TTF ENGINEERING

West Station Lofts

Addendum #TTF-1

Date: July 18, 2017

MECHANICAL

Reference Drawing: TTF Drawings M-0 to M-9: Issued for Addendum #1 on July 17, 2017

Item A1-1

Questions:
1. On drawing M-8 the natural gas schedule notes "supplied by others". This equipment is to be included in the contract. Please confirm.

TTF Answer: Yes natural gas equipment are included in the contract. Refer to attached drawings.

2. On drawings M-8 all of the HWT's are labeled as 2 which is supposed to be gas fired but there is not natural gas running into each suite, clarification is required.

TTF Answer: HWT-2 in mechanical room is natural gas fired and HWT-1 in each suite is electric.

3. Drawing M-8 / Detail 2 (Plumbing Riser Diagram): shows HWT-2 as being 480,100 BTU/H in the mechanical room and 300,400 BTU/H in the individual suites. Drawing M-4 & M-6 indicate the suites are serviced with a HWT-1 (30 gallon electric). Please confirm which is correct?

TTF Answer: It should be electric 30gal HWT-1 in each suite as shown on M-4 & M-6. Plumbing riser diagram on Drawing M-8 has been updated. Refer to attached drawings.

4. Some of the kitchen and bathroom exhaust ducts are shown routed across the middle of the room. I The preference is to run these ducts parallel to the division walls separating each tenant space and has indicated that on the building sections

TTF Answer: ducts are rerouted. Refer to attached drawings.

5. All of the kitchen exhaust ducts are currently shown as 8" ϕ pipe. Could these ducts be reduced to 6" to make the bulkhead depth symmetrical throughout?

TTF Answer: Yes the exhaust duct can be reduced to 6". Refer to attached drawings.

6. Please confirm the water service size. Is it possible to reduce to 1 ½" dia. service as noted on the civil drawings?

TTF Answer: Yes 1 ½" service is adequate. Refer to attached drawings for updated pipe sizes.

Drawing M-1: HVAC layout – ground floor

Item A1-2
Exhaust duct from kitchen exhaust fan EF-2 has been reduced to 6". Refer to drawing note #8.

Drawing M-3: HVAC & hydronic layout – second & 3rd floors

Item A1-3
Exhaust duct from kitchen exhaust fan EF-2 has been reduced to 6". Refer to drawing note #8.

Item A1-4
Exhaust duct in certain suites have been rerouted.

Drawing M-4: Domestic water layout – ground floor

Item A1-5
Incoming water service size has been reduced to 1 ½". Refer to drawings note #1.

Drawing M-7: Elevations

Item A1-6
Locations of exhaust wall boxes have been updated.

Drawing M-8: Mechanical schematic & schedules

Item A1-7
Plumbing riser diagram (Detail #2) has been updated.

Item A1-8
Natural gas schedule has been updated.

ELECTRICAL

Item A1-9

Wire supplying MUA-1 is specified as 2 #10awg+gnd but should be 3 #10awg+gdn. It is a 3 phase motor, not 1 phase.

Item A1-10

Type 'C2' fixture description is to be changed to the following:

5" LIGHTOLIER DOWNLIGHTING SLIMSURFACE LED
MANUFACTURER: PHILIPS
MODEL #: S5R835K7
INPUT WATTS : 10

Item A1-11

Note: light fixtures in the suites are differentiated by the symbols which match the legend. The name designator for theses lights is shown in the legend but not on layout.

Item A1-12

Electrical Questions:

1. No specs have been provided on the metering. Is using triacta metering instead an option? If not then the 400 amp feeding elevator and house panel will need to go into a ct cabinet).

The breaker, feeder, and splitter to the house panel and elevator is reduced to 200A. Therefore, a CT cabinet is not necessary. Panel 'H' will be reduced to 100A.

2. Drawings currently indicate ac90 (bx) cable for wood construction. Can NMD cable be used?

NMD may be used, provided all code elements relative to penetrating fire separations is adhered to for when using this wiring. NOTE: Separations between floors and between suites are fire rated. See architectural plans.

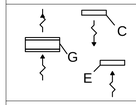
3. The feeders to for each apartment panel are shown as 3 #3 copper. Can 3 #1 aluminum be used as a cost savings?

No, aluminum wiring is not acceptable for this project.

--END OF ADDENDUM-

DRAWING LIST:

HVAC LEGEND

ITEM	DESCRIPTION
	NEW SQUARE DIFFUSER ## INDICATES AIRFLOW (CFM)
	RETURN GRILLES 'R' INDICATES RETURN 'F' INDICATES FLOOR
	THERMOSTAT C/W CONTROL WIRING
	NEW FIRE DAMPER
	NEW SUPPLY DUCTWORK
	NEW RETURN DUCTWORK
	DUCTWORK C/W 1" ACOUSTIC INSULATION
	GRILLES, REGISTERS, AND DIFFUSERS LETTER INDICATES TYPE (REFER TO SPEC)
	BALANCING DAMPER
	FIRE EXTINGUISHER

HYDRONIC LEGEND

CHWS CHWS CHWS CHWS CHWS	CHILLED WATER SUPPLY
HWS HWS HWS HWS HWS	HOT WATER SUPPLY
CHWR CHWR CHWR CHWR CHWR	CHILLED WATER RETURN
HWR HWR HWR HWR HWR	HOT WATER RETURN

PLUMBING LEGEND

SAN SAN	EXISTING SANITARY PIPING BELOW GRADE
CW CW	EXISTING DOMESTIC COLD WATER LINE
+ +	NEW SANITARY PIPING ABOVE GRADE
++ ++	NEW SANITARY PIPING BELOW GRADE
CW CW	NEW DOMESTIC COLD WATER
HW HW	NEW DOMESTIC HOT WATER
G G	NATURAL GAS PIPING

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PROJECT

WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

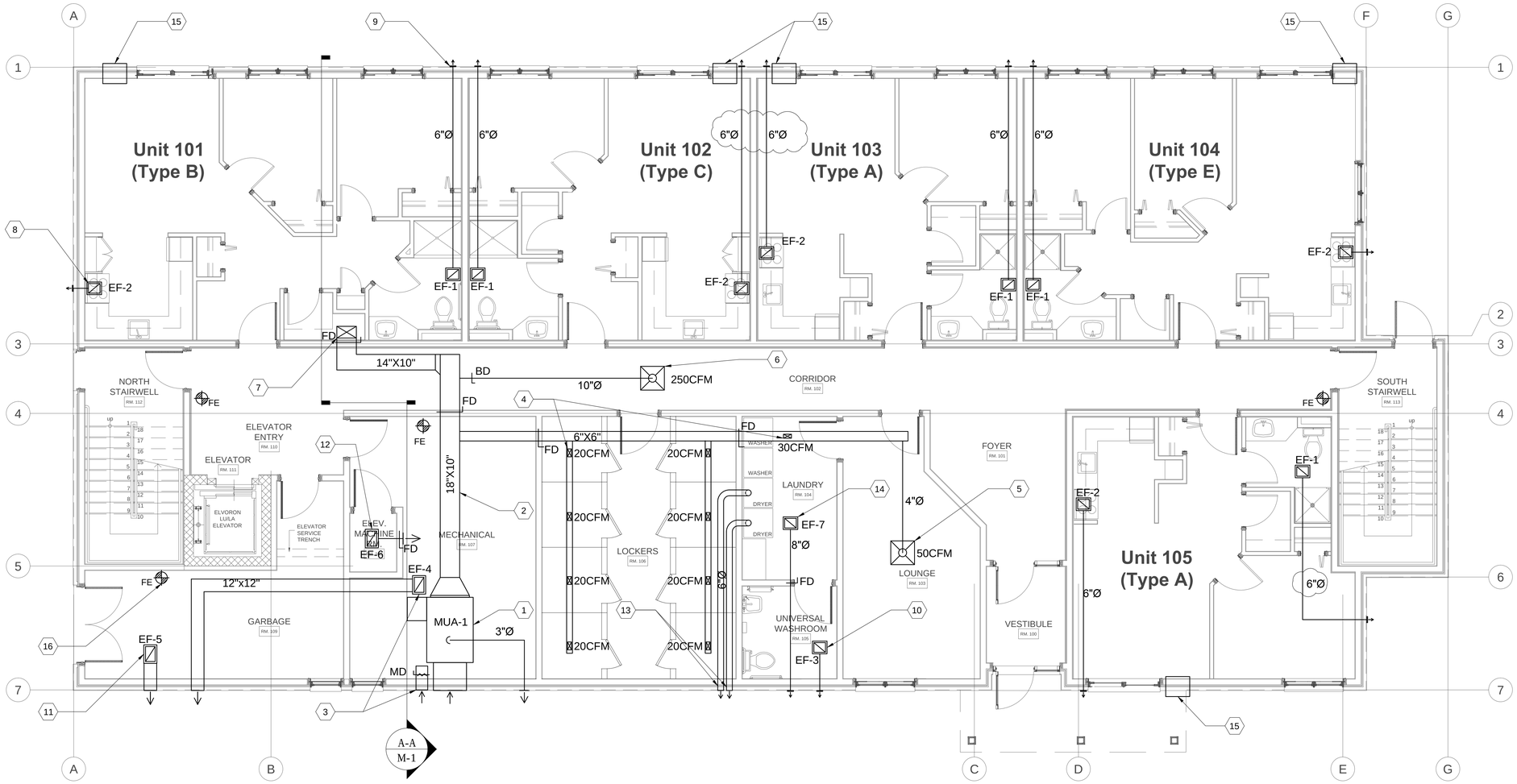
DRAWING

MECHANICAL DRAWING LIST & LEGENDS

DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.

M-0



GROUND FLOOR

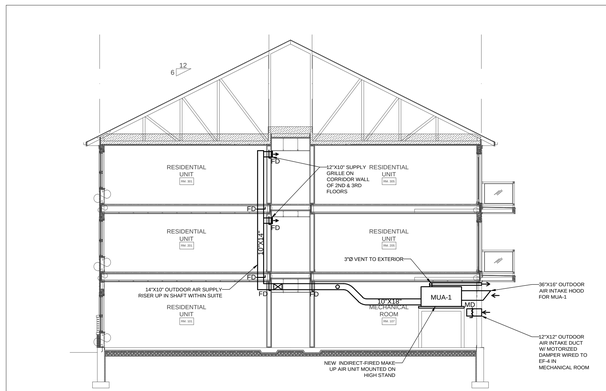
SCALE: 1:50

GENERAL NOTES:

1. ALL DUCTWORK TO BE INSULATED.
2. PROVIDE FIRE DAMPERS AT ALL PENETRATION THROUGH FIRE-RATED WALL AS SHOWN.

DRAWING NOTES:

1. PROVIDE INDIRECT-FIRED MAKE UP AIR UNIT MUA-1 IN MECHANICAL ROOM. MOUNT UNIT AT HIGH LEVEL. PROVIDE OUTDOOR AIR INTAKE HOOD AT EXTERIOR WALL & CONNECT TO MUA-1 VIA 36"X16" DUCT. PROVIDE 3"ø VENT PIPE TO EXTERIOR WALL. VENT TERMINATION TO BE AT LEAST 3' FROM OUTDOOR AIR INTAKE.
2. PROVIDE 18"X10" SUPPLY DUCT FROM MUA-1 INTO CEILING SPACE OF CORRIDOR ON GROUND FLOOR. PROVIDE FIRE DAMPER AT PENETRATION THROUGH WALL BETWEEN CORRIDOR & MECHANICAL ROOM.
3. PROVIDE 12"X12" OUTDOOR AIR INTAKE GRILLE ON EXTERIOR WALL BELOW MUA-1 INTAKE & 12"X12" SUPPLY DUCT INTO MECHANICAL ROOM. PROVIDE MOTORIZED DAMPER. PROVIDE 250CFM CEILING-MOUNTED EXHAUST FAN EF-4 IN MECHANICAL ROOM & EXHAUST TO EXTERIOR WALL OF GARBAGE ROOM VIA 12"X12" EXHAUST DUCT. PROVIDE THERMOSTAT IN ROOM. MOTORIZED DAMPER TO BE OPENED & EXHAUST FAN TO START WHEN ROOM TEMPERATURE EXCEEDS 85F.
4. PROVIDE 6"X6" SUPPLY BRANCH IN CEILING SPACE & PROVIDE 8"X4" CEILING SUPPLY GRILLE IN LOCKER ROOM (TYPICAL OF 8) & LAUNDRY ROOM.
5. PROVIDE 24"X24" SQUARE DIFFUSERS IN LOUNGE ROOM.
6. PROVIDE 24"X24" SQUARE DIFFUSER IN CORRIDOR & CONNECT TO 18"X10" OUTDOOR AIR SUPPLY DUCT VIA 10"ø DUCT. PROVIDE BALANCING DAMPER AT TAKEOFF.
7. PROVIDE 14"X10" SUPPLY RISER UP TO SECOND FLOOR. REFER TO DRAWING M-2 FOR CONTINUATION.
8. PROVIDE 250CFM KITCHEN EXHAUST HOOD EF-2 & EXHAUST TO EXTERIOR WALL VIA 6"ø EXHAUST DUCT. TYPICAL OF 5 ON THIS FLOOR.
9. PROVIDE 100CFM CEILING MOUNTED CABINET WASHROOM EXHAUST FAN EF-1 & EXHAUST TO EXTERIOR EXHAUST WALL BOX VIA 6"ø EXHAUST DUCT. TYPICAL OF 5 ON THIS FLOOR. WIRE EXHAUST FAN TO LIGHT SWITCH IN WASHROOM.
10. PROVIDE 50CFM CEILING MOUNTED CABINET EXHAUST FAN EF-3 IN UNIVERSAL WASHROOM & EXHAUST TO EXTERIOR WALL BOX VIA 5"ø EXHAUST DUCT. EXHAUST FAN TO BE CONTROLLED BY LIGHT SWITCH.
11. PROVIDE CEILING-HUNG 250CFM EXHAUST FAN EF-5 IN GARBAGE ROOM & EXHAUST TO EXTERIOR VIA 12"X12" EXHAUST DUCT. PROVIDE WALL SWITCH FOR EXHAUST FAN.
12. PROVIDE CEILING-HUNG 150CFM TRANSFER FAN EF-6 IN ELEVATOR MACHINE ROOM & EXHAUST TO MECHANICAL ROOM. PROVIDE THERMOSTAT IN ROOM & CONNECT TO EF-6. FAN TO BE STARTED WHEN TEMPERATURE EXCEEDS 85F.
13. PROVIDE 6"ø VENT PIPES FOR DRYERS & VENT TO EXTERIOR WALL BOXES STACKED VERTICALLY. TYPICAL OF 2.
14. PROVIDE NEW 150CFM CEILING EXHAUST FAN EF-7 IN LAUNDRY ROOM. PROVIDE THERMOSTAT IN ROOM TO CONTROL ON/OFF OF EF-7.
15. PROVIDE AIR CONDITIONAL THROUGH WALL (BY OWNER) FOR APARTMENT UNITS. TYPICAL OF 5 ON THIS FLOOR.
16. PROVIDE FIRE EXTINGUISHERS IN GARBAGE ROOM, MECHANICAL ROOM, & CORRIDOR.



A-A M-1 SECTION VIEW

SCALE: 1:100

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PROJECT

WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

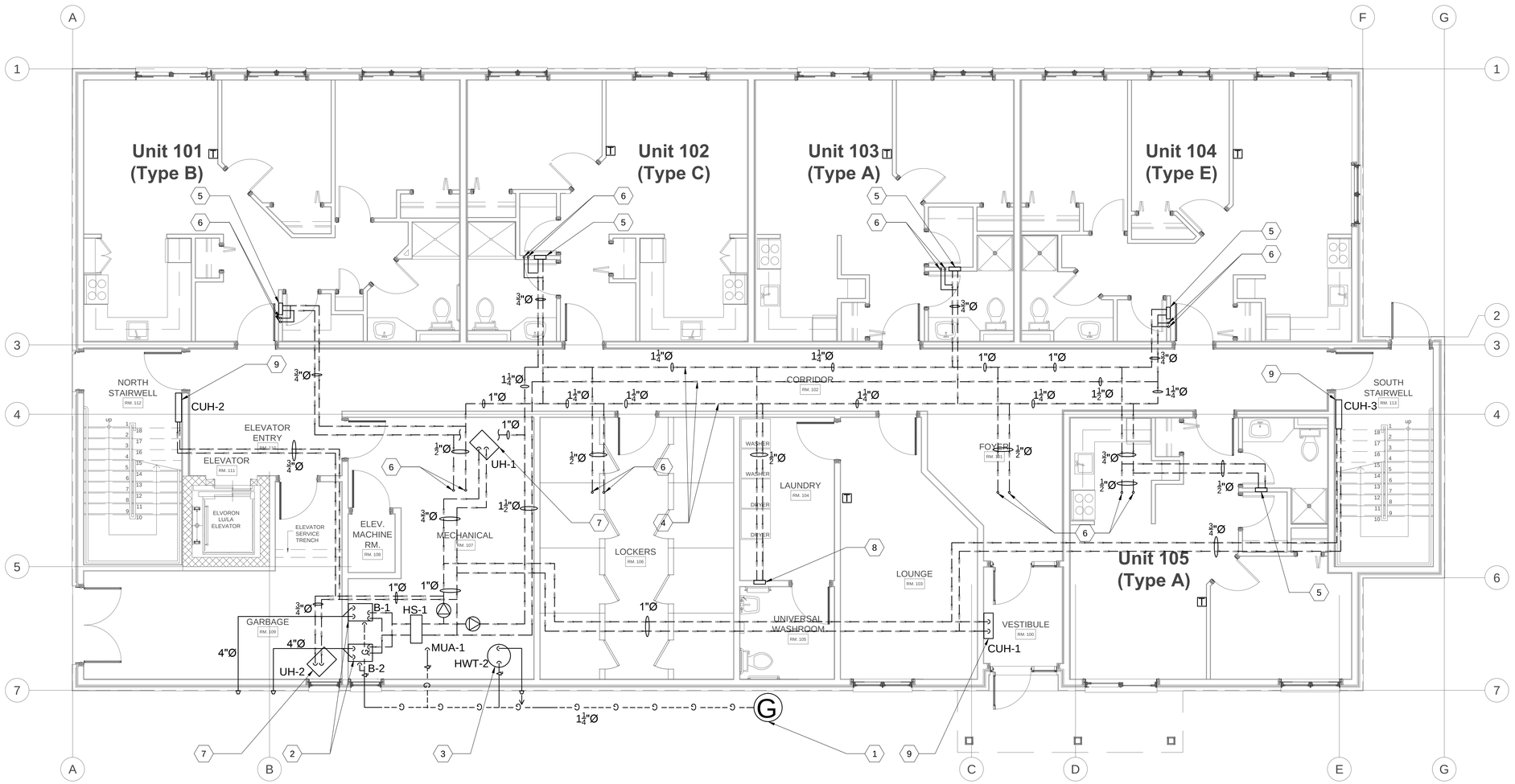
DRAWING

HVAC LAYOUT - GROUND FLOOR

DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.

M-1



GROUND FLOOR PLAN

SCALE: 1:50

DRAWING NOTES:

1. NEW NATURAL GAS METER. PROVIDE NEW 1¼""ø GAS PIPING INTO MECHANICALE ROOM.
2. PROVIDE NEW GAS-FIRED BOILERS (TYPICAL OF 2) IN MECH/ELEC ROOM. CONNECT TO NEW GAS PIPING. PROVIDE 4"ø VENT/AIR INLET PIPING & CONCENTRIC VENT KIT AT EXTERIOR WALL. KEEP AT LEAST 3' BETWEEN THE TWO VENT KITS.
3. PROVIDE 70GAL GAS-FIRED HOT WATER TANK HWT-2 IN MECH/ELEC ROOM FOR LAUNDRY ROOM. PROVIDE 4"ø VENT PIPING & VENT TO EXTERIOR WALL. VENT TERMINATION TO BE AT LEAST 6FT FROM MUA-1 OUTDOOR AIR INTAKE.
4. RUN HYDRONIC SUPPLY, RETURN & REVERSE RETURN MAINS IN CEILING SPACE OF GROUND FLOOR CORRIDOR. REFER TO HYDRONIC SCHEMATIC ON DRAWING M-5.
5. PROVIDE RECESSED MANIFOLD IN CLOSET OF EACH UNIT FOR INFLOOR HEATING SYSTEM. TYPICAL OF 5 ON GROUND FLOOR. PROVIDE INFLOOR HEATING TUBING (LAYOUT TO BE DONE BY INFLOOR HEATING CONTRACTORS) FROM MANIFOLD IN EACH UNIT. PROVIDE THERMOSTAT IN EACH UNIT & CONNECT TO RESPECTIVE MANIFOLD.
6. PROVIDE HYDRONIC HEATING SUPPLY & RETURN RISERS UP IN CLOSET WALL FOR MANIFOLDS ON SECOND AND THIRD FLOORS. TYPICAL OF 8 PAIRS.
7. PROVIDE UNIT HEATERS IN GARBAGE ROOM & M/E ROOM & CONNECT TO HYDRONIC HEATING PIPING IN CEILING SPACE.
8. PROVIDE RECESSED MANIFOLD IN WALL FOR COMMON AREA (LOCKER ROOM, BARRIER FREE WASHROOM, LAUNDRY ROOM AND LOUNGE). PROVIDE INFLOOR TUBING (TO BE DONE BY INFLOOR HEATING CONTRACTORS) FROM THE MANIFOLD. PROVIDE THERMOSTAT IN LOUNGE & CONNECT TO MANIFOLD.
9. PROVIDE HYDRONIC CABINET UNIT HEATERS CUH-1~3 IN VESTIBULE & STAIRWELLS. TYPICAL OF 3.

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June 22/17

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PROJECT

WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

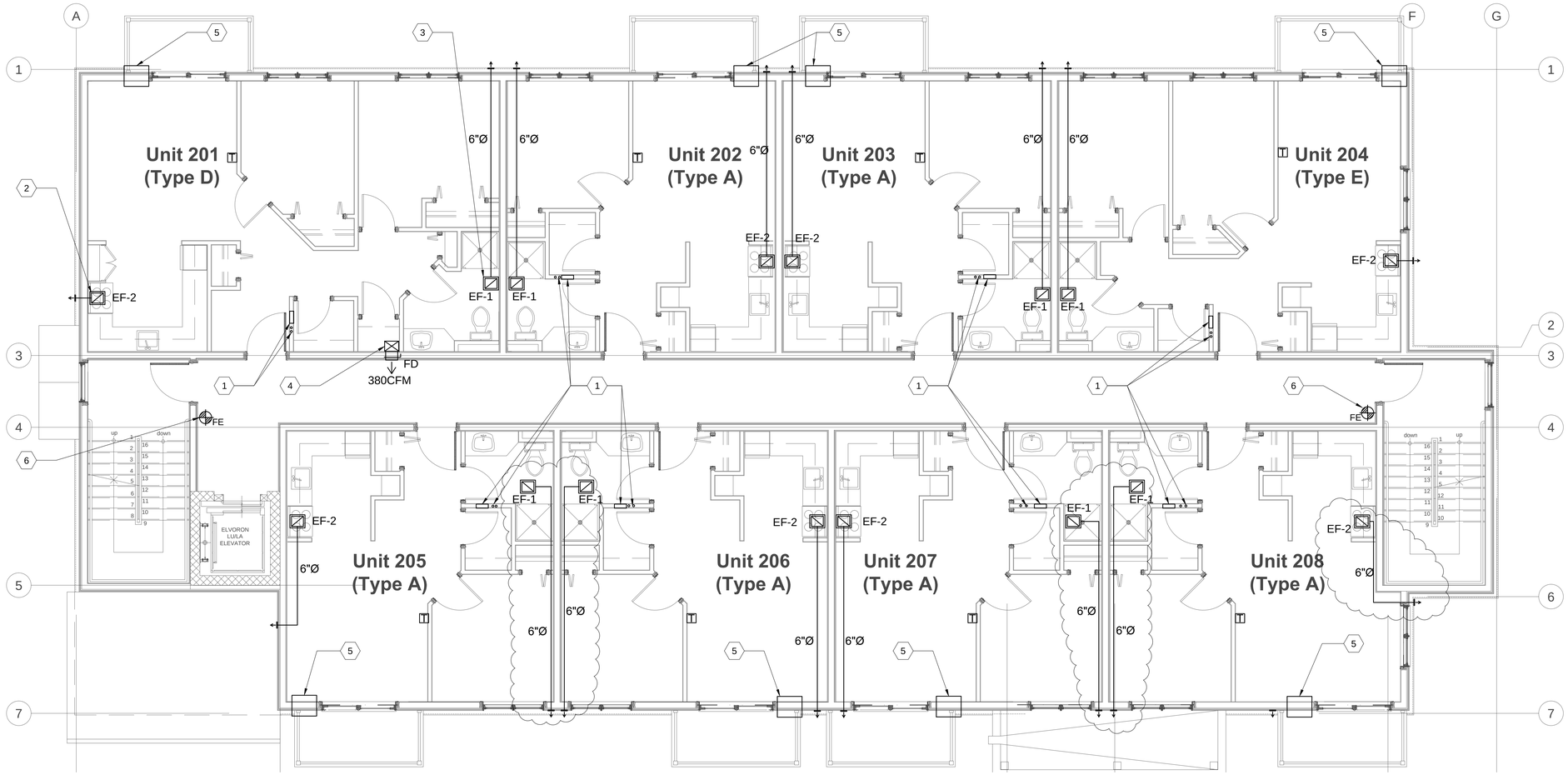
DRAWING

HYDRONIC & NATURAL GAS LAYOUT - GROUND FLOOR

DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.

M-2

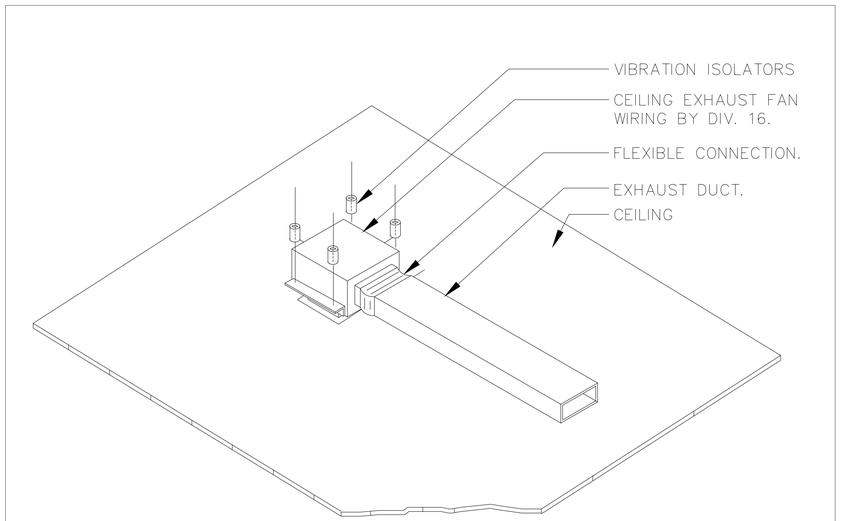


TYPICAL FLOOR LAYOUT - 2ND & 3RD FLOOR

SCALE: 1:50

DRAWING NOTES:

1. NEW HYDRONIC HEATING SUPPLY & RETURN RISERS FROM BELOW. PROVIDE RECESSED MANIFOLD IN CLOSET OF EACH UNIT FOR INFLOOR HEATING SYSTEM. TYPICAL OF 8 ON EACH FLOOR (2ND AND 3RD). PROVIDE INFLOOR HEATING TUBING (LAYOUT TO BE DONE BY INFLOOR HEATING CONTRACTORS) FROM MANIFOLD IN EACH UNIT. PROVIDE THERMOSTAT IN EACH UNIT & CONNECT TO RESPECTIVE MANIFOLD.
2. PROVIDE 250CFM KITCHEN EXHAUST HOOD EF-2 & EXHAUST TO EXTERIOR WALL BOX VIA 6"ø EXHAUST DUCT. TYPICAL OF 8 ON EACH FLOOR (2ND & 3RD).
3. PROVIDE 100CFM CEILING MOUNTED CABINET WASHROOM EXHAUST FAN EF-1 & EXHAUST TO EXTERIOR WALL BOX VIA 6"ø EXHAUST DUCT. TYPICAL OF 8 ON EACH FLOOR (2ND & 3RD).
4. 14"x10" OUTDOOR AIR SUPPLY RISER FROM BELOW UP TO THIRD FLOOR. PROVIDE 12"x10" SIDE WALL SUPPLY GRILLE ON CORRIDOR WALL & CONNECT TO SUPPLY RISER. PROVIDE FIRE DAMPER THROUGH PENETRATION THROUGH CORRIDOR WALL. TYPICAL ON BOTH 2ND & 3RD FLOOR.
5. PROVIDE AIR CONDITIONER THROUGH WALL (BY OWNER) OVER BALCONY IN EACH APARTMENT UNIT. TYPICAL OF 8 ON EACH FLOOR (2ND & 3RD FLOORS).
6. PROVIDE FIRE EXTINGUISHER IN CORRIDOR. TYPICAL OF 2 ON EACH FLOOR.



#1 / M-3 EXHAUST FAN MOUNTING DETAIL

N.T.S.

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PROJECT

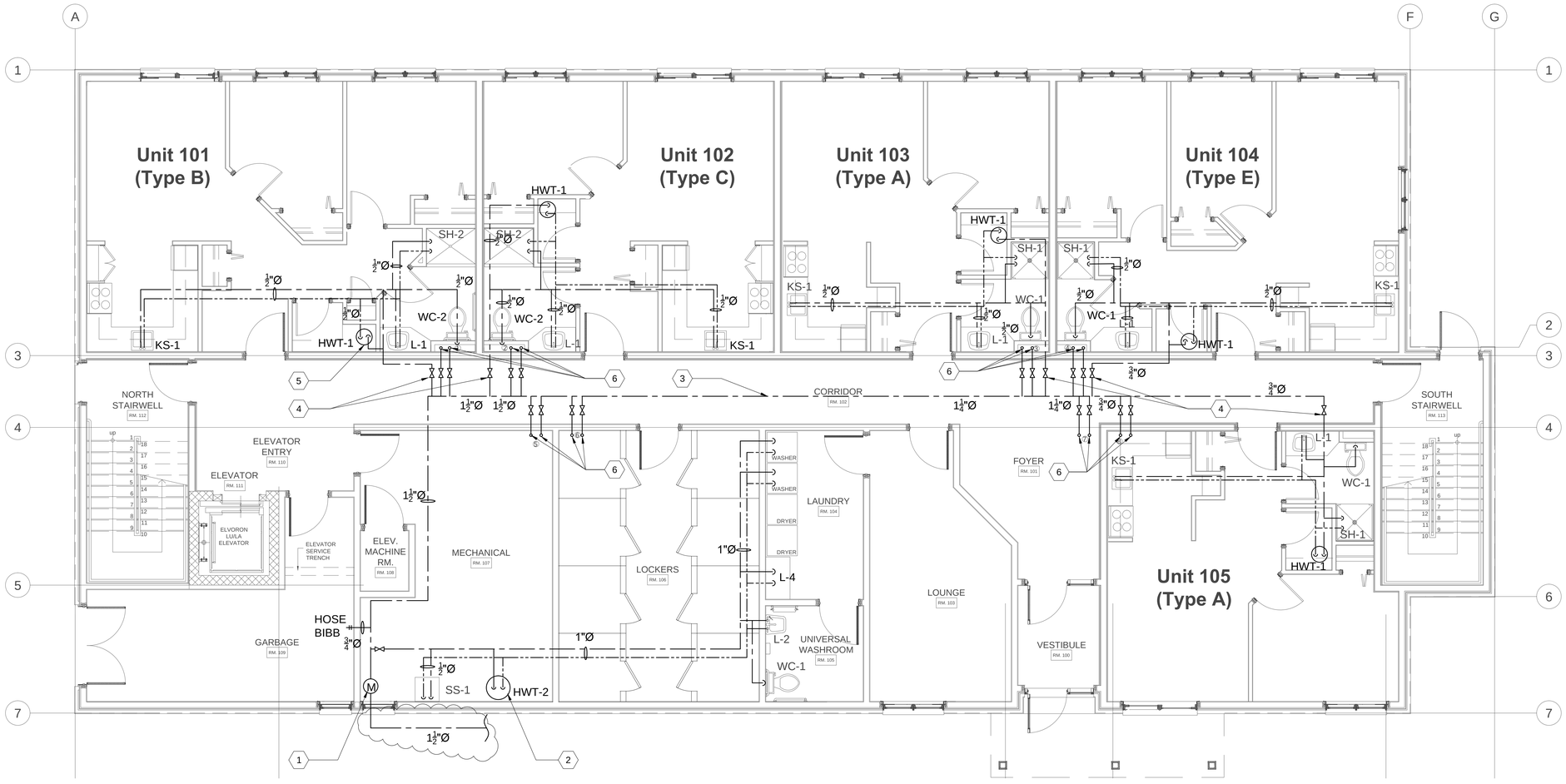
WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

DRAWING

HVAC & HYDRONIC LAYOUT
- 2ND & 3RD FLOORS

DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No. M-3

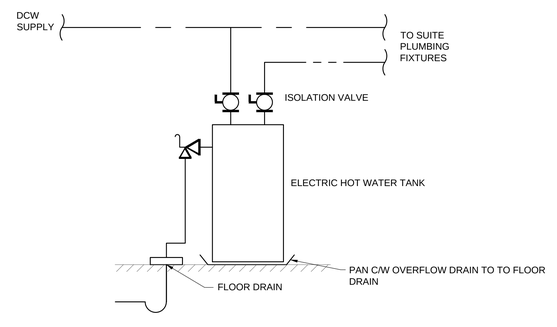


GROUND FLOOR

SCALE: 1:50

DRAWING NOTES:

1. PROVIDE NEW 1½"ø WATER METER IN MECHANICAL ROOM & CONNECT TO NEW 1½"ø WATER SERVICE FROM STREET. PROVIDE NEW ø DCW PIPING DOWNSTREAM & RISE TO CEILING SPACE.
2. PROVIDE NEW 75GAL GAS-FIRED HOT WATER TANK HWT-2 FOR LAUNDRY ROOM & COMMON AREA. PROVIDE ø DHW PIPING DOWNSTREAM & RISE TO CEILING SPACE.
3. PROVIDE DCW IN CEILING SPACE OF CORRIDOR.
4. PROVIDE ¾"ø DCW BRANCH FROM DCW MAIN & ISOLATION VALVE FOR GROUND FLOOR UNITS. TYPICAL OF 5. PROVIDE DCW IN CEILING SPACE WITHIN UNIT & CONNECT TO PLUMBING FIXTURES IN EACH UNIT.
5. PROVIDE 30GAL ELECTRIC HOT WATER TANK HWT-1 IN CLOSET OF EACH UNIT. TYPICAL OF 5 ON THIS FLOOR. PROVIDE DHW IN CEILING SPACE WITHIN UNIT & CONNECT TO PLUMBING FIXTURES IN EACH UNIT.
6. PROVIDE ¾"ø DCW BRANCH C/W ISOLATION VALVE & DCW RISERS UP TO SECOND & THIRD FLOORS. TYPICAL OF 8 PAIRS.



#1 M-4 TYPICAL SUITE DOMESTIC WATER SUPPLY (HOT & COLD)
N.T.S.

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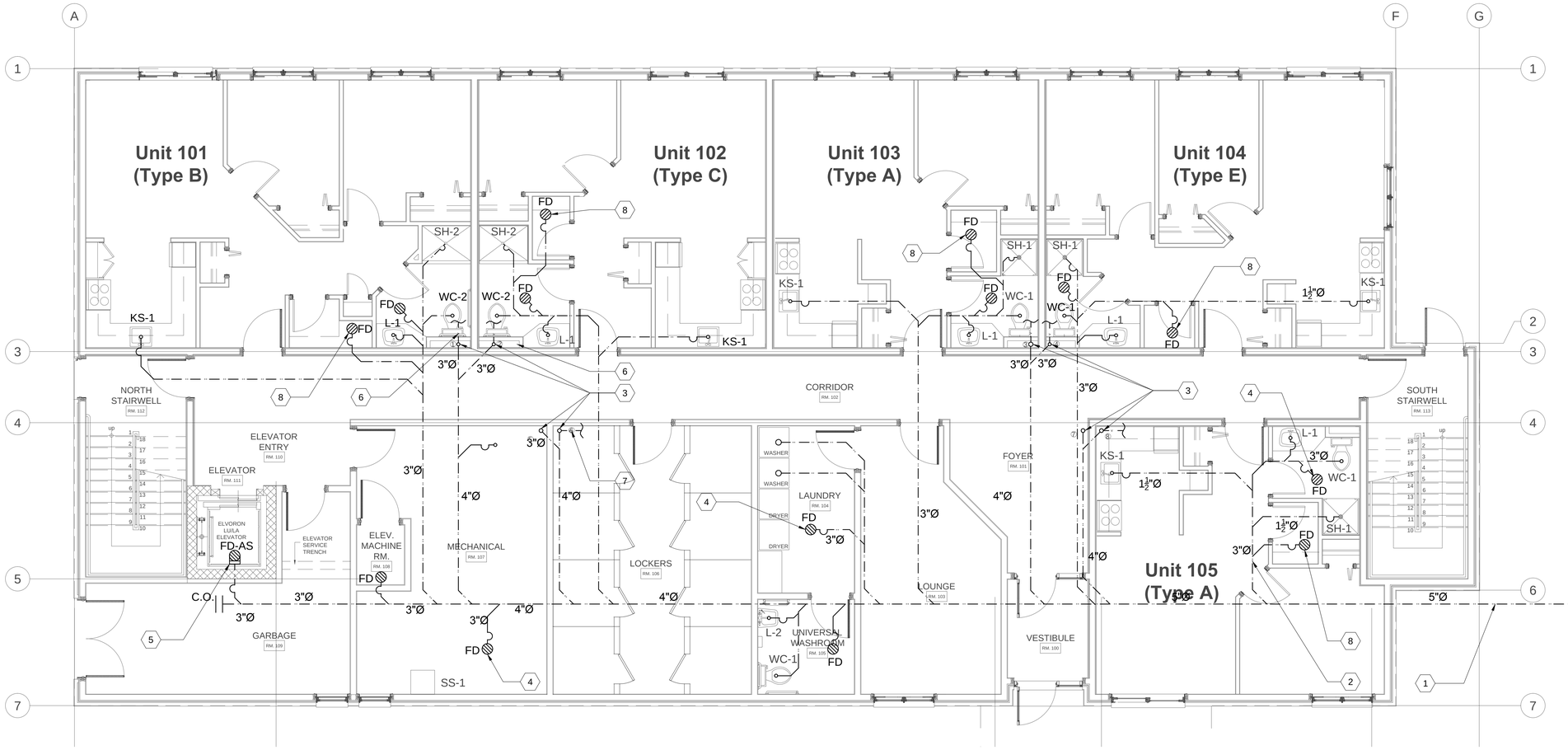
PROJECT
WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

DRAWING
DOMESTIC WATER LAYOUT - GROUND FLOOR

DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No. M-4



GROUND FLOOR PLAN

SCALE: 1:50

DRAWING NOTES:

1. PROVIDE NEW 5"ø SANITARY BELOW GRADE & CONNECT TO EXISTING SANITARY SERVICE IN STREET. RUN NEW SANITARY BELOW GRADE ALONG BUILDING.
2. PROVIDE 3"ø SANITARY BRANCH BELOW GRADE & CONNECT TO NEW PLUMBING FIXTURES ON GROUND FLOOR. TYPICAL.
3. PROVIDE 4"ø SANITARY BRANCH BELOW GRADE (TYPICAL OF 4) & 3"ø SANITARY RISERS UP (TYPICAL OF 8) FOR PLUMBING FIXTURES ON SECOND & THIRD FLOORS.
4. PROVIDE 3"ø FLOOR DRAIN IN WASHROOMS, LAUNDRY ROOM & MECHANICAL ROOM. TYPICAL. PROVIDE TRAP SEAL PRIMER & CONNECT TO NEARBY SINK.
5. PROVIDE 3"ø FLOOR DRAIN W/ ANGLE STRAINER IN ELEVATOR PIT & CONNECT TO MAIN SANITARY PIPE.
6. PROVIDE 5"ø VENT STACK UP TO SHAFT ABOVE & CONNECT TO PLUMBING FIXTURES IN APARTMENT UNITS ON THIS FLOOR VIA VENT PIPES IN CEILING SPACE. TYPICAL OF 5.
7. PROVIDE VENT PIPING IN CEILING SPACE FOR PLUMBING FIXTURES IN COMMON AREA ON THIS FLOOR & CONNECT TO SANITARY RISER #6.
8. PROVIDE FLOOR DRAIN IN CLOSET & CONNECT TO RELIEF VALVE ON HWT-1. TYPICAL OF 5 ON THIS FLOOR.

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PROJECT

WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

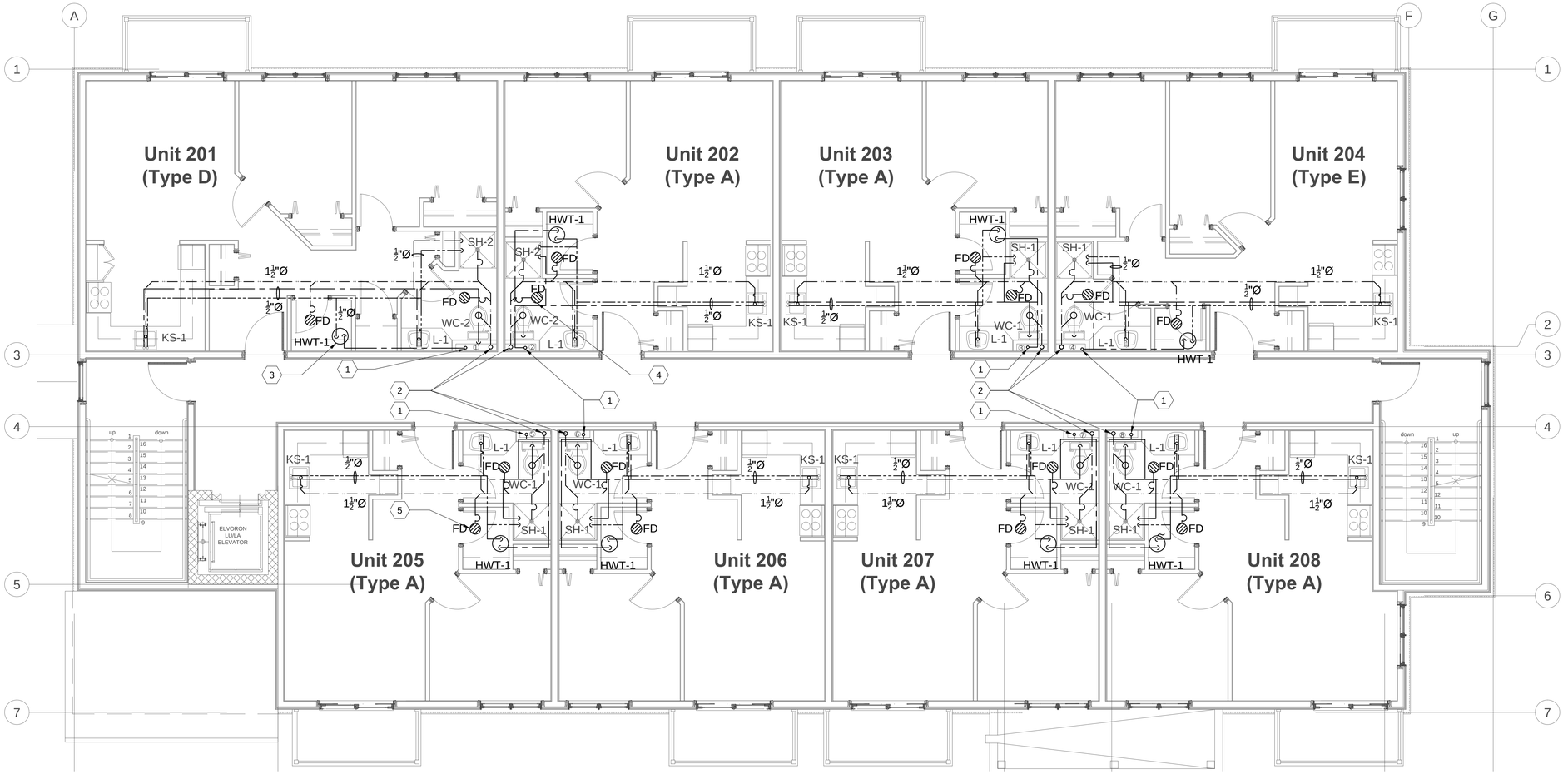
DRAWING

SANITARY LAYOUT - GROUND FLOOR

DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.

M-5



TYPICAL FLOOR PLAN - 2ND & 3RD FLOORS

SCALE: 1:50

DRAWING NOTES:

1. NEW 3"ø DCW RISER FROM GROUND FLOOR BELOW. TYPICAL OF 8 ON EACH FLOOR (2ND AND 3RD FLOORS). PROVIDE NEW DCW IN CEILING SPACE & CONNECT TO PLUMBING FIXTURES IN EACH UNIT.
2. NEW 3"ø SANITARY RISER FROM BELOW. TYPICAL OF 8 ON EACH FLOOR (2ND AND 3RD FLOORS). PROVIDE SANITARY PIPING IN CEILING SPACE BELOW & CONNECT TO PLUMBING FIXTURES IN EACH UNIT. PROVIDE VENT PIPES IN CEILING SPACE & CONNECT TO VENT THROUGH ROOF EXTENDED FROM SANITARY RISERS.
3. PROVIDE NEW 30GAL ELECTRIC HOT WATER TANK IN CLOSET OF EACH UNIT. TYPICAL OF 8 ON EACH FLOOR (2ND & 3RD FLOORS). CONNECT TO DCW FROM BELOW & PROVIDE DHW IN CEILING SPACE & CONNECT TO NEW PLUMBING FIXTURES IN EACH UNIT. PROVIDE FLOOR DRAIN IN CLOSET & CONNECT TO RELIEF DRAIN ON HWT-1.
4. PROVIDE 3"ø FLOOR DRAIN IN EACH WASHROOM. PROVIDE TRAP SEAL PRIMER & CONNECT TO NEARBY SINK. TYPICAL OF 8 ON EACH FLOOR (2ND & 3RD FLOORS).
5. PROVIDE 3"ø FLOOR DRAIN IN CLOSET & CONNECT TO RELIEF VALVE ON HWT-1. TYPICAL OF 8 ON EACH FLOOR.

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PROJECT

WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

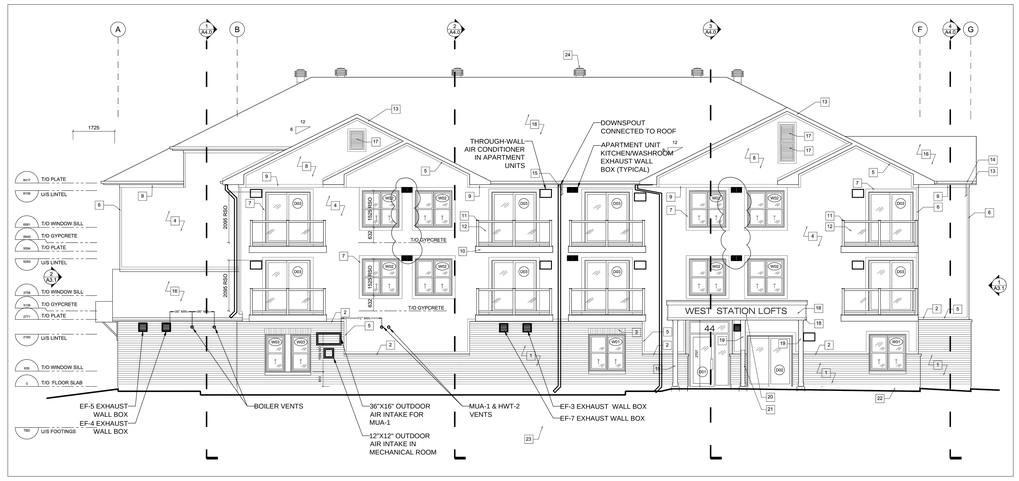
DRAWING

PLUMBING LAYOUT - TYPICAL FLOORS

DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

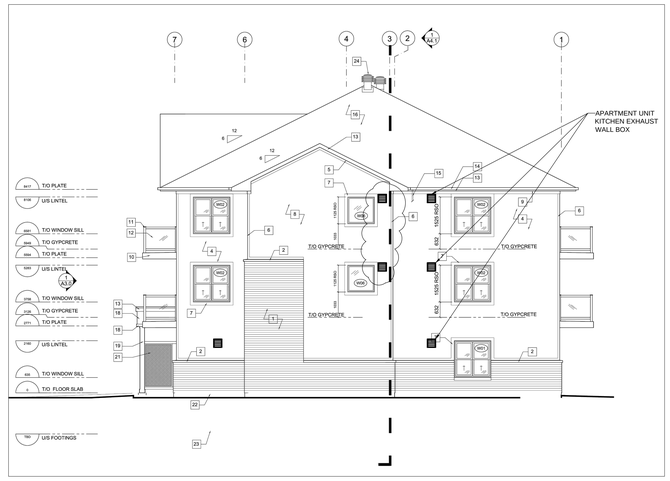
DRAWING No.

M-6



ELEVATION - WEST

SCALE: 1:100



ELEVATION - SOUTH

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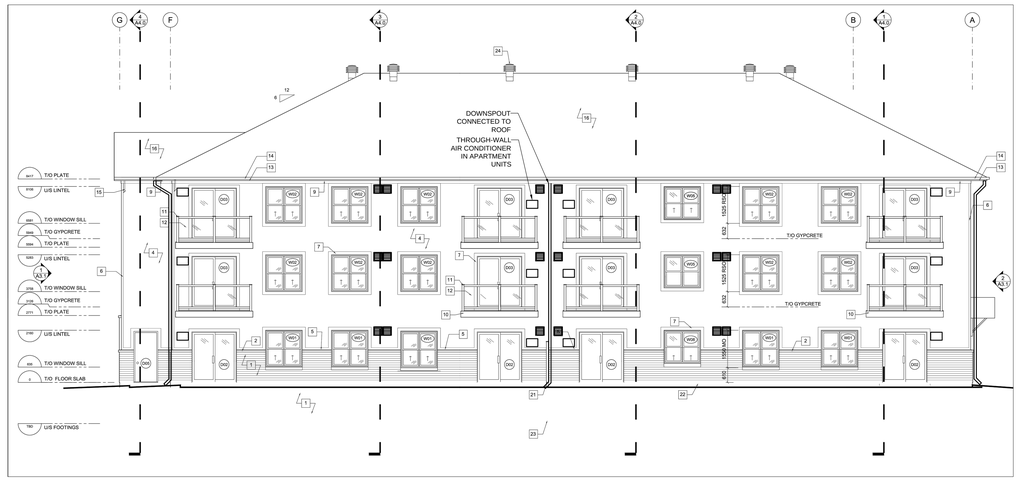
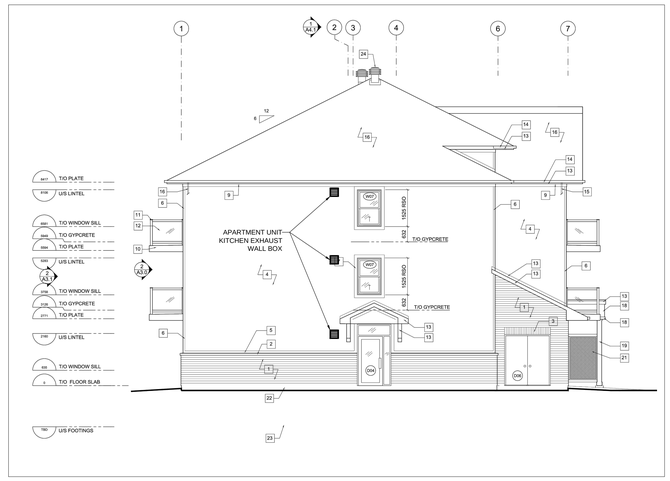


ELEVATION - EAST

SCALE: 1:100



ELEVATION - NORTH

SCALE: 1:100

No.	DATE	REVISIONS	BY
3	JUL. 17/17	ADDENDUM #1	MH
2	JUL. 10/17	ISSUED FOR TENDER	MH
1	JUN 22/17	ISSUED FOR PERMIT	MH

STAMP

LICENSED PROFESSIONAL ENGINEER
T. W. VYVYURKA
PROVINCE OF ONTARIO

PROJECT NORTH

TTF ENGINEERING
TTF Engineering Unit 205 - 1600 Merivale Road
Ottawa, ON K2G 5J8
Tel. 613-592-1677

PROJECT

WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

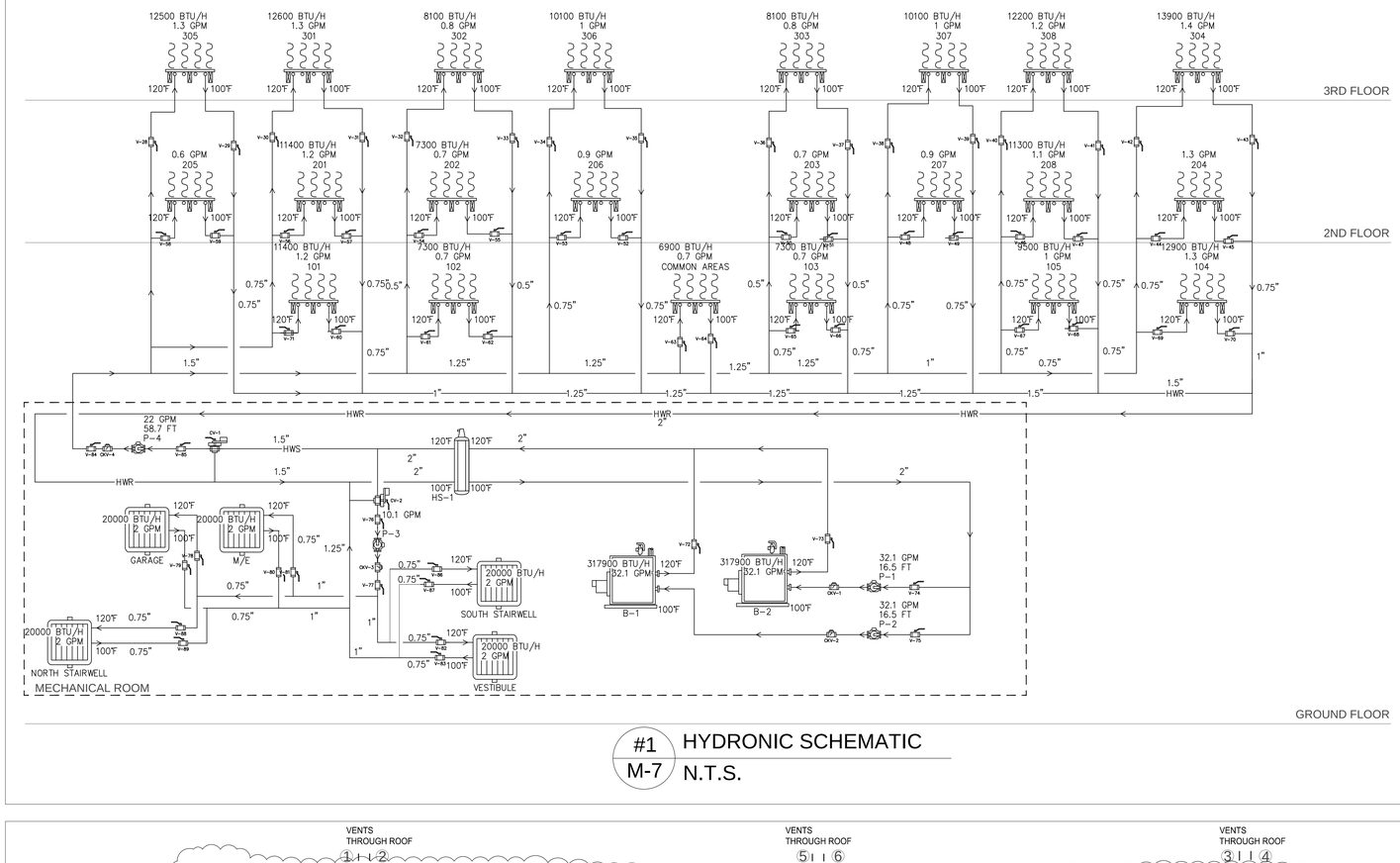
DRAWING

ELEVATIONS

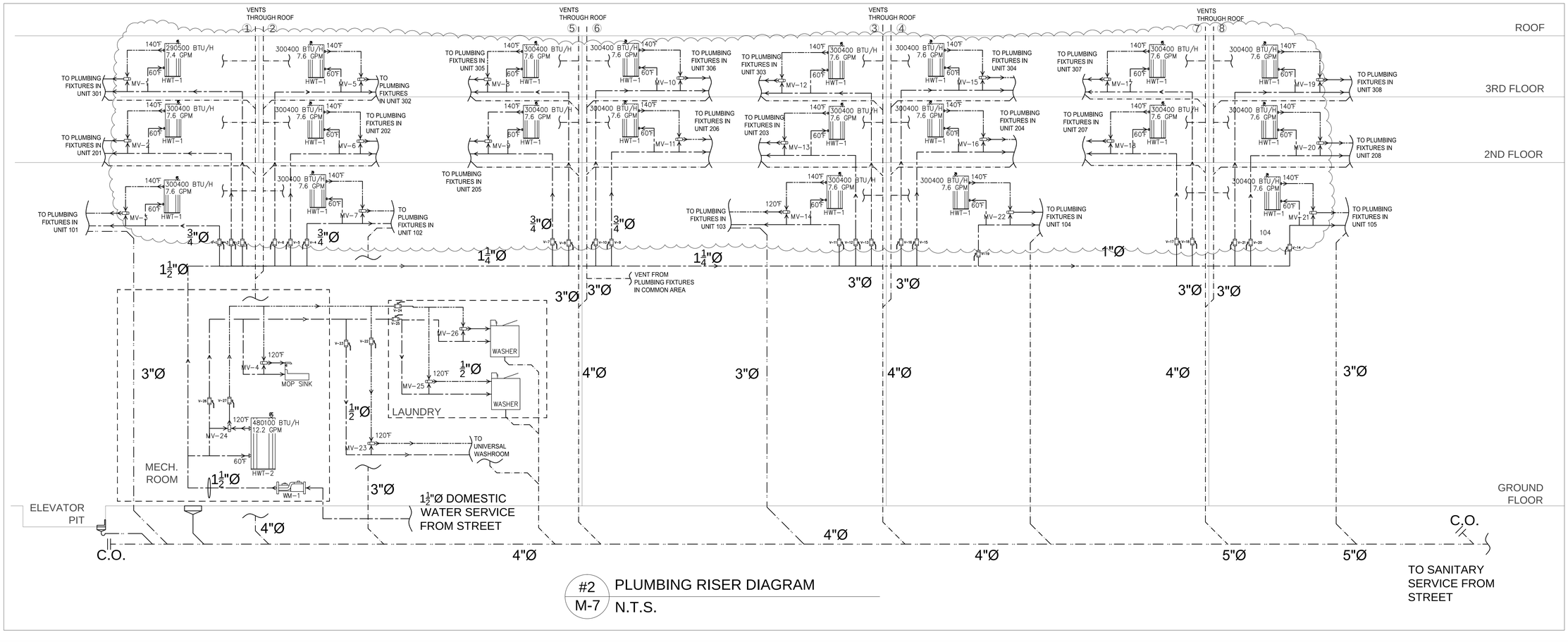
DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.

M-7



#1 M-7 HYDRONIC SCHEMATIC N.T.S.



#2 M-7 PLUMBING RISER DIAGRAM N.T.S.

FAN SCHEDULE

TAG	DESCRIPTION	MODEL	QUANTITY	FLOW (CFM)	E.S.P. (IN W.G.)	POWER (V / PH / HZ)	COMMENTS
EF-1	SUITE WASHROOM EXHAUST FAN	REVERSOMATIC B-100	21	92	0.1	120/1/60	CONTROLLED BY LIGHT SWITCH IN WASHROOM
EF-2	SUITE KITCHEN EXHAUST FAN	BROAN	21	250	0.1	120/1/60	
EF-3	UNIVERSAL WASHROOM EXHAUST FAN	REVERSOMATIC B-60	1	50	0.1	120/1/60	CONTROLLED BY LIGHT SWITCH
EF-4	MECHANICAL ROOM EXHAUST FAN	GREENHECK SQ-70	1	250	0.1	120/1/60	TO BE CONTROLLED BY THERMOSTAT IN ROOM
EF-5	GARBAGE ROOM EXHAUST FAN	GREENHECK SQ-70	1	250	0.1	120/1/60	CONTROLLED BY SWITCH IN ROOM
EF-6	ELEVATOR MACHINE ROOM TRANSFER FAN	GREENHECK SQ-60	1	150	0.1	120/1/60	CONTROLLED BY THERMOSTAT IN ROOM
EF-7	LAUNDRY ROOM EXHAUST FAN	GREENHECK SQ-60	1	150	0.1	120/1/60	CONTROLLED BY THERMOSTAT IN ROOM

PLUMBING FIXTURE SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	MODEL	QUANTITY	DCW	DHW	DRAIN	COMMENTS
L-1	SUITE WASHROOM LAVATORY	AMERICAN STANDARD	AQUALYN 0476.028	19	½"	½"	1¼"	FAUCET: DELTA C-SPOUT 583LF-WF
L-2	SUITE WASHROOM BARRIER FREE LAVATORY	AMERICAN STANDARD	CADET 9495.001	2	½"	½"	1¼"	FAUCET: AMERICAN STANDARD CERAMIX 2000.100X.002
L-3	UNIVERSAL WASHROOM LAVATORY	AMERICAN STANDARD	MURRO 0955.000	1	½"	½"	1¼"	FAUCET: AMERICAN STANDARD CERAMIX 2000.100X.002
L-4	LAUNDRY TUB	FIAT	DL-1	1	½"	½"	1¼"	FAUCET: CHICAGO FAUCETS 891-XK
KS-1	SUITE KITCHEN SINK	KINDRED	QSL-2020-8	21	½"	½"	1¼"	FAUCET: AMERICAN STANDARD CERAMIX 2021.700.002
WC-1	SUITE WASHROOM WATER CLOSET	AMERICAN STANDARD	CADET 3 FLOWISE	19	½"	-	3"	
WC-2	SUITE WASHROOM BARRIER FREE WATER CLOSET	AMERICAN STANDARD	CADET 3 RIGHT HEIGHT	2	½"	-	3"	SEAT: CENTOCO 820ST
SH-1	SUITE SHOWER	SYMMONS	SAFETYMIX	19	½"	½"	1¼"	SHOWER STALL: MAAX SQUARE BASE 36
SH-2	SUITE BARRIER FREE SHOWER	SYMMONS	SAFETYMIX	2	½"	½"	1¼"	SHOWER STALL: MAAX BFS-48
SS-1	MECHANICAL ROOM SERVICE SINK	STERN WILLIAMS	MTB-2424	1	½"	½"	3"	FAUCET: CHICAGO FAUCET 305VB-R-RCF-XK
FD	FLOOR DRAIN	WATTS	FD-C-100	46	-	-	3"	
FD-AS	FLOOR DRAIN W/ ANGLE STRAINER	WATTS	FD-103-C-AS-1	1	-	-	3"	

NATURAL GAS SCHEDULE

ITEM #	Description	Manufacturer	Model	Supplied By	Quantity	NATURAL GAS INPUT (BTUH)	NATURAL GAS SUPPLY TAKEOFF	Comments
B-1	BOILER	NTI	TRINITY LX400	Contractor	1	400,000	3/4"	
B-2	BOILER	NTI	TRINITY LX400	Contractor	1	400,000	3/4"	
MUA-1	MAKE UP AIR UNIT	ENGINEERED AIR	DJX-20	Contractor	1	150,000	3/4"	
HWT-2	HOT WATER TANK	A.O. SMITH	BTH-500	Contractor	1	76,000	1/2"	
				Total:		1,026,000		

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STAMP: LICENSED PROFESSIONAL ENGINEER T. W. VIYYURKA PROVINCE OF ONTARIO

PROJECT NORTH

TTF ENGINEERING
TTF Engineering Unit 205 - 1600 Merivale Road
Ottawa, ON K2G 5J8 Tel. 613-592-1677

PROJECT
WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

DRAWING
MECHANICAL SCHEMATICS & SCHEDULES

DRAWN:	M.H.
APPROVED:	T.V.
DATE:	MAY 26/17
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No. M-8

DOCUMENTATION

1. THESE DOCUMENTS ARE AN INTEGRAL PART OF THE CONTRACT DOCUMENTS. THE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS OF THE ARCHITECTURAL DOCUMENTS ARE FULLY BINDING TO THE MECHANICAL CONTRACT.
2. REFER TO OTHER DIVISIONS TO ENSURE FULL COORDINATION.
3. "PROVIDE" IN THIS DIVISION MEANS TO "SUPPLY AND INSTALL."

COMMISSIONING

1. PLAN, ORGANIZE AND IMPLEMENT THE COMMISSIONING PROCESS FOR MECHANICAL SYSTEMS AND EQUIPMENT. SUPPLY COMPLETE INSTRUCTIONS AND INFORMATION RELATING TO THE OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND SYSTEMS. DELIVER A SYSTEM WHICH PERFORMS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND EQUIPMENT MANUFACTURER'S REQUIREMENTS.

MECHANICAL SYSTEM SUPPORT, AND ANCHORAGE (SEISMIC)

1. PROVIDE SUPPORT, ANCHORAGE AND RESTRAINT OF MECHANICAL DISTRIBUTION SYSTEMS AND EQUIPMENT, DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE ONTARIO BUILDING CODE; ASHRAE APPLICATIONS, SMACNA DUCT CONSTRUCTION STANDARDS; AND ANSI/NFPA 13 INSTALLATION OF SPRINKLER SYSTEMS.
2. COORDINATE MECHANICAL SYSTEM SUPPORT, ANCHORAGE, AND RESTRAINT SYSTEM WITH THE REQUIREMENTS AND CONSTRAINTS OF THE STRUCTURE, VIBRATION ISOLATION SYSTEMS, AND THE SUPPORT. ANCHORAGE, AND RESTRAINT SYSTEMS FOR ELECTRICAL AND ARCHITECTURAL COMPONENTS OF THE BUILDING.
3. CONTRACTOR TO ALLOW FOR SEISMIC REVIEW OF ALL NEW INSTALLATIONS AND PROVIDE ENGINEER-STAMPED DOCUMENTS OUTLINING SEISMIC MEASURES TAKEN.

PROJECT SCHEDULE

1. PHASE WORK IN ACCORDANCE WITH DIVISION 1. PROVIDE CONSULTANT WITH MATERIAL DELIVERY SCHEDULE WITHIN ONE(1) WEEK OF EXECUTING THE AGREEMENT.

DRAWINGS AND MEASUREMENTS

1. DRAWINGS DO NOT INDICATE EXACT ARCHITECTURAL, STRUCTURAL OR ELECTRICAL FEATURES. EXAMINE DRAWINGS PRIOR TO LAYING OUT,FABRICATING AND INSTALLING WORK TO ENSURE NO INTERFERENCE EXISTS. REPORT CONFLICT WITH WORK TO CONSULTANT
2. DRAWINGS SHOW GENERAL DESIGN AND ARRANGEMENT OF MECHANICAL SYSTEM INSTALLATION, AND ARE DIAGRAMMATIC IN SOME DETAILS. COORDINATE WITH ALL TRADES FOR COMPLETE OPERATIONAL SYSTEM.
3. DO NOT SCALE DRAWINGS TO ORDER MATERIAL. TAKE FIELD MEASUREMENTS BEFORE ORDERING MATERIALS AND MAKE MATERIAL CONFORM TO SITE CONDITIONS.

EXAMINATION

1. THIS PROJECT INVOLVES RENOVATIONS TO AN EXISTING BUILDING. EXAMINE THE SITE AND MAKE ALLOWANCE FOR ALL LOCAL CONDITIONS AFFECTING WORK UNDER THIS CONTRACT PRIOR TO SUBMITTING FINAL PRICE.

PERMITS AND FEES

1. GIVE ALL NECESSARY NOTICE, OBTAIN ALL PERMITS AND PAY ALL FEES IN ORDER THAT THE WORK SPECIFIED HEREIN MAY BE COMPLETED.

CODES AND BY-LAWS

1. COMPLY WITH ALL CODES AND BY-LAWS RELATING TO INSTALLATION AND EQUIPMENT. PROVIDE CERTIFICATES TO VERIFY THAT THE WORK INSTALLED CONFORMS WITH THE LAWS AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.

SHOP DRAWINGS

1. PRIOR TO MANUFACTURE, SUBMIT THREE (3) COPIES OF SHOP DRAWINGS OF SPECIFIED EQUIPMENT FOR REVIEW. DRAWINGS WILL BE REVIEWED FOR SPECIFICATION COMPLIANCE AND ARE TO BE REVISED AS OFTEN AS NECESSARY TO SATISFACTION OF CONSULTANT.

INTERRUPTION OF EXISTING SERVICES

1. ARRANGE SCHEDULE AND PERFORM WORK WITH MINIMUM DISTURBANCE TO EXISTING FACILITIES AND SERVICES. NOTIFY CONSULTANT AND LANDLORD IN WRITING AT LEAST 48 HOURS IN ADVANCE OF PLANNED INTERRUPTION TO EXISTING SERVICE.

REMOVAL AND REUSE OF EXISTING SERVICES

1. PRESENT EXISTING MATERIAL AND EQUIPMENT REMOVED FROM WORK BUT NOT IDENTIFIED FOR RE-USE ON SITE TO OWNER/OTHERS. WHERE DEEMED UNSUITABLE, REMOVE FROM SITE.

PROTECTION OF WORK

1. PROTECT ALL FINISHED AND UNFINISHED WORK FROM DAMAGE. REPAIR DAMAGE CAUSED TO SURFACES OF BUILDING WITHOUT COST TO OWNER AND TO SATISFACTION OF CONSULTANT.
2. BE RESPONSIBLE FOR CONDITION OF ALL MATERIALS AND EQUIPMENT SUPPLIED AND/OR INSTALLED. PROVIDE PROTECTION PRIOR TO, DURING AND AFTER INSTALLATION UNTIL TAKEOVER BY OWNER.

CLEANING

1. DURING COURSE OF CONSTRUCTION AND UPON COMPLETION, REMOVESITE ALL RUBBISH AND WASTE RESULTING FROM THIS WORK TO COMPLETE FROM PROJECT SATISFACTION OF THE CONSULTANT .

CUTTING AND PATCHING

1. ALL CUTTING AND PATCHING REQUIRED TO PERFORM WORK TO BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR MECHANICAL CONTRACTOR TO IDENTIFY LOCATIONS FOR ALL OPENINGS FOR PIPES, DUCTS, ETC., AND PROVIDE SLEEVES REQUIRED TO EXECUTE THE MECHANICAL INSTALLATION.

OPERATIONAL TESTS

1. PERFORM SYSTEMATIC CHECK, TEST COMPONENTS IN ALL SYSTEMS, ENSURE THAT EACH SYSTEM FUNCTIONS CORRECTLY BEFORE COMMENCING BALANCING WORK. PROVIDE ALL PRIMARY ELEMENTS, TEST WELLS, BALANCING DAMPERS, BALANCING VALVES AND PARTS WHICH ARE REQUIRED FOR TESTING AND BALANCING.
2. RECORD ALL CHECKS AND TESTS. MANUFACTURER OR SUPPLIER OF THE COMPONENT TESTED TO SIGN FORM INDICATING THAT INSTALLATION IS IN ACCORDANCE WITH THEIR WRITTEN RECOMMENDATION. COUNTERSIGN AS CONTRACTOR.

TEMPORARY AND TRIAL USE

1. OBTAIN WRITTEN PERMISSION FROM CONSULTANT TO USE AND TEST PERMANENT EQUIPMENT AND SYSTEMS PRIOR TO SUBSTANTIAL PERFORMANCE.
2. PROVIDE LABOUR, MATERIAL AND INSTRUMENTS REQUIRED FOR TESTING. RECTIFY INCOMPLETE WORK IMMEDIATELY TO SATISFACTION OF CONSULTANT . CLEAN AND RENEW EQUIPMENT AND SYSTEM USED PRIOR TO ACCEPTANCE.

BALANCING

1. BALANCING TO BE PERFORMED BY A CERTIFIED BALANCING COMPANY.
2. BALANCE AND ADJUST ALL AIR HANDLING SYSTEMS, EQUIPMENT, DUCTWORK, DIFFUSERS, REGISTERS, ETC., TO OBTAIN AIR QUANTITIES INDICATED. ADJUST FAN SPEEDS AS REQUIRED TO ACHIEVE BALANCE, INCLUDING PROVISION OF REPLACEMENT SHEAVES AND BELTS AS REQUIRED. BALANCE AND ADJUST ALL WATER SYSTEMS TO WATER FLOWS INDICATED.
3. COMPILE DATA FOR ALL TESTING AND BALANCING AND SUBMIT TWO DOCUMENTS TO CONSULTANT.

RECORD DRAWINGS

1. AFTER AWARD OF CONTRACT, CONSULTANT WILL PROVIDE CONTRACTOR WITH A SET OF DRAWINGS FOR PURPOSE OF MAINTAINING RECORD DRAWINGS. ACCURATELY AND NEATLY RECORD DEVIATIONS FROM CONTRACT DOCUMENTS WHICH ARE THE RESULT OF SITE CONDITIONS AND CHANGE ORDERS. RECORD CHANGES IN SAME SCALE AND QUALITY OF ORIGINAL DRAWINGS. IDENTIFY ALL REVISIONS MADE TO CONTRACT DRAWINGS AND REFERENCE FABRICATION DRAWINGS INCLUDED.
2. ON COMPLETION OF WORK AND PRIOR TO FINAL INSPECTION, SUBMIT RECORD DOCUMENTS TO CONSULTANT.

OPERATING AND INSTRUCTION MANUALS

1. FURNISH CONSULTANT WITH 3 COPIES OF SERVICE, MAINTENANCE, SPARE PARTS AND OPERATING INSTRUCTIONS, SHOP DRAWINGS AND BULLETINS FOR ALL ITEMS INSTALLED. SUBMIT BALANCING REPORT. SUBMIT IN LOOSE-LEAF BINDERS. PROVIDE BINDERS WITH PROPER INDEX AND LIST OF MANUFACTURER'S SERVICE REPRESENTATIVES, INCLUDING ADDRESS AND PHONE NUMBER. PROVIDE STEP-BY-STEP SEQUENCE OF OPERATION DESCRIPTION FOR AUTOMATIC CONTROL SYSTEM.

INSTRUCTION OF OPERATING STAFF

1. PROVIDE TRAINED PERSONNEL TO INSTRUCT OPERATING STAFF IN MAINTENANCE, ADJUSTMENT AND OPERATION OF MECHANICAL EQUIPMENT. PROVIDE INSTRUCTION DURING REGULAR WORK HOURS PRIOR TO ACCEPTANCE AND TURNOVER TO OPERATING STAFF. USE OPERATION AND MAINTENANCE DATA MANUAL AND UPDATED RECORD DRAWINGS FOR INSTRUCTION PURPOSES.

INSULATION

1. HOT PIPING: RIGID GLASS FIBRE, PREFORMED SECTIONAL, [88 KG/M^3] [5 LB/FT^3], [316°C] [600°F], [0.035 W/M°C @ 24°C] [0.250 BTU.IN./HR.FT^2 @ 75°F]. THICKNESS: [25 MM] [1"].
2. COLD PIPING: RIGID GLASS FIBRE, PREFORMED SECTIONAL, [88 KG/M^3] [5 LB/FT^3], [316°C] [600°F], [0.035 W/M°C @ 24°C] [0.250 BTU.IN./HR.FT^2 @ 75°F], WITH FACTORY APPLIED VAPOUR BARRIER JACKET. THICKNESS: [25 MM] [1"].
3. DUCTWORK, THERMAL, ROUND [AND RECTANGULAR] DUCT: FLEXIBLE GLASS FIBRE [16 KG/M^3] [1 LB/FT^3], [120°C] [250°F], [0.036 W/M°C @ 24°C] [0.250 BTU.IN./HR.FT^2 @ 75°F], WITH FACTORY APPLIED VAPOUR BARRIER JACKET. THICKNESS: [25 MM] [1"].
4. DUCTWORK, THERMAL, RECTANGULAR DUCT: RIGID GLASS FIBREBOARD, [72 KG/M^3] [4.5 LB/FT^3], [120°C] [250°F], [0.032 W/M°C @ 24°C] [0.220 BTU.IN./HR.FT^2 @ 75°F], WITH FACTORY APPLIED VAPOUR BARRIER JACKET. THICKNESS: [25 MM] [1"] EXCEPT FOR OUTSIDE AIR AND EXHAUST DUCTWORK PROVIDE [50 MM] [2"]. PROVIDE AS INDICATED EXCEPT FOR OUTSIDE AIR AND EXHAUST. PROVIDE ON OUTSIDE AIR UP TO AIR HANDLING UNIT. FOR EXHAUST PROVIDE FOR [2 M] [6'-6"] FROM LOUVRE.

AS-CONSTRUCTED DRAWINGS

1. AFTER AWARD OF CONTRACT, CONSULTANT WILL PROVIDE CONTRACTOR WITH A SET OF DRAWINGS FOR PURPOSE OF MAINTAINING AS-CONSTRUCTED DRAWINGS. ACCURATELY AND NEATLY RECORD DEVIATIONS FROM CONTRACT DOCUMENTS WHICH ARE THE RESULT OF SITE CONDITIONS AND CHANGE ORDERS. RECORD CHANGES IN SAME SCALE AND QUALITY OF ORIGINAL DRAWINGS. IDENTIFY ALL REVISIONS MADE TO CONTRACT DRAWINGS AND REFERENCE FABRICATION DRAWINGS INCLUDED.
2. ON COMPLETION OF WORK AND PRIOR TO FINAL INSPECTION, SUBMIT DOCUMENTS TO CONSULTANT.

TESTS

1. GIVE WRITTEN NOTICE 48 HOURS IN ADVANCE OF SCHEDULED TEST DATES. BEAR ALL COSTS IN CONNECTION WITH EQUIPMENT AND SYSTEM TESTS. ALL TESTS TO BE PERFORMED TO SATISFACTION OF CONSULTANT BEFORE BACKFILLING OR FURRING.
2. PRESSURE TEST
   - .1 DOMESTIC WATER PIPING: TEST TO 1-1/2 TIMES MAXIMUM WORKING PRESSURE OR [<1034 KPA> <<150 PSI>>] WATER PRESSURE MEASURED AT SYSTEM LOW POINT.
   - .2 DRAINAGE SYSTEMS: TEST BY FILLING WITH WATER TO PRODUCE WATER PRESSURE OF [<30 KPA> <<10 FT>>] MINIMUM AND [<75 KPA> <<25 FT>>] MAXIMUM. CHECK FOR PROPER GRADE AND OBSTRUCTION BY BALL TEST.
   - .3 STANDPIPE SYSTEM: TEST TO [<2070 KPA> <<300 PSI>>] WATER PRESSURE AT THE VALVE.
   - .4 REFRIGERANT PIPING: TEST WITH [NITROGEN] [REFRIGERANT] TO [<2070 KPA> <<300 PSI>>] ON HIGH PRESSURE SIDE AND [<1035 KPA> <<150 PSI>>] ON LOW SIDE AND REFRIGERANT HALIDE TORCH TEST.
   - .5 LOW PRESSURE DUCTS: TEST FOR TIGHTNESS SUCH THAT LEAKAGE IS INAUDIBLE AND NOT DETECTABLE BY FEEL. [CHECK FOR AUDIBLE LEAKS AT [<500 KPA> <<2 INCHES WG>>] ABOVE DUCT DESIGN OPERATING PRESSURE.]
   - .6 MEDIUM AND HIGH PRESSURE DUCTWORK: CHECK FOR AUDIBLE LEAKS. TEST FOR TIGHTNESS AS SPECIFIED BY THE SMACNA MANUALS WITH MAXIMUM LEAKAGE OF 1/2% AT ANY BRANCH OR MAIN DUCT AT [<3 KPA> <<12 INCHES WG>>] STATIC PRESSURE.
   - .7 MAINTAIN TEST PRESSURE WITHOUT LOSS FOR 4 HOURS. REPAIR LEAKS AND DEFECTS. RETEST UNTIL ACCEPTED.
3. FLUSHING AND CLEANING: AFTER PRESSURE TESTS ARE COMPLETED AND ACCEPTED, PRIOR TO START-UP AND PLACING INTO OPERATION, FLUSH AND CLEAN OUT PIPING SYSTEMS.

PLUMBING

1. MATERIALS AND INSTALLATION TO COMPLY TO ONTARIO BUILDING CODE PART 7.
2. CONNECTIONS BETWEEN DISSIMILAR METALS TO BE BY MEANS OF DIELECTRIC COUPLINGS.
3. DOMESTIC HOT AND COLD WATER PIPING TO BE TYPE 'M' STANDARD STREAMLINED COPPER PIPE WITH CAST BRASS SOLDER FITTINGS. SOLDER TO BE 95/5.
4. SANITARY DRAINAGE PIPING TO BE DWV PIPES CERTIFIED TO CSA B181.2 & LISTED TO ULC S102.2 TO EXHIBIT FLAME SPREAD RATING OF NOT GRATER THAN 25 & A SMOKE DEVELOPED CLASSFICATION OF NOT GRATER THAN 50. PIPE TO BE MADE TO SCHEDULE 40 THICKNESS.
   SPECIFIED PRODUCT: IPEX SYSTEM XFR SERIES.
5. VALVES
   - .1 ALL VALVES TO BE FROM ONE MANUFACTURER AND BE CLASS [860/1380 KPA] [125/200 PSI].
   - .2 GATE VALVES TO BE BRONZE, SOLDER END, NON-RISING STEM:SPRINKLERS INCLUDING ALL LABOUR, VALVES, PIPING, HEADS, HANGERS, LARGER TO BE IRON BODY, WEDGE DISK, OS&Y TYPE, BRONZE TRIMMED, CRANE 465 1/2, JENKINS 454J.
   - .3 GLOBE VALVES TO BE BRONZE, SOLDER END: CRANE 1310; KITZ 10; TOYO 222; JENKINS 106BPJ.
   - .4 BALL VALVES TO BE BRONZE/BRASS, TWO PIECE BODY, CHROME PLATED BALL, PTFE SEAT AND LEVER ACTUATOR WITH MEMORY STOP: CRANE F9202; KITZ 58 OR 59; TOYO 5044A; JENKINS 201J.
   - .5 CHECK VALVES TO BE Y-PATTERN, BRONZE SWING TYPE: CRANE 1342;KITZ 23; TOYO 237; JENKINS 4093J.
6. FIXTURES:
   - .1 REFER TO PLUMBING FIXTURE SCHEDULE ON DRAWINGS.

HOT WATER TANKS

1. HWT-1.
   TYPE: 30GAL ELECTRIC HOT WATER TANK, 3KW HEATING ELEMENTS.

   SPECIFIED PRODUCT: GIANT 142ETE-2F7M.
   POWER REQUIREMENT: 208V, 3000W.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.
2. HWT-2
   TYPE: GAS-FIRED WATER HEATER, 75GAL CAPACITY, CERTIFIED AT 300 PSI TEST PRESSURE AND 150 PSI WORKING PRESSURE. C/W TEMPERATURE & PRESSURE RELIEF VALVES. RECOVERY RATE: 62GPH @ 100F WATER TEMPERATURE RISE.

   SPECIFIED PRODUCT: BRADFORD WHITE 75T-80B-3N.
   GAS INPUT: 76,000BTU/H.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.

HEATING AND COOLING

1. HEATING AND CHILLED WATER PIPING: [NPS 2][2"] AND SMALLER TO BE SCHEDULE 40 STEEL PIPE TO ASTM A53; MALLEABLE IRON FITTINGS, [1034 KPA] [150 PSI], THREADED. [NPS 2 1/2] [2 1/2"] AND LARGER TO BE SCHEDULE 40 SEAMLESS STEEL PIPE TO ASTM A53; SCHEDULE 40 FORGED STEEL FITTINGS, WELDED.
2. VALVES:
   - .1 PROVIDE VALVES CONFORMING TO APPROPRIATE MMS-SP STANDARDS,[860 KPA] [125 PSI].[NPS 2][2"] AND SMALLER TO BE THREADED, [NPS 2 1/2][2 1/2"] AND LARGER TO BE FLANGED; COPPER TO HAVE SOLDER ENDS.
   - .2 GATE VALVES: [NPS 2][2"] AND SMALLER TO BE BRONZE, WEDGE DISK TYPE, CRANE 1700, JENKINS 990 AJ. [NPS 2 1/2][2 1/2"] AND LARGER TO BE IRON BODY, WEDGE DISK, OS&Y TYPE, BRONZE TRIMMED, CRANE 465 1/2, JENKINS 454J.
   - .3 GLOBE VALVES: [NPS 2][2"] AND SMALLER TO BE BRONZE WITH STAINLESS STEEL PLUG DISK AND SEAT RING, CRANE 14 1/2 P, JENKINS 594J.[NPS 2 1/2][2 1/2"] AND LARGER TO BE IRON BODY,OS&Y TYPE, BRONZE TRIMMED, CRANE 351, JENKINS 2342J.
   - .4 BALL VALVES: [NPS 2][2"] AND SMALLER TO BE BRONZE/BRASS TWO PIECE WITH CHROME BALL, PTFE SEAT AND LEVER ACTUATOR WITH MEMORY STOP, CRANE F9202, JENKINS 201J.
3. INSTALLATION:
   - i. INSTALLATION TO CONFORM TO ANSI REQUIREMENTS AND FOLLOW BUILDING LINES. PROVIDE NECESSARY SUPPORTS, SLOPE FOR DRAINAGE, PROVIDE DIELECTRIC COUPLINGS WHERE REQUIRED.

DUCTWORK

1. RECTANGULAR DUCTWORK: CONSTRUCT DUCTWORK AND FITTINGS TO SMACNA AND ASHRAE STANDARDS FOR LESS THAN [500 PA] [2"] W.G. DUCT STATIC PRESSURE RANGE, [1.0 M/S] [2000 FPM] MAXIMUM VELOCITY. USE LOCK FORMING QUALITY GALVANIZED STEEL WITH G90 DESIGNATION ZINC COATING TO ASTM A525-75.
2. ROUND DUCTWORK: GALVANIZED STEEL WITH G90 DESIGNATION, ZINC COATING TO ASTM A525-75. ROUND FITTINGS TO BE OF WELDED CONSTRUCTION FABRICATED FROM [1.0 MM] [20 GAUGE] GALVANIZED STEEL SHEETS. TEES, REDUCERS, Y-BRANCHES AND OTHER FITTINGS TO BE AS INDICATED ON THE DRAWINGS AND CONFORM TO ASHRAE AND SMACNA STANDARDS.
3. FLEXIBLE DUCTWORK: DUCTWORK AND CONNECTORS TO COMPLY WITH OR EXCEED THEREQUIREMENTS OF UL "STANDARDS FOR SAFETY AIR DUCTS", UL-181, CLASS 1 AND NFPA 90A. FLEXIBLE DUCT LENGTHS NOT TO EXCEED [1500 MM] [5 FT.].FLEXIBLE DUCTWORK: DUCTWORK AND CONNECTORS TO COMPLY WITH OR EXCEED THE REQUIREMENTS OF UL "STANDARDS FOR SAFETY AIR DUCTS", UL-181, CLASS 1 AND NFPA 90A. FLEXIBLE DUCT LENGTHS NOT TO EXCEED [1500 MM] [5 FT.].
4. KITCHEN EXHAUST DUCTWORK: WELDED GREASE EXHAUST DUCTWORK INSTALLED IN ACCORDANCE WITH NFPA-96. ALL KITCHEN EXHAUST DUCTWORK TO BE INSULATED IN A 3" THICK LAYER OF ZERO CLEARANCE FIRE BARRIER DUCT WRAP RATED FOR USE WITH NFPA-96 GREASE DUCTWORK.
   SPECIFIED PRODUCT: 3M FIREMASTER DUCTWRAP

   ALTERNATIVE: PRE-MANUFACTURED NFPA-96 RATED DUCTWORK CAN BE USED IN PLACE OF WELDED GREASE EXHAUST DUCTWORK WITH WRAP
   PRE-MANUFACTURED DUCTWORK SHALL BE CONSTRUCTED OF A CODE COMPLIENT 16 GAUGE STEEL INNER LINER & AN IMPACT RESISTANT METAL OUTER CASING RESULTING IN A WALL THICKNESS OF 3.75"
   SPECIFIED PRODUCT: DURADUCT KEX - ZERO CLEARANCE KITCHEN EXHAUST DUCT.
5. ALL DUCTWORK & PLENUMS TO BE SEALED AND PRESSURE TESTED IN ACCORDANCE WITH ASHRAE 90.1

GRILLES AND DIFFUSERS

1. PROVIDE GRILLES AND DIFFUSERS COMPLETE WITH ACCESSORIES AS INDICATED ON DRAWINGS. POSITIONS INDICATED ARE APPROXIMATE ONLY. MECHANICAL CONTRACTOR TO VERIFY LOCATION OF ALL OUTLETS AND MAKE SUCH ADJUSTMENTS AS NECESSARY TO CONFORM WITH ARCHITECTURAL FIXTURES.
2. TYPE 'A': SQUARE DIFFUSER 24" X 24", FIXED DIFFUSION TYPE, 10" DIAMETER NECK, E.H. PRICE SCD.
3. TYPE 'B': LOUVERED FACE SUPPLY GRILLE, ALUMINUM,1/2" X 1/2" GRID, SIZES AS INDICATED, FOR SIDE WALL OR CEILING MOUNTING.

   C/W FRAME AND FLANGE BORDER.
   SPECIFIED PRODUCT: EH PRICE 500/600 SERIES

NATURAL GAS SYSTEM

1. PROVIDE COMPLETE NATURAL GAS SYSTEM TO CSA REQUIREMENTS INCLUDING SEAMLESS BLACK STEEL PIPING, SCHEDULE 40, TO ASTM A53, FITTINGS, SHUT-OFF VALVES, PRESSURE REDUCING VALVES, PRESSURE RELIEF VALVES, ISOLATION COCKS, DRIP AND DIRT POCKETS, AND HARDWARE AND SUPPORTS.
2. FITTINGS:
   - .1 2" AND SMALLER: MALLEABLE IRON, THREADED TO ANSI STANDARD B16.3
   - 2 CARBON STEEL 'PRESS-FIT' FITTINGS CAN BE USED AS AN ALTERNATIVE FOR BOTH STANDARD & HIGH PRESSURE APPLICATIONS. SPECIFIED PRODUCT: VIEGA MEGAPRESS G OR EQUIVALENT
3. GAS VALVES: CHROME PLATED BRASS, TWO PIECE FULL BORE PAD LOCKABLE TO CSA 3.16. SPECIFIED PRODUCT: HATTERESLEY - MILLIKEN MODEL PB-500.
4. GAS PRV: REDUCE NATURAL GAS TO REQUIRED UNIT PRESSURE WITH PRESSURE REDUCING VALVE. PRV TO PROVIDE 100% SAFETY RELIEF ON EXCESS PRESSURE ABOVE CONTROL SETTING. SPECIFIED PRODUCT: FISHER.
5. PROVIDE NATURAL GAS PIPING AS INDICATED TO ALL GAS FIRED EQUIPMENT. CONFORM TO CSA B149.1 AND ALL SUPPLEMENTARY REGULATIONS.
6. PERFORM ALL TESTS IN CONFORMANCE WITH ONTARIO GAS UTILIZATION REGULATIONS.
7. PIPING TO BE PROTECTED AGAINST CORROSION. COAT WITH TWO APPLICATIONS OF PAINT TO CGSB 1-GP-60M IN PRIMARY YELLOW COLOUR.
8. PROVIDE ALL REQUIRED GAS TRAINS FOR EQUIPMENT. PIPE VENTS TO ATMOSPHERE.
9. PROVIDE APPROPRIATE SQUARE HEAD OR FLAT HEAD WRENCH FOR EACH STOP COCK.

FIRE EXTINGUISHERS.

1. MULTI-PURPOSE DRY CHEMICAL: PRESSURIZED 10LB CAPACITY SUITABLE FOR CLASS A, B, AND C FIRES WITH MOUNTING BRACKETS.

INTEGRITY OF FIRE SEPARATIONS

1. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE INTEGRITY AND FIRE RATING OF ANY FIRE SEPARATION PENETRATED DURING THE COURSE OF THE SCOPE OF WORK DEFINED HEREIN. THIS INCLUDES, BUT IS NOT LIMITED TO, DUCTWORK, PIPING, OTHER MECHANICAL EQUIPMENT, FASTENERS, ETC.
2. DEFINITIONS:
   - .1 FIRE SEPARATION - CONSTRUCTED ASSEMBLY THAT ACTS AS A BARRIER AGAINST THE SPREAD OF FIRE.
   - .2 FIRESTOPPING - MATERIAL OR COMBINATION OF MATERIALS USED TO RETAIN INTEGRITY OF FIRE-RATED CONSTRUCTION BY MAINTAINING AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FLAME, SMOKE, WATER, AND HOT GASES THROUGH PENETRATIONS IN FIRE RATED ASSEMBLIES.
3. FIRESTOP TESTED SYSTEMS SHALL BE USED WHEN A FIRE SEPARATION IS PENETRATED BY A COMPONENT OF A MECHANICAL OR ELECTRICAL SYSTEM. FIRESTOPPING PRODUCTS SHALL BE CERTIFIED TO CAN/ULC-S115 AND INSTALLED AS PER THE MANUFACTURER'S INSTRUCTIONS.
   FIRESTOPPING PRODUCTS SHALL MATCH THE FIRE RATING OF THE SEPARATION BEING PENETRATED, AND SHALL BE RATED FOR USE IN THE CONDITIONS AND WITH THE MATERIALS SPECIFIC TO EACH CIRCUMSTANCE.

THERMOSTATS

1. ROOM THERMOSTATS WITH CELSIUS SCALE, SINGLE TEMPERATURE, GRADUAL-ACTING, ADJUSTABLE SENSITIVITY, MINIMUM [<6 DEGREES C> <<10 DEGREES F>>] SET POINT ADJUSTMENT. PROVIDE COVERS WITH CONCEALED SET POINT ADJUSTMENT AND SETPOINT INDICATION WITH THERMOMETER. PROVIDE GUARDS FOR THERMOSTATS IN UNSUPERVISED OR PUBLIC AREAS.
2. REMOTE BULB THERMOSTATS WITH EITHER AVERAGING TYPE ELEMENT OF SUITABLE LENGTH FOR AIR OR RIGID BULB FOR LIQUIDS, WITH FLANGES TO SUPPORT ELEMENTS IN DUCTS AND SEPARATE SOCKETS IN LIQUIDS.

DAMPERS

1. DAMPERS: [<1.6 MM> <<16 GA>>] GALVANIZED STEEL OR EXTRUDED ALUMINUM MULTIPLE BLADE MOUNTED IN [<2.8 MM> <<12 GA>>] STEEL OR EXTRUDED ALUMINUM FLANGED FRAME. INDIVIDUAL BLADES SHALL NOT EXCEED [<150 MM> <<6 INCHES>>] IN WIDTH OR [<1200 MM> <<48 INCHES>>] IN LENGTH WITH INTERLOCKING EDGES AND COMPRESSIBLE SEALS. PROVIDE OIL IMPREGNATED BRONZE OR NYLON BEARINGS WITH ADDITIONAL THRUST BEARINGS FOR VERTICAL BLADES. PRIME COAT STEEL DAMPERS.
2. PROVIDE MIXING DAMPERS OF [OPPOSED] [PARALLEL] BLADE CONSTRUCTION ARRANGED TO MIX STREAMS. DAMPERS SHALL HAVE MAXIMUM 1% LEAKAGE AT [<1494 KPA> <<6 INCH SP>>].

DAMPER OPERATORS

1. PISTON OR GEAR DRIVEN TYPE WITH SPRING RETURN TO OPEN OR CLOSE POSITION AS GOVERNED BY FREEZE, FIRE OR TEMPERATURE PROTECTION. PROVIDE PILOT POSITIONERS WHEN SEQUENCED WITH OTHER ACTUATORS.

ELECTRICAL ROOMS AND ELEVATOR MACHINE ROOM

1. ON TEMPERATURE ABOVE [<30 DEGREES C> <<85 DEGREES F>>] THERMOSTAT SHALL OPEN DAMPERS AND START FANS.

VOLUME CONTROL DAMPERS

1. FABRICATE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
2. FABRICATE SPLITTER DAMPERS, SAME GAUGE AS DUCT TO [<600 MM> <<24 INCHES>>] SIZE AND TWO GAUGES HEAVIER FOR LARGER SIZES, WITH [DINGLE] [DOUBLE] THICKNESS SHEET METAL TO STREAMLINE SHAPE, SECURE WITH CONTINUOUS HINGE OR ROD. OPERATE WITH MINIMUM [<6 MM> <<1/4 INCH>>] DIAMETER ROD.
3. FABRICATE SINGLE BLADE DAMPERS FOR DUCTS SIZES TO [<240 X 760 MM> <<9-1/2 X 30 INCH>>].
4. FABRICATE MULTI-BLADE DAMPER OF OPPOSED BLADE PATTERN WITH MAXIMUM BLADE SIZES [<300 X 1825 MM> <<12 X 73 INCH>>]. ASSEMBLE CENTRE AND EDGE CRIMPED BLADES IN PRIME COATED OR GALVANIZED CHANNEL FRAME WITH SUITABLE HARDWARE.
5. EXCEPT IN ROUND DUCTWORK [<300 MM> <<12 INCHES>>] AND SMALLER, PROVIDE END BEARINGS, OIL-IMPREGNATED NYLON OR SINTERED BRONZE.
6. PROVIDE LOCKING, INDICATING QUADRANT REGULATORS ON SINGLE AND MULTI-BLADE DAMPERS. [WHERE ROD LENGTHS EXCEED [<750 MM> <<30 INCHES>>] PROVIDE REGULATOR AT BOTH ENDS.]

FIRE DAMPERS

1. FABRICATE TO NFPA 90A, UL 555, CAN/ULC-S112 AND CAN/ULC-S112.2 AS INDICATED.
2. FUSIBLE LINKS, ULC-S505, SHALL SEPARATE AT [<71 DEGREES C> <<160 DEGREES F>>] [<100 DEGREES C> <<212 DEGREES F>>]. PROVIDE ADJUSTABLE LINK STRAPS FOR COMBINATION FIRE/BALANCING DAMPERS.

BACK DRAFT DAMPERS

1. GRAVITY BACK DRAFT DAMPERS, SIZE [<450 X 450 MM> <<18 X 18 INCHES>>] OR SMALLER, FURNISHED WITH AIR MOVING EQUIPMENT, MAY BE AIR MOVING EQUIPMENT MANUFACTURERS STANDARD CONSTRUCTION.
2. FABRICATE MULTI-BLADE, PARALLEL ACTION GRAVITY BALANCED BACK DRAFT DAMPERS OF GALVANIZED STEEL OR EXTRUDED ALUMINUM, WITH [CENTRE] PIVOTED BLADES WITH FELT OR FLEXIBLE VINYL SEALED EDGES, LINKED TOGETHER WITH STEEL BALL BEARINGS AND PLATED STEEL PIVOT PIN.

AIR-TURNING DEVICES

1. MULTI-BLADE DEVICE WITH BLADES ALIGNED IN SHORT DIMENSION, STEEL OR ALUMINUM CONSTRUCTION, WITH INDIVIDUALLY ADJUSTED BLADES, MOUNTING STRAPS.
2. MULTI-BLADE DEVICE WITH RADIAL BLADES ATTACHED TO PIVOTING FRAME AND BRACKET, STEEL OR ALUMINUM CONSTRUCTION, WITH PUSH-PULL OPERATOR STRAP

FLEXIBLE DUCT CONNECTIONS

1. UL LISTED FIRE-RETARDANT NEOPRENE COATED WOVEN GLASS FIBRE FABRIC TO NFPA 90A, APPROXIMATELY [<75 MM> <<3 INCHES>>] WIDE, CRIMPED INTO METAL EDGING STRIP.

DUCT ACCESS DOORS

1. FABRICATE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARD METAL AND FLEXIBLE.
2. ACCESS DOORS SMALLER THAN [<300 MM> <<12 INCHES>>] SQUARE MAY BE SECURED WITH SASH LOCKS. ACCESS DOORS WITH SHEET METAL SCREW FASTENERS ARE NOT ACCEPTABLE.

MAKE UP AIR UNIT

1. MUA
   TYPE: INDIRECT-FIRED GAS HIGH EFFICIENCY MAKE UP AIR UNIT, 18 GAUGE STAINLESS STEEL CASING W/ 2" INSULATION & ELASTROSTATICALLY APPLIED ALKYD ENAMEL FINISH; STAINLESS STEEL HEAT EXCHANGER W/ DIRECT VENT.
   RATED AIR FLOW: 1200CFM.

   SPECIFIED PRODUCT: ENGINEERED AIR DJX-20.
   HEAT INPUT: 150,000BTU/H.
   HEAT OUTPUT: 137,000BTU/H.
   POWER REQUIREMENT: 208/3/60, 28.2 AMPS.

   ALTERNATE PRODUCTS WILL BE CONSIDERED.

INFLOOR HEATING SYSTEM

1. PROVIDE COMPLETE SYSTEM INCLUDING BOILER, HYDRONIC PIPING, HYDRONIC SEPARATOR, PUMPS, MANIFOLDS, INFLOOR HEATING TUBING, VALVES.
2. BOILER
   B-1: GAS-FIRED BOILER. CABINET CONSTRUCTED OF 16 GAUGE GALVANIZED STEEL. HEAT EXCHANGER CONSTRUCTED OF 316L STAINLESS STEEL MOUNTED IN SEALED STAINLESS STEEL COMBUSTION CHAMBER. HEAT EXCHANGER RATED FOR 145PSI MAX. OPERATING PRESSURE.
   RATED CAPACITY: 317.9MBH @ 20F RISE.

   SPECIFIED PRODUCT: NTI TRINITY LX400
   MAX. INPUT: 399MBH.
   MAX. OUTPUT: 375MBH
   POWER REQUIREMENT: 120/1/60, 12AMPS.
3. INFLOOR HEATING TUBING
   TYPE: HIGH-DENSITY CROSSLINKED POLYETHYLENE INFLOOR RADIANT PIPING MANUFACTURED USING HIGH-PRESSURE PEROXIDE METHOD OF CROSSLINKING (PEXA). PIPE SHALL CONFORM TO ASTM F876 AND CSA B137.5. PIPE TO HAVE CO-EXTRUDED OXYGEN DIFFUSION BARRIER CAPABLE OF LIMITING OXYGEN DIFFUSION THROUGH PIPE TO LESS THAN 0.32MB(M2D) @ 104oF IN ACCORDANCE WITH DIN 4726.

   SPECIFIED PRODUCT: REHAU RAUPEX O2 BARRIER PIPE.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.
4. PUMPS:
   TYPE: HORIZONTAL INLINE PUMP, CASE IRON CASING, STAINLESS STEEL IMPELLER & SHAFT, METAL IMPREGNATED CARBON BEARING. MAXIMUM OPERATING PRESSURE: 175 PSI. WATER TEMPERATURE RANGE: 14-230F. AMBIENT OPERATION RAGE 32-104F. MAXIMUM HEAD LOSS: 42.7FT.

   SPECIFIED PRODUCT: TACO VR15 SERIES.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.
5. HYDRONIC SEPARATOR
   TYPE: AIR SEPARATORS CONSTRUCTED OF CARBON STEEL W/ EXTERIOR RED OXIDE PRIMER FINISH, 304 STAINLESS STEEL BAFFLES.

   SPECIFIED PRODUCT: TACO 5900 SERIES.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.
6. MANIFOLDS:
   TYPE: DISTRIBUTION MANIFOLDS MANUFACTURED OF EXTRUDED BRASS ROUND PIPE WITH TAPPED HOLES FOR CONNECTIONS, AND BE PRE-ASSEMBLED BY THE MANUFACTURER. 100% OF MANIFOLDS USED SHALL HAVE BEEN AIR TESTED BY THE MANUFACTURER WITH NO INDICATION OF LEAKS.

   SPECIFIED PRODUCT: REHAU PRO-BASLANCE 1" BRASS MANIFOLD W/ GAUGES.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.

UNIT HEATER

1. UH-1,2:
   TYPE: HORIZONTAL UNIT HEATERS, 18 GAUGE CASING W/ SATIN COAT STEEL W/ ELECTROSTATICALLY APPLIED POWDER COAT PRIME FINISH. UNIT TO C/W FOUR WAY ADJUSTABLE LOUVERED DIFFUSER, FACTORY MOUNTED. COIL SHALL BE ½" COPPER TUBE W/ RIPPLED ALUMINUM FINS. HEADERS INCLUDE STEEL MPT PIPE CONNECTIONS. COILS TO BE FACTORY TESTED AT 300 PSI. FANS SHALL BE ALUMINUM BLADE TYPE, DIRECT DRIVE. MOTOR SHALL INCORPORATE SLEEVE BEARINGS AND AUTOMATIC RESET OVERLOAD PROTECTION.
   RATED CAPACITY: 20,000BTU/H @ 20F WATER TEMPERATURE DIFFERENCE.

   SPECIFIED PRODUCT: ENGINEERED AIR H-1.
   POWER REQUIREMENT: 120/1/60, 1/20HP.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.

CABINET UNIT HEATER

1. CUH-1, 2, 3:
   TYPE: HYDRONIC CABINET UNIT HEATERS, 16 GAUGE CASING W/ SATIN COAT STEEL, COILS TO BE ½" COPPER TUBE W/ RIPPLED ALUMINUM FINS AND SWEAT CONNECTIONS. COILS TO BE FACTORY TESTED AT 300 PSI. FANS SHALL BE DOUBLE WIDTH, DOUBLE INLET, FORWARD CURVED CENTRIFUGAL TYPE. MOTORS SHALL BE PERMANENT SPLIT CAPACITOR, OPEN TYPE, INCORPORATING SLEEVE BEARINGS AND INTERNAL AUTOMATIC RESET OVERLOAD PROTECTION.
   RATED CAPACITY: 20,000BTU/H @ 20F WATER TEMPERATURE DIFFERENCE.

   SPECIFIED PRODUCT: ENGINEERED AIR CUH-1.
   POWER REQUIREMENT: 120/1/60, 1/25HP.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.

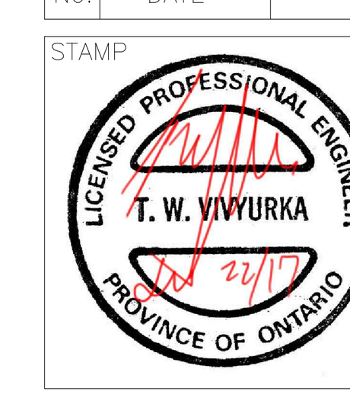
WALL BOX

1. TYPE: STANDARD WALL BOX W/ EXTRUDED ALUMINUM GRILLE, TESTED AT 200 PA. PROVIDE REDUCTION FROM LARGER EXHAUST DUCT TO 6"Ø INLET OF WALL BOX WHEN NECESSARY.

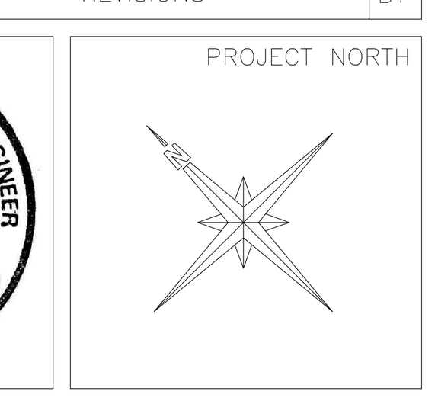
   SPECIFIED PRODUCT: REVERSOMATIC SWB-8.
   ALTERNATE PRODUCTS WILL BE CONSIDERED.

No.	DATE	REVISIONS	BY
3	JUL. 17/17	ADDENDUM #1	MH
2	JUL. 10/17	ISSUED FOR TENDER	MH
1	JUN 22/17	ISSUED FOR PERMIT	MH

STAMP



PROJECT NORTH



TTF ENGINEERING
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PROJECT
WEST STATION LOFTS
44 MACDONALD STREET
ARNPRIOR, ONTARIO

DRAWING
MECHANICAL SPECIFICATIONS

DRAWN:	M.H.	DRAWING No. M-9
APPROVED:	T.V.	
DATE:	MAY 26/17	
SCALE:	AS SHOWN	
SIZE:	ARCH E1	