PLUMBING AND DRAINAGE

SYMBOL	DESCRIPTION
	WATER CLOSET - TANK TYPE
	P-TRAP
CO CO	CLEAN OUT (FLOOR & CEILING)
FD	ROUND FLOOR DRAIN
	PIPE WYE CONNECTION
	PIPE 45° CONNECTION
	PIPE ELBOW
	PIPE TEE
-	DOMESTIC COLD WATER (DCW) PIPING
--	DOMESTIC HOT WATER (DHW) PIPING
SAN	SANITARY DRAINAGE (SAN) PIPING
	VENT PIPING
---	DOMESTIC HOT WATER RECIRC. (DHWR) PIPING

DUCTWORK

SYMBOL	DESCRIPTION
	SUPPLY AIR DUCT UP & DOWN
	RETURN / EXHAUST AIR DUCT UP & DOWN
	ROUND DUCT UP & DOWN
	SUPPLY / RETURN GRILLE
	RETURN / EXHAUST GRILLE
	GRILLE
T	THERMOSTAT

GENERAL NOTES

1. CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO VERIFY EXISTING CONDITIONS AND TO CONFIRM THAT EQUIPMENT AND SERVICES CAN BE INSTALLED AS INDICATED ON THE DRAWINGS. CONTRACTOR TO INCLUDE FOR ALL COSTS ASSOCIATED TO FACILITATE INSTALLATION. IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE ENGINEERS OF ANY DISCREPANCIES, OMISSIONS, AND INTERFERENCES.
2. ENSURE THAT ALL NEW AND EXISTING EQUIPMENT REQUIRING MAINTENANCE IS ACCESSIBLE AND THAT ACCESS REQUIREMENTS ARE NOT OBSTRUCTED BY NEW OR EXISTING SERVICES. PROVIDE ACCESS DOORS/PANELS TO MATCH BASE BUILDING STANDARDS WHERE REQUIRED.
3. PROVIDE ALL REQUIRED CUTTING AND PATCHING TO PERFORM THE SCOPE OF WORK AS OUTLINED IN THE DRAWINGS.

GENERAL DEMOLITION NOTES

1. INCLUDE FOR THE REMOVAL OF ALL DUCTWORK AND ASSOCIATED ACCESSORIES BACK TO THE MAIN FURNACE.
2. CUT BACK NATURAL GAS, DOMESTIC WATER AND DRAINAGE PIPING BACK TO THE MAIN INCOMING SERVICE. PREPARE FOR NEW WORK
3. INCLUDE FOR THE REMOVAL OF ALL EXISTING PROPANE PIPING INSIDE BUILDING. CAP INCOMING CONNECTION AND MAKE GOOD.
4. INCLUDE FOR THE DEMOLITION OF ALL SYSTEMS AND SERVICES, PIPING, ACCESSORIES, ETC. BACK TO THE MAIN INCOMING SERVICE. ALL EQUIPMENT IS TO BE REMOVED COMPLETE.

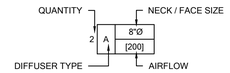
MECHANICAL PIPING

SYMBOL	DESCRIPTION
	PIPE DOWN
	PIPE UP
	PIPE UP & DOWN
	VALVE
	BALANCING VALVE
	CHECK VALVE
	STRAINER
	LOCK-SHEILD VALVE
	PRESSURE REDUCING VALVE
	ELECTRONIC CONTROL VALVE (2-WAY & 3-WAY)
	3-WAY VALVE (MANUAL)
	PIPE CONTINUATION
G	NATURAL GAS PIPING
	FLOW DIRECTION
RL / RG	REFRIGERANT LIQUID AND GAS PIPING
	PUMP
CAP	CAPPED PIPE
	PRESSURE GAUGE
	THERMOMETER
	PRESSURE RELIEF VALVE

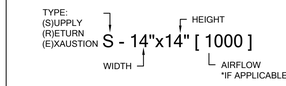
TAGS

SYMBOL	DESCRIPTION
TAG-1	EQUIPMENT TAG
	AIRFLOW DIRECTION
CTE	CONNECT TO EXISTING
(###)	FLOW IN L/S
[###]	FLOW IN CFM

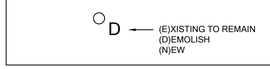
DIFFUSER TAG



DUCTWORK



SPRINKLERS



MECHANICAL DRAWING LIST

DRAWING NO.	DRAWING NAME
M1.0	DRAWING LIST, SYMBOL LIST & NOTES
M2.0	NEW WORK - HVAC
M3.0	NEW WORK - PLUMBING
M4.0	HVAC EQUIPMENT SCHEDULES
M5.0	PLUMBING EQUIPMENT SCHEDULES
M6.0	DETAILS
M7.0	SPECIFICATIONS

APPLICATION NUMBER:

APPLICATION NUMBER:

REVISIONS

SUBMITTALS

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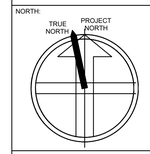
2.	ISSUED FOR PERMIT	2020.06.26	
1.	ISSUED FOR COORDINATION	2020.04.03	
No.	Description	YYYY.MM.DD	By

NORTH:



STAMP:

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RDZ ENGINEERS LTD
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Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

219065 - DENISON HERITAGE HOME

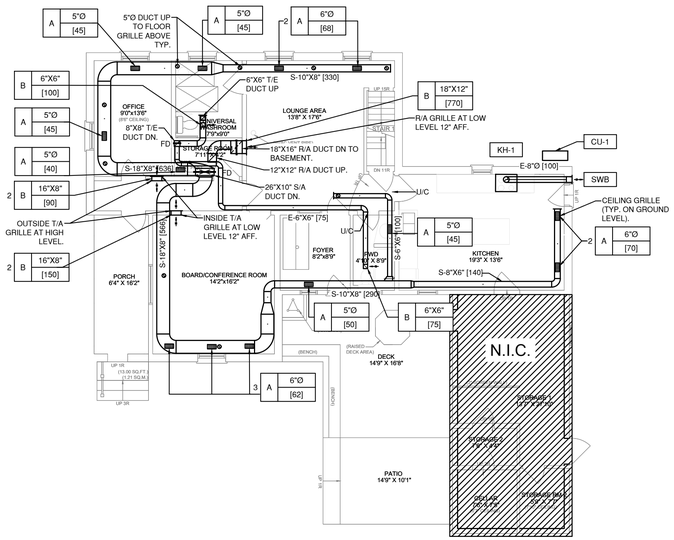
DRAWING LIST, SYMBOL LIST & NOTES

2020.04.17

Scale	Drawn By	Checked By
N.T.S.	PM/KL	MD

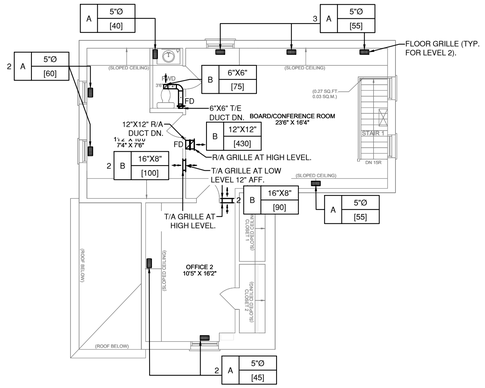
Project Number
19146

M1.0



1 M2.0 GROUND FLOOR PLAN - HVAC

Scale: 1/8"=1.0'



2 M2.0 SECOND FLOOR - HVAC

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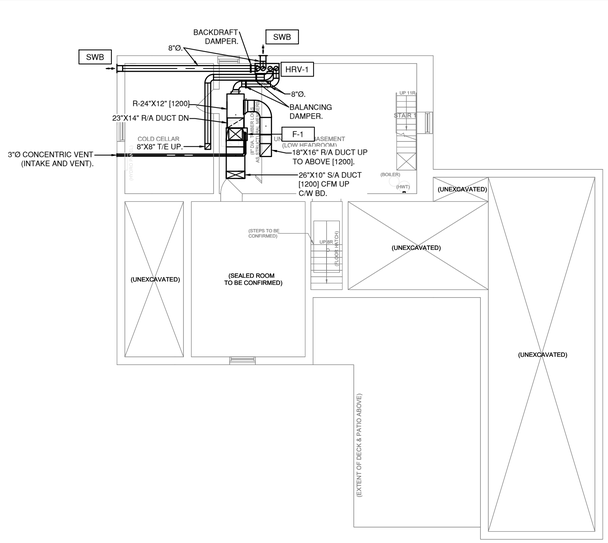

3 M2.0 BASEMENT - HVAC

Scale: 1/8"=1.0'

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SUBMITTALS

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2.	ISSUED FOR PERMIT	2020.06.26	
1.	ISSUED FOR COORDINATION	2020.04.03	

NORTH: TRUE NORTH PROJECT NORTH

STAMP: LICENSED PROFESSIONAL ENGINEER JUN 26, 2020 M. DI ZIO 100150658 PROVINCE OF ONTARIO

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RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

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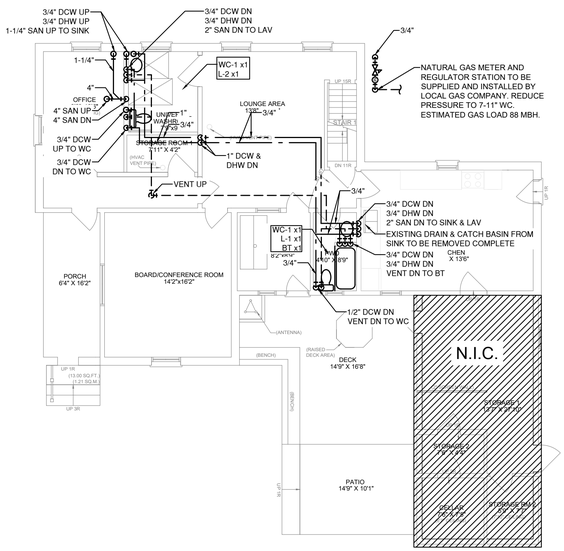
BASEMENT, GROUND FLOOR & SECOND FLOOR PLANS - HVAC

2020.04.17

Scale	Drawn By	Checked By
N.T.S	PM	MD

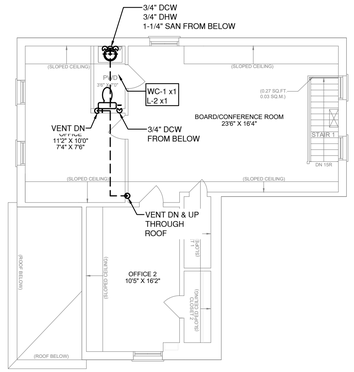
Project Number: 19146

M2.0



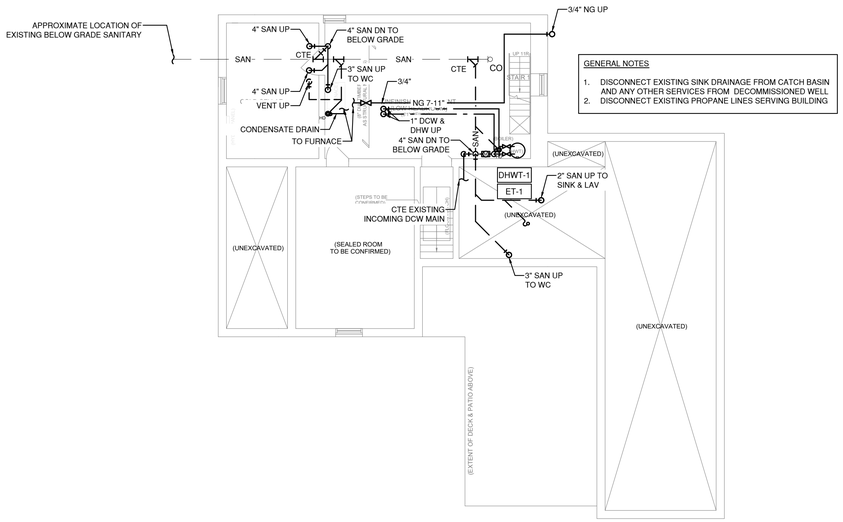
1 M3.0 GROUND FLOOR PLAN - PLUMBING

Scale: 1:100



2 M3.0 SECOND FLOOR - PLUMBING

Scale: 1:100



GENERAL NOTES

1. DISCONNECT EXISTING SINK DRAINAGE FROM CATCH BASIN AND ANY OTHER SERVICES FROM DECOMMISSIONED WELL
2. DISCONNECT EXISTING PROPANE LINES SERVING BUILDING

3 M3.0 BASEMENT - PLUMBING

Scale: 1:100

APPLICATION NUMBER:

APPLICATION NUMBER:

REVISIONS

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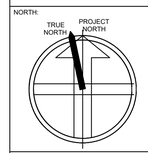

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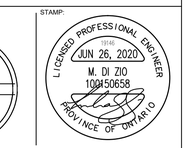

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RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
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NEW WORK ALL FLOORS - PLUMBING

2020.04.17

Scale	Drawn By	Checked By
1:100	KL	MD

Project Number
19146

M3.0

SCHEDULE OF KITCHEN HOOD

TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	DESIGN AIRFLOW (CFM)	ESP (IN. WC)	RPM	SOUND (SONES)	ELECTRICAL		REMARKS
									FLA (A)	POWER (V/Ø/Hz)	
KH-1	REVERSOMATIC	4000-300	KITCHEN	KITCHEN EXHAUST HOOD	100	0.5	1100	6.5	1.2	120/1/60	

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

SCHEDULE OF CONDENSING UNITS

TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	QTY	WEIGHT	DIMENSIONS			DESIGN AIRFLOW	CAPACITY	ELECTRICAL			SOUND	REMARKS
							WIDTH	LENGTH	HEIGHT		MBH	MCA	MOCP	POWER (V/PH/HZ)	OPERATION SOUND (dB(A))	
						(LBS)	(IN.)	(IN.)	(IN.)	(CFM)						
CU-1	LENNOX	VPB036H4M-3P	OUTSIDE	ALL	1	220	13 1/4	35 3/8	52 1/4	4100	36	36	40	208/1/60	61	

NOTES

1 REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

2 MOUNT UNIT ON PAVER C/W RIGID INSULATION.

3 CONFIRM REFRIGERANT PIPING LENGTHS AND INSTALLATION LOCATION WITH MANUFACTURER PRIOR TO INSTALL.

SCHEDULE OF INDOOR HRV

TAG	MANUFACTURER	MODEL	LOCATION	QTY	WEIGHT	DIMENSIONS			ADJUSTED SENSIBLE RECOVERY EFFICIENCY @ 64 CFM AND 32°F	SENSIBLE RECOVERY EFFICIENCY @ 64 CFM AND 32°F	FAN		ELECTRICAL		REMARKS
						DEPTH	LENGTH	HEIGHT			AIRFLOW	ESP	AMP RATING	(V/PH/HZ)	
					(LBS)	(IN.)	(IN.)	(IN.)			(CFM)	(IN.)			
HRV	LENNOX	HRV5-270-TPD-ECM	BASEMENT	1	75	14	33.625	18.75	77%	75%	254	0.5	2.1	120/1/60	

NOTES

1 REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

2 UNIT C/W MULTIPLE SPEED FAN OPERATION. INTERLOCK WITH ASSOCIATED FURNACE.

3 UNITS C/W MOUNTING BRACKETS, WASHABLE AIR FILTERS IN EXHAUST AND SUPPLY AIRSTREAMS.

SCHEDULE OF WALL BOXES

TAG	MANUFACTURER	MODEL	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	DUCT CONNECTION (IN Ø)	REMARKS
SWB	ZONEX	SWB	7-3/4	6-3/4	8	6	C/W EXHAUST LOUVRES

NOTES

1. REFER TO DRAWINGS FOR QUANTITY AND LOCATION OF WALL BOXES.

SCHEDULE OF GRILLES AND DIFFUSERS

TYPE	MANUFACTURER	MODEL	DESCRIPTION	VOLUME CONTROL	FINISH	OPTIONS	REMARKS
A	HART & COOLEY	411	HEAVY GAUGE STEEL FLOOR REGISTER	YES	TO ARCH. DIRECTION	SINGLE DEFLECTION STEEL CONSTRUCTION	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.
B	E.H. PRICE	630DAL	LOUVERED RETURN GRILLE 45° DEFLECTION	YES	TO ARCH. DIRECTION	DOUBLE DEFLECTION ALUMINUM CONSTRUCTION SURFACE MOUNT: F BORDER L BLADE ORIENTATION	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.

NOTES

1. CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDER
2. REFER TO DRAWINGS FOR QUANTITIES.

SCHEDULE OF FURNACES

TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	QTY	WEIGHT	DIMENSIONS			DESIGN AIRFLOW	COOLING COIL							NO. COOLING STAGES	HEATING							SUPPLY FAN					ELECTRICAL			EMERGENCY POWER	REMARKS
											COIL SIZE	EAT (F)		LAT (F)		OAT (F)	CONDENSATE DRAIN SIZE		FUEL		HEATING STAGES	INPUT	OUTPUT	OAT (F)	HEAT RISE	ESP	TSP	BHP	MOTOR HP	VFD	MCA	MOCP	POWER (V/PH/HZ)		
						WEIGHT	WIDTH	LENGTH	HEIGHT										TYPE	PRESSURE															
						(LBS)	(IN.)	(IN.)	(IN.)	(CFM)	TONS	DB	WB	DB	WB	DB	(IN)			(IN. WC)		(MBH)	(MBH)	DB	(F)	(IN. WC)	(IN. WC)								
F-1	LENNOX	EL296UH070XV36B	BASEMENT	ALL	1	163	17.5	29.3	33	1200	2-1/2	89	74	58	48	89	0.8	1	NAT. GAS	7.0	2	66	62	-10	57.1	0.8	0.95	0.5	0.5	YES	-	15	120/1/60	NO	

NOTES

1 REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

2 COMP CRANKCASE HEATER - FLD

3 COMP TIME-OFF CONTROL - FLD

4 INDOOR FAN OFF/DELAY RLY - FLD

5 COMPRESSOR SOUND COVER -FLD

6 AIR FILTER SIDE RETURN SINGLE - FLD

7 PROVIDE PROGRAMMABLE THERMOSTAT

8 CONCENTRIC VENT KIT

APPLICATION NUMBER:

APPLICATION NUMBER:

REVISIONS

SUBMITTALS

No.	Description	YYYY.MM.DD	By
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2.	ISSUED FOR PERMIT	2020.06.26	
1.	ISSUED FOR COORDINATION	2020.04.03	

NORTH: TRUE NORTH PROJECT NORTH

STAMP: LICENSED PROFESSIONAL ENGINEER — SEAL — JUN 26, 2020 — M. DI ZIO — 100150658 — PROVINCE OF ONTARIO

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HVAC EQUIPMENT SCHEDULES

2020.04.17

Scale	Drawn By	Checked By
N.T.S.	PM/KL	MD

Project Number 19146

M4.0

SCHEDULE OF ELECTRIC DOMESTIC HOT WATER STORAGE HEATERS

TAG	MANUFACTURER	MODEL	LOCATION	SIZE DIA. x HEIGHT (IN.)	STORAGE CAPACITY (USGAL)	INPUT (kW)	RECOVERY (GPH @ 100°F RISE)	POWER (V/Ø/Hz)	REMARKS
DHWT	A.O. SMITH	DEL-40-2	BASEMENT MECHANICAL	24" x 32-1/4"	40	2	8	115/1/60	SINGLE ELEMENT MODEL.

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.

SCHEDULE OF EXPANSION TANKS

TAG	SYSTEM	LOCATION	MANUFACTURER	MODEL	TYPE	SIZE (DIA. x LENGTH)	VOLUME (USGAL)	ACCEPTANCE VOLUME (USGAL)	REMARKS
ET-1	DOMESTIC HOT WATER	BASEMENT MECHANICAL	WATTS	PLT-5	VERTICAL DIAPHRAGM	8"Ø x 11"	4.5	2.8	

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.

PLUMBING FIXTURE SCHEDULE

LOCATION	PRODUCTS	DESCRIPTION	ACCESSORIES	SAN	HW	CW	VENT	NOTES/COMMENTS
WC-1	TOILET	AMERICAN STANDARD #215AA.104.020, 'CADET PRO RIGHT HEIGHT ELONGATED'. 419 MM HIGH TOILET, 3517A.101, 4188A.104, VITREOUS CHINA, FLOOR MOUNTED, 4.8 L (1.28 US GAL) PER FLUSH, TWO (2) PIECE, ELONGATED BOWL, CADET FLUSHING SYSTEM WITH POWERWASH RIM SIPHON FLUSHING SYSTEM WHICH SCRUBS BOWL WITH EVERY FLUSH, RAISED SANITARY BAR AND FOUR (4) POINTS TANK STABILIZATION.	CENTOCO #820STS.001, EXTRA HEAVY DUTY TOILET SEAT, SOLID PLASTIC, OPEN FRONT WITH COVER. MCGUIRE #LFH1172BV, POLISHED BRASS TOILET SUPPLY. PROVIDE FLOOR FLANGE, (SAME MATERIAL AS THE CONNECTING PIPE DRAIN), WITH ALL BRASS BOLTS AND WITH RUBBER GASKET.	4"	-	1/2"	1-1/2"	BARRIER FREE
L-1	BASIN	AMERICAN STANDARD MURRO WITH EVERCLEAN #0954.004EC.020/0059.020EC.020 BASIN, 3 HOLES, 4" (102 MM) CENTER, 540 MM X 520 MM X 165 MM (21-1/4" X 20-1/2" X 6-1/2") HIGH, VITREOUS CHINA, WHITE FINISH, FOR CARRIER WITH CONCEALED ARMS, REAR OVERFLOW, RECESSED SELF-DRAINING FAUCET LEDGE. AMERICAN STANDARD 0059.020EC.020 SEMI-PEDESTAL P-TRAP COVER	AMERICAN STANDARD MONTERREY #7500170.002 TWO HANDLES FAUCET, POLISHED CHROME FINISH, BRASS, 1.9 LPM (0.5 GPM) PRESSURE COMPENSATING AERATOR OUTLET, RIGID/LIMITED SWING GOOSENECK SPOUT, 127 MM (5") PROJECTION REACH, 4" (102 MM) LONG VANDAL RESISTANT RED AND BLUE INDEXED WRIST BLADE HANDLES. LAWLER #TMM-1070, BELOW DECK MECHANICAL WATER MIXING VALVE, BRONZE BODY, TEMPERATURE ADJUSTING DIAL, 10 MM (3/8") INLETS AND OUTLET COMPRESSION FITTINGS, HIGH TEMPERATURE THERMOSTATIC LIMIT STOP, SHUT-OFF WITH AUTOMATIC RESET WHEN TEMPERATURE EXCEEDS 120 °F (48.8 °C), INTEGRAL CHECKS, OFFER TEMPERATURE RANGE FROM FULL COLD THROUGH 46 °C (114.8 °F). PROVIDE TEE, ADAPTORS, AND FLEX COPPER TUBING TO SUIT INSTALLATION. PROVIDE TEMPERED WATER TO HOT SIDE OF FAUCET. MCGUIRE #155A OPEN GRID DRAIN, CAST BRASS ONE PIECE TOP, 17 GA. (1.5 MM) TUBULAR 32 MM (1-1/4") TAILPIECE. MCGUIRE #LFH1170BVRB FAUCET SUPPLIES, CHROME PLATED FINISH POLISHED BRASS, COMMERCIAL DUTY 1/4 TURN BALL VALVE ANGLE STOPS, 13 MM (1/2") I.D. INLET X 127 MM (5") HORIZONTAL EXTENSION TUBES, CONVERTIBLE 1/4 TURN/LOOSE KEY HANDLES, ESCUTCHEON AND STAINLESS STEEL BRAIDED FLEXIBLE RISERS. MCGUIRE #8872C P-TRAP, HEAVY CAST BRASS ADJUSTABLE BODY, WITH SLIP NUT, 32 MM (1-1/4") SIZE, SHALLOW WALL FLANGE AND SEAMLESS TUBULAR WALL BEND. WATTS #WCA-411-CA-481 BASIN CARRIER, CONCEALED ARMS, WALL FLANGES TO ATTACH TO BACKING PLATE SECURED IN WALL WITH LOCKING DEVICE AND LEVELLING SCREWS, HEAVY GAUGE STEEL UPRIGHTS WITH INTEGRAL WELDED FEET	1-1/4"	1/2"	1/2"	1-1/4"	BARRIER FREE
L-2	BASIN	AMERICAN STANDARD AQUALYN #0476.028.020 BASIN, 3 HOLES, 4" (102 MM) CENTER, 533 MM X 445 MM X 175 MM (21" X 17-1/2" X 6-7/8") HIGH, OVAL, VITREOUS CHINA, WHITE FINISH, SELF-RIMMING / DROP-IN, SIDE REAR OVERFLOW, FAUCET LEDGE. PROVIDE BASIN RIM SEALANT.	AMERICAN STANDARD MONTERREY #5500170.002 TWO HANDLES FAUCET, POLISHED CHROME FINISH, CAST BRASS BODY, AERATOR OUTLET, CAST BRASS SPOUT, 95 MM (3-3/4") PROJECTION REACH, 4" (102 MM) LONG VANDAL RESISTANT RED AND BLUE INDEXED WRIST BLADE HANDLES. MCGUIRE #155WC OPEN GRID DRAIN, CAST BRASS ONE PIECE TOP, 17 GA. (1.5 MM) TUBULAR 32 MM (1-1/4") TAILPIECE. MCGUIRE #LFH170BV FAUCET SUPPLIES, CHROME PLATED FINISH POLISHED BRASS, COMMERCIAL DUTY 1/4 TURN BALL VALVE ANGLE STOPS, 13 MM (1/2") I.D. INLET X 127 MM (5") HORIZONTAL EXTENSION TUBES, CONVERTIBLE 1/4 TURN/LOOSE KEY HANDLES, ESCUTCHEON AND FLEXIBLE COPPER RISERS. MCGUIRE #8872C P-TRAP, HEAVY CAST BRASS ADJUSTABLE BODY, WITH SLIP NUT, 32 MM (1-1/4") SIZE, SHALLOW WALL FLANGE AND SEAMLESS TUBULAR WALL BEND.	1-1/4"	1/2"	1/2"	1-1/4"	
S-1	SINK	FRANKE COMMERCIAL #LBS6808-1/1 SINGLE BOWL COUNTERTOP MOUNT SINK, 1 HOLE, 508 MM (20") WIDE X 521 MM (20-1/2") LONG X 203 MM (8") HIGH DEEP, COUNTER MOUNTED, BACKLEDGE, GRADE 18-10 20 GA. (0.9 MM) TYPE 302 STAINLESS STEEL, SELF-RIMMING, SATIN FINISH RIM AND BOWLS, MOUNTING KIT PROVIDED, FULLY UNDERCOATED TO REDUCE CONDENSATION AND RESONANCE, FACTORY APPLIED RIM SEAL, 3-1/2" (89 MM) CRUMB CUP WASTE ASSEMBLY WITH 1-1/2" (38 MM) TAILPIECE.	AMERICAN STANDARD MONTERREY #6409170.002 TWO HANDLES FAUCET, POLISHED CHROME FINISH, BRASS, 5.7 LPM (1.5 GPM) PRESSURE COMPENSATING AERATOR OUTLET, RIGID/SWING GOOSENECK SPOUT, 203 MM (8") PROJECTION REACH, 4" (102 MM) LONG VANDAL RESISTANT RED AND BLUE INDEXED WRIST BLADE HANDLES. MCGUIRE #LFH170BV FAUCET SUPPLIES, CHROME PLATED FINISH POLISHED BRASS, COMMERCIAL DUTY 1/4 TURN BALL VALVE ANGLE STOPS, 13 MM (1/2") I.D. INLET X 127 MM (5") HORIZONTAL EXTENSION TUBES, COMBINATION V.P. LOOSE KEY HANDLES, ESCUTCHEON AND FLEXIBLE COPPER RISERS. MCGUIRE #8912CB P-TRAP, HEAVY CAST BRASS ADJUSTABLE BODY, WITH SLIP NUT, 38 MM (1-1/2") SIZE, BOX FLANGE AND SEAMLESS TUBULAR WALL BEND.	1-1/2"	1/2"	1/2"	1-1/4"	
BT-1	BATH	AMERICAN STANDARD COLONY #0182.331.020/0184.331.020 BATH, ACID RESISTING ENAMELLED STEEL CONSTRUCTION, RECTANGULAR, INSTALLATION DIMENSIONS OF 1524 MM X 762 MM X 413 MM (60" X 30" X 16-1/4"), RIGHT OR LEFT HAND OUTLET (ACCORDING TO PLAN), RECESSED ALCOVE INSTALLATION, SOUND DEADENING, SLIP-RESISTANT SURFACE, INTEGRAL FRONT APRON, INTEGRAL TILING FLANGE ON 3 SIDES. PROVIDE SUITABLE BATH DRAIN. PROVIDE SUITABLE REINFORCEMENT FOR ALL SUPPORTS.	AMERICAN STANDARD COLONY PRO #T075.508.002 PRESSURE BALANCING COMPLETE BATH/SHOWER KIT, POLISHED CHROME FINISH, CONSISTING OF: 191 MM (7-1/2") DIA METAL WALL TRIM FACEPLATE WITH ON/OFF AND TEMPERATURE CONTROL SINGLE LEVER HANDLE. 65 MM (2-9/16") DIA WATER-SAVING SHOWER HEAD, 6.7 LPM (1.770 GPM) MAX FLOW RATE, WALL MOUNTED SHOWER ARM AND WALL FLANGE. SLIP-ON 144 MM (5-11/16") LONG TUB SPOUT WITH DIVERTER. AMERICAN STANDARD #R115 PRESSURE BALANCE IN-WALL SHOWER ROUGH VALVE, CAST BRASS BODY, 13 MM (1/2") FEMALE THREAD IPS INLET(S)/OUTLET(S), CERAMIC DISC VALVE CARTRIDGES, INTEGRAL HOT WATER LIMIT STOP, LESS STOPS, BACK-TO-BACK CAPABILITY.	2"	1/2"	1/2"	1-1/2"	

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REVISIONS

No.	Description	YYYY.MM.DD	By
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2.	ISSUED FOR PERMIT	2020.06.26	
1.	ISSUED FOR COORDINATION	2020.04.03	

SUBMITTALS

NORTH: TRUE NORTH PROJECT NORTH

STAMP: LICENSED PROFESSIONAL ENGINEER JUN 26, 2020 M. DI ZIO 100150658 PROVINCE OF ONTARIO

RDZ ENG
RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

219065 - DENISON HERITAGE HOME

PLUMBING EQUIPMENT SCHEDULES

2020.04.17

Scale	Drawn By	Checked By
N.T.S.	SL/KL	MD

Project Number 19146

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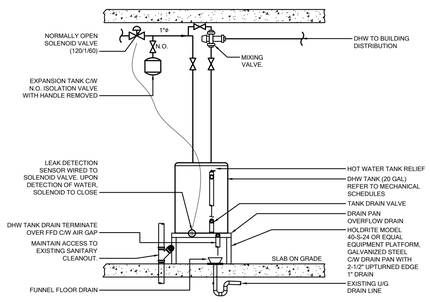
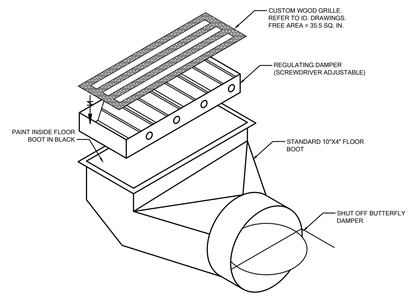


NOTES:
1. CONFIRM AND COORDINATE WALL MOUNT INSTALLATION WITH GENERAL CONTRACTOR AND STRUCTURAL TRADE

DETAIL OF HOT WATER TANK
SCALE: NTS



DETAIL OF FLOOR REGISTER ASSEMBLY
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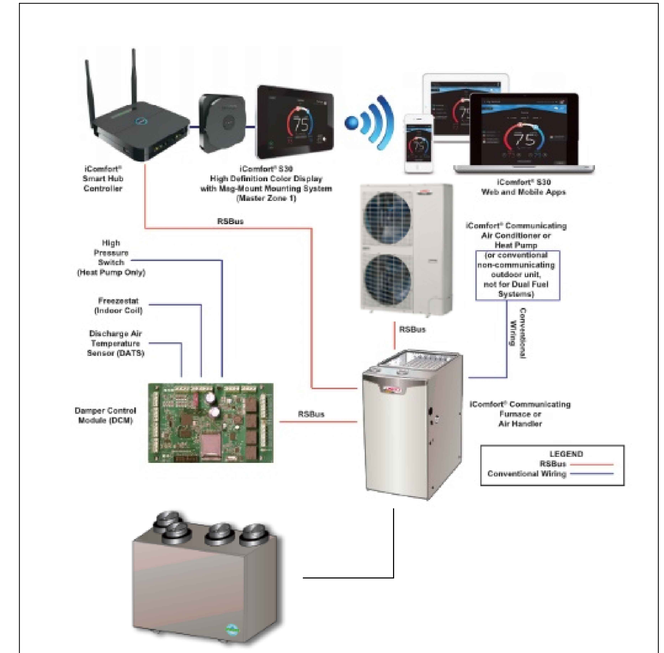
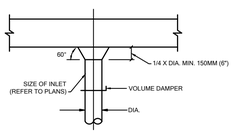
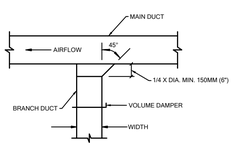


ZONING SYSTEM SCHEMATIC
SCALE: NTS

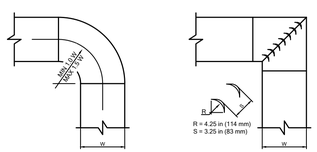


TYPICAL ROUND BRANCH DUCT TAKE-OFF



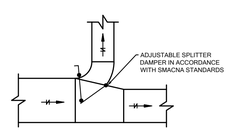
TYPICAL RECTANGULAR BRANCH DUCT TAKE-OFF

DETAIL OF DUCT TAKE-OFF
SCALE: NTS



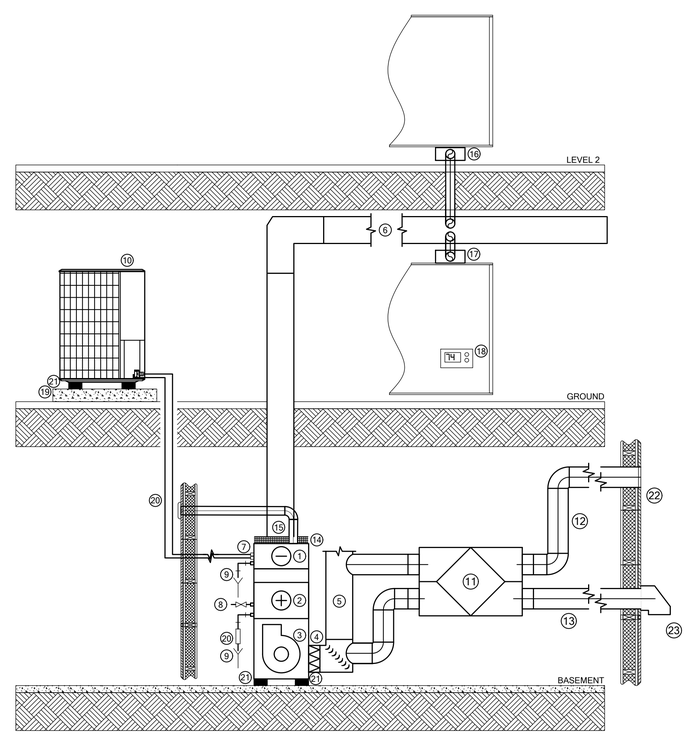
SMOOTH ELBOW

SMOOTH ELBOW



BRANCH DUCT TAKEOFF FROM MAIN

DETAIL OF TYPICAL DUCTWORK FITTINGS
SCALE: NTS



1. COOLING COIL
2. HEATING COIL
3. BLOWER
4. AIR FILTER
5. RETURN AIR DUCT
6. SUPPLY AIR DUCT
7. REFRIGERANT LINES
8. GAS SUPPLY LINE
9. DRAIN LINE WITH TRAP
10. CONDENSER
11. HEAT RECOVERY VENTILATOR
12. VENTILATION AIR DUCT
13. EXHAUST AIR DUCT
14. FLEXIBLE DUCT CONNECTION
15. CONCENTRIC VENT FOR INTAKE AND VENT
16. FLOOR GRILLE (REFER TO PLANS FOR QTY & LOCATIONS)
17. CEILING GRILLE (REFER TO PLANS FOR QTY & LOCATIONS)
18. ZONE THERMOSTATS
19. CONCRETE PAVER
20. ACID NEUTRALIZER
21. NEOPRENE ISOLATOR
22. VENTILATION INTAKE LOUVRE
23. HRV EXHAUST MOUNT

FURNACE INSTALLATION SCHEMATIC
SCALE: NTS

APPLICATION NUMBER:

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REVISIONS

SUBMITTALS

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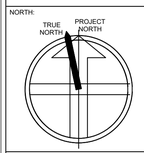

STAMP:

RDZ ENG
RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

219065 - DENISON HERITAGE HOME

DETAILS

2020.04.17

Scale	Drawn By	Checked By
N.T.S.	PM/KL	MD

Project Number
19146

M6.0

MECHANICAL SPECIFICATIONS

GENERAL

1. DRAWINGS AND SPECIFICATIONS ARE TO BE READ IN CONJUNCTION WITH DIVISION 01 GENERAL INSTRUCTIONS.
2. PRIOR TO THE FINAL INSTALLATION OF ANY WALLS AND/OR CEILINGS, CONTRACTOR SHALL CONTACT VIVIEN KWOK (VIVIEN@RDZENG.CA) TO SCHEDULE A FINAL INSPECTION. WHEN WALLS/CEILINGS HAVE BEEN INSTALLED PRIOR TO THE INSPECTION, IT IS THE CONTRACTOR'S OBLIGATION TO REMOVE/REINSTALL ANY RELEVANT SECTIONS FOR INSPECTION PURPOSES AT NO ADDITIONAL COST.
3. DRAWINGS ARE CONSIDERED DIAGRAMMATICAL AND SHOW APPROXIMATE LOCATIONS OF EQUIPMENT AND APPLICABLE SERVICES. CONTRACTOR IS RESPONSIBLE FOR COORDINATION ON SITE WITH THE GENERAL CONTRACTOR, OTHER TRADES, AND SPECIALTY VENDORS, AND FOR ACCURATE MEASUREMENTS OF THE BUILDING ON SITE. THE ASSOCIATED DRAWINGS ARE NOT TO BE SCALED OR USED FOR PREFABRICATION WORK.
4. ALL WORK SHALL BE IN CONFORMANCE WITH THE ONTARIO BUILDING CODE, THE AUTHORITY HAVING JURISDICTION, AND ALL OTHER APPLICABLE CODES AND STANDARDS (ASHRAE, CSA, ETC.).
5. ALL MECHANICAL EQUIPMENT SHALL BE IN CONFORMANCE WITH ASHRAE 90.1 EFFICIENCIES AND PERFORMANCE REQUIREMENTS. FAILURE TO MEET THESE STANDARDS WILL RESULT IN REPLACEMENT OF THE EQUIPMENT AT THE CONTRACTORS COST.
6. APPLY FOR, OBTAIN, AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED. TURN OVER ALL INSPECTION CERTIFICATES FROM GOVERNING AUTHORITIES TO THE ENGINEER TO CERTIFY THAT THE WORK MEETS THE REQUIREMENTS OF THE GOVERNING AUTHORITY.
7. WHERE THERE IS A DISCREPANCY BETWEEN THE DRAWINGS AND SPECIFICATIONS, INCLUDE FOR THE MOST COSTLY ARRANGEMENT.
8. PROVIDE PROPER SHOP DRAWINGS FOR ALL EQUIPMENT AND SYSTEMS, BEARING A DATED REVIEW STAMP FROM THE MECHANICAL CONTRACTOR IDENTIFYING THAT A REVIEW OF THE SUBMISSION HAS BEEN COMPLETED BY THE CONTRACTOR. FAILURE TO DO SO WILL RESULT IN THE SHOP DRAWING BEING RETURNED FOR RESUBMISSION. ALTERNATE EQUIPMENT ARE ACCEPTABLE AS IDENTIFIED IN THE SPECIFICATIONS. IF ALTERNATE EQUIPMENT IS PROVIDED, THE EQUIPMENT PERFORMANCE MUST MEET OR EXCEED THE SPECIFIED EQUIPMENT PERFORMANCE. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WORK RESULTING FROM EQUIPMENT DIMENSION DIFFERENCES, WEIGHT, AND CONNECTION DETAILS.
9. MECHANICAL SHOP DRAWINGS WILL BE REVIEWED BY THE ENGINEER AND WILL BE RETURNED TO THE CONTRACTOR WITHIN ONE (1) WEEK OF RECEIPT, BEARING THE ENGINEERS SHOP DRAWING STAMP AND COMMENTS OF “REVIEWED”, “REVIEWED AS NOTED”, OR “REVISE AND RESUBMIT”.
10. PROVIDE ALL REQUIRED CORE DRILLING, CUTTING, PATCHING, FLASHING WORK, AND CLEAN UP ASSOCIATED WITH YOUR SCOPE OF WORK. IF X-RAY OF THE CONCRETE STRUCTURE IS REQUIRED, THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH OWNER/LANDLORD STRUCTURAL ENGINEER'S REQUIREMENTS. PROVIDE DETAILS OF NEW OPENING THROUGH STRUCTURAL COMPONENTS FOR ENGINEER'S APPROVAL. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS RELATED FOR STRUCTURAL APPROVAL.
11. FLASHING AND COUNTER FLASHING FOR EXTERIOR PENETRATIONS OR WATER-PROOFED FLOORS SHALL BE PROVIDED UNDER THIS CONTRACT.
12. SUBSTITUTIONS OF EQUIPMENT WILL NOT BE ACCEPTED WITHOUT WRITTEN EXPLANATION AND THE CONSULTANT'S WRITTEN AUTHORIZATION. THE EQUIPMENT BEING SUBSTITUTED MUST BE EQUIVALENT IN PERFORMANCE AND QUALITY. ANY ADDITIONAL COSTS INCURRED AS A RESULT OF THE SUBSTITUTED EQUIPMENT, BY THIS TRADE OR ANY OF THE OTHER TRADES, IS THE RESPONSIBILITY OF THE CONTRACTOR.
13. PROVIDE ACCESS DOORS FOR ALL INACCESSIBLE MECHANICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO VALVES, GAUGES AND SERVICES REQUIRING INSPECTION OR SERVICE. FINISH AND MOUNTING ARRANGEMENT SHALL BE APPROVED BY THE ARCHITECT/DESIGNER, PRIOR TO ORDERING AND INSTALLING.
14. CONTRACTOR TO INCLUDE FOR ALL PREMIUM TIME COSTS WHICH FALL OUTSIDE OF NORMAL WORKING HOURS.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ACCURATE RED-LINE AS-BUILT DRAWINGS ON SITE. CLEARLY MARK AND LABEL ANY CHANGES TO THE CONTRACT DOCUMENTS, INCLUDING DIMENSIONED LOCATIONS OF INACCESSIBLE CONCEALED WORK, LOCATIONS OF CONTROL DEVICES WITH IDENTIFICATION, UNDERGROUND PIPING AND DUCTWORK WITH SIZES AND INVERT ELEVATIONS. OBTAIN AND PAY FOR ELECTRONIC AUTOCAD DRAWINGS FROM THE CONSULTANT FOR THE PREPARATION OF AS-BUILT DOCUMENTS IN AUTOCAD FORMAT.
16. PROVIDE TWO (2) OPERATING AND MAINTENANCE (O&M) MANUALS (PLUS ONE DIGITAL COPY) TO THE CONSULTANT FOR REVIEW, IN A THREE RING BINDER WITH TABLE OF CONTENTS AND TABS INCLUDING A FRONT COVER, INTRODUCTION SHEET, COPY OF EACH REVIEWED SHOP DRAWING, OPERATING AND MAINTENANCE DATA FOR EACH PIECE OF EQUIPMENT, START-UP AND VERIFICATION TEST REPORTS, AS-BUILT DRAWINGS, AIR AND WATER BALANCING REPORTS, AND WARRANTIES. SUBMIT MANUALS TO THE ENGINEER FOR REVIEW.
17. PROVIDE ONE (1) YEAR WARRANTY ON ALL MECHANICAL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND FREE FROM DEFECTS FROM THE DATE OF ISSUE OF A CERTIFICATE OF SUBSTANTIAL PERFORMANCE FOR THE WORK. REPAIR AND/OR REPLACE ANY DEFECTS THAT APPEAR IN THE WORK DURING THE WARRANTY PERIOD WITHOUT ADDITIONAL EXPENSE TO THE OWNER.
18. PROVIDE ON-SITE TRAINING FOR THE OWNER AND OPERATIONS PERSONNEL PRIOR TO TURNOVER FOR ALL NEW EQUIPMENT AND CONTROLS. ALL EQUIPMENT REQUIRING MAINTENANCE SHALL BE IDENTIFIED AND LOCATION REVIEWED WITH THE OWNER.
19. WHEN EQUIPMENT/SYSTEM INSTALLATION IS COMPLETE, BUT PRIOR TO COMMISSIONING, PERFORM START-UP FOR EQUIPMENT/SYSTEMS. SUBMIT A COPY OF EACH EQUIPMENT/SYSTEMS MANUFACTURERS START-UP REPORT SHEET TO ENGINEER FOR REVIEW, AND INCORPORATE ANY COMMENTS MADE BY THE ENGINEER. UDNER DIRECT ON-SITE SUPERVISION AND INVOLVEMENT OF EQUIPMENT/SYSTEM MANUFACTURER REPRESENTATIVE, START-UP EQUIPMENT/SYSTEMS, MAKE ANY REQUIRED ADJUSTMENTS, DOCUMENT PROCEDURES, LEAVE EQUIPMENT/SYSTEMS IN PROPER OPERATING CONDITION, AND SUBMIT TO ENGINEER COMPLETE SET OF START-UP DOCUMENTATION SHEETS SIGNED BY MANUFACTURER/SUPPLIER AND CONTRACTOR.
20. PROVIDE TEMPORARY 1" FILTERS ON ALL BASE BUILDING RETURN OPENINGS WITHIN THE AREA OF WORK DURING CONSTRUCTION. REPLACE FILTERS WEEKLY AND REMOVE UPON COMPLETION OF CONSTRUCTION.
21. CHANGE NOTICE QUOTATIONS FOR EXTRA OR DELETED WORK SHALL BE SUBMITTED FOR APPROVAL PRIOR TO PROCEEDING. QUOTATIONS ARE TO BE DETAILED AND INCLUDE ITEMIZED BREAKDOWN OF ALL MATERIALS AND LABOUR, PRICED IN ACCORDANCE WITH THE MECHANICAL CONTRACTORS ASSOCIATION RATES, LESS 25%. OVERHEAD AND PROFIT, UNLESS OTHERWISE SPECIFIED IN DIVISION 01, ARE TO BE SET AT A MAXIMUM OF 7% AND 5% RESPECTIVELY. FAILURE TO SUBMIT THE REQUIRED DOCUMENTATION WILL RESULT IN REJECTION.
22. PRIOR TO OBTAINING PERMIT SIGN OFF AND/OR SUBSTANTIAL COMPLETION, SUBMIT THE FOLLOWING FOR REVIEW: AS-BUILT DRAWINGS; FINAL AIR AND WATER BALANCING REPORT INCLUDING ALL DEFICIENCIES COMPLETED; NFPA 13 CONFORMANCE LETTER; FIRE STOPPING COMPLETENESS LETTER; FIRE DAMPER TEST REPORT; BACKFLOW DEVICE TEST REPORT; AND, WARRANTY.
23. MECHANICAL CONTRACTOR TO PROVIDE ALL ELECTRICAL DEVICES WITH WIRING, STARTERS, DISCONNECTS, ETC. COORDINATE AND CONFIRM ALL POWER REQUIREMENTS WITH THE ELECTRICAL TRADE PRIOR TO ORDERING EQUIPMENT. MECHANICAL TO SUPPLY ALL STARTERS, RELAYS, ETC. AND ELECTRICAL TO INSTALL. ALL POWER WIRING BY ELECTRICAL TRADE. ALL CONTROL WIRING BY MECHANICAL TRADE.

HVAC (SHEETMETAL)

1. ALL DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA AND ASHRAE STANDARDS AND RECOMMENDATIONS.
2. DUCTWORK TO BE GALVANIZED SHEET METAL UNLESS OTHERWISE INDICATED. PROVIDE SATIN COAT FINISH FOR DUCTWORK TO BE PAINTED, G60 COATING ON ALL OTHER DUCTWORK.
3. SEAL ALL JOINTS IN SUPPLY AND EXHAUST AIR DUCTWORK WITH TRANSCONTINENTAL MP DUCT SEALER OR EQUIVALENT.
4. PROVIDE BALANCING DAMPERS FOR ALL NEW AND EXISTING DUCT BRANCHES AS REQUIRED TO PROVIDE A FULLY BALANCED SYSTEM. DAMPERS SHALL BE FREE TO MOVE IN EITHER DIRECTION WITHOUT BINDING AND SHALL NOT RATTLE. INSTALL WITH SUFFICIENT CLEARANCE FOR CEILING ACCESS AND PROVIDE ACCESS DOORS AS REQUIRED.
5. PROVIDE DYNAMIC TYPE FIRE DAMPERS WHERE INDICATED ON THE DRAWINGS AND WHERE DUCTWORK PASSES THROUGH CONSTRUCTION WITH A FIRE RATING, COMPLETE WITH APPROVED ACCESS DOORS. FIRE DAMPERS SHALL BE IN ACCORDANCE WITH ULC LISTINGS AND NFPA 90A REQUIREMENTS.
6. DUCTWORK SHALL BE INSULATED TO MEET ASHRAE 90.1 AND THE GOVERNING AUTHORITY REQUIREMENTS. INSULATE DUCTWORK WITH JOHNS MANVILLE “MICROLITE EQ FSK” FLEXIBLE BLANKET TYPE INSULATION WITH FSK FACING, OR EQUAL, OR JOHNS MANVILLE “800 SERIES SPIN-GLAS” FSK FACE BOARD TYPE INSULATION.
   A. DUCTWORK CONCEALED ABOVE CEILINGS SHALL BE INSULATED WITH FLEXIBLE BLANKET TYPE. EXPOSED DUCTWORK SHALL BE INSULATED WITH BOARD TYPE.
   B. INSULATE SUPPLY AIR DUCTWORK INSIDE THE BUILDING 40MM (1-1/2") THICK
   C. INSULATE EXHAUST AIR DUCTWORK FROM EXTERIOR PENETRATION TO MINIMUM 3 M (10 FT) WITHIN THE BUILDING, 50MM (2") THICK
   D. DO NOT INSULATE DUCTWORK EXPOSED WITHIN THE SPACE IT SERVES.
7. ACOUSTIC DUCT LINING SHALL BE MINIMUM 25MM (1") THICK MEETING 25/50 FLAME SPREAD AND SMOKE DEVELOPED RATINGS, NFPA 90A, ASTM C1071 AND ASTM G21 REQUIREMENTS, AND SHALL BE COATED WITH AN ANTIMICROBIAL AGENT SO AS TO NOT SUPPORT MICROBIAL GROWTH. DUCTWORK DIMENSIONS INDICATED ON THE DRAWINGS ARE THE CLEAR INSIDE DIMENSION OF THE DUCTWORK. ACCOUNT FOR THE ENLARGEMENT OF DUCT SIZES SHOWN TO ACCOMMODATE THE ACOUSTIC DUCT LINING. ACOUSTIC DUCT LINING SHALL BE PROVIDED WHEREVER SHOWN AND/OR SPECIFIED ON THE DRAWING, IN ADDITION TO THE FOLLOWING LOCATIONS:
   A. ALL SUPPLY AND RETURN AIR DUCTWORK SERVING MECHANICAL EQUIPMENT WITH FANS TO A MAXIMUM OF 4.5m (15') FROM THE EQUIPMENT, MEASURED OUTWARD IN ALL DIRECTIONS;
   B. ALL TRANSFER AIR DUCTWORK;
8. MAKE GOOD ALL INSULATION WHEN CONNECTING TO EXISTING DUCTWORK.
9. FLEXIBLE DUCTWORK SHALL BE EQUAL TO FLEXMASTER “TRIPLE LOCK” ALUMINUM AIR DUCT, MAXIMUM LENGTH OF 1.8 M (6 FT), AND OF THE SAME SIZE AS THE DIFFUSER NECK. WHERE LENGTH OF DUCT BETWEEN MAIN AND DIFFUSER IS LONGER THAN 1.8 M (6 FT), PROVIDE RIGID DUCT FROM DUCT MAIN TO LIMIT FLEX DUCT LENGTH.
10. PROVIDE GRILLES AND DIFFUSERS OF NEW QUALITY TO THE SPECIFICATIONS INDICATED ON THE DRAWINGS. COORDINATE FINAL INSTALLATION LOCATION WITH THE ARCHITECTURAL REFLECTED CEILING PLAN AND LIGHTING LAYOUTS.
11. ALL OPEN ENDED RETURN AIR DUCTWORK TO BE PROVIDED WITH A BELLMOUTH TYPE FITTING WITH OPENING A MINIMUM OF 25MM (1") LARGER ON ALL SIDES OF THE MAIN DUCT. PROVIDE WIRE MESH BIRDSCREEN ON OPENING.
12. PROVIDE FLEXIBLE CONNECTIONS BETWEEN DUCTWORK AND ALL FANS, ERVS, ETC.
13. TEST, ADJUST, AND BALANCE ALL AIR SYSTEMS TO OBTAIN THE DESIGN AIR QUANTITIES NOTED TO WITHIN 10%. MARK THE FINAL POSITION ON ALL BALANCING DAMPERS AND ADJUSTABLE AIR TURNING DEVICES. SUBMIT BALANCING REPORT TO THE ENGINEER FOR REVIEW AND INCLUDE FOR ADJUSTMENTS AS DIRECTED BY THE ENGINEER TO MEET THE DESIGN REQUIREMENTS. WORK SHALL BE PERFORMED BY THE OWNER'S TESTING AND BALANCING CONTRACTOR OR BY A CONTRACTOR APPROVED BY THE OWNER. TAB AGENCY TO BE CERTIFIED BY AABC OR NEBB. THE COST FOR BALANCING SHALL BE CARRIED BY THE MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL BE AVAILABLE TO MAKE ADJUSTMENTS TO THE SYSTEM, REPAIR DUCTWORK, ETC. DURING BALANCING. ADJUST OR REPLACE FAN SHEAVES AS REQUIRED TO OBTAIN DESIGN AIR QUANTITIES.
14. PROVIDE ALL CONTROLS, WIRING, AND APPURTENANCES NECESSARY FOR THE COMPLETE AND OPERATING SYSTEMS. CONNECT ALL ROOM AND EQUIPMENT THERMOSTATS AS NECESSARY.
15. MOUNT ROOM THERMOSTATS IN ACCORDANCE WITH THE REQUIREMENTS OF THE AHJ AND BARRIER FREE REQUIREMENTS. CONFIRM EXACT LOCATION AND HEIGHT OF THERMOSTATS WITH CONSULTANT PRIOR TO ROUGHING-IN.

NATURAL GAS PIPING

1. ALL MATERIAL AND INSTALLATION SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE LATEST VERSION OF CSA B149.1, NATURAL GAS AND PROPANE INSTALLATION CODE.
2. WORK IS TO BE PERFORMED BY A LICENSED GAS PIPE FITTER AUTHORIZED UNDER THE TSSA ACT.
3. CONTRACTOR TO ARRANGE AND PAY FOR ALL PERMITS REQUIRED FOR NATURAL GAS INSTALLATION.
4. UNDERGROUND PIPING SHALL BE: COATED BLACK STEEL “YELLOW JACKET” SCHEDULE 40 MILD BLACK CARBON STEEL; OR, SAFETY YELLOW COLOURED POLYETHYLENE PIPE, FITTINGS, AND JOINTS TO CSA B137.4; OR, COATED TYPE “K” SOFT TEMPER COPPER WITH FACTORY APPLIED EXTERNAL YELLOW LPASTIC COATING, STAMPED WITH DESIGNATION C37700 TO INDICATE FORGED BRASS.
5. EXPOSED SCREW PIPING TO BE SCHEDULE 40 MILD BLACK CARBON STEEL, ASTM A53 GRADE B COMPLETE WITH MALLEABLE CAST IRON SCREWED FITTINGS TO ANSI B2.1, AND SCREWED JOINTS.
6. EXPOSED WELDED PIPING TO BE SCHEDULE 40 MILD BLACK CARBON STEEL, ASTM A53 GRADE B, MILL OR SITE BEVELLED, COMPLETE WITH FACTORY MADE FORGED STEEL BUTT WELDING FITTINGS AND WELDED JOINTS.
7. FLEXIBLE STAINLESS STEEL PIPING FOR EQUIPMENT CONNECTIONS UP TO 19 MM (3/4") TO BE CSA CERTIFIED, 860 KPA (125 PSI) RATED GAS TIGHT CONVOLUTED STAINLESS STEEL TUBING FACTORY JACKETED WITH A BRIGHT YELLOW PVC COATING.
8. VALVES SHALL BE PROVINCIAL CODE APPROVED, MINIMUM 3100 KPA (450 PSI) WOG RATED BALL VALVES FOR PIPING UP TO 100 MM (4"). VALVES 100 MM (4") AND LARGER SHALL BE PLUG OR BALL TYPE, CLASS 125 1380 KPA (200 PSI) RATED LUBRICATED PLUG TYPE.
9. PRESSURE REGULATORS ARE TO BE CSA CERTIFIED AS FOLLOWS:
   A. NON-VENTED: LEVER ACTION, DEAD END LOCKUP TYPE, EACH COMPLETE WITH A VENT LIMITER, SELF-ALIGNING VALVE, DIE-CAST ALUMINUM HOUSING, AND SYNTHETIC RUBBER COMPOUND DIAPHRAGM. PROVIDE FOR INDOOR APPLIANCES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
   B. VENTED TYPE: SPRING LOADED SELF OPERATED DESIGN, TIGHT CLOSING, SELECTED FOR FACILITY GAS PRESSURE AND PIPING PRESSURE LOSS, AND CONNECTED TO EQUIPMENT LOAD AT FULL FIRING RATE PLUS 20% SPARE. 1035 KPA (150 PSI) RATED CAST IRON BODY, ALUMINUM DIAPHRAGM AND SPRING CASE WITH NITRILE DIAPHRAGM, DISC, AND BODY O-RING. EXTEND VENT UP THROUGH ROOF WHERE PERMITTED A MINIMUM 3 M (10 FT) FROM EQUIPMENT AIR INTAKES AND BUILDING OPENINGS. PROVIDE REQUIRED VENT PIPING AND TERMINATE VENT IN A TURN-DOWN ELBOW FITTING WITH BRONZE BUG SCREEN.
10. SLOPE GAS PIPING DOWN IN DIRECTION OF FLOW TO LOW POINTS. INSTALL DRIP POINTS AT ALL LOW POINTS IN PIPING SYSTEM AND AT EACH CONNECTION TO EQUIPMENT.
11. IDENTIFY ABOVE GROUND NATURAL GAS PIPING WITH 2 COATS OF SAFETY YELLOW ENAMEL APPLIED OVER PRIMER, AND SMS LTD COIL TYPE VINYL IDENTIFICATION WITH ARROWS.
12. TEST SYSTEM IN ACCORDANCE WITH CAN/CGA B149, PURGE AFTER PRESSURE TEST.

PLUMBING AND DRAINAGE

1. PROVIDE ALL PLUMBING SYSTEMS AS PER THE DRAWINGS AND SPECIFICATIONS, ONTARIO BUILDING CODE AND PLUMBING CODE, AND BY LOCAL BY-LAWS.
2. MAKE ALL WATER, WASTE, AND VENT PIPING CONNECTIONS AS REQUIRED. PROVIDE VENTING, TRAPS, AND PRIMING AS PER THE APPLICABLE APPLICATIONS.
3. ALL SANITARY DRAIN, STORM RAIN WATER LEADERS, AND MAIN VENT STACKS SHALL BE CAST IRON COMPLETE WITH MJ JOINTS. BRANCH VENTS MAY BE COPPER PIPING, AND SANITARY DRAINS UNDER 75 MM (3") AND CONDENSATE DRAINS MAY BE HARD TEMPERED COPPER DRAINAGE TUBE (DWV).
4. UNLESS OTHERWISE NOTED, SLOPE ALL 75 MM (3") DRAINAGE PIPING AT 2% SLOPE AND ALL 100 MM (4") AND LARGER DRAINAGE PIPING AT 1% SLOPE.
5. VERIFY ALL DRAINAGE PIPING INVERTS PRIOR TO COMMENCING WITH WORK.
6. PROVIDE CLEANOUTS FOR ALL DRAINAGE PIPING WHERE INDICATED ON THE DRAWINGS AND AS REQUIRED PER LOCAL CODES. CLEANOUTS FOR PIPING 75 MM (3") AND SMALLER SHALL BE OF THE SAME SIZE AS THE PIPE. CLEANOUTS FOR PIPING 100 MM (4") AND LARGER SHALL BE MINIMUM 100 MM (4") IN SIZE.
7. PROVIDE NEW PLUMBING FIXTURES OF FIRST QUALITY, CLEANED, AND IN PERFECT CONDITION. FINAL LOCATION OF ALL NEW PLUMBING FIXTURES AND EQUIPMENT SHALL BE COORDINATED WITH THE FINAL ARCHITECTURAL LAYOUT. COORDINATE ALL ROUGH IN REQUIREMENTS WITH THE GENERAL CONTRACTOR PRIOR TO PERFORMING WORK. INSTALL ALL FIXTURES IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. PROVIDE TRAP SEAL PRIMER FOR ALL NEW FLOOR DRAINS AND HUB DRAINS.
9. DOMESTIC WATER PIPING SHALL BE TYPE "L" COPPER PIPING CERTIFIED TO ASTM B42. PRESSURE TEST ALL JOINTS IN ACCORDANCE WITH LOCAL CODES PRIOR TO APPLYING INSULATION.
10. SUPPORT COPPER PIPING 25 MM (1") AND SMALLER WITH INDEPENDENT SUPPORTS EVERY 1.8 M (6 FT) AND COPPER PIPING LARGER THAN 25 MM (1") EVERY 2.4 M (8 FT). PROVIDE INDEPENDENT SUPPORTS EVERY 2.4 M (8 FT) FOR ALL CAST IRON PIPING. PROVIDE OVERSIZED PIPE SADDLES TO ACCOMMODATE PIPING INSULATION. DO NOT PROVIDE INSULATION OVER HANGERS OR SUPPORTS.
11. PIPING SHALL BE INSULATED TO MEET ASHRAE 90.1 AND THE GOVERNING AUTHORITY REQUIREMENTS. INSULATE PIPING WITH JOHNS MANVILLE "MICRO-LOK" FIBER GLASS PIPING INSULATION WITH REINFORCED VAPOR RETARDER FACING AND FACTORY APPLIED CLOSURE SYSTEM OR EQUAL.
   A. DOMESTIC COLD WATER PIPING LESS THAN 100 MM (4"), 25 MM (1") THICK
   B. DOMESTIC COLD WATER PIPING 100 MM (4") AND LARGER, 40 MM (1-1/2") THICK
   C. DOMESTIC HOT WATER PIPING LESS THAN 40 MM (1-1/2"), 25 MM (1") THICK
   D. DOMESTIC HOT WATER PIPING 40 MM (1-1/2") AND LARGER, 40 MM (1-1/2") THICK
   E. HORIZONTAL STORM DRAINAGE PIPING FROM ROOF DRAINS TO THE MAIN VERTICAL RISER, 25 MM (1") THICK
   F. CONDENSATE DRAINAGE PIPING FROM AIR CONDITIONING EQUIPMENT TO MAIN VERTICAL RISER OR INDIRECT DRAINAGE POINT, 25 MM (1") THICK
   G. INSTALL INSULATION CONTINUOUS THROUGH WALLS AND PARTITIONS.
12. PROVIDE LAUNDRY WASHER BOX "PPP INC" MODEL M-500 MLB LAUNDRY METAL WASHER BOX, FLUSH WITH WALL, WITH LEVER OPERATED BALL VALVES 19 MM (3/4"), HOSE END OUTLETS WITH WATER HAMMER ARRESTORS, 12 MM (1/2") HOT AND COLD WATER CONNECTIONS, METAL DRAIN AND METAL 50 MM (2") DRAIN CONNECTION. INSTALL SUCH THAT DRAIN CONNECTION IS ABOVE FLOOD LEVEL RIM OF WASHER.
13. PROVIDE BACKWATER VALVES ON SANITARY DRAINAGE PIPING SERVING FIXTURES THAT ARE LOCATED BELOW THE LEVEL OF THE ADJOINING STREET.
14. INCLUDE FOR PIPE FREEZING AS REQUIRED TO CONNECT TO EXISTING PIPING SYSTEMS WHERE ISOLATION VALVES ARE NOT AVAILABLE OR DO NOT HOLD.

DOMESTIC WATER PIPING (PEX)

1. TUBE SHALL BE CROSS-LINKED POLYETHYLENE (PEX) MANUFACTURED BY PEX-A OR PEROXIDE METHOD. PEX TUBING SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM F876, ASTM F877 AND CAN/CSA-B137.5. THE TUBE SHALL BE LISTED TO ASTM BY AN INDEPENDENT THIRD PARTY AGENCY.
2. FITTINGS SHALL BE MANUFACTURED OF ENGINEERED PLASTIC (EP). FITTINGS SHALL BE PEX-A COLD EXPANSION TYPE CERTIFIED TO ASTM F1960.
   A. FITTINGS SHALL BE SUPPLIED BY THE PEX TUBING MANUFACTURER.
   B. PEX-A COLD EXPANSION TYPE FITTINGS SHALL BE AN ASSEMBLY CONSISTING OF INSERT AND PEX-A COLD EXPANSION RING.
   C. FITTING TYPE: UPONOR ENGINEERED PLASTIC (EP).
3. PEX TUBING AND COMPONENTS SHALL BE INSTALLED IN FULL COMPLIANCE WITH ALL PROVINCIAL AND LOCAL JURISDICTIONAL CODES, STANDARDS AND REQUIREMENTS. IN PARTICULAR:
   A. 2" AND BELOW PEX TUBING SHALL BE LISTED TO A MAXIMUM 25 FLAME SPREAD / 50 SMOKE DEVELOPED PER THE REQUIREMENTS OF CAN/ULC-S102.2.
   B. 2½ " TO 3" PEX TUBING SHALL BE LISTED TO A MAXIMUM 25 FLAME SPREAD / 50 SMOKE DEVELOPED WHEN COVERED WITH RATED FIBERGLAS INSULATION PER THE REQUIREMENTS OF CAN/ULC-S102.2.
   C. PEX TUBING PENETRATING A FIRE SEPARATION SHALL BE SEALED PER CAN/ULC-S115.
   D. PEX TUBING CONTAINED WITHIN A FIRE SEPARATION SHALL BE LISTED PER CAN/ULC-S101.
4. WARRANTY SHALL CONFORM TO THE FOLLOWING.
   A. THE ASSEMBLY OF MANUFACTURER'S TUBING AND FITTINGS SHALL CARRY A TWENTY-FIVE (25) YEAR NON-PRORATED WARRANTY ON MAINTAINING A LEAK-PROOF SEAL.
   B. WARRANTY SHALL PROVIDE FOR REPAIR OR REPLACEMENT OF ANY TUBE, FITTINGS OR CONNECTION, WHICH ARE PROVEN TO BE DEFECTIVE AND PAY FOR CONSEQUENTIAL DAMAGES.
5. CONTRACTOR MUST BE TRAINED AND CERTIFIED BY THE MANUFACTURER OR MANUFACTURER
6. EXPANSION/CONTRACTION PROVISIONS:
   A. UTILIZE A CONTINUOUS SUPPORT TRAY SUCH AS UPONOR PEX-A PIPE SUPPORT TO MITIGATE THERMAL EXPANSION AND CONTRACTION. NATURAL CORNERS AND OFFSETS MAY ALSO BE USED. IN CONJUNCTION WITH THE ABOVE OPTIONS, ANCHOR POINTS MUST ALSO BE USED EVERY 65-FT FOR HYDRONIC SYSTEMS ON CONTINUOUS RUNS WITHOUT JOGS. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS
   B. PEX-A PIPING HANGER SPACING: INSTALL HANGERS FOR PEX-A PIPING WITH THE FOLLOWING MAXIMUM SPACING:
   i) NPS ¾ (DN 20) AND SMALLER: 32 INCHES (815MM) WITH 3/8-INCH (10MM) ROD
   ii) NPS 1 TO NPS 3 (DN 25 TO DN 75): 48 INCHES (1200MM) WITH 3/8-INCH (10MM) ROD
   C. NPS 4 (DN 110) AND SMALLER: CONTINUOUSLY SUPPORTED BY PEX-A PIPE SUPPORT OR METALLIC V-CHANNELS THAT:
   i) ARE SUPPORTED EVERY 6 FEET (1.8M) FOR NPS ¾ (DN 20) AND SMALLER
   ii) ARE SUPPORTED EVERY 8 FEET (2.4M) FOR NPS 1 TO 4 (DN 25 TO DN 110)
   D. HAVE A MAXIMUM CANTILEVER, MEASURED FROM THE SUPPORT TO THE END OF THE CTS SUPPORT CHANNEL, OF 1.5 FEET (0.5M)
   E. PEX-A RISER SUPPORTS: INSTALL CTS RISER CLAMPS AT THE BASE OF EACH FLOOR AND AT THE TOP OF EVERY OTHER FLOOR. INSTALL MID-STORY GUIDES BETWEEN EACH FLOOR

REFRIGERATION

1. DESIGN AND INSTALLATION OF REFRIGERATION SYSTEM SHALL BE IN ACCORDANCE WITH CSA B52 MECHANICAL REFRIGERATION CODE, ONTARIO BUILDING CODE, AHRI, AND EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
2. NEW REFRIGERATION PIPING SHALL BE ACR SEAMLESS COPPER TUBING SUITABLE FOR AIR CONDITIONING OR REFRIGERATION SYSTEMS.
3. KEEP TUBING RUNS AND NUMBER OF ELBOWS AND FITTINGS TO A MINIMUM.
4. ENSURE TUBING IS DEHYDRATED, TESTED, ADEQUATELY CHARGED, AND GAS TIGHT.
5. PIPING SHALL BE INSULATED WITH FLEXIBLE ELASTOMERIC, CLOSED CELL, SLEEVE TYPE LONGITUDINALLY SPLIT SELF-SEAL FORMED PLASTIC PIPE INSULATION EQUAL TO ARMACELL AP/ARMAFLEX SS. INSULATION SHALL BE 25 MM (1") THICK.

EQUIPMENT SPECIFICATIONS

GAS FIRED FURNACE

1. GENERAL
   A. SUBMIT SHOP DRAWINGS/PRODUCT DATA SHEETS FOR FURNACES, INCLUDING DX COIL, CONDENSING UNIT, CONTROL AND ACCESSORIES. INCLUDE CERTIFIED POWER AND CONTROL WIRING SCHEMATICS.
   B. SUBMIT WITH DELIVERY OF EACH UNIT A COPY OF FACTORY INSPECTION AND TEST REPORT, AND INCLUDE A COPY OF EACH REPORT WITH O & M MANUAL PROJECT CLOSE-OUT DATA.
   C. SUBMIT A SITE INSPECTION AND START-UP REPORT FROM MANUFACTURER'S REPRESENTATIVE.
   D. SUBMIT A COPY OF MANUFACTURER'S 10 YEAR EXTENDED WARRANTY FOR ALUMINIZED STEEL HEAT EXCHANGER.
   E. FURNACES AND INSTALLATION OF FURNACES ARE TO BE IN ACCORDANCE WITH REQUIREMENTS OF FOLLOWING:
   i) APPLICABLE PROVINCIAL CODES AND STANDARDS;
   ii) CAN/CSA B149.1, NATURAL GAS AND PROPANE INSTALLATION CODES.
   F. FURNACE INSTALLATION TRADESMEN ARE TO BE JOURNEYMAN TRADESMEN LICENSED TO INSTALL GAS FIRED EQUIPMENT.
2. PRODUCT
   A. LENNOX INDUSTRIES (CANADA) LTD. ELITE 'EL' SERIES, 96% AFUE EFFICIENT, CSA OR C-ETL CERTIFIED GAS FIRED WARM AIR FURNACE, FACTORY ASSEMBLED, PRE-WIRED AND IN ACCORDANCE WITH DRAWING SCHEDULE.
   B. INTERNALLY INSULATED CABINET CONSTRUCTED OF STEEL, FINISHED WITH BAKED POWDER EPOXY ENAMEL AND COMPLETE WITH ACCESS PANELS. DOWN-FLOW FURNACES ARE COMPLETE WITH A BASE SECTION AND COMBUSTIBLE FLOOR MOUNTING ADAPTOR.
   C. TUBULAR DESIGN ALUMINIZED STEEL HEAT EXCHANGER WITH AN EXTENDED 10 YEAR MANUFACTURER'S WARRANTY, EQUIPPED WITH FLUE BOX AND A MOTORIZED COMBUSTION AIR INDUCER TO PRE-PURGE AND POST-PURGE HEAT EXCHANGER AND POSITIVELY VENT COMBUSTION PRODUCTS, AND AN ALUMINIZED STEEL INSHOT BURNER REMOVABLE FROM ASSEMBLY AS A SINGLE COMPONENT.
   D. VENTING TO BE SEALED COMBUSTION AND COMPLETED WITH CONCENTRIC VENT KIT SUITABLE FOR SIDEWALL TERMINATION.
   E. DIRECT DRIVE, MULTI-SPEED, STATICALLY AND DYNAMICALLY BALANCED, RESILIENTLY MOUNTED BLOWER WITH PERMANENTLY LUBRICATED OPEN DRIP-PROOF MOTOR CONFORMING TO REQUIREMENTS SPECIFIED IN SECTION ENTITLED BASIC MECHANICAL MATERIALS AND METHODS.
   F. FACTORY INSTALLED AND PRE-WIRED CONTROLS COMPLETE WITH:
   i) 24 VOLT REDUNDANT COMBINATION GAS VALVE WITH 100% SAFETY SHUT-OFF, MANUAL MAIN SHUT-OFF VALVE, PRESSURE REGULATOR, AND AUTOMATIC SOLENOID VALVE;
   ii) HOT SURFACE IGNITION AND A SEPARATE ELECTRONIC FLAME SENSOR TO INITIATE 3 ATTEMPTS TO RE-IGNITE AFTER LOSS OF FLAME, THEN LOCKS OUT UNIT OPERATION;
   iii) PRESSURE SWITCH TO PROVE ADEQUATE FLOW THROUGH VENTING;
   iv) HIGH TEMPERATURE LIMIT CONTROLS WITH A FIXED TEMPERATURE SETTING TO PROTECT FROM ABNORMAL OPERATING TEMPERATURES;
   v) SOLID-STATE, INTEGRATED, COMBINATION IGNITION AND FAN CONTROL BOARD WITH FAN TIMER CONTROL, IGNITION CONTROL LED'S FOR STATUS AND TROUBLESHOOTING;
   vi) 120/24 VOLT CONTROL TRANSFORMER;
   vii) TERMINAL STRIPS FOR POWER AND 24 VOLT CONTROL CONNECTIONS;
   viii) CONTINUOUS LOW SPEED BLOWER CONTROL KIT TO OPERATE BLOWER CONTINUOUSLY ON LOW SPEED AND AUTOMATICALLY SWITCH UP TO RATED SPEED DURING HEATING CYCLE;
   ix) SUMMER-WINTER FAN SWITCH;
   G. SLIDE-IN RETURN AIR FILTER FRAMING WITH A MERV 7 DISPOSABLE FILTER AS WELL AS A SPARE FILTER SUPPLIED LOOSE IN ORIGINAL PACKAGING.
   H. REMOTE WALL MOUNTING, 24 VOLT, ADJUSTABLE, 7 DAY PROGRAMMABLE, TAMPER-PROOF THERMOSTAT SUPPLIED LOOSE FOR SITE INSTALLATION, COMPLETE WITH THERMOMETER, TOUCH SCREEN LCD DIGITAL DISPLAY, TIMED AND CONTINUOUS OVERRIDE, WIFI CONNECTION AND BATTERY BACK-UP. EQUAL TO LENNOX ICOMFORT MODEL V0STAT51P-3.
   I. DX COIL
   i) CABINET SHALL BE INSULATED WITH THICK FIBREGLASS INSULATION, HEAVY GAUGE, PRE-PAINTED STEEL. UNIT COMPLETE WITH FLANGES FURNISHED FOR EASE OF DUCT CONNECTION, ENGAGING HOLES FUMISHED ON CABINET FOR ALIGNMENT WITH FURNACE, REMOVABLE PANELS FOR COIL ACCESS, AND REFRIGERANT LINE CONNECTIONS EXTENDED OUTSIDE OF CABINET FOR EASY CONNECTION.
   ii) UNIT COMPLETE WITH FACTORY-INSTALLED CHECK/EXPANSION VALVE FOR R-410A REFRIGERANT (EXTERNALLY-EQUALIZED AND NON-BLEED PORT).
   iii) COIL SHALL BE CONSTRUCTED OF DURABLE ALUMINUM TUBING, RIPPLED-EDGED ALUMINUM FINS. TWIN COIL ASSEMBLED IN 'A' CONFIGURATION. COIL COMPLETE WITH NON-CORROSIVE, UV-RESISTANT POLYMER DRAIN PAN WITH DUAL DRAIN CONNECTIONS, COPPER REFRIGERANT SWEAT CONNECTIONS ON LIQUIE AND SUCTION LINES FOR EASY BRAZING.
   J. CONDENSING UNIT EQUAL TO LENNOX MINI-VRF HEAT PUMP OUTDOOR UNIT WITH PERFORMANCE SPECIFIED ON DRAWING SCHEDULE AND FOLLOWING FEATURES:
   i) UNIT TO BE FACTORY ASSEMBLED AND PRE-WIRED WITH ALL CONTROLS NECESSARY FOR OPERATION.
   ii) UNIT CABINET SHALL BE CONSTRUCTED OF HEAVEY GAUGE STEEEL AND SHALL BE FINISHED WITH A WEATHERPROOF AND CORRISON RESISTANT BAKED ENAMEL FINISH.
   iii) FAN MOTOR SHALL HAVE CERAMIC BEARINGS AND INSULATED ROTOR SHAFT. IT SHALL BE POWERED BY AN INVERTER DRIVE CAPABLE OF FAN SPEED CONTROL.
   iv) CONDENSER COIL SHALL BE MANUFACTURED FROM COPPER TUBES WITH ALUMINUM FINS. COIL SHALL BE FACTORY COATED WITH A HYDROPHILIC TREATMENT FOR CORROSION RESISTANCE.
   v) COMPRESSOR TO BE INVERTER DRIVEN AND CAPABLE OF ADJUSTING COMPRESSOR SPEED IN RESPONSE TO CHANGING INDOOR UNIT CONDITIONS.
   vi) REFRIGERANT SHALL BE R-410A.
   vii) UNIT CONTROLS COMPLETE WITH AHU CONTROL KIT.
   K. ACCEPTABLE MANUFACTURERS ARE:
   i) LENNOX INDUSTRIES (CANADA) LTD.;
   ii) TRANE CANADA INC.;
   iii) CARRIER CORP.
3. INSTALLATION
   A. PROVIDE GAS FIRED WARM AIR FURNACE AND ASSOCIATED COOLING COIL AND CONDENSING UNIT.
   B. SECURE FURNACE IN PLACE, LEVEL AND PLUMB. INSTALL ALL COMPONENTS, INCLUDING DX COOLING COIL, AND ACCESSORIES SUPPLIED LOOSE.
   C. CONNECT WITH VALVED GAS PIPING WITH DRIP LEG, AND A LENGTH OF FLEXIBLE GAS PIPING WITH 360° LOOP FOR FINAL CONNECTION.
   D. VENT FURNACE AS SHOWN AND/OR SPECIFIED.
   E. SECURE CONDENSING UNIT IN PLACE, LEVEL AND PLUMB, ON PATIO STONES OR WOODEN SLEEPERS.
   F. CONNECT CONDENSING UNIT AND INDOOR DX COOLING COIL WITH REFRIGERANT PIPING. REFER TO REFRIGERANT PIPING SECTION OF SPECIFICATIONS. PROVIDE ALL REQUIRED REFRIGERANT.
   G. PERFORM ALL CONTROL WIRING BETWEEN CONDENSING UNIT AND COOLING COIL.
   H. PROVIDE A THERMOSTAT FOR FURNACE AND WALL MOUNT. CONFIRM EXACT LOCATION PRIOR TO ROUGHING-IN. PROVIDE REQUIRED 24 VOLT CONTROL WIRING IN CONDUIT IN ACCORDANCE WITH CERTIFIED WIRING SCHEMATICS SUPPLIED WITH FURNACES AND ELECTRICAL WORK WIRING REQUIREMENTS.
   I. INCLUDE FOR A ONE HALF DAY ON-SITE OPERATION DEMONSTRATION AND TRAINING SESSION. TRAINING IS TO BE A FULL REVIEW OF ALL COMPONENTS INCLUDING BUT NOT LIMITED TO A FULL OPERATION AND MAINTENANCE DEMONSTRATION, WITH ABNORMAL EVENTS.

HEAT RECOVERT VENTILATOR (HRV)

1. GENERAL
   A. SUBMIT SHOP DRAWING FOR HEAT RECOVERY VENTILATOR, INCLUDING ACCESSORIES, AND ALL REQUIRED POWER AND CONTROL WIRING SCHEMATICS.
   B. SUBMIT WITH DELIVERY OF UNIT A COPY OF THE FACTORY INSPECTION REPORT, AND INCLUDE A COPY OF THE REPORT WITH O&M MANUAL PROJECT CLOSE-OUT DATA.
   C. SUBMIT A SITE INSPECTION AND START-UP REPORT FROM MANUFACTURER'S REPRESENTATIVE.
   D. SUPPLY A SPARE FILTER SET FOR THE VENTILATOR AND STORE AT SITE WHERE DIRECTED PRIOR TO SUBSTANTIAL PERFORMANCE OF THE WORK.
   E. SUBMIT A SIGNED EXTENDED WARRANTY DIRECT FROM MANUFACTURER TO OWNER COVERING THE HEAT RECOVERY CORE FROM MATERIAL AND WORKMANSHIP FOR AN ADDITIONAL 4 YEARS AFTER CONTRACTOR WARRANTY EXPIRES.
2. PRODUCT
   A. UNIT EQUAL TO LENNOX HEALTH CLIMAT SOLUTIONS SERIES. UNIT SHALL BE FACTORY ASSEMBLED, WIRED AND TESTED AND SHALL CONFORM TO CSA AND UL STANDARDS.
   B. CABINET SHALL BE CONSTRUCTED OF 20-GAUGE PRE-PAINTED STEEL FOR CORROSION RESISTANCE AND INSULATED TO PREVENT EXTERIOR CONDENSATION. CABINET SHALL BE COMPLETE WITH DRAIN CONNECTIONS, BALANCING PORTS, AND THREADED INSERTS TO ACCEPT S-HOOKS AND HANGING STRAPS SUPPLIED WITH UNIT.
   C. HEAT RECOVERY ASSMEBLY SHALL BE THERMALLY CONDUCTIVE, ALUMINUM CROSS-FLOW HEAT REXOVERY CORE. THE CORE SHALL BE EASILY REMOVABLE FOR CLEANING AND SERVICE.
   D. UNIT COMPLETE WITH WASHABLE AIR FILTERS LOCATED IN EXHAUST AND SUPPLY AIR STREAMS.
   E. MOTORS ARE CONSTANT TORQUE ECM MOTORS CAPABLE OF MULTI-SPEED OPERATION. ONE DEDICATED FAN PROVIDED FOR EACH AIR STREAM.
   F. UNIT PROVIDED WITH RECIRCULATING DAMPER DEFROST SYSTEM.
   G. CONTROLS SHALL BE SELECTABLE HIGH-SPEED SETTINGS USING ADJUSTABLE DIP SWICHES LOCATED ON THE CONTROL BOARD.
   H. ACCEPTABLE MANUFACTURERS ARE:
   iij) LENNOX;
   ii) LIFEBREATH;
   iii) VENMAR.
3. INSTALLATION
   A. PROVIDE HEAT RECOVERY VENTILATOR WHERE SHOWN.
   B. PROVIDE GALVANIZED STEEL MOUNTING BRACKETS WITH VIBRATION ISOLATORS AND SUSPEND EACH UNIT, LEVEL, AND PLUMB, BY MEANS OF HANGER RODS. PROVIDE SUPPLEMENTARY SUPPORT STEEL AS REQUIRED.
   C. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
   D. COORDINATE INSTALLATION WITH ELECTRICAL TRADE WHO WILL CONNECT UNIT WITH POWER WIRING.
   E. PROVIDE CONTROL WIRING TO FURNACE AS PER MANUFACTURER'S CONTROL WIRING SCHEMATIC.

RANGE HOODS

1. GENERAL
   A. SUBMIT SHOP DRAWING FOR RANGE HOOD, INCLUDING ACCESSORIES, AND ALL REQUIRED POWER AND CONTROL WIRING SCHEMATICS.
   B. SUBMIT WITH DELIVERY OF UNIT A COPY OF THE FACTORY INSPECTION REPORT, AND INCLUDE A COPY OF THE REPORT WITH O&M MANUAL PROJECT CLOSE-OUT DATA.
2. PRODUCT
   A. REVERSOMATIC MANUFACTURING LTD., SERIES 4000 “INTERNATIONAL” DUCTED RANGE HOODS, EACH PER THE DRAWING SCHEDULE, CSA CERTIFIED, ROTARY SOLID STATE SPEED CONTROL PROVIDING INFINITE RANGE, ROTARY LIGHT CONTROL SWITCH, BACKDRAFT DAMPER, WITH LIGHT LENS AND PERMANENT, WASHABLE ALUMINIUM MESH GREASE FILTER(S).
   B. ACCEPTABLE MANUFACTURERS ARE:
   i) REVERSOMATIC HTG. & MANUFACTURING LTD.;
   ii) ZONEX;
   iii) BROAN.
3. INSTALLATION
   A. PROVIDE RANGE HOODS WHERE SHOWN.
   B. SECURE RANGE HOUSING IN PLACE FROM THE STRUCTURE.
   C. INSTALL FAN-MOTOR ASSEMBLIES AND PLUG MOTOR CORD INTO THE FAN HOUSING RECEPTACLE. INSTALL WALLBOXES AND OTHER ACCESSORIES.

DOMESTIC HOT WATER TANK (ELECTRIC)

1. GENERAL
   A. SUBMIT SHOP DRWAING/PRODUCT DATA SHEETS FOR ALL EQUIPMENT AND ASSOCIATED HARDWARE SPECIFIED.
   B. SUBMIT WITH DELIVERY OF HEATER A COPY OF THE FACTORY INSPECTION AND TEST REPORT FOR HEATER, AND INCLUDE A COPY OF EACH REPORT WITH O&M MANUAL PROJECT CLOSE-OUT DATA.
   C. SUBMIT A SITE INSPECTION AND START-UP REPORT FROM MANUFACTURER'S REPRESENTATIVE.
2. PRODUCT
   A. CSA CERTIFIED ELECTRIC DOMESTIC HOT WATER TANK AND HEATER WITH MODEL NUMBER AND PERFORMANCE AS SPECIFIED ON DRAWINGS, AND COMPLETE WITH:
   i) 1035 KPA (150 PSI) RATED (WORKING PRESSURE) STEEL TANK, GLASS LINED, INSULATED (EXCEPT FOR CONTROL PANEL AREA) WITH INJECTED MINIMUM R-16 FOAM INSULATION, COVERED WITH AN ENAMELLED STEEL JACKET, AND EQUIPPED WITH 40 MM (1-½") DIA. NPS BRASS NIPPLE WATER INLET AND OUTLET CONNECTIONS, A DRAIN VALVE, AND SACRIFICIAL ANODE RODS;
   ii) REMOVABLE MULTIPLE IMMERSION HEATING ELEMENTS, EACH CONSISTING OF A WIRE FILAMENT IN A SEALED STAINLESS STEEL SHEATH;
   iii) ASME RATED TEMPERATURE AND PRESSURE RELIEF VALVE;
   iv) FACTORY PRE-WIRED POWER AND CONTROL PANEL.
   B. EQUIP ENAMELLED STEEL VENTILATED CONTROL PANEL WITH REMOVABLE GLASS FIBRE INSULATION TO COVER BARE AREA OF TANK, A HINGED DOOR, MULTIPLE KNOCKOUTS, A GROUND SCREW, AND FOLLOWING:
   i) TERMINAL BLOCK FOR POWER WIRING CONNECTIONS;
   ii) MAGNETIC CONTACTORS FOR HEATING ELEMENTS;
   iii) ADJUSTABLE IMMERSION THERMOSTAT;
   iv) MANUAL RESET IMMERSED HIGH TEMPERATURE LIMIT CONTROL FOR EACH ELEMENT;
   v) FUSE BLOCK WITH FUSES;
   vi) ELEMENT DIAGNOSTIC PANEL WITH LED'S FOR EACH ELEMENT TO MONITOR ON-OFF OPERATION OF EACH ELEMENT;
   C. ACCEPTABLE MANUFACTURERS ARE:
   i) A.O. SMITH WATER PRODUCTS CO.;
   ii) JOHN WOOD (GWS WATER HEATING CO.);
   iii) RHEEM CANADA LTD.;
   iv) BRADFORD WHITE CANADA INC.
3. INSTALLATION
   A. PROVIDE AN ELECTRIC DOMESTIC HOT WATER TANK AND HEATER.
   B. SECURE HEATER IN PLACE, LEVEL AND PLUMB, ON A CONCRETE HOUSEKEEPING PAD.
   C. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
   D. PIPE TEMPERATURE/PRESSURE RELIEF VALVE OUTLET TO DRAIN AND PIPE DRAIN VALVE OUTLET TO DRAIN.
   E. COORDINATE INSTALLATION WITH ELECTRICAL TRADE WHO WILL CONNECT HEATER WITH POWER WIRING.
   F. UNLESS OTHERWISE SPCIFIIED, SET THERMOSTAT TO PRODUCE 51.7°C (125°F) HOT WATER.

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APPLICATION NUMBER:

REVISIONS

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SUBMITTALS

No.	Description	YYYY.MM.DD	By
10.			
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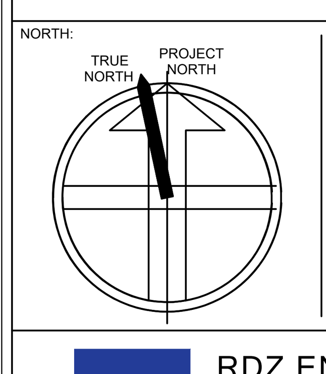
2.	ISSUED FOR PERMIT	2020.06.26	
1.	ISSUED FOR COORDINATION	2020.04.03	

NORTH:



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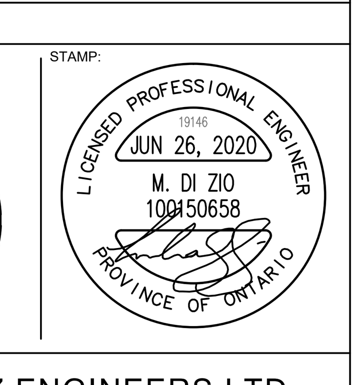

RDZ ENG

RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

219065 - DENISON HERITAGE HOME

SPECIFICATIONS

2020.04.17

Scale	Drawn By	Checked By
N.T.S.	PM/KL	MD

Project Number: 19146

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