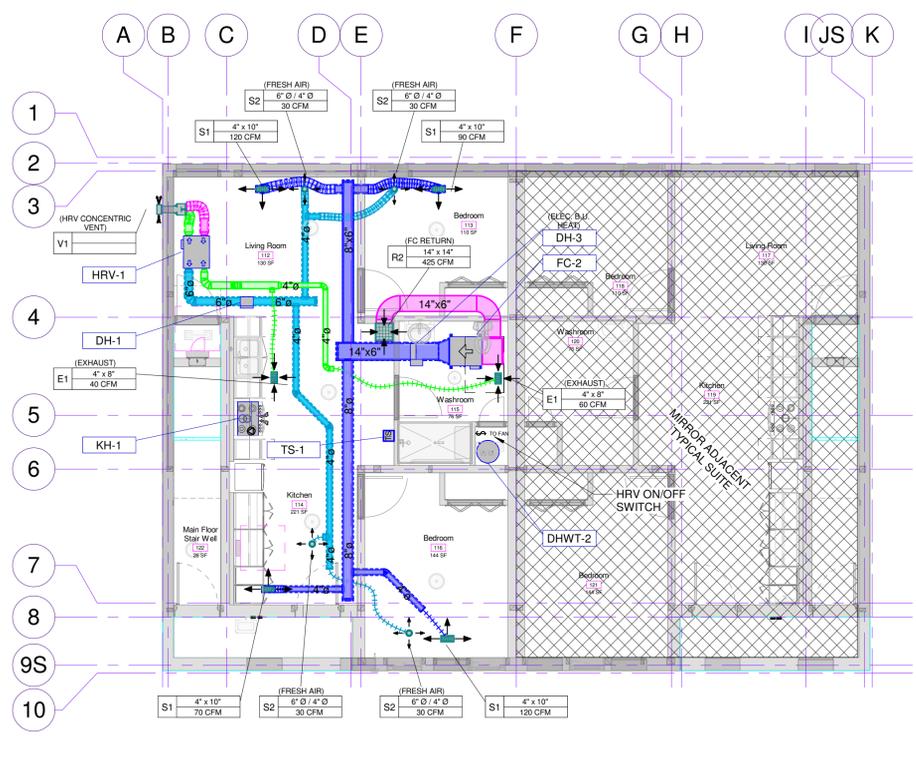
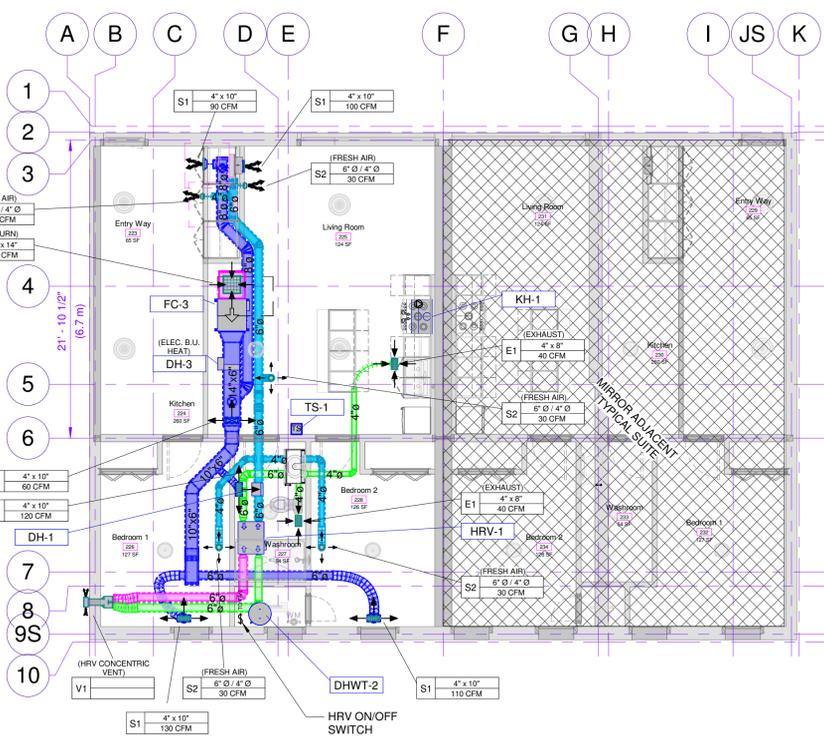


HVAC LEGEND	
	SUPPLY AIR (THERMAL INSULATION)
	SUPPLY AIR
	RETURN AIR (ACOUSTIC LINER)
	RETURN AIR
	EXHAUST AIR (THERMAL INSULATION)
	EXHAUST AIR
	FRESH AIR (THERMAL INSULATION)
	FRESH AIR
	EQUIPMENT TAG: "AIR HANDLER #01" ELEC. PANEL A CIRCUIT 26
	EQUIPMENT TAG: "HUMIDIFIER #01"
	ROUND AIR TERMINAL TYPE 'A' FACE SIZE = 120 AIR FLOW (CFM) = 125
	AIR TERMINAL TYPE 'B' FACE SIZE = 12x4 AIR FLOW (CFM) = 125
	BALANCING DAMPER 'FD'
	FIRE DAMPER 'FD'
	FLOW DIRECTION ARROWS
	FORCED FLOW
	SUPPLY / EXHAUST
	RETURN / INTAKE



2 (04322) Building 1 - Level 1 - RCP HVAC - New
M-7 1 : 75



3 (04322) Building 1 - Level 2 - RCP HVAC - New
M-7 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 THERMALLY 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

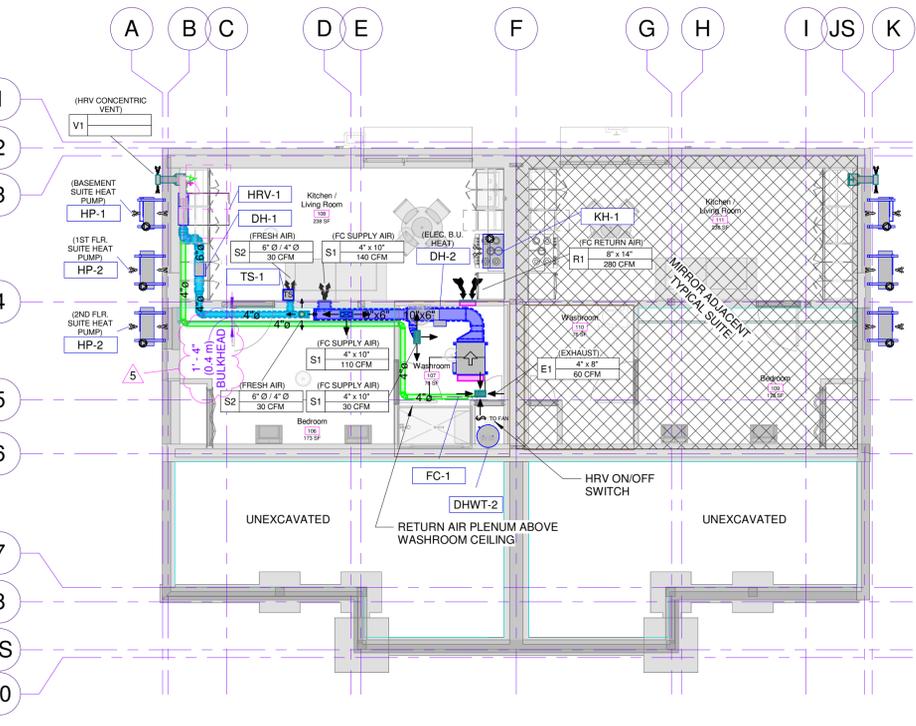
SEPARATE, WEATHER-PROOF ELEC. POWER DISCONNECTS TO BE SUPPLIED FOR OUTDOOR MECH. UNIT (I.E. NOT INCLUDED WITH EQUIP.) BY DIV. 26 CONTRACTOR.

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

REFRIGERANT PIPING & INSTALLATION

IMPORTANT INSTALLATION NOTE: COMPLETE INSTALLATION TO BE PROVIDED BY CONTRACTOR THAT HAS COMPLETED FACTORY TRAINING ON SPECIFIED SYSTEMS. ONLY USE MFG. APPROVED, INSULATED LINE SETS AND FITTINGS.

SUCTION AND LIQUID LINES SHALL BE TYPE ACR COPPER WITH SOLDER TYPE FITTINGS USING 95/9 SILVER SOLDER. EVACUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREON TO MANUFACTURERS SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.



1 (04322) Building 1 - Basement - RCP HVAC - New
M-7 1 : 75

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Typical Suites

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

(04322) Electric Heat Schedule - (New) Typical Suites

Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase	Heating Capacity	Supplied By
DH-1	DUCT HEATER / 1kW / / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	10,236 Btu/h	DIV. 23
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208 V	1	6,824 Btu/h	DIV. 23
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208 V	1	20,473 Btu/h	DIV. 23
Grand total							37,534 Btu/h	

(04322) Thermostat Schedule - (New) Typical Suites

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

(04322) Mechanical Equipment Schedule - (New) Typical Suites

Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	HZ	MCA	VA	Weight	Supplied By
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h		0 Btu/h	0 Btu/h			208 V	1	60	14.4 A	9,000	110 lb	DIV. 23
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09 UX2SAH	11,300 Btu/h	100	11,300 Btu/h	9,600 Btu/h	280 CFM	0.300 in-wg	208 V	1	60	1.1 A	225	55 lb	DIV. 23
FC-2	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	17,100 Btu/h	100	17,100 Btu/h	15,400 Btu/h	425 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
FC-3	VRF / 1.6 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-19H3FCH	21,500 Btu/h	100	21,500 Btu/h	19,100 Btu/h	530 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
HP-1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 0.75 TON / 208V 1Ø / WINDGUARD / c/w WALL BRKT. (STRUCTURAL BY OTHERS)	HISENSE	AS-09UW3SVEDL-O	19,000 Btu/h		0 Btu/h	18,000 Btu/h	2,000 CFM		208 V	1	60	10.0 A	4,160	66 lb	DIV. 23
HP-2	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 2 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AVW-28H3FH-MCO	108,000 Btu/h		0 Btu/h	108,000 Btu/h	3,000 CFM		208 V	1	60	23.2 A	19,302	144 lb	DIV. 23
HRV-1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	0 Btu/h		0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60	0.8 A	288	50 lb	DIV. 23
KH-1	KITCHEN EXHAUST HOOD / DOMESTIC / UNDER CABINET / 30" / s.s. / c/w UNDER LIGHTS / DUCTLESS RECIRCULATING / c/w CHARCOAL FILTER	BROAN	BCS30SSC	0 Btu/h		0 Btu/h	0 Btu/h	300 CFM	0.100 in-wg	120 V	1	60	1.7 A	612	15 lb	DIV. 23
Grand total				176,900 Btu/h		49,900 Btu/h	170,100 Btu/h							34,128		

(04322) PROJECT DRAWING REGISTER

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

NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

92 Caplan Ave. Suite #517
Barrie, Ontario L4N 5J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

- GENERAL DRAWING / DESIGNER NOTES:**
- ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S BUILDING CODE; LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
 - THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS 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. 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 SUBMISSIONS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMANCE 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. MINIMUM 1/2 WEEKS FOR COMPLETION BASED ON COMPLEXITY.
 - THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNERS WORK IN ASSOCIATION WITH THIS PROJECT.
 - RESPONSIBILITY FOR ANY FINAL ASSEMBLYS 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 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 18/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **HVAC - Bldg. 1**

NSET Project #: **04322**

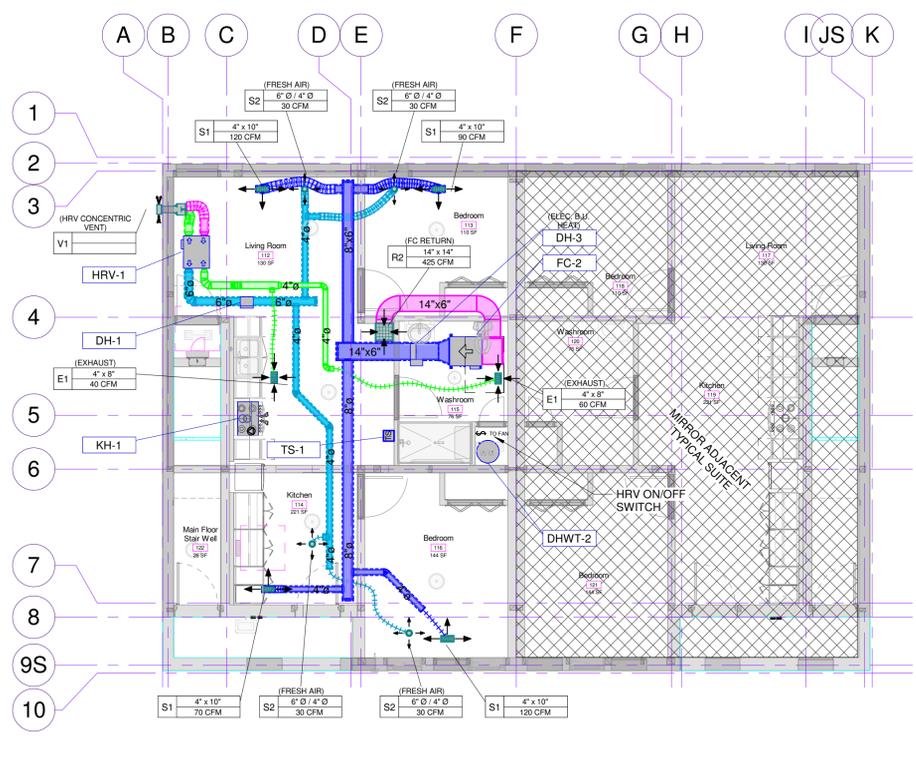
Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

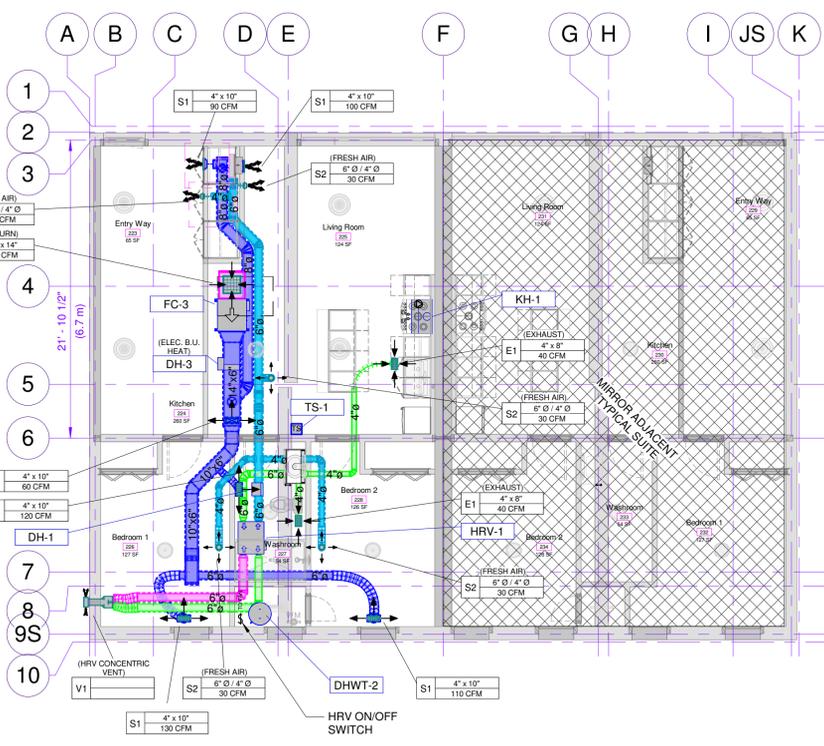
Drawing #: **M-7**

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

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
	EQUIPMENT TAG: "AIR HANDLER #01" ELEC. PANEL A CIRCUIT 26
	EQUIPMENT TAG: "HUMIDIFIER #01"
	ROUND AIR TERMINAL TYPE 'A' 120 / 670 AIR FLOW (CFM) - 125
	AIR TERMINAL TYPE 'B' FACE SIZE = 12" x 4" AIR FLOW (CFM) - 125
	BALANCING DAMPER 'ED'
	FIRE DAMPER 'FD'
	FLOW DIRECTION ARROWS
	FORCED FLOW
	SUPPLY / EXHAUST
	RETURN / INTAKE



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



3 (04322) Building 2 - Level 2 - RCP HVAC - New
M-8 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 THERMALLY 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

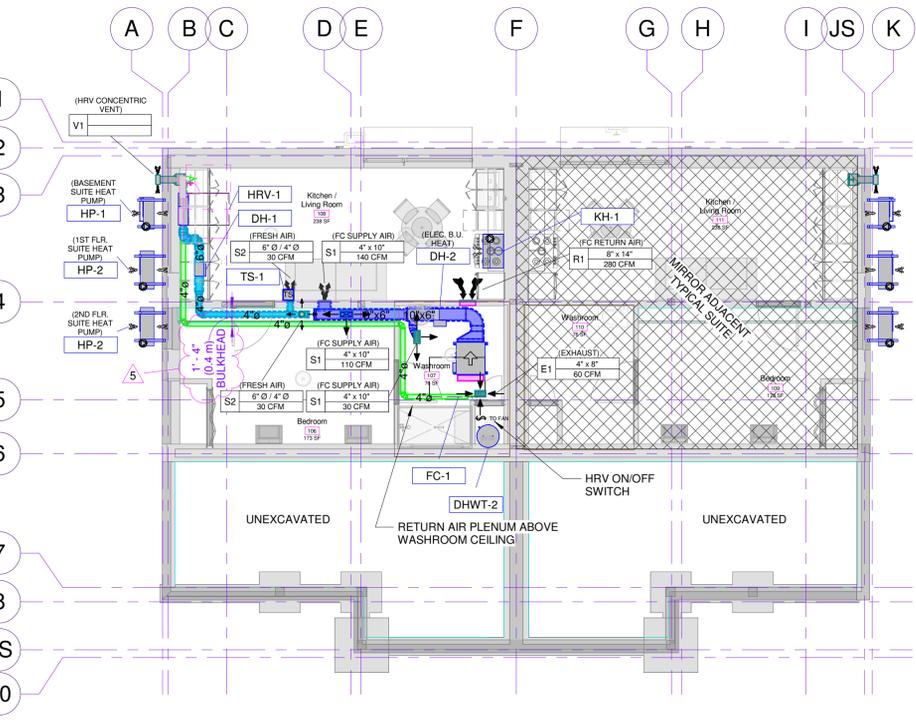
SEPARATE, WEATHER-PROOF ELEC. POWER DISCONNECTS TO BE SUPPLIED FOR OUTDOOR MECH. UNIT (I.E. NOT INCLUDED WITH EQUIP.) BY DIV. 26 CONTRACTOR.

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

REFRIGERANT PIPING & INSTALLATION

IMPORTANT INSTALLATION NOTE: COMPLETE INSTALLATION TO BE PROVIDED BY CONTRACTOR THAT HAS COMPLETED FACTORY TRAINING ON SPECIFIED SYSTEMS. ONLY USE MFG. APPROVED, INSULATED LINE SETS AND FITTINGS.

SUCTION AND LIQUID LINES SHALL BE TYPE ACR COPPER WITH SOLDER TYPE FITTINGS USING 95/9 SILVER SOLDER. EVACUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREON TO MANUFACTURERS SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.



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

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Typical Suites

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

(04322) Electric Heat Schedule - (New) Typical Suites

Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase	Heating Capacity	Supplied By
DH-1	DUCT HEATER / 1kW / / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	10,236 Btu/h	DIV. 23
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208 V	1	6,824 Btu/h	DIV. 23
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208 V	1	20,473 Btu/h	DIV. 23
Grand total							37,534 Btu/h	

(04322) Thermostat Schedule - (New) Typical Suites

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

(04322) Mechanical Equipment Schedule - (New) Typical Suites

Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	HZ	MCA	VA	Weight	Supplied By
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h		0 Btu/h	0 Btu/h			208 V	1	60	14.4 A	9,000	110 lb	DIV. 23
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09 UX2SAH	11,300 Btu/h	100	11,300 Btu/h	9,600 Btu/h	280 CFM	0.300 in-wg	208 V	1	60	1.1 A	225	55 lb	DIV. 23
FC-2	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	17,100 Btu/h	100	17,100 Btu/h	15,400 Btu/h	425 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
FC-3	VRF / 1.6 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-19H3FCH	21,500 Btu/h	100	21,500 Btu/h	19,100 Btu/h	530 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
HP-1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 0.75 TON / 208V 1Ø / WINDGUARD / c/w WALL BRKT. (STRUCTURAL BY OTHERS)	HISENSE	AS-09UW3SVEDL-O	19,000 Btu/h		0 Btu/h	18,000 Btu/h	2,000 CFM		208 V	1	60	10.0 A	4,160	66 lb	DIV. 23
HP-2	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 2 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AVW-28H3FH-MCO	108,000 Btu/h		0 Btu/h	108,000 Btu/h	3,000 CFM		208 V	1	60	23.2 A	19,302	144 lb	DIV. 23
HRV-1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	0 Btu/h		0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60	0.8 A	288	50 lb	DIV. 23
KH-1	KITCHEN EXHAUST HOOD / DOMESTIC / UNDER CABINET / 30" / s.s. / c/w UNDER LIGHTS / DUCTLESS RECIRCULATING / c/w CHARCOAL FILTER	BROAN	BCS30SSC	0 Btu/h		0 Btu/h	0 Btu/h	300 CFM	0.100 in-wg	120 V	1	60	1.7 A	612	15 lb	DIV. 23
Grand total				176,900 Btu/h		49,900 Btu/h	170,100 Btu/h							34,128		

(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
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P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
E-3	Elec. Power - Specifications
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E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

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Barrie, Ontario L4N 5J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

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DRAWING REVISIONS

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

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **HVAC - Bldg. 2**

NSET Project #: **04322**

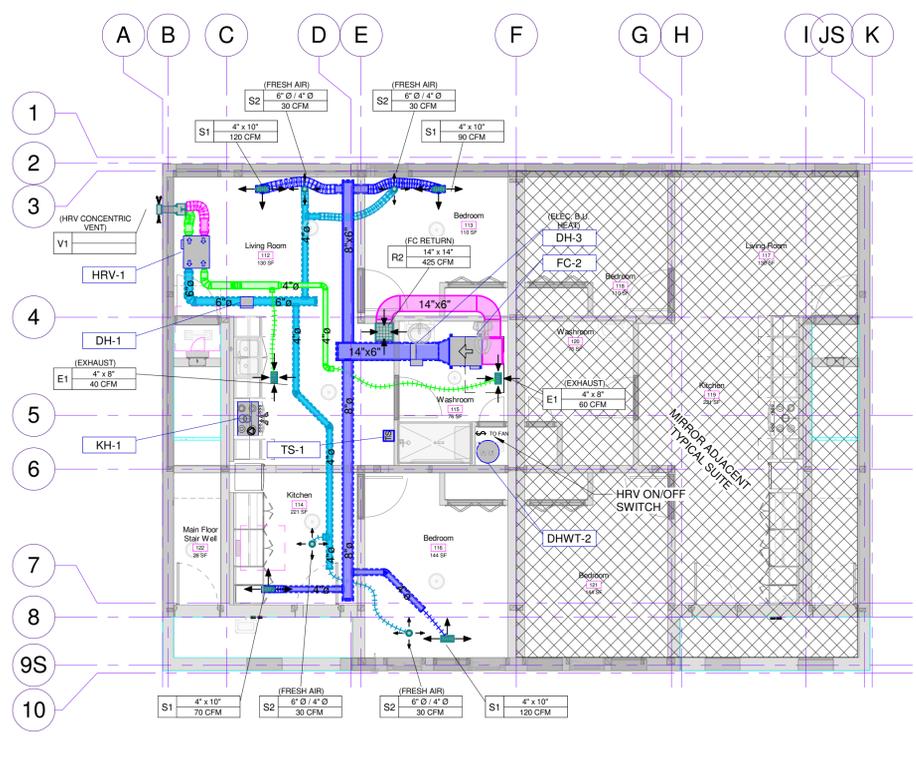
Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

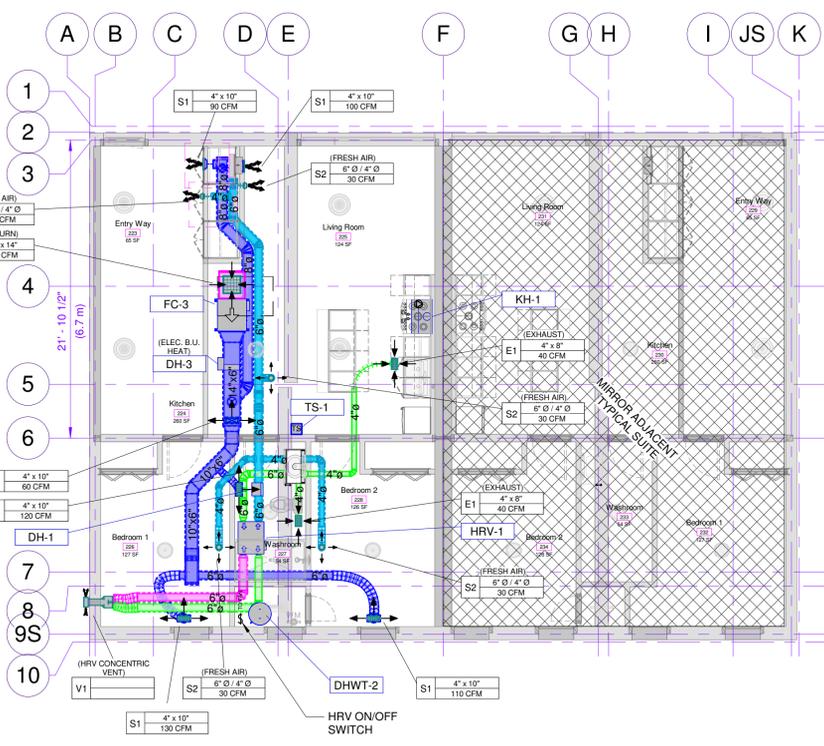
Drawing #: **M-8**

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
	EQUIPMENT TAG: "AIR HANDLER #01" ELEC. PANEL A CIRCUIT 26
	EQUIPMENT TAG: "HUMIDIFIER #01"
	ROUND AIR TERMINAL TYPE 'A' 120 / 670 AIR FLOW (CFM) - 125
	AIR TERMINAL TYPE 'B' FACE SIZE = 12" x 4" AIR FLOW (CFM) - 125
	BALANCING DAMPER 'ED'
	FIRE DAMPER 'FD'
	FLOW DIRECTION ARROWS
	FORCED FLOW
	SUPPLY / EXHAUST
	RETURN / INTAKE



2 (04322) Building 3 - Level 1 - RCP HVAC - New
M-9 1 : 75



3 (04322) Building 3 - Level 2 - RCP HVAC - New
M-9 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 THERMALLY 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

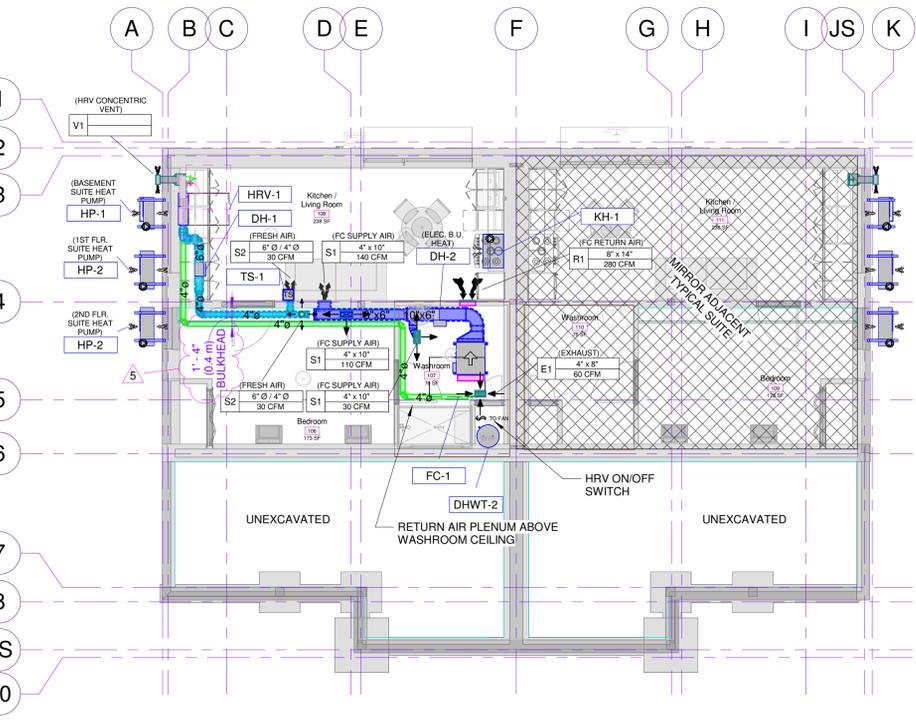
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REFRIGERANT PIPING & INSTALLATION

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 ACR COPPER WITH SOLDER TYPE FITTINGS USING 95/9 SILVER SOLDER. EVACUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREON TO MANUFACTURERS SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.



1 (04322) Building 3 - Basement - RCP HVAC - New
M-9 1 : 75

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Typical Suites

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

(04322) Electric Heat Schedule - (New) Typical Suites

Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase	Heating Capacity	Supplied By
DH-1	DUCT HEATER / 1kW / / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	10,236 Btu/h	DIV. 23
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208 V	1	6,824 Btu/h	DIV. 23
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208 V	1	20,473 Btu/h	DIV. 23
Grand total							37,534 Btu/h	

(04322) Thermostat Schedule - (New) Typical Suites

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

(04322) Mechanical Equipment Schedule - (New) Typical Suites

Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	HZ	MCA	VA	Weight	Supplied By
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h		0 Btu/h	0 Btu/h			208 V	1	60	14.4 A	9,000	110 lb	DIV. 23
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09 UX2SAH	11,300 Btu/h	100	11,300 Btu/h	9,600 Btu/h	280 CFM	0.300 in-wg	208 V	1	60	1.1 A	225	55 lb	DIV. 23
FC-2	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	17,100 Btu/h	100	17,100 Btu/h	15,400 Btu/h	425 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
FC-3	VRF / 1.6 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-19H3FCH	21,500 Btu/h	100	21,500 Btu/h	19,100 Btu/h	530 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
HP-1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 0.75 TON / 208V 1Ø / WINDGUARD / c/w WALL BRKT. (STRUCTURAL BY OTHERS)	HISENSE	AS-09UW3SVEDL-O	19,000 Btu/h		0 Btu/h	18,000 Btu/h	2,000 CFM		208 V	1	60	10.0 A	4,160	66 lb	DIV. 23
HP-2	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 2 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AVW-28H3FH-MCO	108,000 Btu/h		0 Btu/h	108,000 Btu/h	3,000 CFM		208 V	1	60	23.2 A	19,302	144 lb	DIV. 23
HRV-1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	0 Btu/h		0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60	0.8 A	288	50 lb	DIV. 23
KH-1	KITCHEN EXHAUST HOOD / DOMESTIC / UNDER CABINET / 30" / S.S. / c/w UNDER LIGHTS / DUCTLESS RECIRCULATING / c/w CHARCOAL FILTER	BROAN	BCS30SSC	0 Btu/h		0 Btu/h	0 Btu/h	300 CFM	0.100 in-wg	120 V	1	60	1.7 A	612	15 lb	DIV. 23
Grand total				176,900 Btu/h		49,900 Btu/h	170,100 Btu/h							34,128		

(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
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2	Issued for Review	Apr. 22/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 18/23

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **HVAC - Bldg. 3**

NSET Project #: **04322**

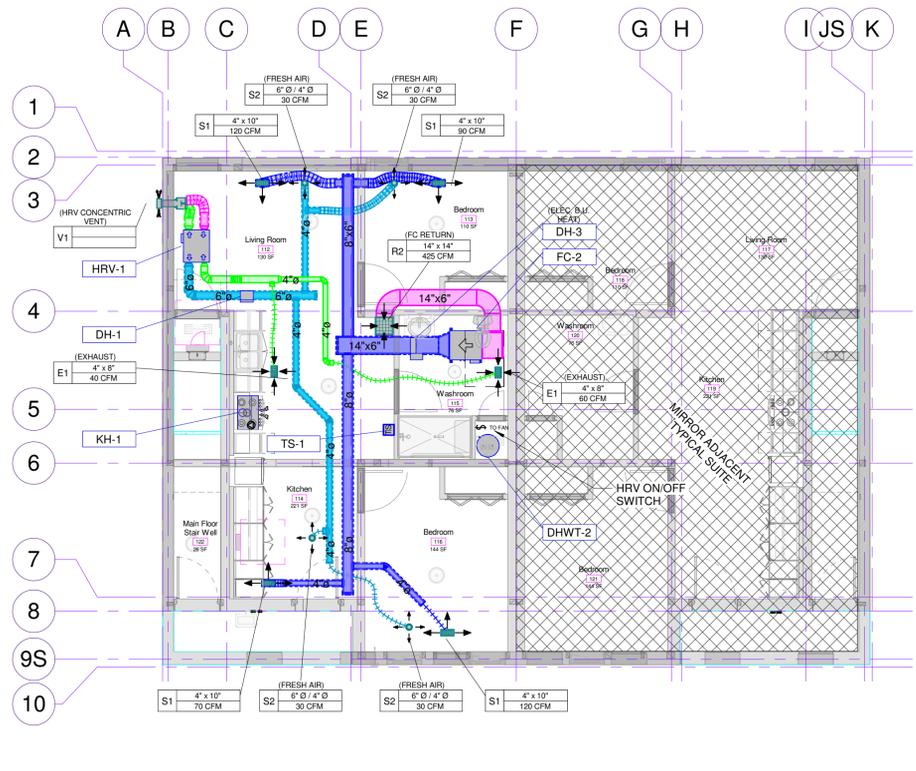
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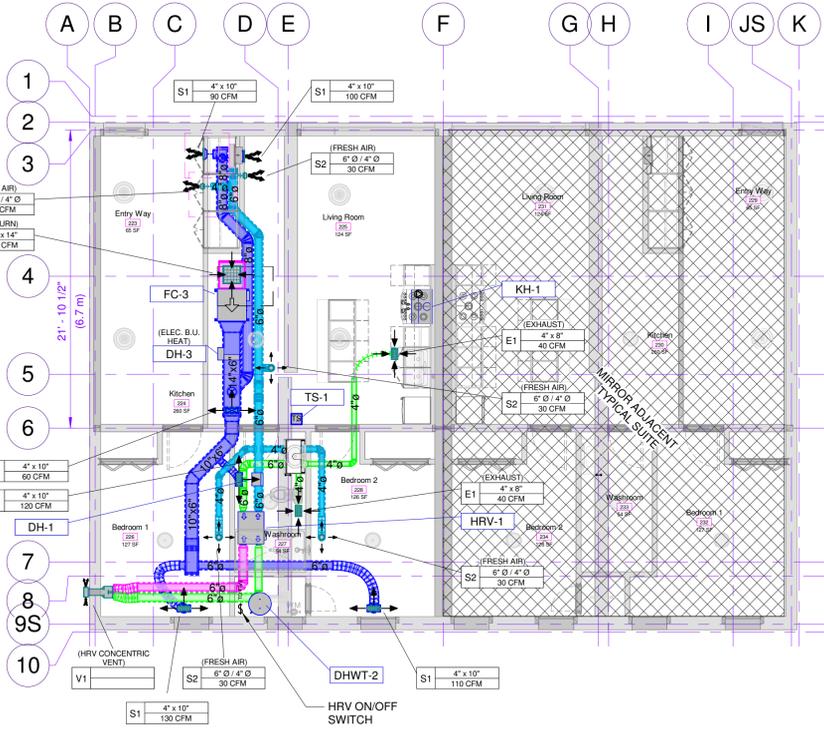
Drawing #: **M-9**

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
	EQUIPMENT TAG: "AIR HANDLER #01" ELEC. PANEL A CIRCUIT 26
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	ROUND AIR TERMINAL TYPE 'A' 120 / 670 AIR FLOW (CFM) - 125
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	FORCED FLOW
	SUPPLY / EXHAUST
	RETURN / INTAKE



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



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

FIRE DAMPERS

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

DIV. 23, DIV. 26 RESPONSIBILITIES

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

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

EXHAUST TERMINALS

ALL EXHAUST DUCTING FROM TERMINALS & FANS TO BE THERMALLY 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

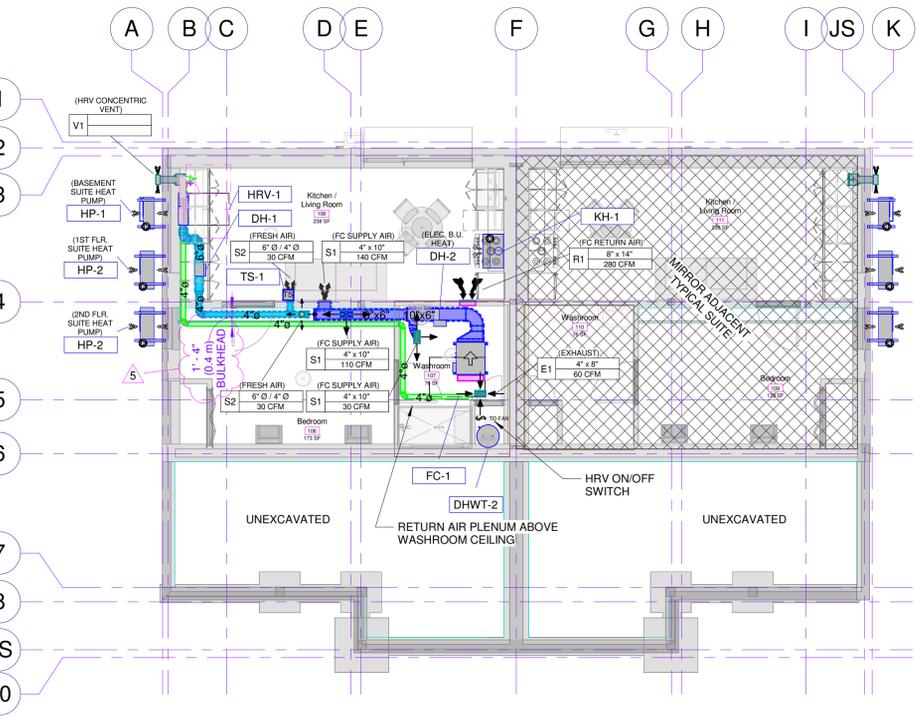
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REFRIGERANT PIPING & INSTALLATION

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

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Typical Suites

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

(04322) Electric Heat Schedule - (New) Typical Suites

Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase	Heating Capacity	Supplied By
DH-1	DUCT HEATER / 1kW / / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	10,236 Btu/h	DIV. 23
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208 V	1	6,824 Btu/h	DIV. 23
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208 V	1	20,473 Btu/h	DIV. 23
Grand total							37,534 Btu/h	

(04322) Thermostat Schedule - (New) Typical Suites

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

(04322) Mechanical Equipment Schedule - (New) Typical Suites

Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	HZ	MCA	VA	Weight	Supplied By
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h		0 Btu/h	0 Btu/h			208 V	1	60	14.4 A	9,000	110 lb	DIV. 23
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09 UX2SAH	11,300 Btu/h	100	11,300 Btu/h	9,600 Btu/h	280 CFM	0.300 in-wg	208 V	1	60	1.1 A	225	55 lb	DIV. 23
FC-2	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	17,100 Btu/h	100	17,100 Btu/h	15,400 Btu/h	425 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
FC-3	VRF / 1.6 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-19H3FCH	21,500 Btu/h	100	21,500 Btu/h	19,100 Btu/h	530 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
HP-1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 0.75 TON / 208V 1Ø / WINDGUARD / c/w WALL BRKT. (STRUCTURAL BY OTHERS)	HISENSE	AS-09UW3SVEDL-O	19,000 Btu/h		0 Btu/h	18,000 Btu/h	2,000 CFM		208 V	1	60	10.0 A	4,160	66 lb	DIV. 23
HP-2	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 2 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AVW-28H3FH-MCO	108,000 Btu/h		0 Btu/h	108,000 Btu/h	3,000 CFM		208 V	1	60	23.2 A	19,302	144 lb	DIV. 23
HRV-1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	0 Btu/h		0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60	0.8 A	288	50 lb	DIV. 23
KH-1	KITCHEN EXHAUST HOOD / DOMESTIC / UNDER CABINET / 30" / S.S. / c/w UNDER LIGHTS / DUCTLESS RECIRCULATING / c/w CHARCOAL FILTER	BROAN	BCS30SSC	0 Btu/h		0 Btu/h	0 Btu/h	300 CFM	0.100 in-wg	120 V	1	60	1.7 A	612	15 lb	DIV. 23
Grand total				176,900 Btu/h		49,900 Btu/h	170,100 Btu/h							34,128		

(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
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E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

NORTHSTAR
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92 Caplan Ave. Suite #517
Barrie, Ontario L4N 5J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

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DRAWING REVISIONS

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

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **HVAC - Bldg.4**

NSET Project #: **04322**

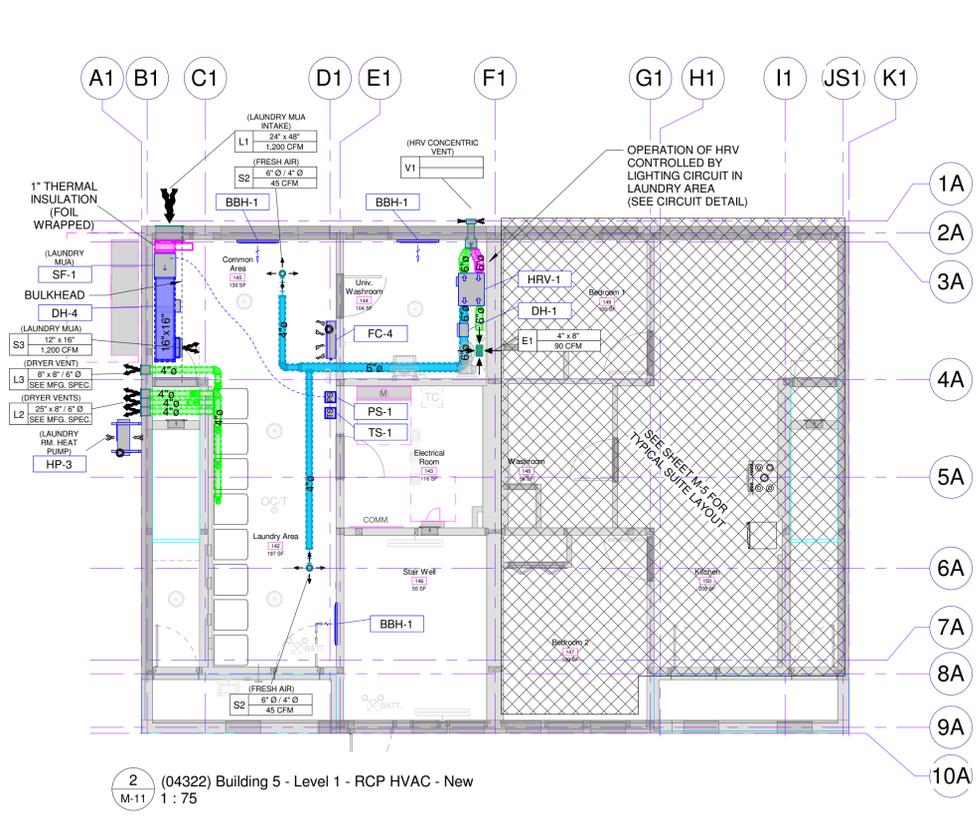
Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

Drawing #: **M-10**

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

HVAC LEGEND	
	SUPPLY AIR (THERMAL INSULATION)
	SUPPLY AIR
	RETURN AIR (ACOUSTIC LINER)
	RETURN AIR
	EXHAUST AIR (THERMAL INSULATION)
	EXHAUST AIR
	FRESH AIR (THERMAL INSULATION)
	FRESH AIR
	EQUIPMENT TAG "AIR HANDLER #01" ELEC. PANEL A CIRCUIT #
	EQUIPMENT TAG "HUMIDIFIER #01"
	ROUND AIR TERMINAL TYPE "A" FACE SIZE = 12" x 12" NECK SIZE = 8" AIR FLOW (CFM) = 125
	AIR TERMINAL TYPE "B" FACE SIZE = 12" x 4" AIR FLOW (CFM) = 125
	BALANCING DAMPER "BD"
	FIRE DAMPER "FD"
	FLOW DIRECTION ARROWS
	FORCED FLOW
	SUPPLY / EXHAUST
	RETURN / INTAKE



2 (04322) Building 5 - Level 1 - RCP HVAC - New
M-11 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 THERMALLY 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.

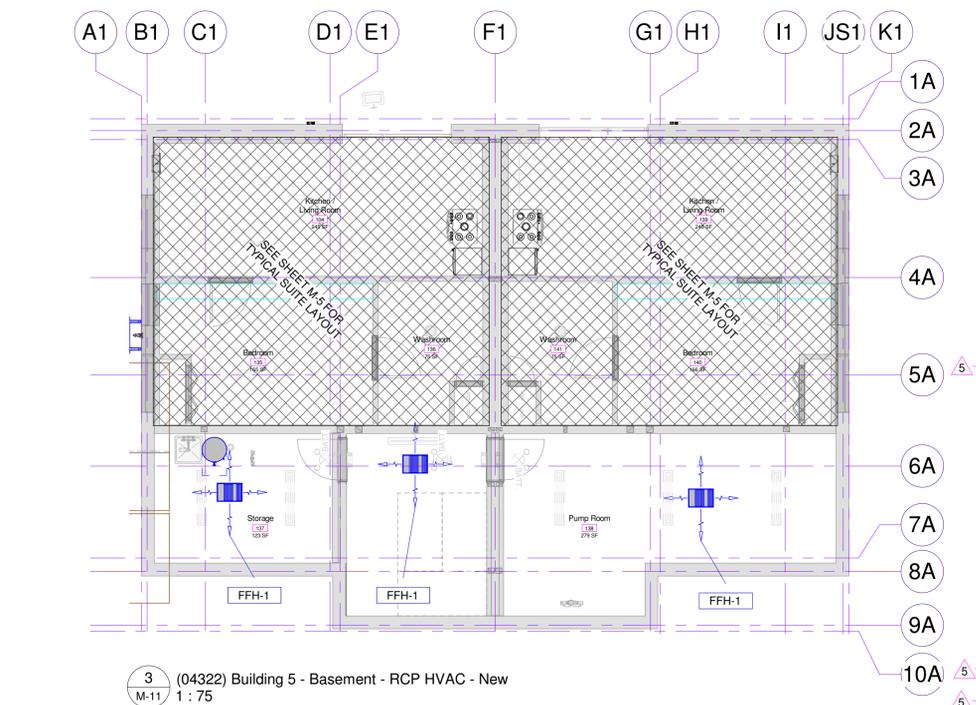
MOUNTING & WIRING TO BE BY DIV. 26 CONTRACTOR INCLUDING PERMANENT TYPE 'LAMACOID' LABELS TO IDENTIFY MECH. UNIT AND ELEC. CIRCUIT AS PER DESIGN.

REFRIGERANT PIPING & INSTALLATION

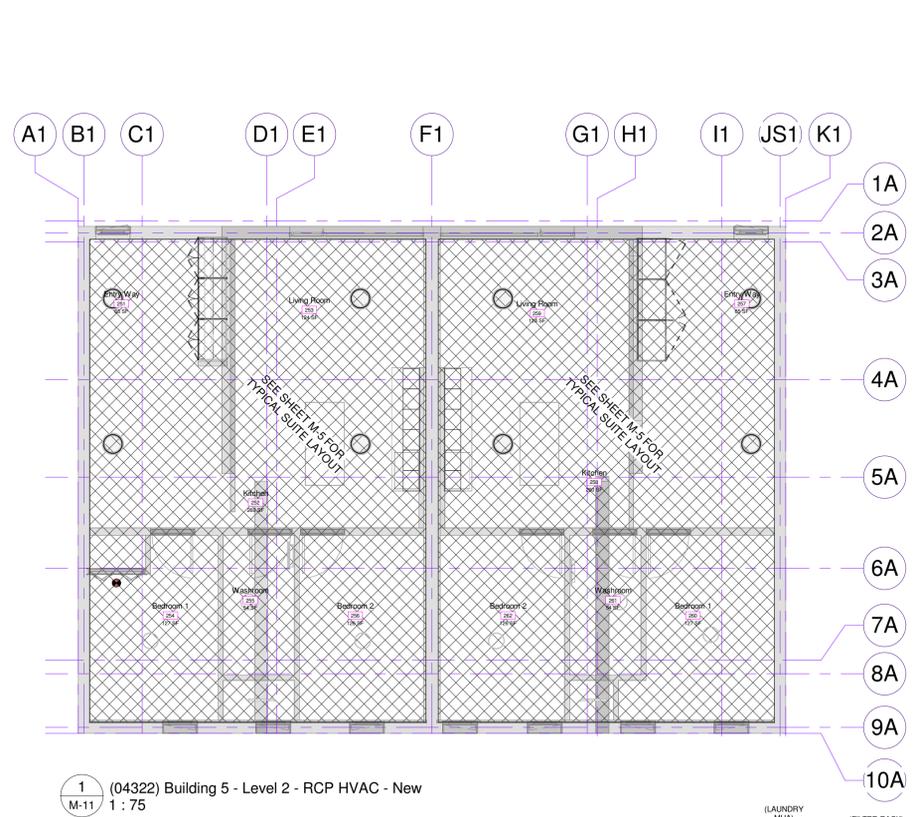
IMPORTANT INSTALLATION NOTE:

COMPLETE INSTALLATION TO BE PROVIDED BY CONTRACTOR THAT HAS COMPLETED FACTORY TRAINING ON SPECIFIED SYSTEMS. ONLY USE MFG. APPROVED, INSULATED LINE SETS AND FITTINGS.

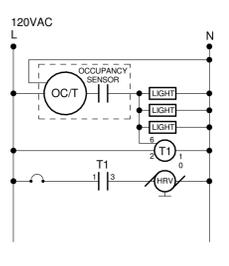
SUCTION AND LIQUID LINES SHALL BE TYPE ACR COPPER WITH SOLDER TYPE FITTINGS USING 95/5 SILVER SOLDER. EVACUATE COMPLETED SYSTEM WITH VACUUM PUMP TO ENSURE REMOVAL OF MOISTURE. RECHARGE WITH FREON TO MANUFACTURERS SPECIFICATIONS. THOROUGHLY CHECK ENTIRE SYSTEM WITH LEAK DETECTOR WHEN UNDER PRESSURE AND REPAIR ANY LEAK.



3 (04322) Building 5 - Basement - RCP HVAC - New
M-11 1 : 75



1 (04322) Building 5 - Level 2 - RCP HVAC - New
M-11 1 : 75

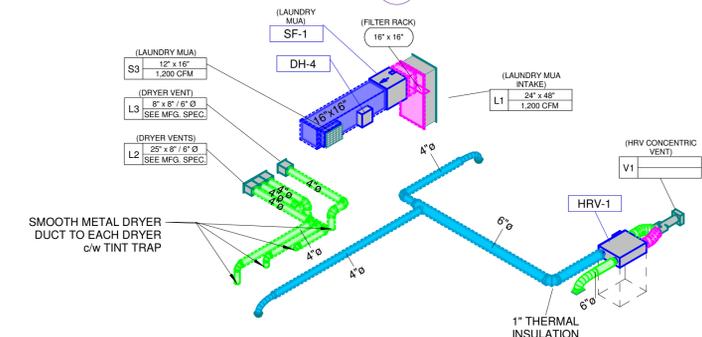


5 Fan Control / Occ Sensor Light Control c/w Delay-Off Fan
M-11 N.T.S.

NOTES:
CONCEPTUAL CONTROL CIRCUIT FOR DELAY-OFF EXHAUST FANS.
SEE PLANS FOR QUANTITY, LOCATIONS, & CIRCUITS FOR LIGHTS & FANS.
IF LOADS EXCEED CONTACT CURRENT RATING: ADD ADDITIONAL CONTACTORS ON LIGHT/FAN POWER SUPPLIES.

OMRON SOLID-STATE MULTI-FUNCTIONAL TIMER
H3CR-AP (MODE 'D')
100 to 240 VAC (50/60 Hz)/100 to 125 VDC
TIME LIMIT CONTACTS:
5 A @ 250 VAC/30 VDC,
0.15 A @ 125 VDC, RESISTIVE LOAD

OCCUPANCY SENSOR
MFG: WATTSTOPPER
MODEL: DT-355



4 (04322) HVAC 3D - Laundry Area
M-11 N.T.S.

(04322) Electric Heat Schedule - (New) Service & Common Areas

Type Mark	Qty.	Description	Mfg.	Model	Voltage	Phase	VA	Heating Capacity	Supplied By
BBH-1	3	BASEBOARD HEATER / 750W / 208V 1P	OUELLET	OFM0758BL	208 V	1	2,250	7,677 Btu/h	DIV. 23
DH-1	1	DUCT HEATER / 1kW / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	120 V	1	996	3,412 Btu/h	DIV. 23
DH-4	1	DUCT HEATER / 30kW / 16"x16" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSCO-30LS	208 V	3	30,010	102,364 Btu/h	DIV. 23
FFH-1	3	HEATER / FAN FORCED / CEILING / SURFACE / 240V 1Ø / 1500W / WHITE c/w BUILT-IN THERMOSTAT	OUELLET	OACP1500-BL & KIT-OAC-BS1	208 V	1	4,500	15,355 Btu/h	DIV. 23
Grand total	8						37,756	128,808 Btu/h	

(04322) Thermostat Schedule - (New) Service & Common Areas

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

(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Service & Common Areas

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

(04322) Mechanical Equipment Schedule - (New) Service & Common Areas

Type Mark	Description	Manufacturer	Model #	Qty.	Energy Source	Heating Capacity (Input)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	Hz	MCA	VA	Weight	Supplied By
FC-4	FAN COIL / SPLIT HP / INDOOR UNIT / 1 TON / WALL MNT. / c/w CONDENSATE PUMP / c/w WIRED REMOTE	HISENSE	AS-12UWSSVEDC01	1	ELEC	13,000 Btu/h	12,000 Btu/h			208 V	1	60	1.0 A	208	24 lb	DIV. 23
HP-3	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 1 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AS-12UWSSXEDL-O	1	ELEC	13,000 Btu/h	12,000 Btu/h	2,000 CFM		208 V	1	60	10.0 A	2,080	79 lb	DIV. 23
HRV-1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	1		0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60	0.8 A	96	50 lb	DIV. 23
Grand total				3		26,000 Btu/h	24,000 Btu/h							2,384		

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Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **HVAC - Bldg. 5**

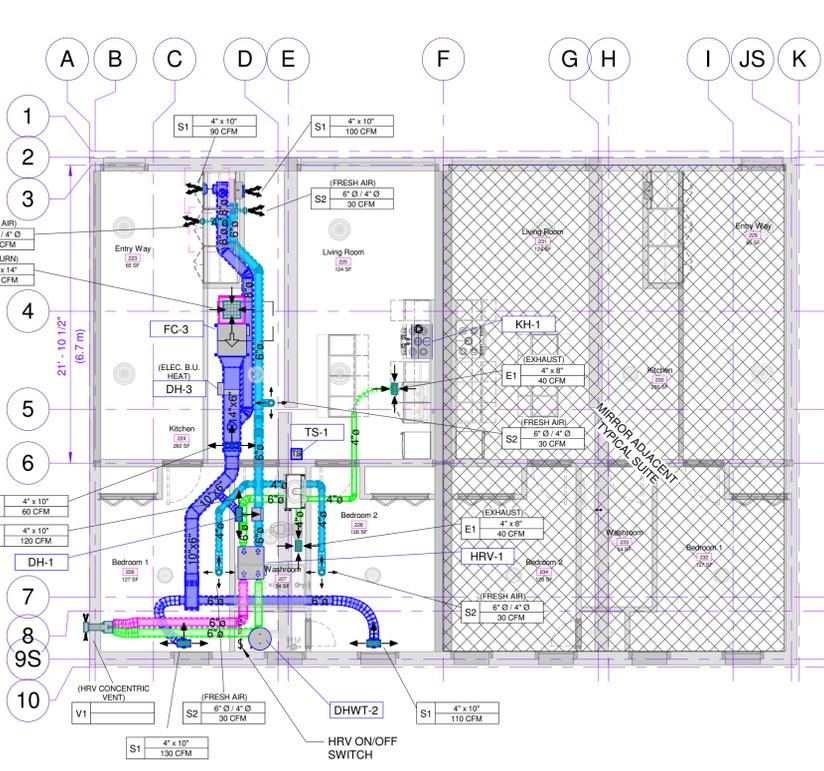
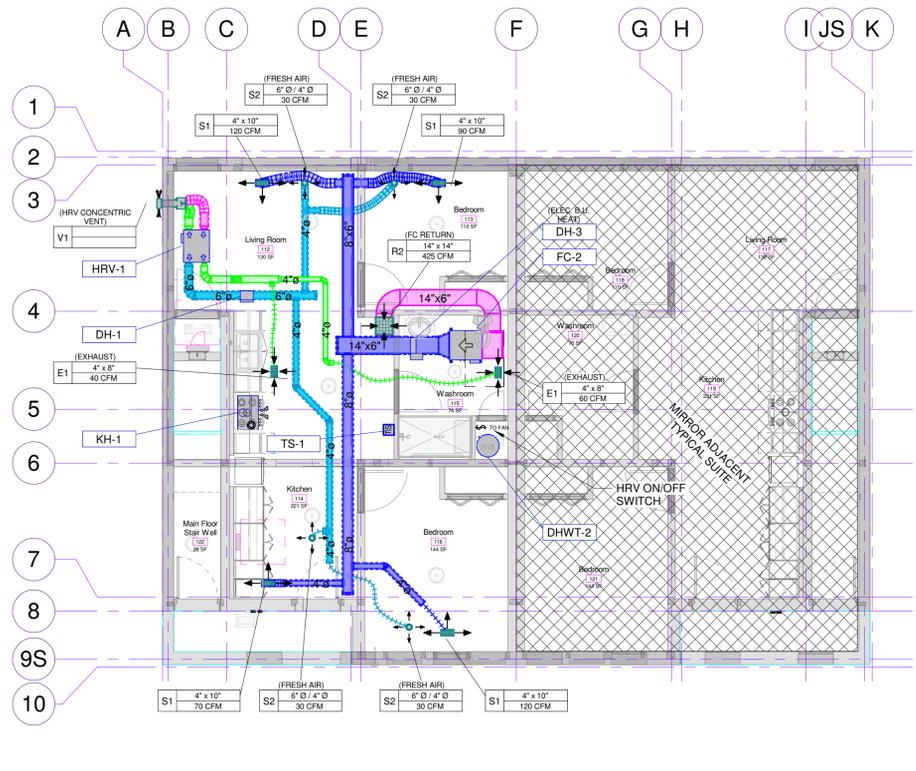
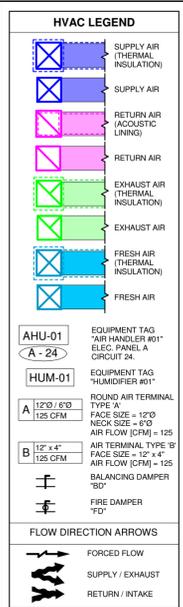
NSET Project #: **04322**

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

Scale: As indicated Revision #: 6.0

Drawing #: **M-11**

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



FIRE DAMPERS

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

DIV. 23, DIV. 26 RESPONSIBILITIES

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ALL EXHAUST DUCTING FROM TERMINALS & FANS TO BE THERMALLY 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

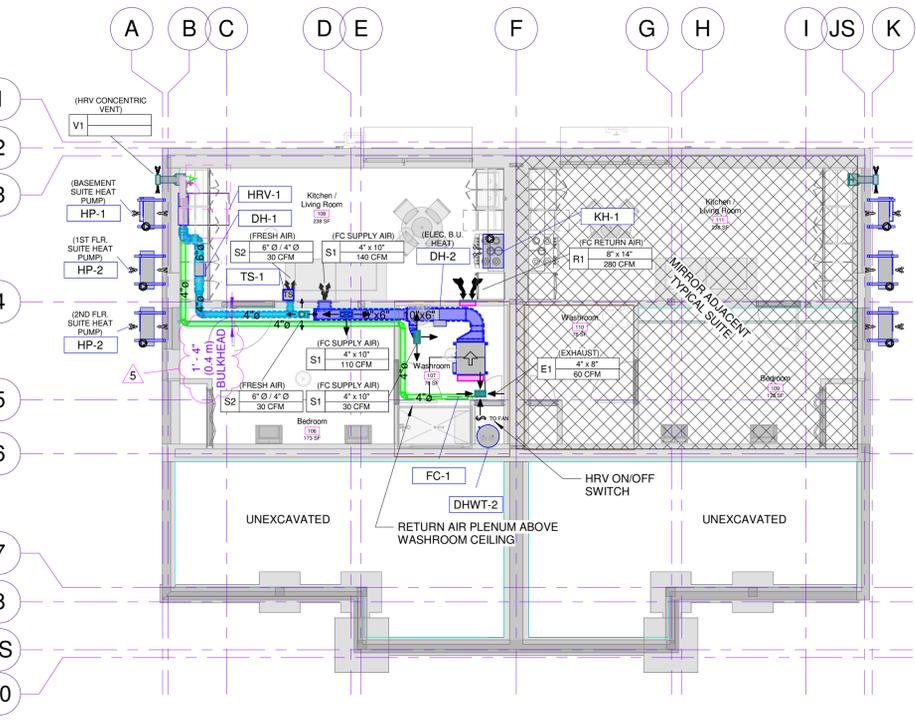
SEPARATE, WEATHER-PROOF ELEC. POWER DISCONNECTS TO BE SUPPLIED FOR OUTDOOR MECH. UNIT (I.E. NOT INCLUDED WITH EQUIP.) BY DIV. 26 CONTRACTOR.

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

REFRIGERANT PIPING & INSTALLATION

IMPORTANT INSTALLATION NOTE: COMPLETE INSTALLATION TO BE PROVIDED BY CONTRACTOR THAT HAS COMPLETED FACTORY TRAINING ON SPECIFIED SYSTEMS. ONLY USE MFG. APPROVED, INSULATED LINE SETS AND FITTINGS.

SUCTION AND LIQUID LINES SHALL BE TYPE ACR COPPER WITH SOLDER TYPE FITTINGS USING 95/9 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.



(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Typical Suites

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

(04322) Electric Heat Schedule - (New) Typical Suites

Type Mark	Description	Mfg.	Model	Fuel Type	Voltage	Phase	Heating Capacity	Supplied By
DH-1	DUCT HEATER / 1kW / / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	ELEC.	120 V	1	10,236 Btu/h	DIV. 23
DH-2	DUCT HEATER / 2kW / 10"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-02LS	ELEC.	208 V	1	6,824 Btu/h	DIV. 23
DH-3	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSC0-03LS	ELEC.	208 V	1	20,473 Btu/h	DIV. 23
Grand total							37,534 Btu/h	

(04322) Thermostat Schedule - (New) Typical Suites

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

(04322) Mechanical Equipment Schedule - (New) Typical Suites

Type Mark	Description	Manufacturer	Model #	Heating Capacity (Input)	Eff.%	Heat Capacity (Output)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	HZ	MCA	VA	Weight	Supplied By
DHWT-2	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	0 Btu/h		0 Btu/h	0 Btu/h			208 V	1	60	14.4 A	9,000	110 lb	DIV. 23
FC-1	VRF / 0.75 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-09 UX2SAH	11,300 Btu/h	100	11,300 Btu/h	9,600 Btu/h	280 CFM	0.300 in-wg	208 V	1	60	1.1 A	225	55 lb	DIV. 23
FC-2	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	17,100 Btu/h	100	17,100 Btu/h	15,400 Btu/h	425 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
FC-3	VRF / 1.6 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-19H3FCH	21,500 Btu/h	100	21,500 Btu/h	19,100 Btu/h	530 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
HP-1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 0.75 TON / 208V 1Ø / WINDGUARD / c/w WALL BRKT. (STRUCTURAL BY OTHERS)	HISENSE	AS-09UW3SVEDL-O	19,000 Btu/h		0 Btu/h	18,000 Btu/h	2,000 CFM		208 V	1	60	10.0 A	4,160	66 lb	DIV. 23
HP-2	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 2 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AVW-28H3FH-MCO	108,000 Btu/h		0 Btu/h	108,000 Btu/h	3,000 CFM		208 V	1	60	23.2 A	19,302	144 lb	DIV. 23
HRV-1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	0 Btu/h		0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60	0.8 A	288	50 lb	DIV. 23
KH-1	KITCHEN EXHAUST HOOD / DOMESTIC / UNDER CABINET / 30" / s.s. / c/w UNDER LIGHTS / DUCTLESS RECIRCULATING / c/w CHARCOAL FILTER	BROAN	BCS30SSC	0 Btu/h		0 Btu/h	0 Btu/h	300 CFM	0.100 in-wg	120 V	1	60	1.7 A	612	15 lb	DIV. 23
Grand total				176,900 Btu/h		49,900 Btu/h	170,100 Btu/h							34,128		

(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
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P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
P-6	Plumbing - Bldg. 1
P-7	Plumbing - Bldg. 2
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P-13	Plumbing - Details
P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
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E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
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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 5J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

- GENERAL DRAWING / DESIGNER NOTES:**
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DRAWING REVISIONS

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

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **HVAC - Bldg.6**

NSET Project #: **04322**

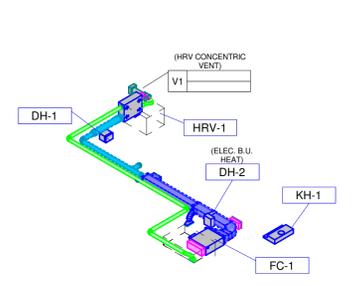
Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

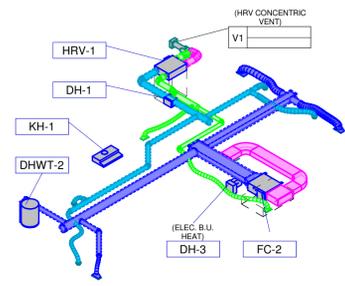
Drawing #: **M-12**

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

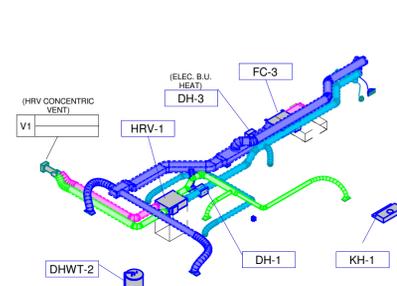
HVAC LEGEND	
	SUPPLY AIR (THERMAL INSULATION)
	SUPPLY AIR
	RETURN AIR (ACOUSTIC LINING)
	RETURN AIR
	EXHAUST AIR (THERMAL INSULATION)
	EXHAUST AIR
	FRESH AIR (THERMAL INSULATION)
	FRESH AIR
	EQUIPMENT TAG "AIR HANDLER #01" ELEC. PANEL "A" CIRCUIT "24"
	EQUIPMENT TAG "HUMIDIFIER #01"
	ROUND AIR TERMINAL TYPE "A" FACE SIZE = 12"Ø NECK SIZE = 4"Ø AIR FLOW (CFM) = 125
	AIR TERMINAL TYPE "B" FACE SIZE = 12" x 4" AIR FLOW (CFM) = 125
	BALANCING DAMPER "BD"
	FIRE DAMPER "FD"
	FLOW DIRECTION ARROWS
	FORCED FLOW
	SUPPLY / EXHAUST
	RETURN / INTAKE



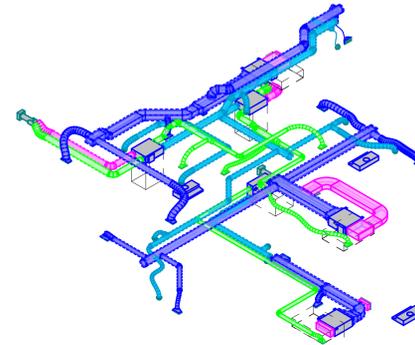
1 (04322)HVAC 3D - Typical Suites Basement
M-13 N.T.S.



2 (04322)HVAC 3D - Typical Suites Level 1
M-13 N.T.S.



3 (04322)HVAC 3D - Typical Suites Level 2
M-13 N.T.S.



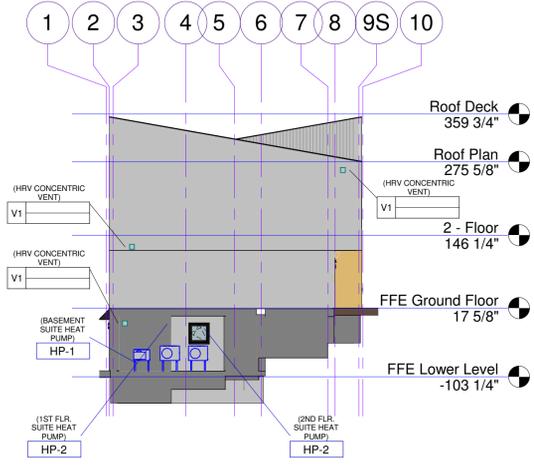
12 (04322) 3D HVAC (Air Side) - Full Building - North
M-13

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E1/M1/P1	Project Cover
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M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
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M-10	HVAC - Bldg. 4
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M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
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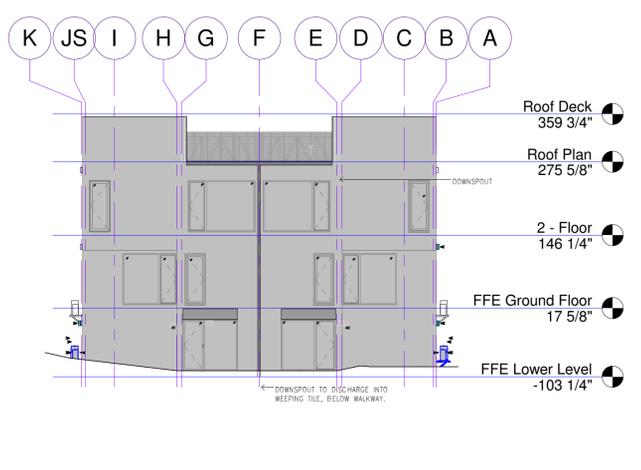
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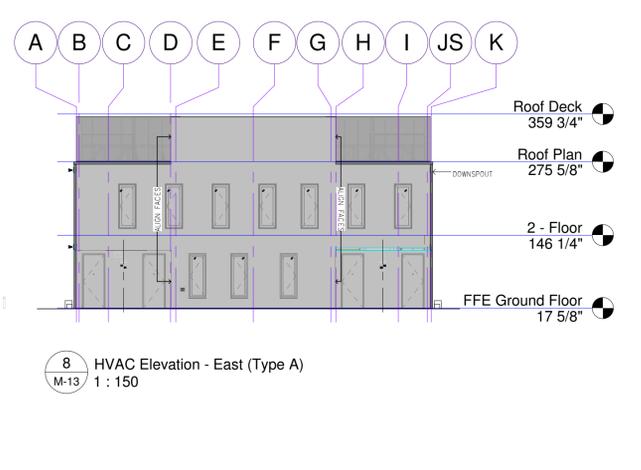
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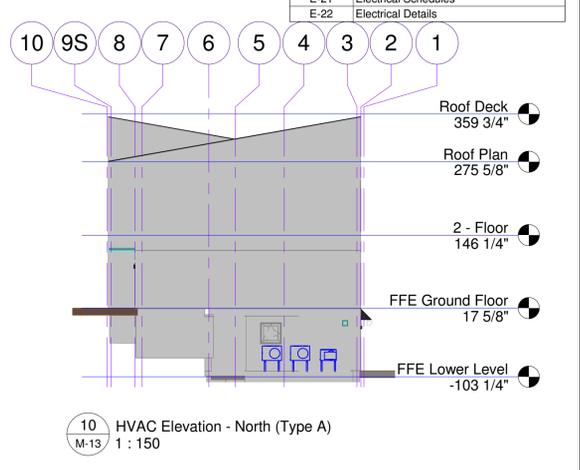
4 HVAC Elevation - South (Type A)
M-13 1 : 150



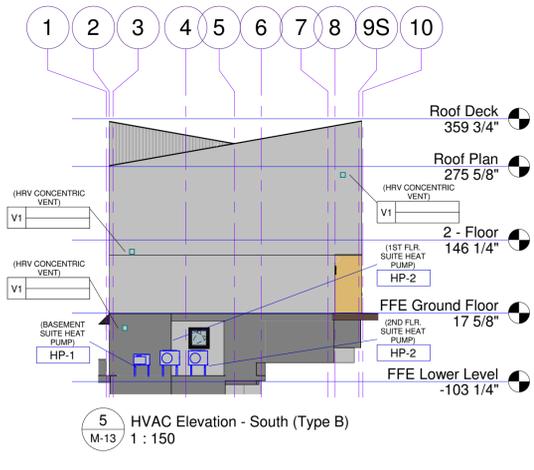
6 HVAC Elevation - West (Type A)
M-13 1 : 150



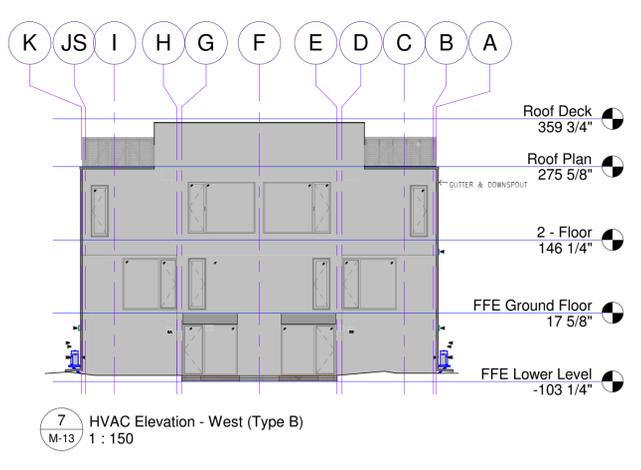
8 HVAC Elevation - East (Type A)
M-13 1 : 150



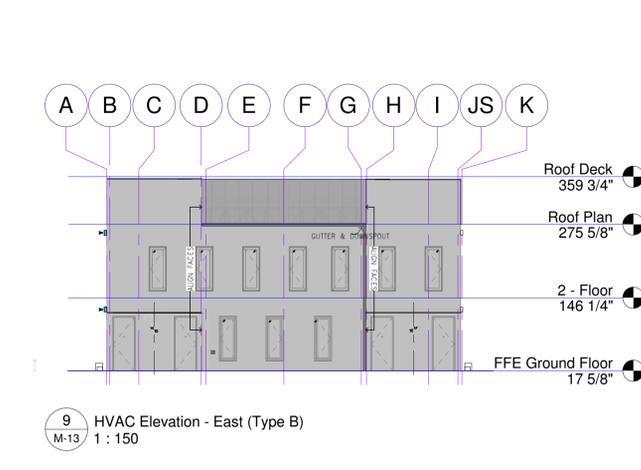
10 HVAC Elevation - North (Type A)
M-13 1 : 150



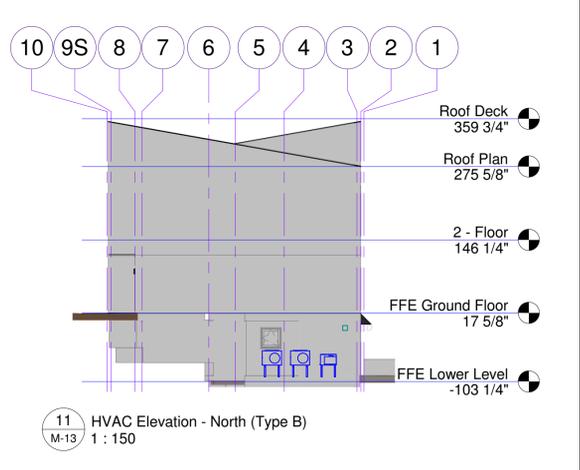
5 HVAC Elevation - South (Type B)
M-13 1 : 150



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



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



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

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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(1) ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S BUILDING CODE, LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.

(2) THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS 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. EXACT DETAILS OF INSTALLATIONS ARE TO BE PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.

(4) CONTRACTOR/AGENT/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER.

(5) PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".

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

(7) THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UNAUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.

(8) **SHOP DRAWINGS:** BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMANCE 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, 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) RESPONSIBILITY FOR ANY FINAL ASSEMBLYS THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.

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

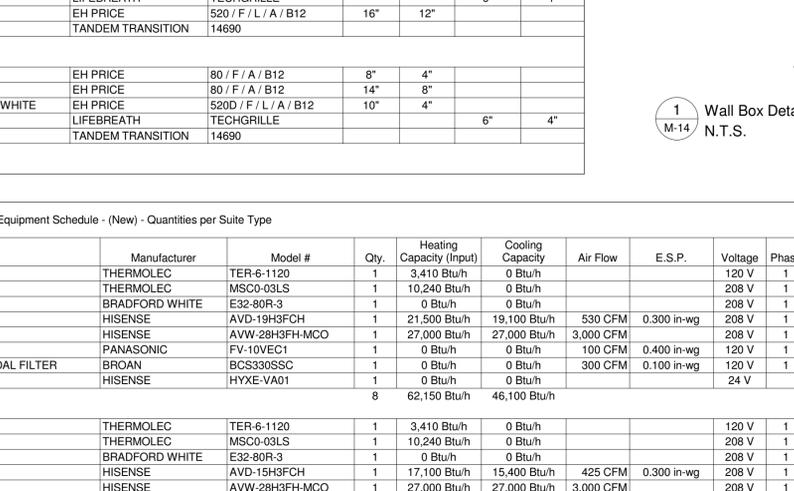
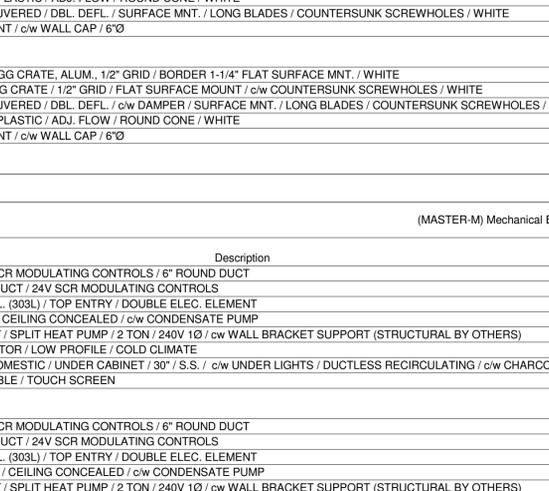
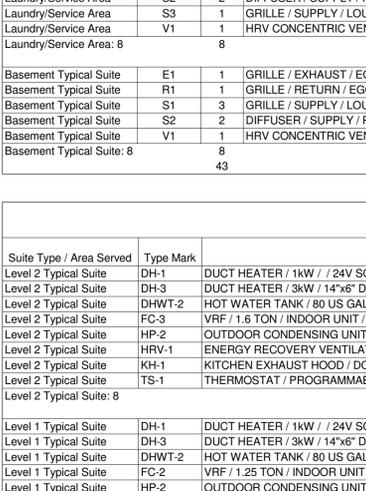
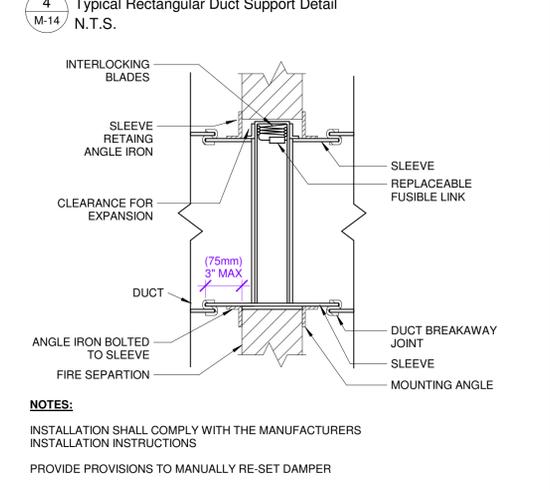
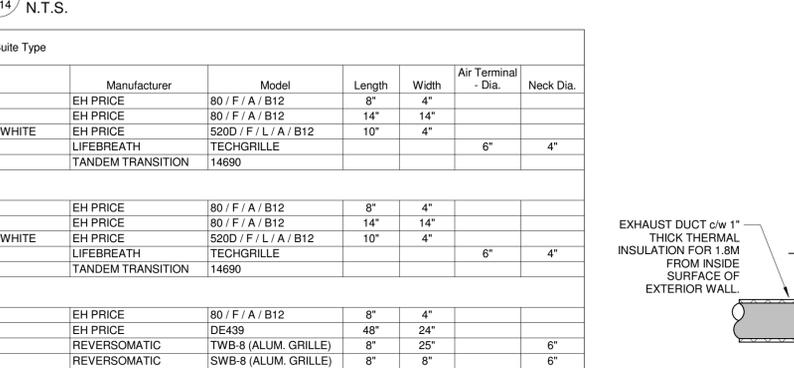
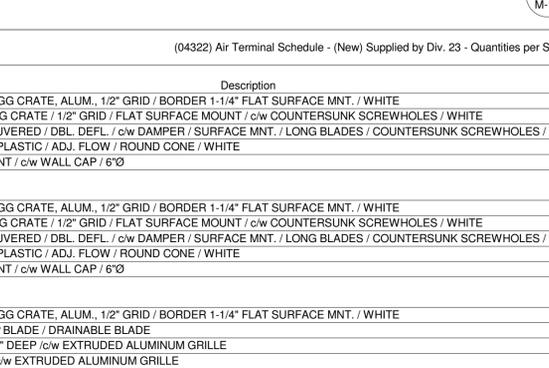
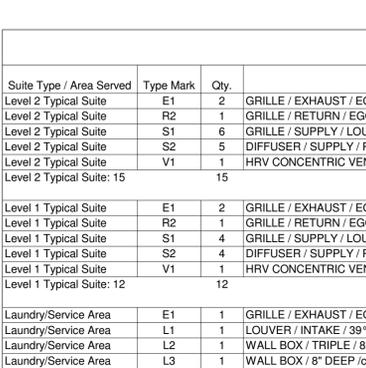
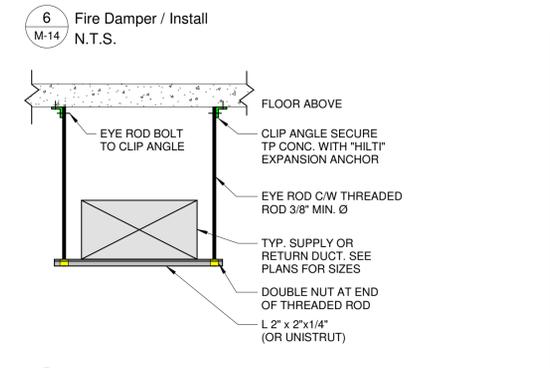
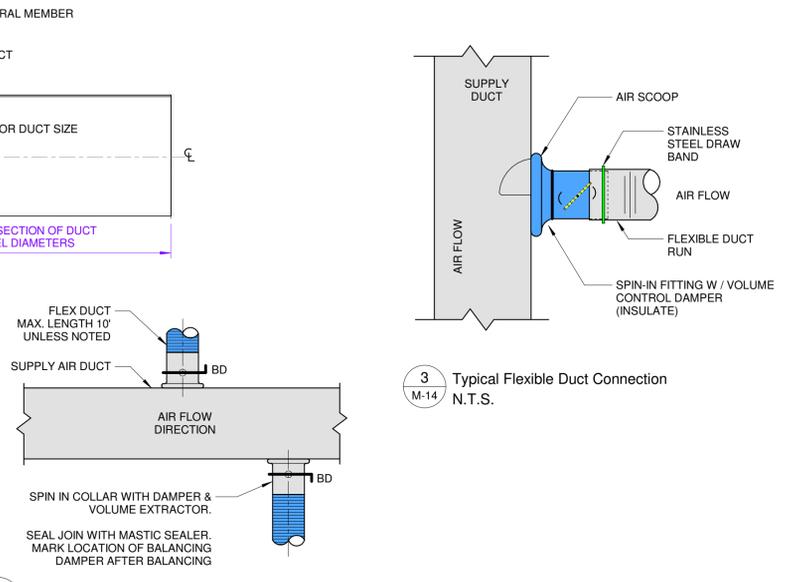
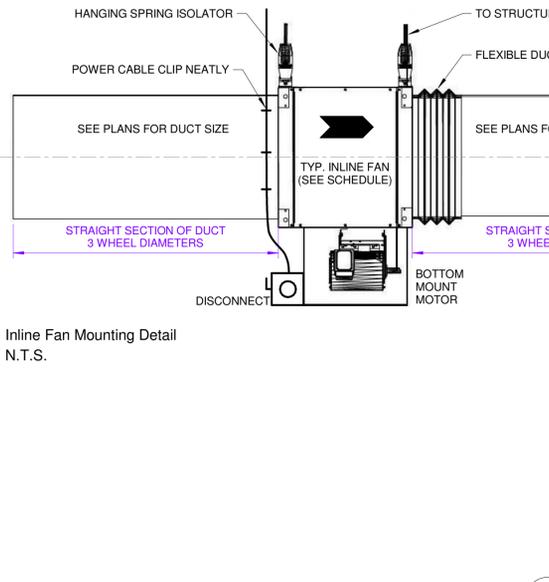
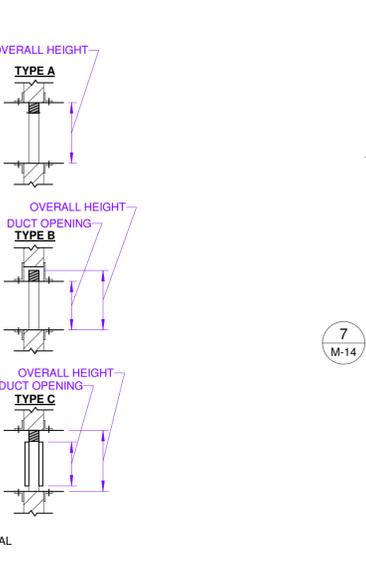
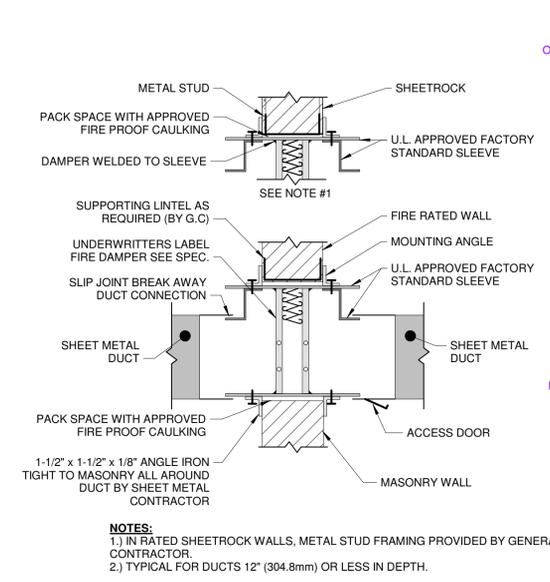
(12) SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.

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

(14) REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURPOSE OF TENDERING PURPOSES BY ANY CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.

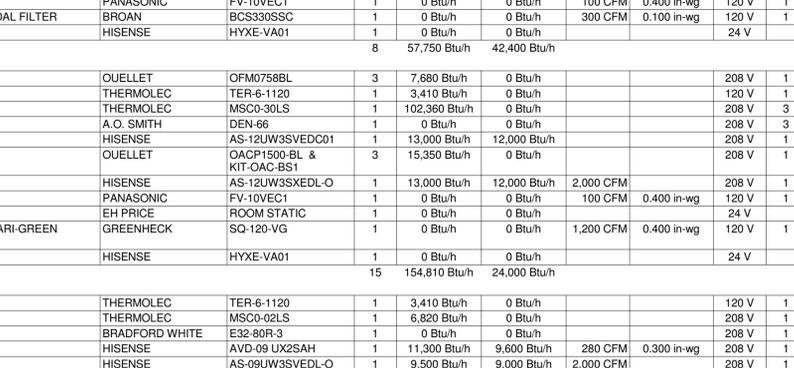
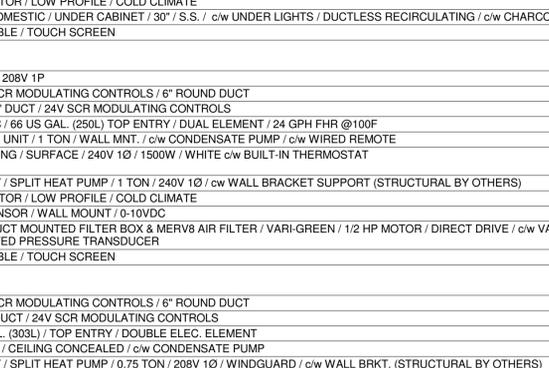
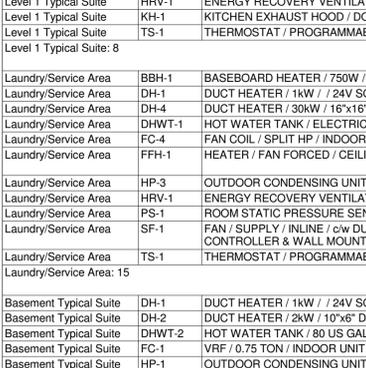
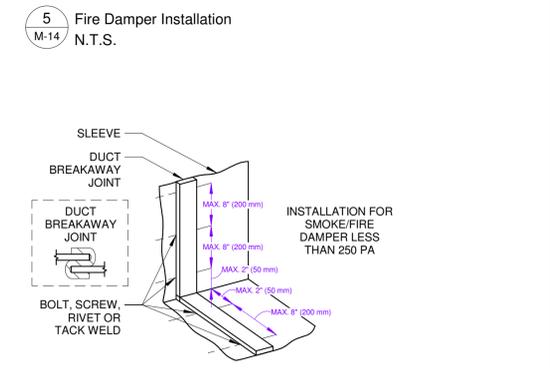
(15) TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.

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



(04322) Air Terminal Schedule - (New) Supplied by Div. 23 - Quantities per Suite Type

Suite Type / Area Served	Type Mark	Qty.	Description	Manufacturer	Model	Length	Width	Air Terminal Dia.	Neck Dia.
Level 2 Typical Suite	E1	2	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"		
Level 2 Typical Suite	R2	1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	80 / F / A / B12	14"	14"		
Level 2 Typical Suite	S1	6	GRILLE / SUPPLY / LOUVERED / DBL. DEFL. / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	5200 / F / L / A / B12	10"	4"		
Level 2 Typical Suite	S2	5	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE			6"	4"
Level 2 Typical Suite	V1	1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"Ø	TANDEM TRANSITION	14690				
Level 2 Typical Suite: 15		15							
Level 1 Typical Suite	E1	2	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"		
Level 1 Typical Suite	R2	1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	80 / F / A / B12	14"	14"		
Level 1 Typical Suite	S1	4	GRILLE / SUPPLY / LOUVERED / DBL. DEFL. / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	5200 / F / L / A / B12	10"	4"		
Level 1 Typical Suite	S2	4	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE			6"	4"
Level 1 Typical Suite	V1	1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"Ø	TANDEM TRANSITION	14690				
Level 1 Typical Suite: 12		12							
Laundry/Service Area	E1	1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"		
Laundry/Service Area	L1	1	LOUVER / INTAKE / 39° BLADE / DRAINABLE BLADE	EH PRICE	DE439	48"	24"		
Laundry/Service Area	L2	1	WALL BOX / TRIPLE / 8" DEEP / c/w EXTRUDED ALUMINUM GRILLE	REVERSOMATIC	TWB-8 (ALUM. GRILLE)	8"	25"		6"
Laundry/Service Area	L3	1	WALL BOX / 8" DEEP / c/w EXTRUDED ALUMINUM GRILLE	REVERSOMATIC	SWB-8 (ALUM. GRILLE)	8"	8"		6"
Laundry/Service Area	S2	2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE			6"	4"
Laundry/Service Area	S3	1	GRILLE / SUPPLY / LOUVERED / DBL. DEFL. / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	520 / F / L / A / B12	16"	12"		
Laundry/Service Area	V1	1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"Ø	TANDEM TRANSITION	14690				
Laundry/Service Area: 8		8							
Basement Typical Suite	E1	1	GRILLE / EXHAUST / EGG CRATE, ALUM., 1/2" GRID / BORDER 1-1/4" FLAT SURFACE MNT. / WHITE	EH PRICE	80 / F / A / B12	8"	4"		
Basement Typical Suite	R1	1	GRILLE / RETURN / EGG CRATE / 1/2" GRID / FLAT SURFACE MOUNT / c/w COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	80 / F / A / B12	14"	8"		
Basement Typical Suite	S1	3	GRILLE / SUPPLY / LOUVERED / DBL. DEFL. / c/w DAMPER / SURFACE MNT. / LONG BLADES / COUNTERSUNK SCREWHOLES / WHITE	EH PRICE	5200 / F / L / A / B12	10"	4"		
Basement Typical Suite	S2	2	DIFFUSER / SUPPLY / PLASTIC / ADJ. FLOW / ROUND CONE / WHITE	LIFEBREATH	TECHGRILLE			6"	4"
Basement Typical Suite	V1	1	HRV CONCENTRIC VENT / c/w WALL CAP / 6"Ø	TANDEM TRANSITION	14690				
Basement Typical Suite: 8		8							



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

Suite Type / Area Served	Type Mark	Qty.	Description	Manufacturer	Model #	Qty.	Heating Capacity (Input)	Cooling Capacity	Air Flow	E.S.P.	Voltage	Phase	Hz.	MCA	VA	Weight	Supplied By
Level 2 Typical Suite	DH-1	1	DUCT HEATER / 1kW / / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	1	3,410 Btu/h	0 Btu/h			120 V	1	60	8.3 A	996		DIV. 23
Level 2 Typical Suite	DH-3	1	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSCO-03LS	1	10,240 Btu/h	0 Btu/h			208 V	1	60	14.5 A	3,006		DIV. 23
Level 2 Typical Suite	DHWT-2	1	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	1	0 Btu/h	0 Btu/h			208 V	1	60	14.4 A	3,000	110 lb	DIV. 23
Level 2 Typical Suite	FC-3	1	VRF / 1.6 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-19H3FCH	1	21,500 Btu/h	19,100 Btu/h	530 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
Level 2 Typical Suite	HP-2	1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 2 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AVW-28H3FH-MCO	1	27,000 Btu/h	27,000 Btu/h	3,000 CFM	0.300 in-wg	208 V	1	60	23.2 A	4,826	144 lb	DIV. 23
Level 2 Typical Suite	HRV-1	1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	1	0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60	0.8 A	96	50 lb	DIV. 23
Level 2 Typical Suite	KH-1	1	KITCHEN EXHAUST HOOD / DOMESTIC / UNDER CABINET / 30" / S.S. / c/w UNDER LIGHTS / DUCTLESS RECIRCULATING / c/w CHARCOAL FILTER	BROAN	BCS330SSC	1	0 Btu/h	0 Btu/h	300 CFM	0.100 in-wg	120 V	1	60	1.7 A	204	15 lb	DIV. 23
Level 2 Typical Suite	TS-1	1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	HYXE-VA01	1	0 Btu/h	0 Btu/h			24 V		60		0		DIV. 23
Level 2 Typical Suite: 8		8				8	62,150 Btu/h	46,100 Btu/h								12,398	
Level 1 Typical Suite	DH-1	1	DUCT HEATER / 1kW / / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	1	3,410 Btu/h	0 Btu/h			120 V	1	60	8.3 A	996		DIV. 23
Level 1 Typical Suite	DH-3	1	DUCT HEATER / 3kW / 14"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSCO-03LS	1	10,240 Btu/h	0 Btu/h			208 V	1	60	14.5 A	3,006		DIV. 23
Level 1 Typical Suite	DHWT-2	1	HOT WATER TANK / 80 US GAL. (303L) / TOP ENTRY / DOUBLE ELEC. ELEMENT	BRADFORD WHITE	E32-80R-3	1	0 Btu/h	0 Btu/h			208 V	1	60	14.4 A	3,000	110 lb	DIV. 23
Level 1 Typical Suite	FC-2	1	VRF / 1.25 TON / INDOOR UNIT / CEILING CONCEALED / c/w CONDENSATE PUMP	HISENSE	AVD-15H3FCH	1	17,100 Btu/h	15,400 Btu/h	425 CFM	0.300 in-wg	208 V	1	60	1.3 A	270	55 lb	DIV. 23
Level 1 Typical Suite	HP-2	1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 2 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AVW-28H3FH-MCO	1	27,000 Btu/h	27,000 Btu/h	3,000 CFM	0.300 in-wg	208 V	1	60	23.2 A	4,826	144 lb	DIV. 23
Level 1 Typical Suite	HRV-1	1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	1	0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	120 V	1	60	0.8 A	96	50 lb	DIV. 23
Level 1 Typical Suite	KH-1	1	KITCHEN EXHAUST HOOD / DOMESTIC / UNDER CABINET / 30" / S.S. / c/w UNDER LIGHTS / DUCTLESS RECIRCULATING / c/w CHARCOAL FILTER	BROAN	BCS330SSC	1	0 Btu/h	0 Btu/h	300 CFM	0.100 in-wg	120 V	1	60	1.7 A	204	15 lb	DIV. 23
Level 1 Typical Suite	TS-1	1	THERMOSTAT / PROGRAMMABLE / TOUCH SCREEN	HISENSE	HYXE-VA01	1	0 Btu/h	0 Btu/h			24 V		60		0		DIV. 23
Level 1 Typical Suite: 8		8				8	57,750 Btu/h	42,400 Btu/h								12,398	
Laundry/Service Area	BBH-1	1	BASEBOARD HEATER / 750W / 208V 1P	OUELLET	OFM0758BL	3	7,680 Btu/h	0 Btu/h			208 V	1	60	3.6 A	2,250	5 lb	DIV. 23
Laundry/Service Area	DH-1	1	DUCT HEATER / 1kW / / 24V SCR MODULATING CONTROLS / 6" ROUND DUCT	THERMOLEC	TER-6-1120	1	3,410 Btu/h	0 Btu/h			120 V	1	60	8.3 A	996		DIV. 23
Laundry/Service Area	DH-4	1	DUCT HEATER / 3kW / 16"x6" DUCT / 24V SCR MODULATING CONTROLS	THERMOLEC	MSCO-30LS	1	102,360 Btu/h	0 Btu/h			208 V	3	60	83.3 A	30,010		DIV. 23
Laundry/Service Area	DHWT-1	1	HOT WATER TANK / ELECTRIC / 66 US GAL. (250L) / TOP ENTRY / DUAL ELEMENT / 24 GPH FHR @100F	A.O. SMITH	DEN-66	1	0 Btu/h	0 Btu/h			208 V	3	60	28.8 A	6,000	176 lb	DIV. 23
Laundry/Service Area	FC-4	1	FAN COIL / SPLIT HP / INDOOR UNIT / 1 TON / WALL MNT. / c/w CONDENSATE PUMP / c/w WIRED REMOTE	HISENSE	AS-12UW3SVEDC01	1	13,000 Btu/h	12,000 Btu/h			208 V	1	60	1.0 A	208	24 lb	DIV. 23
Laundry/Service Area	FFH-1	3	HEATER / FAN FORCED / CEILING / SURFACE / 240V 1Ø / 1500W / WHITE c/w BUILT-IN THERMOSTAT	OUELLET	OACP1500-BL & KIT-OAC-B51	3	15,350 Btu/h	0 Btu/h			208 V	1	60	7.2 A	4,500	24 lb	DIV. 23
Laundry/Service Area	HP-3	1	OUTDOOR CONDENSING UNIT / SPLIT HEAT PUMP / 1 TON / 240V 1Ø / c/w WALL BRACKET SUPPORT (STRUCTURAL BY OTHERS)	HISENSE	AS-12UW3SVEDL-O	1	13,000 Btu/h	12,000 Btu/h	2,000 CFM	0.400 in-wg	208 V	1	60	10.0 A	2,080	79 lb	DIV. 23
Laundry/Service Area	HRV-1	1	ENERGY RECOVERY VENTILATOR / LOW PROFILE / COLD CLIMATE	PANASONIC	FV-10VEC1	1	0 Btu/h	0 Btu/h	100 CFM	0.400 in-wg	1						

22 05 00 COMMON WORK RESULTS FOR PLUMBING

22 05 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 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.
3. THE SCOPE OF WORK IS AS DESCRIBED HEREIN & SHOWN ON THE DRAWINGS.

22 05 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, CIVIL, LANDSCAPE, SPRINKLER, MECHANICAL, ELECTRICAL ETC., DRAWINGS. PROPERLY PLAN, COORDINATE, & ESTABLISH THE LOCATIONS & ROUTING OF SERVICES WITH ALL SUBCONTRACTORS AFFECTED PRIOR TO INSTALLATION SUCH THAT THE SERVICES WILL CLEAR EACH OTHER AS WELL AS ANY OBSTRUCTIONS, INCLUDING STRUCTURAL COMPONENTS OF THE BUILDING.
3. THE DRAWINGS ARE INTENDED TO CONVEY THE SCOPE OF WORK & DO NOT SHOW ARCHITECTURAL & STRUCTURAL DETAILS. PLUMBING CONTRACTOR SHALL PROVIDE, AT PLUMBING CONTRACTOR'S COST, ALL OFFSETS, FITTINGS, & SIMILAR PRODUCTS REQUIRED AS A RESULT OF OBSTRUCTIONS & OTHER ARCHITECTURAL & STRUCTURAL DETAILS BUT NOT SHOWN ON THE DRAWINGS.
4. THE DRAWINGS & SPECIFICATIONS ARE COMPLEMENTARY & INTENDED TO BE COOPERATIVE. PERFORM ALL WORK THAT IS SHOWN, SPECIFIED, OR REASONABLY IMPLIED ON THE DRAWINGS BUT NOT MENTIONED IN THE SPECIFICATION, OR VICE-VERSA, AS THOUGH FULLY COVERED BY BOTH.
5. SHOULD ANY DISCREPANCY APPEAR BETWEEN THE DRAWINGS & SPECIFICATIONS WHICH LEAVES THE PLUMBING CONTRACTOR IN DOUBT AS TO THE TRUE INTENT & MEANING OF THE PLANS & SPECIFICATIONS, A RULING SHALL BE OBTAINED FROM THE ENGINEER. IF THIS IS NOT OBTAINABLE, IT WILL BE ASSUMED THAT THE MOST EXPENSIVE ALTERNATE HAS BEEN ALLOWED FOR.

22 05 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 05 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 05 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 DIRECT 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 IMPEDED. 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 05 00 - 6.0 COORDINATION OF THE WORK

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

22 05 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 05 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 05 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 CAN4-S115 (RATINGS F, FT, FH, AND FTH AS REQUIRED), CANULC-S101, & ALL OTHER GOVERNING AUTHORITIES TO SEAL THE PENETRATIONS.

26 05 00 - 10.0 MOUNTING HEIGHTS

- 1. IF MOUNTING HEIGHT OF PLUMBING FIXTURES ARE NOT SPECIFIED OR INDICATED, VERIFY BEFORE PROCEEDING WITH INSTALLATION.
2. FOR BARRIER-FREE MOUNTING HEIGHTS FOR FIXTURES, CONFORM TO REQUIREMENTS OF THE GOVERNING CODE OR REGULATION.
3. COORDINATE & CONFIRM THE MOUNTING HEIGHTS WITH THE ARCHITECT PRIOR TO ROUGH-IN.
4. INSTALL PLUMBING FIXTURES AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE:
- LAVATORY - WALL HUNG - BARRIER FREE: 33" (840 MM) FROM FINISHED FLOOR TO FRONT RIM OF BASIN
- LAVATORY - WALL HUNG - STANDARD: 31" (787 MM) TO 33" (840 MM) FROM FINISHED FLOOR TO FRONT RIM OF BASIN
- URINAL - WALL HUNG - BARRIER FREE: MAX. 17" (430 MM) FROM FINISHED FLOOR TO FRONT RIM OF BASIN, 19-3/8" (1000 MM) TO CENTER OF BASIN
- URINAL - WALL HUNG - STANDARD: MAX. 24" (610 MM) FROM FINISHED FLOOR TO FRONT RIM OF BASIN
- SHOWER CONTROL - BARRIER FREE: 42" (1067 MM) FROM FINISHED FLOOR TO CENTER OF VALVE
- SHOWER CONTROL - STANDARD: 42" (1067 MM) FROM FINISHED FLOOR TO CENTER OF VALVE
- DRINKING FOUNTAIN - BARRIER FREE: 30" (762 MM) FROM FINISHED FLOOR TO ORIFICE
- DRINKING FOUNTAIN - STANDARD: 33" (838 MM) FROM FINISHED FLOOR TO ORIFICE
- 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 05 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 05 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, PREPARE AND SUBMIT TO THE CONSULTANT FOR APPROVAL, A QUOTATION BEING THE ELECTRICAL CONTRACTOR'S PROPOSED COST FOR EXECUTING THE CHANGE OR REVISION.
5. RELOCATING ANY MECHANICAL EQUIPMENT LESS THAN 10 FEET IS NOT TO BE CONSIDERED AN EXTRA IN THE PROJECT.
6. CONTRACTOR TO PROVIDE PRICING ON ALL 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. WORK SHALL PROCEED UNTIL OFFICIAL WRITTEN ACCEPTANCE IS ISSUED BY NORTHSTAR.

22 05 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. THESE SHOP DRAWINGS SHALL INCLUDING BUT NOT LIMITED TO PLUMBING FIXTURES, PLUMBING DEVICES, PIPING & ACCESSORIES. ALLOW MINIMUM 5 BUSINESS DAYS TO RETURN REVIEWED SHOP DRAWINGS. (BASED ON COMPLEXITY).
2. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS. THE ENGINEER'S REVIEW OF SHOP DRAWINGS SHALL BE FOR GENERAL DESIGN ONLY & SHALL NOT RELIEVE THE PLUMBING CONTRACTOR OR SUPPLIER FROM THEIR RESPONSIBILITY FOR ERRORS, PROPER FITTING & CONSTRUCTION OF THE WORK & FURNISHING OF MATERIALS. THE REVIEW SHALL NOT BE CONSTRUED AS APPROVING DEPARTURES FROM THE CONTRACT DOCUMENT REQUIREMENTS IF SUCH DEPARTURES ARE NOT SPECIFICALLY NOTED IN A COVERING LETTER ACCOMPANYING SUCH DRAWINGS.

22 05 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 05 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.
3. ANY TEST RESULTS THAT DO NOT MEET THE MINIMUM REQUIREMENTS OF THE MANUFACTURER, APPLICABLE BUILDING CODE, AUTHORIZED INSPECTION AGENCY & THE ENGINEER SHALL BE REPAIRED IN A METHOD APPROVED BY THE ENGINEER & RETESTED AT THE EXPENSE OF THE CONTRACTOR.
4. SUBMIT ALL TEST RESULTS TO THE ENGINEER FOR APPROVAL.

22 05 00 - 15.0 CLEANING AND WASTE REMOVAL

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

22 05 00 - 16.0 DEMONSTRATION OF THE SYSTEM

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

22 05 00 - 17.0 PROJECT CLOSEOUT SUBMITTALS

PRIOR TO APPLICATION FOR SUBSTANTIAL PERFORMANCE, SUBMIT ALL REQUIRED ITEMS AND DOCUMENTATION SPECIFIED, INCLUDING THE FOLLOWING:

- 1. RECORD "AS-BUILT" DRAWINGS: AS-BUILT DRAWINGS SHALL BE CLEARLY MARKED IN RED INCLUDING ALL CHANGES TO THE ORIGINAL TENDER DRAWINGS COVERED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, JOB CONDITIONS, ETC.
2. ALL PLUMBING TEST REPORTS REQUIRED AS DESCRIBED HEREIN.
3. A WRITTEN WARRANTY TO BE PROVIDED FOR A MIN. OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. PROVIDE LABOUR, MATERIAL & SERVICES TO CORRECT ALL FAULTS REPORTED DURING THE GUARANTEE PERIOD.

22 06 00 SCHEDULES FOR PLUMBING

22 06 40.13 PLUMBING FIXTURE SCHEDULE

- 1. REFER TO PLANS & DRAWINGS.
2. SUPPLY & INSTALL ALL FIXTURES LISTED IN SCHEDULES & ALL REQUIRED ACCESSORIES TO COMPLETE A WORKING SYSTEM.

22 07 00 PLUMBING INSULATION

22 07 16 PLUMBING EQUIPMENT INSULATION

- 1. ALL PIPING INSULATION MATERIALS & INSTALLATION IN ACCORDANCE TO ASHRAE 90.1.
2. INSULATE EQUIPMENT DRAINS CARRYING LIQUIDS AT 38 C (100 F) OR HIGHER TEMPERATURE, & SAFETY VALVE VENT PIPING TO A HEIGHT OF 2.4 M (8 F T.) ABOVE ANY FLOOR, STEP, CATWALK, OR PLATFORM FROM WHICH PERSONNEL WOULD BE WITHIN REACH OF SUCH PIPING WITH 25 MM (1") THICK INSULATION.
3. INSULATE HEAT PUMPS CONDENSATE DRAIN LINES WITH 25 MM THICK PIPE INSULATION
4. APPLY INSULATION NEATLY & TIGHTLY IN UNBROKEN LENGTHS & WITH ENDS OF SECTIONS FIRMLY & SQUARELY BUTTED OR ENGAGED TOGETHER. INSULATE FLANGES, VALVES, & FITTINGS WITH SEGMENTS OF INSULATION OF THE SAME TYPE & THICKNESS AS THE INSULATION ON THE PIPE, SECURED IN PLACE WITH SOFT ANNEALED GALVANIZED WIRE. FINISH WITH APPROVED INSULATING & FINISHING CEMENT, AND COTTON WRAPPING APPLIED WHILE THE CEMENT IS STILL WET.
5. COVER EXPOSED INSULATED VALVES AND FITTINGS IN BOILER ROOMS, MECHANICAL ROOMS, EQUIPMENT ROOMS, & AREAS WHERE VEHICULAR TRAFFIC, ETC. COULD DAMAGE THE INSULATION. WITH 220 G/M2 (6 OZ.) CANVAS.

22 07 19 PLUMBING PIPING INSULATION

- 1. ALL PIPING INSULATION MATERIALS & INSTALLATION IN ACCORDANCE TO ASHRAE 90.1.
2. ALL DOMESTIC COLD & HOT WATER, NON POTABLE WATER PIPING SHALL BE INSULATED THROUGH: FIBROUS GLASS SPLIT SECTIONAL PIPE INSULATION OF 25 MM (1") THICKNESS WITH FACTORY APPLIED VAPOUR BARRIER JACKET & SELF-SEAL LAP JOINT.
3. ALL SOIL, WASTE AND RAINWATER PIPING SHALL BE SIMILARLY INSULATED.
4. DO NOT APPLY INSULATION UNTIL PIPING & HEAT TRACING (IF APPLICABLE), HAS BEEN TESTED, INSPECTED, VERIFIED & ACCEPTED.
5. APPLY INSULATION NEATLY & TIGHTLY IN UNBROKEN LENGTHS & WITH ENDS OF SECTIONS FIRMLY & SQUARELY BUTTED OR ENGAGED TOGETHER. LAP CANVAS OR OTHER SPECIFIED WRAPPING OVER ALL JOINTS & THOROUGHLY CEMENT DOWN WITH ADHESIVE. EXTEND INSULATION THROUGH SLEEVES IN WALLS (EXCEPT FIRE WALLS) OR OTHER OPENINGS IN BUILDING TO MAKE INSULATION & VAPOUR BARRIER CONTINUOUS & OF UNIFORM DIAMETER.
6. AT EXPANSION JOINTS IN PIPING, APPLY INSULATION OVER A SLEEVE OF 1.6 MM (16 GAUGE) METAL, FABRICATED TO FIT AROUND EXPANSION JOINT WITHOUT RESTRICTING ITS MOVEMENT. FABRICATE SLEEVE SO IT CAN BE REMOVED TO ALLOW FOR THE PACKING AND LUBRICATION OF EXPANSION JOINT WITHOUT DAMAGING THE ADJOINING INSULATION. EXTEND SLEEVES A MINIMUM OF 75 MM (3") LONGER THAN EXPANSION JOINT, FIT WITH INSULATION RETAINING FLANGES & WITH A MEANS OF MAINTAINING THE POSITION OF SLEEVE OVER EXPANSION JOINT.
7. WHERE PIPING IS SPECIFIED TO BE HEAT TRACED, PROVIDE OVERSIZED INSULATION TO ACCOMMODATE TRACING CABLE SPECIFIED IN ELECTRICAL SPECIFICATIONS.
8. ALL BARRIER FREE LAVATORIES ARE TO BE WRAPPED WITH ADA COMPLIANT UNDER SINK PLUMBING SAFETY COVER KIT

22 08 00 COMMISSIONING OF PLUMBING

- 1. TEST PROCEDURES IN ACCORDANCE WITH THE CURRENT APPLICABLE PORTIONS OF ANSI, ASTM, MSS, APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS & OTHER RECOGNISED TEST CODES AS FAR AS FIELD CONDITIONS PERMIT.
2. TEST EQUIPMENT & MATERIAL WHERE REQUIRED BY SPECIFICATION OR AUTHORITY HAVING JURISDICTION TO DEMONSTRATE ITS PROPER & SAFE OPERATION.
3. REQUIRED TESTS SHALL BE MADE IN THE PRESENCE OF EACH AUTHORITY'S HAVING JURISDICTION AUTHORIZED INSPECTOR & CERTIFIED BY THEM.
4. USE FACTORY TRAINED REPRESENTATIVES & SUBMIT MANUFACTURER'S CHECK SHEETS FOR STARTING SPECIALTY EQUIPMENT.
5. PROVIDE EQUIPMENT, MATERIALS & LABOUR FOR TESTS & PAY EXPENSES. USE TEST INSTRUMENTS FROM APPROVED LABORATORY OR MANUFACTURER & FURNISH CERTIFICATE SHOWING DEGREE OF ACCURACY. INSTALL PERMANENT GAUGES & THERMISTERS USED IN TESTS JUST PRIOR TO TESTS TO AVOID POSSIBLE CHANGES IN CALIBRATION.
6. TESTS SHALL BE MADE BEFORE APPLICATION OF PIPE COVERING & BEFORE PIPING IS FURRED IN OR TRENCH BACKFILLED. AFTER COMPLETION OF TESTS, SUBMIT A WRITTEN REPORT TO THE ENGINEER, SUMMARIZING COMPLETE TEST DATA & RESULTS.
7. DRAINAGE SYSTEMS SHALL BE TESTED BY THE FOLLOWING:
- WATER TEST - ALL JOINTS SHALL BE TESTED WITH A WATER COLUMN OF NOT LESS THAN 3 M, EVERY OPENING EXCEPT THE HIGHEST SHALL BE TIGHTLY CLOSED WITH A TESTING PLUG OR A TEST CAP, & THE SYSTEM OR THE SECTION SHALL BE KEPT FILLED WITH WATER FOR 15 MIN.
- AIR TEST - CONDUCTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS FOR THE PIPING MATERIALS, & AIR SHALL BE FORCED TO THE SYSTEM UNTIL A GAUGE PRESSURE OF 35 KPA IS CREATED, & THIS PRESSURE SHALL BE MAINTAINED FOR AT LEAST 15 MIN WITHOUT A DROP IN PRESSURE. FINAL TEST - EVERY TRAP SHALL BE FILLED WITH WATER. THE BOTTOM OF THE SYSTEM BEING TESTED SHALL TERMINATE AT THE BUILDING TRAP. TEST PLUG OR CAP. SMOKE FROM SMOKE-GENERATING MACHINES SHALL BE FORCED INTO THE SYSTEM. WHEN THE SMOKE APPEARS FROM ALL ROOF TERMINALS THEY SHALL BE CLOSED, & A PRESSURE EQUIVALENT TO A 25 MM WATER COLUMN SHALL BE MAINTAINED FOR 15 MIN WITHOUT THE ADDITION OF MORE SMOKE.
- BALL TESTS - A HARD BALL DENSE ENOUGH NOT TO FLOAT SHALL BE ROLLED THROUGH THE PIPE. THE DIAMETER OF THE BALL SHALL BE NOT LESS THAN 50 MM WHERE THE SIZE OF THE PIPE IS 4 IN. OR MORE.

- 8. VENTING SYSTEMS SHALL BE TESTED BY A WATER TEST, AIR TEST & FINAL TEST WITHOUT LEAKAGE.
9. POTABLE WATER SYSTEMS: EVERY POTABLE WATER SYSTEM SHALL BE CAPABLE OF WITHSTANDING WITHOUT LEAKAGE A WATER PRESSURE THAT IS AT LEAST 1 000 KPA FOR AT LEAST 1 HOUR OR WITHSTANDING FOR AT LEAST 2 H WITHOUT A DROP IN PRESSURE AN AIR PRESSURE THAT IS AT LEAST 700 KPA.
10. NATURAL GAS: TEST AS REQUIRED BY CURRENT EDITION OF CAN/CGA 149.1, & AUTHORITY HAVING JURISDICTION
11. SHALL TESTS INDICATE DEFECTIVE WORK OR VARIANCE WITH SPECIFIED REQUIREMENTS, MAKE CHANGES IMMEDIATELY TO CORRECT THE DEFECTS. CORRECT LEAKS BY RE-MAKING JOINTS IN SCREWED FITTINGS, CUTTING OUT & RE-WELDING WELDED JOINTS, RE-MAKING JOINTS IN COPPER LINES. DO NOT CAULK.

- 1. RECORD "AS-BUILT" DRAWINGS: AS-BUILT DRAWINGS SHALL BE CLEARLY MARKED IN RED INCLUDING ALL CHANGES TO THE ORIGINAL TENDER DRAWINGS COVERED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, JOB CONDITIONS, ETC.
2. ALL PLUMBING TEST REPORTS REQUIRED AS DESCRIBED HEREIN.
3. A WRITTEN WARRANTY TO BE PROVIDED FOR A MIN. OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. PROVIDE LABOUR, MATERIAL & SERVICES TO CORRECT ALL FAULTS REPORTED DURING THE GUARANTEE PERIOD.

- 12. DOMESTIC WATER PIPING & FITTINGS IN SUITES ARE TO BE CONSTRUCTED OF PEXAL/PEX COMPOSITE PIPE CONFORMING TO CSA B137.10

22 11 13 FACILITY WATER DISTRIBUTION PIPING

- 1. ALL PIPING, RELATED MATERIALS & INSTALLATION IN ACCORDANCE WITH CURRENT APPLICABLE PORTIONS OF ANSI, ASTM, MSS, APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.
2. UNDERGROUND WATERMANS SHALL BE P.V.C. CERTIFIED TO CAN/CSA B137.3 "RIGID POLYVINYL CHLORIDE PIPE FOR PRESSURE APPLICATIONS" MINIMUM PRESSURE RATING: 1034 KPA (150 PSI) SIZE 100 MM (4") DIA TO 200MM (8") DIA.
3. UNDERGROUND WATERMANS 50 MM (2") DIA. & SMALLER SHALL BE MUNICIPEX OR EQUIVALENT CERTIFIED TO CSA B137.5 "CROSS LINKED POLYETHYLENE (PEX) TUBING FOR PRESSURE APPLICATIONS (CONFIRM ACCEPTANCE OF LOCAL AUTHORITY OR TYPE 'K' SOFT COPPER CERTIFIED TO ASTM B88. "SEAMLESS COPPER WATER TUBE". NOTE: SOLDER JOINTS ARE NOT PERMITTED IN UNDERGROUND WATERMAIN SYSTEMS. SOLDER JOINTS ABOVE GROUND SHALL CONFORM TO ANSI B16-18 OR B16-22. FLARED JOINT FITTINGS SHALL CONFORM TO ANSI B16-26.
4. IF WATER SERVICE & SANITARY DRAIN TO BE IN SAME TRENCH - WATER SERVICE TO BE 500mm ABOVE ELEV. OF SANITARY & OR SHELF - AS PER 2012 OBC 7.3.5.7. CONSULT LOCAL AUTHORITIES AS REQUIRED.
5. EXACT LOCATION OF MUNICIPAL CONNECTIONS, INVERTS TO BE FIELD DETERMINED. * IMPORTANT: CONTRACTOR TO DOCUMENT ON 'AS BUILT' DWG. **
6. PROVIDE A DOMESTIC WATER SUPPLY CURB STOP AT THE PROPERTY LINE LOCATED AS PER LOCAL REQUIREMENTS OR THE SITE PLAN PROVIDED.
7. ANY PROPERTY OR ROAD RESTORATION TO BE AS PER LOCAL AUTHORITIES REQUIREMENTS &/OR AS CONDITIONS ARE DISCOVERED "IN KIND" CONTRACTOR TO INVESTIGATE THE REQUIREMENTS & PROCURE ANY ROAD WORK PERMITS & OTHER PERMITS FROM ANY POSSIBLE LOCAL CONSERVATION AUTHORITY BEFORE PROCEEDING.
8. PROVIDE APPROPRIATE BACKFLOW PREVENTION TO BUILDING SERVICE PER OBC & LOCAL REGULATORY REQUIREMENTS. INCLUDING SERVICE TO INCORPORATE A BACKFLOW PREVENTER INSTALLED IN ACCORDANCE WITH CSA B64. **OWNER TO TEST BACKFLOW VALVE AT REGULAR INTERVALS AS PER THE LOCAL AUTHORITIES REQUIREMENTS**.
9. INSTALL BACKFLOW PREVENTERS AT DOMESTIC WATER CONNECTIONS TO ALL HEATING, COOLING & REFRIGERATION EQUIPMENT & WHERE SPECIFIED IN THE CONTRACT DOCUMENTS.
10. CUT SQUARE, REAM & CLEAN TUBING & TUBE ENDS. CLEAN RECESSES OF FITTINGS & ASSEMBLE WITHOUT BINDING
11. ASSEMBLE ALL PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS.
12. IF BURIED WATERMANS ARE TO BE DUCTILE IRON ENTERING A BUILDING AS REQUIRED BY LOCAL MUNICIPALITY, DUCTILE IRON WATERMANS SHALL CONFORM TO ANSI/AWWA C151/A21-51 & SHALL HAVE A CEMENT-MORTAR LINING IN CONFORMANCE WITH ANSI/AWWA C104/A21-4. CONTACT THE LOCAL AUTHORITY HAVING JURISDICTION.
13. PROVIDE DRAIN COCKS AT ALL LOW POINTS OF WATER SYSTEMS TO ALLOW DRAINAGE OF SYSTEM & WHERE REQUIRED TO PREVENT FREEZING.
14. PROVIDE WATER HAMMER ARRESTORS ON EVERY RISER

22 11 16 DOMESTIC WATER PIPING

- 1. ALL PIPING, RELATED MATERIALS & INSTALLATION IN ACCORDANCE WITH CURRENT APPLICABLE PORTIONS OF ANSI, ASTM, MSS, APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.
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 &/OR 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 LOOKSHIELD OR HANDWIHEEL TYPE AS SPECIFIED. PROVIDE ISOLATING VALVES TO EACH GROUP OF PLUMBING FIXTURES. ADD STOPS TO ALL BATHROOM FIXTURE SUPPLIES
9. PROVIDE AIR COLUMN CHAMBERS AT EACH GROUP OF PLUMBING FIXTURES. THESE SHALL BE 1" MINIMUM PIPE WITH CAP, 18" LONG MOUNTED ON THE TOP OF THE SUPPLY HEADERS OF HOT & COLD WATER. WHERE THE HEADER IS LARGER THAN 1", THE COLUMN SHALL BE ONE SIZE LARGER THAN THE HEADER. ALTERNATIVELY, PROVIDE ANCON "SHOK-GARD" OR APPROVED EQUAL WATER HAMMER ARRESTOR, SIZED FOR THE APPLICATIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
10. ABOVE GROUND WATER PIPING & FITTINGS IN CORRIDORS TO BE PEX AQUARISE - CONFORMING TO B137.6 & ASTM F44. PIPING & FITTINGS TO MEET THE CURRENT REQUIREMENTS OF APPLICABLE BUILDING CODES & SHALL BE CONFIRMED BY THE AUTHORITY HAVING JURISDICTION.
11. DOMESTIC WATER RISER PIPING & FITTINGS TO BE CONSTRUCTED OF IPEX AQUARISE - CONFORMING TO B137.6 & ASTM F44. PIPING & FITTINGS TO MEET THE CURRENT REQUIREMENTS OF APPLICABLE BUILDING CODES & SHALL BE CONFIRMED BY THE AUTHORITY HAVING JURISDICTION.
12. DOMESTIC WATER PIPING & FITTINGS IN SUITES ARE TO BE CONSTRUCTED OF PEXAL/PEX COMPOSITE PIPE CONFORMING TO CSA B137.10
13. WATER PIPING GRADING: GRADE COLD WATER PIPING UP IN DIRECTION OF FLOW 1/50.

Table with 2 columns: Sheet # and Sheet Name. Lists sheets M-3 through E-22 including HVAC specifications, plumbing details, and electrical schedules.



GENERAL DRAWING / DESIGNER NOTES:
(1) ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVISIONS OF ONTARIO'S BUILDING CODE; LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
(2) THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL CONSTRUCTION COSTS 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. EXACT DETAILS OF INSTALLATIONS ARE TO BE PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
(4) CONTRACTOR/AGENT/OWNER TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE DESIGNER. PROCEED WITH CONSTRUCTION ONLY USING THE LATEST REVISED DRAWINGS MARKED "ISSUED FOR CONSTRUCTION".
(5) THIS DRAWING IS SPECIFIC TO THIS PROJECT AND CANNOT BE USED FOR OTHER "SIMILAR" PROJECTS.
(6) THIS DRAWING IS THE PROPERTY OF NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. UNAUTHORIZED RE-PRODUCTION OR USE IS PROHIBITED.
(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 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, 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) RESPONSIBILITY FOR ANY FINAL ASSEMBLYS THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
(11) REQUESTS FOR CHANGES OR SUBSTITUTIONS TO EQUIPMENT, PLANS AND/OR SPECIFICATIONS WILL BE SUBJECT TO ADDITIONAL FEES CHARGED BY THE CONSULTANT.
(12) SITE VISITS TO REVIEW IMPLEMENTED DESIGNS WITHIN THE SCOPE OF THIS PROJECT TO BE ARRANGED WITH THE OWNER.
(13) MINIMUM FORTY EIGHT (48) HOURS PRIOR NOTICE TO BE PROVIDED FOR SITE VISITS, ONCE ARRANGED.
(14) REQUESTS FOR THE RELEASE OF THIS DRAWING SET FROM NORTHSTAR ENGINEERING & TECHNOLOGIES LTD. FOR THE PURPOSE OF TENDERING PURPOSES BY ANY CONTRACTOR TO BE MADE BY THE OWNER OR ARCHITECT IN WRITING.
(15) TENDER PRICING BY CONTRACTORS OF DRAWINGS TO BE BASED ON DWGS MARKED "ISSUED FOR TENDER" OR "ISSUED FOR CONSTRUCTION" ONLY.
(16) ALL REQUESTS FOR DESIGN CHANGES / SUBSTITUTIONS TO BE MADE IN WRITING. ADDITIONAL FEES MAY APPLY. ALLOW MINIMUM (1) ONE WEEK TO REVIEW AND RESPOND TO CHANGE REQUESTS.

Table with 3 columns: No., Description, Date. Lists drawing revisions from Preliminary to Re-Issued for Tender.

DRAWING REVISIONS

Table with 3 columns: No., Description, Date. Lists drawing revisions from Preliminary to Re-Issued for Tender.

Client: WW Inc.
Address: Minden, ON
Project Name: Gull River Affordable Housing
Dwg. Name: Plumbing - Specifications
NSET Project #: 04322
Drawn by: Northstar Eng. Checked by: J.D.L.
Scale: 1:1 Revision #: 6.0
Drawing #: P-3
Project Date: Jan. 14/22 Arch-D (24" x 36")

22 14 00 FACILITY STORM DRAINAGE

- 1. ALL PIPING, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.

STORM PIPING & FITTINGS UNDER GROUND:

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"
CAN/CSA-B182.1, "PLASTIC DRAIN & SEWER PIPE & PIPE FITTINGS"
CAN/CSA-B182.2, "PVC SEWER PIPE & FITTINGS, (PSM TYPE)"
CAN/CSA-B182.4, "PROFILE (RIBBED) PVC SEWER PIPE & FITTINGS"
CAN/CSA-B182.6, "PROFILE POLYETHYLENE SEWER PIPE & FITTINGS"

FERRROUS
CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"

- 2. LAY UNDERGROUND PIPING STRAIGHT & TRUE TO LINE & GRADE WITH UNIFORM INVERT. SPIGOT ENDS ON GROOVE SHALL POINT IN DIRECTION OF FLOW.

- 3. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 75 MM (3") UNLESS NOTED ON PLANS.

- 4. MINIMUM PIPE SLOPE TO BE 2.0%, MAXIMUM 8.0% (SEE OPSD - 1006-010, 1006.020).
• 75mm (3") & LESS - GRADE DOWN 1:50 (1/4" PER FT.)
• 100mm (4") & OVER - GRADE DOWN 1:100 (1/8" PER FT.)

- 5. PROVIDE ALL EXCAVATION & BACKFILL REQUIRED FOR BURIED PIPES

- 6. PRESSURE TEST BURIED SYSTEM BEFORE BACKFILLING.

22 14 16 RAIN WATER LEADERS

- 1. ALL PIPING, RELATED MATERIALS & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.

STORM PIPING & FITTINGS ABOVE GROUND:

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"
FERRROUS
CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"

- 2. CLEANOUTS: LOCATE DRAINAGE CLEANOUT FITTINGS IN DRAINAGE PIPING:
• AS BASE OF EACH RAINWATER LEADER
• AS REQUIRED TO COMPLY WITH APPLICABLE PLUMBING CODE
• VERIFY THAT CLEANOUT RODS CAN PROBE AS FAR AS THE NEXT CLEANOUT, AT LEAST.

- 3. BACK WATER VALVES ARE TO BE PROVIDED WHERE SHOWN.

- 4. PROVIDE VERTICAL EXPANSION JOINTS NEAR TOP OF DRAINAGE PIPE RISERS WHERE TOTAL RISER HEIGHT EXCEEDS 10 METRES FROM GROUND LEVEL.

- 5. PROVIDE HORIZONTAL EXPANSION JOINTS ON SUSPENDED DRAINAGE PIPE WHICH IS WELDED OR CROSSES A BUILDING EXPANSION JOINT

- 6. SUPPORT ALL OVERHEAD PIPES TO APPROVAL.

22 13 00 FACILITY SANITARY SEWERAGE

22 13 16 SANITARY WASTE & VENT PIPING

- 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.

SANITARY PIPING & FITTINGS UNDER GROUND:

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"
CAN/CSA-B182.1, "PLASTIC DRAIN & SEWER PIPE & PIPE FITTINGS"
CAN/CSA-B182.2, "PVC SEWER PIPE & FITTINGS, (PSM TYPE)"
CAN/CSA-B182.4, "PROFILE (RIBBED) PVC SEWER PIPE & FITTINGS"
CAN/CSA-B182.6, "PROFILE POLYETHYLENE SEWER PIPE & FITTINGS"
CAN/CSA-B182.7, "MULTILAYER PVC SEWER PIPE (PSM TYPE)"
MIN. 320 kPa STRENGTH, SDR-35 MINIMUM, CONSULT LOCAL AUTHORITY FOR HEAVIER PIPE REQUIREMENTS.

FERRROUS
CAN/CSA-B70, "CAST IRON SOIL PIPE, FITTINGS"

SANITARY PIPING & FITTINGS ABOVE GROUND:

PLASTIC
ALL SUITE DRAINAGE TO BE CONSTRUCTED USING IPEX SYSTEM 15 CONFORMING TO CAN/CSA-B181.2

FERRROUS
ALL SANITARY RISERS TO BE CONSTRUCTED OF CAST IRON CONFORMING TO CAN/CSA-B181.2/ANSI/AWWA C151/A21.51. FITTINGS SHALL CONFORM TO ASME B16.12

- 2. LAY UNDERGROUND PIPING STRAIGHT & TRUE TO LINE & GRADE WITH UNIFORM INVERT. SPIGOT ENDS ON GROOVE SHALL POINT IN DIRECTION OF FLOW.

- 3. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 75 MM (3") UNLESS NOTED ON PLANS.

- 4. ALL PVC OR ABS TYPE PIPING TO BE USED ABOVE GROUND SHALL BE PROVIDED WITH U.L.C. LISTED & APPROVED FIRE STOP DEVICE AT ALL PENETRATIONS OF ANY FIRE SEPARATION.

- 5. PROVIDE COMPLETE PLUMBING VENT SYSTEM AS REQUIRED BY O.B.C. & LOCAL AUTHORITIES.

- 6. MINIMUM PIPE SLOPE TO BE 2.0%, MAXIMUM 8.0% (SEE OPSD - 1006-010, 1006.020).
• 75mm (3") & LESS - GRADE DOWN 1:50 (1/4" PER FT.)
• 100mm (4") & OVER - GRADE DOWN 1:100 (1/8" PER FT.)

PLUMBING VENTING NOTES
BUILDING TO HAVE MINIMUM, ONE (1) 3" STACK VENT THROUGH THE ROOF. COORDINATE LOCATION WITH OWNER.
MAINTAIN A MINIMUM OF 12 FT. (3.6m) SEPARATION FROM OPERABLE WINDOWS AND FRESH AIR INTAKES AS PER APPLICABLE BUILDING CODES.

PLUMBING P-TRAP NOTES
ALL FLOOR DRAINS, LAVATORIES, SHOWERS TO HAVE P-TRAPS SIZES AS SHOWN, VENTED TO MEET APPLICABLE BUILDING CODES. ALL TRAPS TO BE PRIMED AUTOMATICALLY USING TRAP SEAL PRIMERS. PRIMERS SHALL BE ANCON MS-810 OR EQUIVALENT.

22 13 19 SANITARY DRAINS

- 1. ALL DRAIN FIXTURES & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.

- 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.

- 3. PROVIDE AIR GAP OR USE REDUCED PRESSURED PRINCIPLE BACKFLOW PREVENTION DEVICE FOR TRAP SEAL PRIMING

- 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.

- 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

- 7. INSTALL CLEANOUTS IN SANITARY DRAINAGE PIPING IN THE FOLLOWING LOCATIONS:
• BUILDING DRAINS LEAVING BUILDING ON UPSTREAM SIDE OF EXTERIOR WALL
• 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.
• DRAIN FROM SINK, KITCHEN PIPING OR GREASE WASTE PIPING, AT INTERVALS NOT
• EXCEEDING 6 METERS (20') FOR ALL SIZES OF PIPE.
• ABOVE EACH URINAL
• ADJACENT TO A RUNNING TRAP
• FOR ALL OIL & GREASE INTERCEPTORS AS PER OBC.
• ENDS OF ALL HORIZONTAL DRAINAGE LINES.
• BASE OF SOIL OR WASTE STACKS
• WHERE REQUIRED BY BUILDING & PLUMBING CODES

- 8. EXTEND CLEANOUTS TO FINISHED FLOOR OR WALL UNLESS EXPOSED IN UNFINISHED BASEMENT AREA, PIPE TUNNEL, ACCESSIBLE CRAWL SPACE OR MECHANICAL ROOM.

- 9. IN WET FLOOR AREAS, EXTEND CLEANOUTS TO WALLS OR PROVIDE WITH GASKETED WATERPROOF TOP.

- 10. 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.

- 11. ON OUTSIDE DRAINS, BRING CLEANOUT TO GRADE & ANCHOR IN CONCRETE COLLAR.

- 12. ALL CLEANOUTS IN FINISHED AREAS SHALL BE THE SAME SHAPE (SQUARE OR ROUND), ACCEPTABLE MANUFACTURERS: JAY R. SMITH, MIFAB, ZURN, WATTS. SEE DETAILED SPECIFICATION

- 13. COVER CLEANOUT CONCEALED BEHIND FINISHED WALLS WITH ROUND CHROMED BRONZE OF STAINLESS ANCHORS 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.

22 13 19.33 BACKWATER VALVES

- 1. ALL BACKWATER VALVES & INSTALLATION SHALL CONFORM TO CURRENT CSA B-64, APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.

- 2. PROVIDE AIR GAP OR USE REDUCED PRESSURED PRINCIPLE BACKFLOW PREVENTION DEVICE FOR TRAP SEAL PRIMING.

- 3. BACKFLOW PREVENTERS MUST BE TESTED & APPROVED

22 13 26 SANITARY SEWERAGE PUMPS

- 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.

- 2. INSTALL ALL COMPONENTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

- 3. SUPPLY & INSTALL REQUIRED EQUIPMENT FOR SANITARY SEWAGE PUMP CONTROL PANEL & ALARM

- 4. SUPPLY & INSTALL ALL NECESSARY ACCESSORIES FOR COMPLETE INSTALLATION

- 5. VERIFY EACH FIXTURE WITH MILLWORK PROVIDED BY ANOTHER SECTION, NO EXTRA WILL BE ALLOWED IF REVISIONS IS REQUIRED DUE TO MILLWORK PROVIDED BY ANOTHER SECTION.

- 6. FINAL LOCATION OF ALL NEW PLUMBING FIXTURES SHALL BE COORDINATED ON SITE WITH ALL TRADES. REFER TO ARCHITECTURAL DRAWINGS & DETAILS FOR EXACT LOCATION OF PLUMBING FIXTURES.

- 7. VERIFY MOUNTING HEIGHT OF ALL FIXTURES WITH ARCHITECT BEFORE ROUGH-IN. ADJUST FLUSH VALVES TO PROVIDE ADEQUATE FLOOR WITH MINIMUM WATER.

- 8. PROVIDE FLOOR SUPPORTED CHAIR CARRIER FOR ALL WALL MOUNTED UNITS.

- 9. PROVIDE ALL WIRING TO ELECTRICALLY OPERATED UNITS FROM OUTLETS PROVIDED BY DIVISION 26.

- 10. SUPPLY & INSTALL ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.

- 11. COMPLETE INSTALLATION TO BE PERFORMED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS

- 12. ALL FIXTURES TO BE CAULKED & SEALED.

- 13. TEST ALL PIPING SYSTEMS FOR LEAKS PRIOR TO OPERATION.

- 14. TEST & COMMISSION ALL FIXTURES AS PER LOCAL AUTHORITY.

- 15. SEE SCHEDULES FOR EACH FIXTURE

22 41 13.13 RESIDENTIAL WATER CLOSETS

- 1. WATER CLOSET, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.

22 14 26.13 ROOF DRAINS

- 1. ALL ROOF DRAINS, RELATED MATERIALS, & INSTALLATION MUST CONFORM TO APPLICABLE BUILDING CODE, THE REGIONAL MUNICIPALITY & LOCAL BUILDING & FIRE DEPARTMENT BY-LAWS.

- 2. ROOF DRAINS ARE TO BE FROM THE ACCEPTABLE MANUFACTURERS LISTED BELOW OR A COMPARABLE APPROVED EQUAL:
• ZURN
• WATTS
• J.R. SMITH
• MI FAB

- 3. BARRIER FREE BATHTUBS MUST COMPLY WITH CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.

22 41 23 RESIDENTIAL SHOWERS

- 1. SHOWER, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.

- 2. SHOWER HEAD FLOW RATE MUST COMPLY WITH ASHRAE / IEEF 90.1 AT A MAX OF 5.7LPM

- 3. BARRIER FREE SHOWERS MUST COMPLY WITH CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.

22 41 36 RESIDENTIAL LAUNDRY TRAYS

- 1. LAUNDRY TRAY, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.

22 45 00 EMERGENCY PLUMBING FIXTURES

22 45 16 EYEWASH EQUIPMENT

- 1. COMPLETE INSTALLATION TO BE PERFORMED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS, APPLICABLE BUILDING CODES & CURRENT ANSI Z358.1

- 2. PROVIDE NEW FIXTURES, CSA & ANSI APPROVED, FREE FROM FLAWS & BLEMISHES.

- 3. PROVIDE CSA APPROVED PLUMBING FITTINGS, VISIBLE PARTS OF FIXTURE BRASS & ACCESSORIES SHALL BE HEAVILY CHROME PLATED.

- 4. FIXTURES SHALL BE PRODUCTS OF ONE MANUFACTURER. FITTINGS OF SAME TYPE SHALL BE PRODUCT OF ONE MANUFACTURER.

- 5. PROTECT FIXTURES AGAINST USE & DAMAGE DURING CONSTRUCTION.

- 6. VERIFY EACH FIXTURE WITH MILLWORK PROVIDED BY ANOTHER SECTION, NO EXTRA WILL BE ALLOWED IF REVISIONS IS REQUIRED DUE TO MILLWORK PROVIDED BY ANOTHER SECTION.

- 7. FINAL LOCATION OF ALL EMERGENCY EYEWASH STATIONS MUST BE WITHIN 15m OR 11 SECONDS FROM HAZARD.

- 8. VERIFY MOUNTING HEIGHT OF ALL FIXTURES WITH ARCHITECT BEFORE ROUGH-IN.

- 9. SUPPLY & INSTALL REQUIRED BACKFLOW PREVENTERS ON BOTH DCW & DHW LINES UPSTREAM OF EMERGENCY MIXING VALVE

- 10. SUPPLY & INSTALL ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.

- 11. ALL FIXTURES TO BE CAULKED & SEALED.

- 12. TEST ALL PIPING SYSTEMS FOR LEAKS PRIOR TO OPERATION.

- 13. TEST & COMMISSION ALL FIXTURES AS PER LOCAL AUTHORITY.

- 14. EMERGENCY FIXTURE MUST BE TESTED AND FLUSHED ONCE A WEEK.

- 15. SEE SCHEDULES & DETAILS FOR EACH EMERGENCY FIXTURE

EXCAVATING AND BACKFILLING

UNLESS OTHERWISE INDICATED, ALL NECESSARY EXCAVATING AND BACKFILLING SHALL BE DONE BY THIS CONTRACTOR.

BEFORE COMMENCING WITH WORK, CHECK LOCATIONS OF ALL EXISTING SERVICES. THIS CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES AND SUBSEQUENT EXPENSES RESULTING FROM HIS NEGLIGENCE IN THIS RESPECT.

PROVIDE ANY NECESSARY SHORING AS MAY BE REQUIRED FOR THE SAFETY OF THE TRADE INSTALLING THE WORK.

EXCAVATIONS ARE TO KEPT FREE OF WATER.

EXCESS EXCAVATED MATERIAL SHALL BE PILED ON THE SITE WHERE DIRECTED BY THE FIELD SUPERVISOR FOR REMOVAL BY OTHERS.

FILL INSIDE BUILDING AND UNDER PAVED AREAS WITH PIT RUN GRAVEL OR SAND PROPERLY TAMPED IN 12" LAYERS.

LAY ALL PIPING ON A BED OF SOLID UN-DISTURBED EARTH OR WHERE THIS IS NOT OBTAINABLE, ON CONCRETE PADS, SUPPORTED BY CONCRETE PIERS EXTENDED DOWN TO UN-DISTURBED BEARING.

WHERE ANY EXCAVATING IS NECESSARY IN CLOSE PROXIMITY TO OR BELOW ANY FOOTING LEVEL, BACKFILL WITH 1,500 LB. CONCRETE TO THE LEVEL OF THE TOP OF THE HIGHEST ADJACENT FOOTING.

AT THE COMPLETION OF THE PROJECT FILL-IN AND LEVEL OFF EXTERIOR EXCAVATIONS.

22 41 16 RESIDENTIAL LAVATORIES & SINKS

- 1. LAVATORY / SINK, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.

22 41 19 RESIDENTIAL BATHTUBS

- 1. BATHTUB, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.

- 2. BATHTUB FAUCET FLOW RATE MUST COMPLY WITH ASHRAE / IEEF 90.1 AT A MAX OF 5.7LPM

- 3. BARRIER FREE BATHTUBS MUST COMPLY WITH CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.

22 41 23 RESIDENTIAL SHOWERS

- 1. SHOWER, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.

- 2. SHOWER HEAD FLOW RATE MUST COMPLY WITH ASHRAE / IEEF 90.1 AT A MAX OF 5.7LPM

- 3. BARRIER FREE SHOWERS MUST COMPLY WITH CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING LAWS.

22 41 36 RESIDENTIAL LAUNDRY TRAYS

- 1. LAUNDRY TRAY, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.

22 45 00 EMERGENCY PLUMBING FIXTURES

22 45 16 EYEWASH EQUIPMENT

- 1. COMPLETE INSTALLATION TO BE PERFORMED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS, APPLICABLE BUILDING CODES & CURRENT ANSI Z358.1

- 2. PROVIDE NEW FIXTURES, CSA & ANSI APPROVED, FREE FROM FLAWS & BLEMISHES.

- 3. PROVIDE CSA APPROVED PLUMBING FITTINGS, VISIBLE PARTS OF FIXTURE BRASS & ACCESSORIES SHALL BE HEAVILY CHROME PLATED.

- 4. FIXTURES SHALL BE PRODUCTS OF ONE MANUFACTURER. FITTINGS OF SAME TYPE SHALL BE PRODUCT OF ONE MANUFACTURER.

- 5. PROTECT FIXTURES AGAINST USE & DAMAGE DURING CONSTRUCTION.

- 6. VERIFY EACH FIXTURE WITH MILLWORK PROVIDED BY ANOTHER SECTION, NO EXTRA WILL BE ALLOWED IF REVISIONS IS REQUIRED DUE TO MILLWORK PROVIDED BY ANOTHER SECTION.

- 7. FINAL LOCATION OF ALL EMERGENCY EYEWASH STATIONS MUST BE WITHIN 15m OR 11 SECONDS FROM HAZARD.

- 8. VERIFY MOUNTING HEIGHT OF ALL FIXTURES WITH ARCHITECT BEFORE ROUGH-IN.

- 9. SUPPLY & INSTALL REQUIRED BACKFLOW PREVENTERS ON BOTH DCW & DHW LINES UPSTREAM OF EMERGENCY MIXING VALVE

- 10. SUPPLY & INSTALL ALL REQUIRED ACCESSORIES FOR A COMPLETE INSTALLATION.

- 11. ALL FIXTURES TO BE CAULKED & SEALED.

- 12. TEST ALL PIPING SYSTEMS FOR LEAKS PRIOR TO OPERATION.

- 13. TEST & COMMISSION ALL FIXTURES AS PER LOCAL AUTHORITY.

- 14. EMERGENCY FIXTURE MUST BE TESTED AND FLUSHED ONCE A WEEK.

- 15. SEE SCHEDULES & DETAILS FOR EACH EMERGENCY FIXTURE

EXCAVATING AND BACKFILLING

UNLESS OTHERWISE INDICATED, ALL NECESSARY EXCAVATING AND BACKFILLING SHALL BE DONE BY THIS CONTRACTOR.

BEFORE COMMENCING WITH WORK, CHECK LOCATIONS OF ALL EXISTING SERVICES. THIS CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES AND SUBSEQUENT EXPENSES RESULTING FROM HIS NEGLIGENCE IN THIS RESPECT.

PROVIDE ANY NECESSARY SHORING AS MAY BE REQUIRED FOR THE SAFETY OF THE TRADE INSTALLING THE WORK.

EXCAVATIONS ARE TO KEPT FREE OF WATER.

EXCESS EXCAVATED MATERIAL SHALL BE PILED ON THE SITE WHERE DIRECTED BY THE FIELD SUPERVISOR FOR REMOVAL BY OTHERS.

FILL INSIDE BUILDING AND UNDER PAVED AREAS WITH PIT RUN GRAVEL OR SAND PROPERLY TAMPED IN 12" LAYERS.

LAY ALL PIPING ON A BED OF SOLID UN-DISTURBED EARTH OR WHERE THIS IS NOT OBTAINABLE, ON CONCRETE PADS, SUPPORTED BY CONCRETE PIERS EXTENDED DOWN TO UN-DISTURBED BEARING.

WHERE ANY EXCAVATING IS NECESSARY IN CLOSE PROXIMITY TO OR BELOW ANY FOOTING LEVEL, BACKFILL WITH 1,500 LB. CONCRETE TO THE LEVEL OF THE TOP OF THE HIGHEST ADJACENT FOOTING.

AT THE COMPLETION OF THE PROJECT FILL-IN AND LEVEL OFF EXTERIOR EXCAVATIONS.

22 41 16 RESIDENTIAL LAVATORIES & SINKS

- 1. LAVATORY / SINK, RELATED MATERIALS & INSTALLATION MUST CONFORM TO CURRENT APPLICABLE BUILDING CODE, REGIONAL MUNICIPALITY & LOCAL BUILDING BY-LAWS.

PLUMBING SCOPE OF WORK:

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

TENDER PHASE

- 1. DWGS ARE GENERAL LAYOUT - CONTRACTOR TO PROVIDE A COMPLETE WORKING SYSTEM.

- 2. ALL CHANGES RELATED TO MISSING OR UNCLEAR DESIGN DETAILS TO BE COMMUNICATED IMMEDIATELY TO THE ENGINEER VIA THE GENERAL CONTRACTOR USING THE RFI PROCESS. (NORTHSTAR GENERALLY WILL NOT PROVIDE VERBAL DIRECTIVES ON THIS PROJECT)

- 3. VISIT THE SITE TO REVIEW THE EX. CONDITIONS

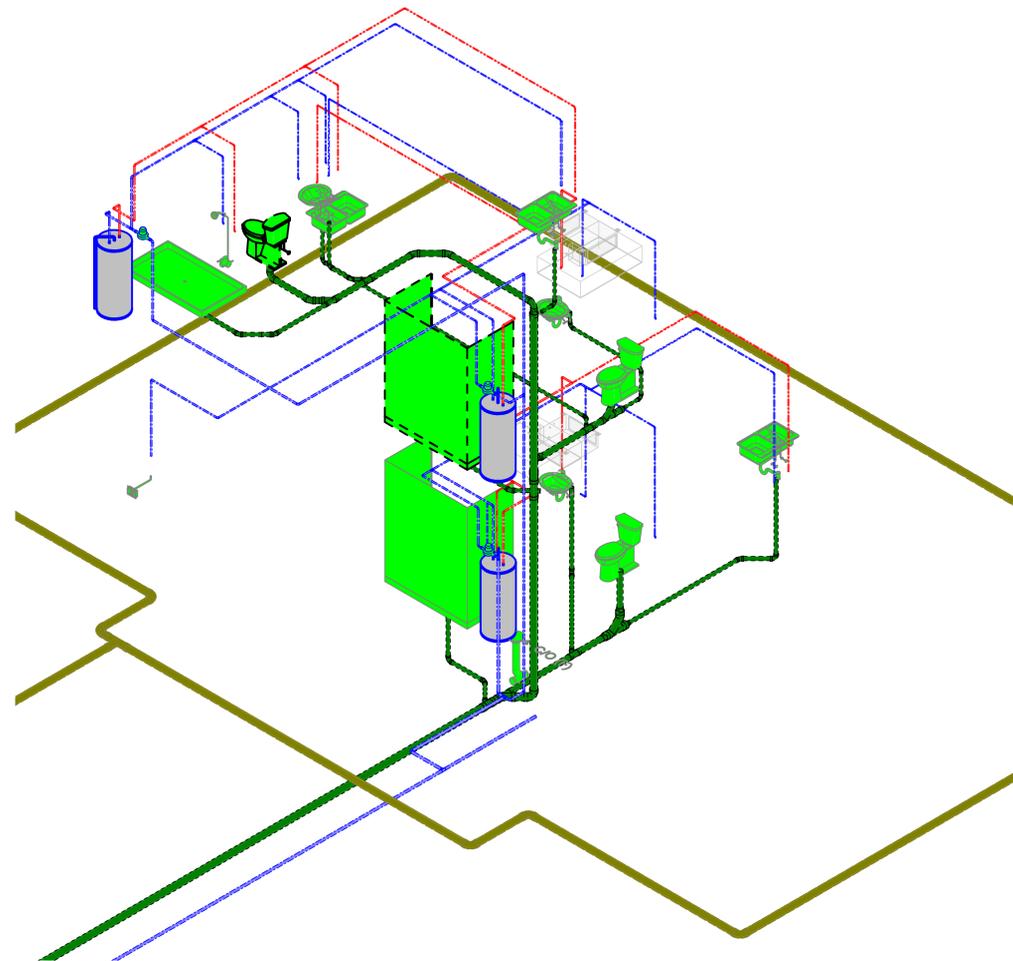
- 4. PROVIDE ALL QUESTIONS TO THE GENERAL CONTRACTOR IN WRITING. THE PROPERTY LINES, TWO GRIDLINES AND ONE BENCHMARK WILL BE PROVIDED BY THE OWNER AT NO COST. ALL OTHER LAZYMARK WILL BE THE RESPONSIBILITY OF THIS TRADE. IF DIMENSIONS ARE NOT EVIDENT, REQUEST FURTHER INFORMATION BY SUBMITTING A CLEAR, REFERENCED RFI.

- 5. 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 RESPOND TELEPHONE CALLS TO CLARIFY SCOPE, REASONABLE BEYOND THE COST OF 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.

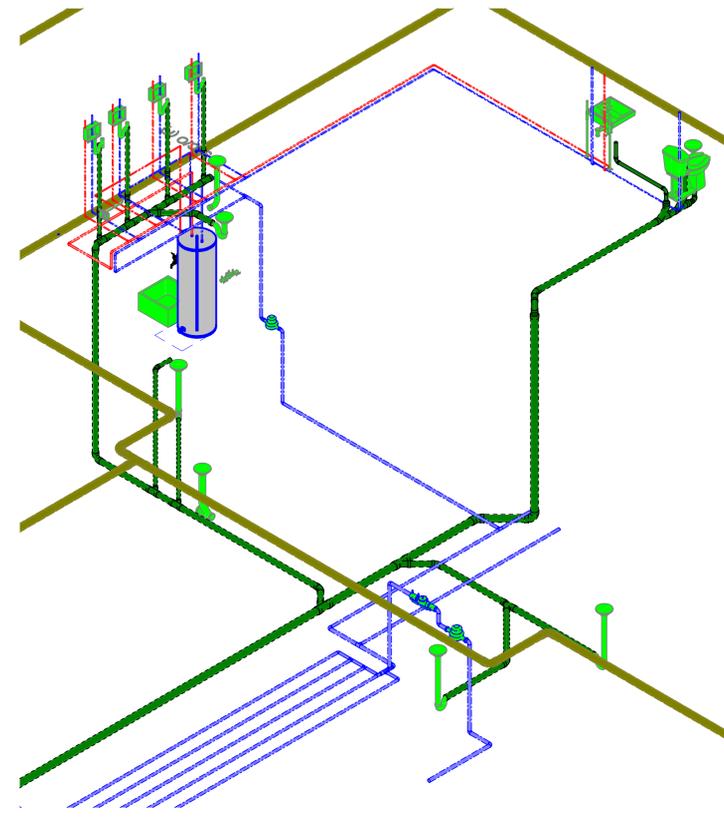
- 6. THE DESIGN DRAWINGS PROVIDED BY NORTHSTAR ARE GENERAL LAYOUTS ONLY. THE CONTRACTOR SHALL PROVIDE A COMPLETE, WORKING INSTALLATION BASED ON THE GENERAL LAYOUTS PROVIDED BY NORTHSTAR. SHOULD COORDINATION OF THE ACTUAL INSTALLATION REQUIRE ADDITIONAL CONDUIT, MATERIAL, FITTINGS THAN SHOWN, THE CONTRACTOR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

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

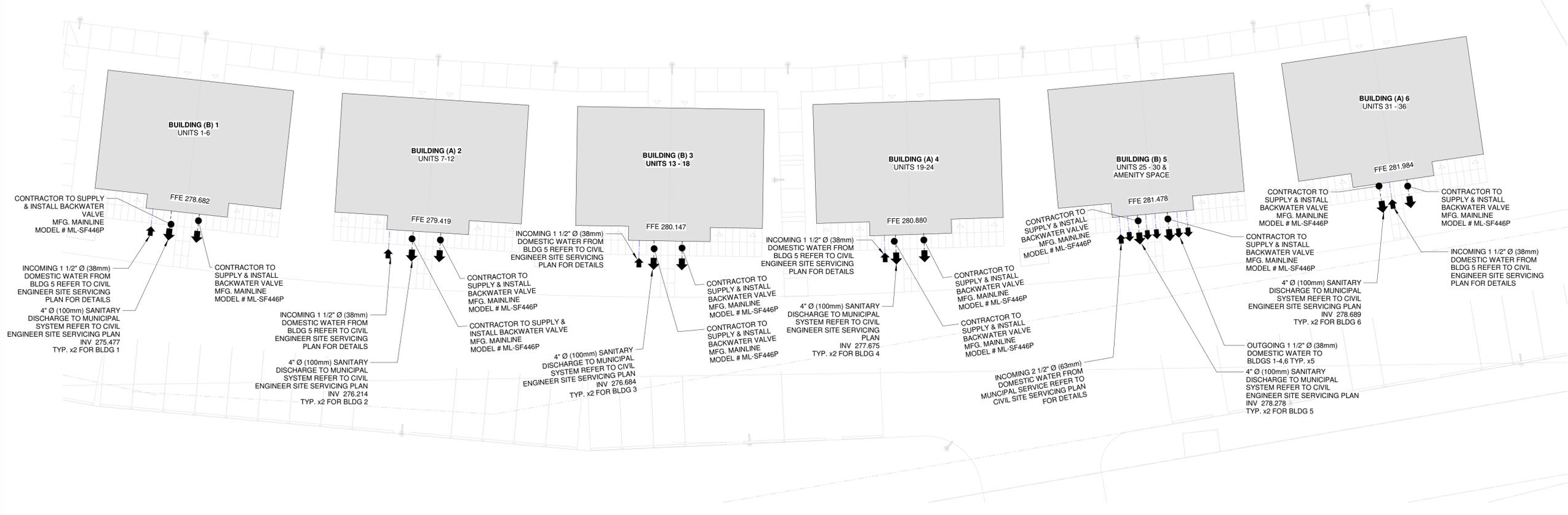
- 8. CONTRACTOR TO PROVIDE THE PRICE FOR THE WORK WITH REASONABLE DETAIL. CONSIDERATION OF ALL OF THE CONSTRUCTION DOCUMENTS PROVIDED BY ALL CONSULTANTS ON THIS PROJECT. THIS INCLUDES CIVIL, SITE SERVICING, PLANNING, ARCHITECTURAL, STRUCTURAL, MECHANICAL & ALL ASSOCIATED CONTROLS CONTRACTORS



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



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



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

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

NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

92 Caplan Ave. Suite #517
Barrie, Ontario L4N 5J2
Tel. (705) 719-1003 Fax (705) 719-0490
dong@nset.ca www.nset.ca

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 - DRAWINGS ONLY SHOW GENERAL INTENT AND SCOPE OF WORK. EXACT DETAILS OF INSTALLATIONS ARE TO BE PROVIDED BY CONTRACTOR(S). DO NOT SCALE DRAWINGS.
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 - SHOP DRAWINGS: BASED ON CONTRACT WITH OWNER, THE ENGINEER WILL REVIEW SHOP SUBMISSION DWGS FROM THE CONTRACTOR TO REVIEW THE ITEMS FOR GENERAL CONFORMANCE 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, 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 ASSEMBLYS THAT VIOLATE APPLICABLE BUILDING CODES IS NOT ACCEPTED BY THE DESIGNER.
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 - 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 REQUESTS.

DRAWING REVISIONS

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

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **Plumbing - Site Plan**

NSET Project #: **04322**

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

Scale: As indicated Revision #: 6.0

Drawing #: **P-5**

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

PLUMBING LEGEND	
	CLEANOUT / STACK
	CLEANOUT / RIN
	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
	SANITARY SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK
	FIXTURE TAG XXX DENOTES TYPE MARK
	STACK XXX DENOTES: • SAN - SANITARY • VENT - VENT TO ROOF • RWL - RAIN WATER LEADER • DCW - DOMESTIC COLD WATER • DHW - DOMESTIC HOT WATER • RECIRCULATION • NGAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / DCW
	DOMESTIC HOT WATER / DHW
	DOMESTIC HOT WATER RECIRCULATING / DHWR
	VENT
	SANITARY DRAINAGE / UNDERGROUND
	SANITARY DRAINAGE / ABOVE GROUND
	STORM DRAINAGE / UNDERGROUND
	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	

(04322) 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	Yes	1	4"Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.						
FFE Lower Level	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites	
FFE Lower Level	SNK-1	Yes	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites	
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	'COLONY' #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites	
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	'CADET PRO' "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites	
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites	
6												
FFE Ground Floor	HB-1		1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22		Typ. Suites	
FFE Ground Floor	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites	
FFE Ground Floor	SNK-1	Yes	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites	
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	'COLONY' #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites	
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	'CADET PRO' "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites	
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites	
6												
2 - Floor	SH-2	No	1	SHOWER / c/w HEAD & CONTROLS	LONGEVITY	ALPINE 2260	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites	
2 - Floor	SNK-1	Yes	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites	
2 - Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	'COLONY' #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites	
2 - Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	'CADET PRO' "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites	
2 - Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites	
6												
Grand total				17								

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

(04322) PROJECT DRAWING REGISTER

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

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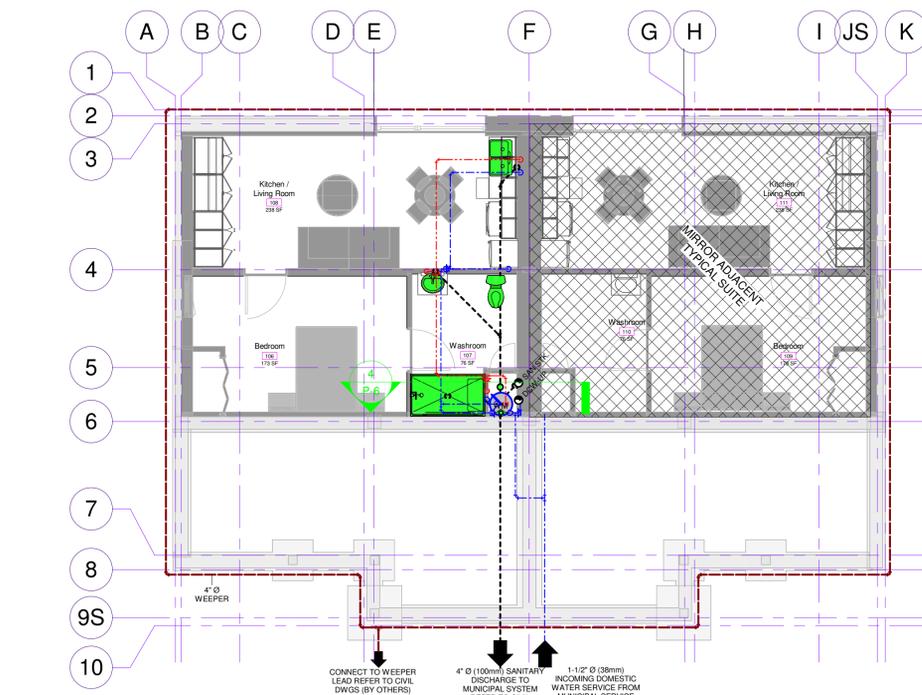
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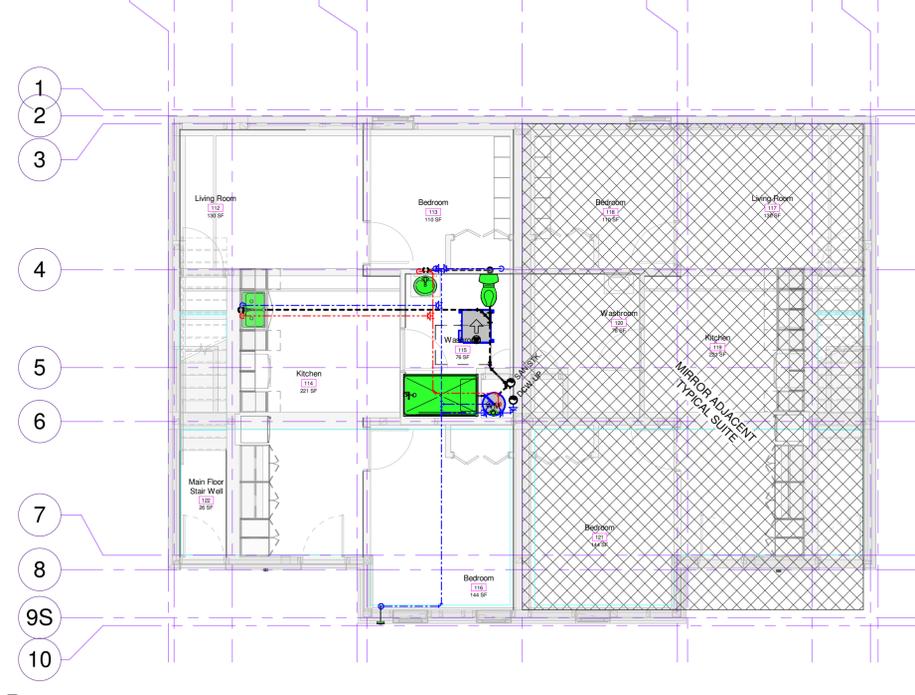
3 (04322) Building 1 - Level 2 - Plumbing Plan - New
1 : 75

4 (04322) Basement Access Hatch Section View - Building 1
1 : 25

4 (04322) Basement Access Hatch Section View - Building 1
1 : 25



1 (04322) Building 1 - Basement - Plumbing Plan - New
1 : 75



2 (04322) Building 1 - Level 1 - Plumbing Plan - New
1 : 75

DRAWING REVISIONS

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

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **Plumbing - Bldg. 1**

NSET Project #: **04322**

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

Scale: As indicated Revision #: 6.0

Drawing #: **P-6**

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

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
	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 • DOW - DOMESTIC COLD WATER • DHWR - DOMESTIC HOT WATER • RECIRCULATION • N.GAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / DCW
	DOMESTIC HOT WATER / DHW
	DOMESTIC HOT WATER RECIRCULATING / DHWR
	VENT
	SANITARY DRAINAGE / UNDERGROUND
	SANITARY DRAINAGE / ABOVE GROUND
	STORM DRAINAGE / UNDERGROUND
	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	

(04322) Plumbing Fixture Schedule - (New) Typical Suite											
Level	Type Mark	Barrier-Free (Blank = N/A)	Oty.	Description	Manufacturer	Model	Accessory 1	Accessory 2	Supplied By	Comments (Controls)	Group ID / NSET
FFE Lower Level	CO-4F		1	4"Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.					
FFE Lower Level	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
FFE Lower Level	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites
6											
FFE Ground Floor	HB-1		1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS / 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22		Typ. Suites
FFE Ground Floor	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
FFE Ground Floor	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites
6											
2 - Floor	SH-2	No	1	SHOWER / c/w HEAD & CONTROLS	LONGEVITY	ALPINE 2260	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
2 - Floor	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites
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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	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 #QCLA2031R8

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

NORTHSTAR
ENGINEERING & TECHNOLOGIES LTD.

92 Caplan Ave. Suite #517
Barris, Ontario L4N 5J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

GENERAL DRAWING / DESIGNER NOTES:

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- THE CONSULTANT RESERVES THE RIGHT TO MAKE REASONABLE CHANGES IN ORDER TO ACCOMMODATE CONDITIONS ARISING DURING CONSTRUCTION FOR ADDITIONAL FEES. ADDITIONAL 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. 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.
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- THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNER'S WORK IN ASSOCIATION WITH THIS PROJECT.
- RESPONSIBILITY 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.
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- 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 REQUESTS.

DRAWING REVISIONS

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

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **Plumbing - Bldg. 2**

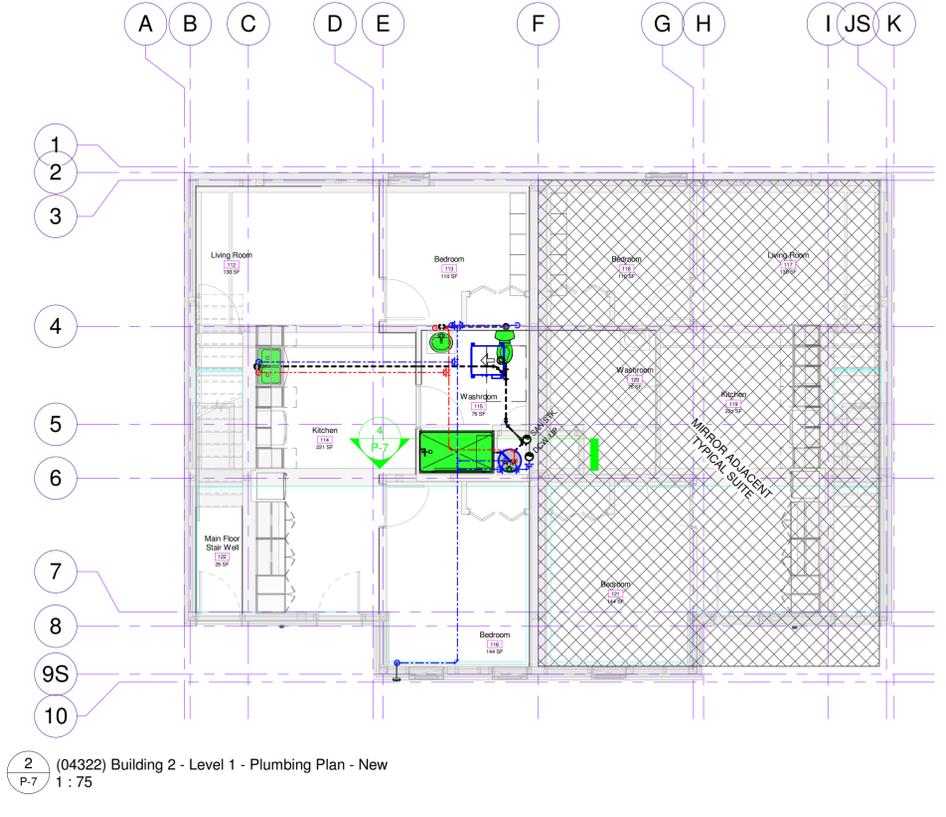
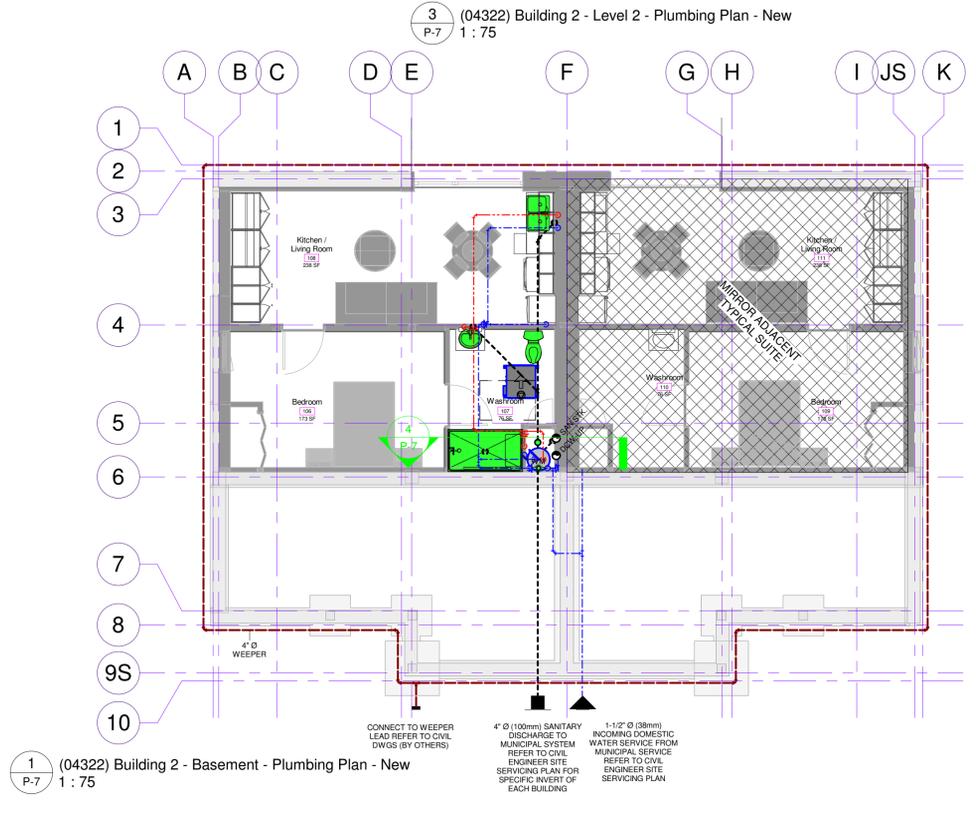
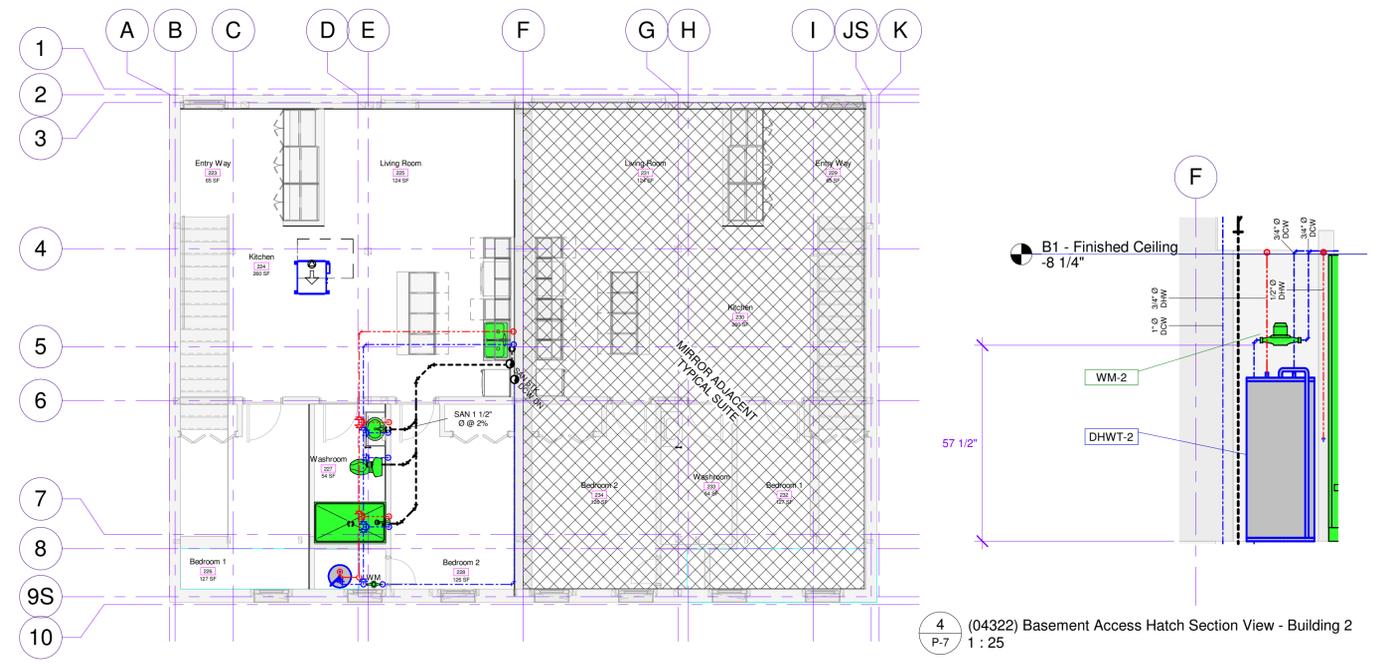
NSET Project #: **04322**

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

Scale: As indicated Revision #: 6.0

Drawing #: **P-7**

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



1 (04322) Building 2 - Basement - Plumbing Plan - New
1 : 75

CONNECT TO WEEPER LEAD REFER TO CIVIL DWGS (BY OTHERS)

4" Ø (100mm) SANITARY DISCHARGE TO MUNICIPAL SYSTEM REFER TO CIVIL ENGINEER SITE SERVING PLAN FOR SPECIFIC INVERT OF EACH BUILDING

1-1/2" Ø (38mm) INCOMING DOMESTIC WATER SERVICE FROM MUNICIPAL SERVICE REFER TO CIVIL ENGINEER SITE SERVING PLAN

2 (04322) Building 2 - Level 1 - Plumbing Plan - New
1 : 75

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 / PPZ
	DOUBLE CHECK VALVE ASSEMBLY / DCVA
	CAP / FITTING
	UNION
	CIRCULATING PUMP
	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 • VENT - VENTS TO ROOF • RWL - RAIN WATER LEADER • C/W - DOMESTIC COLD WATER • D/W - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER RECIRCULATION • N.GAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / C/W
	DOMESTIC HOT WATER / D/W
	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) 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	Yes	1	4"Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.					
FFE Lower Level	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
FFE Lower Level	SNK-1	Yes	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites
6											
FFE Ground Floor	HB-1	Yes	1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22		Typ. Suites
FFE Ground Floor	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
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FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites
6											
2 - Floor	SH-2	No	1	SHOWER / c/w HEAD & CONTROLS	LONGEVITY	ALPINE 2260	HEAD: MOEN 52236GBM15 c/w CONTROL-MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
2 - Floor	SNK-1	Yes	1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites
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6											
NOTE: THIS SCHEDULE DEPICTS THE FIXTURES FOR ONE TYPICAL SUITE ON EACH LEVEL/TYPE READOUT											
SK-1 MODEL # FOR MIRRORED SUITES IS #QCLA2031R/8											
Grand total 17											

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

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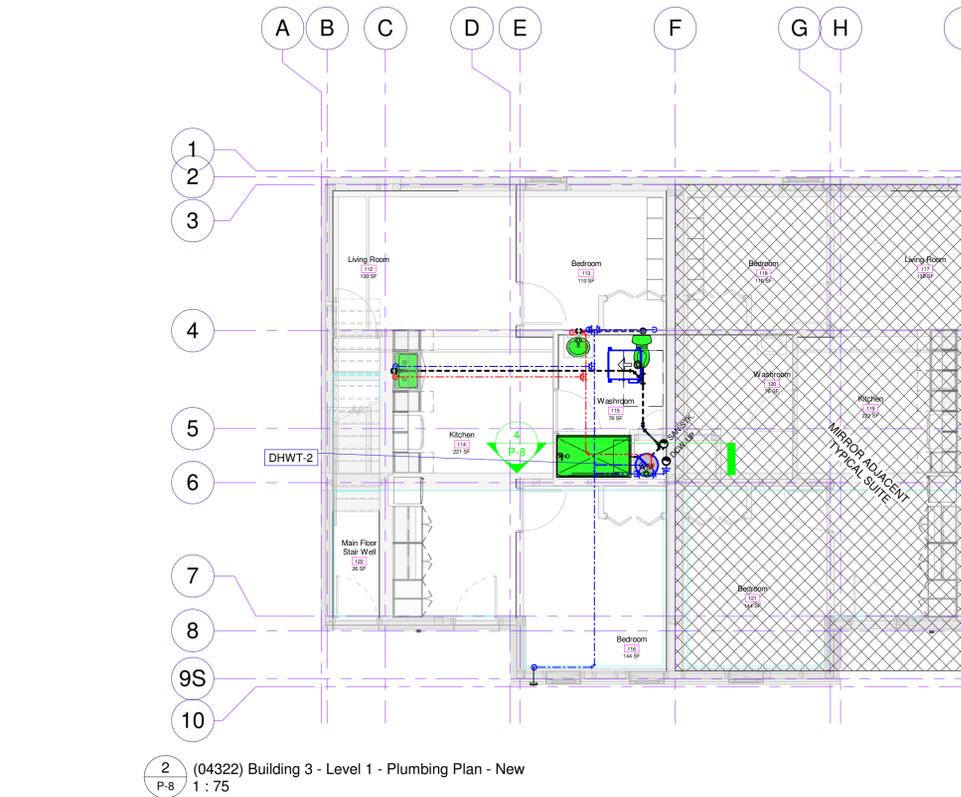
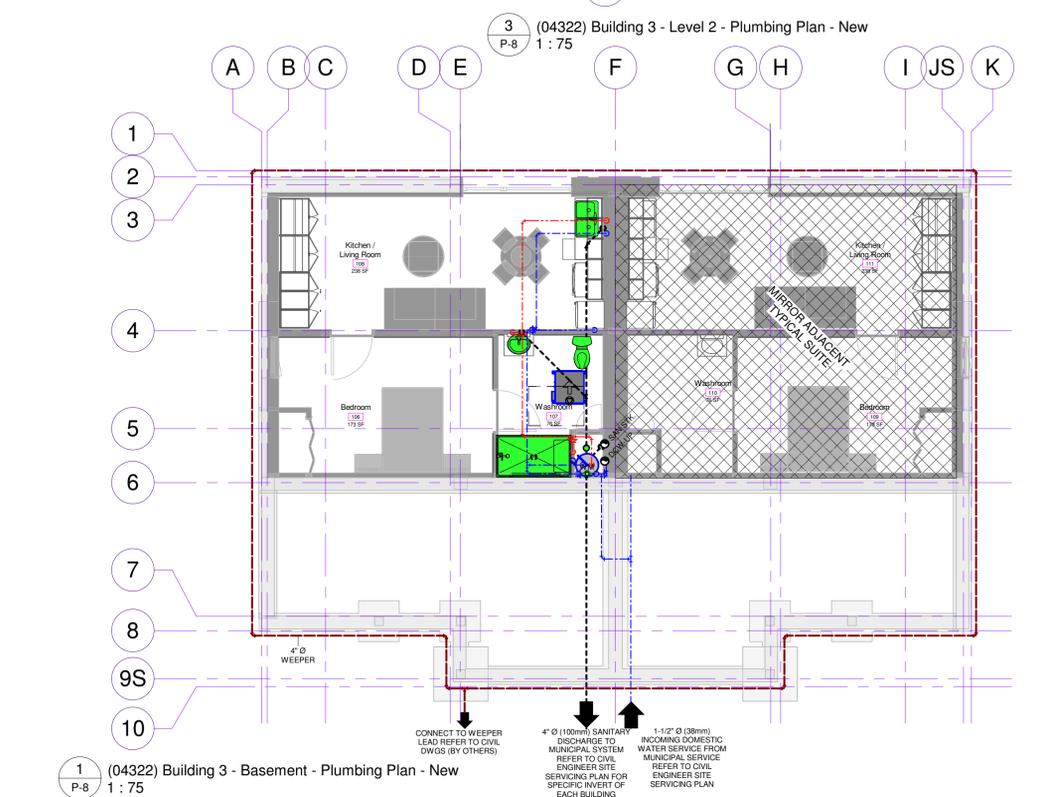
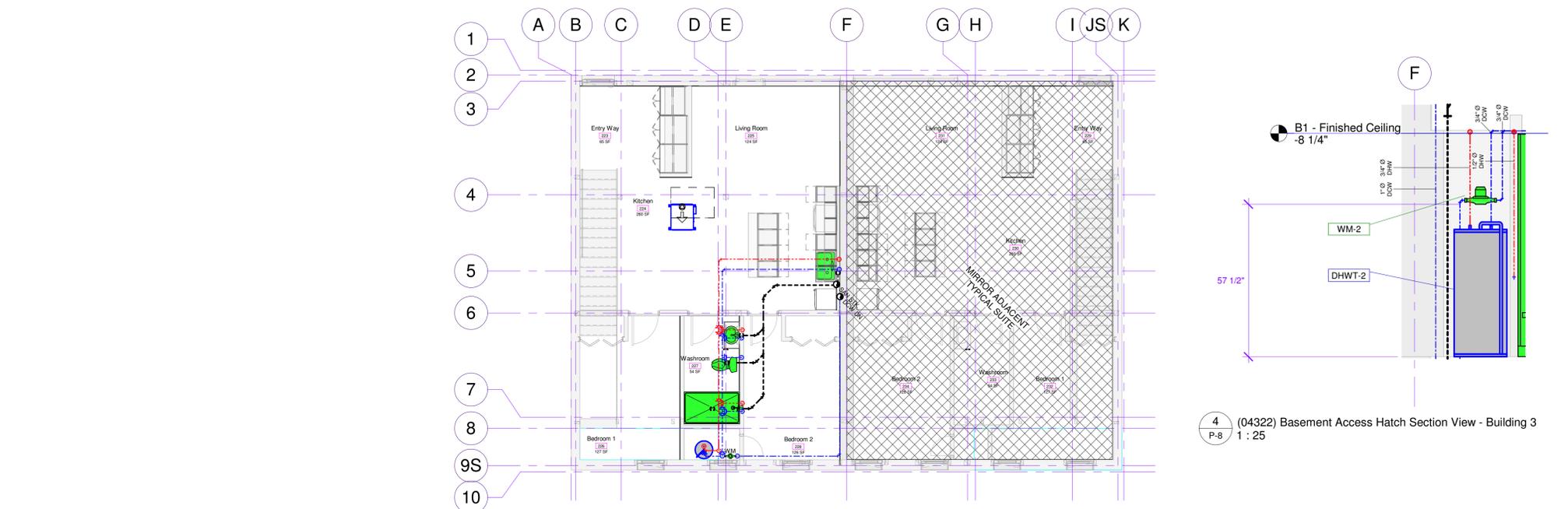
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DRAWING REVISIONS		
No.	Description	Date
1	Preliminary	May 19/22
3	Preliminary for Review	Sep. 09/22
4	Issued for Permit	Oct. 05/22
5	Issued for Tender	May 18/23
6	Re-Issued for Tender	Dec. 20/24

Engineer's Seal:

Client: **WW Inc.**
 Address: **Minden, ON**
 Project Name: **Gull River Affordable Housing**
 Dwg. Name: **Plumbing - Bldg. 3**
 NSET Project #: **04322**
 Drawn by: Northstar Eng. Checked by: J.D.L.
 Scale: As indicated Revision #: 6.0
 Drawing #: **P-8**
 Project Date: Jan. 14/22 Arch-D (24" x 36")



1 (04322) Building 3 - Basement - Plumbing Plan - New 1 : 75
 2 (04322) Building 3 - Level 1 - Plumbing Plan - New 1 : 75

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 / PPZ
	DOUBLE CHECK VALVE ASSEMBLY / DCVA
	CAP / FITTING
	UNION
	CIRCULATING PUMP
	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 • DCW - DOMESTIC COLD WATER • DHW - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER RECIRCULATION • N.GAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / DCW
	DOMESTIC HOT WATER / DHW
	DOMESTIC HOT WATER RECIRCULATING / DHWR
	VENT
	SANITARY DRAINAGE / UNDERGROUND
	SANITARY DRAINAGE / ABOVE GROUND
	STORM DRAINAGE / UNDERGROUND
	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	

(04322) 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	4"Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.					
FFE Lower Level	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
FFE Lower Level	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites
6											
FFE Ground Floor	HB-1		1	HYDRANT / NON-FREEZE / 12" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22		Typ. Suites
FFE Ground Floor	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
FFE Ground Floor	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites
6											
2 - Floor	SH-2	No	1	SHOWER / c/w HEAD & CONTROLS	LONGEVITY	ALPINE 2260	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites
2 - Floor	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites
2 - Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	"COLONY" #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites
2 - Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	"CADET PRO" "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites
NOTE: THIS SCHEDULE DEPICTS THE FIXTURES FOR ONE TYPICAL SUITE ON EACH LEVEL/OTE READOUT SK-1 MODEL # FOR MIRRORRED SUITES IS #QCLA2031R/8											
Grand total 17											

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

NORTHSTAR
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Barris, Ontario L4N 5J2
Tel. (705) 719-1003 Fax (705) 719-0490
dlong@nset.ca www.nset.ca

GENERAL DRAWING / DESIGNER NOTES:

- ALL CONSTRUCTION METHODS AND MATERIALS TO CONFORM TO THE LATEST EDITION OF THE PROVINCE OF ONTARIO'S BUILDING CODE; LOCAL REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
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- ALLOW THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR OTHER DESIGNERS WORK IN ASSOCIATION WITH THIS PROJECT.
- RESPONSIBILITY FOR ANY FINAL ASSEMBLYS 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 REQUESTS.

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

Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **Plumbing - Bldg. 4**

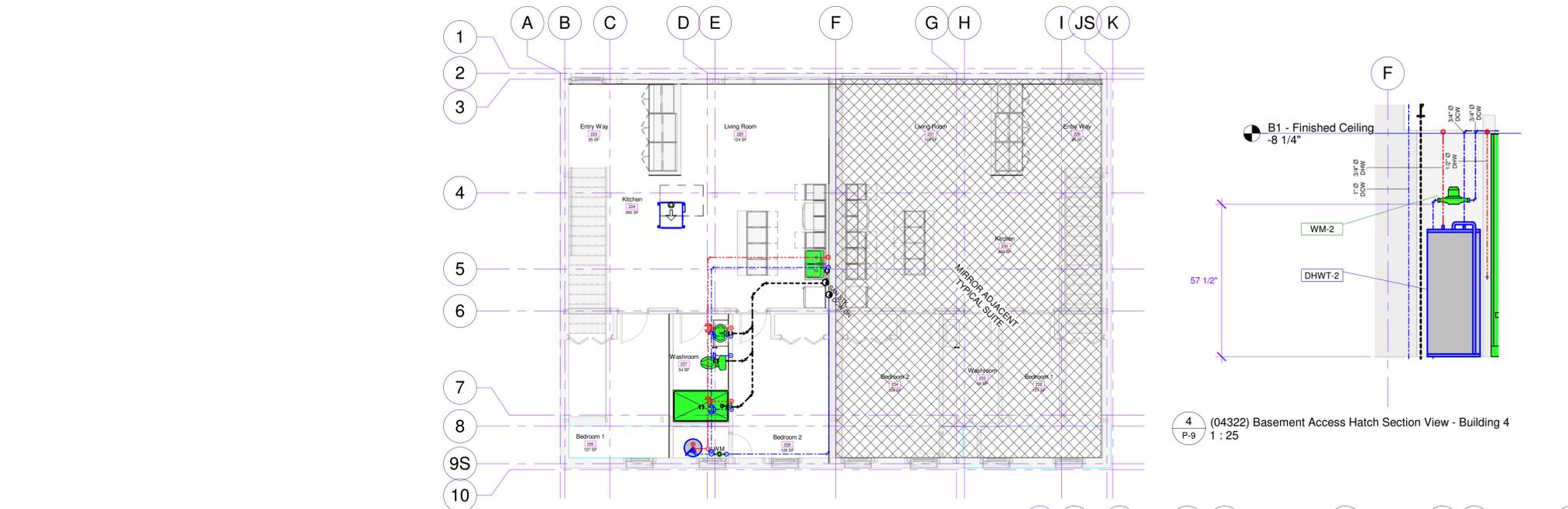
NSET Project #: **04322**

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

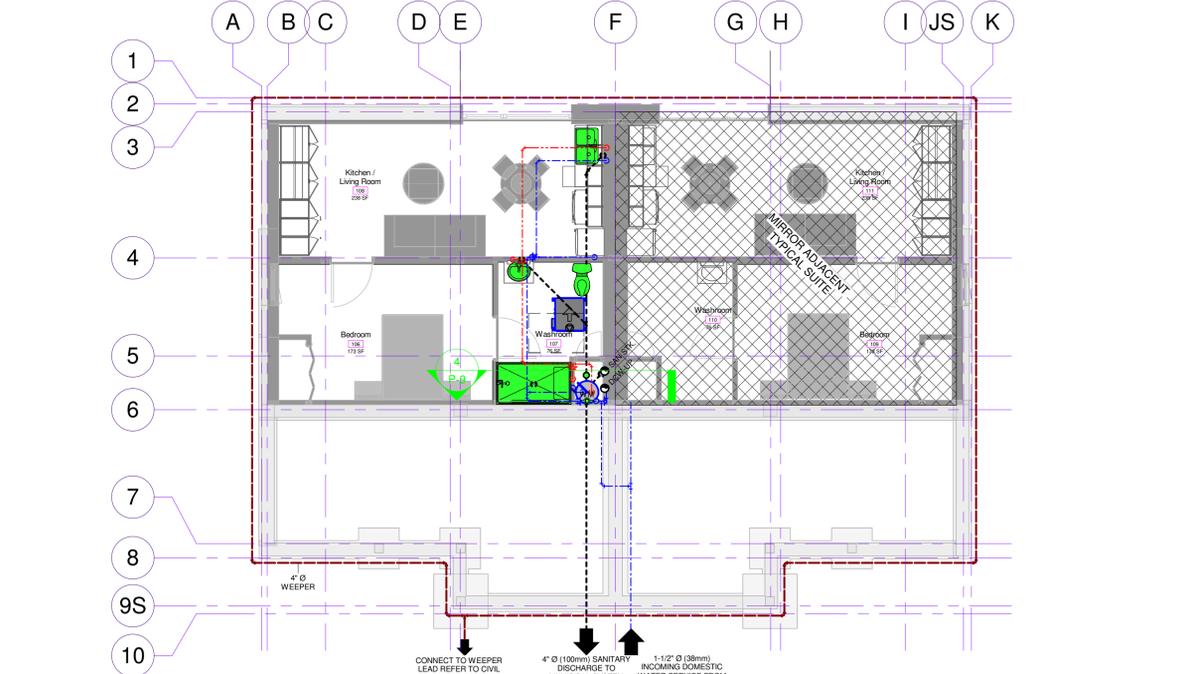
Scale: As indicated Revision #: 6.0

Drawing #: **P-9**

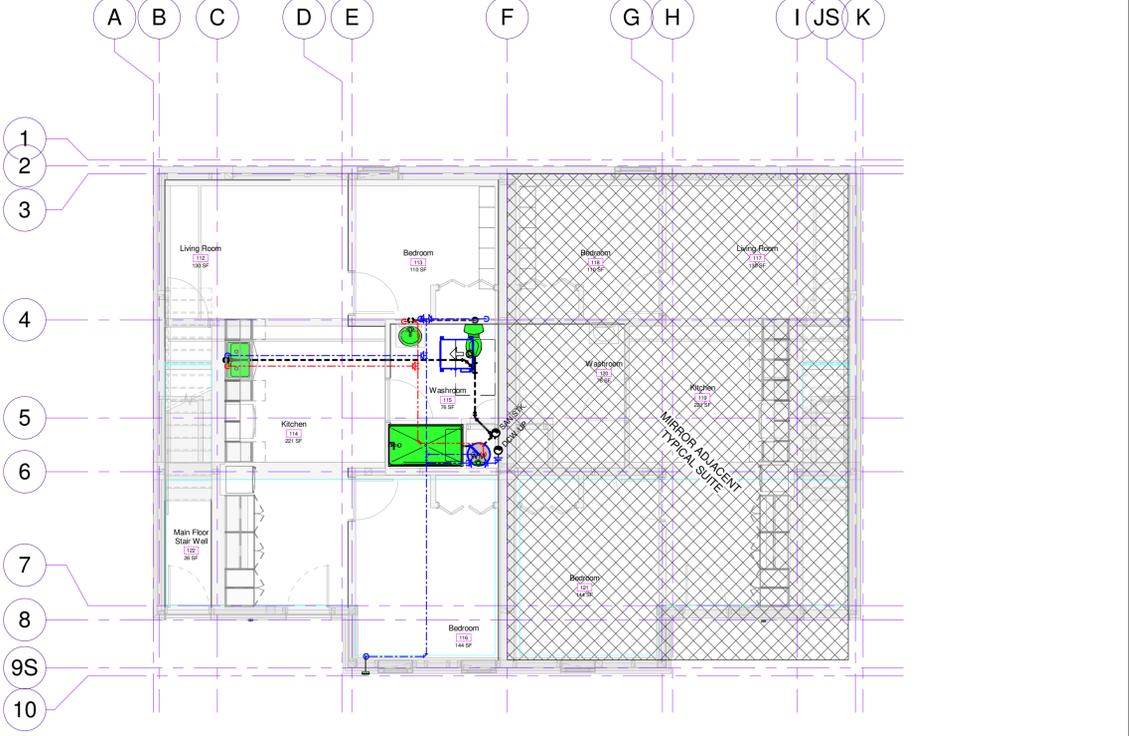
Project Date: Jan. 14/22 Arch-D (24" x 36")



3 (04322) Building 4 - Level 2 - Plumbing Plan - New
1 : 75

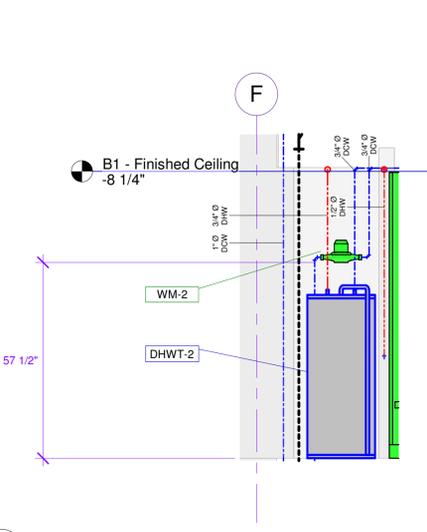


1 (04322) Building 4 - Basement - Plumbing Plan - New
1 : 75



2 (04322) Building 4 - Level 1 - Plumbing Plan - New
1 : 75

4 (04322) Basement Access Hatch Section View - Building 4
1 : 25



PLUMBING LEGEND	
	CLEANOUT / STACK
	CLEANOUT / RIN
	CLEANOUT / FITTING
	FLOOR DRAIN / 3" / FINISHED c/w TRAP & 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
	SANITARY SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK
	FIXTURE TAG XXX DENOTES TYPE MARK
	STACK XXX DENOTES: SAN - SANITARY VENT - VENT TO ROOF RWL - RAIN WATER LEADER DCW - DOMESTIC COLD WATER DHW - DOMESTIC HOT WATER DHW/R - DOMESTIC HOT WATER RECIRCULATION NGAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / DCW
	DOMESTIC HOT WATER / DHW
	DOMESTIC HOT WATER RECIRCULATING / DHWR
	VENT
	SANITARY DRAINAGE / UNDERGROUND
	SANITARY DRAINAGE / ABOVE GROUND
	STORM DRAINAGE / UNDERGROUND
	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	

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

Level	Type Mark	Barrier-Free (Blank = N/A)	Qty.	Description	Manufacturer	Model	Accessory 1	Accessory 2	Supplied By	Comments (Controls)	Group ID, NSET
FFE Lower Level	BF-1		1	BACKFLOW PREVENTER / "DCVA" TYPE / 2" CONN. / HORIZ. MNT.	WATTS	007-M1-QT			Div. 22		Service
FFE Lower Level	BF-2		1	BACKFLOW PREVENTER / "DCVA" TYPE / 1" CONN. / HORIZ. MNT.	WATTS	007-M1-QT			Div. 22		Service
FFE Lower Level	CO-4F		1	4" Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.			Div. 22		Service
FFE Lower Level	FD-3F		2	FLOOR DRAIN / 3" / FINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.	SEE PROJECT SPEC.			Div. 22		Service
FFE Lower Level	FD-3U		1	FLOOR DRAIN / 3" / UNFINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.	SEE PROJECT SPEC.			Div. 22		Service
FFE Lower Level	MS-1		1	SINK / JANITOR / FLOOR MNT. / PRECAST TERRAZZO / 24"x24"x12" / 3" DRAIN	FIAT	#MSB-2424	FAUCET: FIAT PRODUCTS #830-AA		Div. 22		Service
FFE Lower Level	WM-1	Yes	1	WATER METER	BY AHJ	BY AHJ			BY AHJ		Service
FFE Lower Level	WM-3	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		Div. 22		Service
9											
FFE Ground Floor	CO-3F		1	3" Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.			Div. 22		Service
FFE Ground Floor	FD-2F		1	FLOOR DRAIN / 3" / FINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.	SEE PROJECT SPEC.			Div. 22		Service
FFE Ground Floor	FD-3F		1	FLOOR DRAIN / 3" / FINISHED c/w TRAP & PRIMER	SEE PROJECT SPEC.	SEE PROJECT SPEC.			Div. 22		Service
FFE Ground Floor	SNK-3	Yes	1	LAVATORY / B.F. / WALL MNT. @ 34" TO RIM / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	9141011.020	FAUCET: MOEN #L64600 STRAINER: Z8746-PC	CARRIER: WATTS# CA-421 / COVERING: MCGUIRE #PW2000	Div. 22		Service
FFE Ground Floor	WB-1		4	WALL BOX / LAUNDRY / LEAD FREE / 1/2" SUPPLIES / c/w WATER HAMMER ARRESTOR	QATEY	38542	WATER HAMMER ARRESTOR		Div. 22		Service
FFE Ground Floor	WC-1	Yes	1	TOILET / B.F. / PUBLIC / BOWL, ELONG., 16 1/2" AFF / FLOOR MNT. / LINED TANK / OPEN SEAT NO COVER	AMERICAN STD.	"CADET PRO" "RIGHT HEIGHT" #215AA-104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #500STSC0.01	Div. 22		Service
Grand total 18											

NOTE: SCHEDULE ABOVE IS FOR SERVICE & COMMON AREAS 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	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
E-18	Power/Comm - Bldg. 6
E-19	Elec. Lighting - Bldg. 6
E-20	Elec. Typical Building
E-21	Electrical Schedules
E-22	Electrical Details

NORTHSTAR
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Burlington, Ontario L7R 3J2
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dlong@nset.ca www.nset.ca

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DRAWING REVISIONS

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: **Plumbing -Bldg. 5**

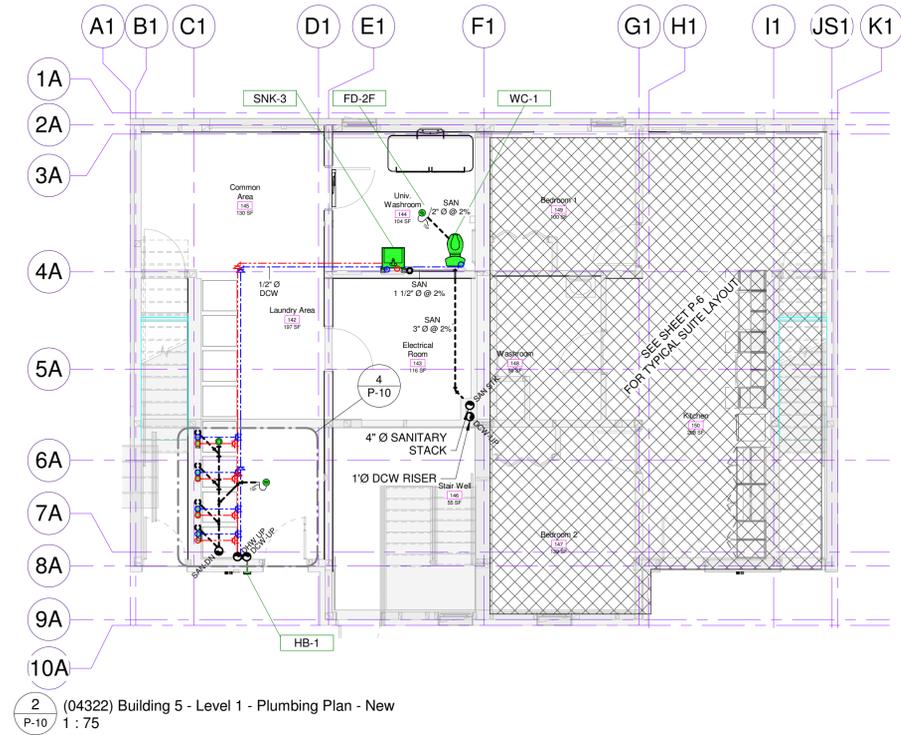
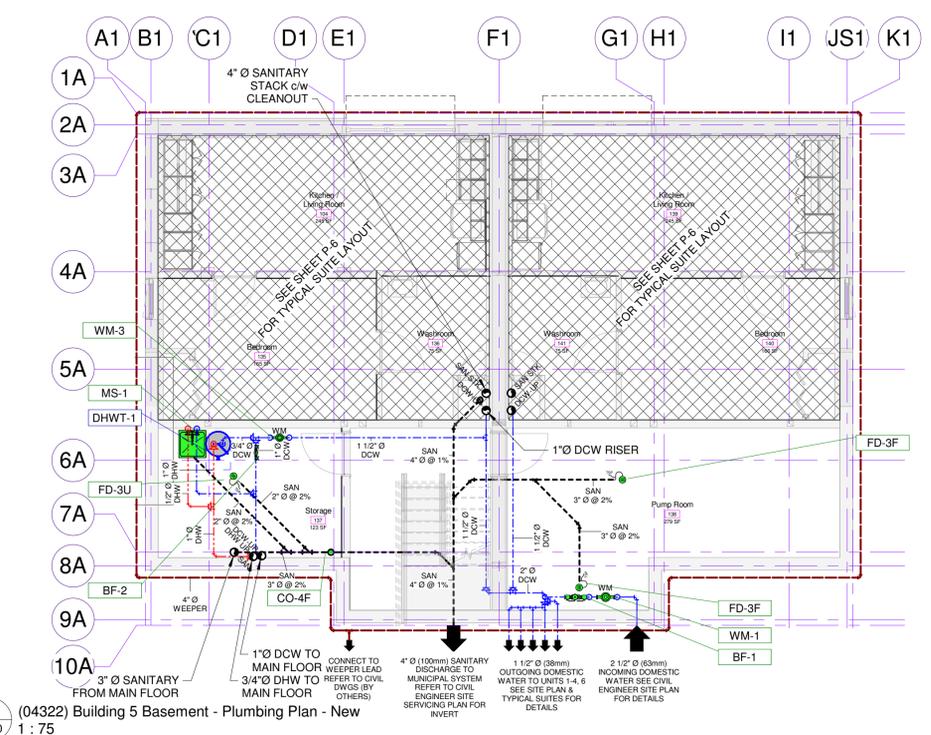
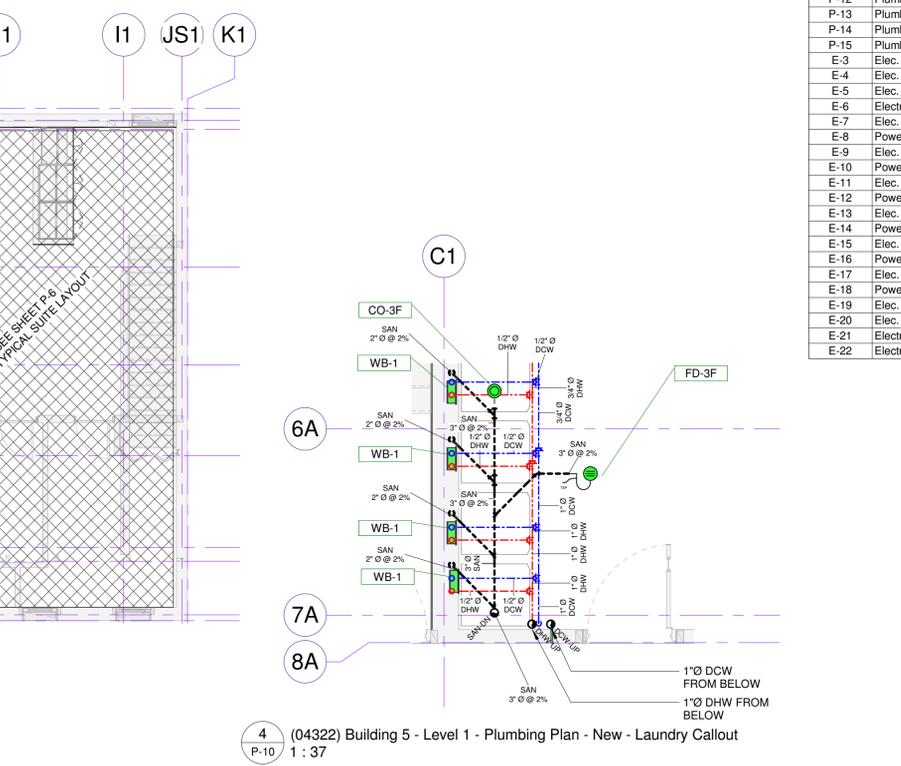
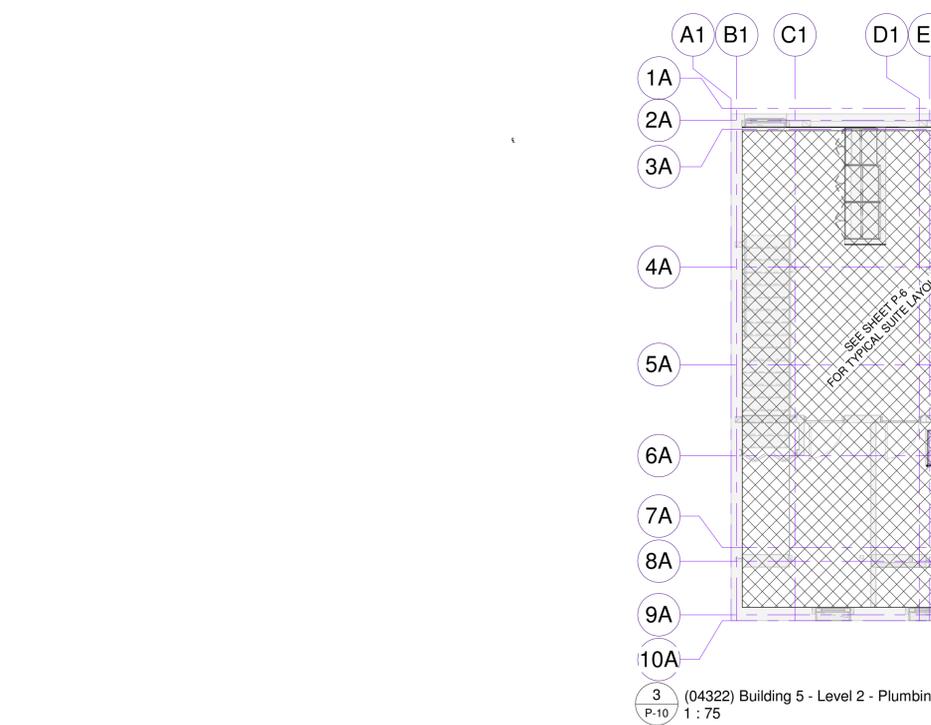
NSET Project #: **04322**

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

Scale: As indicated Revision #: 6.0

Drawing #: **P-10**

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



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 / PPZ
	DOUBLE CHECK VALVE ASSEMBLY / DCVA
	CAP / FITTING
	UNION
	CIRCULATING PUMP
	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 • VENT - VENT TO ROOF • RWL - RAIN WATER LEADER • DCW - DOMESTIC COLD WATER • DHW - DOMESTIC HOT WATER • RECIRCULATION • NGAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / DCW
	DOMESTIC HOT WATER / DHW
	DOMESTIC HOT WATER RECIRCULATING / DHWR
	VENT
	SANITARY DRAINAGE / UNDERGROUND
	SANITARY DRAINAGE / ABOVE GROUND
	STORM DRAINAGE / UNDERGROUND
	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	

(04322) 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	4"Ø C/O / FINISHED	SEE PROJECT SPEC.	SEE PROJECT SPEC.						
FFE Lower Level	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites	
FFE Lower Level	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites	
FFE Lower Level	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	'COLONY' #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites	
FFE Lower Level	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	'CADET PRO' "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites	
FFE Lower Level	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites	
6												
FFE Ground Floor	HB-1		1	HYDRANT / NON-FREEZE / 1/2" WALL THICKNESS/ 3/4" NOM. / c/w VACUUM BREAKER / KEY LOCK	WATTS	HY-725	INTERGRAL VACUUM BREAKER		DIV. 22		Typ. Suites	
FFE Ground Floor	SH-1	Yes	1	SHOWER / 5-PIECE / c/w GRAB BARS & SEAT / HANDHELD SHOWER VALVE	LONGEVITY	SC2366 OBC 2BAR PHENOLIC SEAT	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites	
FFE Ground Floor	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites	
FFE Ground Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	'COLONY' #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites	
FFE Ground Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	'CADET PRO' "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites	
FFE Ground Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites	
6												
2 - Floor	SH-2	No	1	SHOWER / c/w HEAD & CONTROLS	LONGEVITY	ALPINE 2260	HEAD: MOEN 52236GBM15 c/w CONTROL:MOEN# T8370 c/w MOEN #62320(CC)	DRAIN FIXTURE: WATTS FD-100-C-A	DIV. 22		Typ. Suites	
2 - Floor	SNK-1		1	SINK / KITCHEN / DBL. BOWL / 7" DEEP / STAINLESS STEEL / DECK MNT. / SINGLE HANDLE FAUCET	KINDRED	QCLA2031L/8	FAUCET: MOEN #67425	MIXING VALVE: AMERICAN STD. #605XTMV	DIV. 22		Typ. Suites	
2 - Floor	SNK-2	Yes	1	LAVATORY / DROP-IN / SINGLE HANDLE STD. FAUCET	AMERICAN STD.	'COLONY' #0346.403	FAUCET: MOEN #L64600	MIXING VALVE: LAWLER#570-86820	DIV. 22		Typ. Suites	
2 - Floor	WC-2	Yes	1	TOILET / PRIVATE / BOWL, ELONG., 15" AFF. / FLOOR MOUNT / LINED TANK / OPEN SEAT c/w COVER	AMERICAN STD.	'CADET PRO' "ELONGATED" #215CA.104.020	TANK: GRAVITY / LINED	SEAT: CENTOCO #1600	DIV. 22		Typ. Suites	
2 - Floor	WM-2	Yes	1	WATER METER / TENANT SUB-METER c/w REMOTE READOUT	BY CONTRACTOR	BY CONTRACTOR	REMOTE READOUT		DIV. 22		Typ. Suites	
6												
Grand total				17								

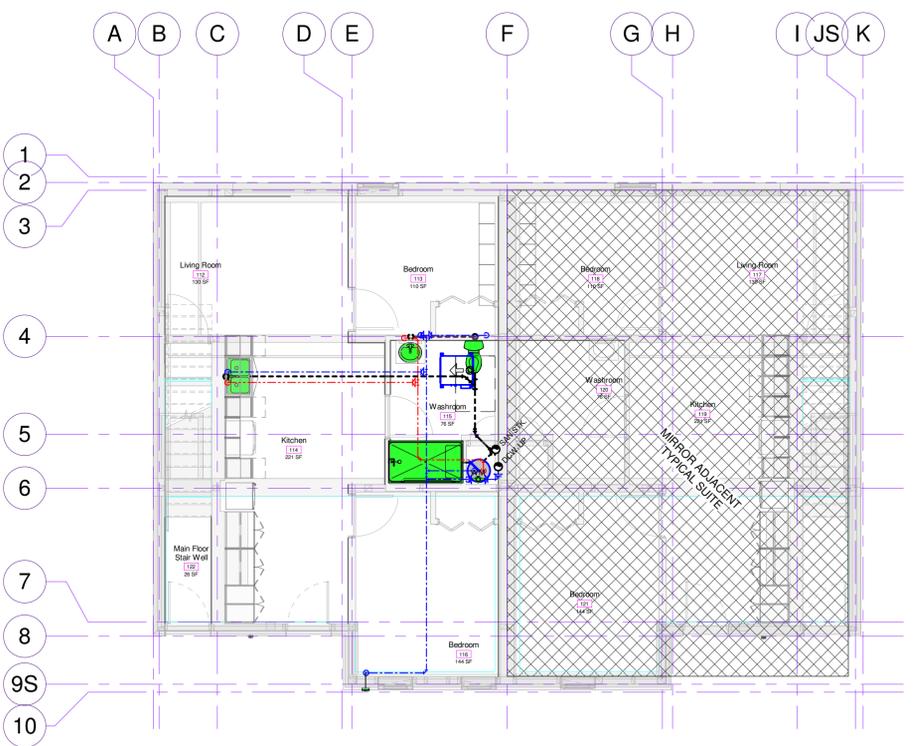
NOTE: THIS SCHEDULE DEPICTS THE FIXTURES FOR ONE TYPICAL SUITE ON EACH LEVEL SK-1 MODEL # FOR MIRRORRED SUITES IS #QCLA2031R/8



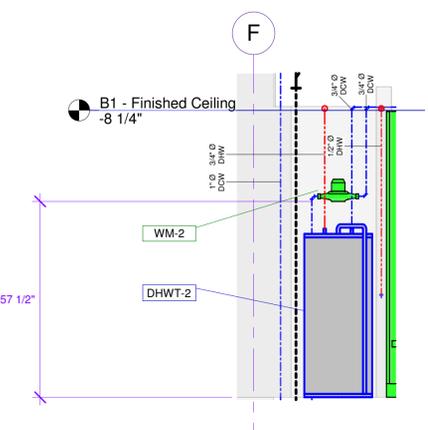
3 (04322) Building 6 - Level 2 - Plumbing Plan - New
P-11 1:75



1 (04322) Building 6 - Basement - Plumbing Plan - New
P-11 1:75



2 (04322) Building 6 - Level 1 - Plumbing Plan - New
P-11 1:75



4 (04322) Basement Access Hatch Section View - Dependent 4
P-11 1:25

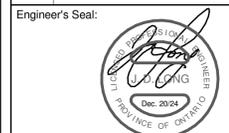
(04322) PROJECT DRAWING REGISTER	
Sheet #	Sheet Name
E1/M1/P1	Project Cover
E2/M2/P2	Project Cover
M-3	HVAC - Specifications
M-4	HVAC - Specifications
M-5	HVAC - Scope of Work
M-6	HVAC - Scope of Work
M-7	HVAC - Bldg. 1
M-8	HVAC - Bldg. 2
M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	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

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



Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **Plumbing - Bldg. 6**

NSET Project #: **04322**

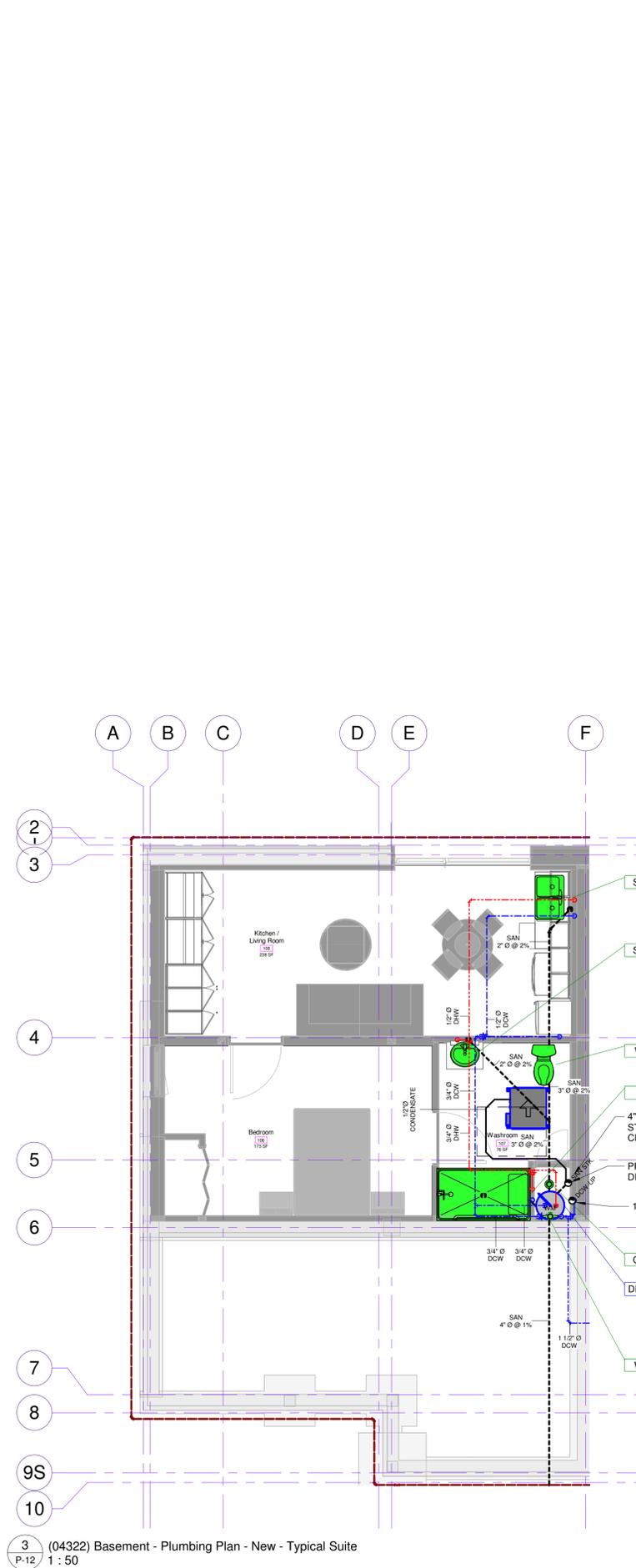
Drawn by: Northstar Eng. Checked by: J.D.L.

Scale: As indicated Revision #: 6.0

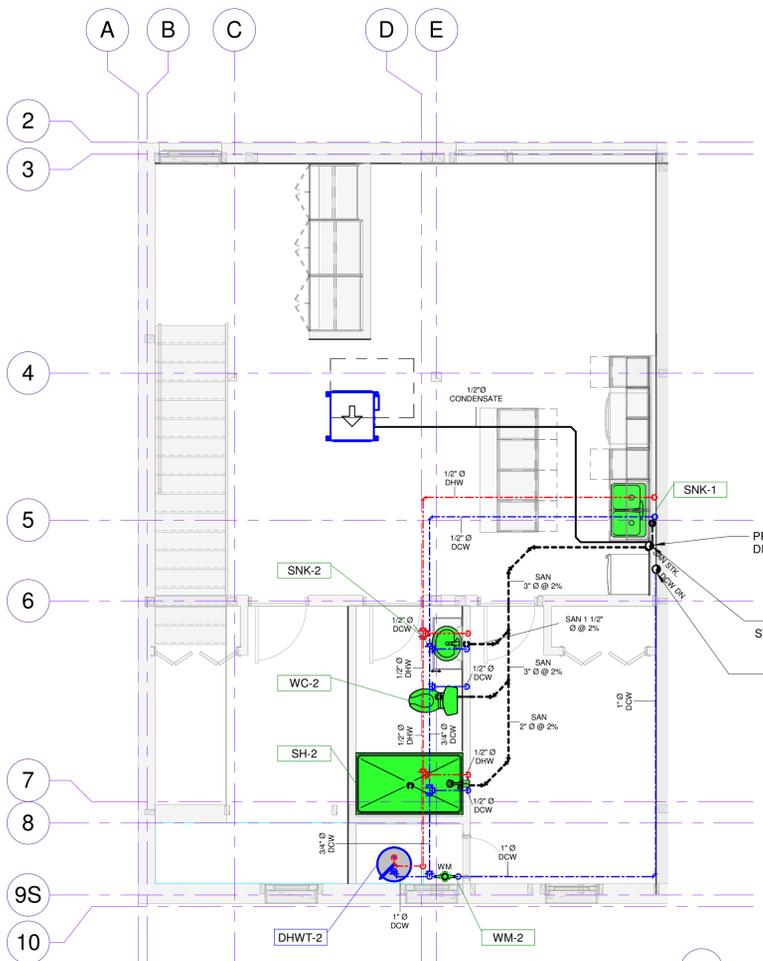
Drawing #: **P-11**

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

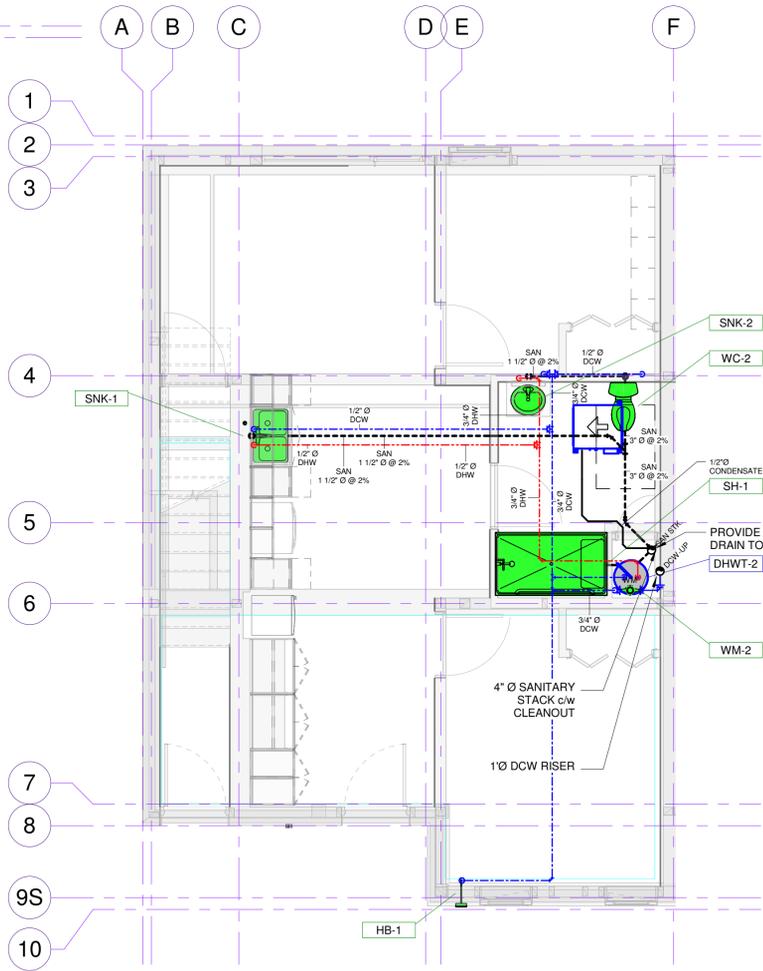
PLUMBING LEGEND	
	CLEANOUT / STACK
	CLEANOUT / RUN
	CLEANOUT / FITTING
	FLOOR DRAIN c/w P-TRAP & TRAP SEAL PRIMER
	RUNNING TRAP c/w CLEANOUT & TRAP SEAL PRIMER
	VALVE / BALL
	VALVE / GLOBE
	VALVE / GATE
	VALVE / SOLENOID
	VALVE / BALANCING
	VALVE / REDUCING
	VALVE / CHECK
	VALVE / THERMOSTATIC MIXING
	REDUCED PRESSURE ZONE / RPPZ
	DOUBLE CHECK VALVE ASSEMBLY / DCVA
	CAP / FITTING
	UNION
	CIRCULATING PUMP
	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 • DCW - DOMESTIC COLD WATER • DHW - DOMESTIC HOT WATER • DHWR - DOMESTIC HOT WATER RECIRCULATION • NGAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / DCW
	DOMESTIC HOT WATER / DHW
	DOMESTIC HOT WATER RECIRCULATING / DHWR
	VENT
	SANITARY DRAINAGE / UNDERGROUND
	SANITARY DRAINAGE / ABOVE GROUND
	STORM DRAINAGE / UNDERGROUND
	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	



3 (04322) Basement - Plumbing Plan - New - Typical Suite
P-12 1 : 50



2 (04322) Level 2 - Plumbing Plan - New - Typical Suite
P-12 1 : 50



1 (04322) Level 1 - Plumbing Plan - New - Typical Suite
P-12 1 : 50

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P-4	Plumbing - Specifications
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P-8	Plumbing - Bldg. 3
P-9	Plumbing - Bldg. 4
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P-12	Plumbing - Typical Building
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P-14	Plumbing - Water Schematic
P-15	Plumbing - Sanitary Schematic
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E-4	Elec. Power - Specifications
E-5	Elec. Power - Scope of Work
E-6	Electrical Site Plan
E-7	Elec. - SLD
E-8	Power/Comm - Bldg. 1
E-9	Elec. Lighting - Bldg. 1
E-10	Power/Comm - Bldg. 2
E-11	Elec. Lighting - Bldg. 2
E-12	Power/Comm - Bldg. 3
E-13	Elec. Lighting - Bldg. 3
E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
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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 LFMM430	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		0 Btu/h		0 Btu/h	208 V	1	60	14.4 A	3,000	110 lb	MIXING VALVE: WATSS LFMM430	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		0 Btu/h		0 Btu/h	208 V	1	60	14.4 A	3,000	110 lb	MIXING VALVE: WATSS LFMM430	DIV. 23
						1		0 Btu/h		0 Btu/h					3,000			
						3		0 Btu/h		0 Btu/h					9,000			

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

(04322) Hot Water Tank Schedule Shared Laundry Area - (New)

Level	Mark	Type Mark	Description	Manufacturer	Model #	Qty.	Energy Source	Heating Capacity (Input)	Eff. %	Heat Capacity (Output)	Voltage	Phase	Hz.	MCA	VA	Weight	Accessory 1	Supplied By
FFE Lower Level	FC-1-25	DHWT-1	HOT WATER TANK / ELECTRIC / 66 US GAL. (250L) TOP ENTRY / DUAL ELEMENT / 24 GPH FHR @100F	A.O. SMITH	DEN-66	1	ELEC.	0 Btu/h		0 Btu/h	208 V	3	60	28.8 A	6,000	176 lb	MIXING VALVE: WATSS LFMM430	DIV. 22
						1		0 Btu/h		0 Btu/h					6,000			

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

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Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **Plumbing - Details**

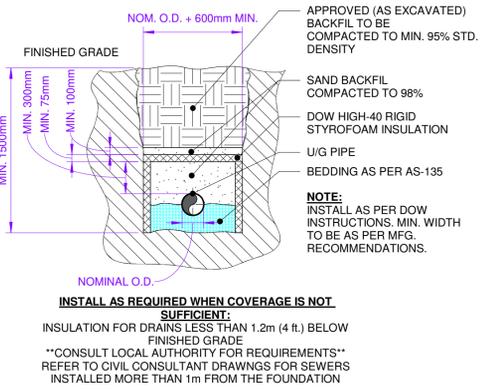
NSET Project #: **04322**

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

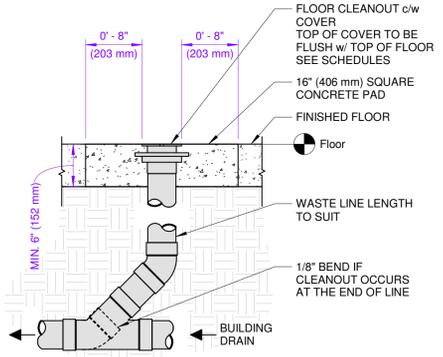
Scale: As indicated Revision #: 6.0

Drawing #: **P-13**

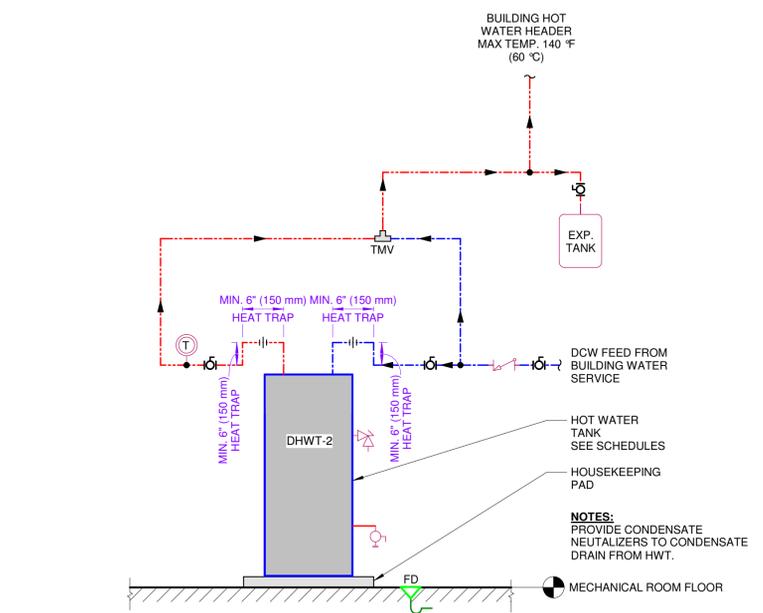
Project Date: Jan. 14/22 Arch-D (24" x 36")



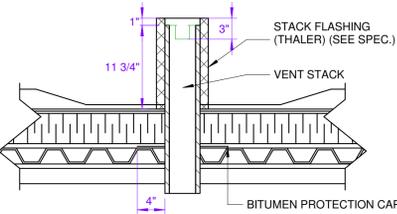
5 Plumbing / U/G Plumbing Detail
P-13 N.T.S.



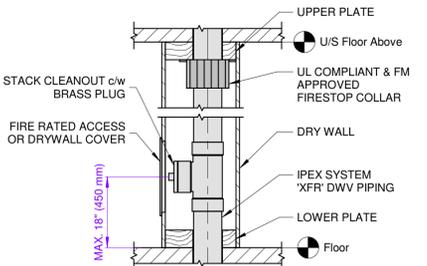
2 Plumbing / Cleanouts / Typ. Floor Install
P-13 N.T.S.



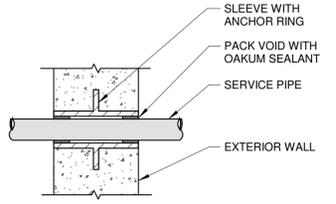
8 Plumbing / Hot Water Tank / DHWT-2
P-13 N.T.S.



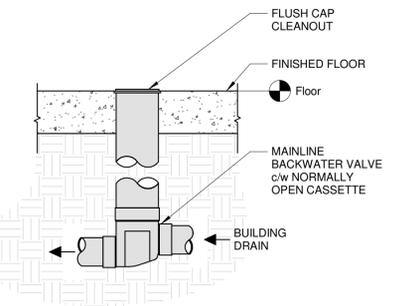
3 Plumbing / Venting / Stack Through Roof
P-13 N.T.S.



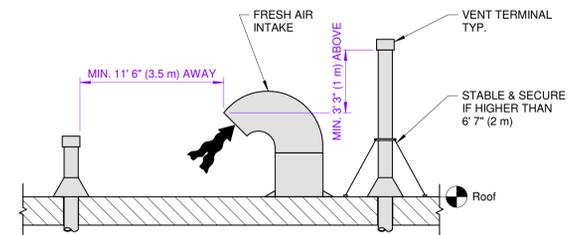
1 Plumbing / Cleanouts / Stack / PVC
P-13 N.T.S.



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



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



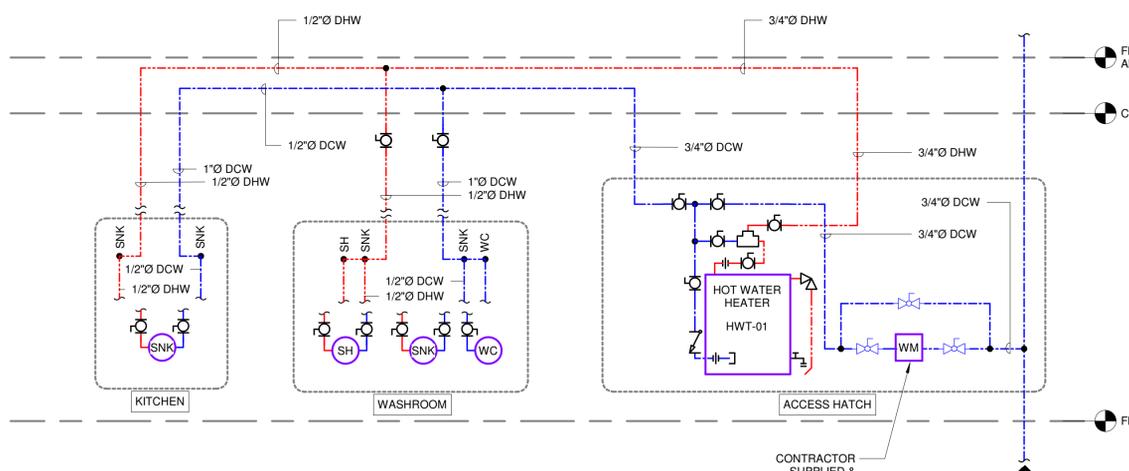
4 Plumbing / Venting / VTR Clearance
P-13 N.T.S.

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 / RPPZ
	DOUBLE CHECK VALVE ASSEMBLY / DCVA
	CAP / FITTING
	UNION
	CIRCULATING PUMP
	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 VENT - VENT TO ROOF RWL - RAIN WATER LEADER DCW - DOMESTIC COLD WATER DHW - DOMESTIC HOT WATER DHW/R - DOMESTIC HOT WATER RECIRCULATION NGAS - NATURAL GAS
	TEE / DROP REFER TO PIPE TYPE
	TEE / RISE REFER TO PIPE TYPE
	ELBOW / DROP REFER TO PIPE TYPE
	ELBOW / RISE REFER TO PIPE TYPE
	DOMESTIC COLD WATER / DCW
	DOMESTIC HOT WATER / DHW
	DOMESTIC HOT WATER RECIRCULATING / DHWR
	VENT
	SANITARY DRAINAGE / UNDERGROUND
	SANITARY DRAINAGE / ABOVE GROUND
	STORM DRAINAGE / UNDERGROUND
	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	

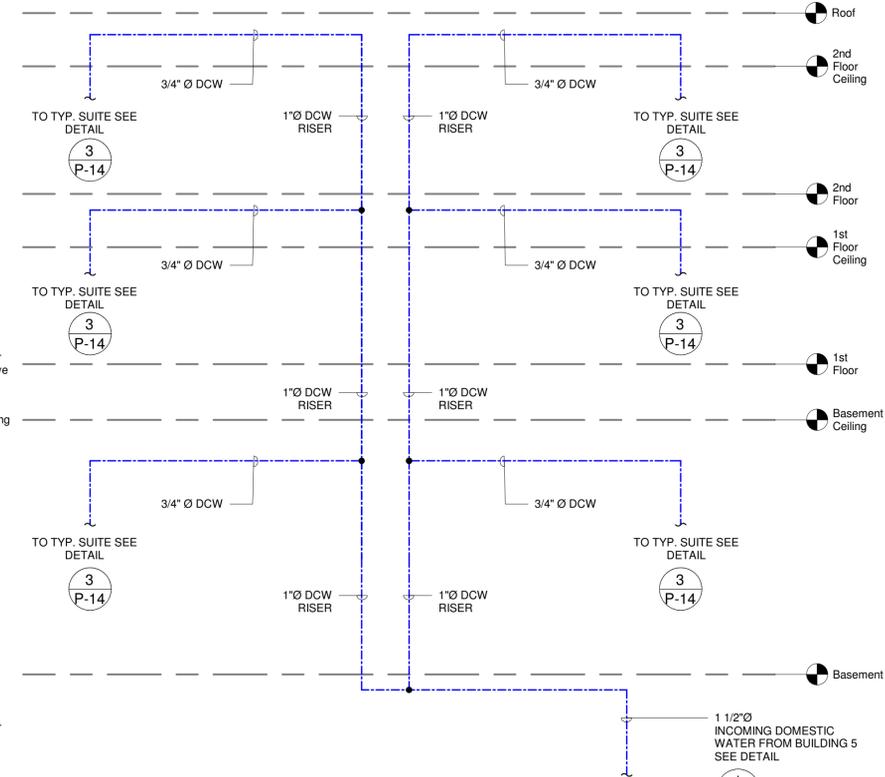
POTABLE WATER SYSTEM

APPROVED PEX TUBING TO BE USED FOR ALL DCW & DHW PIPING SHOWN. INSTALL AS PER MFG. INSTRUCTIONS USING APPROVED MATCHING FITTINGS.

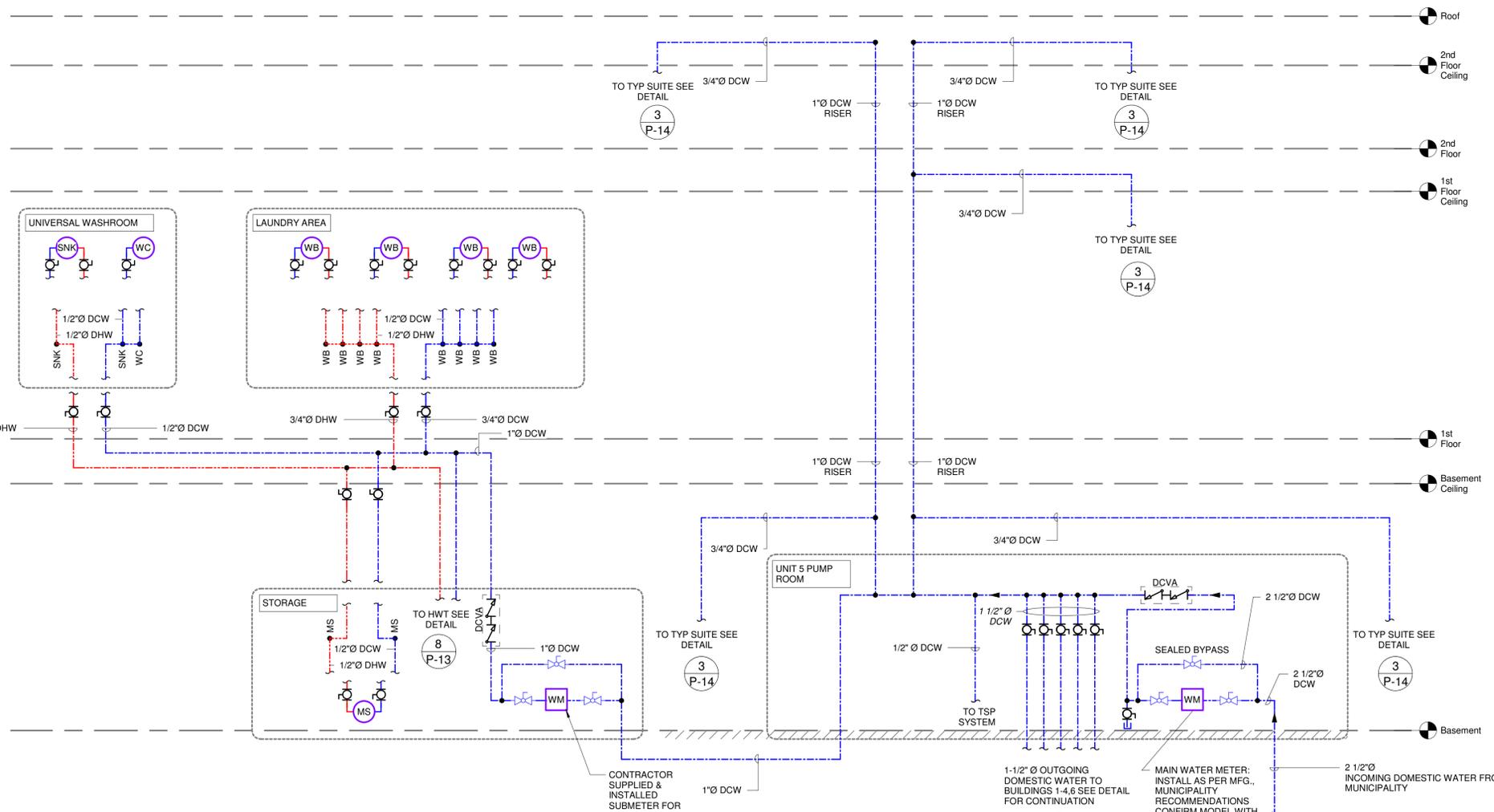
EXPOSED PIPING FIXTURE SUPPLIES IN ROOMS AND OCCUPIABLE SPACES TO BE TRANSITIONED & VISIBLE IN COPPER, TYPE L, c/w LEAD FREE SOLDER THROUGH-OUT.



3 (04322) Typical Suite - DCW & DHW Distribution
N.T.S.



2 (04322) Bldg 1-4,6 - DCW Distribution
N.T.S.



1 (04322) Building 5 - DCW & DHW Distribution
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	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	Electrical Building
E-21	Electrical Schedules
E-22	Electrical Details

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Tel. (705) 719-1003 Fax (705) 719-0490
dong@nset.ca www.nset.ca

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Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **Plumbing - Water Schematic**

NSET Project #: **04322**

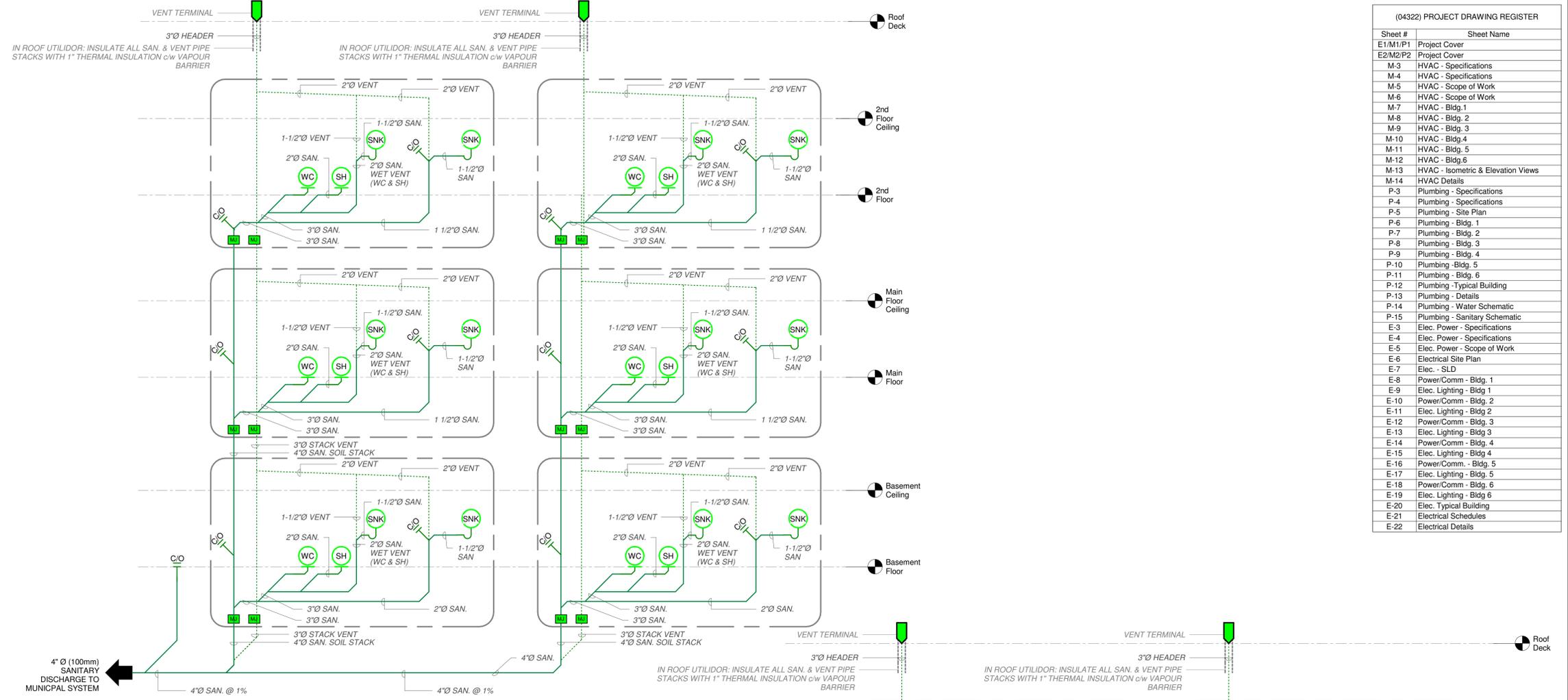
Drawn by: Northstar Eng. Checked by: J.D.L.

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

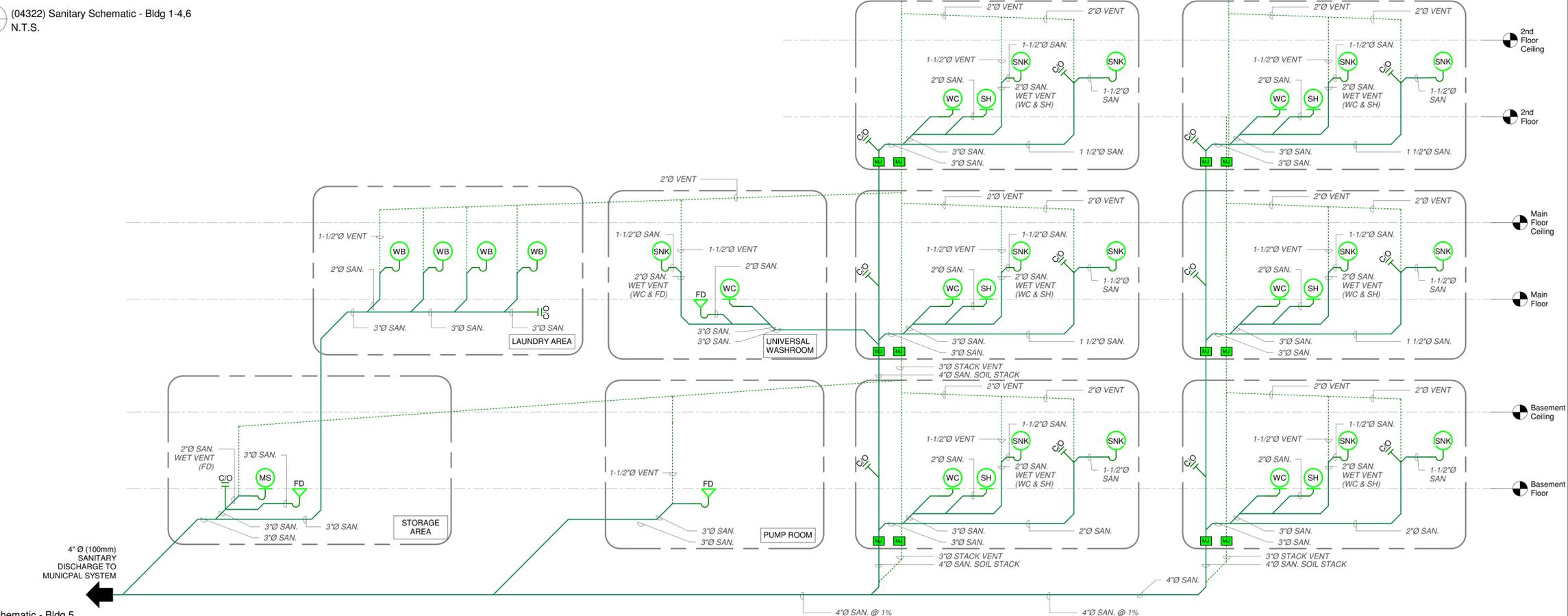
Drawing #: **P-14**

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

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
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	VALVE / CHECK
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	CIRCULATING PUMP
	WATER SCHEMATIC FIXTURE XX DENOTES FIXTURE TYPE MARK
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	DOMESTIC HOT WATER / DHW
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	STORM DRAINAGE / ABOVE GROUND
	WEEPING TILE PIPING
	NATURAL GAS PIPING
NOT ALL SYMBOLS APPLY TO FLOOR PLANS / DRAWINGS	



2 (04322) Sanitary Schematic - Bldg 1-4,6
P-15 N.T.S.



1 (04322) Sanitary Schematic - Bldg 5
P-15 N.T.S.

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M-9	HVAC - Bldg. 3
M-10	HVAC - Bldg. 4
M-11	HVAC - Bldg. 5
M-12	HVAC - Bldg. 6
M-13	HVAC - Isometric & Elevation Views
M-14	HVAC Details
P-3	Plumbing - Specifications
P-4	Plumbing - Specifications
P-5	Plumbing - Site Plan
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
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E-14	Power/Comm - Bldg. 4
E-15	Elec. Lighting - Bldg. 4
E-16	Power/Comm - Bldg. 5
E-17	Elec. Lighting - Bldg. 5
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Engineer's Seal:

Client: **WW Inc.**

Address: **Minden, ON**

Project Name: **Gull River Affordable Housing**

Dwg. Name: **Plumbing - Sanitary Schematic**

NSET Project #: **04322**

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

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

Drawing #: **P-15**

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