CSA C22.2 NO.38.
- TM-75, TWU IN ACCORDANCE WITH CSA C22.2 NO.75.
- M-1 ULC 2 HOUR FIRE RATED CONDUCTOR IN ACCORDANCE WITH CSA C22.2 NO. 124.
- RHW CABLE IN ACCORDANCE WITH REQUIREMENTS OF CSA C22.2 NO. 38.
- G CABLE IN ACCORDANCE WITH REQUIREMENTS OF CSA C22.2 NO. 203.
- BX (ARMoured CABLE) IS ONLY PERMITTED FOR LIGHT FIXTURE DROPS IN ACoustIC CEILINGS (MAX LENGTH 5') & MAY BE USED IN HOLLOW PARTITIONS FOR SWITCH OR SPANNED CEILING FOR FIXTURE DROPS ONLY. ANY DROPS SHALL NOT EXCEED 10' (3M). AC-90 (BX ARMoured CABLE) IS NOT TO BE INSTALLED IN OPEN CEILINGS OR ANY OTHER EXPOSED APPLICATION. ALL CABLES ARE TO BE PROPERLY FASTENED TO THE BUILDING STRUCTURE IN A NEAT & PROFESSIONAL MANNER. EXCESSIVE USE OF BX CABLE IS NOT PERMITTED & RESULT THE ELECTRICAL CONTRACTOR TO REPLACE ALL NEW WIRING WITH PROPER WIRING & CONDUIT AT CONTRACTORS EXPENSE.

26 05 36 CABLE TRAYS

- CABLE TRAYS SHALL BE IN ACCORDANCE WITH CSA-C22.1 CANADIAN ELECTRICAL CODE & ANSI/NFPA 70 - NATIONAL ELECTRICAL CODE REQUIREMENTS.

26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

- IDENTIFY ALL EQUIPMENT WITH ENGRAVED LAMACOID NAMEPLATES.
- ALL PANELS WITH CIRCUITS ADDED OR REMOVED SHALL HAVE NEW COMPUTER GENERATED PANEL SCHEDULES PLACE IN THEM. SCHEDULE SHALL INDICATE PANEL DESIGNATION, WHERE PANEL IS FED FROM, VOLTAGE, PHASE, BRANCH CIRCUIT NUMBERS, BREAKER AMPERAGE & CIRCUIT DESCRIPTION.

26 22 00 TRANSFORMERS

- TRANSFORMERS SHALL BE COMPLETE WITH COPPER WINDINGS & MEET THE REQUIREMENTS OF CSA 802.2 - CURRENT EDITION FOR ENERGY EFFICIENCY.
- MOUNT DRY TYPE TRANSFORMER UP TO 75kVA ON WALL WITH ANGLE IRON FRAME SECURELY SUPPORTED FROM STRUCTURE & VIBRO-AcouSTIC ISOLATORS.
- MOUNT DRY TYPE TRANSFORMER 75kVA & ABOVE ON 4" CONCRETE PAD C/W VIBRO-AcouSTIC ISOLATORS.

26 24 16 PANELBOARDS

- PANELBOARDS IN ACCORDANCE WITH REQUIREMENTS OF CAN/CSA-C22.2 NO. 29.
- PANELBOARDS TO HAVE THE FOLLOWING MINIMUM RATINGS FOR INTERRUPTING CAPACITY OR AS INDICATED ON THE DRAWINGS OR PANEL SCHEDULES.
- 120/208V PANELBOARDS - 10KA
- 347/600V PANELBOARDS - 22KA
- MAIN BREAKER SHALL OCCUPY A SEPARATE COMPARTMENT FROM BRANCH BREAKER PANELS WITH MAIN BREAKERS IN BRANCH BREAKER COMPARTMENT WILL NOT BE ACCEPTED.
- MAINS NUMBER OF CIRCUITS, & NUMBER & SIZE OF BRANCH CIRCUIT BREAKERS AS INDICATED.
- COPPER BUS WITH FULL SIZE COPPER MAINS & NEUTRAL.

26 05 19 - 3.0 CONDUCTOR COLOUR CODING

- UNLESS OTHERWISE SPECIFIED, COLOUR CODE CONDUCTORS TO IDENTIFY PHASES, NEUTRAL & GROUND BY MEANS OF SELF-LAMINATING COLOURED VINYL TAPE, COLOURED CONDUCTOR INSULATION, OR PROPERLY COLOURED PLASTIC DISCS. COLOURS ARE TO BE AS FOLLOWS:

- PHASE A - RED
- PHASE B - BLACK
- PHASE C - BLUE
- NEUTRAL - WHITE
- CONTROL - ORANGE

26 05 19 - 4.0 INSTALLATION OF CONDUCTOR

- AFTER SUCCESSFUL START-UP & PRIOR TO SUBSTANTIAL PERFORMANCE, COMMISSION THE ELECTRICAL WORK USING APPROVED COMMISSIONING SHEETS. SUBMIT FINAL COMMISSIONING DATA SHEETS. INCLUDE FOR EQUIPMENT MANUFACTURER'S REPRESENTATION AT THE SITE TO ASSIST IN THE COMMISSIONING PROCESS.
- PROVIDE PULL BOXES FOR CONDUIT RUNS GREATER THAN 35 METERS.

26 05 33 RACEWAY AND BOXES

- RIGID GALVANIZED STEEL TO CSA C22.2 NO. 45, SIZE AS INDICATED.
- ELECTRICAL METALIC TUBING (EMT) WITH COUPLINGS & EXPANDED ENDS AS REQUIRED TO CSA C22.2 NO. 83, SIZE AS INDICATED.

26 05 33.13 CONDUIT

- RIGID PVC CONDUIT FOR EXPOSED, ABOVE GROUND WORK TO CSA C22.2 NO. 211.1, SIZE AS INDICATED. FLEXIBLE PVC IS NOT PERMITTED.
- FLEXIBLE GALVANIZED STEEL LIQUID-TIGHT CONDUIT TO CSA C22.2 NO. 56.

26 05 33.16 JUNCTION & PULL BOXES

- ALL EQUIPMENT MANUALS & SPECIFICATION SHEETS REQUIRED FOR PROPER MAINTAINING & SERVICING OF THE EQUIPMENT
- 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.

26 05 19 - 5.0 VOLTAGE DROP

- VOLTAGE DROP FOR WIRING SHALL MEET REQUIREMENTS AS Laid Out IN THE CANADIAN ELECTRICAL CODE, GENERALLY MAXIMUM BRANCH CIRCUIT CONDUCTOR DISTANCES (120VAC) TO MAINTAIN MAX. 3% VOLTAGE DROP ARE AS FOLLOWS:

- 15A-1P BREAKER - #12AWG WIRING - 80 FEET (24 METRES)
- 15A-1P BREAKER - #10AWG WIRING - 125 FEET (37 METRES)
- 20A-1P BREAKER - #12AWG WIRING

26 05 33.16 OUTLET BOXES

- UNLESS OTHERWISE SPECIFIED, EACH BOX IS TO BE CSA CERTIFIED, SUITABLE IN ALL RESPECTS FOR THE APPLICATION, SINGLE OR MULTI-GANG AS REQUIRED, & COMPLETE WITH SUITABLE SECURING LUGS, CONNECTORS SUITABLE FOR THE CONNECTED CONDUIT, KNOCKOUTS, & WHERE NECESSARY, SUITABLE PLASTER RINGS.
- ALL LIGHTING FIXTURES, RECEPTACLES & OTHER WIRING DEVICES FOR ANY CONDUIT SYSTEM SHOWN SHALL BE PROVIDED WITH AN OUTLET BOX.
- 4" (100 MM) OCTAGON OR SQUARE OUTLET BOXES OR LARGER, C/W FITTINGS FOR LIGHTING FIXTURES & AS REQUIRED FOR SPECIAL DEVICES.
- WALL OUTLET BOXES SHALL BE:

 - NO. 110A SERIES, FLUSH MOUNTED IN DRYWALL PARTITIONS
 - MBS SERIES MASONRY BOXES (GALVANIZED STEEL) FLUSH MOUNTED IN MASONRY WALLS (BLOCK WALLS).
 - GANG BOXES SHALL BE USED AT LOCATIONS WHERE DEVICES ARE GROUPED. PROVIDE BARRIERS AS REQUIRED.
 - BLANK COVER PLATES FOR BOXES WITHOUT WIRING DEVICES.

26 27 26 WIRING DEVICES

- ALL WIRING DEVICES ARE TO BE CSA CERTIFIED AS A MINIMUM, IN ACCORDANCE WITH THE FOLLOWING STANDARDS, AS APPLICABLE:
 - CAN/CSA C22.2 NO. 42, GENERAL USE RECEPTACLE, ATTACHMENT PLUG & SIMILAR WIRING DEVICES
 - CAN/CSA C22.2 NO. 42.1, COVER PLATES FOR FLUSH MOUNTED DEVICES
 - CSA C22.2 NO. 111, GENERAL USE SNAP SWITCHES
- ALL WIRING DEVICES ARE TO BE SUPPLIED BY THE SAME MANUFACTURER.
- SWITCHES: SPECIFICATION GRADE, PREMIUM QUALITY, BACK AND SIDE WIRED, 20 AMPERE, 120-277 VOLT A.C. QUIET ACTION WHITE DECORATIVE ROCKER TYPE TOGGLE SWITCHES, SINGLE POLE, 2-POLE, 3-WAY, OR KEY TYPE AS INDICATED ON THE DRAWINGS.
- HAZARDOUS LOCATION SWITCH: EXPLOSION-PROOF, SURFACE MOUNTING, FRONT OPERATED SWITCHES SUITABLE FOR USE IN CLASS 1 DIVISION 2 LOCATIONS
- OCCUPANCY SENSOR SWITCH: DIGITAL ULTRASONIC SENSOR TYPE, 120-277 VOLT A.C. WITH INTEGRAL PHOTO SENSOR AND SELECTED TO SUIT THE AREA AND OCCUPANCY OF THE ROOM SERVED.
- STANDARD RECEPTACLES: BACK OR SIDE WIRED, U-GROUND, 2 POLE RECEPTACLES AS FOLLOWS:
 - 15 AMP, 125 VOLT DUPLEX RECEPTACLE: 3-WIRE, NEMA 5-15R
 - 15 AMP, 250 VOLT DUPLEX RECEPTACLE: 3-WIRE, NEMA 6-15R
 - 20 AMP, 125 VOLT DUPLEX RECEPTACLE: 3-WIRE, NEMA 5-20R
 - 20 AMP, 250 VOLT DUPLEX RECEPTACLE: 3-WIRE, NEMA 6-20R
 - 30 AMP, 250 VOLT SIMPLEX RECEPTACLE: 3-WIRE, NEMA 6-30R
 - 50 AMP, 125/250 VOLT SIMPLEX RECEPTACLE: 3-WIRE, NEMA 14-30R
 - 50 AMP, 125/250 VOLT SIMPLEX RECEPTACLE: 4-WIRE, NEMA 14-50R
- GROUND FAULT RECEPTACLES: HEAVY-DUTY, 15/20 AMPERE, 125 VOLT DUPLEX GROUND FAULT CIRCUIT INTERRUPTER, GROUND FAULT CIRCUIT INTERRUPTING DUPLEX RECEPTACLES WITH 15/20 AMPERE CIRCUIT CURRENT RATING, AUTOMATIC SELF-TEST DIAGNOSTICS, GREEN POWER ON LED, AND RED GROUND FAULT LED. GROUND FAULT RECEPTACLES FOR INDOOR CLIMATE CONTROLLED & OUTDOOR OR NON-CLIMATE CONTROLLED AREAS ARE TO BE AS FOLLOWS:
 - INDOOR CLIMATE CONTROLLED AREAS: EQUAL TO HUBBELL CANADA NO. GFST15/GFST20 "AUTOGUARD"
 - OUTDOOR AREAS AND INDOOR NON-CLIMATE AREAS: EQUAL TO HUBBELL CANADA NO. GFR5262TR/GFR4362TR "AUTOGUARD"

- TAMPER-RESISTANT DUPLEX RECEPTACLES: SPECIFICATION GRADE, BACK OR SIDE WIRED, U-GROUND, 2-POLE, 3-WIRE TAMPER-RESISTANT DUPLEX RECEPTACLES AS SPECIFIED ABOVE, 15 AMPERE OR 20 AMPERE, 125 VOLT AS INDICATED ON THE DRAWINGS, EACH WITH THERMOPLASTIC SHUTTERS TO LIMIT ACCESS TO ENERGIZED CONTACTS.

26 28 00 CIRCUIT BREAKERS

- BREAKERS ARE TO BE MOULDED CASE, BOLT-ON BREAKERS IN ACCORDANCE WITH CSA/C22.2 NO. 5, MOULDED-CASE CIRCUIT BREAKERS, MOULDED-CASE SWITCHES, & CIRCUIT BREAKER ENCLOSURES, CALIBRATED FOR OPERATION IN A 40°C (105°F) AMBIENT TEMPERATURE.
- BRANCH CIRCUIT BREAKER INTERRUPTING CAPACITY IS TO SUIT THE PANELBOARD VOLTAGE & BE AS SCHEDULED, OR IN ACCORDANCE WITH CODE REQUIREMENTS TO SUIT THE APPLICATION.
- FOR GROUND FAULT BREAKERS, CSA CLASS A, GROUP 1 COMBINATION THERMAL MAGNETIC TRIP BREAKERS WITH SOLID-STATE GROUND DEFAULT INTERRUPTERS.
- PROVIDE SPARE BREAKERS OR SPACE FOR FUTURE BREAKERS.

26 51 00 INTERIOR LIGHTING

- ALL LIGHTING FIXTURES ARE TO BE ULC LISTED, CSA CERTIFIED & LABELED.
- LIGHTING FIXTURES & LAMPS ARE SCHEDULED ON THE DRAWINGS. PROVIDE LIGHTING FIXTURES & LAMPS WHERE SHOWN, INCLUDE FOR ALL REQUIRED SITE ASSEMBLY, & PROVIDE ALL REQUIRED INSTALLATION & SUPPORT HARDWARE.
- THE LIGHTING EQUIPMENT FOR THIS PROJECT AND SPECIFIED HEREIN HAS BEEN CAREFULLY SELECTED FOR ITS ABILITY TO MEET THE PROJECT'S LUMINOUS ENVIRONMENT REQUIREMENTS. MANUAL & COMPUTER CALCULATIONS HAVE BEEN PERFORMED TO ENSURE THAT THE LIGHTING EQUIPMENT THAT HAS BEEN SPECIFIED COMPLIES WITH ESTABLISHED CRITERIA. THE ENGINEER RESERVES THE RIGHT NOT TO ACCEPT ANY ALTERNATES OR SUBSTITUTIONS. IF ALTERNATES OR SUBSTITUTIONS ARE ENTERTAINED, THEN IT IS THE RESPONSIBILITY OF THE CONTRACTOR/SUPPLIER TO PROVIDE ALL INFORMATION REQUIRED HEREIN & DETAILED LAYOUTS & LIGHTING CALCULATIONS DEMONSTRATING THE PERFORMANCE OF THE ALTERNATE LUMINAIRE MEETS OR EXCEEDS THE ORIGINAL LIGHTING DESIGN WHILE NOT CONSUMING ANY ADDITIONAL ENERGY. THE CONTRACTOR/SUPPLIER IS RESPONSIBLE TO ENSURE THE LIGHT LEVELS PROVIDED IN THE ALTERNATE SUBMITTAL PACKAGE ARE ACHIEVED.
- COORDINATE WITH THE ARCHITECTURAL DRAWINGS (REFLECTED CEILING PLANS, SECTIONS, ELEVATION, DETAILS...) FOR ALL LIGHTING FIXTURE LOCATIONS. THE MOUNTING HEIGHTS OF THE LIGHTING FIXTURES SHALL BE CONFIRMED PRIOR TO ROUGH-IN. NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

5. PRIOR TO ROUGH-IN FOR LIGHTING FIXTURE INSTALLATIONS, EXAMINE DRAWINGS & SITE CONDITIONS TO DETERMINE THAT SUITABLE SPACE IS AVAILABLE FOR THE FIXTURE INSTALLATION AS SHOWN. IF SUFFICIENT SPACE IS NOT AVAILABLE, NOTIFY THE CONSULTANT IMMEDIATELY &, IF REQUIRED, RELOCATE THE FIXTURES WITHIN REASONABLE DISTANCES WITHOUT ADDITIONAL COST.

6. INSTALLATION OF ALL LIGHTING EQUIPMENT SHALL COMPLY WITH THE CURRENT EDITION OF APPLICABLE ELECTRICAL SAFETY CODE.

7. SECURE METAL POLES TO REINFORCED CONCRETE BASES. INSTALL POLE ANCHOR BOLT SUPPORT HARDWARE IN THE BASE CONCRETE DURING THE POUR, & ENSURE THAT THE HARDWARE IS PROPERLY POSITIONED & REMAINS PROPERLY POSITIONED UNTIL CONCRETE HAS SET. PROVIDE VANDAL-PROOF ANCHOR BOLT COVERS.

8. ENSURE THAT ALL POLES ARE TRUE AND PLUMB.

27 05 00 COMMON WORK RESULTS FOR COMMUNICATION SYSTEM

- SUPPORT ALL LIGHTING FIXTURES IN SUSPENDED CEILINGS FROM THE GLAD OR BUILDING CONSTRUCTION ABOVE, INDEPENDENT OF THE SUSPENDED CEILING CONSTRUCTION USING #12 JACK CHAIN HANGERS. SUPPORT CONTINUOUS ROWS OF FIXTURES AT MINIMUM 1.2 M (48") CENTRES.
- LEVEL & PLUMB ALL LIGHTING FIXTURES WITH THE STRUCTURE & OTHER EQUIPMENT, & IN A HORIZONTAL OR VERTICAL POSITION AS INTENDED.
- WALL OR SIDE BRACKET MOUNTED FIXTURE HOUSING SHALL BE RIDGELY INSTALLED & ADJUSTED TO GIVE A NEAT FLUSH FIT TO THE SURFACE ON WHICH IT IS MOUNTED.
- WHERE LIGHTING FIXTURES PENETRATE A FIRE-RATED CEILING THEY ARE TO BE ENCLOSED IN AN ENCLOSURE WITH A RATING TO MATCH THAT OF THE CEILING. THE ENCLOSURE IS TO BE CONSTRUCTED BY THE TRADE CONSTRUCTING THE CEILING. ENSURE THAT CONDUCTORS CONNECTING THE FIXTURES ARE FIRE-RATED TYPE AND THAT CEILING PENETRATIONS FOR CONDUCTORS ARE PROPERLY SEALED WITH FIRE STOPPING AND SMOKE SEAL MATERIAL. FIXTURES INSTALLED IN THE FIRE-RATED ENCLOSURES ARE TO BE EQUIPPED WITH THERMAL OVERLOAD PROTECTION.

10. WHERE LIGHTING FIXTURES PENETRATE A FIRE-RATED CEILING THEY ARE TO BE ENCLOSED IN AN ENCLOSURE WITH A RATING TO MATCH THAT OF THE CEILING. THE ENCLOSURE IS TO BE CONSTRUCTED BY THE TRADE CONSTRUCTING THE CEILING. ENSURE THAT CONDUCTORS CONNECTING THE FIXTURES ARE FIRE-RATED TYPE AND THAT CEILING PENETRATIONS FOR CONDUCTORS ARE PROPERLY SEALED WITH FIRE STOPPING AND SMOKE SEAL MATERIAL. FIXTURES INSTALLED IN THE FIRE-RATED ENCLOSURES ARE TO BE EQUIPPED WITH THERMAL OVERLOAD PROTECTION.

11. AT THE COMPLETION OF CONSTRUCTION & ACCEPTANCE OF WORK, ALL LIGHTING FIXTURES SHALL BE CLEAN, COMPLETE WITH ALL NECESSARY ACCESSORIES & PROVIDED WITH THE REQUIRED OPERATING LAMP(S).

26 52 13.13 EMERGENCY LIGHTING

- ALL EMERGENCY LIGHTING IS TO BE CSA CERTIFIED IN ACCORDANCE WITH:
 - OSA 022.2 NO. 141, UNIT EQUIPMENT FOR EMERGENCY LIGHTING
 - UL 924, STANDARD FOR EMERGENCY LIGHTING & POWER EQUIPMENT
 - CAN/CSA-C860, PERFORMANCE OF INTERNALLY-LIGHTED EXIT SIGNS
 - CAN/ULC-S572, PHOTOLUMINESCENCE & SELF-LUMINOUS SIGNS AND PATH MARKING SYSTEMS, INCLUDING APPENDIX A AS APPLICABLE
 - CSA C22.2 NO. 107.2, BATTERY CHARGERS
- WHERE REMOTE LAMP HEADS ARE INDICATED, INSTALL & CONNECT TO THE BATTERY UNIT WITH 12/24 VDC WIRING IN CONDUIT AS INDICATED.
- AIM ALL ADJUSTABLE LAMP HEADS TO PROVIDE MAXIMUM COVERAGE TO EGRESS ROUTES.
- PROVIDE SELF-CONTAINED EMERGENCY LIGHTING UNITS WHERE SHOWN. INCLUDE FOR ALL REQUIRED SITE ASSEMBLY. PROVIDE ALL REQUIRED INSTALLATION & SUPPORT HARDWARE, & PLUG THE ASSEMBLIES INTO ADJACENT RECEPTACLES. CIRCUIT TO BE IDENTIFIED IN PANELS c/w LOCK ON BREAKER. Confirm EXACT LOCATIONS & MOUNTING HEIGHTS PRIOR TO INSTALLATION.
- THE SELF-CONTAINED EMERGENCY LIGHTING UNITS SHALL BE CAPABLE OF SUPPLYING THE WATTAGE AS INDICATED.
- CONTRACTOR TO COMMISSION & TEST COMPLETED SYSTEM. PROVIDE A CERTIFICATE OF PROPER OPERATION FOR COMPLETE SYSTEM.
- TEST TO INCLUDE BATTERY MINIMUM DURATION AT FULL LIGHTING LEVEL:
 - HIGH BUILDINGS - AS A MINIMUM 2 HR.
 - GROUP B - AS A MINIMUM 1 HR.
 - ALL OTHER - AS A MINIMUM 1/2 HR.

9. INSTALL BELLS, HORNS & VISUAL SIGNAL DEVICES & CONNECT TO SIGNALLING CIRCUITS.

10. CONNECT SIGNALLING CIRCUITS TO MAIN CONTROL PANEL.

11. INSTALL END-OF-LINE DEVICES.

12. INSTALL REMOTE ANNUNCIATOR PANELS AND CONNECT TO ANNUNCIATOR CIRCUIT WIRING.

13. INSTALL DOOR RELEASEING DEVICES.

14. INSTALL REMOTE RELAY UNITS TO CONTROL FAN SHUT DOWN.

15. COORDINATE WITH SPRINKLER DRAWINGS & SPRINKLER CONTRACTOR. REVIEW & COORDINATE WITH ALL SPRINKLER DEVICE LOCATIONS. SPRINKLER DEVICES SHOULD BE WIRED SUCH THAT OPENING OF A DEVICE WILL CAUSE A TROUBLE ON AN ALARMING DEVICE OR A SUPERVISORY ON A SUPERVISING DEVICE. INSTALLATION WILL BE COMPLETE WITH SAMPLING TUBES.

16. CONTRACTOR SHALL ENSURE THE VERIFICATION OF THE FIRE ALARM INCLUDES ANY SECURITY DOORS.

17. ALL FIRE ALARM TEST & VERIFICATION REPORTS ARE TO BE SUBMITTED WITH A COVERING LETTER FROM THE MANUFACTURER CLEARLY STATING THAT THERE ARE NO DEFICIENCIES WITH THE INSTALLATION PRIOR TO RELEASING THE RESPECTIVE AREA FOR OCCUPANCY.

18. ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM 1 TO 2 WEEKS TO REVIEW AND RESPOND TO CHANGE REQUESTS.

26 56 00 EXTERIOR LIGHTING

- ALL LIGHTING FIXTURES ARE TO BE ULC LISTED, CSA CERTIFIED & LABELED.
- LIGHTING FIXTURES & LAMPS ARE SCHEDULED ON THE DRAWINGS. PROVIDE EXTERIOR LIGHTING FIXTURES WHERE SHOWN & IN ACCORDANCE WITH THE LIGHTING SCHEDULES. INCLUDE FOR ALL REQUIRED SITE ASSEMBLY, & PROVIDE ALL REQUIRED INSTALLATION & SUPPORT HARDWARE.
- THE LIGHTING EQUIPMENT FOR THIS PROJECT AND SPECIFIED HEREIN HAS BEEN CAREFULLY SELECTED FOR ITS ABILITY TO MEET THE PROJECT'S LUMINOUS ENVIRONMENT REQUIREMENTS. MANUAL & COMPUTER CALCULATIONS HAVE BEEN PERFORMED TO ENSURE THAT THE LIGHTING EQUIPMENT THAT HAS BEEN SPECIFIED COMPLIES WITH ESTABLISHED CRITERIA. THE ENGINEER RESERVES THE RIGHT NOT TO ACCEPT ANY ALTERNATES OR SUBSTITUTIONS. IF ALTERNATES OR SUBSTITUTIONS ARE ENTERTAINED, THEN IT IS THE RESPONSIBILITY OF THE CONTRACTOR/SUPPLIER TO PROVIDE ALL INFORMATION REQUIRED HEREIN & DETAILED LAYOUTS & LIGHTING CALCULATIONS DEMONSTRATING THE PERFORMANCE OF THE ALTERNATE LUMINAIRE MEETS OR EXCEEDS THE ORIGINAL LIGHTING DESIGN WHILE NOT CONSUMING ANY ADDITIONAL ENERGY. THE CONTRACTOR/SUPPLIER IS RESPONSIBLE TO ENSURE THE LIGHT LEVELS PROVIDED IN THE ALTERNATE SUBMITTAL PACKAGE ARE ACHIEVED.
- CONFIRM EXACT LIGHTING FIXTURE LOCATIONS PRIOR TO ROUGH-IN.
- SECURE GRADE MOUNTED BUILDING FLOODLIGHTING FIXTURES TO CONCRETE PADS SET FLUSH WITH FINISHED GRADE.
- PROVIDE POLES WITH MOUNTING BRACKETS FOR POLE MOUNTED LIGHTING FIXTURES. FOR DIRECT BURY CONCRETE POLES, BACKFILL THE EXCAVATION AROUND THE POLE WITH CONCRETE.

ELECTRICAL REPORTS REQUIRED FOR SIGN-OFF

THE FOLLOWING REPORTS MUST BE SUBMITTED TO THE ENGINEER PRIOR TO FINAL APPROVAL OF THE COMPLETED SYSTEM.

- ESA (ONTARIO ELECTRICAL SAFETY AUTHORITY) - CERTIFICATE OF ACCEPTANCE.
- EMERGENCY LIGHTING DURATION TEST - SUCCESSFUL CERTIFICATION LETTER
- SMOKE ALARM VERIFICATION REPORT
- CONTRACTOR COMPLETION & WARRANTY LETTER

(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	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

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.)

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GENERAL DRAWING / DESIGNER NOTES:

- ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE CURRENT 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. THE CONSULTANT IS NOT RESPONSIBLE FOR CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.
- DRAWINGS ONLY SHOW GENERAL INTENT & REQUIREMENTS. DETAILED DRAWINGS ARE PROVIDED AS PROVIDED BY CONTRACTOR. DO NOT SCALE DRAWINGS.
- CONTRACTOR/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 PROVIDE COMMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SHOP DWG REVIEW IS NOT TO RELEASE THE CONTRACTOR FROM ITS OBLIGATION TO PROVIDE A REASONABLE 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.
- FEASIBILITY FOR ANY FINAL 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 EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
- REQUESTS FOR THE RELEASE OF THIS DRAWING SET

ELECTRICAL - SCOPE OF WORK

CONTRACTOR TO VISIT THE SITE & FAMILIARIZE THEMSELVES WITH THE REQUIREMENTS OF THIS DESIGN.

REFER TO SPECIFICATIONS & GENERAL PROJECT NOTES & DETAILS INCLUDED IN THIS SET OF DWGS.

THE WORK SHALL CONSIST OF, BUT SHALL NOT BE LIMITED TO THE FOLLOWING:

TENDER - PHASE - ELECTRICAL

E 1.0. ALL CONTRACT DOCUMENTS WHERE THE WORD "NORTHSTAR" APPEARS, REFERS TO THE ENGINEERING CONSULTANT, NORTHSTAR ENGINEERING & TECHNOLOGIES LTD.

E 1.1. THE CONTRACT SHALL BE GOVERNED BY THE LAWS OF THE CANADIAN PROVINCE BASED ON THE PROVINCIAL ADDRESS OF THE PROJECT.

E 1.2. CONTRACTOR TO BE FAMILIAR WITH AND FULLY ABIDE BY ALL CLIENT / SITE SAFETY & CONFIDENTIALITY REQUIREMENTS FOR ACCESSING THE SITE STIPULATED IN THE CLIENT'S SAFETY REGULATIONS, RULES, POLICIES & PROTOCOLS. ALL VISITS TO BE ARRANGED WITH THE LISTED CLIENT REPRESENTATIVE IN WRITING IN ADVANCE OF THE VISIT. ENTRANCE TO THE SITE IS NOT PERMITTED WITHOUT A PRE-ARRANGED APPOINTMENT. CONTRACTOR TO CARBON COPY (CO) THE ENGINEER TO NOTIFY OF AN IMPENDING SITE VISIT IN WRITING.

E 1.3. CONTRACTOR SHALL COMPLETE ALL REQUIRED TRAINING SUCCESSFULLY IN FULL ACCORDANCE WITH THE CLIENT'S SPECIFIC TRAINING PROGRAM / REQUIREMENTS. WRITTEN PROOF TO BE PROVIDED TO THE ENGINEER PRIOR TO ENTERING THE SITE.

E 1.4. CONTRACTOR TO BE FAMILIAR WITH AND FULLY ABIDE BY ALL PROVINCIAL AND CLIENT / SITE SAFETY PPE REQUIREMENTS WHILE AT THE CLIENT'S SITE.

E 1.5. CONTRACTOR TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL OF THE REQUIREMENTS OF THIS PROJECT PRIOR TO THE TENDER PHASE TO REVIEW THE EXISTING CONDITIONS AND THE RELATIONSHIP TO THE NEWLY PROPOSED DESIGN. PARTICULAR ATTENTION TO BE PAID TO MODIFICATIONS TO EXISTING SERVICES (IF APPLICABLE).

E 1.6. CONTRACTOR TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL OF THE REQUIREMENTS OF THIS PROJECT.

E 1.7. THE SPECIFICATIONS TEXT LISTED IN THE TENDER DOCUMENTS SHALL HAVE PRIORITY OVER THE DRAWINGS AND PLANS. THIS MAY IN "SHEET" FORMAT OR "BOOK" FORMAT.

E 1.8. SHOULD THERE BE A CONFLICT OR INCONSISTENCY WITHIN THE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN A TIMELY MANNER WITHIN THE TENDER PERIOD.

E 1.9. THE DESIGN DRAWINGS PROVIDED BY NORTHSTAR ARE GENERAL LAYOUTS ONLY. THE CONTRACTOR SHALL PROVIDE A COMPLETE, WORKING INSTALLATION BASED ON THE GENERAL LAYOUTS PROVIDED BY NORTHSTAR. SHOULD COORDINATION OF THE ACTUAL INSTALLATION REQUIRE ADDITIONAL CONDUIT, MATERIAL, FITTINGS THAT SHOWN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF PROCUREMENT AND INSTALLATION. EXTRAS FOR OFFSETS AND ROUTING CHANGES WILL NOT BE APPROVED.

E 1.10. EVERY EFFORT HAS BEEN MADE BY NORTHSTAR TO PROVIDE A WORKABLE CONCEPT FOR THIS PROJECT. THE CONTRACTOR IS REQUESTED TO REVIEW THE VIABILITY OF THE DESIGN CONCEPT AND LIST ANY CONCERN OR OBSTACLES TO THE SUCCESS OF THE PROPOSED PLAN BEFORE ORDERING OF MATERIALS OR PLANNING IS BEGUN.

E 1.11. THERE MAY BE ADDITIONAL SCOPES OF WORK THAT THE OWNER MAY REQUIRE RELATED TO OUR CONSTRUCTION DOCUMENTS CONTAINED IN THE TENDER. THE CONTRACTOR IS ENCOURAGED TO CONTACT TO CONTACT THE OWNER OR OWNER'S REPRESENTATIVE TO ENQUIRE ABOUT ADDITIONAL WORK RELATED TO NOT CONTAINED IN THIS TENDER.

E 1.12. CONTRACTOR TO PROVIDE THE PRICE FOR THE WORK WITH REASONABLE DETAILED CONSIDERATION OF ALL OF THE CONSTRUCTION DOCUMENTS PROVIDED BY ALL CONSULTANTS ON THIS PROJECT. THIS INCLUDES CIVIL, SITE SERVICING, PLANNING, ARCHITECTURAL, STRUCTURAL, MECHANICAL & ALL ASSOCIATED CONTROLS CONTRACTORS.

E 1.13. CONTRACTOR TO INCLUDE COORDINATING, SUPPLYING AND INSTALLING NECESSARY ELECTRICAL CONTROLS CONDUITS TO SERVICE MECHANICAL EQUIPMENT FOR LOW-VOLTAGE (UNDER 30VAC) FOR ALL REQUIRED MECHANICAL CONTROLS.

E 1.14. NORTHSTAR WILL NOT PROVIDE VERBAL OR WRITTEN PERMISSION TO DEVIATE FROM THE CONTRACT DOCUMENTS DURING THE TENDER PERIOD UNLESS THROUGH A FORMAL ADDENDUM ISSUED BY NORTHSTAR AND/OR THE PRIME CONSULTANT.

E 1.15. CONTRACTOR TO FULLY REVIEW AND CONSIDER LISTED AND SPECIFIED TECHNICAL REPORTS PRIOR TO SUBMITTING THEIR BID.

E 1.16. IT SHALL BE ASSUMED THAT ANY FINAL BID SUBMITTED ON OR BEFORE THE OFFICIAL TENDER DATE SHALL BE DEEMED TO CONTAIN AND INCLUDE COSTING FOR ALL OFFICIAL CHANGES AND ADDENDUMS ISSUED BY NORTHSTAR AND/OR THE CONSULTANT TEAM.

E 1.17. NORTHSTAR RESERVES THE RIGHT TO APPROVE AND/OR DENY ANY CONTRACTOR SELECTED EQUIPMENT / MATERIALS / METHODS - INCLUDING SHOP DRAWINGS THAT DEVIATE FROM THE DESIGN PRESENTED.

E 1.18. CONTRACTOR SHALL FULLY DISCLOSE IN THEIR BID A LIST OF SUB-CONTRACTORS CARRIED AND PLANNED TO BE EMPLOYED FOR THIS PROJECT BY THE CONTRACTOR.

E 1.19. CONTRACTOR SHALL IDENTIFY LONG-LEAD ITEMS IN THEIR BID SUBMISSION.

E 1.20. CONTRACTOR MAY IDENTIFY AN ALTERNATE SOLUTION FROM THE CONTRACT DOCUMENTS FOR NORTHSTAR'S REVIEW - AS AN OPTIONAL PRICE.

E 1.21. CONTRACTOR SHALL BE RESPONSIBLE FOR PRICING ALL MATERIALS CONTAINED WITHIN THE CONTRACT DOCUMENTS. FAILURE OF THE CONTRACTOR TO ORDER AND PROCURE THE SPECIFIED OR APPROVED ALTERNATE MATERIALS TO MEET THE PROJECT SCHEDULE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

E 1.22. EVERY EFFORT HAS BEEN MADE BY NORTHSTAR TO PROVIDE A WORKABLE CONCEPT FOR THIS PROJECT. THE CONTRACTOR IS REQUESTED TO REVIEW THE VIABILITY OF THE DESIGN CONCEPT AND LIST ANY CONCERN OR OBSTACLES TO THE SUCCESS OF THE PROPOSED PLAN ALONG WITH THE TENDER SUBMISSION.

E 1.23. ANY DEVICES THAT REQUIRE ELECTRICAL POWER OVER 50VAC ARE TO BE WIRED ENERGIZED AND COMMISSIONED BY THE ELECTRICAL CONTRACTOR.

E 1.24. CONTRACTOR TO OBTAIN PRICING AND CARRY THE COSTS OF ANY REQUIRED (QUALIFIED) COMPANIES TO PERFORM ANY LISTED TESTING AND OR INVESTIGATIONS PRIOR TO CONSTRUCTION. FEES FOR ALL LISTED REPORTS TO BE INCLUDED IN THE TENDER.

E 1.25. THE ENTIRE INSTALLATION IS TO BE WARRANTED FOR A PERIOD OF NOT LESS THAN 1-YEAR INCLUDING PARTS AND LABOUR. THE WARRANTY PERIOD SHALL COMMENCE AT THE DATE OF SUBSTANTIAL COMPLETION GRANTED BY THE CONSULTANT.

E 1.26. CONTRACTOR TO PROVIDE PRICING ON ALL NORTHSTAR ISSUED OFFICIAL CHANGE ORDERS IN THE FORMAT REQUESTED BASED ON THE SPECIFIC ITEM NUMBERS LISTED ON THE NORTHSTAR CHANGE REQUEST DOCUMENT. ONE PRICE FOR EACH ITEM LISTED. PRICING TO INCLUDE ALL LABOUR AND MATERIALS REQUIRED FOR THE SCOPE REQUESTED. NORTHSTAR WILL NOT NECESSARILY APPROVE PRICING BASED UPON INDUSTRY PRICE GUIDES SUCH AS "ALLPRISER" OR SIMILAR METHOD. PRICING WILL BE REVIEWED BASED ON FAIR MARKET CONDITIONS. CONTRACTOR TO PROVIDE CHANGE ORDER PRICING IN A TIMELY MANNER FOR NORTHSTAR'S REVIEW. NO WORK SHALL PROCEED UNTIL OFFICIAL WRITTEN ACCEPTANCE IS ISSUED BY NORTHSTAR.

E 1.27. NORTHSTAR OFFICIAL ISSUED SITE INSTRUCTIONS (OR SIS) ARE DIRECTIVES TO CHANGE THE INSTALLATION AND ARE NOT SUBJECT TO PRICING FROM THE CONTRACTOR. IF THE CONTRACTOR FEELS THAT THE ITEM WARRANTS AN ADDITIONAL COST TO THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING PRIOR TO PRICING THE ITEM.

E 1.28. FIRE ALARM THIRD PARTY MONITORING IS TO BE INCLUDED IN FULL ACCORDANCE TO CANULC S561.

E 1.29. ABIDE BY THE CONTRACT DOCUMENTS AS DETAILED IN THE "BID FORM" & "VENDOR POLICY" PROVIDED BY THE CLIENT.

PRE-CONSTRUCTION - PHASE - ELECTRICAL

E 2.0. CONTRACTOR SHALL BE RESPONSIBLE FOR PRICING ALL MATERIALS CONTAINED WITHIN THE CONTRACT DOCUMENTS. FAILURE OF THE CONTRACTOR TO ORDER AND PROCUER THE SPECIFIED OR APPROVED ALTERNATE MATERIALS TO MEET THE PROJECT SCHEDULE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NORTHSTAR WILL NOT APPROVE EXTRA COSTS FOR THE CONTRACTOR'S FAILURE TO ORDER THE REQUIRED MATERIALS & EQUIPMENT IN A TIMELY MANNER IN ORDER TO MAINTAIN THE PROJECT SCHEDULE.

E 2.1. EVERY EFFORT HAS BEEN MADE BY NORTHSTAR TO PROVIDE A WORKABLE CONCEPT FOR THIS PROJECT. THE CONTRACTOR IS REQUESTED TO REVIEW THE VIABILITY OF THE DESIGN CONCEPT AND LIST ANY CONCERN OR OBSTACLES TO THE SUCCESS OF THE PROPOSED PLAN BEFORE ORDERING OF MATERIALS OR PLANNING IS BEGUN.

E 2.2. EVERY EFFORT HAS BEEN MADE BY NORTHSTAR TO PROVIDE A WORKABLE DESIGN CONCEPT FOR THIS PROJECT. THE CONTRACTOR IS TO REVIEW THE VIABILITY OF THE DESIGN CONCEPT AND REPORT ANY CONFLICTS OR CONSTRUCTABILITY ISSUES CONCERN OR OBSTACLES TO THE TO THE ENGINEER BEFORE ORDERING OF MATERIALS OR DETAILED PLANNING IS BEGUN.

E 2.3. CONTRACTOR IS TO APPLY FOR AND PAY FOR ANY AND ALL NECESSARY PERMITS REQUIRED TO PERFORM THE WORK LISTED.

E 2.4. CONTRACTOR AS WELL AS SUBCONTRACTORS ARE TO PERFORM A DETAILED CONSIDERATION OF ALL OF THE CONSTRUCTION DOCUMENTS PROVIDED BY ALL CONSULTANTS ON THIS PROJECT. THIS INCLUDES CIVIL, SITE SERVICING, PLANNING, ARCHITECTURAL, STRUCTURAL, MECHANICAL & ALL ASSOCIATED CONTROLS CONTRACTORS. ANY DISCREPANCIES OR CONFLICTS ARE TO BE REPORTED IN A TIMELY MANNER IN WRITING TO THE PRIME CONSULTANT AS WELL AS NORTHSTAR.

E 2.5. CONTRACTOR TO REGULARLY (AND AT PROJECT MILESTONES), REQUEST ELECTRICAL SAFETY INSPECTIONS AND PROVIDE TO THE ENGINEER THE INSPECTOR'S REPORT IN A TIMELY MANNER.

E 2.6. CONTRACTOR TO CONTACT AND COORDINATE THE LOCATING AND DISCOVERY OF ALL UNDERGROUND SERVICES RELATED TO THE PROJECT (IN THE VICINITY OF THE WORK). PAYMENT FOR ALL SERVICES ARE TO BE MADE BY THE CONTRACTOR. ALL RECEIVED REPORTS ON LOCATES ARE TO BE ISSUED TO THE ENGINEER IN A TIMELY MANNER.

E 2.7. CONTRACTOR TO CONTACT, COORDINATE, AND MEET WITH ALL LOCAL SERVICE UTILITY REPRESENTATIVES AS PART OF THE PROJECT ACTIVITIES. ANY INFORMATION PROVIDED TO THE CONTRACTOR IS TO BE SHARED WITH THE PRIME CONSULTANT AS WELL AS NORTHSTAR.

E 2.8. CONTRACTOR TO RETAIN QUALIFIED COMPANIES TO PERFORM ANY LISTED TESTING AND OR INVESTIGATIONS PRIOR TO CONSTRUCTION. ALL REPORTS TO BE ISSUED TO THE ENGINEER IN A TIMELY MANNER. FEES FOR ALL LISTED REPORTS TO BE INCLUDED IN THE TENDER.

E 2.9. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ALL LISTED ITEMS WITHIN DRAWING SCHEDULES CONTAINED IN THE PLANS. IN ADDITION, NORTHSTAR MAY PROVIDE A SPECIFIC LIST OF REQUIRED SHOP DRAWINGS. ALTERNATES MAY OR MAY NOT BE ACCEPTABLE. IT IS RECOMMENDED THAT THE CONTRACTOR PRE-APPROVE THE SHOP DRAWINGS WITH NORTHSTAR IN ORDER TO EXPEDITE AND TO CONSERVE SCHEDULE TIME. NOTE: REVIEW THE SHOP DRAWINGS BY NORTHSTAR DOES NOT IMPLY RESPONSIBILITY FOR THE PRODUCTS SELECTED. NORTHSTAR'S REVIEW TO DETERMINE "GENERAL CONFORMITY" WITH OUR DESIGN CONCEPT, CONTRACTOR SHALL ENSURE THAT ALL PROVIDED SHOP DRAWINGS ARE APPROPRIATE AND SUITABLE PRODUCTS FOR THE INSTALLATION AND THEREFORE BARE THE RESPONSIBILITY FOR THE SELECTION OF THE PRODUCTS CONTAINED THEREIN. NORTHSTAR DOES NOT WARRANT QUANTITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSESS AND ORDER THE REQUIRED QTY. OF PRODUCTS AND MATERIALS. COMPLEX ALTERNATES PRESENTED MAY INVOLVE SIGNIFICANT WORK BY NORTHSTAR IN ORDER TO APPROVE WHICH MAY RESULT IN AN ADDITIONAL CHARGE TO THE OWNER. IF THE OWNER IS NOT AGREEABLE, THE ADDITIONAL COST OF REVIEWING THE DESIGN MAY BE CHARGEABLE TO THE CONTRACTOR.

E 2.10. CONTRACTOR SHALL RETAIN AND PAY FOR THE SERVICES OF A PROFESSIONAL STRUCTURAL ENGINEER TO DESIGN & COORDINATE ALL REQUIRED STRUCTURAL MOUNTS, BRACKETS, ROOF INSTALLATIONS, STAGING ACTIONS, LIFTS AND SUPPORTS. NO STRUCTURAL MEMBER SHALL BE CUT WITHOUT THE KNOWLEDGE AND CONSENT OF THE PROJECT STRUCTURAL ENGINEER OF RECORD.

E 2.11. CONTRACTOR TO INITIATE DISCUSSIONS WITH THE UTILITY TO ORGANIZE CONSTRUCTION POWER FOR THE SITE.

E 2.12. PROVIDE SIGNAGE TO THE SITE WITH AN INDICATION OF THE CONTRACTING TEAM.

E 2.13. ELECTRICAL CONTRACTOR TO WORK CLOSELY WITH GENERAL CONTRACTORS, ARCHITECTS, & ENGINEERS TO PROVIDE SAFE, COMPLIANT & RELIABLE ELECTRICAL SYSTEMS.

CONSTRUCTION - PHASE - ELECTRICAL

E 3.0. THIS CONTRACTOR IS TO SUPPLY AND INSTALL ALL ELECTRICAL COMPONENTS AND COMMISSION ALL SYSTEMS CONTAINED IN THE CONSTRUCTION DOCUMENTATION PROVIDED BY NORTHSTAR SO AS TO PROVIDE TO THE OWNER A COMPLETE, WORKING INSTALLATION THAT FUNCTIONS AS INTENDED BY THE ENGINEERS. THE WORK IS TO BE COMPLETED TO THE SATISFACTION OF THE OWNER AS WELL AS NORTHSTAR.

E 3.1. ALL INSTALLATION METHODS AND WORK SHALL COMPLY WITH ALL CURRENT APPLICABLE STANDARDS, CODES, BY-LAWS AND REGULATIONS - AS WELL AS THE LATEST EDITION OF THE PROVINCIAL BUILDING CODE.

E 3.2. CONTRACTOR TO CONFIRM THE STRUCTURAL INTEGRITY OF THE ROOF OR FLOOR PRIOR TO STAGING AND STOREING EQUIPMENT ONSITE. THIS MAY REQUIRE THE SERVICES OF A PROFESSIONAL STRUCTURAL ENGINEER TO BE RETAINED AT THE EXPENSE OF THE CONTRACTOR. ANY TEMPORARY STAGING THAT IS REQUIRED FOR EQUIPMENT ON THE ROOF SURFACE, OR SITE NECESSARY LOAD SPREADING RAILS TO PREVENT DAMAGE TO THE ROOF STRUCTURE IS TO BE PROVIDED. PROVIDE NECESSARY WEATHER TARPS SECURELY FIXED TO PREVENT WIND/RAIN DAMAGE.

E 3.3. CONTRACTOR TO OBTAIN PRICING AND CARRY THE COSTS OF ANY REQUIRED (QUALIFIED) COMPANIES TO PERFORM ANY LISTED TESTING AND OR INVESTIGATIONS PRIOR TO CONSTRUCTION. FEES FOR ALL LISTED REPORTS TO BE INCLUDED IN THE TENDER.

E 3.4. THE ENTIRE INSTALLATION IS TO BE WARRANTED FOR A PERIOD OF NOT LESS THAN 1-YEAR INCLUDING PARTS AND LABOUR. THE WARRANTY PERIOD SHALL COMMENCE AT THE DATE OF SUBSTANTIAL COMPLETION GRANTED BY THE CONSULTANT.

E 3.5. THE DESIGN DRAWINGS PROVIDED BY NORTHSTAR ARE "DIAGRAMMATIC" AND GENERAL IN NATURE. LOCATIONS SHOWN ARE APPROXIMATE. ALL DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE A COMPLETE, WORKING INSTALLATION BASED ON THE GENERAL LAYOUTS PROVIDED BY NORTHSTAR. SHOULD COORDINATION OF THE ACTUAL INSTALLATION REQUIRE ADDITIONAL CONDUIT, MATERIAL, FITTINGS THAT SHOWN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF PROCUREMENT AND INSTALLATION. EXTRAS FOR OFFSETS AND ROUTING CHANGES WILL NOT BE APPROVED.

E 3.6. CONTRACTOR TO READ THE INSTALLATION MANUAL OF ANY COMPONENT PRIOR TO INSTALLATION. ALL EQUIPMENT AND PURCHASED PRODUCTS USED IN THE INSTALLATION SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE RELEVANT MANUFACTURER'S INSTRUCTION INSTALLATION MANUAL FOR THE PROJECT. THE CONTRACTOR, PROVIDE CHANGE ORDER PRICING IN A TIMELY MANNER FOR NORTHSTAR'S REVIEW. NO WORK SHALL PROCEED UNTIL OFFICIAL WRITTEN ACCEPTANCE IS ISSUED BY NORTHSTAR.

E 3.7. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.8. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL WALL PENETRATIONS THROUGH ANY EXTERIOR WALL. COORDINATE ALL WALL PENETRATIONS WITH THE DESIGN REQUIREMENTS. COORDINATE ALL CORING WITH THE GENERAL CONTRACTOR. PROVIDE ALL NECESSARY MEASURE TO PREVENT GROUNDWATER FROM ENTERING THE BUILDING THROUGH FOUNDATION PENETRATIONS AND ELECTRICAL CONDUITS.

E 3.9. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.10. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL WALL PENETRATIONS THROUGH ANY EXTERIOR WALL. COORDINATE ALL WALL PENETRATIONS WITH THE DESIGN REQUIREMENTS. COORDINATE ALL CORING WITH THE GENERAL CONTRACTOR. PROVIDE ALL NECESSARY MEASURE TO PREVENT GROUNDWATER FROM ENTERING THE BUILDING THROUGH FOUNDATION PENETRATIONS AND ELECTRICAL CONDUITS.

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E 3.15. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.16. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.17. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.18. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.19. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.20. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.21. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.22. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.23. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.24. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

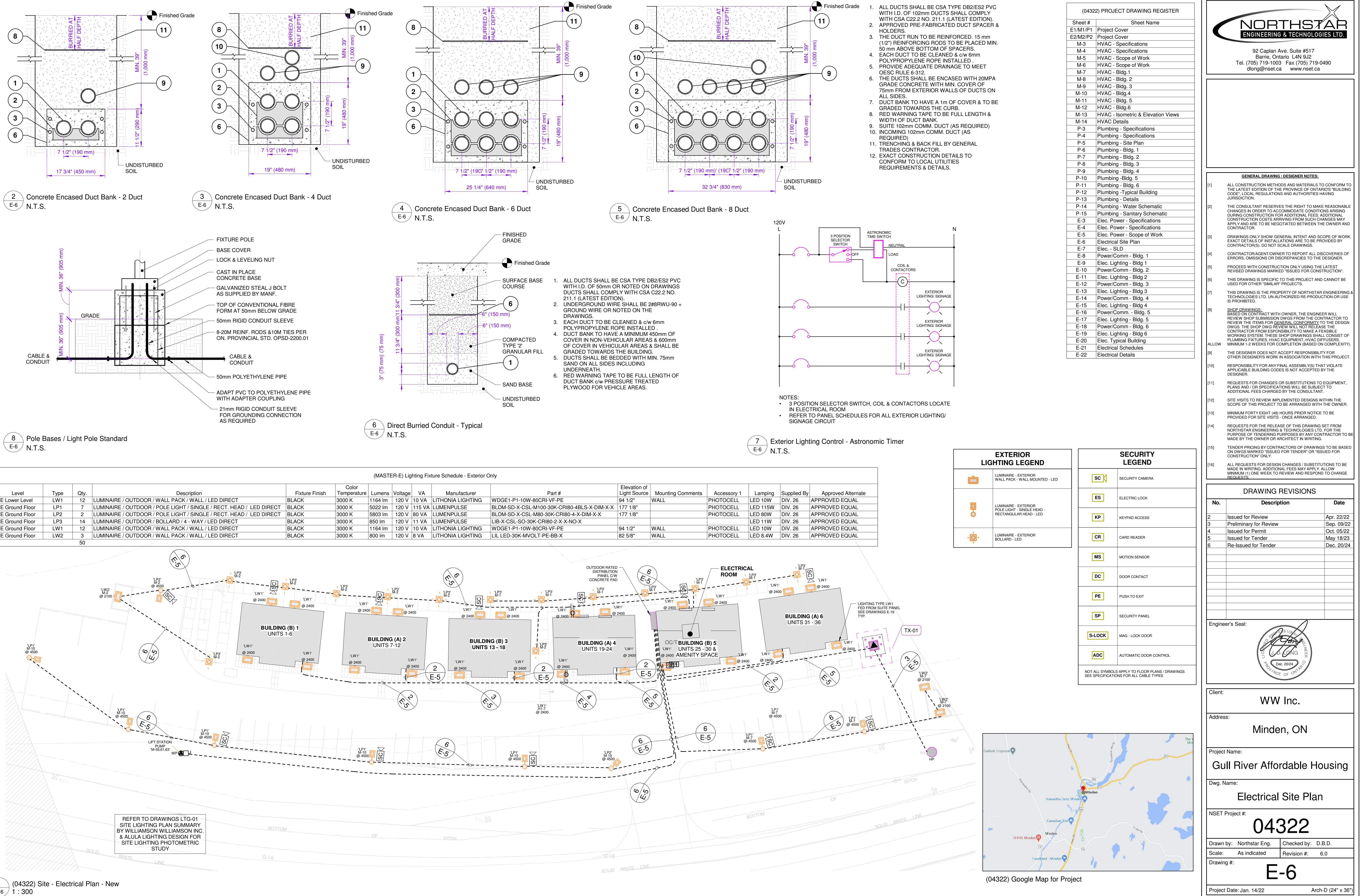
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E 3.26. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

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E 3.28. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR AND/OR THE ROOFING CONTRACTOR.

E 3.29. CONTRACTOR TO PROVIDE A WEATHER-PROOF DURABLE SEAL TO ALL SERVICE PENETRATIONS ON THE ROOF. COORDINATE ALL ROOF CONE INSTALLATIONS WITH THE GENERAL CONTRACTOR



NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

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".

HIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.

HIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UN-AUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.

HOP 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 RESPONSIBILITY TO MAKE A FEASIBLE WORKING SYSTEM. THESE SHOP DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS. A MINIMUM 1-2 WEEKS FOR COMPLETION (BASED ON COMPLEXITY).

HE 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.

EQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.

ITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.

A MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.

EQUESTS 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.

ENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.

LL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW A MINIMUM (1) ONE WEEK TO REVIEW AND RESPOND TO CHANGE

WW Inc.

Minden, ON

Name:

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y: Northstar Eng. Checked by: D.B.D.

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

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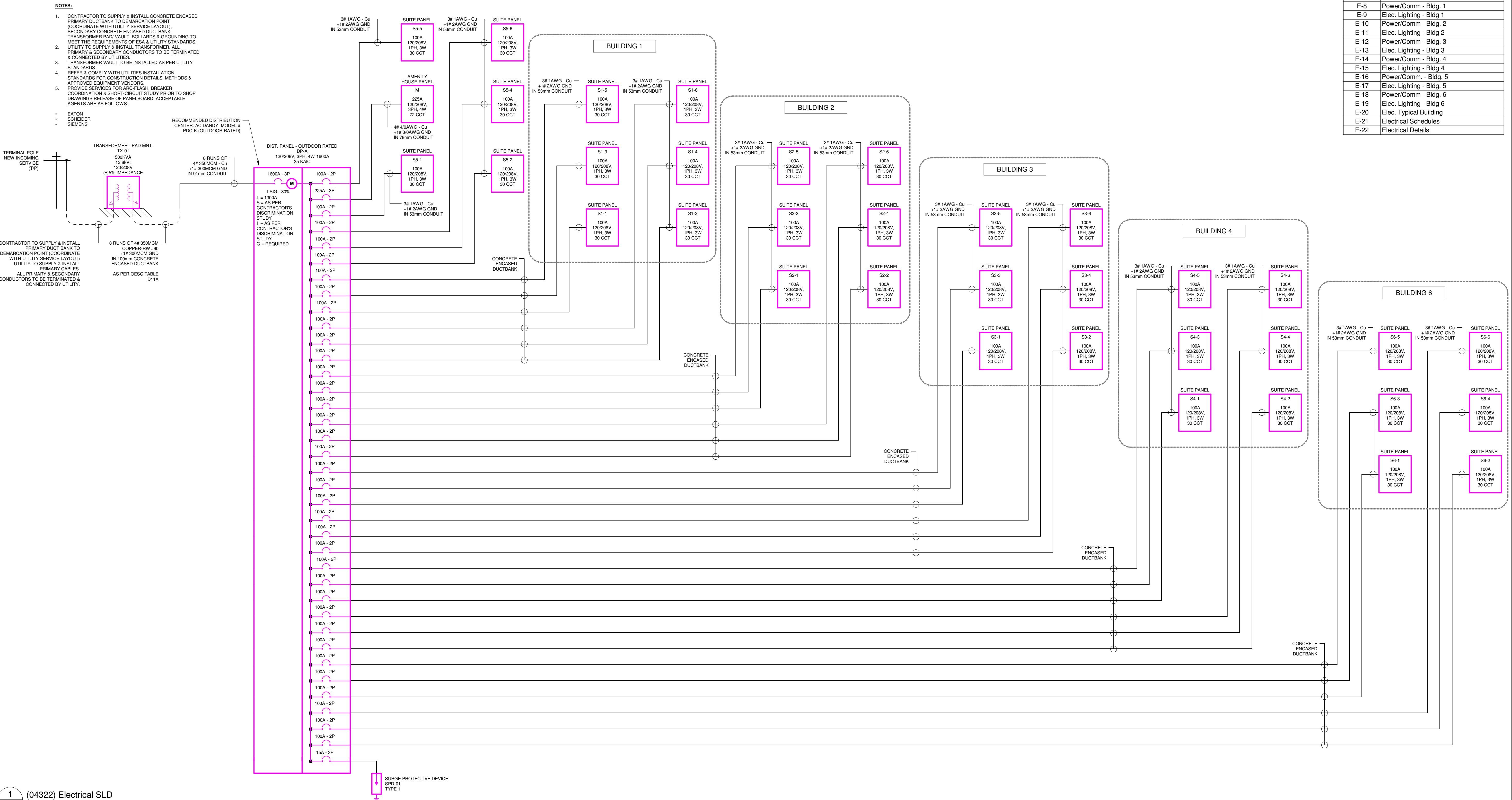
E-7

Date: Jan. 14/22

Arch-D (24" x 36")

COPPER FEEDER SCHEDULE - MAXIMUM CIRCUIT CAPACITY (PER 75°C COLUMN) 1 RUN - COPPER			
FEEDER AMPACITY FOR 3 & 4 WIRE SYSTEMS	CONDUCTOR SIZE (AWG OR KCMIL) PER RUN	3 WIRE CONDUIT SIZE PER RUN	4 WIRE CONDUIT SIZE PER RUN
25 A	#12 AWG	21 (3/4")	21 (3/4")
35 A	#10 AWG	21 (3/4")	21 (3/4")
50 A	#8 AWG	27 (1")	27 (1")
65 A	#6 AWG	27 (1")	35 (1-1/4")
85 A	#4 AWG	35 (1-1/4")	35 (1-1/4")
100 A	#3 AWG	35 (1-1/4")	41 (1-1/2")
115 A	#2 AWG	35 (1-1/4")	41 (1-1/2")
130 A	#1 AWG	41 (1-1/2")	53 (2")
150 A	#1/0 AWG	53 (2")	53 (2")
175 A	#2/0 AWG	53 (2")	53 (2")
200 A	#3/0 AWG	53 (2")	63 (2-1/2")
230 A	#4/0 AWG	63 (2-1/2")	63 (2-1/2")
255 A	250 KCMIL	63 (2-1/2")	78 (3")
285 A	300 KCMIL	78 (3")	78 (3")
310 A	350 KCMIL	78 (3")	78 (3")
335 A	400 KCMIL	78 (3")	91 (3-1/2")
380 A	500 KCMIL	78 (3")	91 (3-1/2")

(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



ELECTRICAL LEGEND	
(OFFICES) A - 20.22 @450mm A.F.E.	ELECTRICAL CIRCUIT TAG: COMMENT: PANEL NAME: CIRCUIT # A - 20.22 @450mm A.F.E.
(OFFICES) FC-1-07 A - 20	MECHANICAL EQUIPMENT CIRCUIT TAG: AIR SYSTEM / COMMENT: MECHANICAL EQUIP. MARK / TYPE: PANEL NAME: CIRCUIT #
(OFFICES) PB-1	ELECTRICAL EQUIPMENT TAG: COMMENTS: PANEL NAME: SEE SLD. SCHEDULES & PLAN VIEWS.
JB	JUNCTION BOX - WALL MOUNTED
JB	JUNCTION BOX - FLOOR MOUNTED
JB	JUNCTION BOX - CEILING MOUNTED
Ⓐ	DIRECT CONNECTION - SINGLE PHASE
Ⓑ	DIRECT CONNECTION - THREE PHASE
□	DISCONNECT
Ⓐ	DIRECT CONNECTION c/w DISCONNECT
xxx	DUPLEX RECEPTACLE RECEPTACLES FOR NEMA TYPE & AMPERAGE) x1 - WALL MOUNTED XXX DENOTES: EX - EXISTING GFCI - GROUND FAULT CIRCUIT INTERRUPTER AFCI - ARC FAULT CIRCUIT INTERRUPTER SDU - SURFACE MOUNTED GROUND O/C - OVER COUNTER UC - UNDER COUNTER WPC - WIRELESS PUSH BUTTON TR - TAMPER RESISTANT USB - CONTAINS USB PORTS
∅	DUPLEX RECEPTACLE SPLIT (INDIV. CIRCUITS) - WALL MOUNTED
□	DUPLEX RECEPTACLE (120V, STD.) x1 - FLOOR MOUNTED
∅	DUPLEX RECEPTACLE (120V, STD.) x1 - CEILING MOUNTED
∅	DUPLEX RECEPTACLE (120V, STD.) x1 - CAB TIRE c/w STRIKE RELIEF - SUSPENDED MOUNT
∅	QUADPLEX RECEPTACLE (120V, STD.) x1 - WALL MOUNTED
∅	QUADPLEX RECEPTACLE (120V, STD.) x1 - FLOOR MOUNTED
∅	QUADPLEX RECEPTACLE (120V, STD.) x1 - CEILING MOUNTED
xxx	SINGLE RECEPTACLE x1 (WALL MOUNTED) XXX DENOTES: OUTLET PURPOSE: VOLTAGE & AMPEREAGE SEE SYMBOL ON PLANS (REFER TO SCHEDULES FOR NEMA TYPE)
H	HANDICAP PUSH BUTTON - WALL MOUNTED
∅	LOCK PUSH BUTTON - WALL MOUNTED
∅	EMERGENCY CALL PUSH BUTTON - WALL MOUNTED
∅	DOME LIGHT (STROBE) WITH SOUNDER - WALL MOUNTED
TS	THERMOSTAT - SUPPLIED & INSTALLED BY 3RD PARTY - 3V - CONNECTION BY DIV. 26 WIRE <= 30V - CONNECTION BY DIV. 23
COMMUNICATIONS LEGEND	
▽	TELEPHONE & DATA COMBINATION OUTLET - QUANTITY AS INDICATED - WALL MOUNTED
▽	TELEPHONE & DATA COMBINATION OUTLET - QUANTITY AS INDICATED - CEILING MOUNTED
▽	TELEPHONE & DATA COMBINATION OUTLET - QUANTITY AS INDICATED - FLOOR MOUNTED
▽	DATA OUTLET - QUANTITY AS INDICATED - CEILING MOUNTED
WAP	WIRELESS ACCESS POINT DATA OUTLET - QUANTITY AS INDICATED - CEILING MOUNTED
TV	COAX CABLE TV OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - WALL MOUNTED
TV	COAX CABLE TV OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - FLOOR MOUNTED
D/TV	COAX CABLE COMBINATION OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - WALL MOUNTED
D/TV	COAX CABLE COMBINATION OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - CEILING MOUNTED
D/TV	DATA & COAX COMBINATION OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - FLOOR MOUNTED
D/TV	DATA & COAX COMBINATION OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - CEILING MOUNTED
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS SEE SPECIFICATIONS FOR ALL CABLE TYPES	NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS SEE SPECIFICATIONS FOR ALL CABLE TYPES

(04322) Data Device Schedule - Typical Suite Only					
Level	Rm. #	Description	Pin Config.	Qty.	
FFE Lower Level	106	LUMINAIRE - INTERIOR DOWNLIGHT - RECESSED - LED		1	
FFE Lower Level	108	LUMINAIRE - INTERIOR DOWNLIGHT - SURFACE MOUNTED - LED		2	
FFE Ground Floor	112	LUMINAIRE - INTERIOR DOWNLIGHT - SURFACE MOUNTED - LED		1	
FFE Ground Floor	113	LUMINAIRE - INTERIOR DOWNLIGHT - SURFACE MOUNTED - LED		1	
FFE Ground Floor	114	OUTLET - TELEPHONE & DATA COMBINATION - WALL MOUNTED - ELEVATED		1	
2 - Floor	224	OUTLET - DATA & COAX CABLE COMBINATION - WALL MOUNTED		1	
2 - Floor	225	OUTLET - DATA & COAX CABLE COMBINATION - WALL MOUNTED		1	
2 - Floor	228	OUTLET - DATA & COAX CABLE COMBINATION - WALL MOUNTED		1	
				4	
				10	
Grand total					
NOTES: DATA DEVICE SCHEDULE ABOVE IS FOR TYPICAL SUITE TYPE AND DOES NOT REFLECT THE TOTAL QUANTITY OF DATA DEVICES REQUIRED TOTAL NUMBER OF SUITES: 35					

(04322) Electrical Receptacle Schedule - Typical Suite Only

Level Rm. # Qty. Description Pin Config.

FFE Lower Level 1 ELECTRIC DOOR BUZZER ELECTRIC DOOR BUZZER

FFE Lower Level 1 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - GFCI - WEATHERPROOF c/w NEMA 5-15R

FFE Lower Level 5 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Lower Level 107 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 15A / GFCI NEMA 5-15R

FFE Lower Level 108 1 ELECTRIC DOOR BELL ELECTRIC DOOR BELL

FFE Lower Level 5 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Lower Level 108 1 RECEPTACLE - SINGLE - WALL MOUNTED - 208V 50A - COOKING RANGE NEMA 14-50R

FFE Lower Level 108 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 15A / FRIDGE NEMA 5-15R

FFE Lower Level 108 2 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 20A / GFCI / OVER COUNTER NEMA 5-20R

FFE Ground Floor 2 ELECTRIC DOOR BUZZER ELECTRIC DOOR BUZZER

FFE Ground Floor 1 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - GFCI - WEATHERPROOF c/w NEMA 5-15R

FFE Ground Floor 1 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 108 1 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 108 1 RECEPTACLE - SINGLE - WALL MOUNTED - 208V 50A - COOKING RANGE NEMA 14-50R

FFE Ground Floor 108 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 15A / FRIDGE NEMA 5-15R

FFE Ground Floor 108 2 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 20A / OVER COUNTER NEMA 5-20R

FFE Ground Floor 115 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 15A / GFCI NEMA 5-15R

FFE Ground Floor 116 4 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 25 1 ELECTRIC DOOR BELL ELECTRIC DOOR BELL

FFE Ground Floor 1 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 3 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 113 4 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 114 1 ELECTRIC DOOR BELL ELECTRIC DOOR BELL

FFE Ground Floor 3 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 114 1 RECEPTACLE - SINGLE - WALL MOUNTED - 208V 50A - COOKING RANGE NEMA 14-50R

FFE Ground Floor 114 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 15A / FRIDGE NEMA 5-15R

FFE Ground Floor 114 2 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 20A / OVER COUNTER NEMA 5-20R

FFE Ground Floor 115 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 15A / GFCI NEMA 5-15R

FFE Ground Floor 116 4 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 25 2 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 1 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 2 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 223 2 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 224 2 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 224 1 RECEPTACLE - SINGLE - WALL MOUNTED - 208V 50A - COOKING RANGE NEMA 14-50R

FFE Ground Floor 224 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 15A / FRIDGE NEMA 5-15R

FFE Ground Floor 224 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 20A / OVER COUNTER NEMA 5-20R

FFE Ground Floor 225 2 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 226 4 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 227 1 RECEPTACLE / DUPLEX / WALL MOUNTED / 120V / 15A / GFCI NEMA 5-15R

FFE Ground Floor 228 4 RECEPTACLE - DUPLEX - WALL MOUNTED - 120V 15A - TAMPER RESISTANT NEMA 5-15R

FFE Ground Floor 22 65 Grand total

FFE Ground Floor 65 Grand total

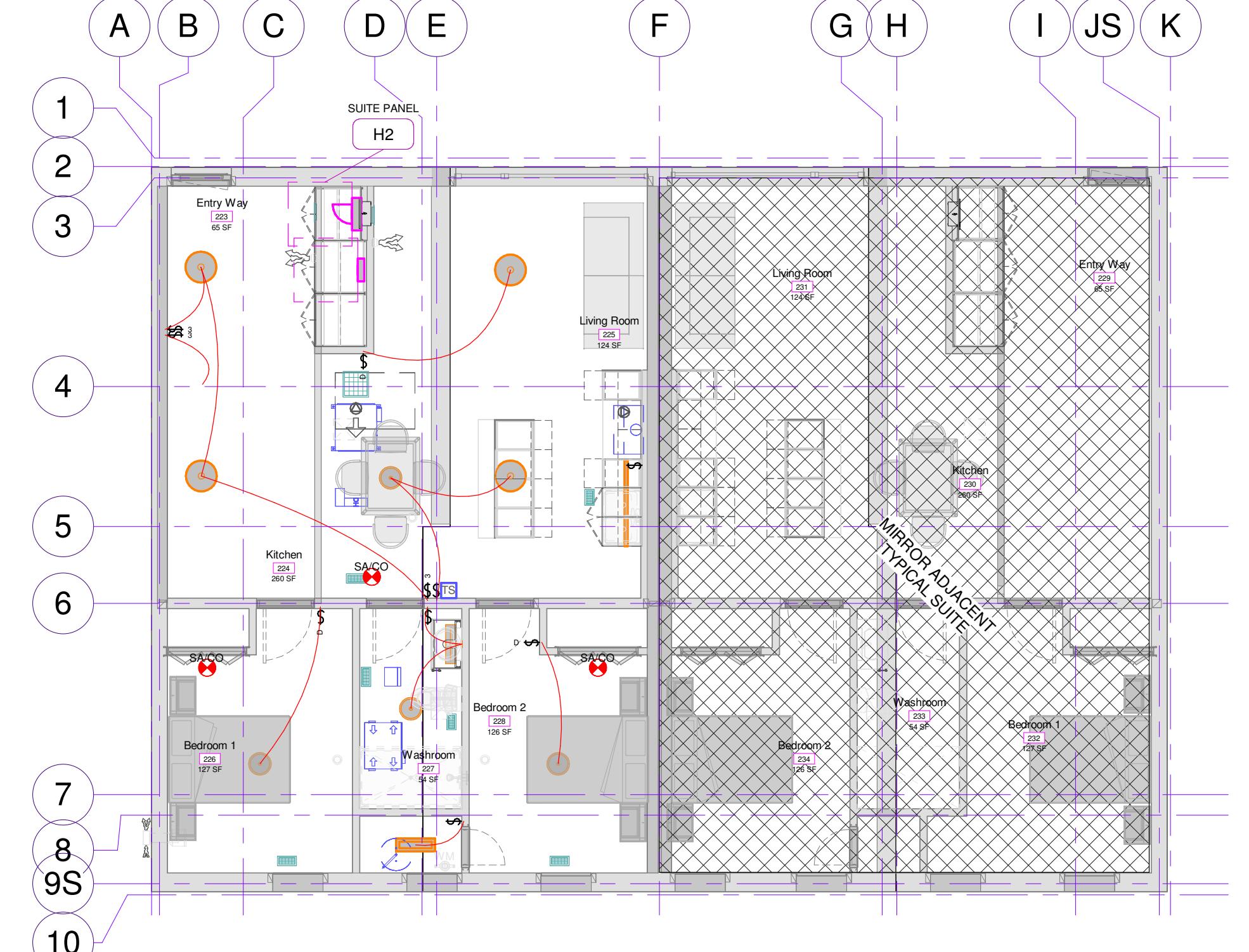
FFE

(04322) Lighting Fixture Schedule - Interior - Typical Suite Only																
Level	Type	Qty.	Description	Fixture Finish	Color Temperature	Lumens	Voltage	VA	Manufacturer	Part #	Elevation of Light Source	Mounting Comments	Accessory 1	Lamping	Supplied By	Approved Alternate
FFE Lower Level	B	1	LUMINAIRE / INDOOR / VANTY / WALL / 24' LENGTH / LED DIRECT	BRUSHED NICKEL	3000 K	1300 lm	120 V	18 VA	LITHONIA LIGHTING	FMVCSL 24IN MVOLT 30K 90CRI BN M6	84"	WALL	LED 18W DIV. 26	APPROVED EQUAL		
B1 - U/S Cabinet	K	3	LUMINAIRE / INDOOR / TAPE / SURFACE / 18' LENGTH / LED DIRECT	WHITE	3500 K	400 lm	120 V	9 VA	LITHONIA LIGHTING	UCES 18IN SWW6 90CRI WH M6		CEILING / SURFACE	LED 8.4W DIV. 26	APPROVED EQUAL		
B1 - Ceiling	A1	1	LUMINAIRE / INDOOR / LINEAR / SURFACE / 24' LENGTH / LED DIRECT	WHITE	3500 K	940 lm	120 V	9 VA	LITHONIA LIGHTING	RLNK L24 120 35K 80 CRI M4		CEILING / SURFACE	LED 8.9W DIV. 26	APPROVED EQUAL		
B1 - Ceiling	L1	1	LUMINAIRE / INDOOR / DOME / SURFACE / 11' LED DIRECT	WHITE	4000 K	1100 lm	120 V	16 VA	LITHONIA LIGHTING	FMLRL 11 14840 M4		CEILING / SURFACE	LED 16W DIV. 26	APPROVED EQUAL		
B1 - Ceiling	L2	3	LUMINAIRE / INDOOR / DOME / SURFACE / 14' LED DIRECT	WHITE	4000 K	1600 lm	120 V	24 VA	LITHONIA LIGHTING	FMLRL 14 20840 M4		CEILING / SURFACE	LED 24W DIV. 26	APPROVED EQUAL		
FFE Ground Floor	B	1	LUMINAIRE / INDOOR / VANTY / WALL / 24' LENGTH / LED DIRECT	BRUSHED NICKEL	3000 K	1300 lm	120 V	18 VA	LITHONIA LIGHTING	FMVCSL 24IN MVOLT 30K 90CRI BN M6	84"	WALL	LED 18W DIV. 26	APPROVED EQUAL		
1 - U/S Cabinet	K	4	LUMINAIRE / INDOOR / TAPE / SURFACE / 18' LENGTH / LED DIRECT	WHITE	3500 K	400 lm	120 V	9 VA	LITHONIA LIGHTING	UCES 18IN SWW6 90CRI WH M6		CEILING / SURFACE	LED 8.4W DIV. 26	APPROVED EQUAL		
1 - Finished Ceiling	A1	2	LUMINAIRE / INDOOR / LINEAR / SURFACE / 24' LENGTH / LED DIRECT	WHITE	3500 K	940 lm	120 V	9 VA	LITHONIA LIGHTING	RLNK L24 120 35K 80 CRI M4		CEILING / SURFACE	LED 8.9W DIV. 26	APPROVED EQUAL		
1 - Finished Ceiling	L1	1	LUMINAIRE / INDOOR / DOME / SURFACE / 11' LED DIRECT	WHITE	4000 K	1100 lm	120 V	16 VA	LITHONIA LIGHTING	FMLRL 11 14840 M4		CEILING / SURFACE	LED 16W DIV. 26	APPROVED EQUAL		
1 - Finished Ceiling	L2	6	LUMINAIRE / INDOOR / DOME / SURFACE / 14' LED DIRECT	WHITE	4000 K	1600 lm	120 V	24 VA	LITHONIA LIGHTING	FMLRL 14 20840 M4		CEILING / SURFACE	LED 24W DIV. 26	APPROVED EQUAL		
2 - Floor	B	1	LUMINAIRE / INDOOR / VANTY / WALL / 24' LENGTH / LED DIRECT	BRUSHED NICKEL	3000 K	1300 lm	120 V	18 VA	LITHONIA LIGHTING	FMVCSL 24IN MVOLT 30K 90CRI BN M6	84"	WALL	LED 18W DIV. 26	APPROVED EQUAL		
2 - Floor	P	4	LUMINAIRE / INDOOR / PENDANT / SUSPENDED / LED DIRECT	WHITE	4000 K	4800 lm	120 V	34 VA	LITHONIA LIGHTING	VCVLED-V4-P2-40K-80CRI-T5W-120-PM-DWHXD	108"	SUSPENDED	LED 34W DIV. 26	APPROVED EQUAL		
2 - U/S Cabinet	K	3	LUMINAIRE / INDOOR / TAPE / SURFACE / 18' LENGTH / LED DIRECT	WHITE	3500 K	400 lm	120 V	9 VA	LITHONIA LIGHTING	UCES 18IN SWW6 90CRI WH M6		CEILING / SURFACE	LED 8.4W DIV. 26	APPROVED EQUAL		
2 - Finished Ceiling	A1	1	LUMINAIRE / INDOOR / LINEAR / SURFACE / 24' LENGTH / LED DIRECT	WHITE	3500 K	940 lm	120 V	9 VA	LITHONIA LIGHTING	RLNK L24 120 35K 80 CRI M4		CEILING / SURFACE	LED 8.9W DIV. 26	APPROVED EQUAL		
2 - Finished Ceiling	L2	4	LUMINAIRE / INDOOR / DOME / SURFACE / 14' LED DIRECT	WHITE	4000 K	1600 lm	120 V	24 VA	LITHONIA LIGHTING	FMLRL 14 20840 M4		CEILING / SURFACE	LED 24W DIV. 26	APPROVED EQUAL		

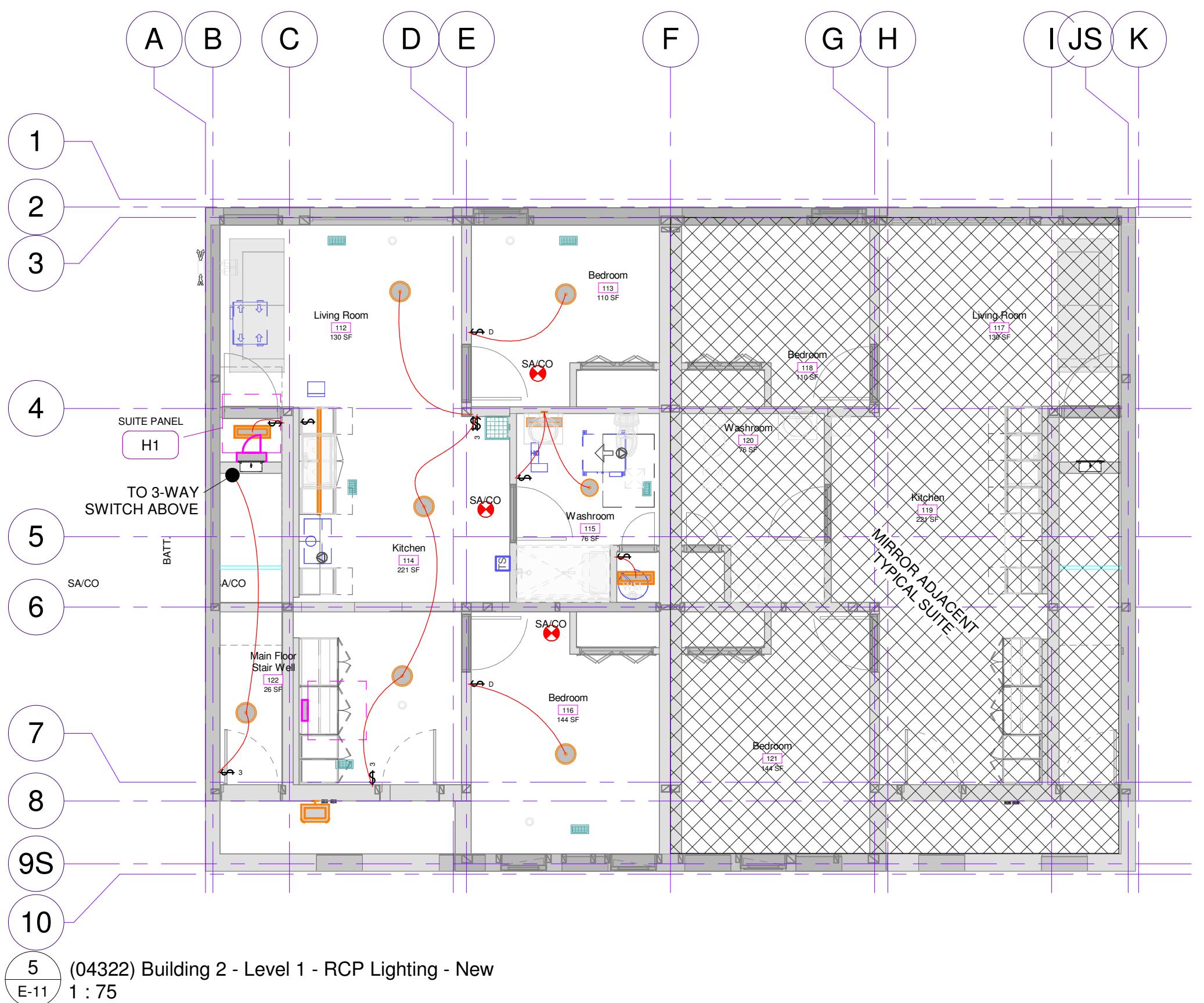
NOTES:
LIGHTING SCHEDULE ABOVE IS FOR TYPICAL SUITE TYPE AND DOES NOT REFLECT THE TOTAL QUANTITY OF LIGHTING FIXTURES REQUIRED
TOTAL NUMBER OF SUITES: 35

(MASTER-E) Fire Alarm Device Schedule														
Level	Type	Mark	Description	Circuit #	Qty.									
2 - Finished Ceiling			FIRE ALARM - COMBINATION SMOKE ALARM & CARBON MONOXIDE DETECTOR - CEILING MOUNTED - CAN/ULC-S531, S538	4	1									
2 - Finished Ceiling			FIRE ALARM - COMBINATION SMOKE ALARM & CARBON MONOXIDE DETECTOR - CEILING MOUNTED - CAN/ULC-S531, S538	4	1									
2 - Finished Ceiling			FIRE ALARM - COMBINATION SMOKE ALARM & CARBON MONOXIDE DETECTOR - CEILING MOUNTED - CAN/ULC-S531, S538	4	1									
1 - Finished Ceiling			FIRE ALARM - COMBINATION SMOKE ALARM & CARBON MONOXIDE DETECTOR - CEILING MOUNTED - CAN/ULC-S531, S538	7	1									
1 - Finished Ceiling			FIRE ALARM - COMBINATION SMOKE ALARM & CARBON MONOXIDE DETECTOR - CEILING MOUNTED - CAN/ULC-S531, S538	7	1									
1 - Finished Ceiling			FIRE ALARM - COMBINATION SMOKE ALARM & CARBON MONOXIDE DETECTOR - CEILING MOUNTED - CAN/ULC-S531, S538	7	1									
B1 - Ceiling			FIRE ALARM - COMBINATION SMOKE ALARM & CARBON MONOXIDE DETECTOR - CEILING MOUNTED - CAN/ULC-S531, S538	4	1									
B1 - Ceiling			FIRE ALARM - COMBINATION SMOKE ALARM & CARBON MONOXIDE DETECTOR - CEILING MOUNTED - CAN/ULC-S531, S538	4	1									

NOTES:
PRE-ALARM SCHEDULE ABOVE IS FOR TYPICAL SUITE TYPE AND DOES NOT REFLECT THE TOTAL QUANTITY OF DEVICES REQUIRED
TOTAL NUMBER OF SUITES: 35

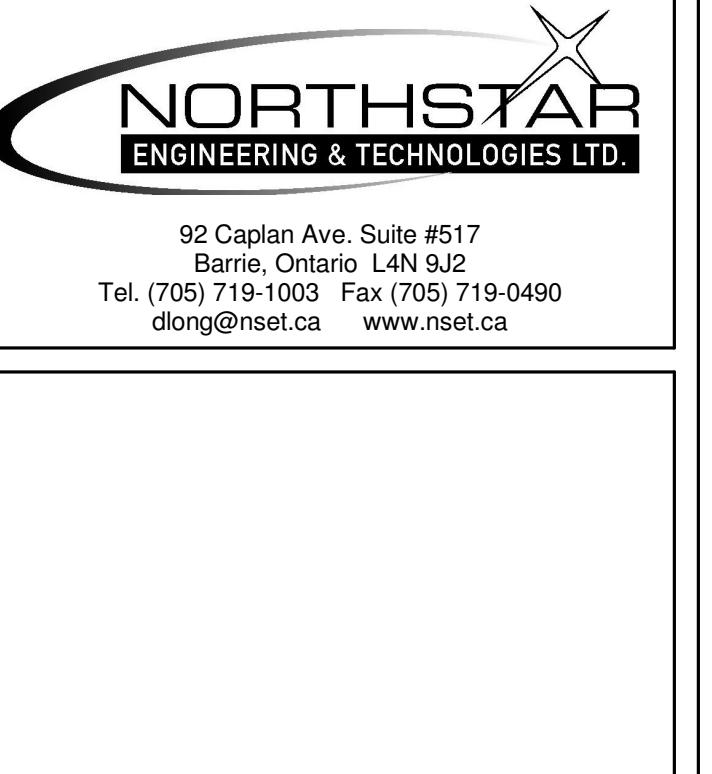


2 (04322) Building 2 - Level 2 - RCP Lighting - New
E-11 1 : 75



5 (04322) Building 2 - Level 1 - RCP Lighting - New
E-11 1 : 75

(04322) PROJECT DRAWING REGISTER	
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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
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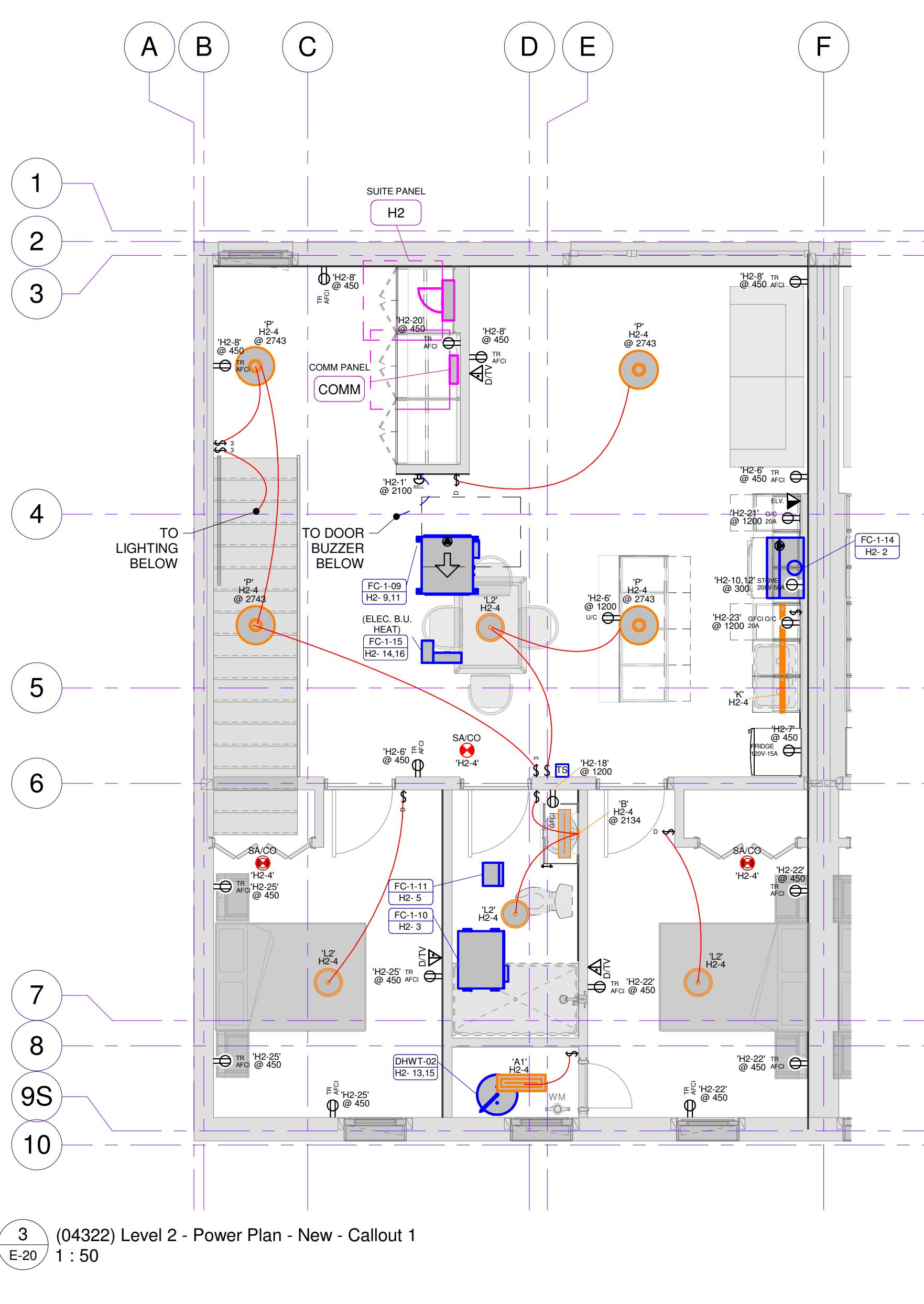


- GENERAL DRAWING / DESIGNER NOTES:
- [1] ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE REQUIREMENTS OF THE PROVINCE OF ONTARIO'S BUILDING CODE, LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
 - [2] THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR 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. DO NOT SCALE DRAWINGS.
 - [4] CONTRACTOR/AGENT OWNER TO REPORT ALL DISCRENCIES OF ERRORS, OMISSIONS OR DISCRENCIES TO THE DESIGNER.
 - [5] PROCEDURE FOR ANY FINAL ASSEMBLY THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
 - [6] REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND / OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
 - [7] SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
 - [8] MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS - ONCE ARRANGED.
 - [9] REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURPOSE OF REVIEW AND APPROVAL BY A CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
 - [10] TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
 - [11] 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.

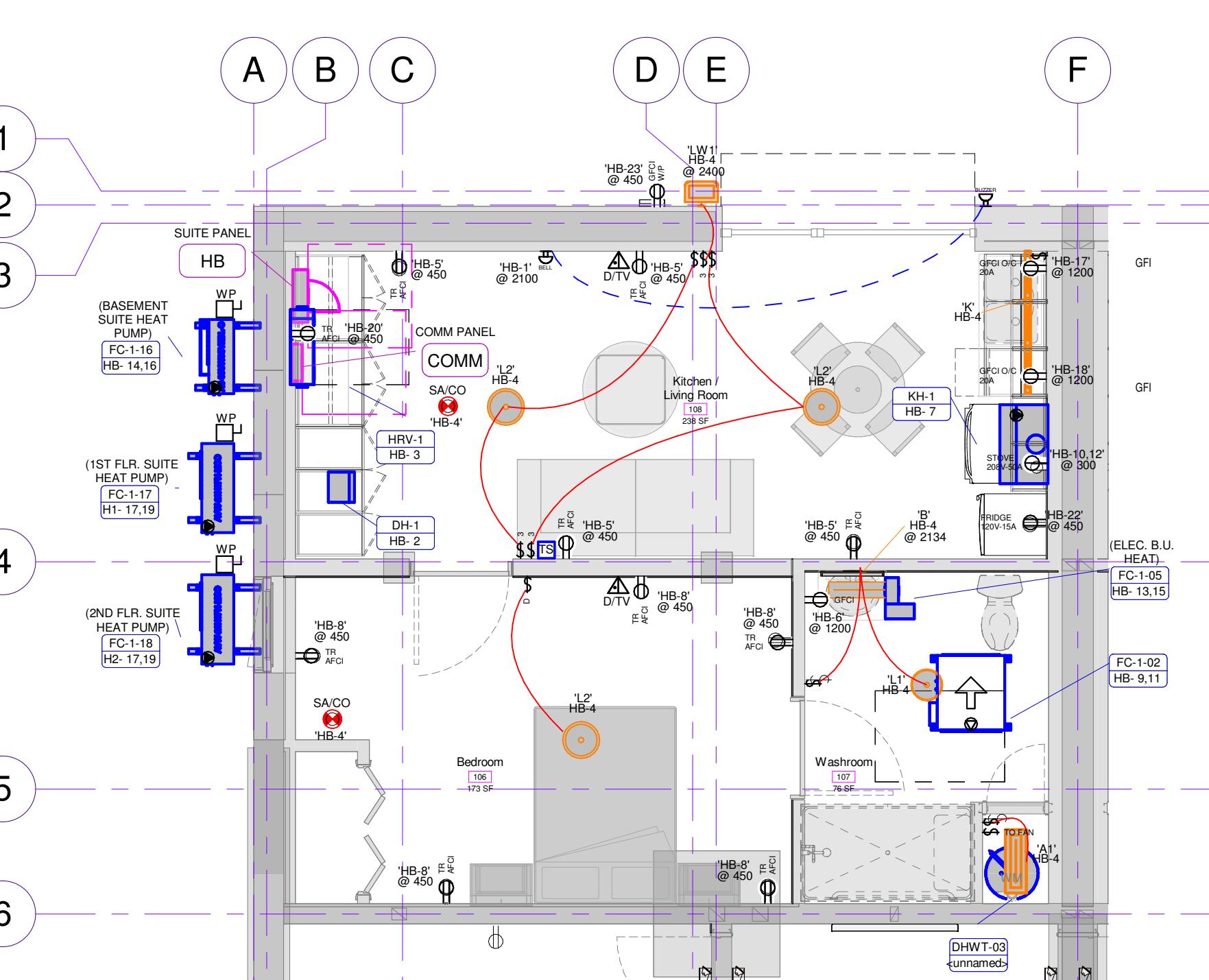
DRAWING REVISIONS		
No.	Description	Date
2	Issued for Review	Apr. 22/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 18/23
6	Re-Issued for Tender	Dec. 20/24

Client: WW Inc.
Address: Minden, ON
Project Name: Gull River Affordable Housing
Dwg. Name: Elec. Lighting - Bldg 2
NSET Project #: 04322
Drawn by: Northstar Eng. Checked by: D.B.D.
Scale: As indicated Revision #: 6.0
Drawing #: E-11
Project Date: Jan. 14/22 Arch-D (24" x 36")

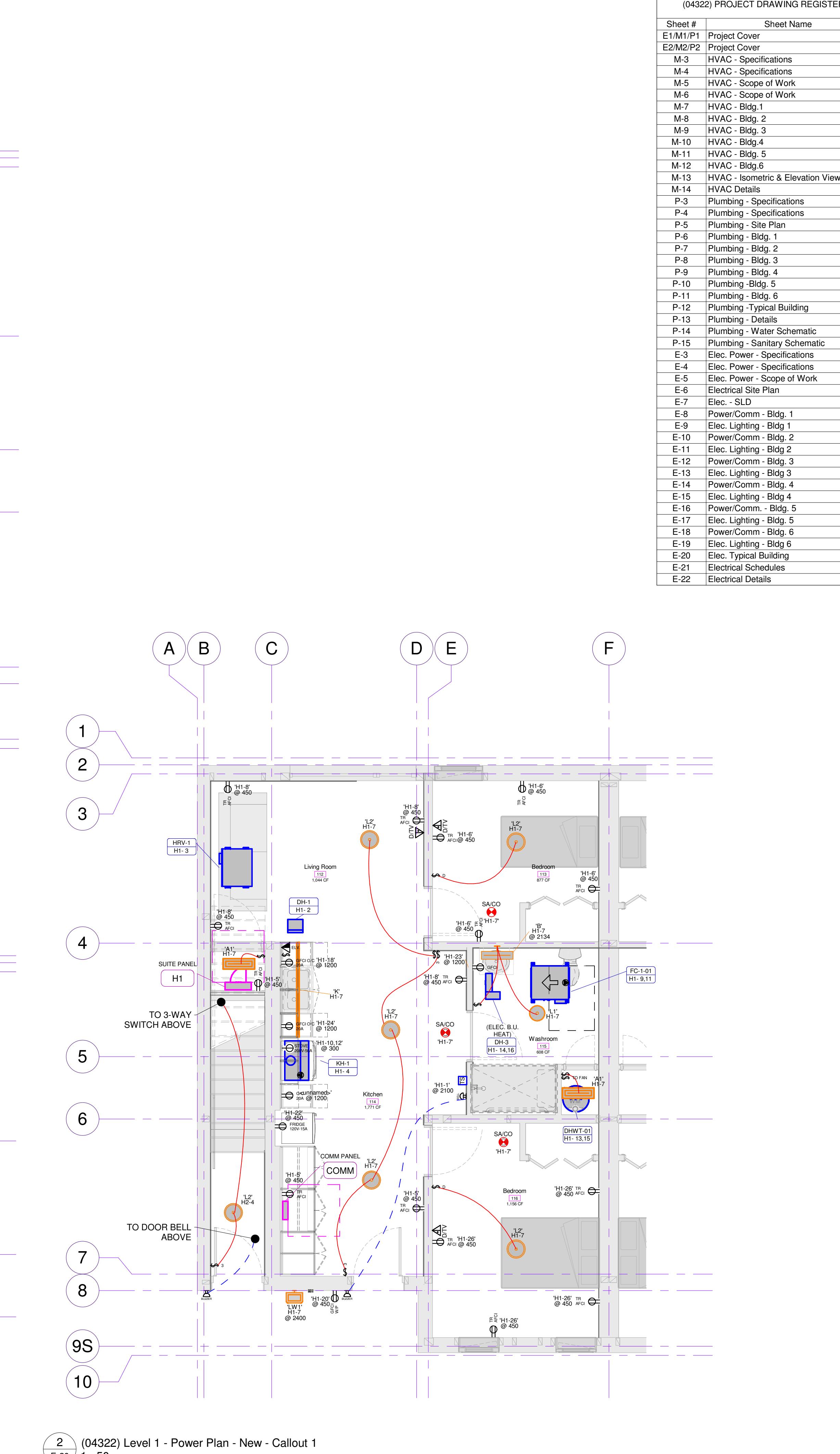
ELECTRICAL LEGEND		LIGHTING LEGEND	
(OFFICES)	ELECTRICAL CIRCUIT TAG: COMMENT: PANEL NAME: CIRCUIT #	A - 20.22 @450mm A.F.C.	LUMINAIRE - INTERIOR DOWNLIGHT - RECESSED - LED JB ROUGH IN HEIGHT (CENTER LINE OF BOX) 1000MM ABOVE FINISHED FLOOR - FOR WALL MOUNTED - IN mm
(OFFICES)	MECHANICAL EQUIPMENT CIRCUIT TAG: AIR SYSTEM / COMMENT: MECHANICAL EQUIP. MARK / TYPE: PANEL NAME: CIRCUIT #	FC-1-07 A - 20	LUMINAIRE - INTERIOR DOME - SURFACE MOUNTED - LED
(OFFICES)	ELECTRICAL EQUIPMENT TAG: COMMENTS: PANEL NAME SEE SLD. SCHEDULES & PLAN VIEWS.	PB-1	LUMINAIRE - INTERIOR LINEAR - SURFACE MOUNTED - LED
(JB)	JUNCTION BOX - WALL MOUNTED	1	LUMINAIRE - INTERIOR LINEAR - WALL MOUNTED - LED
(JB)	JUNCTION BOX - FLOOR MOUNTED	2	LUMINAIRE - INTERIOR LINEAR PENDANT - SUSPENDED - LED
(JB)	JUNCTION BOX - CEILING MOUNTED	3	LUMINAIRE - INTERIOR TAPE - SURFACE MOUNTED - LED
EXTERIOR LIGHTING LEGEND			
(JB)	DIRECT CONNECTION - SINGLE PHASE	4	LUMINAIRE - EXTERIOR WALL PACK - WALL MOUNTED - LED
(JB)	DIRECT CONNECTION - THREE PHASE	5	LUMINAIRE - EXTERIOR BOLLARD - LED
(JB)	DISCONNECT	6	LUMINAIRE - EXTERIOR POLE LIGHT - SINGLE HEAD - RECTANGULAR HEAD - LED
EXIT & EMERGENCY LIGHTING LEGEND			
(JB)	DUPLEX RECEPTACLE (RECEPTACLES FOR NEMA TYPE & AMPEREAGE) x1 - WALL MOUNTED	7	EXIT SIGN - CEILING MOUNTED DIRECTIONAL ARROW INDICATES NUMBER OF EMERGENCY LIGHTS HATCH INDICATES NUMBER OF SIDES/FACES
(JB)	XXX DENOTES: EX - EXISTING GFCI - GROUND FAULT CIRCUIT INTERRUPTER AFCI - ARC FAULT CIRCUIT INTERRUPTER SDU - SURGE GROUND O/C - OVER COUNTER U/C - UNDER COUNTER WIP - WORKING IN PLACE TR - TAMPER RESISTANT USB - CONTAINS USB PORTS	8	BATT. (BATTERY)
(JB)	DUPLEX RECEPTACLE SPLIT (INDIV. CIRCUITS) - WALL MOUNTED	9S	EXIT SIGN - WALL MOUNTED c/w BATTERY DIRECTIONAL ARROW INDICATES NUMBER OF EMERGENCY LIGHTS HATCH INDICATES NUMBER OF SIDES/FACES
(JB)	DUPLEX RECEPTACLE (120V, STD.) x1 - FLOOR MOUNTED	10	BATTERY UNIT - PLUG-IN c/w DUPLEX RECEPTACLE - WALL MOUNTED
(JB)	DUPLEX RECEPTACLE (120V, STD.) x1 - CEILING MOUNTED		BATTERY UNIT c/w 2x EMERGENCY LIGHTS - PLUG-IN c/w DUPLEX RECEPTACLE - WALL MOUNTED
(JB)	DUPLEX RECEPTACLE (120V, STD.) x1 - CAB TIRE c/w STRIKE RELIEF - SUSPENDED MOUNT		EMERGENCY LIGHT - REMOTE DOUBLE HEADS - CEILING MOUNTED
(JB)	QUADPLEX RECEPTACLE (120V, STD.) x1 - WALL MOUNTED		EMERGENCY LIGHT - REMOTE DOUBLE HEADS - WALL MOUNTED
(JB)	QUADPLEX RECEPTACLE (120V, STD.) x1 - FLOOR MOUNTED		EMERGENCY LIGHT - REMOTE SINGLE HEAD - CEILING MOUNTED
(JB)	QUADPLEX RECEPTACLE (120V, STD.) x1 - CEILING MOUNTED		EMERGENCY LIGHT - REMOTE SINGLE HEAD - WALL MOUNTED
LIGHTING CONTROLS LEGEND			
(JB)	SINGLE RECEPTACLE x1 (WALL MOUNTED)	3	(04322) Level 2 - Power Plan - New - Callout 1
(JB)	XXX DENOTES: OUTLET PURPOSE: VOLTAGE: AMPEREAGE: SEE SYMBOL ON PLANS (REFER TO SCHEDULES FOR NEMA TYPE)	E-20	1 : 50
(JB)	HANDICAP PUSH BUTTON - WALL MOUNTED	1	LIGHTING CIRCUIT TAG: SWITCH GROUP: PURPOSE: PANEL NAME: CIRCUIT # JB ROUGH IN HEIGHT (CENTER LINE OF BOX) ABOVE FINISHED FLOOR - WALL MOUNTED - IN mm
(JB)	LOCK PUSH BUTTON - WALL MOUNTED	2	TYP 1: INDICATES "NIGHT LIGHT" TO REMAIN ACTIVE AT ALL TIMES
(JB)	EMERGENCY CALL PUSH BUTTON - WALL MOUNTED	3	SW#1: SWITCH TAG: #1 SWITCH GROUP - LIGHTS ASSOCIATED WILL ACTIVATE ON THIS SWITCH
(JB)	DOME LIGHT (STROBE) WITH SOUNDER - WALL MOUNTED	4	EXTRA LOW VOLTAGE WIRE (ELV) <30V
(TS)	THERMOSTAT - SUPPLIED & INSTALLED BY DV. 26 WIRE <30V - CONNECTION BY DIV. 26 WIRE <30V - CONNECTION BY DIV. 23	5	LOW VOLTAGE SWITCH WIRE <30 to 750V
COMMUNICATIONS LEGEND			
(V)	TELEPHONE & DATA COMBINATION OUTLET - QUANTITY AS INDICATED - WALL MOUNTED	6	LINE VOLTAGE SWITCH - SINGLE POLE
(V)	TELEPHONE & DATA COMBINATION OUTLET - QUANTITY AS INDICATED - CEILING MOUNTED	7	LINE VOLTAGE SWITCH - 3 WAY
(V)	TELEPHONE & DATA COMBINATION OUTLET - QUANTITY AS INDICATED - FLOOR MOUNTED	8	LINE VOLTAGE SWITCH - DIMMER
(V)	DATA OUTLET - QUANTITY AS INDICATED - CEILING MOUNTED	9	LINE VOLTAGE SWITCH - SINGLE POLE - TO FAN
(WAP)	WIRELESS ACCESS POINT DATA: OUTLET - QUANTITY AS INDICATED - CEILING MOUNTED	10	LINE VOLTAGE SWITCH - OCCUPANCY SENSOR
(TV)	COAX CABLE TV OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - WALL MOUNTED		OCT: LINE VOLTAGE OCCUPANCY SENSOR & TIMER - CEILING MOUNTED
(TV)	COAX CABLE TV OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - FLOOR MOUNTED		PHOTOCELL
(D/TV)	D/TV & COAX COMBINATION OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - WALL MOUNTED		ASTRONOMIC TIME SWITCH
(D/TV)	D/TV & COAX COMBINATION OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - FLOOR MOUNTED		CEILING MOUNT: SD-SMOKE DETECTOR - PHOTOELECTRIC SD-B: PHOTOELECTRIC SMOKE DETECTOR SD-B: BEAM TYPE SMOKE DETECTOR SD-B: SMOKE DETECTOR w/o LOCAL SOUNDER/BELL SA-SMOKE ALARM: SMOKE ALARM & CARBON MONOXIDE DETECTOR
(D/TV)	D/TV & COAX COMBINATION OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - CEILING MOUNTED		C: CONVENTIONAL B: BLANK ADDRESSABLE WG: CW WIRE GUARD
(D/TV)	D/TV & COAX COMBINATION OUTLET - QUANTITY AS INDICATED - PROVIDE RG6 CABLE - CEILING MOUNTED		WP: WEATHER PROOF - OUTDOOR RATED
	NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS SEE SPECIFICATIONS FOR ALL CABLE TYPES		NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS SEE SPECIFICATIONS FOR ALL CABLE TYPES



(04322) Level 2 - Power Plan - New - Callout 1

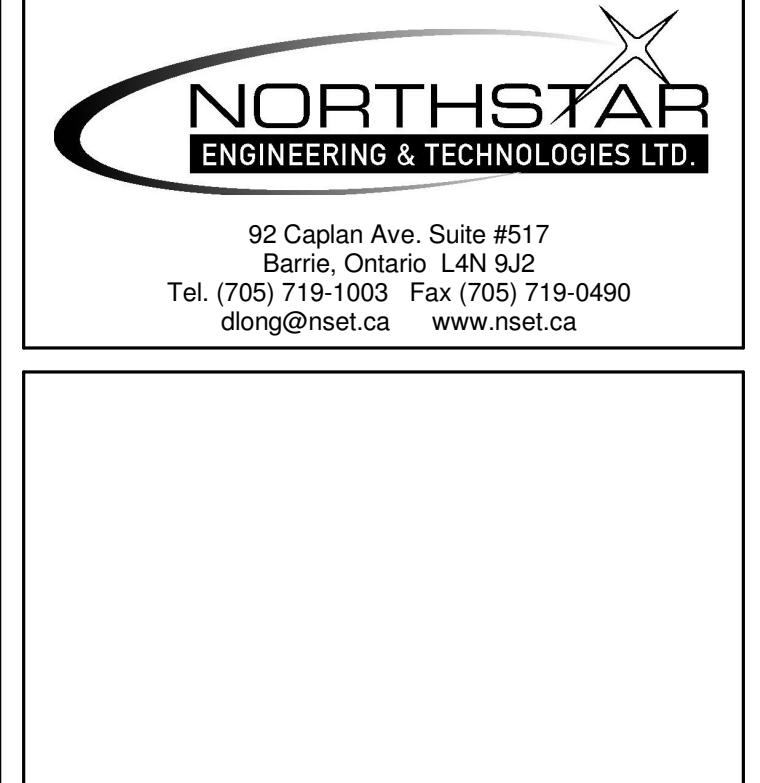


(04322) Basement - Electrical - Typical Suite Layout



(04322) Level 1 - Power Plan - New - Callout 1

(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. 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:
 [List of 16 notes detailing project requirements, drawing usage, and contractor responsibilities.]

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: [Signature]

Client: WW Inc.
Address: Minden, ON
Project Name: Gull River Affordable Housing
Dwg. Name: Elec. Typical Building
NSET Project #: 04322
Drawn by: Northstar Eng. Checked by: D.B.D.
Scale: As indicated Revision #: 6.0
Drawing #: E-20
Project Date: Jan. 14/22 Arch-D (24" x 36")

(MASTER-E) Electric Heat Schedule - (New)											
Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase	Heating Capacity	Supplied By			
BBH-1	BASEBOARD HEATER / 750W / 208V 1P	OUELET	OFM0758BL	ELEC.	208	1	2,559 Btu/h	DIV. 23			
BBH-1	BASEBOARD HEATER / 750W / 208V 1P	OUELET	OFM0758BL	ELEC.	208	1	2,559 Btu/h	DIV. 23			
BBH-1	BASEBOARD HEATER / 750W / 208V 1P	OUELET	OFM0758BL	ELEC.	208	1	2,559 Btu/h	DIV. 23			
DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	3,412 Btu/h	DIV. 23			
DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	3,412 Btu/h	DIV. 23			
DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	3,412 Btu/h	DIV. 23			
DH-1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	3,412 Btu/h	DIV. 23			
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208	1	6,824 Btu/h	DIV. 23			
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208	1	10,236 Btu/h	DIV. 23			
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208	1	10,236 Btu/h	DIV. 23			
DH-4	DUCT HEATER / 30kW / 16"x16" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-30LS	ELEC.	208	3	102,364 Btu/h	DIV. 23			
FFH-1	HEATER / FAN FORCED / CEILING / SURFACE / 240V 10 / 1500W / WHITE c/w BUILT-IN THERMOSTAT	OUELET	OACP1500-BL & KIT-OAC-B51	ELEC.	208	1	5,118 Btu/h	DIV. 23			
FFH-1	HEATER / FAN FORCED / CEILING / SURFACE / 240V 10 / 1500W / WHITE c/w BUILT-IN THERMOSTAT	OUELET	OACP1500-BL & KIT-OAC-B51	ELEC.	208	1	5,118 Btu/h	DIV. 23			
FFH-1	HEATER / FAN FORCED / CEILING / SURFACE / 240V 10 / 1500W / WHITE c/w BUILT-IN THERMOSTAT	OUELET	OACP1500-BL & KIT-OAC-B51	ELEC.	208	1	5,118 Btu/h	DIV. 23			
Grand total							166,342 Btu/h				

(04322) PROJECT DRAWING REGISTER

Sheet #	Sheet Name
E1/M1/P1	Project Cover
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E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
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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



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 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(S). DO NOT SCALE DRAWINGS.
- [4] CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
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- [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 REQUIREMENT TO PROVIDE WORKING SYSTEMS. 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 OTHER DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
- [10] REQUESTS FOR ANY FOR AN 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.
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- [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 OF EQUIPMENT, SERVICES OR ACCESSORIES BY CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
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WIRE SIZE NOTE: ALL 15A & 20A CIRCUITS TO BE SERVED BY 12AWG MINIMUM WIRE c/w 3/4" CONDUIT UNLESS NOTED IN THE SCHEDULE.											
Location:	Volts:	120/208 Single	Mains Rating:	100 A	Serves:	SUITE PANEL					
Supply From:											
Mounting:	RECESSED										
Mfg.:	EATON										
Model:	POW-R-LINE PRL1a										
CKT	Circuit Description	# L	# N	Item#, Wire, Cond.	Brkr.	A	B	Brkr.	Item#, Wire, Cond.	# N	L
1	DOOR BELL	1	1		15 A	10 VA	996 VA			1	1
3	HVAC - HRV-1	1	1		15 A			96 VA	204 VA	1	1
5	RECEPTACLE - AFCI KITCHEN / LIVIN...	1	1		15 A	1,080 VA	1,440 VA			1	1
7	LIGHTING	1	1		15 A			246 VA	1,440 VA	1	1
9	HVAC - FC-2	2	0		15 A	135 VA	180 VA			0	2
11	--	--	--				135 VA	180 VA	--	--	12
13	HWT	2	0		20 A	1,500 VA	1,503 VA			0	2
15	--	--	--				1,500 VA	1,503 VA	--	--	16
17	HVAC - HP-2	2	0	3# 10AWG IN 21mmC	30 A	2,413 VA	360 VA			1	1
19	--	--	--				2,413 VA	360 VA	--	--	20
21	RECEPTACLE - GFCI KITCHEN...	1	1		15 A					1	1
23	RECEPTACLE - GFCI KITCHEN...	1	1		15 A					1	1
25	RECEPTACLE - BEDROOM AFCI	1	1		15 A	1,440 VA				1	1
27	--	--	--								28
29	--	--	--								30
Notes: Provide GND. wires as per CDN. Elec. Code.											
Total Load:		11,516 VA		8,579 VA							
Total...		107 A		82 A							
Total Connected Load: Provide LOCKING CLIPS on all Life Safety Circuits.											
Total... 20,094 VA											

(MASTER-E) Panel Schedule - (New)											
Level	Panel Name	Description				Location					
FFE Lower Level	COMM	SUITE COMM. PANEL									

GENERAL DRAWING / DESIGNER NOTES:

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- [2] THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. THE CONSULTANT WILL NOT CHARGE 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 INFORMATION IS PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
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ALLOW THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OWN DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.

[8] REQUEST FOR ANY FINAL ASSEMBLY THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.

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[15] DRAWING REVISIONS

No. Description Date

1 Preliminary May 19/22

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:

Electrical Details

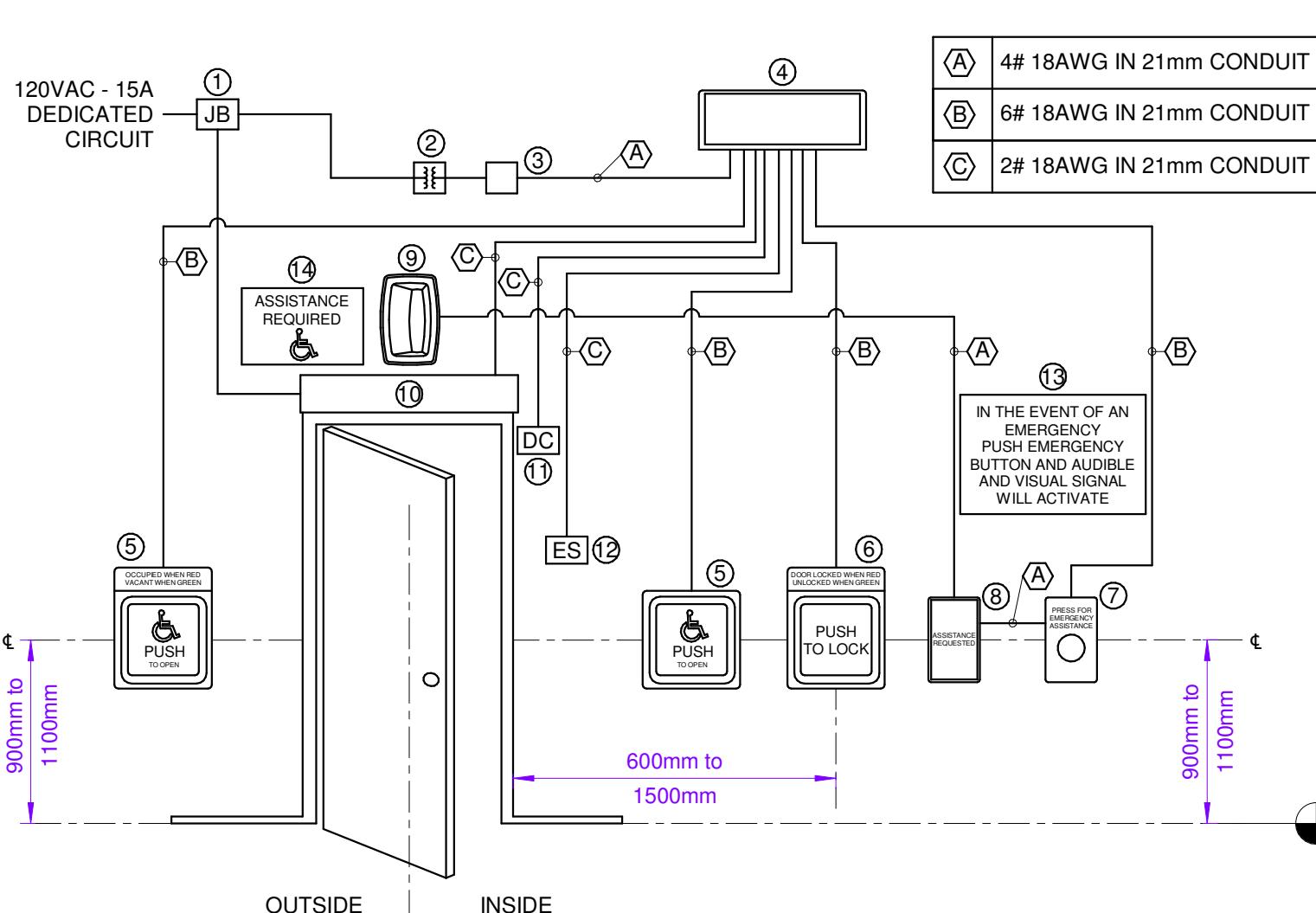
NSET Project #: 04322

Drawn by: Northstar Eng. Checked by: D.B.D.

Scale: As indicated Revision #: 6.0

Drawing #: E-22

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



NOTES:
SUPPLY & INSTALL A COMPLETE UNIVERSAL ACCESSIBLE WASHROOM DOOR CONTROL, ELECTRONIC LOOKING & EMERGENCY SIGNAL KIT AS PER MANUFACTURERS RECOMMENDATIONS FOR ALL COMPONENTS, WIRING, INTERCONNECTIONS & MOUNTING. ALL WIRING & SERVICE INSTALLATIONS SHALL BE CONCEALED. FINAL WIRE & SPECIFICATION TO BE CONFIRM WITH SHOP DRAWINGS. UNIVERSAL EMERGENCY CALL KIT TO BE CAMDEN CX-WC13XF & CX-WC10 SYSTEMS OR APPROVED EQUIAR. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT DEVICE LOCATIONS.

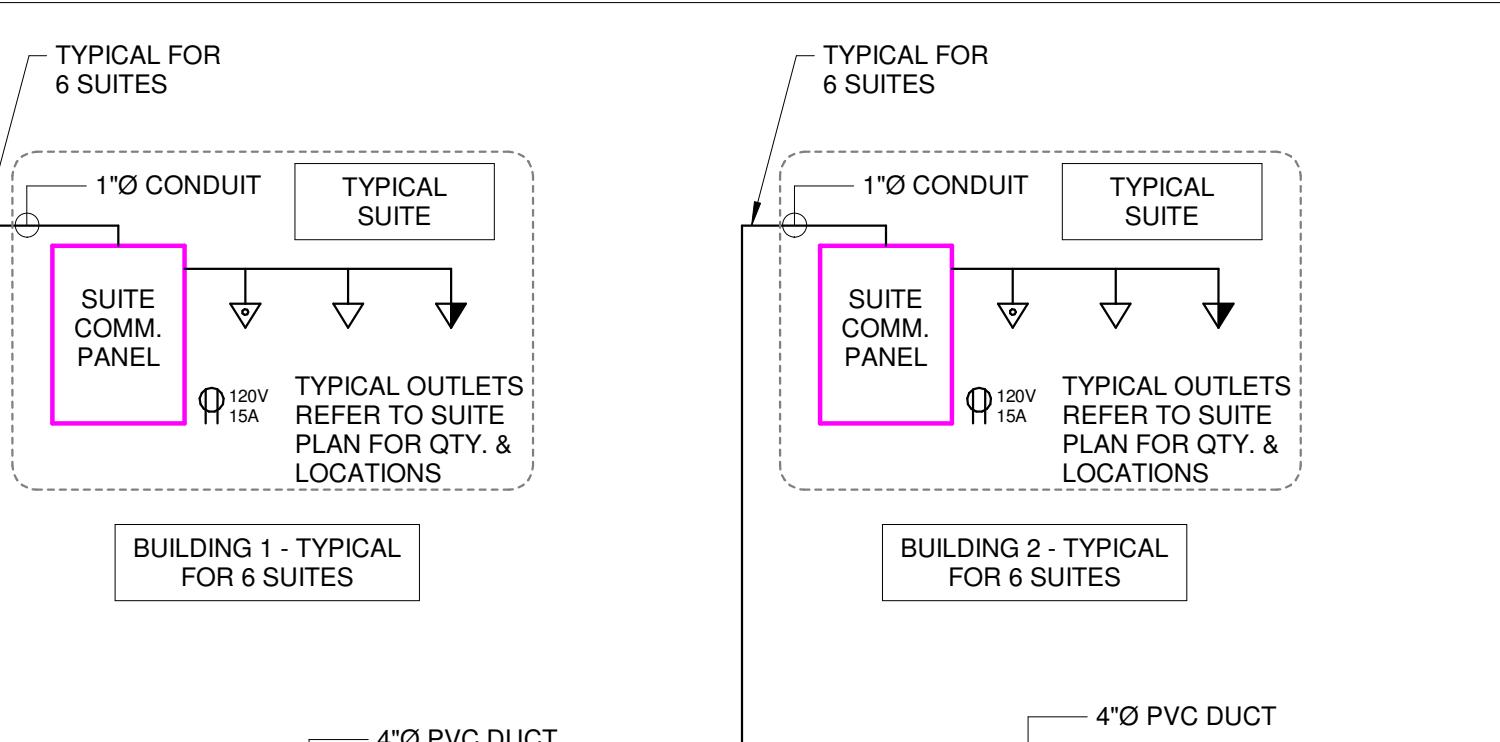
1. 120VAC - 15A DEDICATED CIRCUIT FOR UNIVERSAL ACCESSIBLE WASHROOM CONTROL.
2. 120VDC TO 24VDC TRANSFORMER.
3. 12/24VDC LINEAR POWER SUPPLY.
4. UNIVERSAL WASHROOM DOOR CONTROL / RELAY.
5. WALL MOUNTED HANDICAP PUSH BUTTON WITH ILLUMINATED ENCLOSURE AND SIGN - BUTTON TO OPERABLE WITH A CLOSED FIST OF NOT MORE THAN 22.2N. SYMBOL ON DRAWINGS: (◎)
6. WALL MOUNTED DOOR LOCK PUSH BUTTON WITH ILLUMINATED ENCLOSURE AND SIGN - BUTTON TO OPERABLE WITH A CLOSED FIST OF NOT MORE THAN 22.2N. SYMBOL ON DRAWINGS: (◎)
7. WALL MOUNTED EMERGENCY CALL PUSH BUTTON WITH ILLUMINATED ENCLOSURE AND SIGN - BUTTON TO OPERABLE WITH A CLOSED FIST OF NOT MORE THAN 22.2N. ELECTRIC STRIKE ON DOOR TO RELEASE WHEN EMERGENCY BUTTON IS PUSHED. DOOR OPERATOR IS NOT TO ACTIVATE. SYMBOL ON DRAWINGS: (◎)
8. 'ASSISTANCE REQUESTED' LED ANNUNCIATOR WITH SOUNDER.
9. DOME LIGHT WITH SOUNDER OUTSIDE OF WASHROOM TO SIGNAL ASSISTANCE IS REQUIRED WHEN EMERGENCY CALL PUSH BUTTON IS PRESSED. SOUND LEVEL TO BE 82 DBA @ 3 METERS.
10. DOOR OPERATOR SUPPLIED BY OTHERS.
11. MAGNETIC DOOR CONTACT.
12. ELECTRIC STRIKE.
13. EMERGENCY ASSISTANCE LAMACOID SIGNAGE - MOUNT SIGN ON WALL ABOVE PUSHBUTTON. SIGN TO READ AS SHOWN. LETTERS ON LAMACOID MUST BE AT LEAST 25MM HIGH WITH A 5MM STROKE.
14. PROVIDE "ASSISTANCE REQUIRED" WITH WHEELCHAIR GRAPHIC SIGNAGE OUTSIDE OF THE WASHROOM.

NUMBER OF CABLES PER CONDUIT		
CONDUIT SIZE (INNER DIAMETER)	# OF COAX CABLE (RG6U)	# OF CAT6a CABLE (4 PAIR)
1/2"	1	0
3/4"	2	4
1"	4	7
1-1/4"	7	12
1-1/2"	10	16
2"	16	22
2-1/2"	28	36
3"	42	50

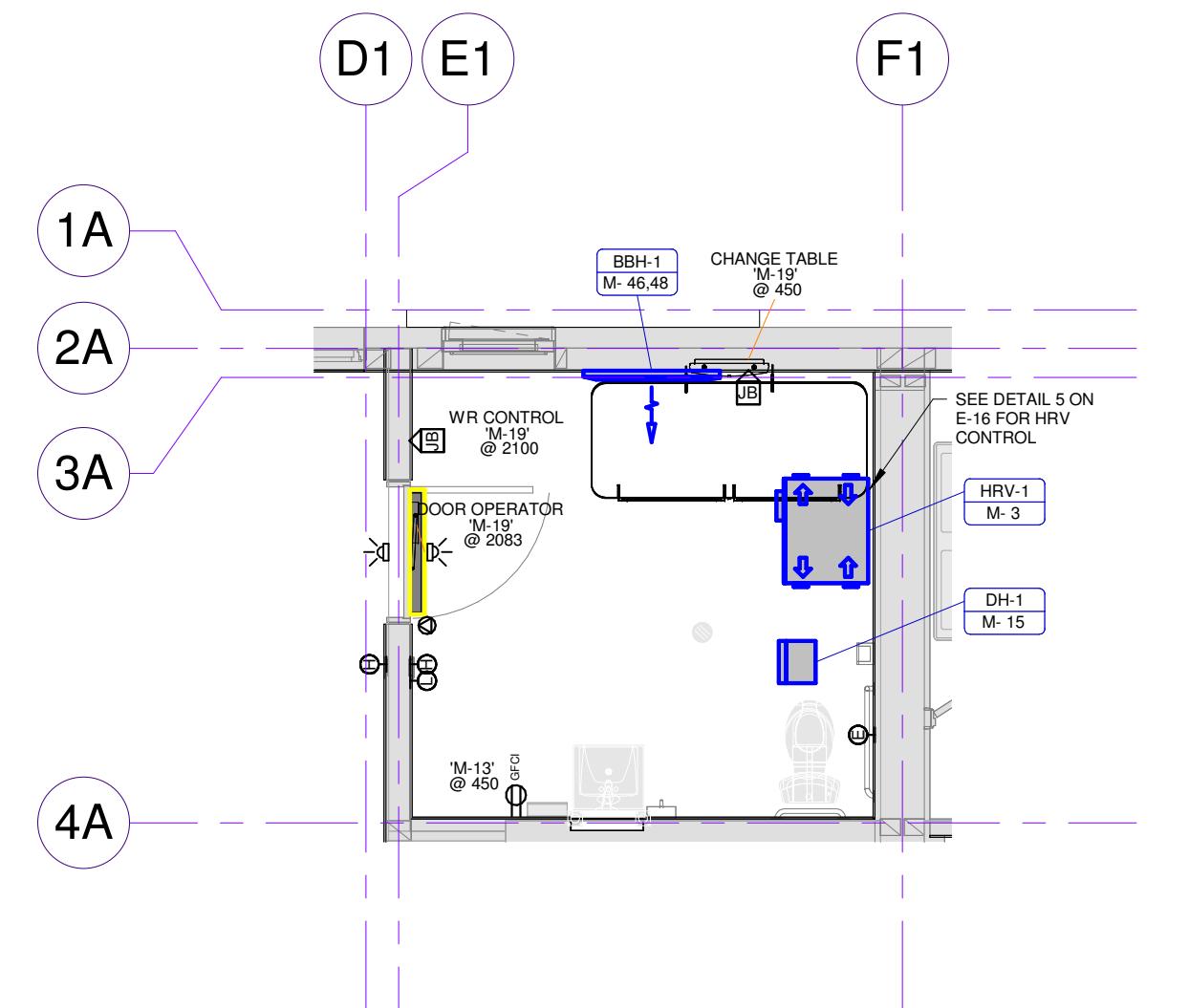
NOTES:
1. IN-SUITE RECESSED WALL CABINET (DEMARCATION COMMUNICATION BOX - PRIMEX MODEL P3000 - 30'H x 14'W x 3.5'D) PROVIDED BY COMMUNICATION PROVIDER.
2. MOUNTING HEIGHT IN BARRIER FREE SUITE SHALL BE 13" A.F.F. & SHALL BE 30" A.F.F. FOR OTHER SUITES.
3. COORDINATE FINAL LOCATION & MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.

TELEVISION RISER:
1. ALL CABLE INSTALLATION & CONNECTIONS ARE BY OTHERS.
2. ELECTRICAL CONTRACTOR TO PROVIDE CONDUITS & COMM. PANEL AS SHOWN. WHEN DEVICES ARE LOCATED ON SUITE DEMISING WALLS, DATA BOXES ARE TO BE USED & PUTTY PADS WHEN REQUIRED TO MAINTAIN ACOUSTICAL & FIRE RATINGS.

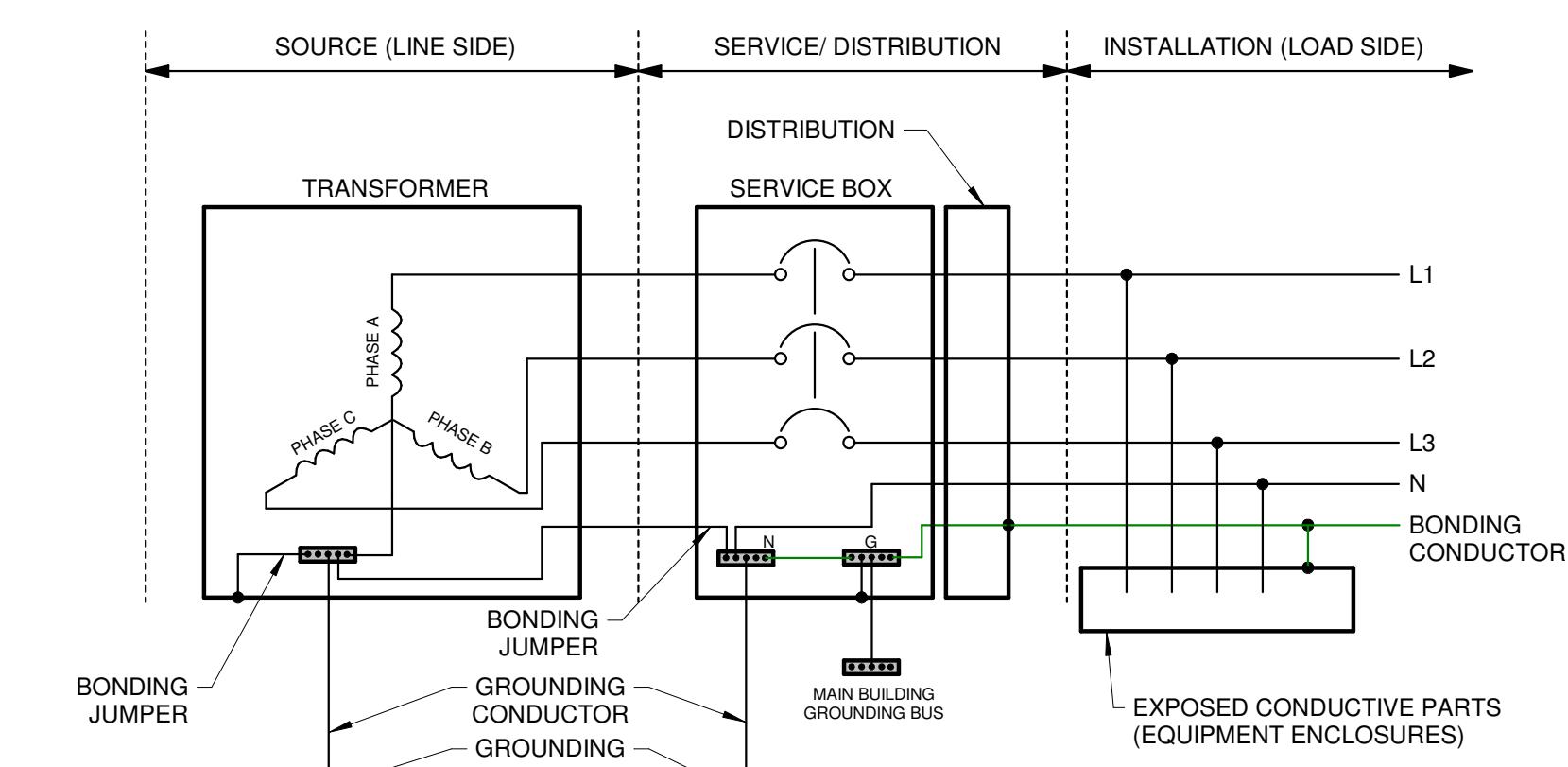
3. MAXIMUM RUN OF CABLE FROM POINT OF SUPPLY TO FURTHEST OUTLET IS NOT TO EXCEED 50 METERS.
COMMUNICATION RISER:
1. ALL CABLE INSTALLATION & CONNECTIONS ARE BY OTHERS.
2. ELECTRICAL CONTRACTOR TO PROVIDE CONDUITS & COMM. PANEL AS SHOWN. WHEN DEVICES ARE LOCATED ON SUITE DEMISING WALLS, DATA BOXES ARE TO BE USED & PUTTY PADS WHEN REQUIRED TO MAINTAIN ACOUSTICAL & FIRE RATINGS.



1 Communications - Riser Diagram
N.T.S.

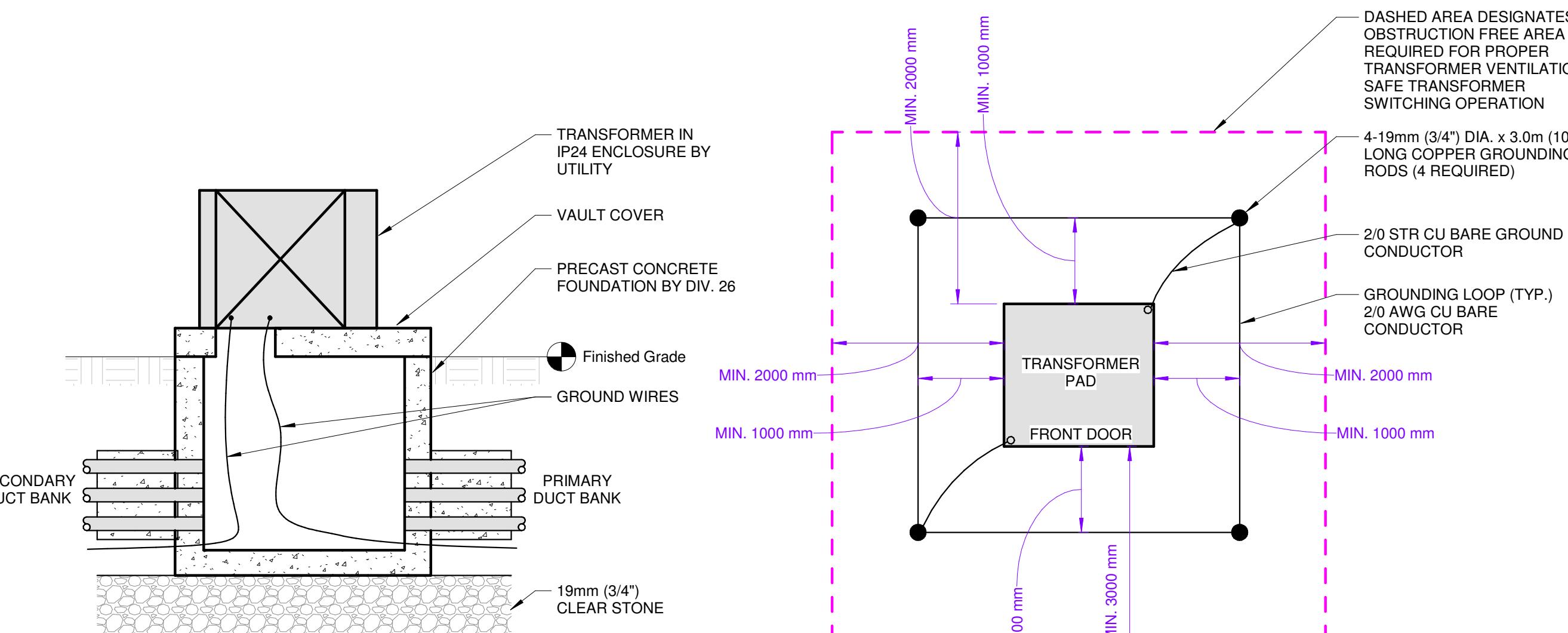


3 (04322) Building 5 - Level 1 - Power Plan - Universal WR
E-22 1 : 50



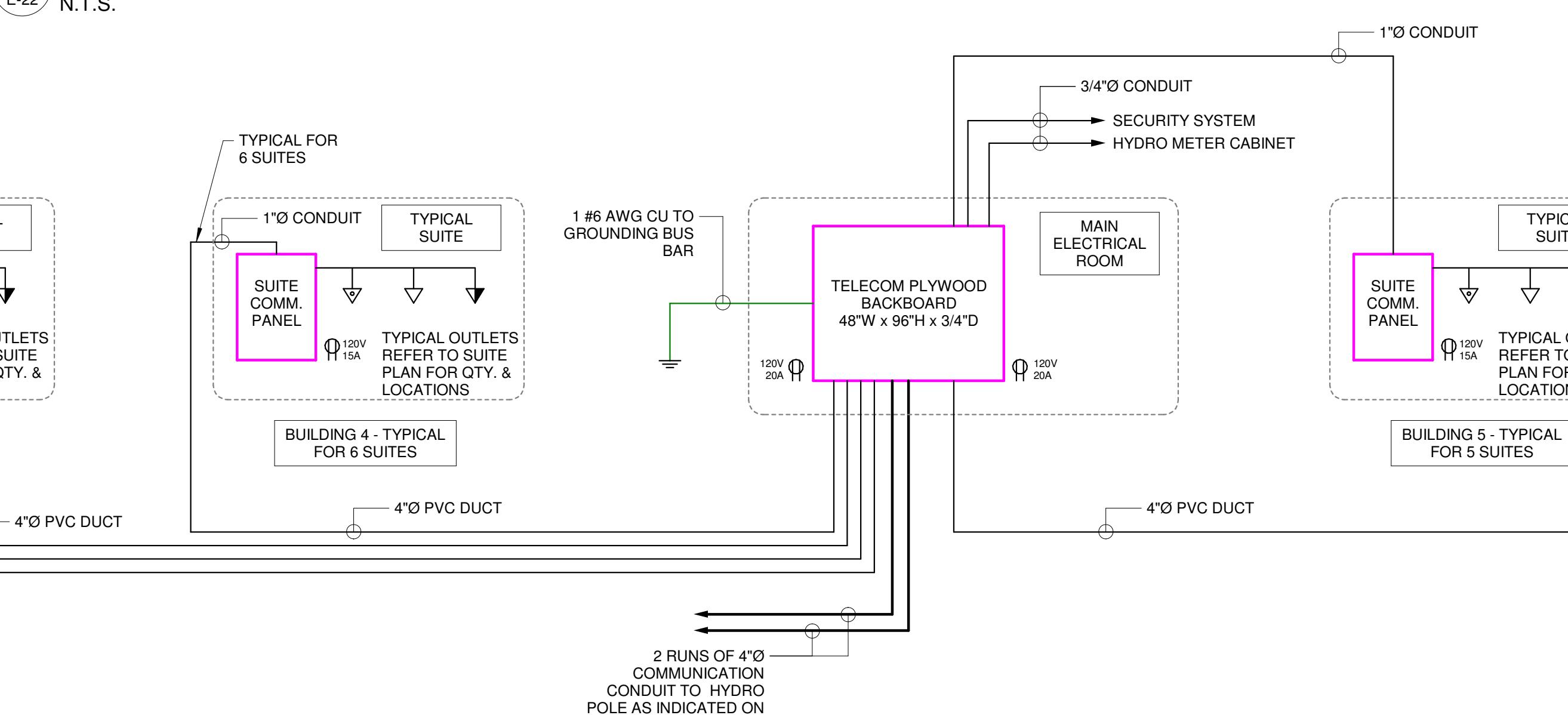
NOTES:
1. BONDING CONDUCTORS TO BE SIZED AS PER TABLE 16 IN THE CANADIAN ELECTRICAL CODE / ONTARIO ELECTRICAL SAFETY CODE.
2. THE INTENT OF THIS DETAIL IS TO OUTLINE GROUNDING & BONDING REQUIREMENTS. THIS DETAIL SHALL NOT BE INTERPRETED FOR QUANTITY OF PANELS, TRANSFER SWITCHES, LIFE-SAFETY LOADS, NON-LIFE-SAFETY LOADS, UTILITY SERVICE CONFIGURATION, OR UTILITY METERING CONFIGURATION.

4 Grounding Bonding Detail
N.T.S.

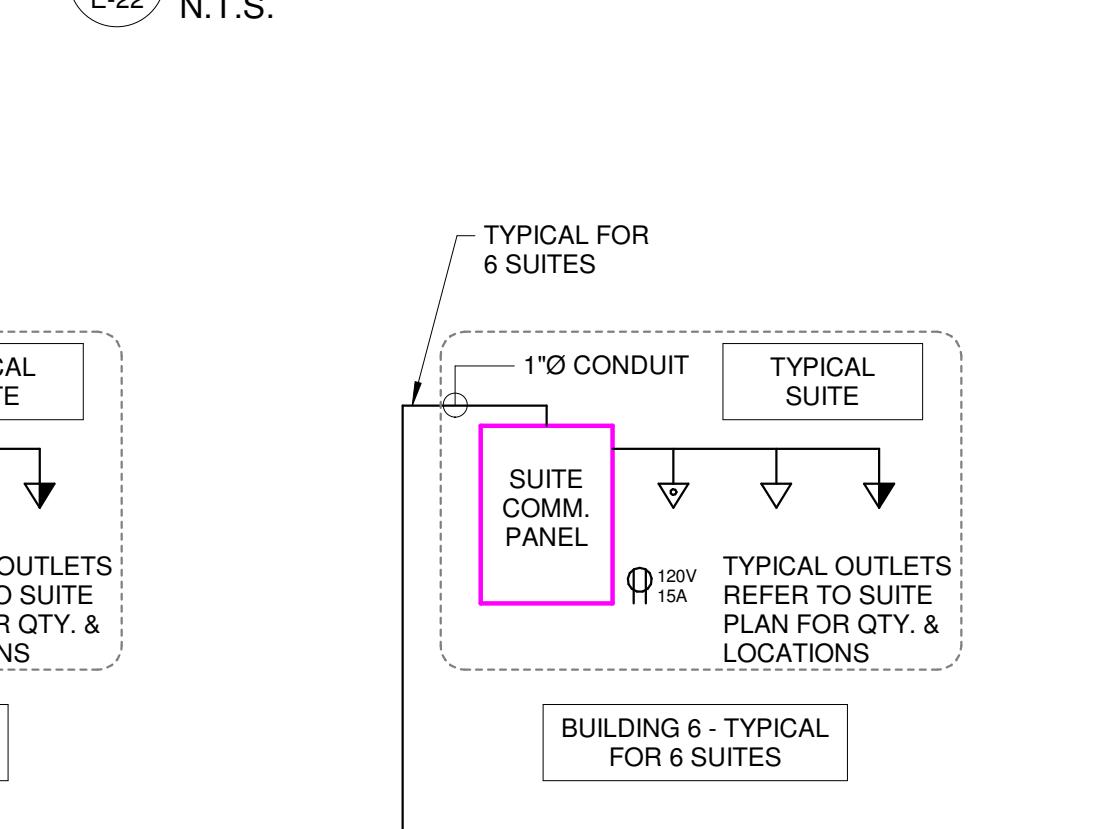


NOTES:
1. TRANSFORMER VAULT TO BE INSTALLED AS PER UTILITIES STANDARD.
2. CONTRACTOR TO SUPPLY & INSTALL CONCRETE ENCASED PRIMARY DUCT BANK TO DEMARCTION POINT (COORDINATE WITH UTILITIES). COMPLETE SECONDARY DUCT BANK & CABLES, TRANSFORMER PAD/VAULT, BOLLARDS & GROUNDING TO MEET THE REQUIREMENTS OF ESA & UTILITIES.
3. UTIL TO SUPPLY & INSTALL TRANSFORMER COMPLETE WITH PRIMARY CONDUCTORS. ALL PRIMARY & SECONDARY CONDUCTORS TO BE TERMINATED BY UTIL.
4. REFER & COMPLY WITH UTILITIES INSTALLATION STANDARDS FOR CONSTRUCTION DETAILS, METHODS & APPROVED EQUIPMENT VENDORS.

5 Pad Mount Transformer
N.T.S.



6 Grounding Pit
N.T.S.



Engineering Details
04322
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23.05.00 COMMON WORK RESULTS FOR HVAC

23.05.00 - 1.0 MECHANICAL HVAC INSTALLATION

- SUPPLY & INSTALL COMPLETE MECHANICAL HVAC SYSTEMS & INCLUDING ALL NECESSARY LABOUR, SERVICES, PRODUCTS, MATERIALS & EQUIPMENT. HVAC SYSTEMS TO BE FULLY FUNCTIONING OPERATING TO THE SATISFACTION OF THE OWNER & THE DESIGN PROVIDED.
- CONSTRUCTION & INSTALLATION METHODS SHALL COMPLY WITH THE CURRENT EDITION OF THE APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS. ALL WORK SHALL ALSO COMPLY WITH OTHER CODES, STANDARDS & REGULATIONS REFERRED TO IN THE MANUFACTURER'S INSTALLATION MANUALS & DOCUMENTS AND ADOPTED BY THE AUTHORITIES HAVING JURISDICTION.
- SPECIFIED WORK IN THIS DESIGN DOES NOT IMPLY OR DETERMINE CONTRACTUAL LIMITS OR SCOPE BETWEEN SUB-CONTRACTORS, CONTRACTORS & THE OWNER.
- THE SCOPE OF WORK IS AS DESCRIBED HEREIN & SHOWN ON THE DRAWINGS.

23.05.00 - 2.0 DRAWINGS & SPECIFICATIONS

- DRAWINGS ARE DIAGRAMMATIC & SHOW APPROXIMATE LOCATIONS OF MECHANICAL SYSTEM INSTALLATION & 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 PRE-BIDDING WORK. CONTRACTOR TO VERIFY ALL DRAWS, RUMPS & POSSIBLE INTERFERENCE WITH EXISTING SERVICES & STRUCTURAL FEATURES. ANY REQUIRED RELOCATION OF EXISTING SERVICES TO ACCOMMODATE HVAC SYSTEM TO BE INCLUDED IN COST ESTIMATE.
- READ THE MECHANICAL DRAWINGS IN CONJUNCTION WITH ALL OTHER STRUCTURAL, ARCHITECTURAL, SITE CIVIL, LANDSCAPE, SPRINKLER, PLUMBING, 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.
- THE DRAWINGS ARE INTENDED TO CONVEY THE SCOPE OF WORK & DO NOT SHOW ARCHITECTURAL & STRUCTURAL DETAILS. MECHANICAL CONTRACTOR SHALL PROVIDE, AT MECHANICAL CONTRACTOR'S COST, ALL OFFSETS, FITTINGS, & SIMILAR PRODUCTS REQUIRED AS A RESULT OF OBSTRUCTIONS & OTHER ARCHITECTURAL & STRUCTURAL DETAILS BUT NOT SHOWN ON THE DRAWINGS.
- 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-VERA, AS THOUGH FULLY COVERED BY BOTH.
- SHOULD ANY DISCREPANCY APPEAR BETWEEN THE DRAWINGS & SPECIFICATIONS WHICH LEAVES THE MECHANICAL 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 PRACTICAL ALTERNATE HAS BEEN ALLOWED FOR.
- IN THE EVENT THAT THE CONTRACTOR OR AUTHORITY HAVING JURISDICTION DOES NOT AGREE WITH THE ENGINEER'S PLANS, THEIR REQUEST SHALL BE COMMUNICATED TO THE ENGINEER IN WRITING. CONTRACTOR SHALL CONSULT THE ENGINEER BEFORE PROCEEDING WITH CHANGES. EACH CONTRACTOR SHALL PREPARE DRAWINGS IN ADDITION TO ENGINEER'S DRAWINGS AS MAY BE REQUIRED BY VARIOUS INSPECTION DEPARTMENTS HAVING JURISDICTION, & OBTAIN THEIR APPROVAL BEFORE PROCEEDING WITH THE WORK.

23.05.00 - 3.0 PERMITS, FEES, & CERTIFICATES

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

23.05.00 - 4.0 EXAMINATION OF THE SITE

- PRIOR TO SUBMITTING THEIR TENDER, THE MECHANICAL CONTRACTOR SHALL FULLY 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.

23.05.00 - 5.0 STANDARD OF MATERIAL & WORKMANSHIP

- ALL MATERIALS & EQUIPMENT SHALL BE NEW, CSA APPROVED, BEAR CSA STAMP & BE OF THE BEST COMMERCIAL QUALITY. OBTAINABLE FOR THE PURPOSE. ALL ITEMS REQUIRED TO PROVIDE A COMPLETE WORKING SYSTEM - INCLUDING ITEMS NOT SPECIFIED OR SHOWN, SHALL BE INCLUDED.
- 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 DIRECT ON SITE SUPERVISION OF AN EXPERIENCED JOURNEYMAN TRADESMAN.
- WORKMANSHIP SHALL BE OF THE HIGHEST STANDARDS THROUGHOUT & SHALL BE MINIMUM OF THE CURRENT TRADE PRACTICES FOR MECHANICAL INSTALLATIONS IN THIS BUILDING.
- UNLESS OTHERWISE SPECIFIED ALL EQUIPMENT TO BE INSTALLED IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS & INSTRUCTIONS, & REQUIREMENTS OF GOVERNING CODES, STANDARDS, & REGULATIONS. GOVERNING CODES, STANDARDS, & REGULATIONS TAKE PRIORITY OVER MANUFACTURER'S INSTRUCTIONS.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY THAT MATERIAL AND EQUIPMENT BE BROUGHT INTO THE BUILDING IN SUCH ASSEMBLIES AND SIZES AS TO ENTER INTO THE SPACES WHERE THEY ARE TO BE LOCATED & TO BE SMALL ENOUGH TO BE HOISTED INTO THE BUILDING WITHOUT DIFFICULTY. ANY CUTTING, PATCHING, ETC. INVOLVED IN GETTING LARGE ASSEMBLIES INTO PLACE, SHALL BE THE RESPONSIBILITY OF THIS SUBCONTRACTOR.
- ENSURE THAT PROPER ACCESS & SERVICE CLEARANCES ARE MAINTAINED AROUND EQUIPMENT, & WHERE APPLICABLE, ACCESS SPACE FOR FUTURE EQUIPMENT REMOVAL OR REPLACEMENT IS NOT IMPEDED. REMOVE & REPLACE ANY EQUIPMENT WHICH DOES NOT MEET THIS REQUIREMENT.
- THE MECHANICAL 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.
- SUSPENSION OF ANY MECHANICAL EQUIPMENT SPECIFIED IN THIS DESIGN IS THE RESPONSIBILITY OF THE CONTRACTOR. VERIFICATION WITH OTHER CONSULTANTS MAY BE REQUIRED. MAXIMUM 3/8" DIA. THREADED HOD HANGERS ACCEPTED. EQUIPMENT MAY REQUIRE VIBRATION ISOLATION. SEE MFG. INSTALLATION MANUALS.

- ALL ROOF CURBS SHALL BE A PERIMETER TYPE WITH COMPLETE PERIMETER SUPPORT CAPABLE OF SUPPORTING ENTIRE UNIT WEIGHT OF THE MECHANICAL UNIT. THE CURB SHALL BE A MINIMUM OF 14 INCHES HIGH AND INCLUDE A NOMINAL 2 X 4 INCH WOOD STRIP. WEATHERPROOF GASKETING SHALL BE PROVIDED FOR FIELD MOUNTING BETWEEN THE UNIT BASE AND ROOF CURB.
- PROVIDE NEOPRENE PAD ISOLATORS BETWEEN ALL MECHANICAL EQUIPMENT & THE BUILDING STRUCTURE.
- ADEQUATE ALLOWANCE SHALL BE MADE FOR EXPANSION AND CONTRACTION OF DUCT AND GAS PIPING SYSTEMS. COORDINATE EQUIPMENT, PIPING AND DUCTWORK INSTALLATION TO PROVIDE ADEQUATE SERVICE CLEARANCES AND REMOVAL.
- PAINTING: ALL EQUIPMENT FABRICATED FROM STEEL AND NOT FACTORY FINISH PAINTED SHALL BE SUPPLIED WITH A PRIME COAT DONE AT THE SUPPLIER'S FACTORY. IF DAMAGED IN TRANSIT OR ON THE JOB, THIS CONTRACTOR SHALL TOUCH UP WITH RED LEAD PRIMER BEFORE FINISH PAINTING.
- INSURANCE SHALL BE MAINTAINED BY THE CONTRACTOR TO PROTECT THE OWNER AND OTHER TRADES FROM ALL CLAIMS. ALL TRADESMEN TO BE LICENSED, ADEQUATELY TRAINED, BRIEFED ON SITE SAFETY, HAVE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT IN PLACE AT ALL TIMES AND MEET THE REQUIREMENTS OF ALL APPLICABLE ONTARIO GOVERNING ASSOCIATIONS AND GOVERNMENT BODIES.
- PROVIDE A CERTIFICATE OF GUARANTEE OF WORKMANSHIP & MATERIAL FOR ONE YEAR FROM DATE OF ACCEPTANCE.
- ALL DAMAGE TO ADJACENT BUILDING FEATURES OR SYSTEMS LIKE DRYWALL, PLASTER, FLOORS, WOOD FINISHES OR OTHER MATERIALS, OR DAMAGE TO OTHER EQUIPMENT, CAUSED BY SUCH DEFECTS OF THIS CONTRACTOR'S WORK OR BY SUBSEQUENT REPLACEMENTS AND REPAIRS, SHALL BE MADE GOOD AT THE EXPENSE OF THIS CONTRACTOR. ALL REPAIR WORK SHALL BE DONE BY TRADES RESPONSIBLE FOR THE ORIGINAL WORK.
- SITE VISITS DURING CONSTRUCTION ARE TO BE AGREED TO AT THE OUTSET AND AMPLE NOTIFICATION TO BE GIVEN TO VISIT THE SITE (MIN. 48 HOURS). THIS INCLUDES PRESSURE TESTS OF PIPING, DUCTWORK, SAFETY DEVICES ETC.

23.05.00 - 6.0 COORDINATION OF THE WORK

- REVIEW ALL THE CONTRACT DOCUMENTS & COORDINATE THE WORK WITH THE WORK OF ALL OTHER TRADES.
- PROPERLY PLAN, COORDINATE, & ESTABLISH THE LOCATIONS & ROUTING OF SERVICES WITH ALL SUBCONTRACTORS AFFECTED PRIOR TO INSTALLATION SUCH THAT THE SERVICES WILL CLEAR EACH OTHER AND, AS ANY OBSTRUCTIONS, INCLUDING STRUCTURAL COMPONENTS OF THE BUILDING.
- COORDINATE THE LOCATIONS OF THE MECHANICAL EQUIPMENT WITH THE ARCHITECTURAL & 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.
- THE CONTRACTOR SHALL CONFER WITH ALL OTHER CONTRACTORS INSTALLING EQUIPMENT, PLANT PIPING, OTHER WORK FOUNDATIONS, ETC., WHICH MAY AFFECT HIS INSTALLATION AND THE CONTRACTOR'S EQUIPMENT, PIPING, ETC. IN PROPER RELATION WITH OTHER APPARATUS, AND WITH THE BUILDING CONSTRUCTION. HE SHALL ALSO CONFIRM THE ELECTRICAL CHARACTERISTICS OF THE PROJECT AND ORDER EQUIPMENT ACCORDINGLY.
- CONTRACTOR SHALL CONTACT THE LOCAL GAS COMPANY AS SOON AS POSSIBLE & VERIFY THAT GAS SERVICE IS AVAILABLE AT PRESSURE & CAPACITY REQUIRED FOR THE PROJECT. HE SHALL INFORM ENGINEER IMMEDIATELY, IF THERE IS ANY PROBLEM WITH GAS SERVICE WHATSOEVER. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO COORDINATE SERVICE REQUIREMENTS WITH THE LOCAL AUTHORITY COMPANY BEFORE ANY OF HIS WORK PROCEEDS AS WELL DURING CONSTRUCTION.
- ELECTRICAL COMPONENTS RELATED TO MECHANICAL EQUIPMENT ARE TO BE INCLUDED BY THE DIV. 23 CONTRACTOR (OVER 50 VOLTS WIRED BY DIV. 26 CONTRACTOR), UNLESS SPECIFIED. CONTROLS DEVICES FOR HVAC UNITS TO BE BY DIV. 23.

23.05.00 - 7.0 PENETRATIONS

- 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.
- 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.
- CONTRACTORS SHALL NOTIFY THE OWNER OR GENERAL CONTRACTOR & OTHER CONTRACTORS WHO ARE INVOLVED OF ALL PENETRATIONS, LOCATIONS, SIZES, AND DEPTHS OF ALL ANCHORS, OR OTHER FIXTURES 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.
- 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.
- NO CUTTING SHALL BE DONE WITHOUT PERMISSION. ALL SUCH WORK SHALL BE DONE BY TRADESMEN SKILLED IN & CERTIFIED FOR THIS PARTICULAR TRADE.
- ALL PENETRATIONS TO BE APPROVED BY THE ARCHITECT OR LANDLORD IN WRITING.
- PROVIDE SLEEVES, FLASHING AND COUNTER FLASHING WHERE MECHANICAL SERVICES PENETRATE WALLS, FLOORS & ROOFS. ANNUAL SPACES BETWEEN SLEEVES & SERVICES SHALL BE CAULKED WITH FIREPROOF MATERIAL & SEALED AIR TIGHT. EX. 2-PART FLEXIBLE POLYURETHANE GROUT - SIKAFIX PU.
- ANY EXTERIOR PENETRATION TO BE APPROPRIATELY FLASHED AND WEATHER PROOFED WITH APPROVED SEALING METHODS. PROVIDE BIRD SCREENS ON ALL EXTERIOR INTAKE AND EXHAUST GRILLES. THERMAL INSULATION TO BE PROVIDED FOR DUCTS SERVING EXTERIOR GRILLES. MIN. 2" FOIL WRAPPED INSULATION REQUIRED.
- ALL PLANNED & UN-PLANNED PENETRATION OF SERVICES THROUGH RATED FIRE ASSEMBLIES TO BE COMPLETED USING AN APPROVED FIRE STOP MATERIAL AND METHOD. RATED FIRE DAMPERS AS PER ARCHITECTURAL DRAWINGS AND AS SPECIFIED ON THESE PLANS. ALL FIRE DAMPERS ARE TO BE ACCESSIBLE FOR RESETTING.

23.05.00 - 8.0 ACCESS DOORS

- SUPPLY ACCESS DOORS TO GIVE ACCESS TO ALL MECHANICAL WORK WHICH MAY NEED MAINTENANCE, REPAIR OR SHUT OFF VALVES LOCATIONS BUT WHICH IS CONCEALED IN INACCESSIBLE CONSTRUCTION, EXCEPT AS OTHERWISE SPECIFIED HEREIN OR ON THE DRAWINGS.
- LOCATE ACCESS DOORS WHERE REQUIRED & OF SUFFICIENT SIZE FOR SERVICING VALVES, DAMPERS, CLEANOUTS, ETC. DOORS SHALL BE FLUSH MOUNTING, SCREWDRIVER ACCESS, METAL TYPES, 16 GAUGE PRIMED STEEL.
- ACCESS DOORS IN FIRE RATED CONSTRUCTION ARE TO BE ULC LISTED & LABELED AND OF A RATING TO MAINTAIN THE FIRE SEPARATION INTEGRITY.

23.05.00 - 9.0 FIRE STOPPING

- CONTRACTOR TO PROVIDE ULC LISTED FOR STOPPING ASSEMBLIES WHERE PIPES & DUCTS PASS THROUGH BUILDING ASSEMBLIES THAT ARE FIRE-RATED. CONTRACTOR TO INSTALL AS PER MANUFACTURERS WRITTEN INSTRUCTIONS. CONTRACTOR TO PROVIDE CONSULTANT WITH ULC LISTING UPON REQUEST.
- FIRE STOPPING TO BE TESTED IN ACCORDANCE WITH CAN-4-S115-M "STANDARD METHOD OF FIRE TESTING OF FIRE STOP SYSTEMS" AND THE LOCAL STANDARDS.
- FIRESTOPPING & SMOKE SEAL SYSTEMS: ASBESTOS-FREE MATERIALS AND SYSTEMS CAPABLE OF MAINTAINING AN EFFECTIVE BARRIER AGAINST FLAME, SMOKE AND GASES IN COMPLIANCE WITH REQUIREMENTS OF CAN/ULC-S115-M OR UL 1475 AND ASTM E14, AND NOT TO EXCEED OPENING SIZES FOR WHICH THEY ARE INTENDED.
- FIRE RESISTANCE RATING OF INSTALLED FIRESTOPPING ASSEMBLY SHALL NOT BE LESS THAN THE FIRE RESISTANCE RATING OF SURROUNDING FLOOR & WALL ASSEMBLY AS INDICATED.
- INSTALL FIRESTOPPING & SMOKE SEAL MATERIAL AND COMPONENTS THAT HAVE BEEN TESTED BY CERTIFIED TESTING AGENCIES, ULC, CUL, OR ULTRITEK, & MANUFACTURER'S INSTRUCTIONS TO PROVIDE A FLAME RETEAL SEAL NOT LESS THAN THE REQUIREMENT OF THE SURROUNDING FLOOR OR WALL. TEMPERATURE RATE RATINGS MAY BE REQUIRED IN CERTAIN INSTANCES AND SHOULD BE SPECIFIED BY THE ENGINEERING OR ARCHITECTURAL AUTHORITY.

23.05.00 - 10.0 DAMPERS

- THE LOCATION OF BALANCE DAMPERS, FIRE DAMPERS, VALVES, ETC. ABOVE CEILING PANELS SHALL HAVE THEIR LOCATION IDENTIFIED BY MEANS OF A DATA DOT. IN THE CASE OF T-BAR CEILINGS, THE DATA DOT SHALL BE PLACED ON THE METAL T-BAR RAIL, NOT ON THE CEILING TILE.
- ADJUST AND BALANCE MAJOR NEW OR EXISTING EQUIPMENT COMPONENTS TO PROVIDE FLOW RATES PRIOR TO ISSUING FINAL REPORT TO ENGINEER.
- INDICATE OPERATING PERFORMANCE (DESIGN VS ACTUAL) OF ALL FANS AND AIR SYSTEMS TO BE SHOWN.
- PROVIDE THREE COPIES OF THE BALANCE REPORT FOR INCLUSION IN THE OPERATING AND MAINTENANCE MANUALS.
- TESTING TO BE PERFORMED IN BOTH COOLING AND HEATING MODE.
- AIR AND WATER FLOW RATES TO BE WITHIN 5% OF THOSE SPECIFIED.
- A WRITTEN WARRANTY TO BE PROVIDED FOR A MIN. OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. PROVIDE LABOUR, MATERIAL AND SERVICES TO CORRECT ALL FAULTS REPORTED DURING THE GUARANTEE PERIOD.

23.05.00 - 11.0 IDENTIFICATION OF HVAC SYSTEMS

- MANUFACTURER'S NAMEPLATES; PROVIDE FACTORY SUPPLIED AND INSTALLED NAMEPLATE ON EACH PIECE OF EQUIPMENT.
- PROVIDE REGISTRATION/APPROVAL NAMEPLATES (IE. CSA, ULC, ASME) IN ACCORDANCE WITH THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
- PROVIDE LAMAOQID OR ADHESIVE LABELS WITH BLACK LETTERING ON WHITE BACKGROUNDS, ON EACH PIECE OF HVAC EQUIPMENT (RTU, BYPASS BOX, VAV BOX, FAN COIL, HEAT PUMP, CONDENSING UNIT, TERMINAL UNIT, WSHP, EXHAUST FAN, BOILER, ETC.) THAT CORRESPONDS WITH THE TAGS PROVIDED ON THE PLANS AND SPECIFICATIONS IN A EASY VISIBLE LOCATION. THE CONTROL DEVICE (THERMOSTAT, SWITCH, ETC) SHALL ALSO BE PROVIDED WITH AN ADHESIVE LABEL INDICATING THE SAME TAG DESCRIPTION FOR THE PIECE OF EQUIPMENT THAT IT SERVES.
- PROVIDE LABELS FOR ALL PIPING INDICATING FLUID FLOW DIRECTION & SERVICE DESCRIPTION.

23.05.00 - 12.0 CONSTRUCTION SCHEDULE

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

23.05.00 - 13.0 CHANGES OR REVISIONS & EXTRAS

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

- 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 NOTIFY THE CONSULTANT FOR APPROVAL. A QUOTATION BEING THE ELECTRONIC CONTRACTOR'S PROPOSED COST FOR EXECUTING THE CHANGE OR REVISION.

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

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

23.05.00 - 14.0 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.
- THESE SHOP DRAWINGS SHALL INCLUDE BUT NOT LIMITED TO MECHANICAL EQUIPMENT, PIPING & ACCESSORIES. ALLOW MINIMUM 5 BUSINESS DAYS TO RETURN REVIEWED SHOP DRAWINGS. (BASED ON COMPLEXITY).
- MECHANICAL 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 MECHANICAL 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.

- ALTHOUGH EVERY EFFORT HAS BEEN MADE TO QUANTIFY THE NUMBER OF EQUIPMENT REQUIRED FOR THE COMPLETE INSTALLATION, THE SHOP DRAWING REVIEW DOES NOT CONSTITUTE ANY QUALIFICATION OF QTY'S REQUIRED.
- ANY DEVIATION FROM THE DESIGN, DRAWINGS OR COMPONENT CONFIGURATION, IS TO BE COMMUNICATED CLEARLY TO THE CONSULTANT SEPARATELY, AND MUST INCLUDE A SKETCH OR SYSTEM CONTEXT RATIONALE FOR THE CHANGE, BENEFIT FOR THE CHANGE FOR THE CONSULTANT'S REVIEW.

23.05.00 - 15.0 SUBSTITUTIONS

- PERFORMANCE 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.
- PERFORM TESTS AS INSTRUCTED BY THE ENGINEER TO DEMONSTRATE THAT THE WORK CONFORMS TO THE CONTRACT DOCUMENTS. PROVIDE WRITTEN REPORTS OF SAME.
- CARRY OUT ALL REQUIRED TESTS ON SYSTEMS TO SATISFY THE AUTHORITIES IN ACCORDANCE WITH THE BUILDING CODE. PROVIDE WRITTEN REPORTS OF SAME.
- EXAMPLE OF A TYPICAL HVAC EQUIPMENT AND SYSTEM CHECK- INCLUDES (BUT NOT LIMITED TO):

PLACE ALL FANS (SUPPLY, RETURN AND EXHAUST) IN OPERATION AND VERIFY (WITH REPORTS) THE FOLLOWING ITEMS (AS APPLICABLE):

- AN FAN ROTATIONS.
- MOTOR AMPERAGE & VOLTAGE TO GUARD AGAINST OVERLOAD.
- OPERABILITY OF STATIC PRESSURE LIMIT SWITCH.
- AUTOMATIC DAMPERS FOR PROPER POSITION.
- TERMOSTAT FUNCTION.
- ZONE CONTROL FUNCTION.
- AIR & WATER RESETS OPERATING TO DELIVER REQUIRED TEMPERATURES.

6. FINAL AIR BALANCING (AS REQUIRED BY LIST OF REPORTS) OF SYSTEM TO TAKE PLACE AFTER OCCUPANCY TO ADDRESS ANY CONCERNs. FAN SHEAVE ADJUSTMENTS AND SIZING TO BE THE RESPONSIBILITY OF THE CONTRACTOR. AS A MINIMUM, A FINAL INSPECTION BY ENGINEERING CONSULTANT IS IMPERATIVE FOR ANY FINAL APPROVALS.

7. CONTRACTOR TO REMOVE ANY CEILING TILES / ACCESS COVERS AND PREPARE SITE FOR INSPECTIONS AS REQUIRED.

8. CONTRACTOR TO PROVIDE CERTIFIED, GOOD CONDITION LADDERS / 'GENIE' LIFT AS REQUIRED WITH APPROPRIATE PERSONAL HARNESSSES AND SAFETY GEAR FOR USE BY THE ENGINEER ON SITE.

9. PROVIDE BALANCING OF AIR, WATER, RETURN AND EXHAUST FAN SYSTEMS AS INDICATED BELOW.

10. PROVIDE THREE COPIES OF THE BALANCE REPORT FOR INCLUSION IN THE OPERATING AND MAINTENANCE MANUALS.

11. TESTING TO BE PERFORMED IN BOTH COOLING AND HEATING MODE.

10. PROVIDE THERMOMETERS IN THE FOLLOWING LOCATIONS IN PIPELINES: EACH HOT OR COLD WATER STORAGE TANK AND WHERE SPECIFICALLY SHOWN.

11. VALVES SHALL BE PROVIDED:
 a. AT BASE OF ALL WATER RISERS.
 b. AT INLET AND OUTLET OF ALL EQUIPMENT.
 c. A SHUT-OFF VALVE AND BALANCING VALVES AT ALL HEAT TRANSFER EQUIPMENT.
 d. AT ALL BRANCH TAKE-OFF.
 e. AT LOWEST POINTS OF LINE HAVING DRAIN VALVE ALLOWING FOR COMPLETE DRAIN OF THE SYSTEM.

23 21 00 HYDRONIC PIPING AND PUMPS

- SCHEDULE 40 WELDED STEEL TO ASTM A53-B. MAKE CONNECTIONS TO EQUIPMENT WITH UNIONS AND MECHANICAL COUPLINGS.
- SCREWED FITTINGS FOR PIPING 2" AND UNDER, FLAMED, WELDED OR GROOVED MECHANICAL COUPLINGS FOR PIPING 2-1/2" AND OVER.
- DO NOT INSTALL HEATING WATER PIPING IN EXTERIOR WALLS OR UNHEATED AREAS OF THE BUILDING.
- PRESSURE TESTING: TEST HEATING WATER PIPING AT A PRESSURE OF 860KPA (125PSIG). DEMONSTRATE THE TEST PRESSURE DOES NOT FLUCTUATE FOR A PERIOD OF EIGHT HOURS. HAVE TEST WITNESSED BY THE CONSULTANT OR THE OWNER'S DESIGNATED REPRESENTATIVE.
- PROVIDE 13-MM ISOLATION VALVES FOR ALL AIR VENTS AND GAUGES. PROVIDE ISOLATION BALL VALVES ON BOTH THE HEATING AND COLD WATER RETURN LINES SERVING ALL HYDRONIC HEATING APPLIANCES. PROVIDE TREADED UNION ON ALL PIPING CONNECTIONS TO CONTROL VALVE ASSEMBLIES.
- BALANCING VALVES: INSTALL ARMSTRONG MODEL CBV OR APPROVED EQUIVALENT CIRCUIT BALANCE VALVES WITH READ-OUTS PORTS, POSITION READ-OUT AND MEMORY AND INSULATED VALVE BODY PACKAGING.
- CHEMICAL TREATMENT: PROVIDE AND INSTALL A CHEMICAL POT FEE FROM PACE CHEMICALS. THOROUGHLY PUSH ALL HYDRONIC SYSTEMS PIPING. INSTALL SCOURERS, ANTI-OXIDENTS AND INHIBITORS TO THE RECOMMENDATIONS OF PACE CHEMICALS. INSTALL 40% ETHYLENE GLYCOL IN ALL SYSTEMS SUBJECT TO FREEZING CONDITIONS EXCEPT WHERE NOTED OTHERWISE. SUBMIT PACE CHEMICAL SYSTEM FLUID TEST REPORT PRIOR TO BUILDING OCCUPANCY.

23 23 00 REFRIGERANT PIPING:

- COMPLY WITH PROVINCIAL REGULATIONS AND THE CURRENT EDITION OF CSA B52, MECHANICAL REFRIGERATION CODES.
- SCOPE:
 a. LIQUID INDICATORS.
 b. STRAINERS.
 c. HOT GAS REGULATOR AND HOT GAS PIPING, FOR LAST STAGE, PIPED BETWEEN COIL AND CONDENSING UNIT.
 d. FILTER-DRYERS.
 e. SOLENOID VALVES.
 f. EXPANSION VALVES.
 g. REFRIGERANT CHARGING VALVES.
 h. FLEXIBLE CONNECTIONS.
- SUCTION AND LIQUID LINES SHALL BE TYPE C&R COPPER WITH SOLDER TYPE FITTINGS USING 35/5 SILVER SOLDER. EVALUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREON-12 TO MANUFACTURER'S SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.

23 30 00 HVAC AIR DISTRIBUTION

- ALL AIR DUCTWORK SHALL BE FABRICATED AND SUPPORTED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ASHRAE EQUIPMENT GUIDE, NPPA 90A-SMACNA DUCT MANUAL. SHEET METAL USED TO FABRICATE THE DUCTWORK SHALL BE GALVANIZED AND SHALL CONFORM TO ASTM A-46 WITH Z-275 METRIC COATING, AND NOT LIGHTER THAN 26 GAUGE. SEAL ALL DUCTWORK AIR TIGHT. PROVIDE RIA TRANSFER DUCTS C/W SOUND ATTENUATION BETWEEN CEILING PLenums AND R/A CORRIDORES COORDINATED WITH OTHER DUCTS AND SERVICES AS REQUIRED. REFER TO PLANS FOR ANY SPECIFIC DESIGN REQUIREMENTS AS APPLICABLE.
- ALL AIR DISTRIBUTION TERMINALS (AS REQUIRED) TO BE PROVIDED WITH FLOW ADJUSTING BALANCING DAMPER LOCATED AT THE TRUNK OR BRANCH DUCT TAKE-OFF - UNLESS OTHERWISE SPECIFIED ON PLANS. OWNER/ARCHITECT TO APPROVE THE LOCATION, TYPE AND APPEARANCE OF ALL AIR TERMINALS AND GRILLES. EH PRICE / GREENHECK PRODUCTS ARE SPECIFIED IN THIS DESIGN.
- ELEVATION OF EXTERIOR GRILLES TO BE ABOVE NORMAL SNOW HEIGHTS AND NOT IN AREAS PRONE TO SNOW DRIFTING. INTAKE AND EXHAUST GRILLES TO BE SEPARATED BY MINIMUM 10 FT. AS PER NPPA 96. SEE DETAIL.
- AIR MU EQUIPMENT TO BE FURNISHED WITH FLEXIBLE DUCT (DURADYNE NEOPRENE OR EQUIVALENT) AND SERVICE CONNECTIONS AS PER MFG. RECOMMENDATIONS. INTERNAL NOISE ATTENUATING ACOUSTICAL INSULATION MAY BE REQUIRED AS SPECIFIED OR REQUIRED. MINIMUM 1" MATERIAL FASTENED WITH MECHANICAL FASTENERS REQUIRED. ALL DUCT SIZES INDICATED AFTER INSULATION IS ADDED.
- GALVANIZED STEEL LOCK FORMING DUCTWORK, WITH GALVANIZED COATING CONFORMING TO ASTM A525 G90. FABRICATED TO THE REQUIREMENTS OF SMACNA STANDARDS FOR THE SPECIFIED CLASSIFICATION. ALL DUCT WORK USED ON THIS PROJECT SHALL BE CLEAN AND FREE OF SCALE.
- ALL DUCTWORK ON THIS PROJECT IS CLASSIFIED AS LOW PRESSURE. SHEET METAL SCREWS MAY BE USED FOR FASTENING JOINTS. WRAP ALL JOINTS WITH FIRE AND WATER RESISTIVE DUCT TAPE AND SEAL WITH WATER RESISTANT SEALANT. USE ROBSON'S DUCT SEAL OR DURO DYNE S-2 WITH FT-2 TAPE TLEXMASTER DUCT BAND.
- DUCTS THAT PENETRATE EXTERIOR WALLS ASSEMBLIES MUST BE SEALED TO THE WEATHER BARRIER USING SELF ADHESIVE BITUMINOUS MEMBRANE AND EXPANDING FOAM SEALANT.
- DUCT ACCESS DOORS SHALL HAVE ULC LISTING AND SHALL BE 450X450 UNLESS OTHERWISE REQUIRED BY DUCT SIZE.
- FABRICATED BALANCING DAMPERS FROM MINIMUM 1.6 MM THICK GALVANIZED STEEL, WITH ADJUSTMENT ROD AND LOCK SCREW, PROVIDE AS INDICATED ON THE DRAWINGS.
- INSTALL CANVAS FLEXIBLE CONNECTIONS ON INLET TO ALL EXHAUST FANS, AND INLET AND OUTLET OF ROOF MOUNTED AIR HANDLING UNITS, ENSURE THAT FLEX DOES NOT IMPEDE AIRFLOW AND ALLOWS MODULAR EQUIPMENT WITHOUT TRANSMITTING VIBRATION INTO THE DUCTWORK. INSTALL FLEXIBLE DUCT CONNECTIONS WITH A MINIMUM 40 MM (1 1/4 INCHES) METAL-TO-METAL GAP.

- Maintain all ductwork installed on this project clean and free from dust and other workplace debris. If in the consultant's opinion any ductwork installed has not been maintained in a clean condition the contractor shall retain the services of a certified duct cleaning company to thoroughly vacuum and clean all outdoor, supply and return air ductwork installed.
- Ductwork layouts are shown as schematic information only. Provide offsets and transitions to route the ductwork required to suit the structure and maintain the design performance as close as possible without extra cost.
- Size round ducts, installed in place of rectangular ducts, from ASHRAE table of equivalent rectangular and round ducts, no variation of duct configuration or sizes permitted except by permission from consultant.
- Indicate duct size, duct function (i.e.: "SUPPLY, EXHAUST") and air handling unit or fan (i.e.: AHP-1, EF-1) to which the duct is connected, use arrow to indicate air flow direction.
- Identify duct runs at least once in every room and maximum 50 ft. between markings.
- The nomenclature for identification of equipment shall be consistent with the designations in the plans and specifications.

23 50 00 CENTRAL HEATING EQUIPMENT

23 51 00 BREECHINGS, CHIMNEYS, AND STACKS

- Install vents, complete with accessories and appurtenances, in accordance with latest editions of (CAN 1-B149.1), (CAN 4-B149.2) PROVINCIAL BUILDING CODE, MANUFACTURER'S INSTRUCTIONS AND AS FOLLOWS:
 a. TYPE TO CAN 4-S64A.
 b. TYPE A-2 TO CAN 4-S629.
 c. TYPE B-2 TO CAN 4-S605.
 d. TYPE BW TO CAN 4-S605.
 e. TYPE L TO ULC S609.
- DO NOT PENETRATE FLUE GAS CHAMBER OF VENT WITH SCREWS OR MECHANICAL FASTENERS.

- INSTALL BREECHING WITH POSITIVE SLOPE UPWARD FROM APPLIANCE, MIN. 2%.
- SUSPEND BREECHING USING TRAPEZE HANGERS AT 1500 MM CENTERS.
- INSTALL CLEANOUT AT BASE OF CHIMNEY.
- PROVIDE PROPERLY SIZED BAROMETRIC DAMPER AS REQUIRED.
- SUPPORT CHIMNEY AT BOTTOM, ROOF AND INTERMEDIATE LEVELS.
- INSTALL THIMBLES WHERE PENETRATING ROOF, FLOOR, CEILING AND WHERE BREECHING ENTERS MASONRY CHIMNEY.
- INSTALL FLY ASH SCREEN ON ALL CHIMNEYS SERVING SOLID FUEL FIRED APPLIANCES.
- INSTALL RAIN CAP ON CHIMNEY OUTLET.
- PROVIDE FOR EXPANSION AND CONTRACTION OF CHIMNEY AND BREECHING.

23 52 00 BOILERS

- ALL ELECTRICAL COMPONENTS TO BE OF A HIGH QUALITY AND ULC RATED
- BOILER MUST BE CSA-1 COMPLIANT WITH FACTORY REPORT FOR ASME CS-1
- THE BOILER SHALL BE DIRECT VENT OR DIRECT EXHAUST USING PVC, CPVC, PP OR AL29-4C APPROVED VENTING SYSTEM
- BOILER(S) SHALL BE 95% MINIMUM AHRI CERTIFIED THERMAL EFFICIENT AS REQUIRED BY BTS 2000
- WATER BOILER(S) CONTROLS FURNISHED WITH:
 a. HIGH LIMIT TEMPERATURE CONTROL WITH MANUAL RESET, FIXED 200 DEGREE F OPERATING LIMIT WITH 190 DEGREES F MAXIMUM BOILER WATER TEMPERATURE SET POINT CLEARLY MARKED AND EASY TO READ.
 b. COMBINATION PRESSURE-TEMPERATURE GAUGE. GAUGE DIAL CLEARLY MARKED AND EASY TO READ.
 c. ASME CERTIFIED PRESSURE RELIEF VALVE SET TO RELIEVE AT 30 (OPTIONAL 50, 80, OR 100) PSIG.
 d. FLUE GAS OUTLET WATER TEMPERATURE, AND RETURN WATER TEMPERATURE SENSORS.
 e. FIELD INSTALLABLE OUTDOOR TEMPERATURE SENSOR AND SYSTEM HEAD/OUTDOOR TEMPERATURE SENSOR.
 f. LOW WATER PROTECTION WITH MANUAL RESET.
 g. HIGH AND LOW GAS PRESSURE SWITCHES WITH MANUAL RESET AND INDICATOR LIGHTS.
 h. CIRCULATOR EXERCISING.
 i. BUILT-IN FREEZE PROTECTION.
 j. WARM WEATHER SHUTDOWN

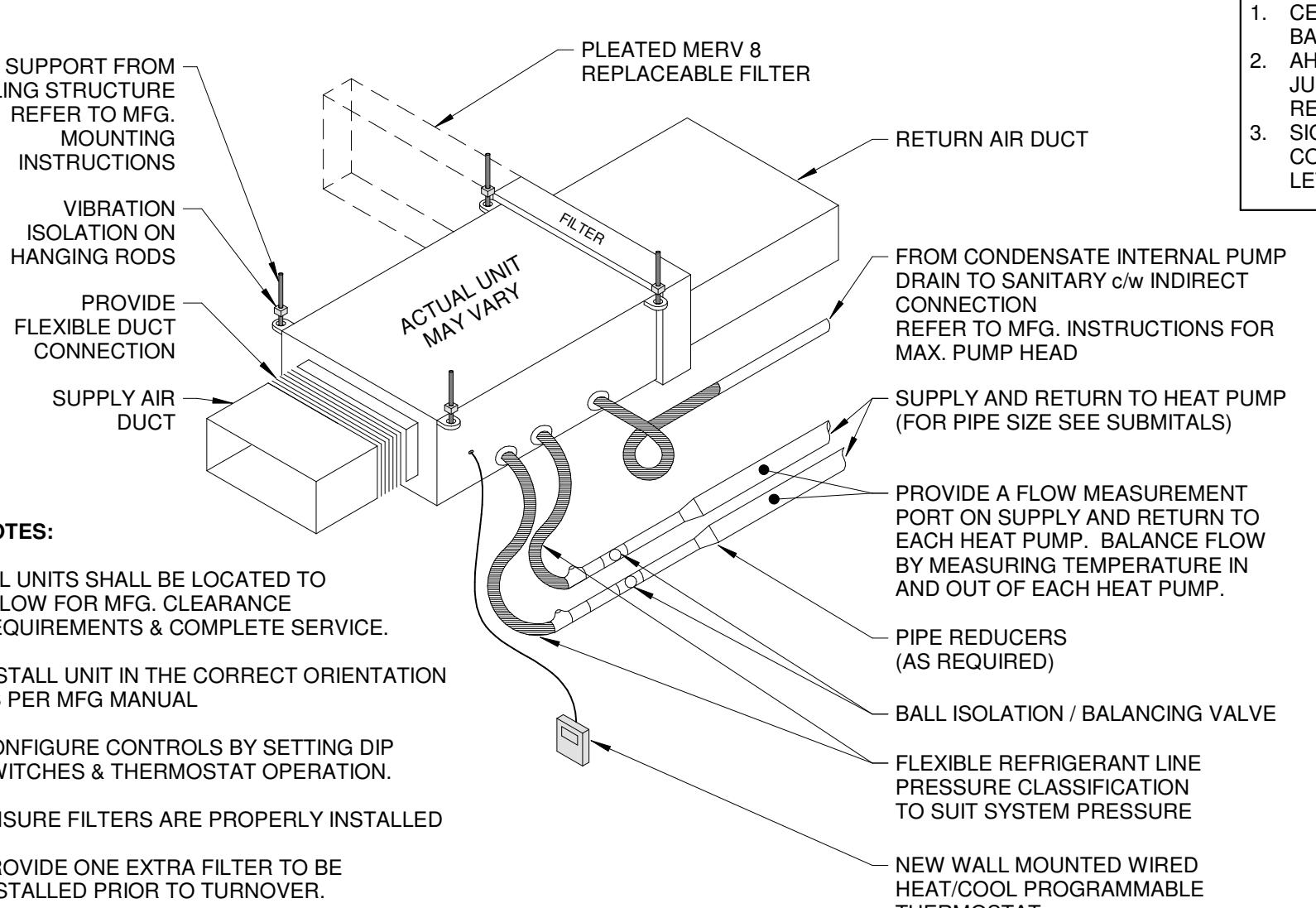
- BOILER CONTROL TO BE UL 353 LISTED WITH:
 a. 3 PUMP CONTACTS.
 b. FULLY CUSTOMIZABLE OUTDOOR RESET CURVE.
 c. MULTIPLE BOILER SYSTEM FUNCTIONALITY INCLUDING LEAD / LAG CAPABILITY, AS WELL AS LEAD BOILER ROTATION.
 d. ABILITY TO CONTROL A TOTAL OF 8 BOILERS.
 e. CENTRAL HEATING AND DOMESTIC HOT WATER PRIORITIES. LARGE LCD SCREEN TO MONITOR MULTIPLE TEMPERATURES AT ONE TIME, INCLUDING SUPPLY, RETURN, HEADER, OUTDOOR, AND FLUE GAS TEMPERATURES.
 f. AUTOMATIC CONTROL OF SWIFTS AND MANUAL RESET LOCKOUTS INCLUDING FLAME FAILURE, HIGH TEMPERATURE LIMITS, GAS PRESSURE LIMITS, AIR PRESSURE LIMIT, AND LOW WATER CUT OFF LIMIT.
- REMOTE MODULATION CAPABLE OF INTERFACING WITH BUILDING AUTOMATION SYSTEMS THROUGH MODBUS, OR AN OPTIONAL MODBUS TO BACNET TRANSLATOR

- DUCTS THAT PENETRATE EXTERIOR WALLS ASSEMBLIES MUST BE SEALED TO THE WEATHER BARRIER USING SELF ADHESIVE BITUMINOUS MEMBRANE AND EXPANDING FOAM SEALANT.
- DUCT ACCESS DOORS SHALL HAVE ULC LISTING AND SHALL BE 450X450 UNLESS OTHERWISE REQUIRED BY DUCT SIZE.
- FABRICATED BALANCING DAMPERS FROM MINIMUM 1.6 MM THICK GALVANIZED STEEL, WITH ADJUSTMENT ROD AND LOCK SCREW, PROVIDE AS INDICATED ON THE DRAWINGS.
- INSTALL CANVAS FLEXIBLE CONNECTIONS ON INLET TO ALL EXHAUST FANS, AND INLET AND OUTLET OF ROOF MOUNTED AIR HANDLING UNITS, ENSURE THAT FLEX DOES NOT IMPEDE AIRFLOW AND ALLOWS MODULAR EQUIPMENT WITHOUT TRANSMITTING VIBRATION INTO THE DUCTWORK. INSTALL FLEXIBLE DUCT CONNECTIONS WITH A MINIMUM 40 MM (1 1/4 INCHES) METAL-TO-METAL GAP.

23 80 00 DECENTRALIZED HVAC EQUIPMENT

23 84 13 HUMIDIFIERS

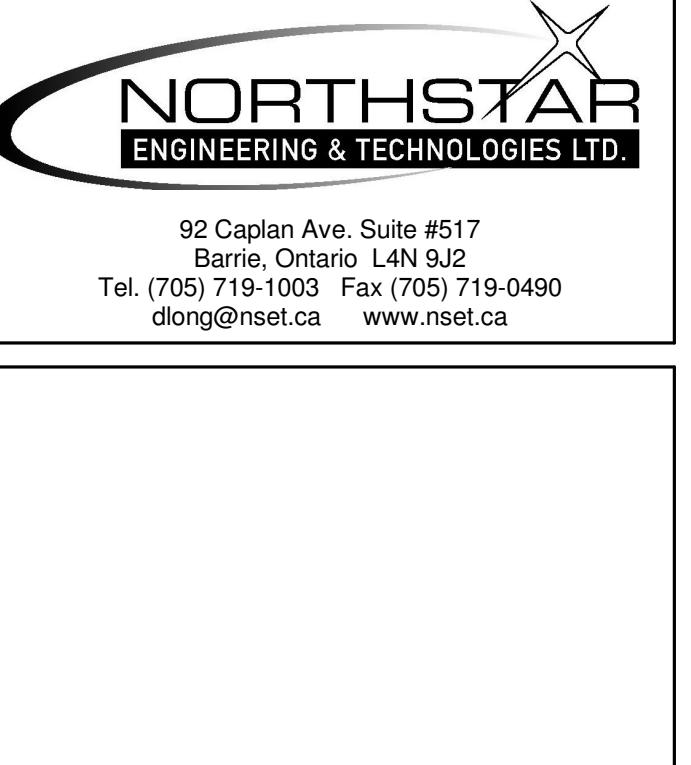
- INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS REGARDING MAXIMUM PIPING DISTANCES, CONDENSATE AND DRAIN PIPING, AND STEAM DISTRIBUTION MANIFOLD LOCATION. UNITS SHALL BE UL AND CSA LISTED.
- DUCTWORK LAYOUTS ARE SHOWN AS SCHEMATIC INFORMATION ONLY. PROVIDE OFFSETS AND TRANSITIONS TO ROUTE THE DUCTWORK REQUIRED TO SUIT THE STRUCTURE AND MAINTAIN THE DESIGN PERFORMANCE AS CLOSE AS POSSIBLE WITHOUT EXTRA COST.
- INDICATE THE STEAM GENERATOR ON A WALL AT A LEVEL BELOW THE DUCT MOUNTED STEAM DISTRIBUTION MANIFOLD.
- PROVIDE A HIGH LEVEL HUMIDISTAT AND AN AIR PROVING SWITCH IN THE SUPPLY DUCTWORK DOWNSTREAM OF THE DISTRIBUTION MANIFOLD.
- CONNECT THE HUMIDIFIER CABINET WITH VALVED DOMESTIC WATER PIPING WITH BACKFLOW PREVENTER, AND INDIRECT DRAINAGE PIPING TERMINATED OVER A FUNNEL AND FLOOR DRAIN UNLESS OTHERWISE SPECIFIED OR SHOWN.
- PROVIDE TYPE "L" HARD COPPER STEAM PIPING, SLOPED 7 TO 1 MINIMUM, FROM THE HUMIDIFIER TO THE STEAM DISTRIBUTION MANIFOLD AND TYPE "L" HARD COPPER CONDENSATE PIPING SLOPED 1 TO 4 FROM THE MANIFOLD TO THE HUMIDIFIER.
- CONCEAL ALL PIPING WHEREVER POSSIBLE.
- DO ALL REQUIRED 24 VOLT CONTROL WIRING FROM HUMIDISTAT AND THE AIR PROVING SWITCH TO THE HUMIDIFIER POWER AND CONTROL PANEL. INSTALL CONTROL WIRING IN CONDUIT IN ACCORDANCE WITH REQUIREMENTS SPECIFIED IN DIV 26.
- WHEN INSTALLATION OF THE HUMIDIFIER IS COMPLETE, ARRANGE FOR THE SUPPLIER TO VISIT THE SITE TO CHECK THE INSTALLATION, TO START UP THE UNIT, TO MAKE ANY REQUIRED ADJUSTMENTS, TO ENSURE THAT THE HUMIDIFIER IS OPERATING AS INTENDED, AND WHEN THE HUMIDIFIER IS OPERATING PROPERLY, CERTIFY THIS FACT IN WRITING TO THE CONSULTANT.
- CONFIRM SIZE AND NUMBER OF STEAM PIPES FROM GENERATOR TO DISTRIBUTOR WITH SUPPLIER AND PROVIDED PIPING AS REQUIRED.
- INSULATE ALL PIPING INCLUDING WATER SUPPLY, CONDENSATE, STEAM PIPING, ETC.



MECHANICAL REPORTS REQUIRED FOR SIGN-OFF

- CERTIFIED THIRD PARTY AIR BALANCING REPORT
- AHU AUTHORITY HAVING JURISDICTION INSPECTION REPORTS
- SIGN & DATED CONTRACTOR COMPLETION & WARRANTY LETTER

(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	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 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 CONSTRUCTION COSTS ARISING FROM SUCH CHANGES UNLESS AGREED UPON IN WRITING.
- [3] DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DETAILS ARE NOT DRAWN TO SCALE. DRAWINGS 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 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. UNAUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.
- [8] SHOP DRAWINGS:
BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW AND APPROVAL DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMITY TO THE DESIGN DWGS. THE SETUP DWGS WILL NOT RELEASE THE CONTRACTOR FROM THE RESPONSIBILITY FOR THE DWGS. 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 OTHER DESIGNERS WORK IN ASSOCIATION WITH THIS PROJECT.
- [10] REQUESTS FOR ANY FOR ANY FINAL ASSEMBLY YET 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 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 REVIEW & APPROVAL 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.

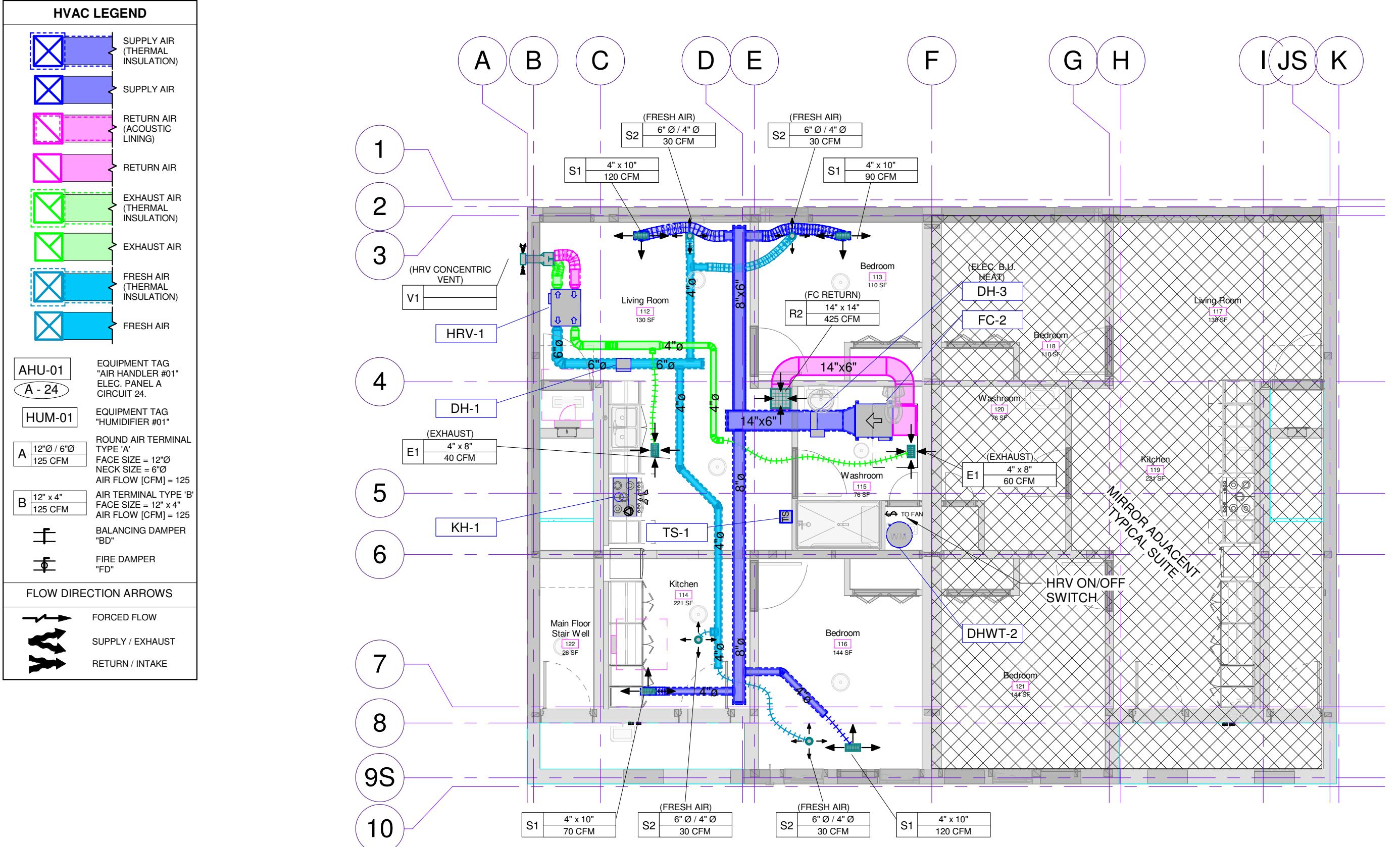
DRAWING REVISIONS

No.	Description	Date
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	

MECHANICAL HVAC - SCOPE OF WORK CONTRACTOR TO VISIT THE SITE & FAMILIARIZE THEMSELVES WITH THE REQUIREMENTS OF THIS DESIGN. OBTAINT ALL REQUIRED CLIENT TRAINING, HEALTH & SAFETY, ELEVATED WORK, HOT WORK TRAINING & CERTIFICATIONS. REFER TO SPECIFICATION & GENERAL PROJECT NOTES & DETAILS INCLUDED IN THIS SET OF DWGS. THE WORK SHALL CONSIST OF, BUT SHALL NOT BE LIMITED TO THE FOLLOWING: **TENDER - PHASE - MECHANICAL** M 1.0. THE CONTRACT SHALL BE GOVERNED BY THE LAWS OF THE CANADIAN PROVINCE BASED ON THE PROVINCIAL ADDRESS OF THE PROJECT. M 1.1. CONTRACTOR TO BE FAMILIAR WITH AND FULLY ADOBE BY AN APPENDIX / SITE SAFETY & CONFIDENTIALITY REQUIREMENTS FOR ACCESSING THE SITE STIPULATED IN THE CLIENT'S SECURITY REGULATIONS, RULES, POLICIES & PROTOCOLS. ALL VISITS TO BE ARRANGED WITH THE LISTED CLIENT REPRESENTATIVE IN WRITING IN ADVANCE OF THE VISIT. ENTRANCE TO THE SITE IS NOT PERMITTED WITHOUT A PRE-ARRANGED APPOINTMENT. CONTRACTOR TO CARBON COPY (CC) THE ENGINEER TO NOTIFY OF AN IMPENDING SITE VISIT IN WRITING. M 1.2. CONTRACTOR SHALL COMPLETE ALL REQUIRED TRAINING SUCCESSFULLY IN FULL ACCORDANCE WITH THE CLIENT'S SPECIFIED TRAINING PROGRAM. REQUIREMENTS, WRITTEN PROOF TO BE PROVIDED TO THE ENGINEER PRIOR TO ENTERING THE SITE. M 1.3. CONTRACTOR TO BE FAMILIAR WITH AND FULLY ADOBE BY ALL PROVINCIAL AND CLIENT / SITE SAFETY PPE REQUIREMENTS WHILE AT THE CLIENT'S SITE. M 1.4. CONTRACTOR TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL OF THE REQUIREMENTS OF THIS PROJECT PRIOR TO THE TENDER PHASE TO REVIEW THE EXISTING CONDITIONS AND THE RELATIONSHIP TO THE NEWLY PROPOSED DESIGN. PARTICULAR ATTENTION TO BE PAID TO MODIFICATIONS TO EXISTING SERVICES (IF APPLICABLE). M 1.5. CONTRACTOR TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL OF THE REQUIREMENTS OF THIS PROJECT. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING PRIOR TO PRICING THE ITEM. M 1.6. THE SPECIFICATIONS TEXT LISTED IN THE TENDER DOCUMENTS SHALL HAVE PRIORITY OVER THE DRAWINGS AND PLANS. THIS MAY IN "SHEET" FORMAT OR "BOOK" FORMAT. M 1.7. ANY AND ALL QUESTIONS RELATED TO THE SPECIFICATIONS AND/OR DESIGN DOCUMENTS PROVIDED BY NORTHSTAR ARE TO BE COMMUNICATED IN WRITING TO THE PRIME CONSULTANT AND CARBON COPIED TO NORTHSTAR IN A TIMELY MANNER WITHIN THE TENDER PERIOD. THE ENGINEER WILL NOT RESPOND TO TELEPHONE CALLS TO CLARIFY SCOPE. REASONABLE TIME SHALL BE ALLOWED FOR A WRITTEN RESPONSE FROM NORTHSTAR. NORTHSTAR WILL NOT PROVIDE INFORMATION OR SCOPE CHANGES VERBALLY / OR IN WRITING, TO ANY ONE BIDDING PARTY WITHOUT THE PROVISIONS OF A FORMAL ADDENDUM. M 1.8. SHOULD THERE BE A CONFLICT OR INCONSISTENCY WITHIN THE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN A TIMELY MANNER WITHIN THE TENDER PERIOD. M 1.9. THE DESIGN DRAWINGS PROVIDED BY NORTHSTAR ARE GENERAL LAYOUTS ONLY. THE CONTRACTOR SHALL PROVIDE A COMPLETE, WORKING INSTALLATION BASED ON THE GENERAL LAYOUTS PROVIDED BY NORTHSTAR. SHOULD COORDINATION OF THE INSTALLATION REQUIRE AN ADDITIONAL CONDUIT, MATERIAL, FITTING, THAN SHOWN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF PROCUREMENT AND INSTALLATION. EXTRAS FOR OFFSETS AND ROUTING CHANGES WILL NOT BE APPROVED. M 1.10. EVERY EFFORT HAS BEEN MADE BY NORTHSTAR TO PROVIDE A WORKABLE CONCEPT FOR THIS PROJECT. THE CONTRACTOR IS REQUESTED TO REVIEW THE VIABILITY OF THE DESIGN CONCEPT AND LIST ANY CONCERN OR OBSTACLES TO THE SUCCESS OF THE PROPOSED PLAN BEFORE ORDERING OF MATERIALS OR PLANNING IS BEGUN. M 1.11. CONTRACTOR TO INCLUDE COORDINATING, SUPPLYING AND INSTALLING NECESSARY ELECTRICAL CONTROLS CONDUITS TO SERVICE MECHANICAL EQUIPMENT FOR LOW-VOLTAGE (UNDER 30VAC) FOR ALL REQUIRED MECHANICAL CONTROLS. M 1.12. NORTHSTAR WILL NOT PROVIDE VERBAL OR WRITTEN PERMISSION TO DEVIATE FROM THE CONTRACT DOCUMENTS DURING THE TENDER PERIOD UNLESS THROUGH A FORMAL ADDENDUM ISSUED BY NORTHSTAR AND OR THE PRIME CONSULTANT. M 1.13. CONTRACTOR TO FULLY REVIEW AND CONSIDER LISTED AND SPECIFIED TECHNICAL REPORTS PRIOR TO SUBMITTING THEIR BID. M 1.14. IT SHALL BE ASSUMED THAT ANY FINAL BID SUBMITTED ON OR BEFORE THE OFFICIAL TENDER DATE SHALL BE DEEMED TO CONTAIN AND INCLUDE COSTING FOR ALL OFFICIAL CHANGES AND ADDENDUMS ISSUED BY NORTHSTAR AND OR THE CONSULTANT TEAM. M 1.15. NORTHSTAR RESERVES THE RIGHT TO APPROVE AND/OR DENY ANY CONTRACTOR SELECTED EQUIPMENT / MATERIALS / METHODS - INCLUDING SHOP DRAWINGS THAT DEViate FROM THE DESIGN PRESENTED. M 1.16. CONTRACTOR SHALL FULLY DISCLOSE IN THEIR BID A LIST OF SUB-CONTRACTORS CARRIED AND PLANNED TO BE EMPLOYED FOR THIS PROJECT BY THE CONTRACTOR. M 1.17. CONTRACTOR SHALL IDENTIFY LONG-LEAD ITEMS IN THEIR BID SUBMISSION. M 1.18. CONTRACTOR MAY IDENTIFY AN ALTERNATE SOLUTION FROM THE CONTRACT DOCUMENTS FOR NORTHSTAR'S REVIEW - AS AN OPTIONAL PRICE. M 1.19. CONTRACTOR SHALL BE RESPONSIBLE FOR PRICING ALL MATERIALS CONTAINED WITHIN THE CONTRACT DOCUMENTS. FAILURE OF THE CONTRACTOR TO ORDER AND PROCURE THE SPECIFIED OR APPROVED ALTERNATE MATERIALS TO MEET THE PROJECT SCHEDULE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.				M 1.20. EVERY EFFORT HAS BEEN MADE BY NORTHSTAR TO PROVIDE A WORKABLE CONCEPT FOR THIS PROJECT. THE CONTRACTOR IS REQUESTED TO REVIEW THE VIABILITY OF THE DESIGN CONCEPT AND LIST ANY CONCERN OR OBSTACLES TO THE SUCCESS OF THE PROPOSED PLAN ALONG WITH THE TENDER SUBMISSION. M 1.21. ANY DEVICES THAT REQUIRE ELECTRICAL POWER OVER 50VAC ARE TO BE WIRED ENERGIZED AND COMMISSIONED BY THE ELECTRICAL CONTRACTOR. M 1.22. CONTRACTOR TO OBTAIN PRICING AND CARRY THE COSTS OF ANY REQUIRED (QUALIFIED) COMPANIES TO PERFORM ANY LISTED TESTING AND OR INVESTIGATIONS PRIOR TO CONSTRUCTION. FEES FOR ALL LISTED REPORTS TO BE INCLUDED IN THE TENDER. M 1.23. THE ENTIRE INSTALLATION IS TO BE WARRANTED FOR A PERIOD OF NOT LESS THAN 1-YEAR INCLUDING PARTS AND LABOUR. THE WARRANTY PERIOD SHALL COMMENCE AT THE DATE OF SUBSTANTIAL COMPLETION GRANTED BY THE CONSULTANT. M 1.24. CONTRACTOR TO PROVIDE PRICING ON ALL NORTHSTAR ISSUED OFFICIAL CHANGE ORDERS IN THE FORMAT REQUESTED BASED ON THE SPECIFIC ITEM NUMBERS LISTED ON THE NORTHSTAR CHANGE REQUEST DOCUMENT, ONE PRICE FOR EACH ITEM LISTED. PRICING TO INCLUDE ALL LABOUR AND MATERIALS REQUIRED FOR THE SCOPE REQUESTED. NORTHSTAR WILL NOT NECESSARILY APPROVE PRICING BASED UPON INDUSTRY PRICE GUIDES SUCH AS "ALLPRISER" OR "SIMILAR" METHOD. PRICING WILL BE FURNISHED BASED ON THE CONDITIONS CONTRACTOR TO PROVIDE CHANGE ORDER PRICING IN A TIMELY MANNER FOR NORTHSTAR'S REVIEW. NO WORK SHALL PROCEED UNTIL OFFICIAL WRITTEN ACCEPTANCE IS ISSUED BY NORTHSTAR. M 1.25. NORTHSTAR OFFICIAL ISSUED SITE INSTRUCTIONS (OR SIS) ARE DIRECTIVES TO CHANGE THE INSTALLATION AND ARE NOT SUBJECT TO PRICING FROM THE CONTRACTOR. IF THE CONTRACTOR FEELS THAT THE ITEM WARRANTS AN ADDITIONAL COST TO THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING PRIOR TO PRICING THE ITEM. M 1.26. SPECIFICATIONS AND DRAWINGS FORM AN INTEGRAL PART OF THE CONTRACT DOCUMENTS. ANY SUBJECT OR ITEM OMITTED FROM ONE BUT WHICH IS MENTIONED OR REASONABLY IMPLIED IN THE OTHER SHALL BE CONSIDERED AS PROPERLY AND SUFFICIENTLY SPECIFIED AND SHALL BE INCLUDED AS PART OF THE WORK. M 1.27. THE CONTRACTOR'S SUBMITTED PRICING IS TO CLEARLY LIST ALL OPTIONAL PRICING REQUESTED FOR IN THIS TENDER TO BE CONSIDERED A VALID TENDER SUBMISSION. M 1.28. THE CONTRACTOR'S SUBMITTED PRICING IS TO INCLUDE ALL APPLICABLE TAXES. M 1.29. THE OWNER IS TO BE RESPONSIBLE FOR ANY UTILITY FEES RELATED TO SERVICE UPGRADES. M 1.30. SUPPLY AND INSTALL ANY APPURTENANT FITTINGS OR MATERIALS NOT EXPRESSLY LISTED WITHIN THE DRAWINGS OR SPECIFICATIONS THAT ARE NECESSARY FOR THE PROPER OPERATION OF ANY OF THE MECHANICAL SYSTEMS. CONTRACTOR DOCUMENTS ARE NOT INTENDED TO ENUMERATE EACH AND EVERY DETAIL THAT MAY BE NECESSARY TO FURNISH AND INSTALL THE COMPLETE SYSTEM, CONNECTED AND READY FOR SERVICE OPERATION. THE TENDER PRICE SHALL INCLUDE ALL SUCH DETAILS, AND ALL ASSOCIATED LABOUR AND MATERIALS, TO PROVIDE A COMPLETE AND WORKING SYSTEM. M 1.31. ALL OF THE MATERIALS REQUIRED FOR THE PERFORMANCE OF THE WORK SHALL BE NEW, THE BEST QUALITY OF THEIR RESPECTIVE KIND, AND INSTALLED IN A GOOD, INDUSTRY STANDARD WORKMANSHIP. M 1.32. CONTRACTOR SHALL CARRY THE COST OF ALL PERMIT APPLICATION FEES ASSOCIATED WITH THE WORK. M 1.33. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CAREFULLY REVIEW THE DRAWINGS, SPECIFICATIONS, AND OTHER INSTRUCTIONS AND NOTIFY THE CONSULTANT IN WRITING OF ANY ERRORS, OMISSIONS, AND DISCREPANCIES PRIOR TO THE CLOSING OF THE BID. THE CONTRACTOR SHALL ABIDE BY THE DECISION GIVEN IN WRITING. THE WORK AS SHOWN IS INTENDED TO BE COMPLETED IN ALL RESPECTS, AND FAILURE TO NOTIFY THE CONSULTANT OF ANY DISCREPANCIES WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLETING THE WORK AS INTENDED. IN NO CASE SHALL THE CONTRACTOR PROCEED IN UNCERTAINTY. M 1.34. CONTRACTOR SHALL EXAMINE ALL SECTIONS AND DIVISIONS OF THE SPECIFICATIONS AND ALL OTHER RELATED CONTRACT DOCUMENTS IN CONTEXT OF THIS DESIGN INCLUDING THE ELECTRICAL, STRUCTURAL, CIVIL, AND ARCHITECTURAL DRAWINGS. THIS SPECIFICATION IS TO BE READ IN CONJUNCTION WITH ALL OTHER SECTIONS AND DIVISIONS OF THE SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN DOCUMENTS, THIS SPECIFICATION SHALL GOVERN. M 1.35. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS, STANDARDS & REGULATIONS OF CSA, NFPA, NATIONAL BUILDING CODES, ALL MUNICIPAL BY-LAWS, REGULATIONS, AND ANY RELEVANT AUTHORITIES HAVING JURISDICTION (AHU). M 1.36. CONTRACTOR SHALL INCLUDE LABOUR & MATERIAL THAT MAY BE REQUIRED TO RELOCATE ANY MECHANICAL UNIT UP TO 10 FEET (3M) FROM THE LOCATION INDICATED IN THE PLANS. **PRE-CONSTRUCTION - PHASE - MECHANICAL** M 2.0. CONTRACTOR SHALL BE RESPONSIBLE FOR PRICING ALL MATERIALS CONTAINED WITHIN THE CONTRACT DOCUMENTS. FAILURE OF THE CONTRACTOR TO ORDER AND PROCURE THE SPECIFIED OR APPROVED ALTERNATE MATERIALS TO MEET THE PROJECT SCHEDULE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NORTHSTAR WILL NOT APPROVE EXTRA COSTS FOR THE CONTRACTOR'S FAILURE TO ORDER THE REQUIRED MATERIALS & EQUIPMENT IN A TIMELY MANNER IN ORDER TO MAINTAIN THE PROJECT PLANNING IS BEGUN. M 2.1. EVERY EFFORT HAS BEEN MADE BY NORTHSTAR TO PROVIDE A WORKABLE CONCEPT FOR THIS PROJECT. THE CONTRACTOR IS REQUIRED TO REVIEW THE VIABILITY OF THE DESIGN CONCEPT AND LIST ANY CONCERN OR OBSTACLES TO THE SUCCESS OF THE PROPOSED PLAN BEFORE ORDERING OF MATERIALS OR DETAILED PLANNING IS BEGUN. M 2.2. EVERY EFFORT HAS BEEN MADE BY NORTHSTAR TO PROVIDE A WORKABLE DESIGN CONCEPT FOR THIS PROJECT. THE CONTRACTOR IS TO REVIEW THE VIABILITY OF THE DESIGN CONCEPT AND REPORT ANY CONFLICTS OR CONSTRUCTABILITY ISSUES CONCERN OR OBSTACLES TO THE TO THE ENGINEER BEFORE ORDERING OF MATERIALS OR DETAILED PLANNING IS BEGUN. M 2.3. CONTRACTOR IS TO APPLY FOR AND PAY FOR ANY AND ALL NECESSARY PERMITS REQUIRED TO PERFORM THE WORK LISTED. M 2.4. CONTRACTOR AS WELL AS SUBCONTRACTORS ARE TO PERFORM A DETAILED CONSIDERATION OF ALL OF THE CONSTRUCTION DOCUMENTS PROVIDED BY THE CONSULTANTS ON THIS PROJECT. THIS INCLUDES CIVIL, SITE SERVICING, PLANNING, ARCHITECTURAL, STRUCTURAL, MECHANICAL & ASSOCIATED CONTROLS CONTRACTORS. M 2.5. CONTRACTOR TO REGULARLY (AND AT PROJECT MILESTONES), REQUEST ELECTRICAL SAFETY INSPECTIONS AND PROVIDE TO THE ENGINEER THE INSPECTOR'S REPORT IN A TIMELY MANNER. M 2.6. CONTRACTOR TO CONTACT AND COORDINATE THE LOCATING AND DISCOVERY OF ALL UNDERGROUND SERVICES RELATED TO THE PROJECT (IN THE VICINITY OF THE WORK). PAYMENT FOR ALL SERVICES ARE TO BE MADE BY THE CONTRACTOR. ALL RECEIVED REPORTS ON LOCATES ARE TO BE ISSUED TO THE ENGINEER IN A TIMELY MANNER. M 2.7. CONTRACTOR TO CONTACT, COORDINATE, AND MEET WITH ALL LOCAL SERVICE UTILITY REPRESENTATIVES AS PART OF THE PROJECT ACTIVITIES. ANY INFORMATION PROVIDED TO THE CONTRACTOR TO BE SHARED WITH THE PRIME CONSULTANT AS WELL AS NORTHSTAR. M 2.8. CONTRACTOR TO RETAIN QUALIFIED COMPANIES TO PERFORM ANY LISTED TESTING AND OR INVESTIGATIONS PRIOR TO CONSTRUCTION. ALL REPORTS TO BE ISSUED TO THE ENGINEER IN A TIMELY MANNER. FEES FOR ALL LISTED REPORTS TO BE INCLUDED IN THE TENDER. M 2.9. REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL LOCATIONS OF MECHANICAL FIXTURES. OUR DRAWINGS ARE NOT TO BE SCALED TO DETERMINE LOCATIONS OF EQUIPMENT. M 2.10. THE CONTRACTOR IS TO ALLOW FOR COSTS FOR ALL CUTTING AND PATCHING PERTAINING TO THE MECHANICAL SYSTEMS INSTALLATION UNLESS NOTED OTHERWISE. THIS SHALL INCLUDE ALL CUTTING AND PATCHING OF ROOFS, PARTITION WALLS, CEILINGS, FLOORS, AND OUTSIDE WALLS. ALL CUTTING AND PATCHING SHALL BE PERFORMED BY CONTRACTOR FOR THE CONTRACTOR TO BE SHARED WITH THE PRIME CONSULTANT AS WELL AS NORTHSTAR. M 2.11. THE CONTRACTOR TO DEMOLISH ANY REQUIRED EQUIPMENT TO COMPLETE ANY REQUIRED TESTS IS TO BE PRESERVED IN PREPARATION FOR HANDLING THE COMPLETED PROJECT OVER TO THE OWNER ONCE SUBSTANTIAL COMPLETION IS DETERMINED BY NORTHSTAR. M 2.12. THE CONTRACTOR SHALL REVIEW THE PLANS IN CONJUNCTION WITH THIS PROJECT SPECIFICATION TO COMPLETE. THE GENERAL CONTRACTOR PROVIDES THE APPROVAL AND THE OWNER & NORTHSTAR HAS BEEN NOTIFIED IN WRITING. ALL DEMOLISHED EQUIPMENT AND MATERIALS ARE TO BE DISPOSED OF IN A PROPER MANNER, COMPLETE WITH RECEIPTS. ANY CONTAMINATED FLUIDS ARE TO BE REMOVED FROM THE SITE AND DISPOSED OF BY A PROPER AGENCY. A RECEIPT OF SAME IS TO BE FURNISHED UPON REQUEST OF NORTHSTAR. M 2.13. THE CONTRACTOR SHALL ORGANIZE AND CREATE AGREEMENTS WITH ALL SEPARATE TRADES REQUIRED TO COMPLETE THE WORK. NORTHSTAR IS NOT RESPONSIBLE FOR "CAPS" OR UNCLEAN CONTRACT REQUIREMENTS BETWEEN THE GENERAL CONTRACTOR, ELECTRICAL CONTRACTOR OR ANY OTHER CONTRACTS RELATED TO THIS PROJECT. M 2.14. THERE MAY BE ADDITIONAL SCOPES OF WORK THAT THE OWNER MAY REQUIRE RELATED TO OUR CONSTRUCTION DOCUMENTS CONTAINED IN THE TENDER. THE CONTRACTOR IS ENCOURAGED TO CONTACT TO CONTACT THE OWNER OR OWNER'S REPRESENTATIVE TO ENQUIRE ABOUT ADDITIONAL WORK RELATED TO - BUT NOT CONTAINED IN THIS TENDER. M 2.15. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ALL LISTED ITEMS WITHIN DRAWING SCHEDULES CONTAINED IN THE PLANS. IN ADDITION, NORTHSTAR MAY PROVIDE A SPECIFIC LIST OF REQUIRED SHOP DRAWINGS. ALTERNATES MAY OR MAY NOT BE ACCEPTABLE. IT IS RECOMMENDED THAT THE CONTRACTOR TO NOTIFY THE OWNER OR PROJECT MANAGER OF THE SCOPE OF THE DRAWINGS. M 2.16. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ALL LISTED ITEMS WITHIN DRAWING SCHEDULES CONTAINED IN THE PLANS. IN ADDITION, NORTHSTAR MAY PROVIDE A SPECIFIC LIST OF REQUIRED SHOP DRAWINGS. ALTERNATES MAY OR MAY NOT BE ACCEPTABLE. IT IS RECOMMENDED THAT THE CONTRACTOR TO NOTIFY THE OWNER OR PROJECT MANAGER OF THE SCOPE OF THE DRAWINGS. M 2.17. CONTRACTOR TO HAVE A VALID WORKPLACE SAFETY INSURANCE CLEARANCE CERTIFICATES FOR ALL STAFF AND SUB-TADES WORKING ON THE SITE AT ALL PHASES OF CONSTRUCTION. M 2.18. CONTRACTOR TO POSITIVELY IDENTIFY ALL ITEMS TO BE DEMOLISHED BY USE OF PHOTOS AND EMAIL AS WELL AS VERIFY WITH THE OWNER AND ENGINEER PRIOR TO DEMOLITION. M 2.19. ALL EQUIPMENT, FIXTURES AND ELEMENTS NOT REQUIRED TO BE DEMOLISED IN THE PLANS ARE TO BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. M 2.20. CONTRACTOR TO PRIOR TO COMMENCING CONSTRUCTION, A WORKING SECURITY CAMERA MONITORING SYSTEM IS TO BE INSTALLED AND TESTED FOR THE SITE AND STORAGE AND HOARDING AREAS OF THE CONSTRUCTION SITE. M 2.21. PRIOR TO COMMENCING CONSTRUCTION, A WORKING SECURITY CAMERA MONITORING SYSTEM IS TO BE INSTALLED AND TESTED FOR THE SITE AND STORAGE AND HOARDING AREAS OF THE CONSTRUCTION SITE. M 2.22. CONTRACTOR TO NOTIFY THE OWNER OR PROJECT MANAGER IN WRITING PRIOR TO COMMENCING CONSTRUCTION, THE SCOPE OF THE DRAWINGS AND THE CONTRACTOR'S PLANS. THE CONTRACTOR IS TO SIMULTANEOUSLY NOTIFY THE OWNER OR OWNER'S OFFICIAL REPRESENTATIVE OF ANY SUCH EVENT IN A TIMELY MANNER WITH ADEQUATE TEAM INCLUDING NORTHSTAR. M 2.23. CONTRACTOR TO NOTIFY IN WRITING TO THE OWNER OR OWNER'S REPRESENTATIVE OF IMPENDING WORK THAT COULD AFFECT THEIR OPERATIONS WITH SUFFICIENT WARNING TIME (MIN. 48 HOURS). THIS INCLUDES POWER OUTAGES, MECHANICAL TESTING, SERVER INTERRUPTIONS OF ANY KIND. THE CONTRACTOR IS TO SIMULTANEOUSLY NOTIFY THE OWNER OR OWNER'S OFFICIAL REPRESENTATIVE OF ANY SUCH EVENT IN A TIMELY MANNER WITH ADEQUATE TEAM INCLUDING NORTHSTAR. M 2.24. CONTRACTOR TO CONTACT, COORDINATE, AND MEET WITH A LOCAL SERVICE UTILITY REPRESENTATIVES AS PER THE PROJECT ACTIVITIES. ANY INFORMATION PROVIDED TO THE CONTRACTOR TO BE SHARED WITH THE CONSULTING ENGINEER & OWNER FOR REVIEW. M 2.25. CONTRACTOR TO SAFELY REMOVE FROM THE SITE AND DISPOSE OF (IN A LEGAL RESPONSIBLE MANNER) OF ANY MECHANICAL MATERIALS FROM THE SITE. M 2.26. CONTRACTOR TO PROVIDE COMPANY AND PERSONAL LOCKS AND TAGS ON ALL ELECTRICAL DISTRIBUTION EQUIPMENT REQUIRED TO BE DE-ENERGIZED DURING CONSTRUCTION AS REQUIRED. M 2.27. CONTRACTOR TO INCLUDE THE COST OF DELIVERY OF ALL REQUIRED EQUIPMENT AND MATERIALS TO THE SITE. M 2.28. CONTRACTOR TO INCLUDE THE COST OF ALL REQUIRED LIFTING AND CRANE OPERATIONS FOR THE PROJECT. THIS INCLUDES AND SUBSEQUENT LIFTS NECESSARY DUE TO ANY ERROR OR OMISSION MADE BY THE CONTRACTOR DURING THE PROJECT. THIS INCLUDES ALL NECESSARY RIGGING, LIFTING AIDS, SLINGS AND PAY DUTIES OF POLICE DEPARTMENTS FOR ROAD SHUT-DOWNS. **CONSTRUCTION - PHASE - MECHANICAL** M 3.0. CONTRACTOR IS TO SUPPLY AND INSTALL ALL CONSULTANT'S DOCUMENTS PROVIDED BY THE CONSULTANT. THIS INCLUDES CIVIL, SITE SERVICING, PLANNING, ARCHITECTURAL, STRUCTURAL, MECHANICAL & ASSOCIATED CONTROLS CONTRACTORS. ANY DISCREPANCIES OR CONFLICTS ARE TO BE REPORTED IN A TIMELY MANNER AS INTENDED BY THE ENGINEERS. THE WORK IS TO BE COMPLETED TO THE SATISFACTION OF THE OWNER AS WELL AS NORTHSTAR. M 3.1. ALL INSTALLATION METHODS AND WORK SHALL COMPLY WITH ALL CURRENT APPLICABLE STANDARDS, CODES, BY-LAWS AND REGULATIONS - AS WELL AS THE LATEST EDITION OF THE PROVINCIAL & NATIONAL BUILDING CODES. M 3.2. CONTRACTOR TO OBTAIN, LIASON, AND COORDINATE THE DETAILED ENGINEERING, APPROVAL, AND PROCUREMENT OF ALL FIRE STOPPING PROVISIONS FOR THE PROJECT. M 3.3. CONTRACTOR TO SUPPLY & INSTALL ALL ASSEMBLIES, REFER TO THE ARCHITECTURAL PLANS FOR A COMPLETE LIST. NORTHSTAR PLANS CAN ALSO BE OF ASSISTANCE FOR THIS. ALL SERVICE ROOMS SHALL BE FIRESTOPPED. M 3.4. SHOULD THE CONTRACTOR WISH TO DEVIATE FROM THE LAYOUT PROVIDED BY NORTHSTAR, THE CONTRACTOR SHALL PROVIDE A DETAILED RATIONALE AND PLAN IN A SKETCH AS MINIMUM FOR DISCUSSION AND APPROVAL BY NORTHSTAR. ONLY AFTER NORTHSTAR APPROVES THE DESIGN CHANGE IN WRITING, CAN THE WORK BE PLANNED & INITIATED BY THE CONTRACTOR. M 3.5. PROVIDE DI-ELECTRIC FITTINGS WHERE DISSIMILAR METALS ARE IN CONTACT. WHERE SUPPORTING COPPER PIPE, ISOLATE THE PIPE FROM THE HARSHER METAL. PROTECTIVE ACTION ARE OR EQUIVALENT, USE COPPER/PLASTIC COATED SUPPORTS, DIRECT CONTACT BETWEEN COPPER PIPING AND CONCRETE OR MASONRY CONSTRUCTION WILL NOT BE PERMITTED. M 3.6. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.7. CONTRACTOR TO OBTAIN, LIASON, AND COORDINATE THE DETAILED PROFESSIONAL ENGINEERING SERVICES FOR STRUCTURAL ENGINEERING AND APPROVAL OF ANY LISTED SEISMIC SUPPORT PROVISIONS FOR THE PROJECT. M 3.8. PROVIDE DI-ELECTRIC FITTINGS WHERE DISSIMILAR METALS ARE IN CONTACT. WHERE SUPPORTING COPPER PIPE, ISOLATE THE PIPE FROM THE HARSHER METAL. PROTECTIVE ACTION ARE OR EQUIVALENT, USE COPPER/PLASTIC COATED SUPPORTS, DIRECT CONTACT BETWEEN COPPER PIPING AND CONCRETE OR MASONRY CONSTRUCTION WILL NOT BE PERMITTED. M 3.9. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.10. CONTRACTOR TO OBTAIN, LIASON, AND COORDINATE THE DETAILED PROFESSIONAL ENGINEERING SERVICES FOR STRUCTURAL ENGINEERING AND APPROVAL OF ANY LISTED SEISMIC SUPPORT PROVISIONS FOR THE PROJECT. M 3.11. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.12. CONTRACTOR TO OBTAIN, LIASON, AND COORDINATE THE DETAILED PROFESSIONAL ENGINEERING SERVICES FOR STRUCTURAL ENGINEERING AND APPROVAL OF ANY LISTED SEISMIC SUPPORT PROVISIONS FOR THE PROJECT. M 3.13. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.14. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.15. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.16. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.17. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.18. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.19. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.20. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.21. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.22. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.23. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.24. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.25. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.26. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.27. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.28. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.29. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.30. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.31. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.32. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.33. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.34. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.35. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.36. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.37. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.38. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE SERVICES ARE INSTALLED IN AN ORDER THAT IS REQUIRED FOR ALL THE SERVICES. CHARGES FOR ANY OUT-OF-ORDER INSTALLATION WORK WILL NOT BE APPROVED BY THE ENGINEER. M 3.39. CONTRACTOR TO HOLD REGULAR TRADES COORDINATION MEETINGS ON-SITE TO ENSURE			

M 3.43. PROVIDE DUCT INSULATION IN ACCORDANCE WITH TABLES OF ASHRAE 90.1, TABLES 6.8.2A, 6.8.2B.		M 3.52. 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 AGREEABLE 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.	
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 A RFK FINISH FOR ALL DUCTWORK WHERE INDICATED ON THE DRAWINGS. ADHESIVE TAPE WITH 45MM TURNS, RIPS OF BONDING ADHESIVE AT 6" (200MM) ARC, ALL PIN PENETRATIONS OR PUNCTURES AND ALL CIRCUMFERENTIAL AND LONGITUDINAL JOINTS IN THE JACKET SHALL BE TAPE WITH EITHER PLAIN FOIL OR FRK BACKING STOCK.		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 ALL APPROPRIATE APPOINTMENT/TIME, THE CONTRACTOR SHALL MAKE AVAILABLE 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.	
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 3.54. 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 ASSTENDEES 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:	
ALL INSULATION SHALL BE APPLIED ACCORDING TO MANUFACTURERS' RECOMMENDATIONS. ALL INSULATION AND COMPONENTS SHALL HAVE MAXIMUM FLAME AND SMOKE SPREAD RATINGS OF 25 AND 50 RESPECTIVELY.		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.		(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.	
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 3.56. 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 WARDED IN SUCH A MANNER AS TO NOT BE DAMAGED AT START-UP.		(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 USEAGE.	
M 3.44. PROVIDE PIPE INSULATION IN ACCORDANCE WITH TABLES OF ASHRAE 90.1, TABLES 6.8.3-1, 6.8.3-2. INSULATION FOR PIPING, FITTINGS, ETC., SHALL BE OWENS-CORNING FIBERGLASS SSL-II PIPE INSULATION, OR AN EQUAL PRODUCT WITH A FACTORY-APPLIED KRAFT REINFORCED FOR VAPOR RETARDER JACKET AND DOUBLE ADHESIVE LONGITUDINAL JACKET LAP SEALING. PVC INSULATION IS NOT PERMITTED. BIA STRIP SEAL JACKETS SHALL BE NON-MISMATCHABLE WITH FLAME SPREAD AND SMOKE DEVELOPED RATINGS OF 25 AND 50 RESPECTIVELY OR LESS. INSTALL ACCORDING TO MANUFACTURERS' RECOMMENDATIONS AND TAPE ALL JOINTS. FOR VALVES AND FITTINGS, USE PRE-FORMED FITTINGS OR MITERED SEGMENTS TO MATCH ADJACENT PIPE INSULATION AND COMPONENTS. WHERE INSULATIONS 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 3.57. 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 4.11. CANULC S1001 COORDINATION WILL NOT BE PROVIDED BY NORTHSTAR. THE OWNER OR PRIME CONSULTANT 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 NECESSARY LABOUR TO SUPPORT ALL TESTING AND COMMISSIONING OF THE INTEGRATED SYSTEMS.		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 WARRANTLY CLAIMS.	
THE UNDERSIDE OF ROOF DRAIN PODIES SHALL BE INSULATED WITH FIBERGLASS AF530 OR EQUAL, 3 LB./CU.FT. (4.81 KG./CU.M.) DENSITY RIGID VAPOR SEAL DUCT INSULATION WITH RFK FINISH. PROVIDE CANVAS COVERING. ULC 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.).		M 3.58. CONTRACTOR TO PROVIDE ALL REQUIRED FIRE WATCHES FOR ANY HOT WORK PLANNED.		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 6.4. DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. DRAWINGS ARE THE PROPERTY OF NORTHSTAR. DRAWINGS PROVIDED BY CONTRACTOR(S), DO NOT SCALE DRAWINGS.	
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 3.59. CONTRACTOR TO COORDINATE THE DE-ENERGIZATION OF ALL MECHANICAL EQUIPMENT LISTED TO BE DEMOLISHED WITH THE OWNER AND MECHANICAL CONTRACTOR.		M 4.13. CONTRACTOR TO DEMONSTRATE THAT THE NEWLY INSTALLED EQUIPMENT & SYSTEMS TO THE ENGINEER & OWNER AT THE COMPLETION OF THE PROJECT.		M 6.5. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
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. 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 3.60. PROVIDE A HOLSTER OR STORAGE/MOUNT FOR ALL HVAC REMOTE CONTROL THERMOSTATS. CONFIRM WITH THE OWNER THE REQUIRED LOCATION.		M 4.14. CONTRACTOR TO REMOVE ALL SHIPPING MATERIALS AND REFUSE FROM THE SITE AND CLEAN ALL WORK AREAS THOROUGHLY.		M 6.6. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
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.		M 3.61. SUPPLY & INSTALL WATER DRIP GUARDS OVER ANY SENSITIVE ELECTRICAL EQUIPMENT WHERE MECHANICAL CONDENSATE MAY CAUSE DAMAGE IF A MALFUNCTION OCCURS.		M 4.15. PROVIDE THREE COPIES OF MANUFACTURERS' MAINTENANCE DATA AND OPERATING INSTRUCTIONS FOR ALL EQUIPMENT AND SYSTEMS IN INCLUDED IN THE PROJECT. THESE ARE TO BE PROVIDED IN RIGID, RIBBED, 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 6.7. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARRIVING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
M 3.45. 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 HINGE POSITIVE LATCHES. SETSCREWS, SIZES, PLATES AND THE THICKNESS 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, DISCONNECT/UNCTION BOXES, MOTORS, SWITCHES AND DEVICES WITHIN THE PROJECT. ALL MARKINGS TO BE TYPEWRITTEN, 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, WITH THE CONTRACTOR'S NAME, ADDRESS, CHARTERS ON A BLACK BACKGROUND AND LENGTH AS REQUIRED. ALLOW AN AVERAGE OF 25 LETTERS PER LINE/PLATE. 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 6.8. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARRIVING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND 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 4.17. 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. EACH MECHANICAL PIECE OF EQUIPMENT IS TO BE FURNISHED WITH NEW, FRESH FILTERS AT THE COMPLETION OF THE COMMISSIONING PHASE.		M 6.9. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARRIVING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
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 4.18. 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 DEMONSTRATE ALL SYSTEMS TO BE FUNCTIONAL FOR THE INTENDED PURPOSE TO THE OWNER / PROJECT MANAGER.		M 6.10. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARRIVING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
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. EXPANSION AND CONTRACTION.		(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 4.19. 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.		M 4.19. EACH MECHANICAL PIECE OF EQUIPMENT IS TO BE FURNISHED WITH NEW, FRESH FILTERS AT THE COMPLETION OF THE COMMISSIONING PHASE.	
(1) PROVISION SHALL BE MADE TO PROTECT THE WATER DISTRIBUTION SYSTEM FROM THE ADVERSE EFFECTS OF WATER HAMMER.		M 4.20. CONTRACTOR SHALL ATTEND, PARTICIPATE AND SUPPORT ALL ONSITE AND OFFICE FINALIZATION (INCLUDING MEETINGS) FOR CAN/ULC-S1001 REQUIRED TESTING AT THE CLOSE OUT OF THE PROJECT.		M 4.20. CONTRACTOR SHALL ATTEND, PARTICIPATE AND SUPPORT ALL ONSITE AND OFFICE FINALIZATION (INCLUDING MEETINGS) FOR CAN/ULC-S1001 REQUIRED TESTING AT THE CLOSE OUT OF THE PROJECT.		M 6.11. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARRIVING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
M 3.49. CONTRACTOR TO FURNISH TO THE ENGINEER ALL PIPING PRESSURE TEST REPORTS FOR REVIEW.		M 4.21. 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 CONTRACTOR'S DESIGN, AS WELL AS ANY CHANGES TO THE CONTRACTOR'S FIELD CHANGES. THIS ADDENDA, CHANGE ORDERS, FIELD CHANGES AND 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. 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.		M 4.21. CONTRACTOR TO DEMONSTRATE ALL SYSTEMS TO BE FUNCTIONAL FOR THE INTENDED PURPOSE TO THE OWNER / PROJECT MANAGER.		M 6.12. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARRIVING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	
M 3.50. CONTRACTOR TO FURNISH TO THE ENGINEER ALL PIPING PRESSURE TEST REPORTS FOR REVIEW.		M 4.22. CONTRACTOR SHALL SUPPLY & INSTALL ALL REQUIRED ISOLATION DISCONNECTS FOR ALL HVAC EQUIPMENT HAVING MOTORS AND EQUIPMENT WITHIN THE SCOPE OF THE PROJECT AND AS LISTED IN THE NORTHSTAR SCHEDULES - I.E., PROVIDE A SUITABLE, RATED, FUSED OR BREAKER BOX WITH AN ISOLATION DISCONNECT AS PER CEC.		M 4.22. CONTRACTOR TO DEMONSTRATE ALL SYSTEMS TO BE FUNCTIONAL FOR THE INTENDED PURPOSE TO THE OWNER / PROJECT MANAGER.		M 6.13. THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARRIVING DURING CONSTRUCTION. THESE CHANGES PERTAIN TO ALL CONSTRUCTION COSTS ARRIVING FROM SUCH CHANGES MAY APPLY AND ARE TO BE NEGOTIATED BETWEEN THE OWNER AND CONTRACTOR.	

(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



2 M-8 (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.

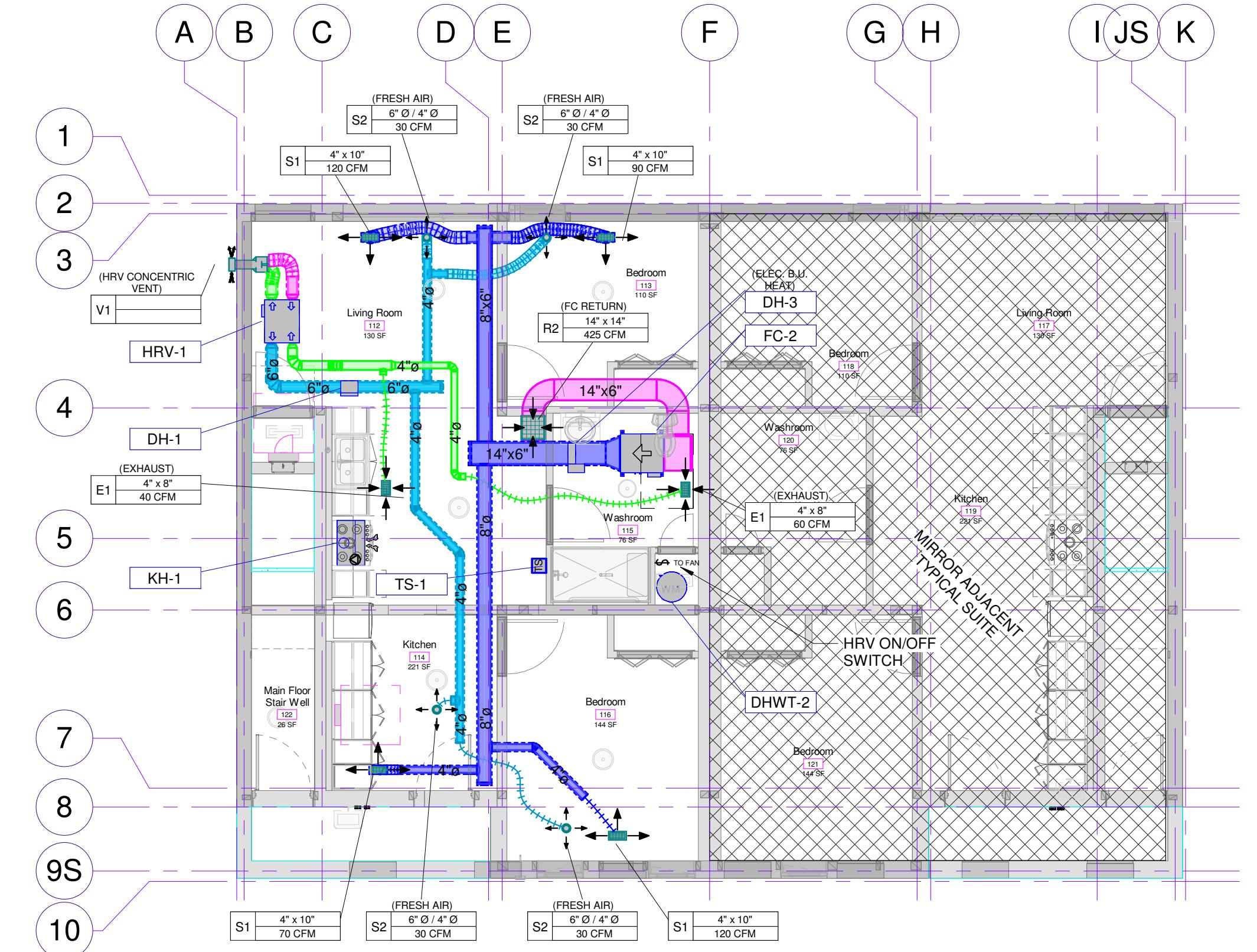
MOUNTING & WIRING TO BE BY DIV. 26 CONTRACTOR INCLUDING PERMANENT TYPE LAMAOID. LABELS TO IDENTIFY MECU UNIT AND ELEC. CIRCUIT AS PER DESIGN.

REFRIGERANT PIPING & INSTALLATION

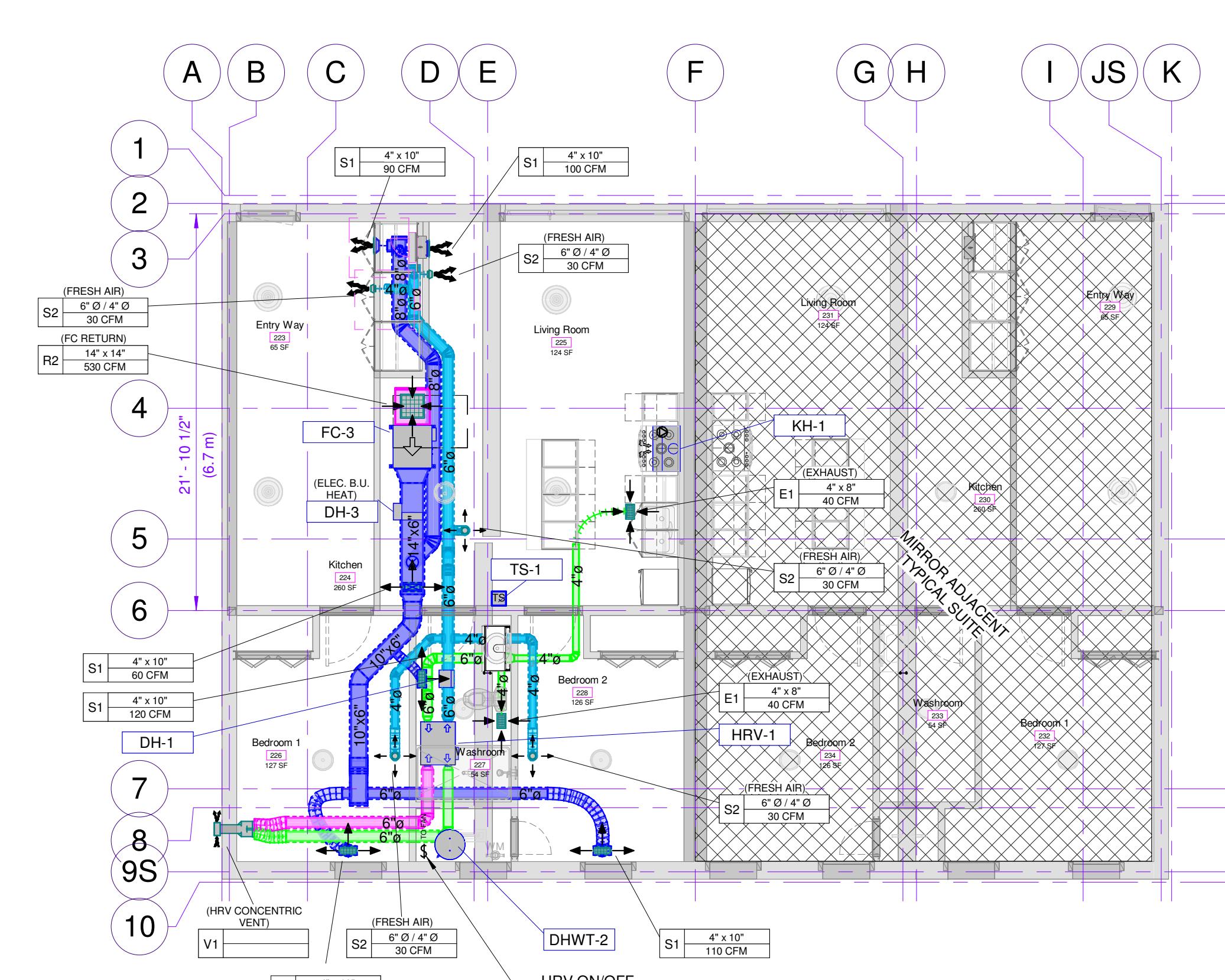
IMPORTANT INSTALLATION NOTE:

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 AGC COPPER WITH SOLDER TYPE FITTINGS USING 6/32 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.

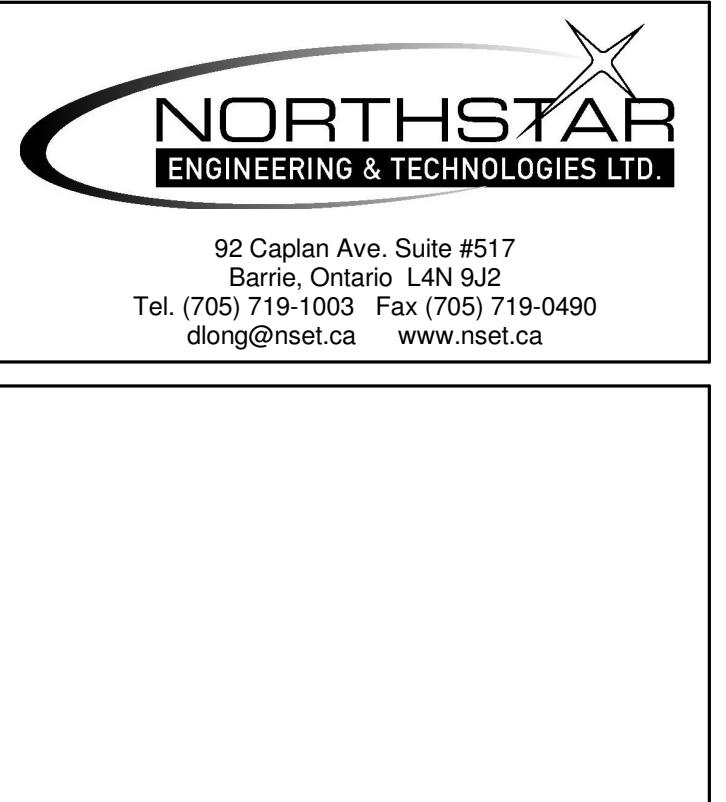


1 M-8 (04322) Building 2 - Basement - RCP HVAC - New
1 : 75



3 M-8 (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
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 REQUIREMENT 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 CONTRACTOR(S). DO NOT SCALE DRAWINGS.
 - CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
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 - REQUEST FOR ANY FOR ANY FINAL 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.
 - REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR PURCHASE, TRANSFER, LICENSE OR RELEASE TO A CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
 - TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
 - 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.

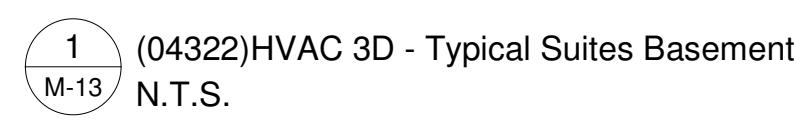
Address: Minden, ON

Project Name:	Gull River Affordable Housing						
Dwg. Name:	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")							

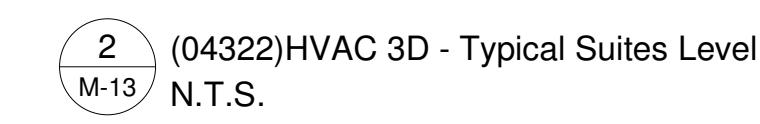
HVAC LEGEND	
	SUPPLY AIR (THERMAL INSULATION)
	SUPPLY AIR
	RETURN AIR (ACOUSTIC LINING)
	RETURN AIR
	EXHAUST AIR (THERMAL INSULATION)
	EXHAUST AIR
	FRESH AIR (THERMAL INSULATION)
	FRESH AIR

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

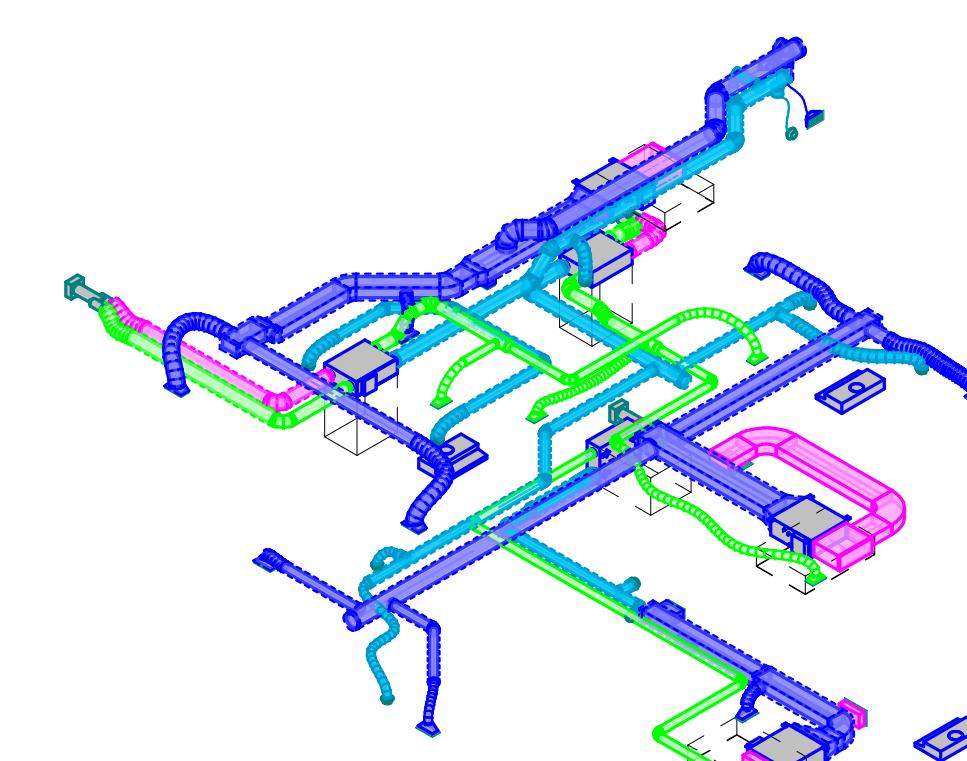
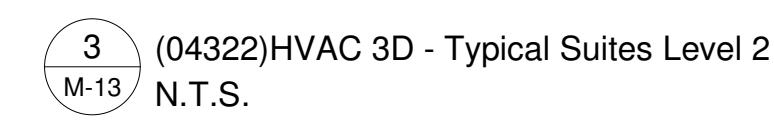
1 (04322) HVAC 3D - Typical Suites Basement
N.T.S.



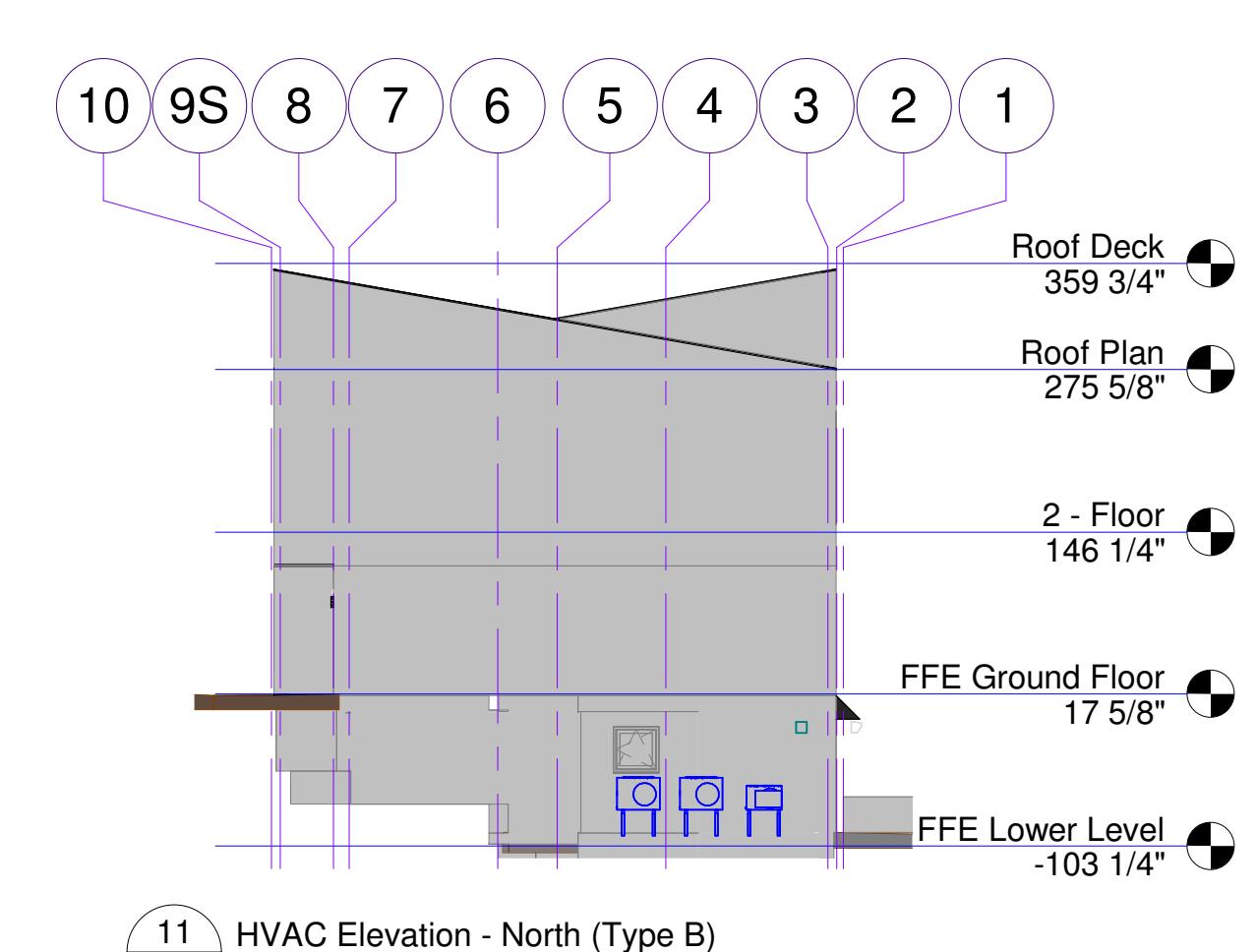
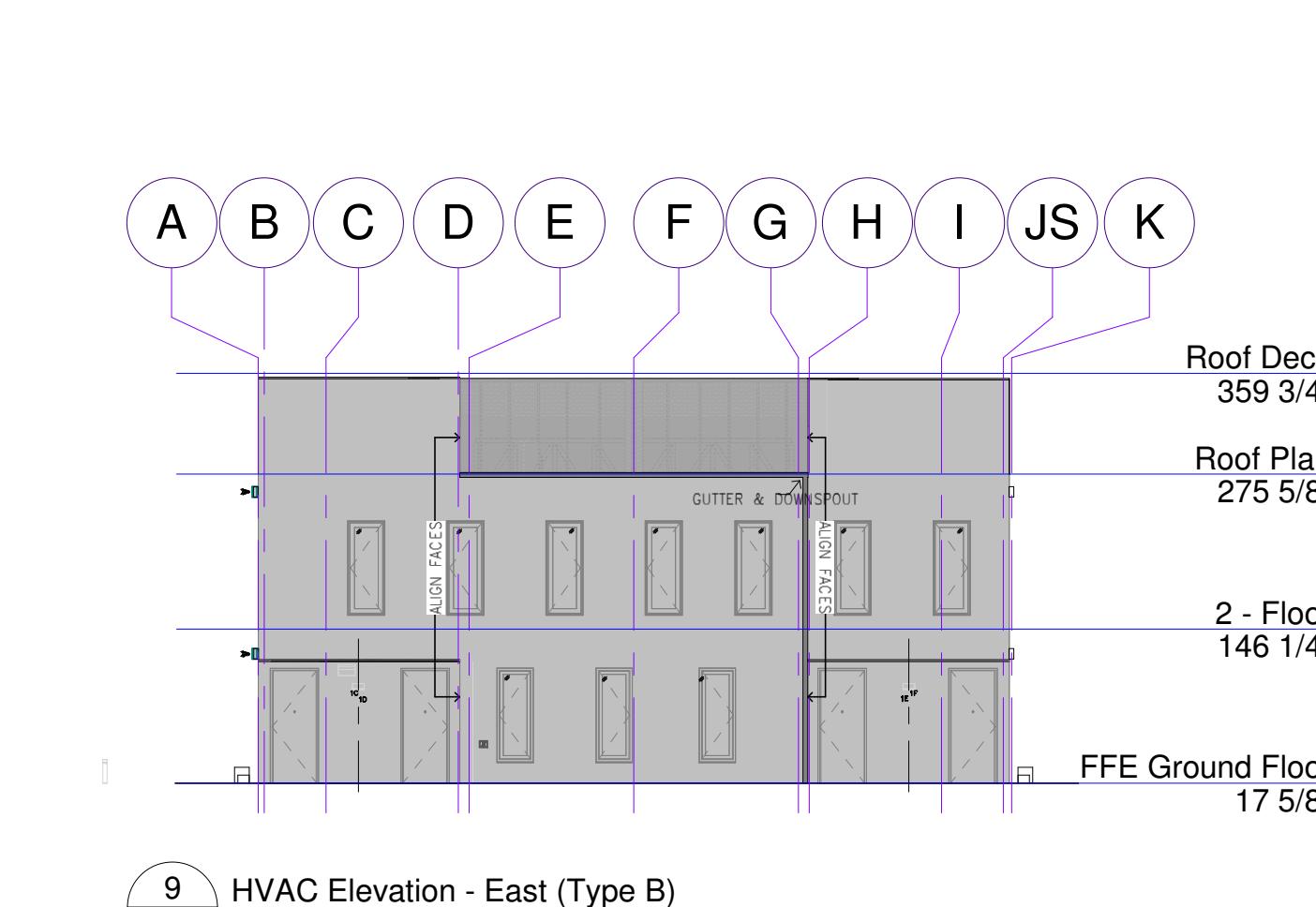
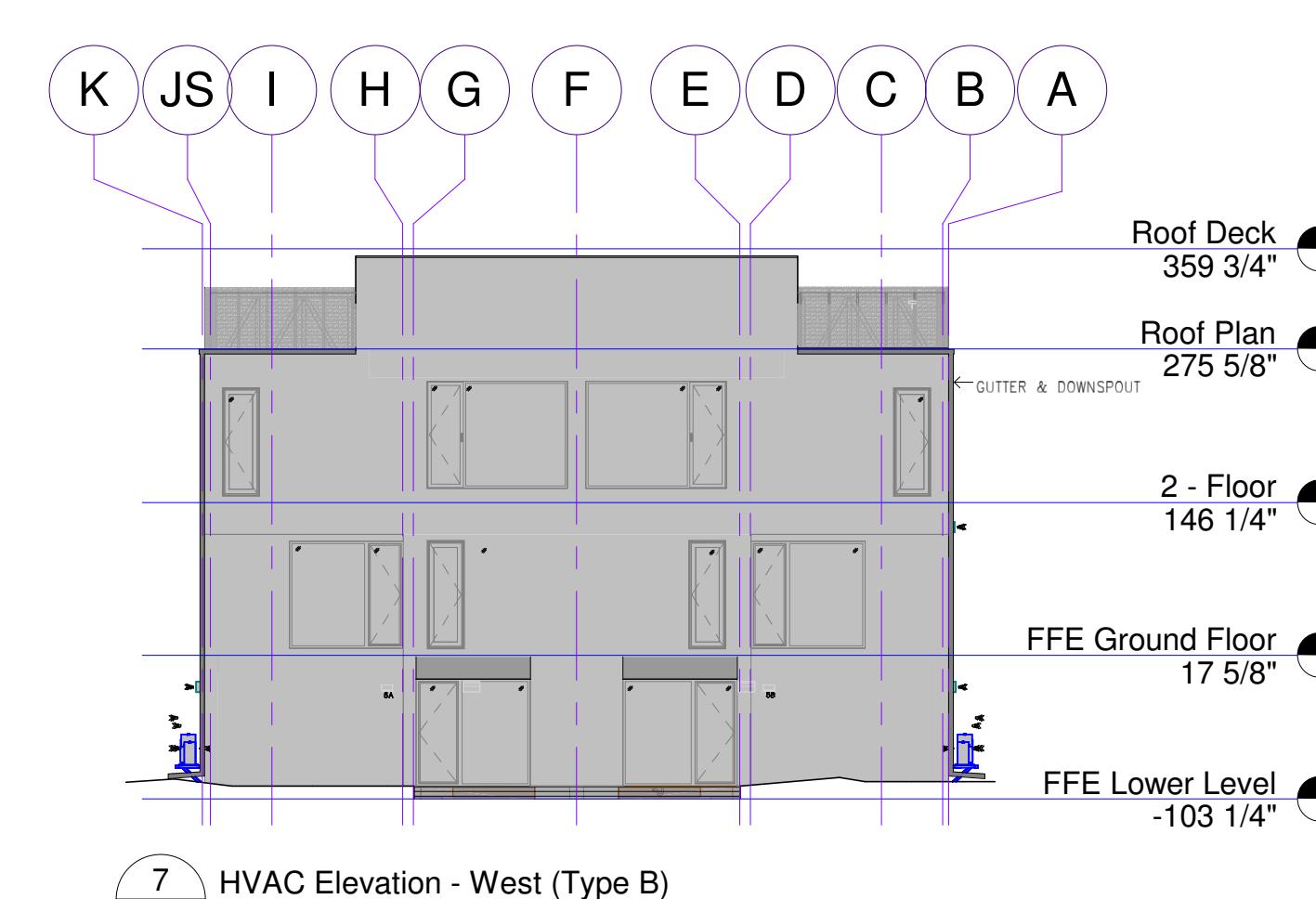
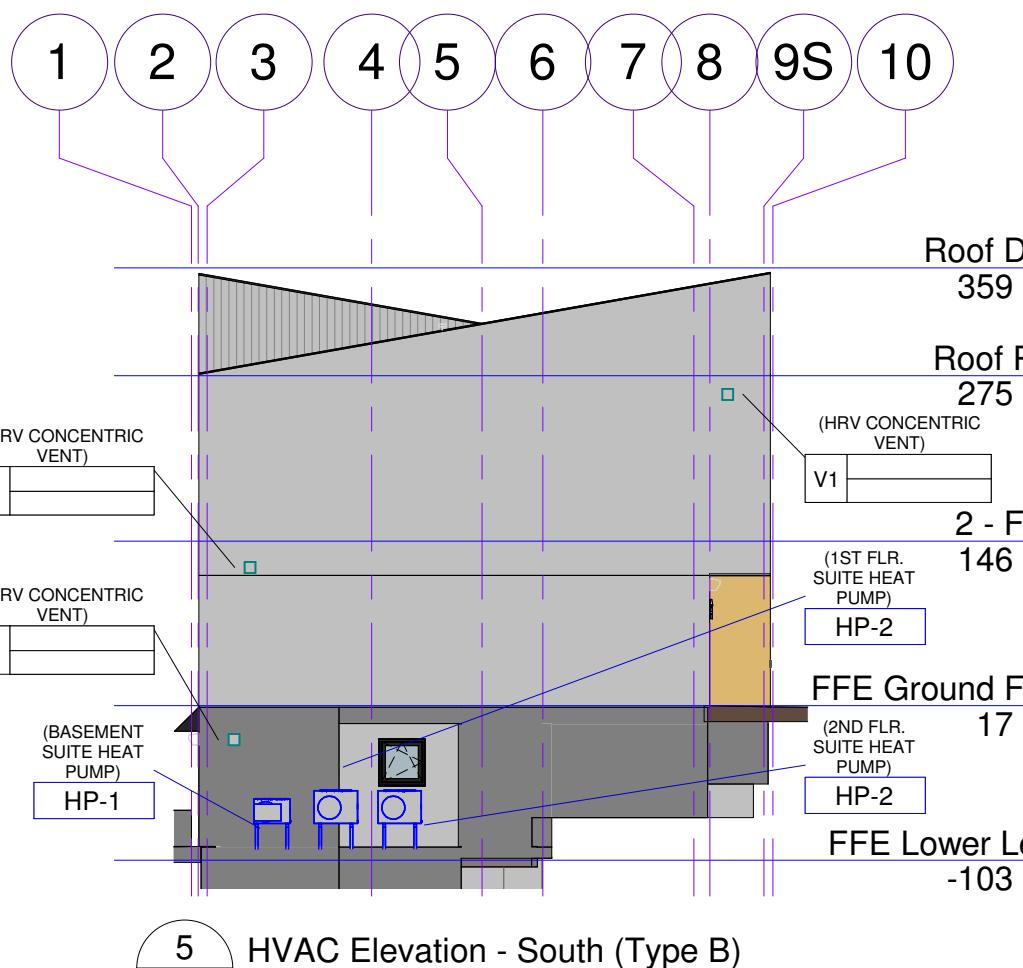
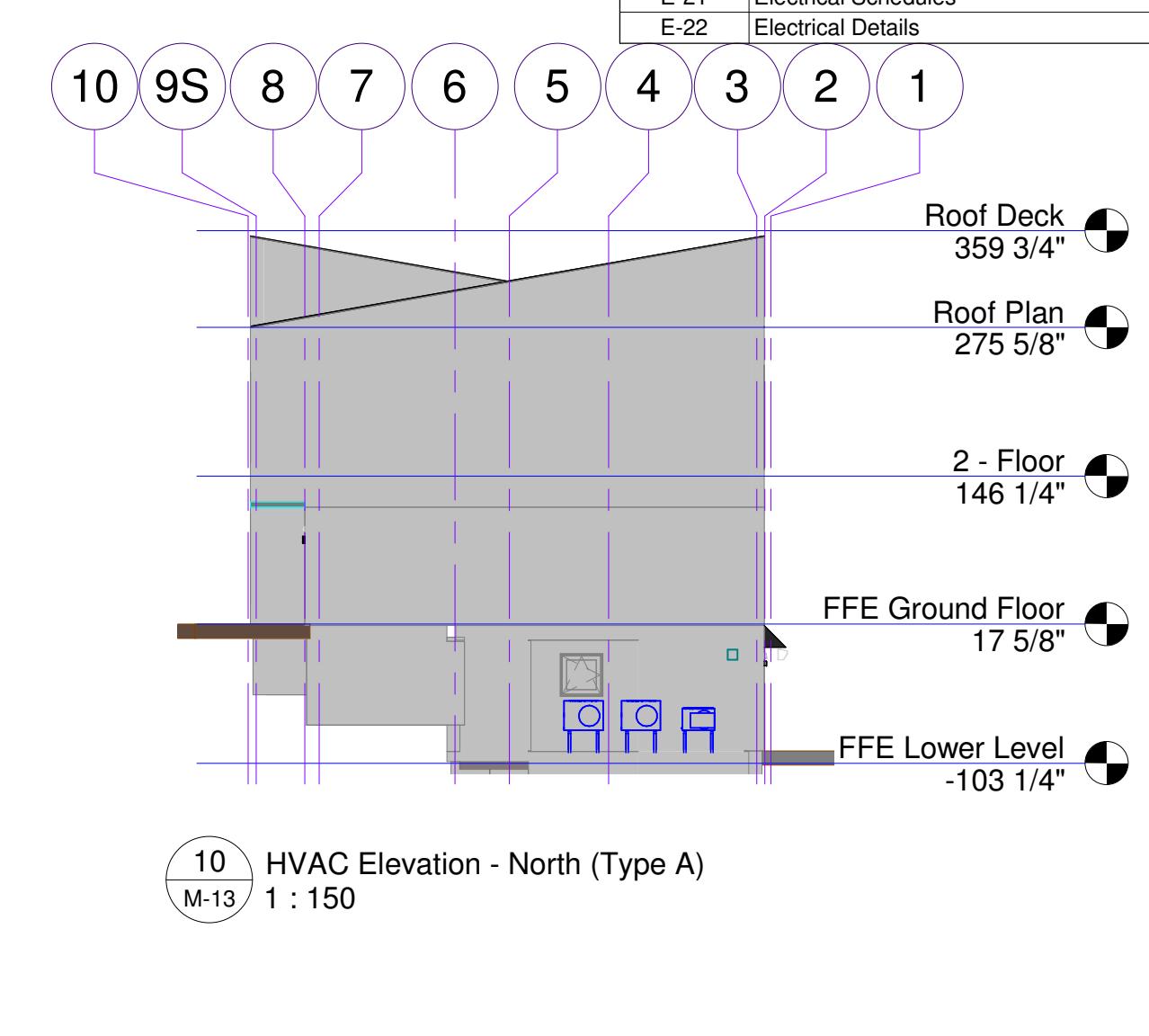
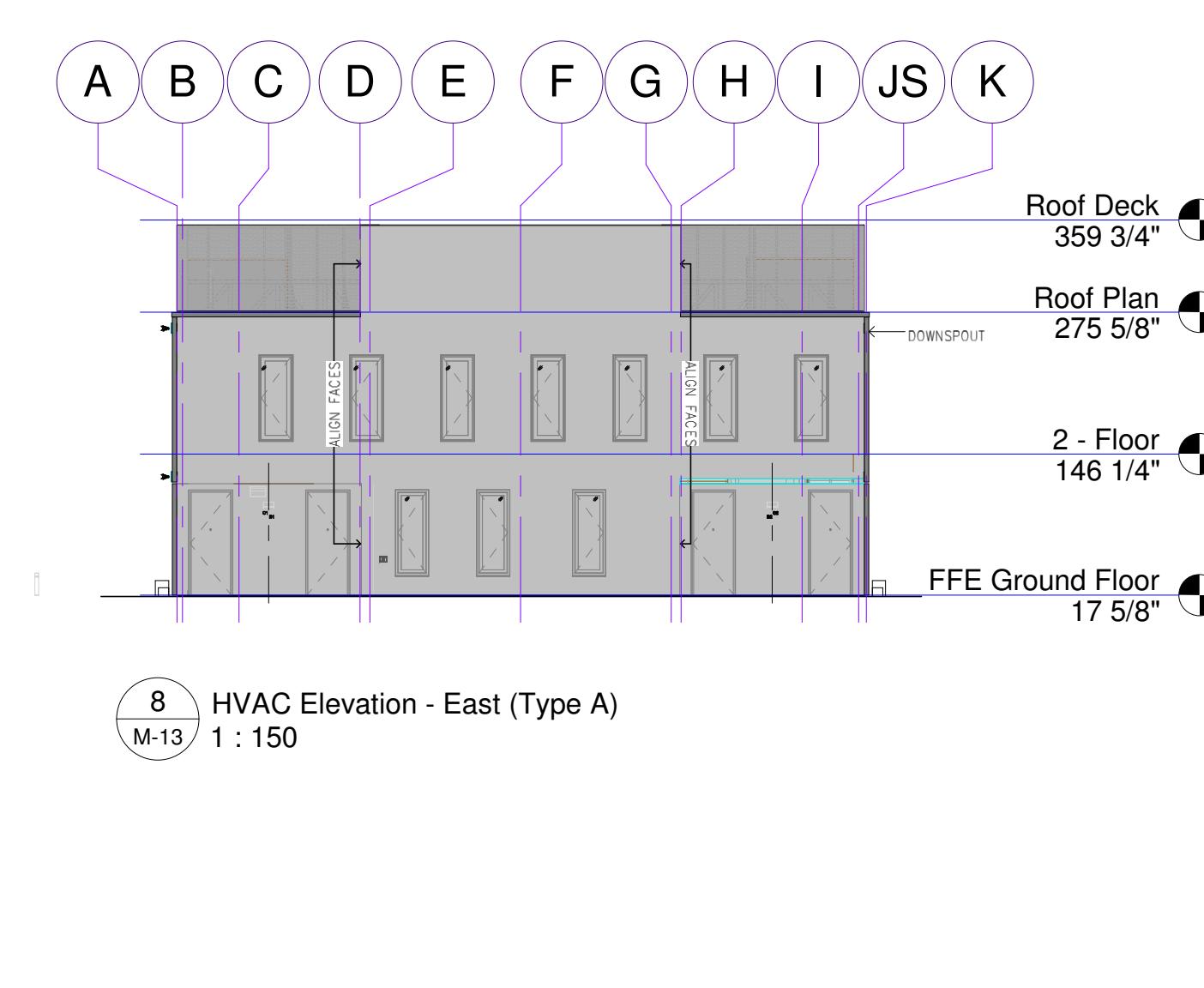
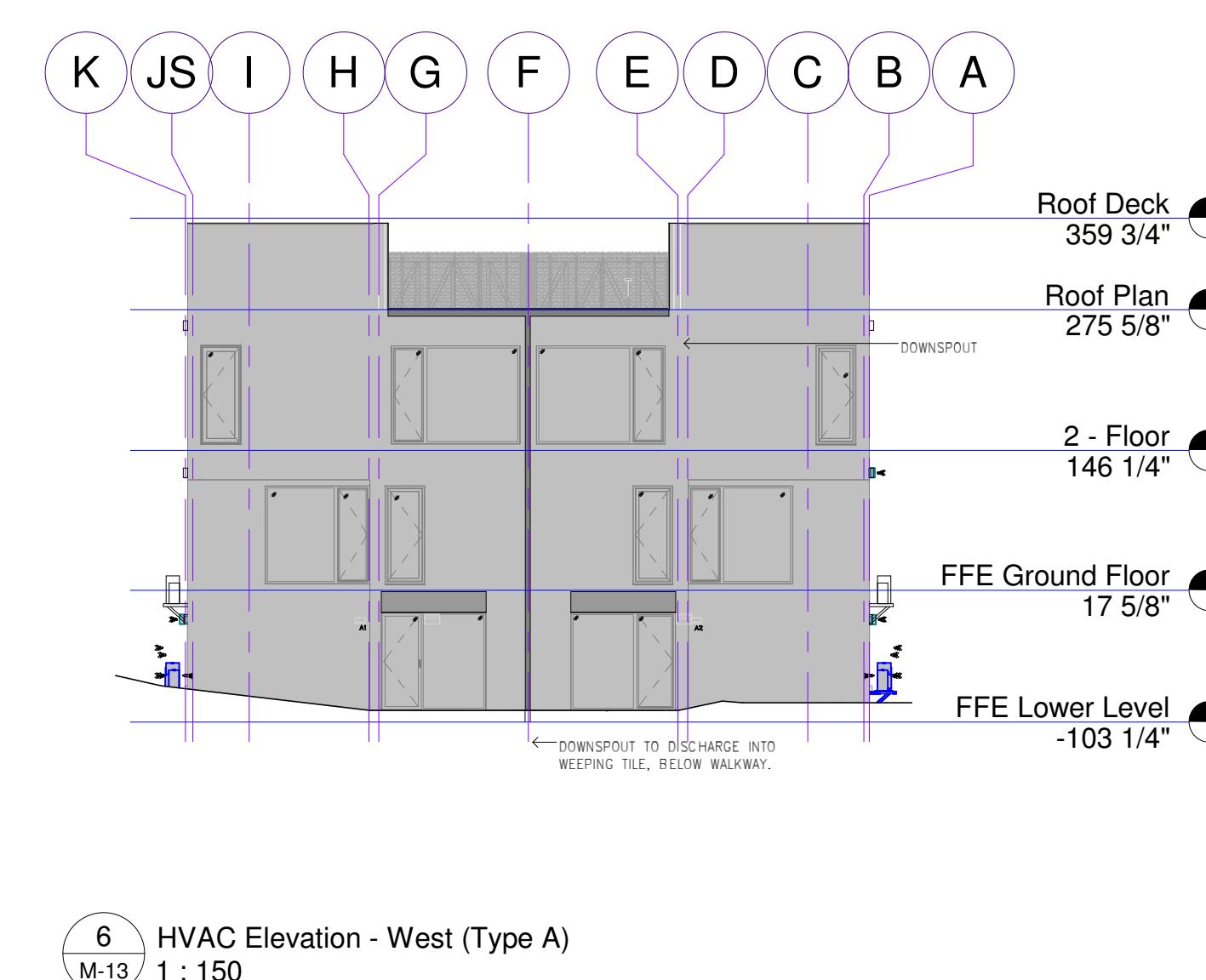
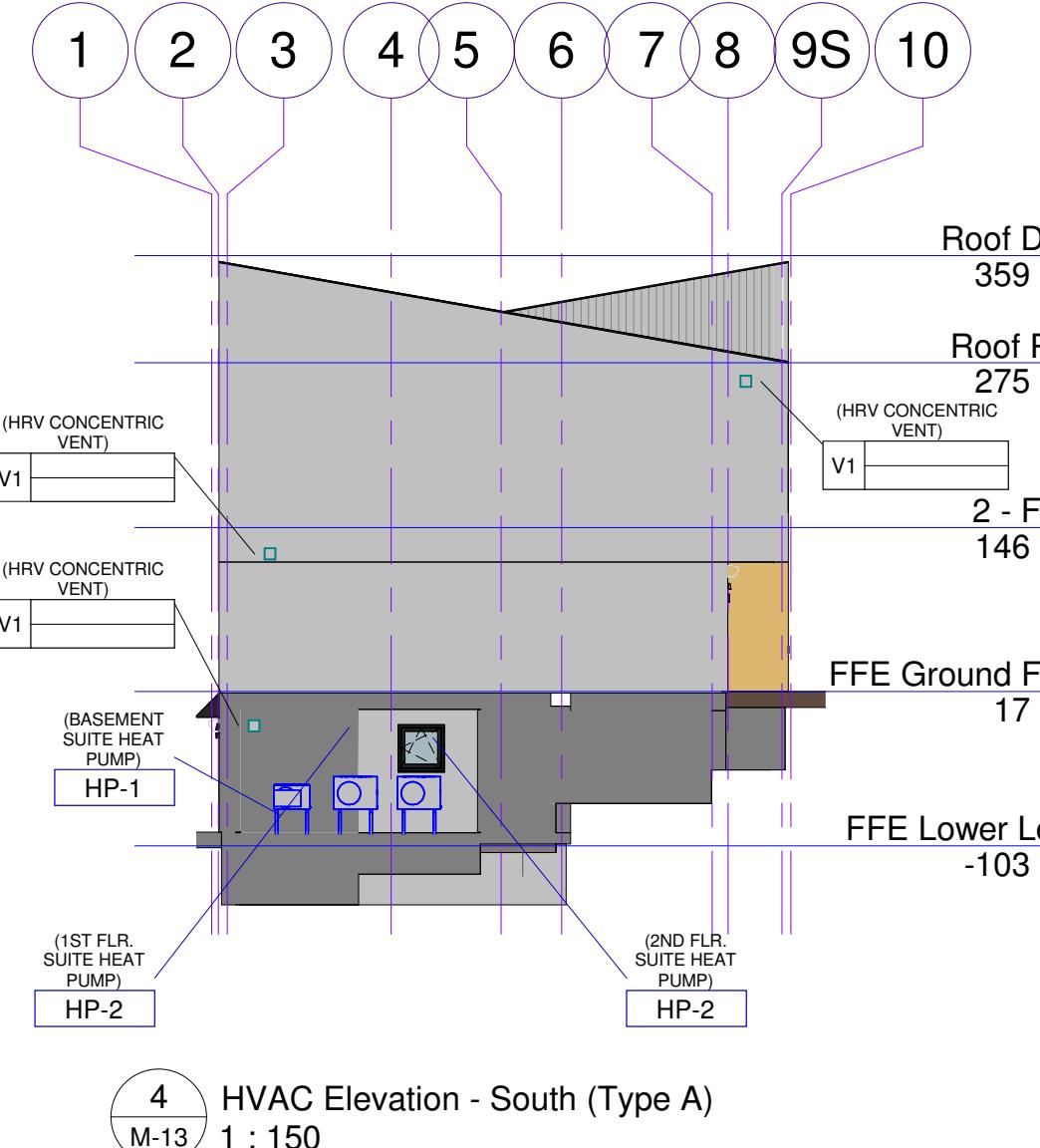
2 (04322) HVAC 3D - Typical Suites Level 1
N.T.S.



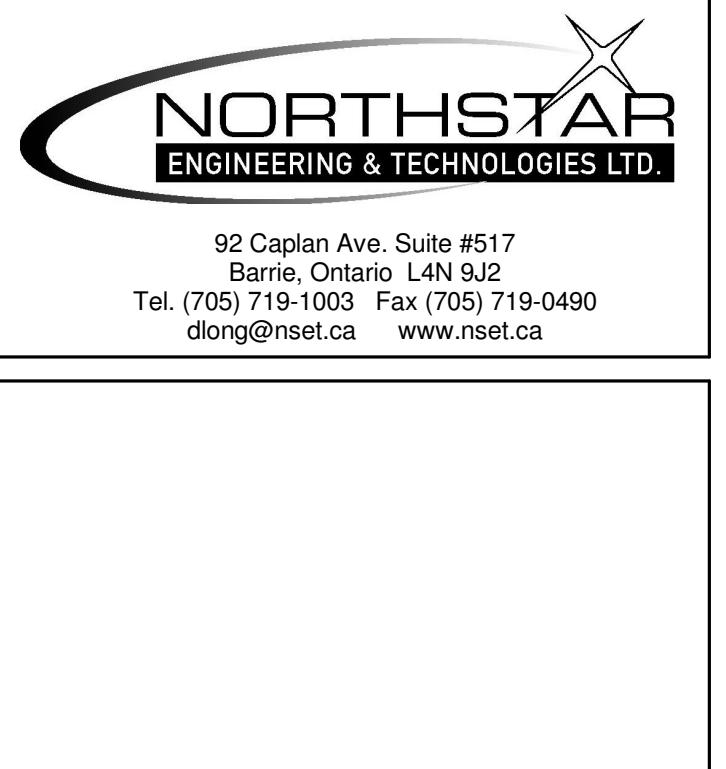
3 (04322) HVAC 3D - Typical Suites Level 2
N.T.S.



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



(04322) PROJECT DRAWING REGISTER	
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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
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E-4	Elec. Power - Specifications
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E-7	Elect. 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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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
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")	

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No.	Description	Date
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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 Details

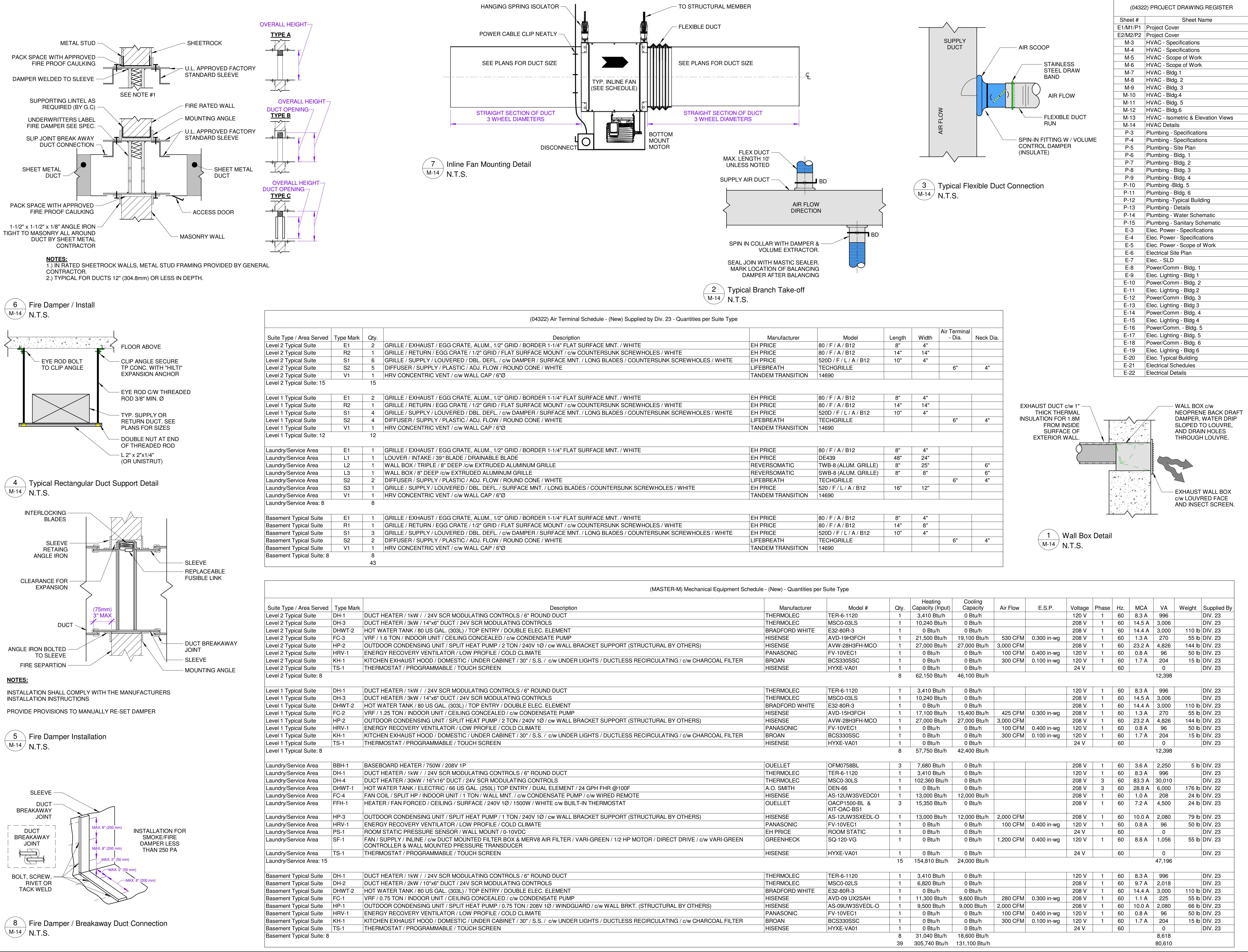
NSET Project #: 04322

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")



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 SO 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 SO 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.
8. ANY EXTERIOR PENETRATION TO BE APPROPRIATELY FLASHED & WEATHER PROOFED WITH APPROVED SEALING METHODS.

22.00 - 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.
2. ACCESS DOORS IN FIRE RATED CONSTRUCTION ARE TO BE ULC LISTED & LABELED AND OF A RATING TO MAINTAIN THE FIRE SEPARATION INTEGRITY.

22.00 - 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.

22.00 - 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" (797 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
 - DRAINAGE TRAP - BARRIER FREE: 30" (762 MM) FROM FINISHED FLOOR TO DRAIN
 - DRINKING FOUNTAIN - STANDARD: 33" (838 MM) FROM FINISHED FLOOR TO DRAIN
 - 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
 - NON-FREEZE HYDRANT: 36" (914 MM) TO 42" (1066 MM) FROM FINISHED FLOOR/ GRADE

22.00 - 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.

22.00 - 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 ELECTRONIC 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.

22.00 - 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.

22.00 - 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.

22.00 - 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.

22.00 - 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.
2. ACCESS DOORS IN FIRE RATED CONSTRUCTION ARE TO BE ULC LISTED & LABELED AND OF A RATING TO MAINTAIN THE FIRE SEPARATION INTEGRITY.

22.00 - 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.

22.00 - 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.

22.00 - 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.

22.00 - 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.

22.00 - 13.0 COMMISSIONING OF PLUMBING

1. TEST PROCEDURES IN ACCORDANCE WITH THE CURRENT APPLICABLE PORTIONS OF ASME, ASHRAE, APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS & OTHER RECOGNISED TEST CODES AS FAR AS FIELD CONDITIONS PERMIT.
2. CUT SQUARE, REAM & CLEAN TUBING & TUBE ENDS, CLEAN RECESSES OF FITTINGS & ASSEMBLE WITHOUT BINDING.
3. ASSEMBLE ALL PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS.
4. INSTALL TUBING CLOSE TO BUILDING STRUCTURE TO MINIMIZE FURRING, CONSERVE HEADROOM & SPACE GROUP EXPOSED PIPING & RUN PARALLEL TO WALLS.

5. CONNECT TO FIXTURES & EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS UNLESS OTHERWISE INDICATED.
6. PROVIDE ISOLATING GATE VALVES ON MAIN & FOR BRANCH LINES & FOR ALL EQUIPMENT SERVED WITH HOT & COLD WATER LINES. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED. SEE VALVE SELECTION CRITERIA.
7. SUPPORT ALL OVERHUNG PIPES TO APPROVAL.
8. PROVIDE STOPS TO EACH PLUMBING FIXTURE OF LOCKSHIELD OR HANDWHEEL TYPE AS SPECIFIED. PROVIDE ISOLATING VALVES TO EACH GROUP OF PLUMBING FIXTURES. ADD STOPS TO ALL BATHROOM FIXTURE SUPPLIES

22.00 - 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.

22.00 - 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.
2. ACCESS DOORS IN FIRE RATED CONSTRUCTION ARE TO BE ULC LISTED & LABELED AND OF A RATING TO MAINTAIN THE FIRE SEPARATION INTEGRITY.

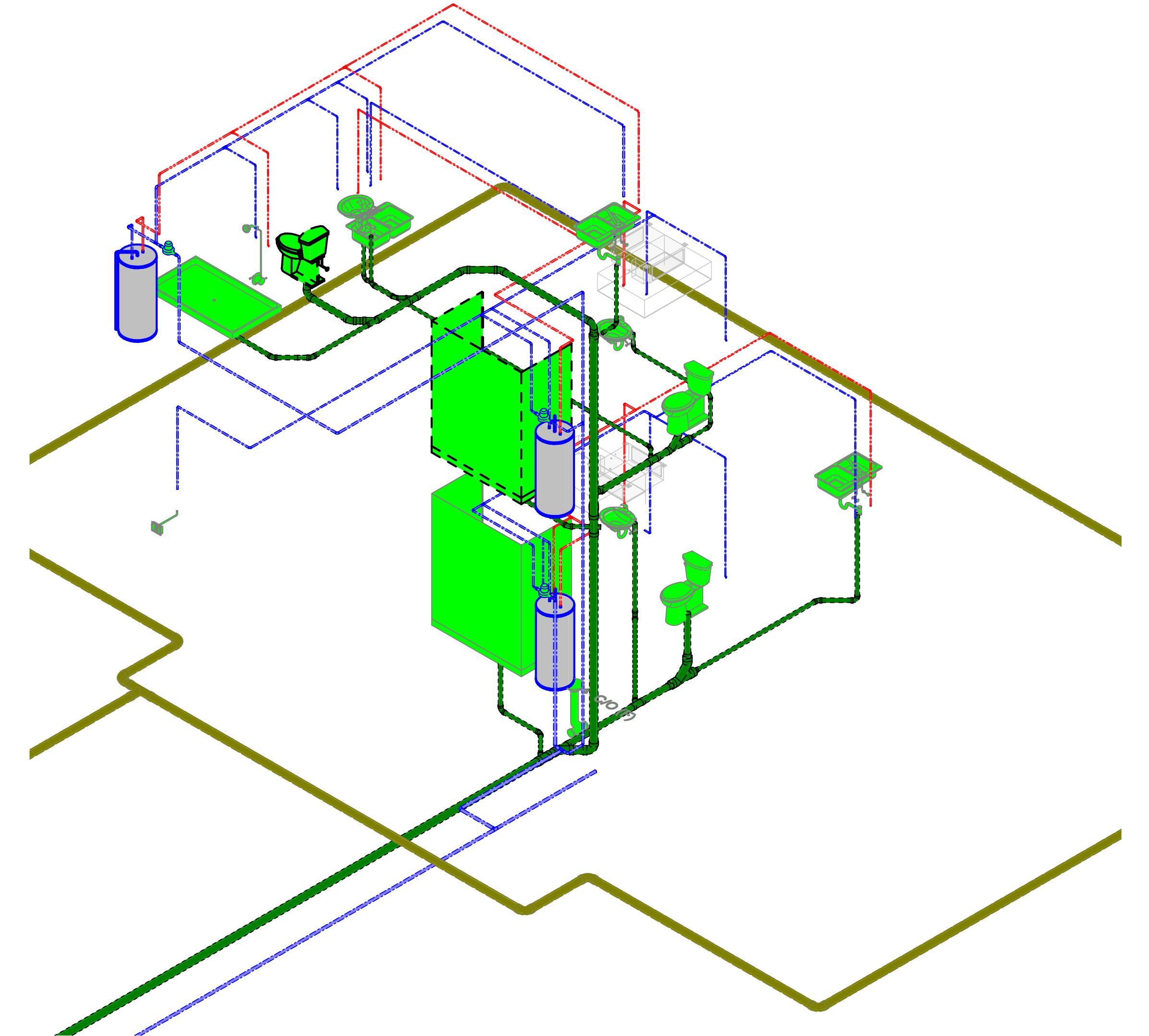
22.00 - 9.0 FIRE STOPPING

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.

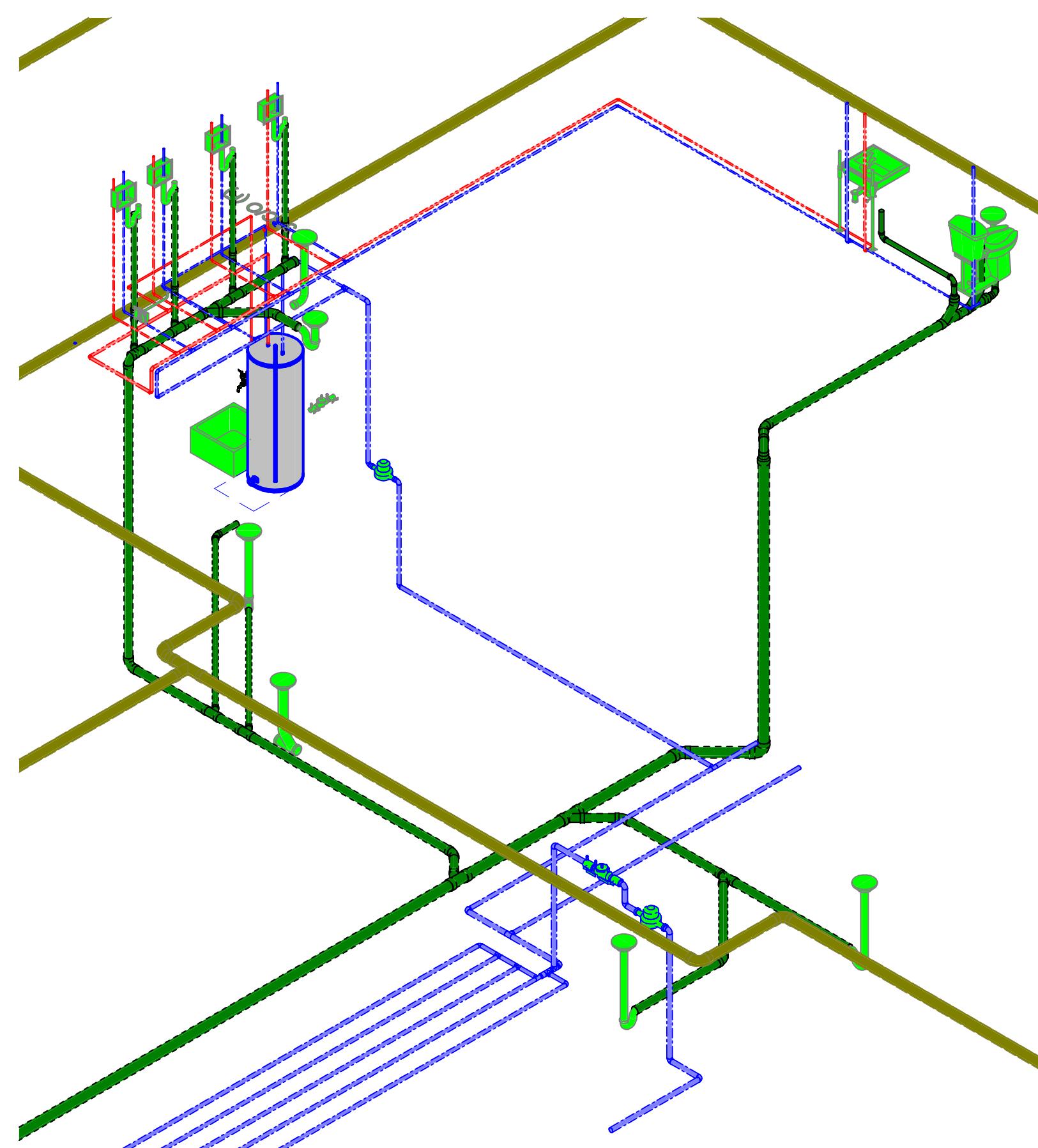
22.00 - 10.0 MOUNTING HEIGHTS

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.

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
CAN/CSA-B182.1, "PLASTIC DRAIN & SEWER PIPE & FITTINGS (PSM TYPE)" 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. MAX FLOOR SURFACE 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. CONTRACTOR WARRANTY & COMPLETION LETTER.	M-3 HVAC - Specifications	
FERROUS CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"	5. CLEANOUTS SHALL BE FULL SIZE FOR PIPES UP TO 100 MM (4") & NOT LESS THAN 100 MM (4") FOR LARGER SIZES.	6. LOCATE CLEANOUTS TO BE READILY ACCESSIBLE WITH SUFFICIENT CLEARANCES FOR RODDING & CLEANING	5. BARRIER FREE SHOWERS MUST COMPLY WITH CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.		M-4 HVAC - Specifications	E2/M2/P2 Project Cover
2. LAY UNDERGROUND PIPING STRAIGHT & TRUE TO LINE & GRADE WITH UNIFORM INVERT. SPIGOT ENDS ON GROOVE SHALL POINT IN DIRECTION OF FLOW.	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.	6. ALL AREA DRAINS, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.		M-5 HVAC - Scope of Work	M-3 HVAC - Specifications
3. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 75 MM (3") UNLESS NOTED ON PLANS.	• Zurn • Watts • J.R. Smith • Mi Fab	8. AREA DRAINS ARE TO BE FROM THE ACCEPTABLE MANUFACTURERS LISTED BELOW OR A COMPARABLE APPROVED EQUAL:	7. LAUNDRY TRAY, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.		M-6 HVAC - Scope of Work	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.)	9. INSTALL CLEANOUTS IN SANITARY DRAINAGE PIPING IN THE FOLLOWING LOCATIONS:	8. SHOWER, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.		M-7 HVAC - Bldg. 1	M-3 HVAC - Isometric & Elevation Views
5. PROVIDE ALL EXCAVATION & BACKFILL REQUIRED FOR BURIED PIPES	• 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.	10. DRIFT FROM SINK, KITCHEN PIPING OR GREASE WASTE PIPING, AT INTERVALS NOT EXCEEDING 6 METERS (20') FOR ALL SIZES OF PIPE.	9. SHOWER HEAD FLOW RATE MUST COMPLY WITH ASHRAE / IEEE 90.1 AT A MAX OF 5.7LPM		M-8 HVAC - Bldg. 2	M-4 HVAC Details
6. PRESSURE TEST BURIED SYSTEM BEFORE BACKFILLING.	• ABOVE EACH DRAINAGE CLEANOUT	11. ADDED TO A RAINING TRAP	10. BARRIER FREE SHOWERS MUST COMPLY WITH CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.		M-9 HVAC - Bldg. 3	P-3 Plumbing - Specifications
22 14 16 RAIN WATER LEADERS	12. FOR A COLD & GREASE INTERCEPTORS AS PER OBC.	13. ENDS OF ALL HORIZONTAL DRAINAGE LINES.	11. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		M-10 HVAC - Bldg. 4	P-4 Plumbing - Specifications
1. ALL PIPING, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.	14. BASE OF SOIL OR WASTE STACKS.	15. WHERE REQUIRED BY CODE OR WHERE SHOWN, DRAINS SHALL BE TRAPPED, VENTED & HAVE 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.	12. DWGS ARE GENERAL LAYOUT - CONTRACTOR TO PROVIDE A COMPLETE WORKING SYSTEM.		M-11 HVAC - Bldg. 5	P-5 Plumbing - Site Plan
STORM PIPING & FITTINGS ABOVE GROUND:	16. WHERE REQUIRED BY BUILDING & PLUMBING CODES	17. PROVIDE CSA APPROVED PLUMBING FITTINGS. VISIBLE PARTS OF FIXTURE BRASS & ACCESSORIES SHALL BE HEAVILY CHROME PLATED.	13. ALL QUESTIONS RELATED TO MISSING OR UNCLEAR DESIGN DETAILS TO BE COMMUNICATED IMMEDIATELY TO THE ENGINEER VIA THE GENERAL RFP PROCESS. (NORTHSTAR GENERALLY WILL NOT PROVIDE VERBAL DIRECTIVES ON THIS PROJECT)		M-12 HVAC - Bldg. 6	P-6 Plumbing - Bldg. 1
PLASTIC ASTM F628, "(ABS) SCHEDULE 40 PLASTIC DRAIN WASTE & VENT PIPE"	18. EXTEND CLEANOUTS TO FINISHED FLOOR OR WALL UNLESS EXPOSED IN UNFINISHED BASEMENT AREA, PIPE TUNNEL, ACCESSIBLE CRAWL SPACE OR MECHANICAL ROOM.	19. SUPPLY & INSTALL ALL NECESSARY ACCESSORIES FOR A COMPLETE INSTALLATION	14. VISIT THE SITE TO REVIEW THE EX. CONDITIONS.		M-13 HVAC - Isometric & Elevation Views	P-7 Plumbing - Bldg. 2
CAN/CSA-B181.1, "ABS DRAIN, WASTE & VENT PIPE FITTINGS" CAN/CSA-B181.2, "PVC DRAIN, WASTE & VENT PIPE FITTINGS"	20. IN WET FLOOR AREAS, EXTEND CLEANOUTS TO WALLS OR PROVIDE WITH GASKETTED WATERPROOF TOP.	21. SUPPLY & INSTALL REQUIRED THERMOSTATIC MIXING VALVE	15. PROVIDE ANY QUESTIONS TO THE BID ADMINISTRATOR IN WRITING.		M-14 HVAC Details	P-8 Plumbing - Bldg. 3
FERROUS CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"	21. WHERE CLEANOUT PASS THROUGH WATERPROOF FLOOR OR ARE INSTALLED IN SLABS ON GRADE, PROVIDE CLAMPING COLLAR & CLAMP TO MEMBRANE OR PROVIDE LEAD FLASHING TO SUIT.	22. FIXTURES SHALL BE PRODUCTS OF ONE MANUFACTURER. FITTINGS OF SAME TYPE SHALL BE PRODUCT OF ONE MANUFACTURER.	16. PROVIDE ANY QUESTIONS TO THE BID ADMINISTRATOR IN WRITING.		P-9 Plumbing - Bldg. 4	P-9 Plumbing - Bldg. 5
2. CLEANOUTS: LOCATE DRAINAGE CLEANOUT FITTINGS IN DRAINAGE PIPING: • AT BASE OF EACH RAINFOVER LEADER • AS REQUIRED TO COMPLY WITH APPLICABLE PLUMBING CODE • VERIFY THAT CLEANOUT RODS CAN PROBE AS FAR AS THE NEXT CLEANOUT, AT LEAST.	23. ON OUTSIDE DRAINS, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	24. SUPPLY & INSTALL ALL NECESSARY ACCESSORIES FOR COMPLETE INSTALLATION	17. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		P-10 Plumbing - Bldg. 6	P-11 Plumbing - Bldg. 6
3. BACK WATER VALVES ARE TO BE PROVIDED WHERE SHOWN.	24. 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.	25. REFER TO SCHEDULES & DETAILS	18. DWGS ARE GENERAL LAYOUT - CONTRACTOR TO PROVIDE A COMPLETE WORKING SYSTEM.		P-12 Plumbing - Typical Building	P-12 Plumbing - Typical Building
4. PROVIDE VERTICAL EXPANSION JOINTS NEAR TOP OF DRAINAGE PIPE RISERS WHERE TOTAL RISER HEIGHT EXCEEDS 10 METRES FROM GROUND LEVEL.	26. 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.	27. 22 40 00 PLUMBING FIXTURES	19. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		P-13 Plumbing - Details	P-13 Plumbing - Details
5. PROVIDE HORIZONTAL EXPANSION JOINTS ON SUSPENDED DRAINAGE PIPE WHICH IS WELDED OR CROSSES A BUILDING EXPANSION JOINT	27. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	28. 22 41 00 RESIDENTIAL PLUMBING FIXTURES	20. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		P-14 Plumbing - Water Schematic	P-14 Plumbing - Water Schematic
6. SUPPORT ALL OVERHEAD PIPES TO APPROVAL.	28. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	29. 22 45 00 EMERGENCY PLUMBING FIXTURES	21. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		P-15 Plumbing - Sanitary Schematic	P-15 Plumbing - Sanitary Schematic
22 13 00 FACILITY SANITARY SEWERAGE	29. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	30. 22 45 16 EYEWASH EQUIPMENT	22. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-3 Elec. Power - Specifications	E-3 Elec. Power - Specifications
22 13 16 SANITARY WASTE & VENT PIPING	30. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	31. 22 46 16 EYEWASH EQUIPMENT	23. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-4 Elec. Power - Specifications	E-4 Elec. Power - Specifications
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.	31. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	32. 22 46 20 EYEWASH EQUIPMENT	24. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-5 Elec. Power - Scope of Work	E-5 Elec. Power - Scope of Work
SANITARY PIPING & FITTINGS UNDER GROUND:	32. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	33. 22 46 21 EYEWASH EQUIPMENT	25. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-6 Electrical Site Plan	E-6 Electrical Site Plan
PLASTIC ASTM F628, "(ABS) SCHEDULE 40 PLASTIC DRAIN WASTE & VENT PIPE"	33. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	34. 22 46 22 EYEWASH EQUIPMENT	26. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-7 Elec. - SLD	E-7 Elec. - SLD
CAN/CSA-B181.1, "ABS DRAIN, WASTE & VENT PIPE FITTINGS" CAN/CSA-B181.2, "PVC DRAIN, WASTE & VENT PIPE FITTINGS"	34. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	35. 22 46 23 EYEWASH EQUIPMENT	27. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-8 Power/Comm - Bldg. 1	E-8 Power/Comm - Bldg. 1
FERROUS CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"	35. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	36. 22 46 24 EYEWASH EQUIPMENT	28. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-9 Elec. Lighting - Bldg. 1	E-9 Elec. Lighting - Bldg. 1
2. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	36. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	37. 22 46 25 EYEWASH EQUIPMENT	29. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-10 Power/Comm - Bldg. 2	E-10 Power/Comm - Bldg. 2
3. BACKFLOW PREVENTERS MUST BE TESTED & APPROVED	37. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	38. 22 46 26 EYEWASH EQUIPMENT	30. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-11 Elec. Lighting - Bldg. 2	E-11 Elec. Lighting - Bldg. 2
22 13 29 SANITARY SEWERAGE PUMPS	38. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	39. 22 46 27 EYEWASH EQUIPMENT	31. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-12 Power/Comm - Bldg. 3	E-12 Power/Comm - Bldg. 3
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.	39. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	40. 22 46 28 EYEWASH EQUIPMENT	32. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-13 Elec. Lighting - Bldg. 3	E-13 Elec. Lighting - Bldg. 3
SANITARY PIPING & FITTINGS UNDER GROUND:	40. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	41. 22 46 29 EYEWASH EQUIPMENT	33. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-14 Power/Comm - Bldg. 4	E-14 Power/Comm - Bldg. 4
PLASTIC ASTM F628, "(ABS) SCHEDULE 40 PLASTIC DRAIN WASTE & VENT PIPE"	41. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	42. 22 46 30 EYEWASH EQUIPMENT	34. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-15 Elec. Lighting - Bldg. 4	E-15 Elec. Lighting - Bldg. 4
CAN/CSA-B181.1, "ABS DRAIN, WASTE & VENT PIPE FITTINGS" CAN/CSA-B181.2, "PVC DRAIN, WASTE & VENT PIPE FITTINGS"	42. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	43. 22 46 31 EYEWASH EQUIPMENT	35. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-16 Power/Comm - Bldg. 5	E-16 Power/Comm - Bldg. 5
FERROUS CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"	43. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	44. 22 46 32 EYEWASH EQUIPMENT	36. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-17 Elec. Lighting - Bldg. 5	E-17 Elec. Lighting - Bldg. 5
4. SUPPLY & INSTALL ALL COMPONENTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.	44. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	45. 22 46 33 EYEWASH EQUIPMENT	37. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-18 Power/Comm - Bldg. 6	E-18 Power/Comm - Bldg. 6
5. SUPPLY & INSTALL REQUIRED EQUIPMENT FOR SANITARY SEWAGE PUMP CONTROL PANEL & ALARM	45. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	46. 22 46 34 EYEWASH EQUIPMENT	38. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-19 Elec. Lighting - Bldg. 6	E-19 Elec. Lighting - Bldg. 6
6. SUPPLY & INSTALL ALL NECESSARY ACCESSORIES FOR COMPLETE INSTALLATION	46. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	47. 22 46 35 EYEWASH EQUIPMENT	39. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-20 Elec. Typical Building	E-20 Elec. Typical Building
22 13 30.13 RESIDENTIAL, SMALL-CAPACITY ELECTRIC DOMESTIC WATER HEATERS	47. ONCE RODDED, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.	48. 22 46 36 EYEWASH EQUIPMENT	40. REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REQUESTED ADDENDUM.		E-21 Electrical Schedules	E-21 Electrical Schedules
1. ALL						



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



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

(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 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 TENDERING PURPOSES BY ANY CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.

TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.

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

o.	Description	Date
	Preliminary	May 19/22
	Preliminary for Review	Sep. 09/22
	Issued for Permit	Oct. 05/22
	Issued for Tender	May 18/23
	Re-Issued for Tender	Dec. 20/24

A circular seal for a professional engineer. The outer ring contains the text "LICENCED PROFESSIONAL ENGINEER" at the top and "PROVINCE OF ONTARIO" at the bottom. In the center, it says "J.D. LONG". At the bottom of the seal, there is a box containing the date "Dec. 20/24".

ent:
WW Inc.
dress:

Project Name: Small Business Assistance Program

Blanket Story Plot

Planning Site Plan

04322

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

Drawing #: B-5

13

[View Details](#) | [Edit](#) | [Delete](#)

P-5

This architectural site plan illustrates the domestic water supply and sanitary discharge connections for six buildings, labeled BUILDING (B) 1 through BUILDING (A) 6, across a sloped terrain.

BUILDING (B) 1 UNITS 1-6: Located on the left slope. Incoming domestic water from BLDG 5 is connected via FFE 278.682. A 4" Ø (100mm) sanitary discharge line connects to the municipal system. Contractor instructions specify supply & install backwater valves.

BUILDING (A) 2 UNITS 7-12: Located in the middle-left area. Incoming domestic water from BLDG 5 is connected via FFE 279.419. A 4" Ø (100mm) sanitary discharge line connects to the municipal system. Contractor instructions specify supply & install backwater valves.

BUILDING (B) 3 UNITS 13 - 18: Located in the middle area. Incoming domestic water from BLDG 5 is connected via FFE 280.147. A 4" Ø (100mm) sanitary discharge line connects to the municipal system. Contractor instructions specify supply & install backwater valves.

BUILDING (A) 4 UNITS 19-24: Located in the middle-right area. Incoming domestic water from BLDG 5 is connected via FFE 280.880. A 4" Ø (100mm) sanitary discharge line connects to the municipal system. Contractor instructions specify supply & install backwater valves.

BUILDING (B) 5 UNITS 25 - 30 & AMENITY SPACE: Located in the right-middle area. Incoming domestic water from BLDG 5 is connected via FFE 281.478. A 4" Ø (100mm) sanitary discharge line connects to the municipal system. Contractor instructions specify supply & install backwater valves.

BUILDING (A) 6 UNITS 31 - 36: Located on the far right. Incoming domestic water from BLDG 5 is connected via FFE 281.984. A 4" Ø (100mm) sanitary discharge line connects to the municipal system. Contractor instructions specify supply & install backwater valves.

General Notes:

- INCOMING 1 1/2" Ø (38mm) DOMESTIC WATER FROM BLDG 5 REFER TO CIVIL ENGINEER SITE SERVICING PLAN FOR DETAILS
- 4" Ø (100mm) SANITARY DISCHARGE TO MUNICIPAL SYSTEM REFER TO CIVIL ENGINEER SITE SERVICING PLAN
- CONTRACTOR TO SUPPLY & INSTALL BACKWATER VALVE MFG. MAINLINE MODEL # ML-SF446P

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

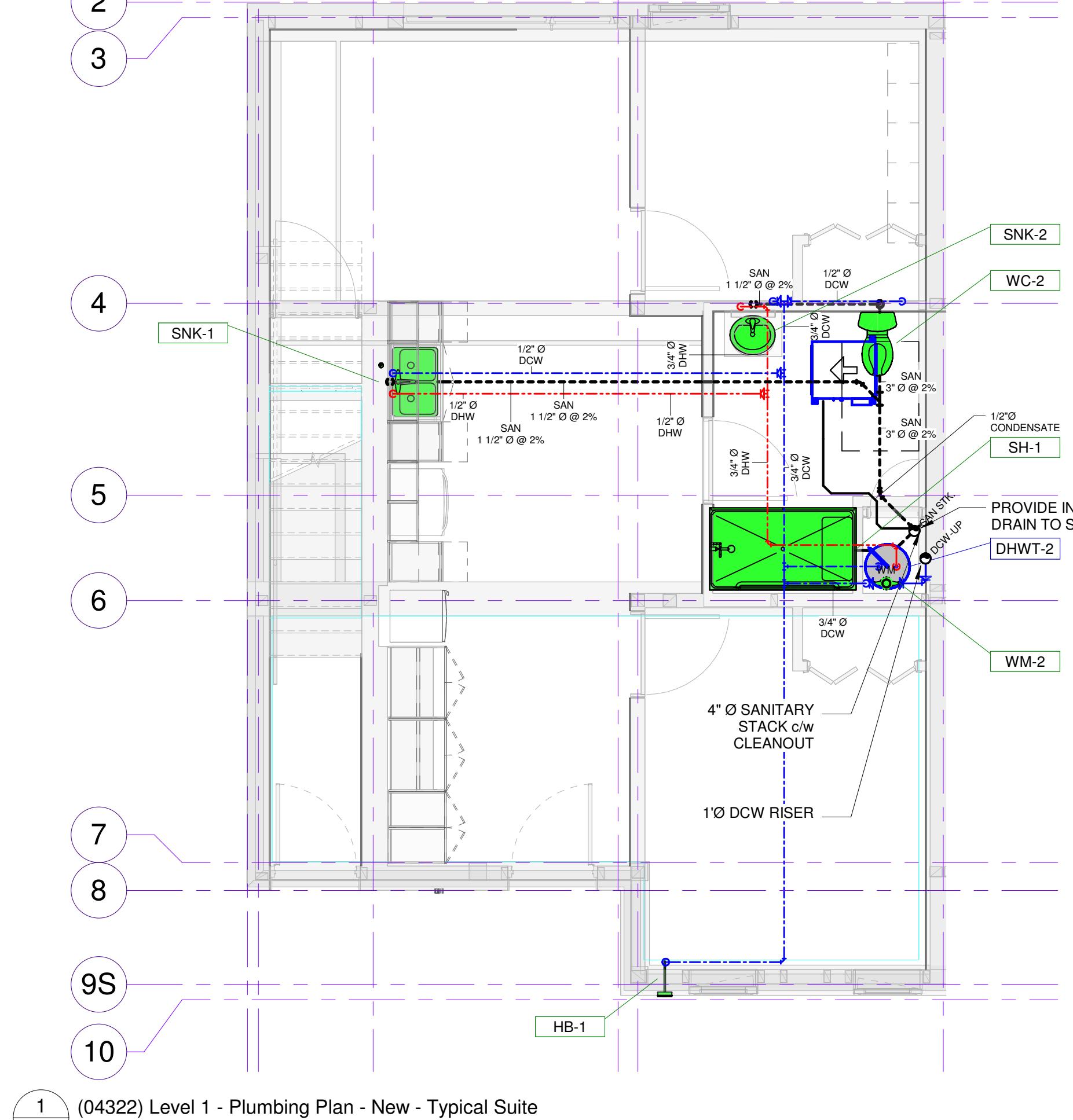
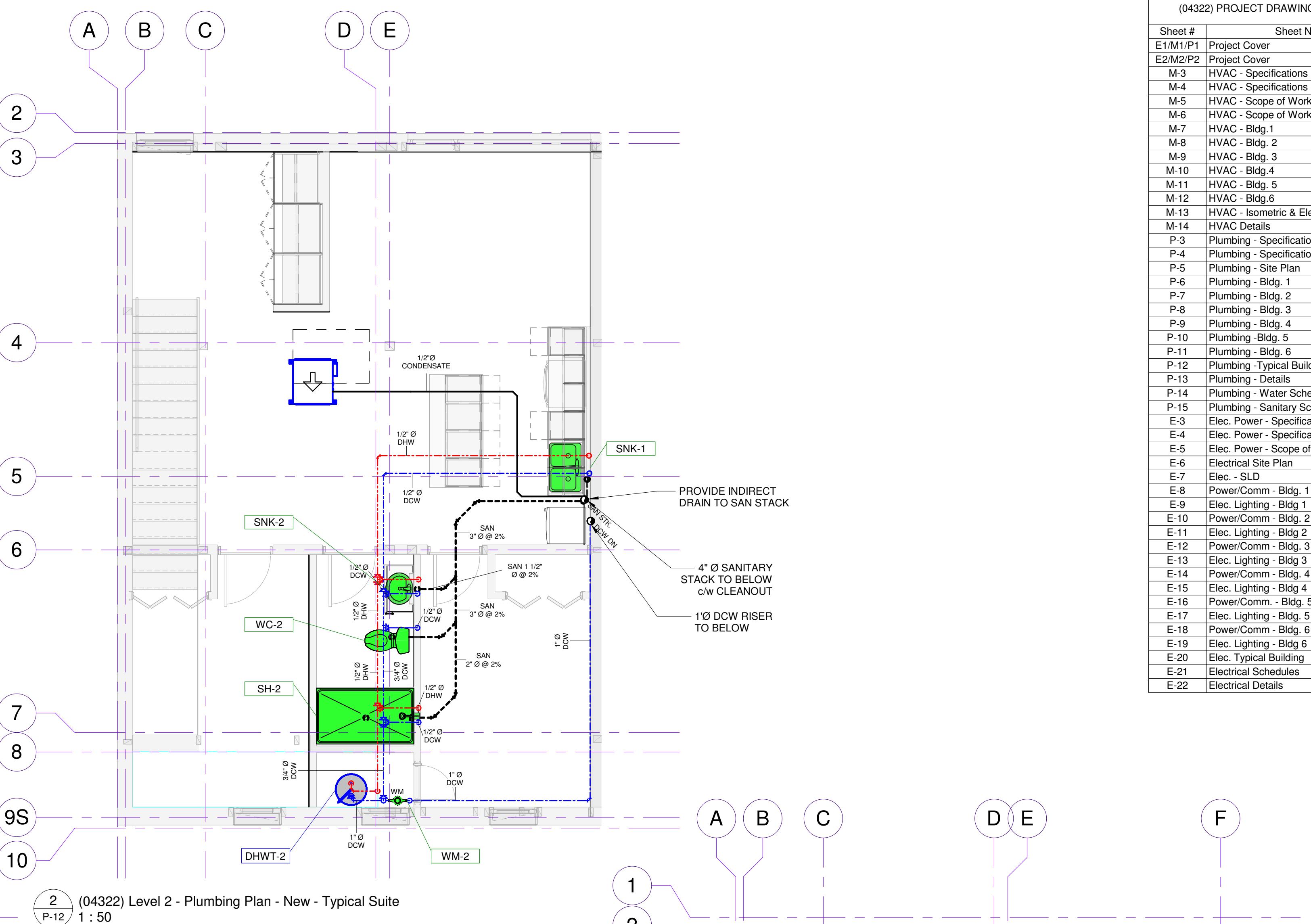
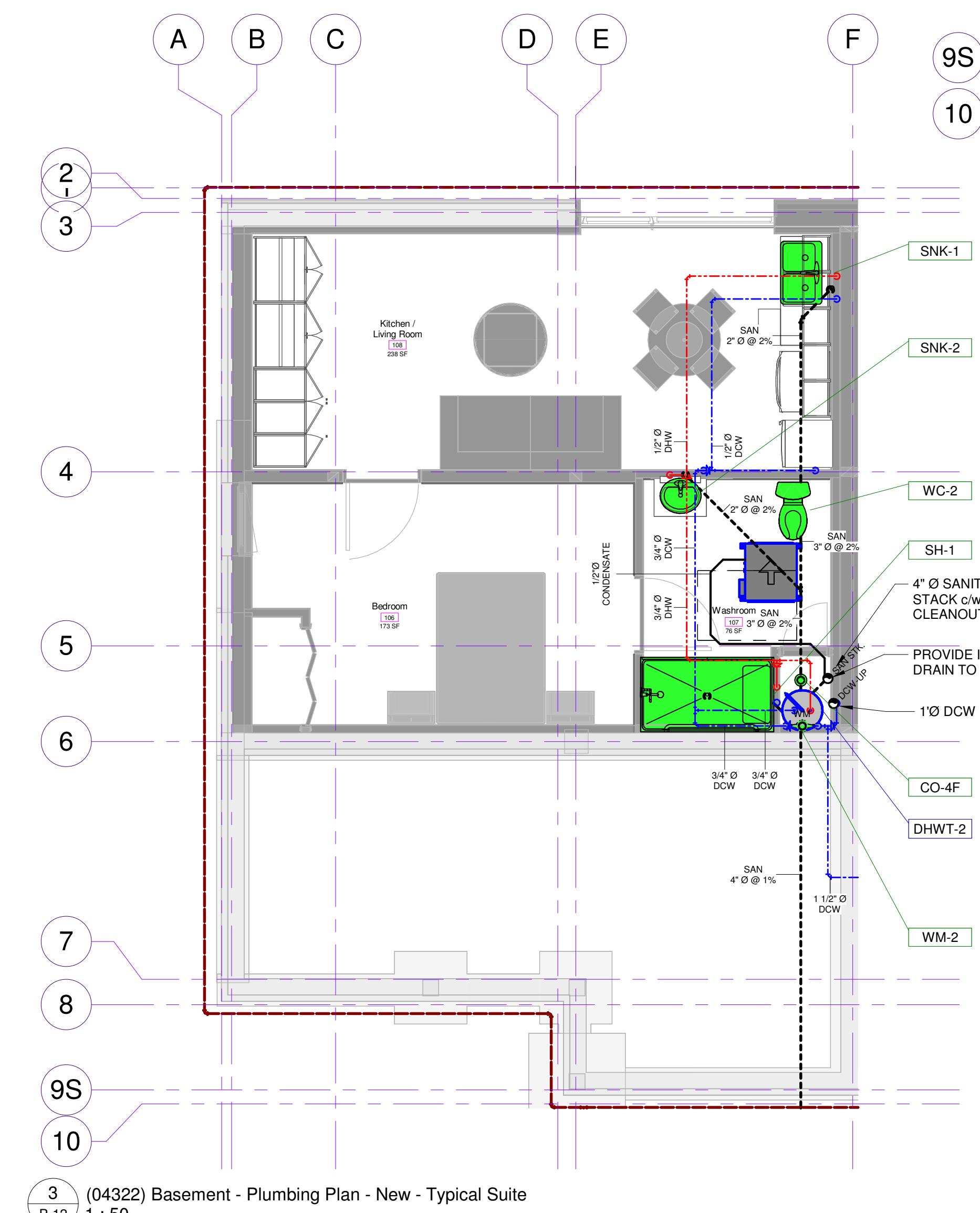
PLUMBING LEGEND										
	CLEANOUT / STACK									
	CLEANOUT / RUN									
	CLEANOUT / FITTING									
	FLOOR DRAIN									
	P-TRAP & TRAP SEAL PRIMER									
	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER									
	VALVE / BALL									
	VALVE / GLOBE									
	VALVE / GATE									
	VALVE / SOLENOID									
	VALVE / BALANCING									
	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 - DOMESTIC HOT WATER									
	- DHWR - DOMESTIC HOT WATER									
	- RDCW - READING COLD WATER									
	- 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 LONGEVITY SC2366 OBC 2BAR PHENOLIC SEAT	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	KINDRED	OCLA2031L/8	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.	O'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	KINDRED	OCLA2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL; MOEN# T8370 c/w LONGEVITY SC2366 OBC 2BAR PHENOLIC SEAT	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.	O'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	KINDRED	2260	HEAD: MOEN 52236GBM15 c/w CONTROL; MOEN# T8370 c/w LONGEVITY SC2366 OBC 2BAR PHENOLIC SEAT	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.	O'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

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 • SAN - SANITARY • VTR - VENT TO ROOF • RWL - RAIN WATER LEADER • DOV - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER RECIRCULATING • RGAS - 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

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 CONTRACTOR(S) DO NOT SCALE DRAWINGS.
[4]	CONTRACTOR/AGENT OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCRENCES 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, ALLOW FOR COMPLETION (BASED ON COMPLEXITY).
[9]	THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER 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 OF EQUIPMENT OR ACCESSORIES BY 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
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	208 V	1	60	14.4 A	3,000	110 lb	MIXING VALVE: WATSS LFM430	
						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								

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

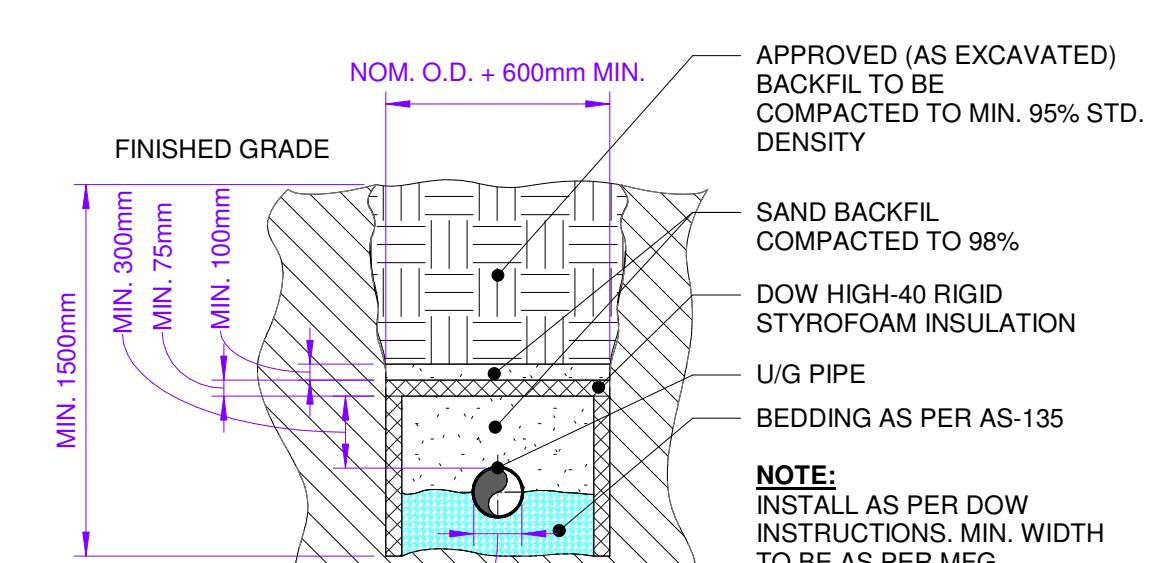
NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.
92 Caplan Ave. Suite #517
Barrie, Ontario L4N 9J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

- GENERAL DRAWING / DESIGNER NOTES:
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 - [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. DETAILED DESIGN AND SPECIFICATIONS PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
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 - [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.
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 - [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

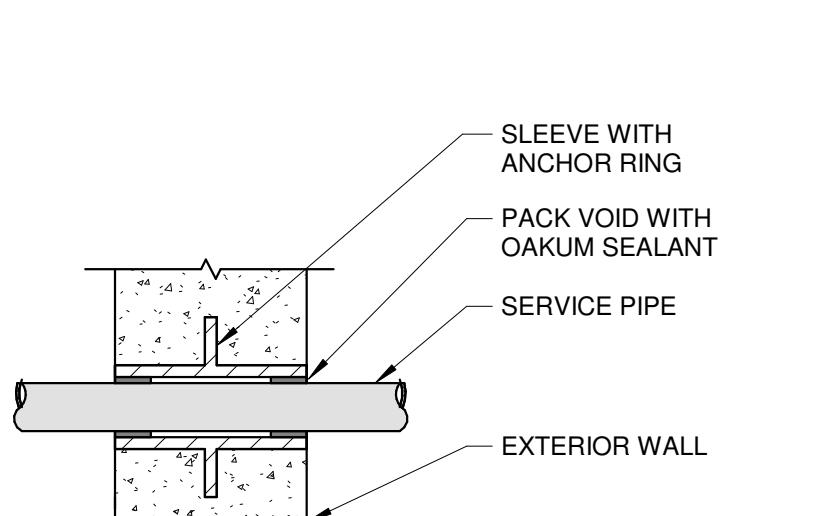
Engineer's Seal:

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")

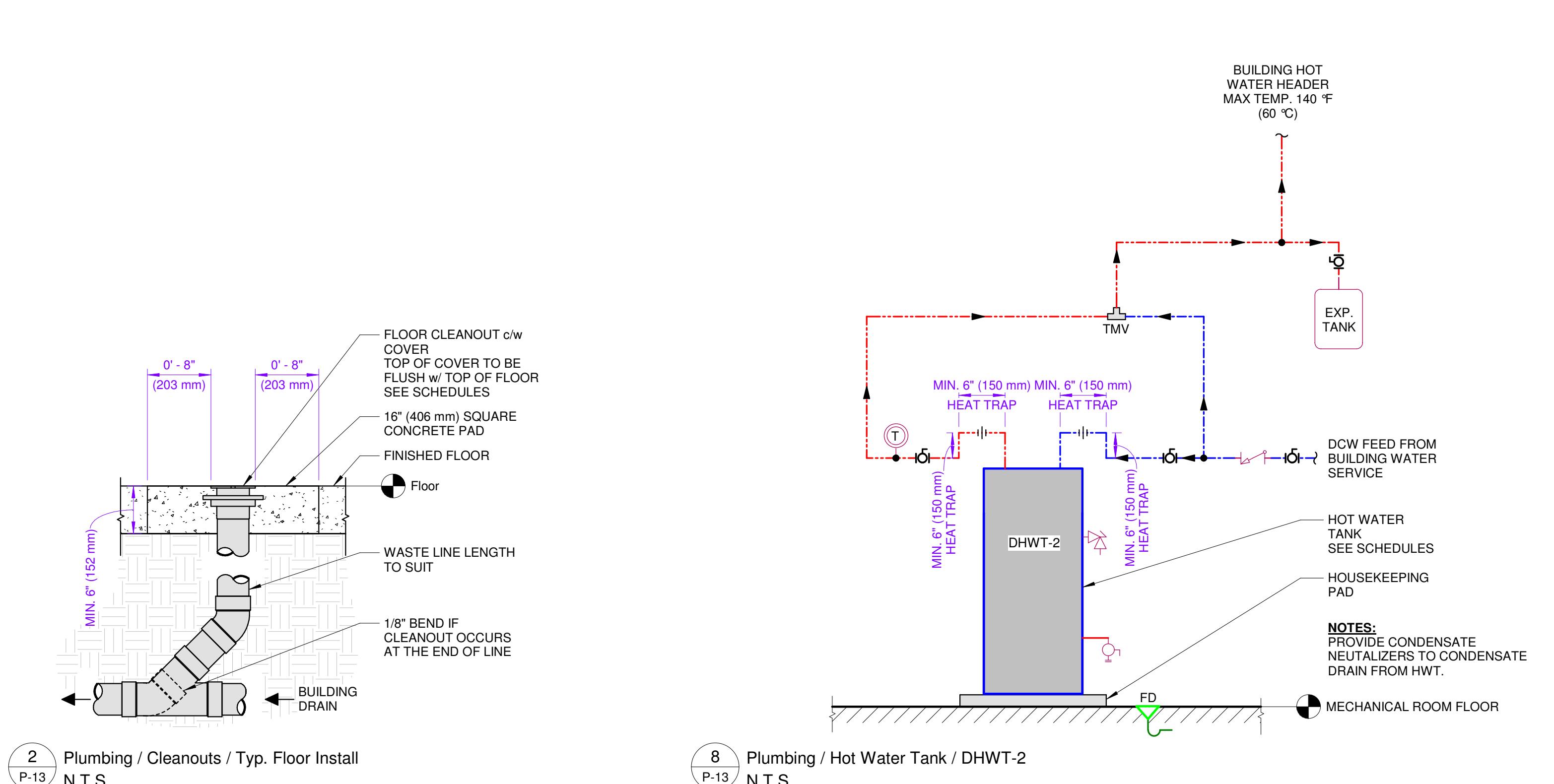


5 Plumbing / U/G Plumbing Detail
N.T.S.
P-13

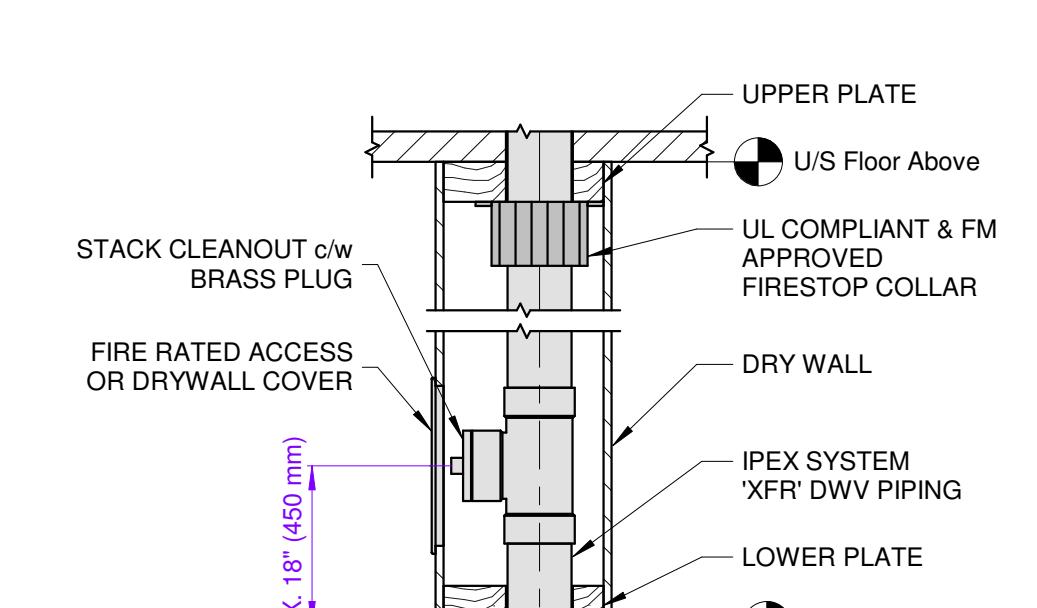
3 Plumbing / Venting / Stack Through Roof
N.T.S.
P-13



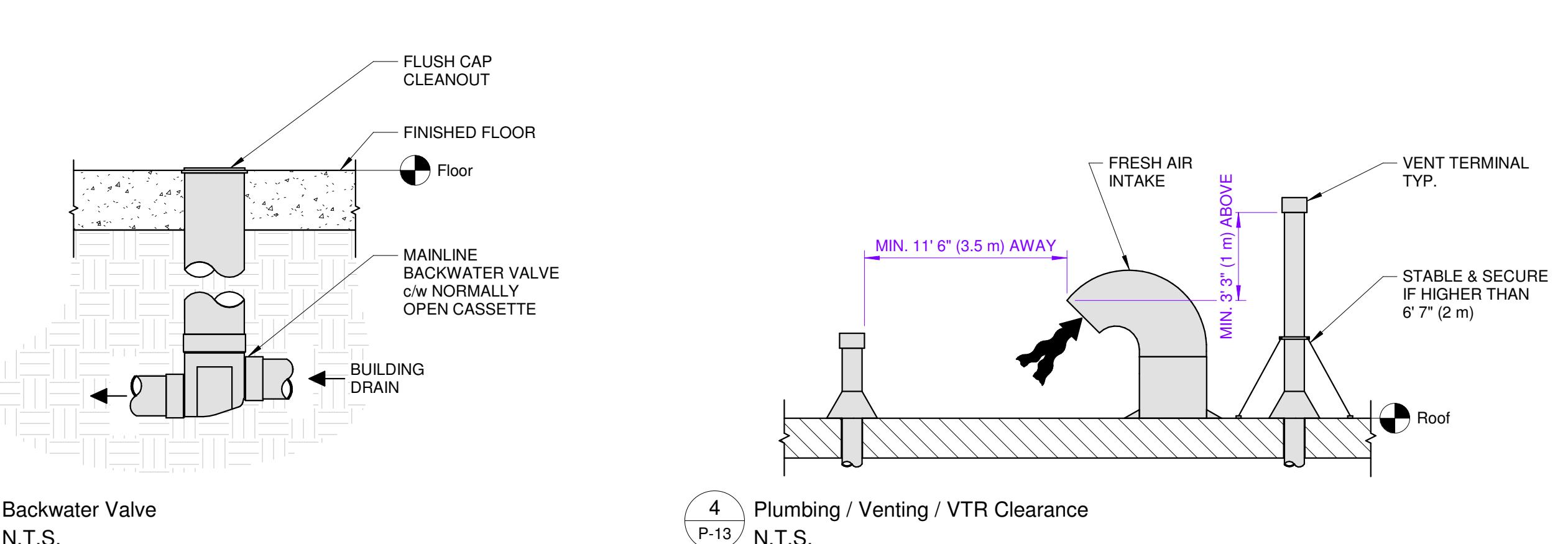
6 Plumbing / Water Service / Pipe Penetration Thru Exterior Wall
N.T.S.
P-13



2 Plumbing / Cleanouts / Typ. Floor Install
N.T.S.
P-13



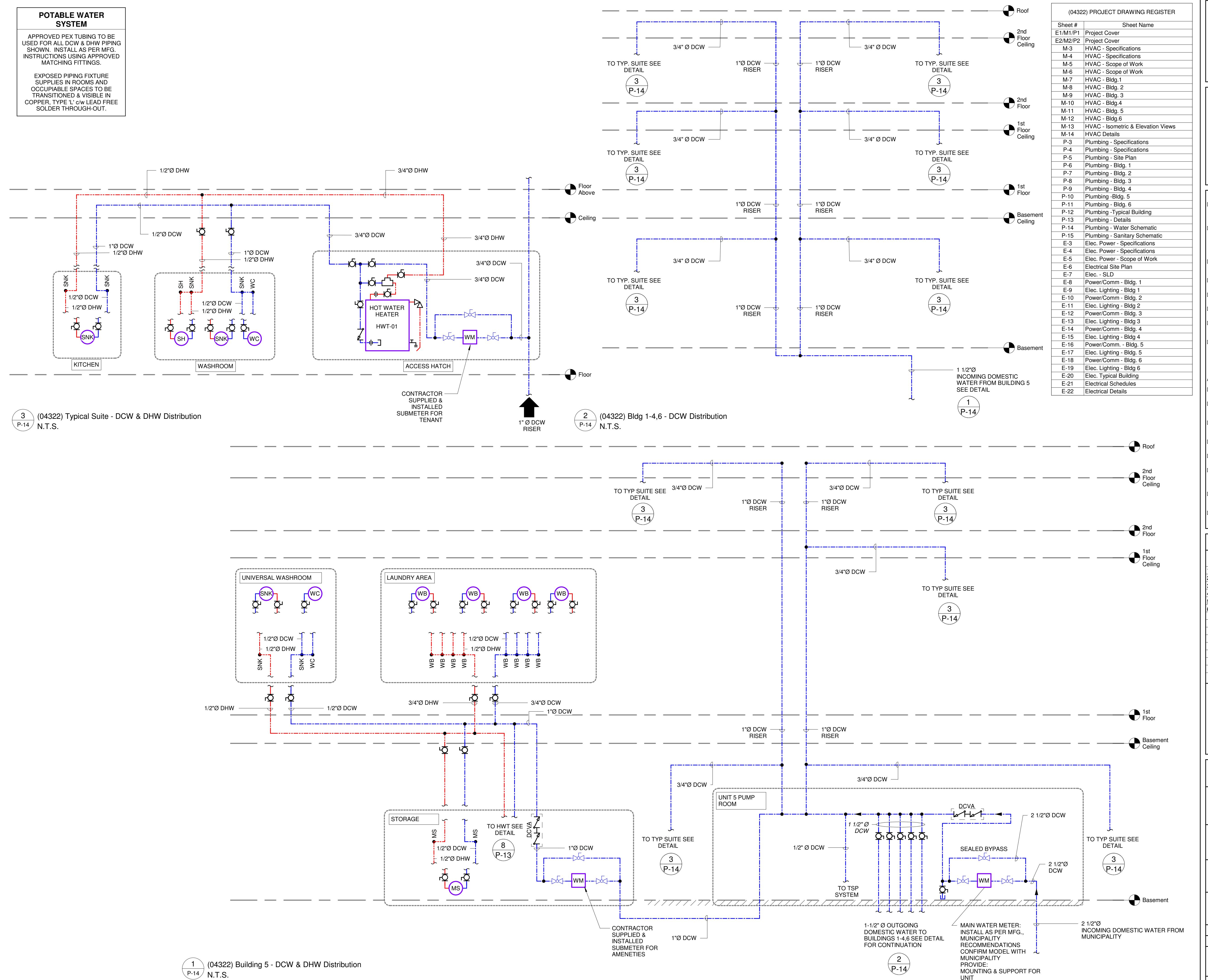
1 Plumbing / Cleanouts / Stack / PVC
N.T.S.
P-13



9 Backwater Valve
N.T.S.
P-13

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 / 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 XX DENOTES: • SAN - SANITARY • VTR - VENT TO ROOF • RWL - RAIN WATER LEADER • DOV - DOMESTIC OVERFLOW • DHWR - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER • RECP - RECYCLER • 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	

POTABLE WATER SYSTEM	
APPROVED PEX TUBING TO BE USED FOR ALL DCW & DHW PIPING SHOWN. INSTALL AS PER MFG. INSTRUCTIONS USING APPROVED MATCHING FITTINGS.	
EXPOSED PIPING FIXTURE SUPPLIES IN ROOMS AND OCCUPYABLE SPACES TO BE TRANSITIONED & VISIBLE IN COPPER, TYPE L c/w LEAD FREE SOLDER THROUGH-OUT.	



NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

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GENERAL DRAWING / DESIGNER NOTES:

- ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE REQUIREMENT 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. CONTRACTOR IS RESPONSIBLE FOR ALL 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. DETAILS ARE PROVIDED BY THE CONTRACTOR. DRAWINGS PROVIDED BY THE CONTRACTOR ARE PROVIDED AS REFERENCE ONLY.
- CONTRACTOR/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.
- PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS 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 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 FROM THE CONTRACTUAL REQUIREMENTS OF THE WORKING SYSTEM. THESE SHOP DRAWINGS SHALL CONSIST OF PLUMBING FIXTURES, HVAC EQUIPMENT, HVAC DIFFUSERS, ETC.
- ALLOW 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.
- REQUEST FOR ANY FOR ANY FINAL 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 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 PROCESS IS TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
- TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
- 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.

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

