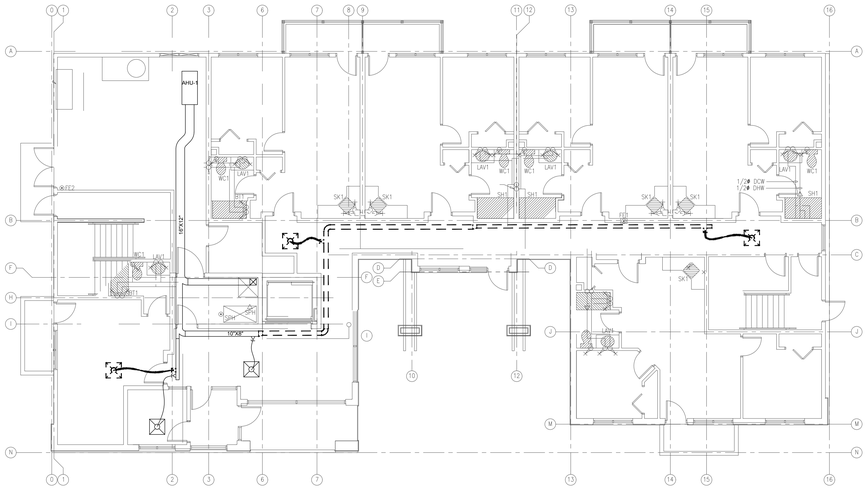
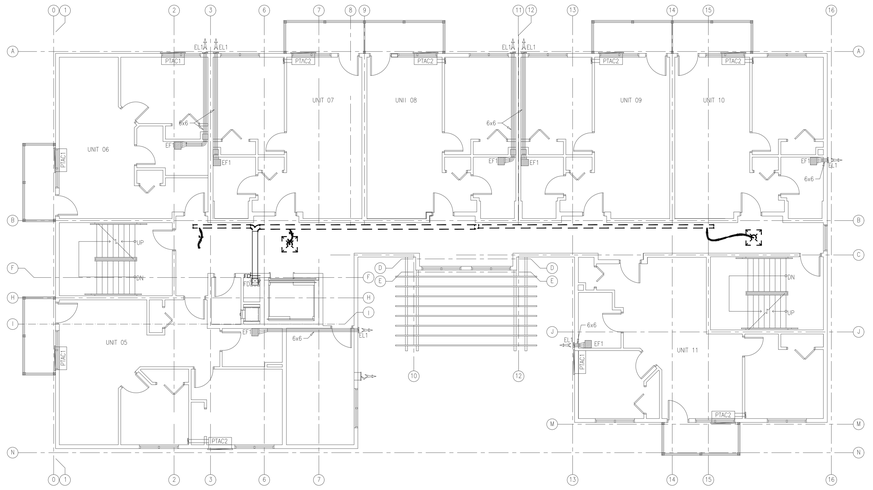


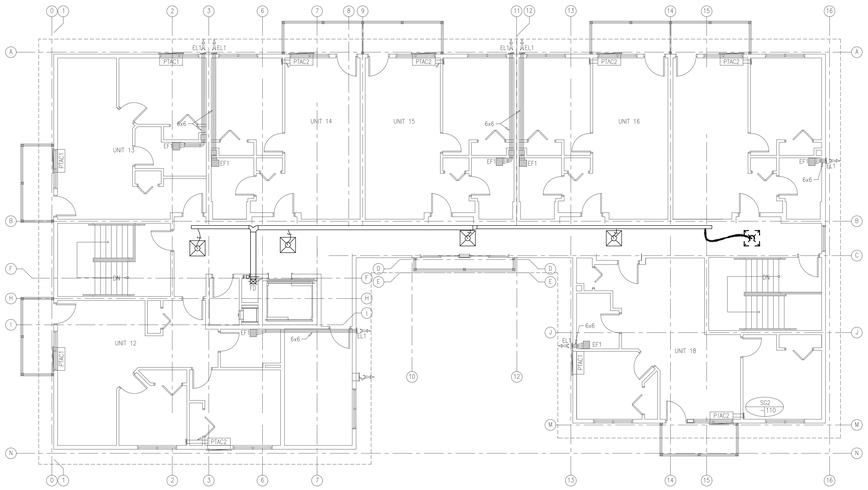
EXISTING BUILDING GROUND FLOOR PLAN - DEMO HVAC LAYOUT

SCALE: 1/8"=1'0"



EXISTING BUILDING SECOND FLOOR PLAN - DEMO HVAC LAYOUT

SCALE: 1/8"=1'0"



EXISTING BUILDING THIRD FLOOR PLAN - DEMO HVAC LAYOUT

SCALE: 1/8"=1'0"

GENERAL NOTES:

1. DEMOLISH DUCTWORK AS SHOWN.
2. REMOVE DIFFUSERS AS SHOWN & RELOCATE TO NEW LOCATIONS AS NECESSARY.

HVAC LEGEND

ITEM	DESCRIPTION
A ##	NEW SQUARE DIFFUSER 'A' INDICATES DIFFUSER TYPE (REFER TO SPEC) ## INDICATES AIRFLOW (CFM)
D ##	NEW LINEAR DIFFUSER 'D' INDICATES DIFFUSER TYPE (REFER TO SPEC) ## INDICATES AIRFLOW (CFM)
T	THERMOSTAT C/W CONTROL WIRING
	EXISTING D.O.A.S. DUCTWORK
	EXISTING DUCTWORK
	NEW DUCTWORK
	DUCTWORK C/W 1" ACOUSTIC INSULATION
B B	ACOUSTICALLY INSULATED RETURN TRANSFER DUCT 'B' INDICATES GRILLE TYPE (REFER TO SPEC)
FD	FIRE DAMPER

NEW

EXISTING

DEMOLITION

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

STAMP

LICENSED PROFESSIONAL ENGINEER
T. W. VIVYURKA
PROVINCE OF ONTARIO

PROJECT NORTH

TTF ENGINEERING

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

PROJECT

PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

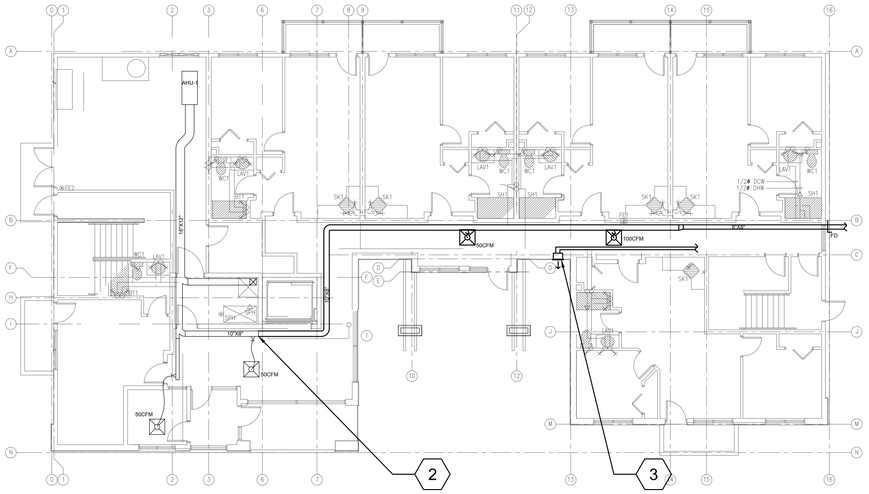
DRAWING

EXISTING BUILDING PLAN - DEMO HVAC LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

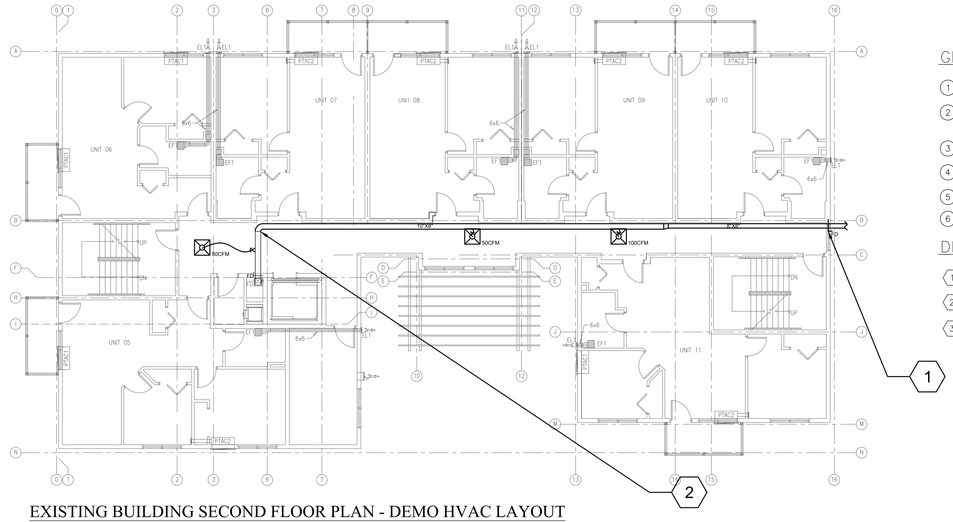
DRAWING No.

M-1



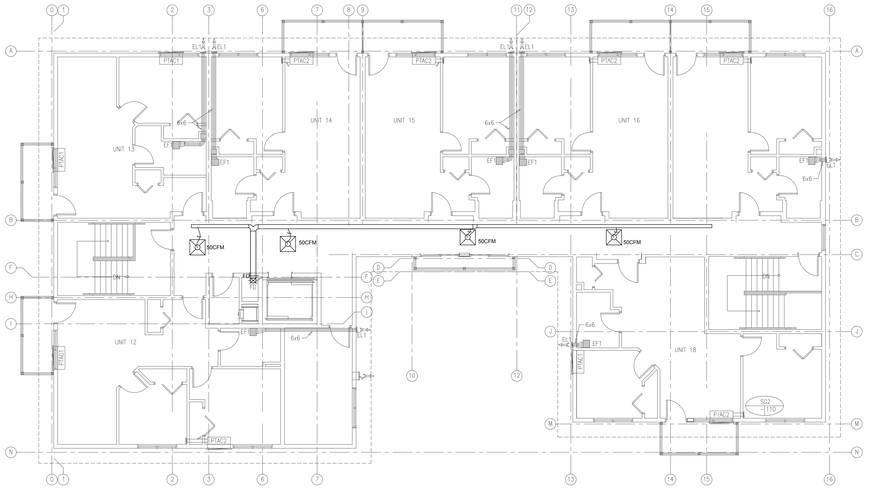
EXISTING BUILDING GROUND FLOOR PLAN - DEMO HVAC LAYOUT

SCALE: 1/8"=1'0"



EXISTING BUILDING SECOND FLOOR PLAN - DEMO HVAC LAYOUT

SCALE: 1/8"=1'0"



EXISTING BUILDING THIRD FLOOR PLAN - DEMO HVAC LAYOUT

SCALE: 1/8"=1'0"

GENERAL NOTES:

1. PROVIDE NEW DUCTWORK AS SHOWN.
2. RELOCATE DEMOLISHED DIFFUSERS TO NEW LOCATIONS SHOWN AS NECESSARY.
3. PROVIDE BALANCING DAMPERS AT EACH FLEXIBLE DUCT TAKEOFF.
4. MAXIMUM FLEXIBLE DUCT NOT TO EXCEED 10FT LONG IN ANY SINGLE SECTION.
5. ALL FLEXIBLE DUCT CONNECTION TO BE 6"ø.
6. ALL DIFFUSER FLOWRATES TO BE RE-BALANCED AS SHOWN.

DRAWING NOTES:

1. PROVIDE NEW FIRE DAMPER AS SHOWN.
2. PROVIDE NEW DUCTWORK AS SHOWN & CONNECT TO EXISTING.
3. PROVIDE NEW 17"X8" DOUBLE EXHAUST WALLBOX FOR DRYER EXHAUST AS SHOWN.

HVAC LEGEND

ITEM	DESCRIPTION
A ##	NEW SQUARE DIFFUSER "A" INDICATES DIFFUSER TYPE (REFER TO SPEC) ## INDICATES AIRFLOW (CFM)
D ##	NEW LINEAR DIFFUSER "D" INDICATES DIFFUSER TYPE (REFER TO SPEC) ## INDICATES AIRFLOW (CFM)
T	THERMOSTAT C/W CONTROL WIRING
	EXISTING D.O.A.S. DUCTWORK
	EXISTING DUCTWORK
	NEW DUCTWORK
	DUCTWORK C/W 1" ACOUSTIC INSULATION
B B	ACOUSTICALLY INSULATED RETURN TRANSFER DUCT "B" INDICATES GRILLE TYPE (REFER TO SPEC)
FD	FIRE DAMPER

NEW

EXISTING

DEMOLITION

No.	DATE	REVISIONS	BY
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LICENSED PROFESSIONAL ENGINEER
T. W. VIVYURKA
PROVINCE OF ONTARIO

PROJECT NORTH

TTF ENGINEERING

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PROJECT

PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

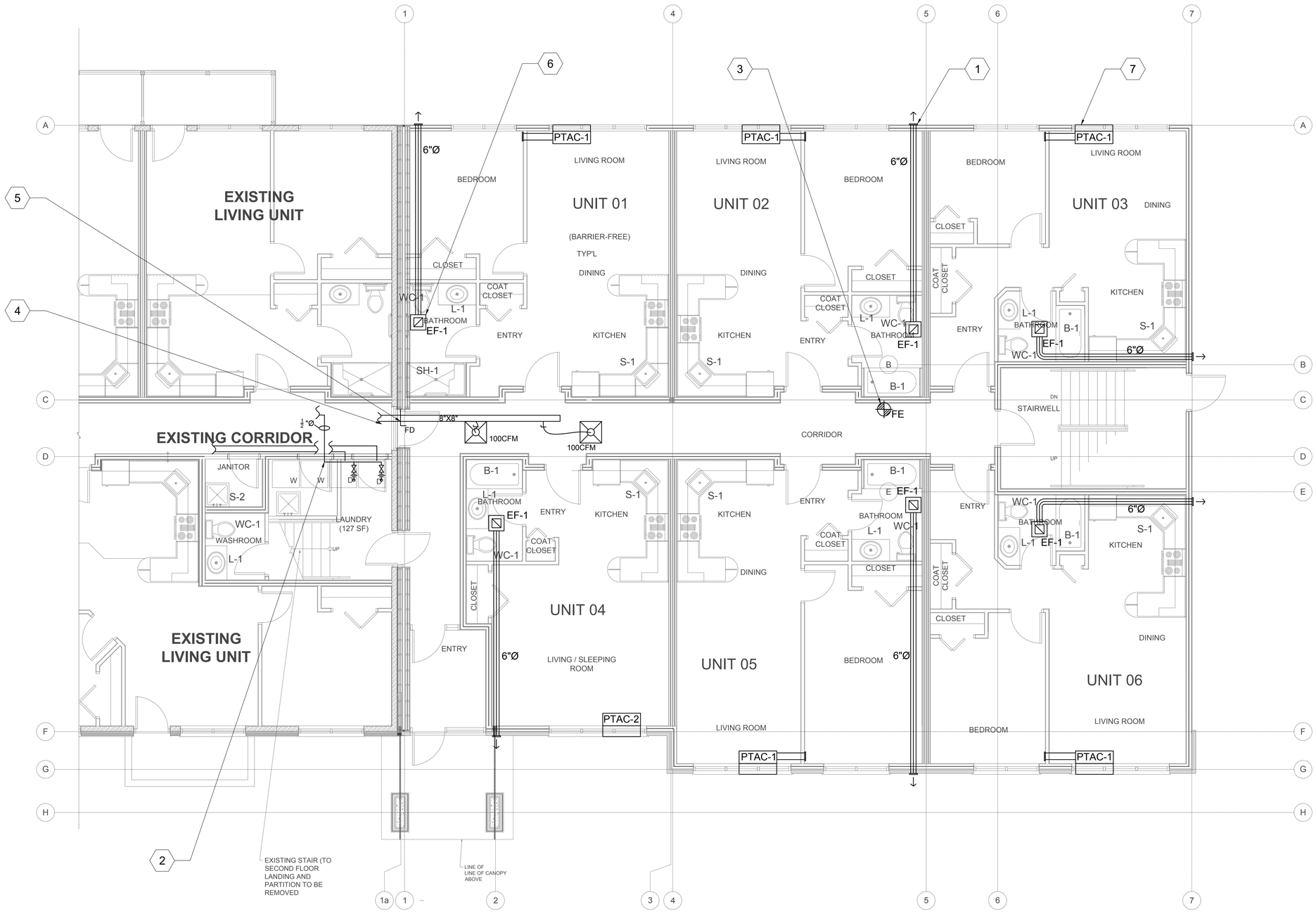
DRAWING

EXISTING BUILDING FLOOR PLAN - NEW HVAC LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.

M-2



NEW EXTENSION GROUND FLOOR PLAN - HVAC LAYOUT

SCALE: 1/4"=1'0"

GENERAL NOTES:

1. PROVIDE NEW DUCTWORK AS SHOWN.
2. RELOCATE DEMOLISHED DIFFUSERS TO NEW LOCATIONS SHOWN AS NECESSARY.
3. PROVIDE BALANCING DAMPERS AT EACH FLEXIBLE DUCT TAKEOFF.
4. MAXIMUM FLEXIBLE DUCT NOT TO EXCEED 10FT LONG IN ANY SINGLE SECTION.
5. ALL FLEXIBLE DUCT CONNECTION TO BE 6"ø.
6. ALL DIFFUSER FLOWRATES TO BE RE-BALANCED AS SHOWN.

DRAWING NOTES:

1. PROVIDE NEW 9"X8" SINGLE EXHAUST WALLBOX FOR WASHROOM EXHAUST FAN AS SHOWN. TYPICAL.
2. PROVIDE NEW ¾"ø GAS PIPING TO DRYERS AS SHOWN. CONNECTION TO BE MADE TO EXISTING 1"ø GAS PIPING FROM EXISTING BUILDING.
3. PROVIDE NEW FIRE EXTINGUISHER AS SHOWN.
4. PROVIDE NEW 8"X8" DUCTWORK FROM EXISTING BUILDING AS SHOWN.
5. PROVIDE NEW FIRE DAMPER AS SHOWN.
6. PROVIDE NEW 100CFM @ 0.1"W.G. E.S.P WASHROOM EXHAUST FAN, TYPICAL.
7. PROVIDE NEW 1 TON, 325CFM PACKAGED TERMINAL AIR CONDITIONING UNIT (PTAC-1) C/W ELECTRIC HEATING COIL & LATERAL DUCT ADAPTER. TYPICAL.

HVAC LEGEND

ITEM	DESCRIPTION
A ##	NEW SQUARE DIFFUSER 'A' INDICATES DIFFUSER TYPE (REFER TO SPEC) ## INDICATES AIRFLOW (CFM)
D ##	NEW LINEAR DIFFUSER 'D' INDICATES DIFFUSER TYPE (REFER TO SPEC) ## INDICATES AIRFLOW (CFM)
T	THERMOSTAT C/W CONTROL WIRING
	EXISTING D.O.A.S. DUCTWORK
	EXISTING DUCTWORK
	NEW DUCTWORK
	DUCTWORK C/W 1" ACOUSTIC INSULATION
B B	ACOUSTICALLY INSULATED RETURN TRANSFER DUCT 'B' INDICATES GRILLE TYPE (REFER TO SPEC)
FD	FIRE DAMPER

NEW
EXISTING
DEMOLITION

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

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

PROJECT NORTH

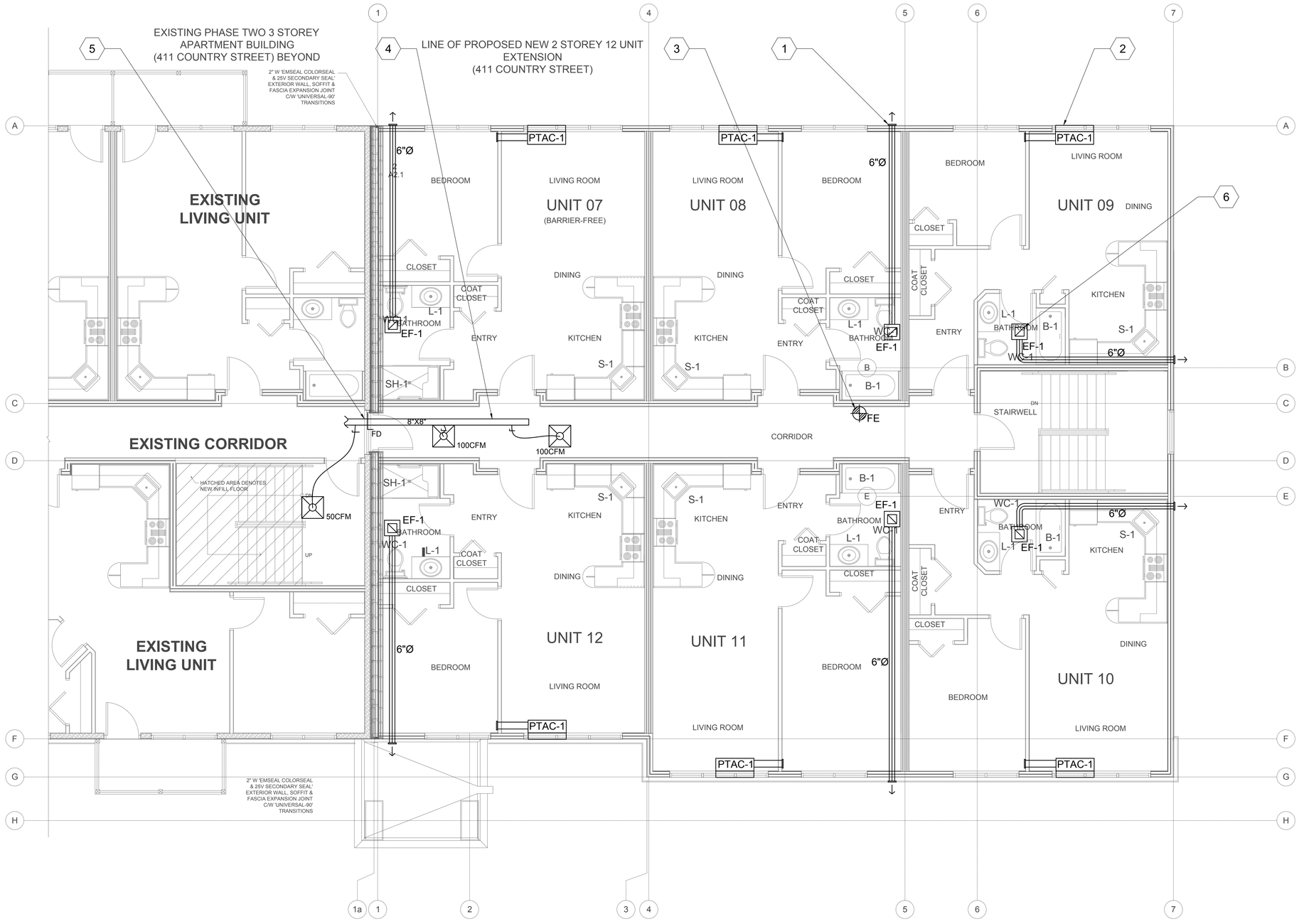
TTF ENGINEERING
TTF Engineering Unit 205 - 1600 Merivale Road
Ottawa, ON K2G 5J8 Tel. 613-592-1677

PROJECT
PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

DRAWING
NEW EXTENSION GROUND FLOOR PLAN - HVAC LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No. M-3



NEW EXTENSION SECOND FLOOR PLAN - HVAC LAYOUT

SCALE: 1/4"=1'0"

GENERAL NOTES:

1. PROVIDE NEW DUCTWORK AS SHOWN.
2. RELOCATE DEMOLISHED DIFFUSERS TO NEW LOCATIONS SHOWN AS NECESSARY.
3. PROVIDE BALANCING DAMPERS AT EACH FLEXIBLE DUCT TAKEOFF.
4. MAXIMUM FLEXIBLE DUCT NOT TO EXCEED 10FT LONG IN ANY SINGLE SECTION.
5. ALL FLEXIBLE DUCT CONNECTION TO BE 6"ø.
6. ALL DIFFUSER FLOWRATES TO BE RE-BALANCED AS SHOWN.

DRAWING NOTES:

1. PROVIDE NEW 9"X8" SINGLE EXHAUST WALLBOX FOR WASHROOM EXHAUST FAN AS SHOWN. TYPICAL.
2. PROVIDE NEW 1 TON PACKAGED TERMINAL AIR CONDITIONING UNIT (PTAC-1) C/W ELECTRIC HEATING COIL & LATERAL DUCT ADAPTER. TYPICAL.
3. PROVIDE NEW FIRE EXTINGUISHER AS SHOWN.
4. PROVIDE NEW 8"X8" DUCTWORK FROM EXISTING BUILDING AS SHOWN.
5. PROVIDE NEW FIRE DAMPER AS SHOWN.
6. PROVIDE NEW 100CFM @ 0.1"W.G. E.S.P WASHROOM EXHAUST FAN. TYPICAL.

HVAC LEGEND

ITEM	DESCRIPTION
A ##	NEW SQUARE DIFFUSER 'A' INDICATES DIFFUSER TYPE (REFER TO SPEC). ## INDICATES AIRFLOW (CFM)
D ##	NEW LINEAR DIFFUSER 'D' INDICATES DIFFUSER TYPE (REFER TO SPEC). ## INDICATES AIRFLOW (CFM)
T	THERMOSTAT C/W CONTROL WIRING
	EXISTING D.O.A.S. DUCTWORK
	EXISTING DUCTWORK
	NEW DUCTWORK
	DUCTWORK C/W 1" ACOUSTIC INSULATION
B B	ACOUSTICALLY INSULATED RETURN TRANSFER DUCT 'B' INDICATES GRILLE TYPE (REFER TO SPEC)
FD	FIRE DAMPER

NEW
EXISTING
DEMOLITION

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

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

PROJECT NORTH

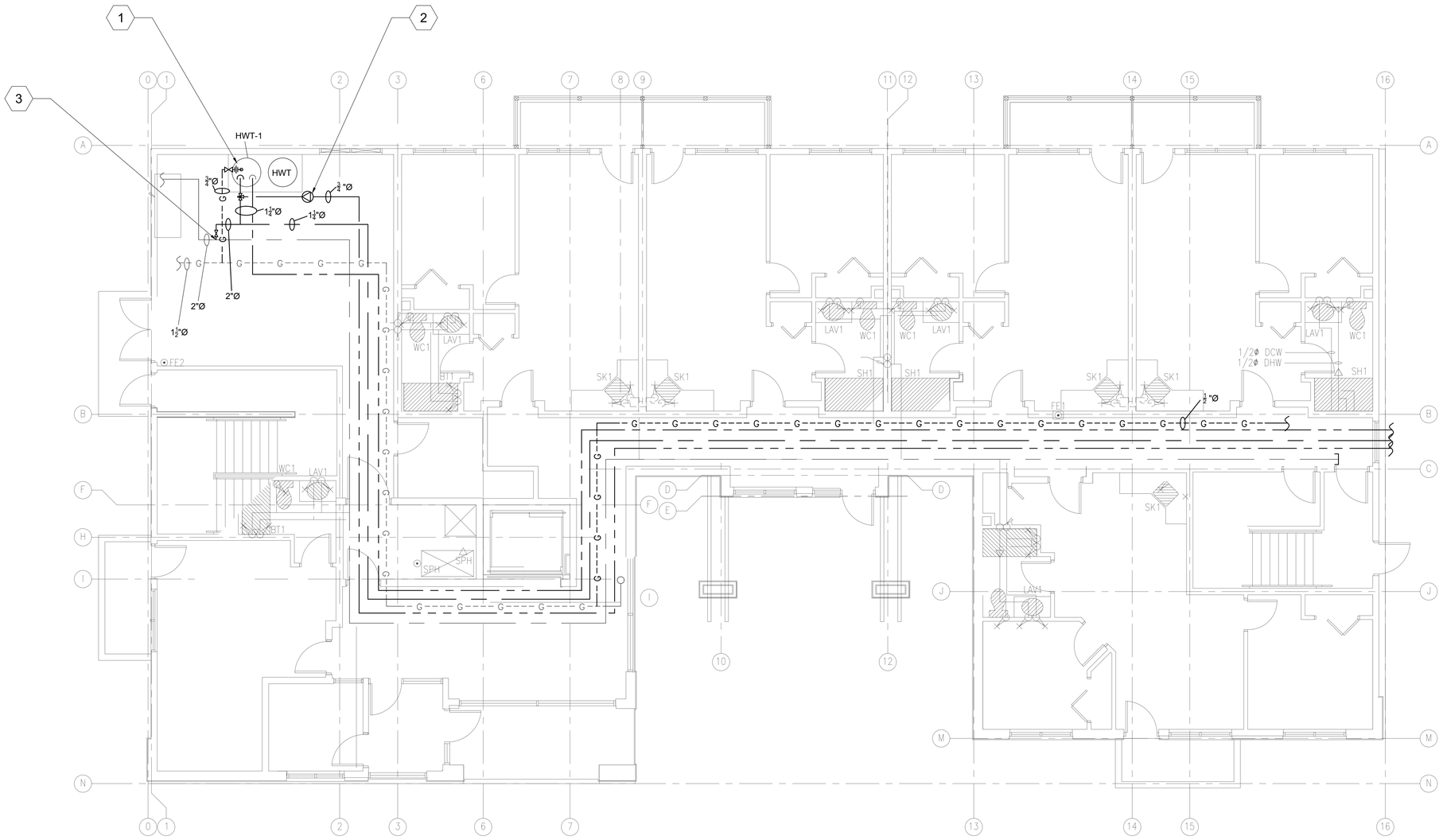
TTF ENGINEERING
TTF Engineering Unit 205 - 1600 Merivale Road
Ottawa, ON K2G 5J8 Tel. 613-592-1677

PROJECT
PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

DRAWING
NEW EXTENSION SECOND FLOOR PLAN - HVAC LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.
M-4



EXISTING BUILDING GROUND FLOOR PLAN - NEW DOMESTIC WATER & GAS PIPING LAYOUT

SCALE: 1/4"=1'0"

GENERAL NOTES:

1. PROVIDE NEW DOMESTIC COLD & HOT WATER PIPING AS SHOWN.
2. PROVIDE NEW GAS PIPING AS SHOWN.

DRAWING NOTES:

1. PROVIDE NEW GAS FIRED 100GALLON HOT WATER TANK (HWT-1). INPUT HEATING CAPACITY TO BE RATED AT 200,000BTU/HR. PROVIDE NEW ¾"ø GAS PIPE CONNECTION AS SHOWN. CONNECT ¾"ø GAS PIPE CONNECTION TO EXISTING 1½"ø GAS PIPE.
2. PROVIDE NEW 2GPM, 9FT HEAD, HOT WATER RECIRCULATION PUMP AS SHOWN.
3. PROVIDE NEW 2"ø DOMESTIC COLD WATER PIPING & CONNECT TO EXISTING AS SHOWN. PROVIDE ISOLATION VALVE AS SHOWN.

PLUMBING LEGEND

- EXISTING SANITARY PIPING BELOW GRADE
- EXISTING DOMESTIC COLD WATER LINE
- EXISTING STORM PIPING BELOW GRADE
- SANITARY PIPING ABOVE GRADE
- SANITARY PIPING BELOW GRADE
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- NATURAL GAS PIPING
- SPRINKLER PIPING
- REFRIGERANT LIQUID PIPING
- REFRIGERANT SUCTION PIPING
- DOMESTIC HOT WATER RECIRC

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

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LICENSED PROFESSIONAL ENGINEER
T. W. VIVYURKA
PROVINCE OF ONTARIO

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TTF Engineering Unit 205 - 1600 Merivale Road
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PROJECT

PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

DRAWING

EXISTING BUILDING FLOOR PLAN - NEW DOMESTIC WATER & GAS PIPING LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.

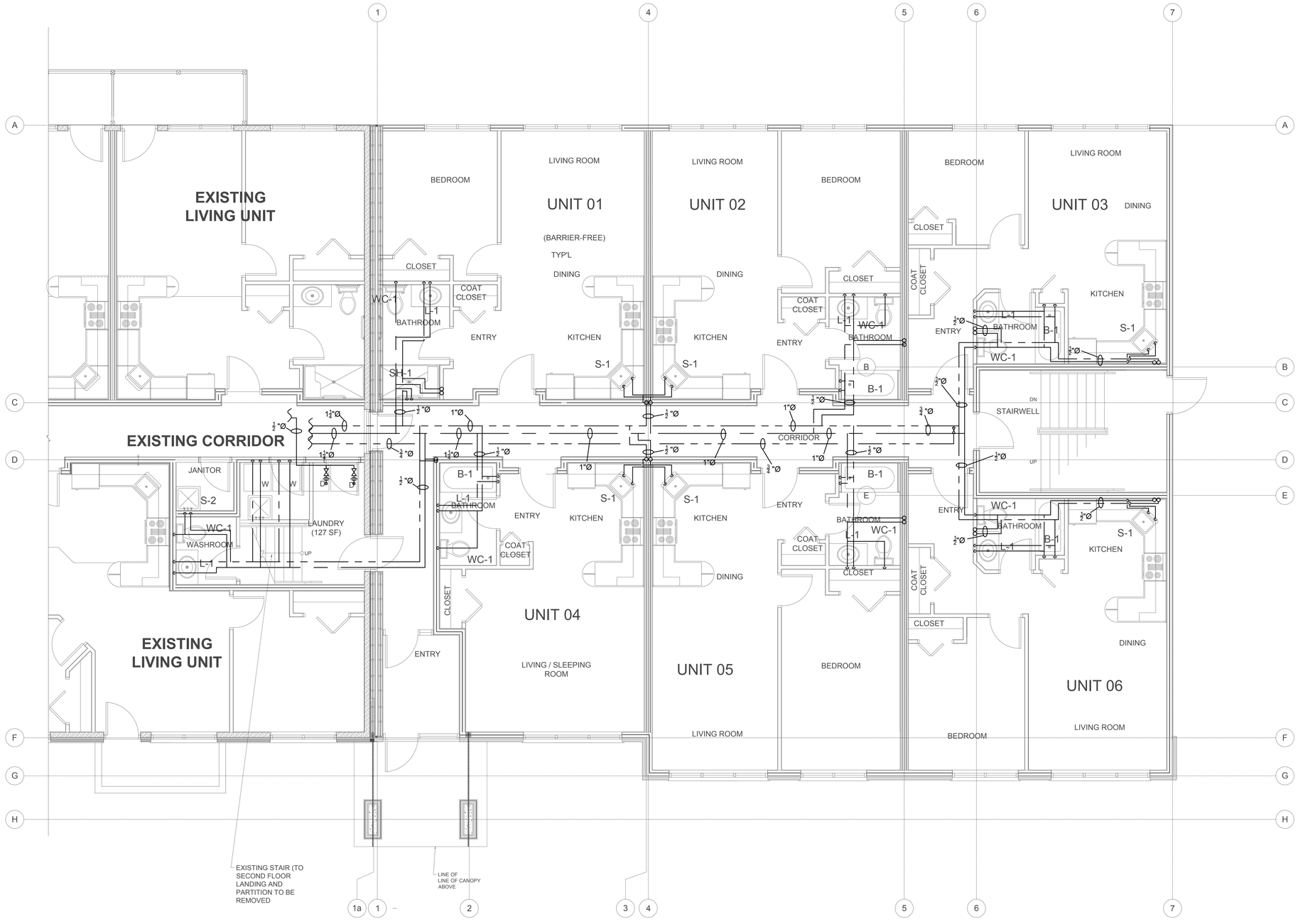
M-5

GENERAL NOTES:

1. PROVIDE NEW DOMESTIC COLD & HOT WATER PIPING AS SHOWN.
2. PROVIDE NEW GAS PIPING AS SHOWN.

PLUMBING LEGEND

- EXISTING SANITARY PIPING BELOW GRADE
- EXISTING DOMESTIC COLD WATER LINE
- EXISTING STORM PIPING BELOW GRADE
- SANITARY PIPING ABOVE GRADE
- SANITARY PIPING BELOW GRADE
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- NATURAL GAS PIPING
- SPRINKLER PIPING
- REFRIGERANT LIQUID PIPING
- REFRIGERANT SUCTION PIPING
- DOMESTIC HOT WATER RECIRC



NEW EXTENSION GROUND FLOOR PLAN - DOMESTIC WATER & GAS PIPING LAYOUT

SCALE: 1/4"=1'0"

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

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PROJECT NORTH

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

PROJECT

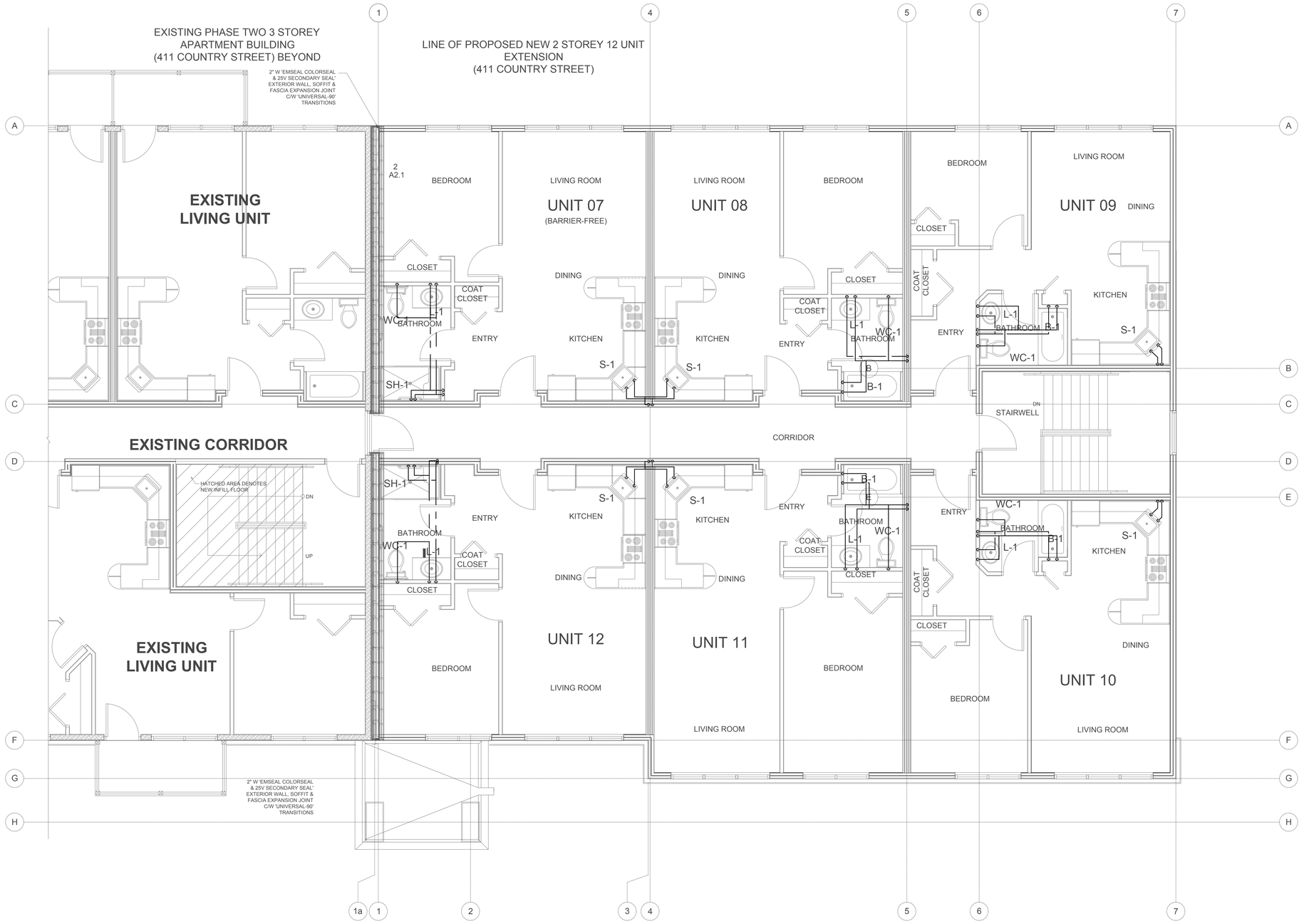
PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

DRAWING

NEW EXTENSION FLOOR PLAN - NEW DOMESTIC WATER & GAS PIPING LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No. M-6



GENERAL NOTES:

1. PROVIDE NEW DOMESTIC COLD & HOT WATER PIPING AS SHOWN.
2. PROVIDE NEW GAS PIPING AS SHOWN.

PLUMBING LEGEND

- EXISTING SANITARY PIPING BELOW GRADE
- EXISTING DOMESTIC COLD WATER LINE
- EXISTING STORM PIPING BELOW GRADE
- SANITARY PIPING ABOVE GRADE
- SANITARY PIPING BELOW GRADE
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- NATURAL GAS PIPING
- SPRINKLER PIPING
- REFRIGERANT LIQUID PIPING
- REFRIGERANT SUCTION PIPING
- DOMESTIC HOT WATER RECIRC

NEW EXTENSION SECOND FLOOR PLAN - DOMESTIC WATER & GAS PIPING LAYOUT

SCALE: 1/4"=1'0"

PLUMBING FIXTURE SCHEDULE

ITEM #	Description	Manufacturer	Model	Quantity	PLUMBING SERVICES DCW	DHW	SAN	CONDENSATE	Comments
WC-1	Water Closet	American Standard	Cadet 3 2403	1	1/2"	-	3"	-	
L-1	Lavatory	American Standard	Cadet 0419	1	1/2"	1/2"	1-1/2"	-	
S-1	Kitchen Sink	Novanni	1017AEI	1	1/2"	1/2"	1-1/2"	-	Single bowl drop-in sink, 20"x20"x8" dimensions, satin finish, 3 hole, 8" centre
S-2	Janitor's Mop sink	Fiatproducts	MSB-2424, 830AA Faucet, 1453BB Strainer	1	1/2"	1/2"	3"	-	Outer dimension 24"x24"x10" . Stainless steel drain body
SH-1	Barrier Free Shower	Aquatic	1603BFSD	3	1/2"	1/2"	1-1/2"	-	
B-1	Bath Tub	American Standard	Colony Recess Bath 0182	1	1/2"	1/2"	1-1/2"	-	right hand bathtub with single lever faucet and handshower c/w grab bar
B-2	Bath Tub	American Standard	Colony Recess Bath 0184	2	1/2"	1/2"	1-1/2"	-	right hand bathtub with single lever faucet and handshower c/w grab bar
FD-1	Floor Drain	Watts	FD-103T-C-A5-1	1	-	-	3"	-	Epoxy coated cast iron floor drain with anchor flange, adjustable nickel bronze strainer

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

STAMP: LICENSED PROFESSIONAL ENGINEER T. W. VIVYURKA PROVINCE OF ONTARIO FEB 26/18

PROJECT NORTH

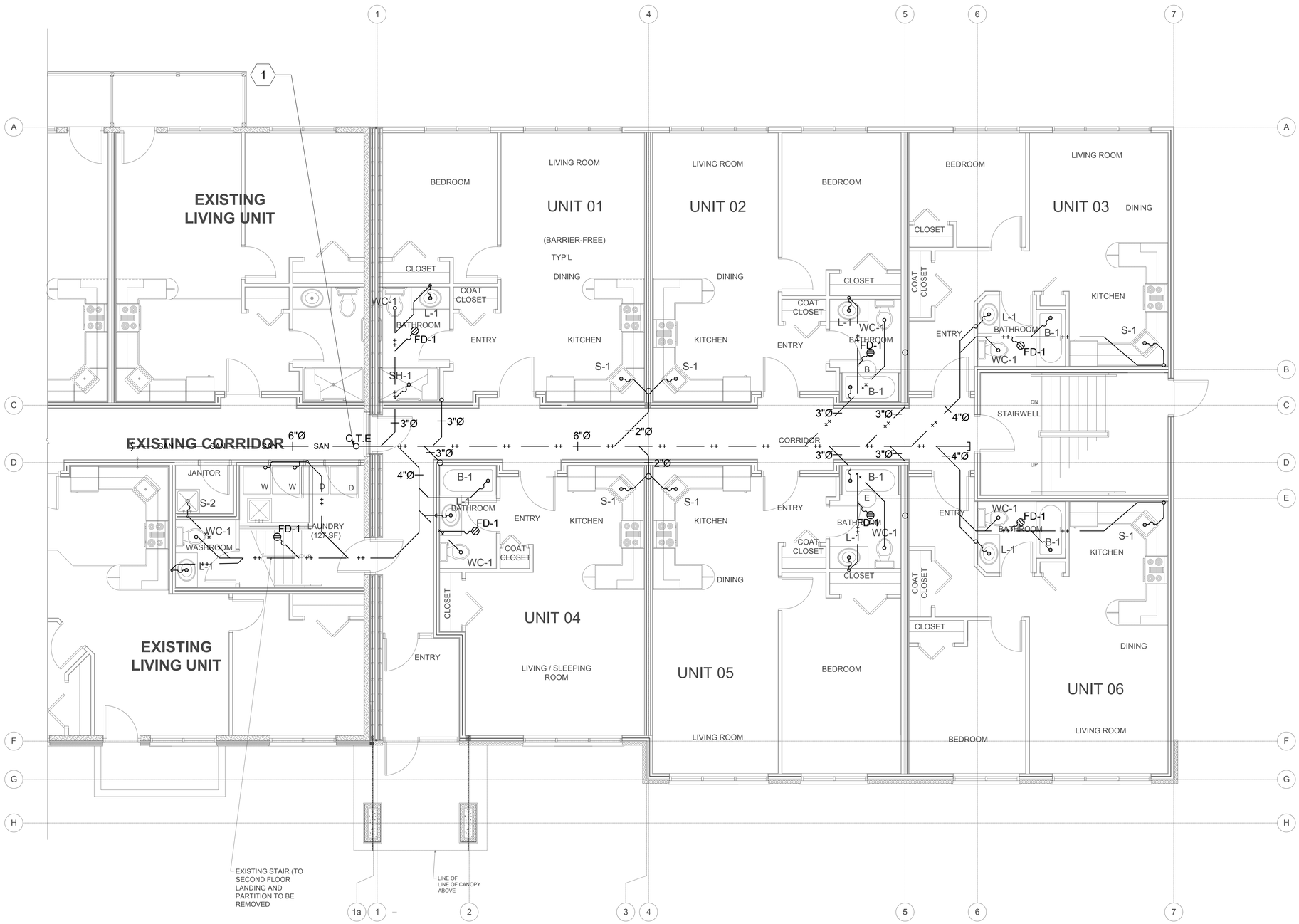
TTF ENGINEERING
TTF Engineering Unit 205 - 1600 Merivale Road Ottawa, ON K2G 5J8 Tel. 613-592-1677

PROJECT
PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

DRAWING
NEW EXTENSION FLOOR PLAN - NEW DOMESTIC WATER & GAS PIPING LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No. M-7



GENERAL NOTES:

1. PROVIDE NEW SANITARY PIPING AS SHOWN.
2. PROVIDE TRAP SEAL PRIMER CONNECTION FROM FLOOR DRAIN TO NEAREST LAVATORY OR SINK FIXTURE.

DRAWING NOTES:

1. PROVIDE NEW 6"ø SANITARY PIPING & CONNECT TO EXISTING SANITARY 6"ø SANITARY PIPING AS SHOWN.

PLUMBING LEGEND

- EXISTING SANITARY PIPING BELOW GRADE
- EXISTING DOMESTIC COLD WATER LINE
- EXISTING STORM PIPING BELOW GRADE
- SANITARY PIPING ABOVE GRADE
- SANITARY PIPING BELOW GRADE
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- NATURAL GAS PIPING
- SPRINKLER PIPING
- REFRIGERANT LIQUID PIPING
- REFRIGERANT SUCTION PIPING
- DOMESTIC HOT WATER RECIRC

NEW EXTENSION GROUND FLOOR PLAN - SANITARY LAYOUT

SCALE: 1/4"=1'0"

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

STAMP: LICENSED PROFESSIONAL ENGINEER — T. W. VIVYURKA — PROVINCE OF ONTARIO

PROJECT NORTH

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

PROJECT

PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

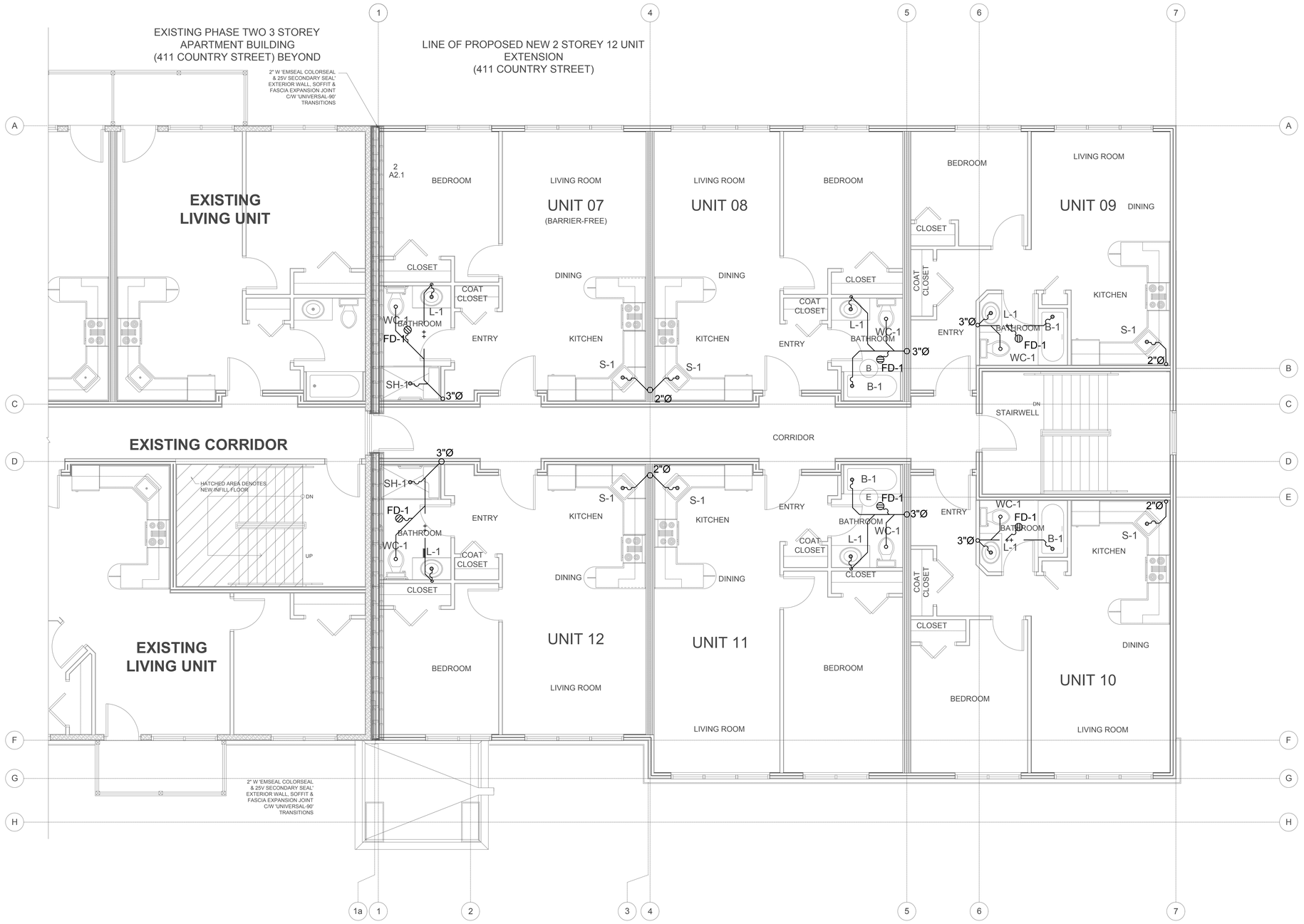
DRAWING

NEW EXTENSION FLOOR PLAN - NEW SANITARY LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No.

M-8



GENERAL NOTES:

1. PROVIDE NEW SANITARY PIPING AS SHOWN.
2. PROVIDE TRAP SEAL PRIMER CONNECTION FROM FLOOR DRAIN TO NEAREST LAVATORY OR SINK FIXTURE.

PLUMBING LEGEND

- EXISTING SANITARY PIPING BELOW GRADE
- EXISTING DOMESTIC COLD WATER LINE
- EXISTING STORM PIPING BELOW GRADE
- SANITARY PIPING ABOVE GRADE
- SANITARY PIPING BELOW GRADE
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- NATURAL GAS PIPING
- SPRINKLER PIPING
- REFRIGERANT LIQUID PIPING
- REFRIGERANT SUCTION PIPING
- DOMESTIC HOT WATER RECIRC

NEW EXTENSION SECOND FLOOR PLAN - SANITARY LAYOUT

SCALE: 1/4"=1'0"

PLUMBING FIXTURE SCHEDULE

ITEM #	Description	Manufacturer	Model	Quantity	PLUMBING SERVICES DCW	DHW	SAN	CONDENSATE	Comments
WC-1	Water Closet	American Standard	Cadet 3 2403	1	1/2"	-	3"	-	
L-1	Lavatory	American Standard	Cadet 0419	1	1/2"	1/2"	1-1/2"	-	
S-1	Kitchen Sink	Novanni	1017AEI	1	1/2"	1/2"	1-1/2"	-	Single bowl drop-in sink, 20"x20"x8" dimensions, satin finish, 3 hole, 8" centre
S-2	Janitor's Mop sink	Fiatproducts	MSB-2424, 830AA Faucet, 1453BB Strainer	1	1/2"	1/2"	3"	-	Outer dimension 24"x24"x10" . Stainless steel drain body
SH-1	Barrier Free Shower	Aquatic	1603BFSD	3	1/2"	1/2"	1-1/2"	-	
B-1	Bath Tub	American Standard	Colony Recess Bath 0182	1	1/2"	1/2"	1-1/2"	-	right hand bathtub with single lever faucet and handshower c/w grab bar
B-2	Bath Tub	American Standard	Colony Recess Bath 0184	2	1/2"	1/2"	1-1/2"	-	right hand bathtub with single lever faucet and handshower c/w grab bar
FD-1	Floor Drain	Watts	FD-103T-C-A5-1	1	-	-	3"	-	Epoxy coated cast iron floor drain with anchor flange, adjustable nickel bronze strainer

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

STAMP: LICENSED PROFESSIONAL ENGINEER T. W. VIVYURKA PROVINCE OF ONTARIO Feb 26/18

PROJECT NORTH

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

PROJECT
PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

DRAWING
NEW EXTENSION FLOOR PLAN - NEW SANITARY LAYOUT

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1

DRAWING No. M-9

MECHANICAL SPECIFICATIONS

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.

SPRINKLERS

1. PROVIDE REVISIONS TO SPRINKLER SYSTEM IN ACCORDANCE WITH ONTARIO BUILDING CODE, NATIONAL BUILDING CODE, N.F.P.A. 13 AND AUTHORITIES HAVING JURISDICTION.
2. WORK TO CONSIST OF RELOCATING EXISTING AND PROVIDING NEW SPRINKLERS INCLUDING ALL LABOUR, VALVES, PIPING, HEADS, HANGERS, FITTINGS AND MATERIALS FOR A COMPLETE SYSTEM.
3. EXISTING AND NEW SPRINKLERS ARE SHOWN ON THE MECHANICAL PLANS. PIPING LAYOUT TO BE THE RESPONSIBILITY OF THE SPRINKLER CONTRACTOR. COORDINATE LOCATIONS WITH ALL MECHANICAL, ELECTRICAL, ARCHITECTURAL AND STRUCTURAL COMPONENTS.
4. QUALITY ASSURANCE: SPRINKLER CONTRACTOR TO BE A MEMBER IN GOOD STANDING OF THE CANADIAN AUTOMATIC SPRINKLER ASSOCIATION.
5. APPROVALS: OBTAIN APPROVAL OF AUTHORITIES HAVING JURISDICTION FOR SYSTEM DESIGN, EQUIPMENT, MATERIALS AND INSTALLATION. AUTHORITIES TO PERFORM INSPECTIONS AND SUPERVISE TESTS.
6. MATERIALS: ALL COMPONENTS TO BE ULC LISTED, WORKING PRESSURE NOT LESS THAN [1200 KPA] [175 PSI]. PIPING TO BE SCHEDULE 10, BLACK STEEL TO CSA Z245.10. PIPE HANGERS TO CONFORM TO N.F.P.A. 13. SPRINKLERS TO BE [CHROME PLATED] [UPRIGHT] [PENDANT] [RECESSED] AND MATCH EXISTING. SPRINKLERS TO BE LISTED, BEAR CERTIFICATION MARKING OF ULC AND BE RATED FOR [74°C] [165°F]
7. INSTALLATION: INSTALL SYSTEMS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND CODE REQUIREMENTS. PROVIDE HYDRAULIC PUMP, TEMPORARY CONNECTIONS AND LABOUR TO TEST SYSTEM IN ACCORDANCE WITH N.F.P.A. 13, IN THE PRESENCE OF THE CONSULTANT HAVING JURISDICTION. SUBMIT RESULTS OF TESTS.

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 CHROM 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.

HOT WATER RADIANT HEAT

1. PROVIDE FINNED TUBED CONVECTOR C/W ENCLOSURE FOR WALL TO WALL INSTALLATION. SUPPORT RIGIDLY AT TOP AND BOTTOM. PROVIDE FACTORY BAKED ENAMEL PRIME COAT ON CABINET. HEATING ELEMENT TO BE SEAMLESS COPPER TUBING WITH MECHANICALLY EXPANDED INTO FLANGED COLLARS OF EVENLY SPACED ALUMINUM FINS.REFER TO DRAWING FOR REQUIRED CAPACITY. CAPACITY IS BASED ON FOLLOWING OPERATING CRITERIA:
   - -180 DEG F AVERAGE OPERATING TEMPERATURE
   - -20 DEG F TEMPERATURE DROP
   - -ENTERING AIR TEMPERATURE 65 DEG F.

   SPECIFIED PRODUCT: ENGINEER AIR.

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, 8" DIAMETER NECK, SPECIFIED PRODUCT: E.H. PRICE SCD.
3. TYPE 'B': EGGCRATE RETURN GRILLE, ALUMINUM,1/2" X 1/2" GRID, SIZES AS INDICATED, FOR SIDE WALL MOUNTING. C/W FRAME AND FLANGE BORDER.
   SPECIFIED PRODUCT: EH PRICE 80 SERIES
4. TYPE 'C': EGGCRATE RETURN GRILLE, ALUMINUM,1/2" X 1/2" GRID, SIZES AS INDICATED, TO FIT LAY-IN TILE CEILING.
   SPECIFIED PRODUCT: EH PRICE 80 SERIES

FANS

3. BOOSTER FAN FOR CLOTHES DRYER EXHAUST. SIZE AND CAPACITY AS FOLLOWS: 140 CFM AT 1/4" S.P.
4. FANS TO BE INLINE CENTRIFUGAL ALL PLASTIC CONSTRUCTION.
   FAN TO INCLUDE:
   - EXTERNAL ROTOR MOTOR
   - BACKWARD CURVED FAN BLADES
   - IN LINE CONFIGURATION
   - SUITABLE FOR HIGH TEMPERATURE OPERATION
   - THERMAL OVERLOAD
   - MOUNTING BRACKETS
   - PRESSURE SWITCH WITH 10 MINUTE INTEGRAL TIME DELAY
   - 120 V SINGLE PHASE POWER
3. SPECIFIED PRODUCT: CONTINENTAL FAN DVK DRYER BOOSTER KIT WITH POSITIVE PRESSURE SWITCH .

AUTOMATIC CONTROLS

1. BASE BUILDING CONTROL MODIFICATIONS FOR RELOCATING EXISTING THERMOSTATS IS TO BE COMPLETED BY QUALIFIED AND EXPERIENCED CONTROL COMPANY.

   NEW CONTROLS FOR SPECIFIC EQUIPMENT IS TO BE PROVIDED AS SPECIFIED.

   RELOCATE OR MODIFY EXISTING CONTROLS ON EXISTING PERIMETER HEATING AND EXISTING FAN COILS AS DESCRIBED.
2. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL ELECTRICAL WORK REQUIRED FOR THE INSTALLATION OF CONTROLS FOR MECHANICAL EQUIPMENT.
   THIS INCLUDES BUT IS NOT LIMITED TOO LOW VOLTAGE TRANSFORMERS, LINE VOLTAGE SENSORS OR CONTROLLERS, RIGID CONDUIT, ETC.

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.

FIRE HOSE CABINET & ACCESSORIES

1. CABINETS
   - .1 TO NFPA 14 AND ULC LISTED: [FLUSH], [SURFACE] [SEMI-RECESSED] TYPE AS INDICATED, CONSTRUCTED OF [1.6] MM THICK STEEL, 180 DEGREES OPENING DOOR OF [2.5] MM THICK STEEL WITH HINGE SAME SIDE AS WATER SUPPLY AND LATCHING DEVICE.
   - .2 CABINETS TO MAINTAIN FIRE RESISTIVE RATING OF CONSTRUCTION IN WHICH THEY OCCUR.
   - .3 CABINET DOOR: WITH [5 MM FULL GLASS PANEL] [5 MM GLASS VIEWING PANEL, 1/3 OF DOOR AREA].
   - .4 LARGE ENOUGH TO ACCOMMODATE ANGLE VALVE, HOSE RACK, FIRE HOSE NOZZLE AND SPANNER, [FIRE EXTINGUISHER] [AND NPS 2 1/2 FIRE DEPARTMENT VALVE].
2. HOSE RACK
   - .1 ULC LISTED, [SWIVEL TYPE WITH PINS TO PERMIT HOSE TO BE HUNG IN FOLDS] [STATIONARY-TYPE RACK WITH PINS DESIGNED FOR 180 DEGREES MOVEMENT]. LOCKING DEVICE SHALL PREVENT FLOW OF WATER INTO HOSE UNTIL LAST FOLD IS REMOVED FROM RACK. COMPLETE WITH HOSE, NOZZLE AND ANGLE VALVE.
3. FIRE HOSE AND NOZZLE
   - .1 HOSE: ULC LISTED, [38] MM NOMINAL DIAMETER,[23] M LONG, SYNTHETIC JACKET, SYNTHETIC RUBBER LINED.
   - .2 NOZZLE: ULC LISTED, [38] MM NOMINAL DIAMETER, [FORGED BRASS] [PLASTIC] ADJUSTABLE COMBINATION FOG-STRAIGHT STREAM WITH SHUT-OFF.
4. ANGLE VALVES
   - .1 ULC LISTED FOR FIRE SERVICE. NPS 1 1/2 CAST OR FORGED BRASS COMPLETE WITH HAND WHEEL, OPEN OR DRIP CONNECTIONS, OR HYDROLATOR VALVE. WHERE WATER PRESSURE EXCEEDS 690 KPA, PROVIDE ULC LISTED PRESSURE REDUCING DEVICE.
5. SWINGING HOSE REEL
   - .1 ULC LISTED, DESIGNED SO HOSE CAN BE REMOVED FROM REEL WHEN WATER IS FLOWING, AND WITH [20] MM NOMINAL DIAMETER HOSE [23] M LONG, AND NOZZLE.
6. FIRE DEPARTMENT VALVE
   - .1 ULC LISTED, NPS 2 1/2 FORGED OR CAST BRASS ANGLE VALVE: WITH THREAD COMPATIBLE WITH LOCAL FIRE DEPARTMENT, COMPLETE WITH HANDWHEEL, CAP AND CHAIN. CAP TO BE PART OF ULC LISTING FOR VALVE.
7. PUMPER CONNECTION
   - .1 TO NFPA 14, ULC LISTED, [SIAMESE TYPE], LOCATION AS INDICATED. THREADS TO BE COMPATIBLE WITH LOCAL FIRE DEPARTMENT COMPLETE WITH THREADED METAL CAPS AND CHAINS.
   - .2 POLISHED [BRONZE] [CHROME PLATED] [RECESSED] [SURFACE MOUNTED] [WITH IDENTIFYING SIGN CAST ON PLATE].
8. PRESSURE GAUGES
   - .1 [90] MM DIAMETER, TO SECTION [23 05 19.01 - THERMOMETERS AND PRESSURE GAUGES - PIPING SYSTEMS].
9. MFINISHES
   - .1 IN FINISHED AREAS, CHROME PLATE VALVES, NOZZLES, FITTINGS [AND HOSE RACK] [AND SPANNER].
   - .2 CABINETS.
     - .1 TUB: PRIME COATED.
     - .2 DOOR AND FRAME: [NO. 4 SATIN FINISH STAINLESS STEEL].

STANDPIPES

1. PIPE: FERROUS/COPPER TUBE CONFORMING TO NFPA 14.
2. FITTINGS & JOINTS TO NFPA 14:
   - .1 FERROUS: SCREWED, WELDED, FLANGED OR ROLL GROOVED.
     - .1 GROOVED JOINTS DESIGNED WITH TWO DUCTILE IRON HOUSING SEGMENTS, PRESSURE RESPONSIVE GASKET, AND ZINC-ELECTROPLATED STEEL BOLTS AND NUTS. CAST WITH OFFSETTING ANGLE-PATTERN BOLT PADS FOR RIGIDITY AND VISUAL PAD-TO-PAD OFFSET CONTACT.
   - .2 COPPER TUBE: SCREWED, SOLDERED, BRAZED.
3. VALVES:
   - .1 ULC LISTED FOR FIRE PROTECTION SERVICE.
   - .2 UP TO NPS 2: BRONZE, SCREWED ENDS, GROOVED, OS&Y GATE.
   - .3 NPS 2 1/2 AND OVER: CAST OR DUCTILE IRON, [FLANGED] [ROLL GROOVED] ENDS, INDICATING BUTTERFLY VALVE.
   - .4 CHECK VALVES: SPRING ACTUATED SWING TYPE, COMPOSITION DISC OR SEAL.
4. PIPE HANGERS:
   - .1 ULC LISTED FOR FIRE PROTECTION SERVICES.
5. DRAIN VALVE: NPS 1, COMPLETE WITH HOSE END, CAP AND CHAIN.
6. INSPECTOR'S TEST CONNECTIONS: NPS 1 GATE VALVE.

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.

No.	DATE	REVISIONS	BY
1	FEB 26/18	ISSUED FOR PERMIT	TV

STAMP: LICENSED PROFESSIONAL ENGINEER — T. W. VIVYURKA — PROVINCE OF ONTARIO

PROJECT NORTH

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

PROJECT
PROPOSED 12 UNIT EXTENSION
411 COUNTRY STREET
ALMONTE, ONTARIO, K0A 1A0

DRAWING
MECHANICAL SPECIFICATIONS

DRAWN:	G.D. & M.E.
APPROVED:	T.V.
DATE:	FEB 15/18
SCALE:	AS SHOWN
SIZE:	ARCH E1
DRAWING No.	M-10