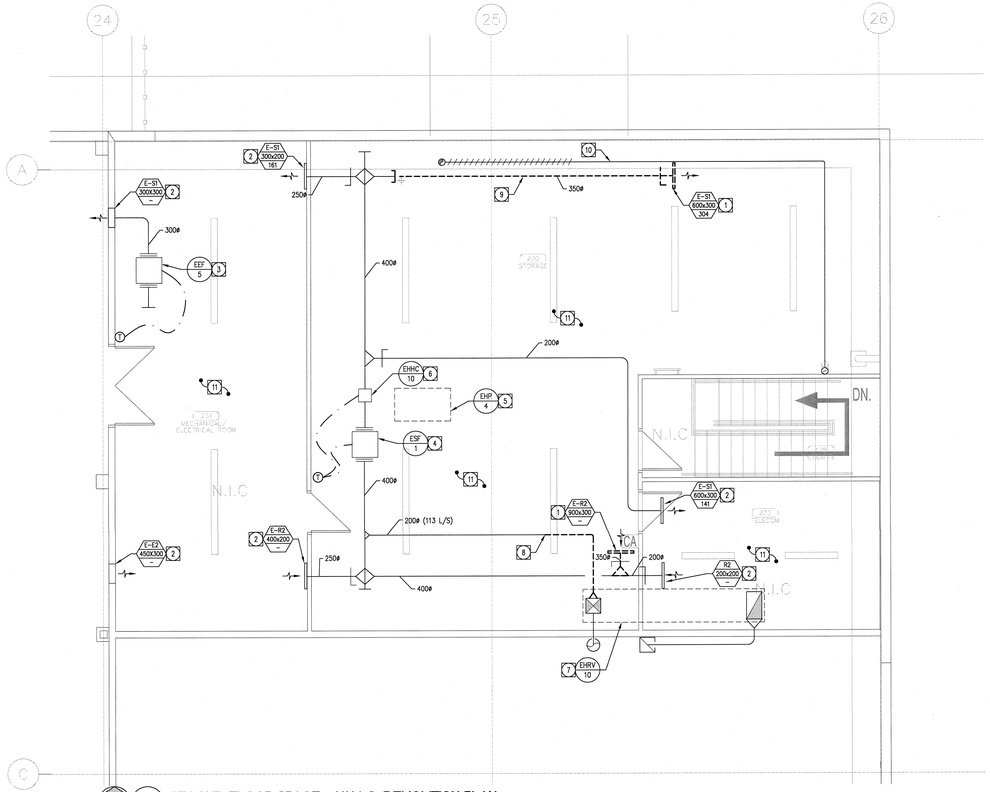
DATE: 2016.06.10 FILE NAME: 36055DWG

PROJECT No: 2015-166 SHEET TITLE: SECOND FLOOR OFFICE ADDITION - MECHANICAL HVAC PLAN

ADDRESS: 960 THOMAS AVENUE



2 M1.0 **SECOND FLOOR SPACE - H.V.A.C. DEMOLITION PLAN**
SCALE: 1:50

DRAWING NOTES - DEMOLITION

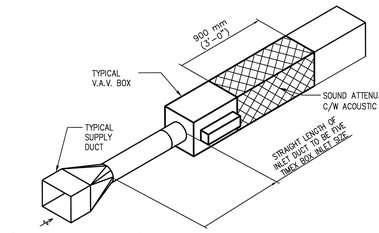
1. EXISTING GRILLE TO BE REMOVED AND RELOCATED AS INDICATED ON RENOVATION PLAN 3-M1.0. REUSE DUCTWORK WHERE POSSIBLE.
2. EXISTING GRILLES TO REMAIN.
3. EXISTING EXHAUST FAN (EEF-5) TO REMAIN.
4. EXISTING SUPPLY FAN (ESF-1) TO REMAIN.
5. EXISTING HEAT PUMP (EHP-4) AT ROOFTOP INCLUDING ALL ASSOCIATED PIPING AND DUCTWORK TO REMAIN.
6. EXISTING HEAT COIL (EHHC-10) AND ASSOCIATED CONTROLS TO REMAIN.
7. EXISTING HEAT RECOVERY VENTILATOR AND ALL EXISTING DUCTWORK, DISTRIBUTION AND CONTROLS TO REMAIN (EHRV-10) TO REMAIN.
8. EXISTING SUPPLY DUCTWORK FROM EHRV-10 TO BE REMOVED UP TO APPROXIMATE LOCATION INDICATED FOR EVENTUAL TIE-IN TO RECONFIGURED DUCTWORK.
9. EXISTING SUPPLY DUCTWORK TO BE REMOVED BACK TO MAIN AND CAPPED.
10. EXISTING EXHAUST DUCTWORK SERVING RANGE HOOD IN BREAK ROOM ON MAIN LEVEL TO REMAIN.
11. PROVIDE PRE-DEMOLITION AIR BALANCE FOR SPACE IN SCOPE OF WORK.

LEGEND - HVAC

	SUPPLY AIR DIFFUSER
	RETURN AIR GRILLE
	EXHAUST AIR GRILLE
	DUCT RISE UP / DUCT DROP DOWN
	DOOR GRILLE
T	THERMOSTAT
H	HUMIDISTAT
CO	CARBON DIOXIDE DETECTOR
NO2	NITROGEN DIOXIDE DETECTOR
S	SWITCH
$	ON / OFF SWITCH (DIV. 16)
	DUCTWORK DEMO
	BALANCING DAMPER
	FIRE DAMPER
	BACK DRAFT DAMPER
M	MOTORIZED DAMPER
	FLEXIBLE DUCT CONNECTION
	THERMAL INSULATION
	ACOUSTIC INSULATION
TYPE / SIZE / CFM / AECK⌀	GRILLE / DIFFUSER TAG
EQ NO	EQUIPMENT TAG
1	DRAWING NOTE TAG

GENERAL NOTES - HVAC

1. MECHANICAL SUBCONTRACTOR SHALL VERIFY EXACT LOCATIONS, SIZES, ETC. PRIOR TO COMMENCEMENT OF WORK. VERIFY ALL CONNECTION POINTS ON SITE.
2. MECHANICAL SUBCONTRACTOR SHALL ALLOW IN HIS TENDER QUOTATION FOR ALL REQUIRED MODIFICATIONS TO EXISTING HVAC SYSTEMS AND EQUIPMENT (I.E.) RE-ROUTING AND RE-BALANCING OF EXISTING DUCTWORK AS DEEMED NECESSARY DUE TO RENOVATION WORK.
3. REFER TO ARCHITECTURAL, ELECTRICAL & STRUCTURAL DRAWINGS FOR COORDINATION PURPOSES.
4. MECHANICAL SUBCONTRACTOR SHALL CAREFULLY REMOVE & RELOCATE EXISTING EQUIPMENT AS PER OWNERS REQUIREMENTS.
5. ALL CUTTING & PATCHING OF FLOOR SLABS, WALLS ETC. TO BE PERFORMED BY CONTRACTOR.
6. COORDINATE THE EXACT LOCATION OF THE GRILLES AND DIFFUSERS ON SITE WITH THE ELECTRICAL SUBCONTRACTOR, CONTRACTOR, ARCHITECTURAL CEILING PLAN, LIGHTING LAYOUT, ETC. TO ENSURE THAT THERE ARE NOT ANY CONFLICTS DURING INSTALLATION.
7. PROVIDE BALANCE DAMPER FOR EACH SUPPLY/EXHAUST AIR GRILLE OR DIFFUSER TO ALLOW FOR THE PROPER BALANCING OF THE SYSTEM. PROVIDE OPPOSED BLADE DAMPERS WITH THE DIFFUSER AND ADJUSTABLE FROM THE DIFFUSER FACE WHEN A DUCT MOUNTED BALANCE DAMPER WOULD NOT BE ACCESSIBLE.
8. ALL DUCT DIMENSIONS DENOTE INTERNAL "OPEN" AREA OF THE DUCT.
9. ALL DUCTWORK PENETRATING THE BUILDING THERMAL ENVELOPE SHALL BE INSULATED A MINIMUM 10'-0" BACK FROM THE BUILDING PENETRATION.
10. REFER TO ARCHITECTURAL DRAWINGS AND PROVIDE FIRE DAMPERS IN ALL WALLS DENOTED AS FIRE SEPARATIONS. PROVIDE ACCESS DOORS AT ALL FIRE DAMPERS TO ALLOW FOR INSPECTION/TESTING.
11. COORDINATE THE EXACT LOCATIONS OF EQUIPMENT, DUCT OPENINGS, AND DUCT LOCATIONS WITH THE EXISTING STRUCTURE AND THE CONTRACT ADMINISTRATOR.
12. ALL WORK SHALL COMPLY IN EVERY RESPECT WITH ALL NATIONAL, PROVINCIAL AND LOCAL CODES AND BY-LAWS, WHICH SHALL BE CONSIDERED PART OF THE SPECIFICATION. IN THE CASE OF CONFLICTING REQUIREMENTS, BE GOVERNED BY THE MOST STRINGENT REGULATIONS.
13. THE MECHANICAL SUBCONTRACTOR SHALL INSTALL HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS IN COMPLETE ACCORDANCE WITH THE RECOMMENDATIONS OF THE NATIONAL/PROVINCIAL BUILDING CODE, ASHRAE, SMACNA LATEST EDITION DUCT STANDARDS, AND MANITOBA DEPT. OF LABOUR REQUIREMENTS.
14. ALL INSULATING MATERIALS, METHODS, SIZES AND TYPES OF INSULATION FOR ALL DUCT WORK SHALL BE INSTALLED TO THE REQUIREMENTS OF THE ASHRAE STANDARDS 90.1-2010 "ENERGY STANDARD FOR BUILDING EXCEPT LOW-RISE RESIDENTIAL BUILDING", STANDARD 90.2 "ENERGY EFFICIENT DESIGN OF LOW-RISE RESIDENTIAL BUILDINGS", THERMAL INSULATION ASSOCIATION OF CANADA (TIAC) STANDARDS AND MANITOBA ENERGY CODE FOR BUILDINGS REQUIREMENTS.
15. MECHANICAL SUBCONTRACTOR SHALL ENSURE THAT ALL DUCTWORK THAT MAY CONVEY OUTSIDE AIR BE LOCATED A MINIMUM OF 6" (150 MM) AWAY FROM ANY SPRINKLER PIPING. DUCTWORK IN SUCH LOCATIONS SHALL BE PROTECTED WITH A MINIMUM OF 2" (50MM) RIGID DUCT INSULATION WITH VAPOR RETARDING FOIL FINISH. ALTER LOCATION OF DUCTWORK TO SUIT.
16. FOR STRUCTURES REQUIRING OR CONTAINING EXISTING FIRE PROTECTION/SPRINKLER SYSTEMS, THE CITY AND/OR CONTRACTOR SHALL RETAIN A SPRINKLER SUBCONTRACTOR TO PROVIDE FREEZE PROTECTION IN ALL MECHANICAL AND SERVICE ROOMS UTILIZING DRY AND/OR GLYCOL SYSTEMS.
17. ALL CONTROL / ELECTRICAL WIRING TO MEET OR EXCEED FLAME SPREAD RATING OF 25 AND DEVELOPED SMOKE RATING OF 50 AND BE SUITABLE FOR INSTALLATION IN AIR PLENUMS.
18. FIREWATCH IS REQUIRED FOR FIRE ALARM SYSTEM SHUTDOWN.



4 M1.0 **TYPICAL V.A.V. TERMINAL DETAIL**
N.T.S.

NOTES:

THESE DRAWINGS SHALL NOT BE SCALED.

THE CONTRACTOR SHALL VISIT THE SITE AND SATISFY ONESELF ALL DIMENSIONS, DATUM, AND DETAILED INFORMATION SHOWN ARE CORRECT.

THE CONTRACTOR IS TO REVIEW AND COORDINATE ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL DRAWINGS FOR ADDITIONAL OPENINGS THROUGH FLOORS, WALLS, AND CEILINGS FOR DUCT, PIPE & ELECTRICAL RISERS AND ALL OPENINGS NOT SHOWN ON DRAWINGS.

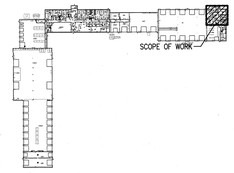
ALL OPENINGS THROUGH FIRE ASSEMBLIES ARE TO BE FIRE STOPPED AND SEALED WITH ULC APPROVED FIRE STOPPING TO MAINTAIN THE INTEGRITY OF THE FIRE SEPARATION, AND PROVIDE A SMOKE-TIGHT BARRIER.

ALL PRODUCTS AND MATERIALS TO BE USED AND INSTALLED SHALL CONFORM WITH MANUFACTURER'S SPECIFICATIONS & APPLICABLE CODES.

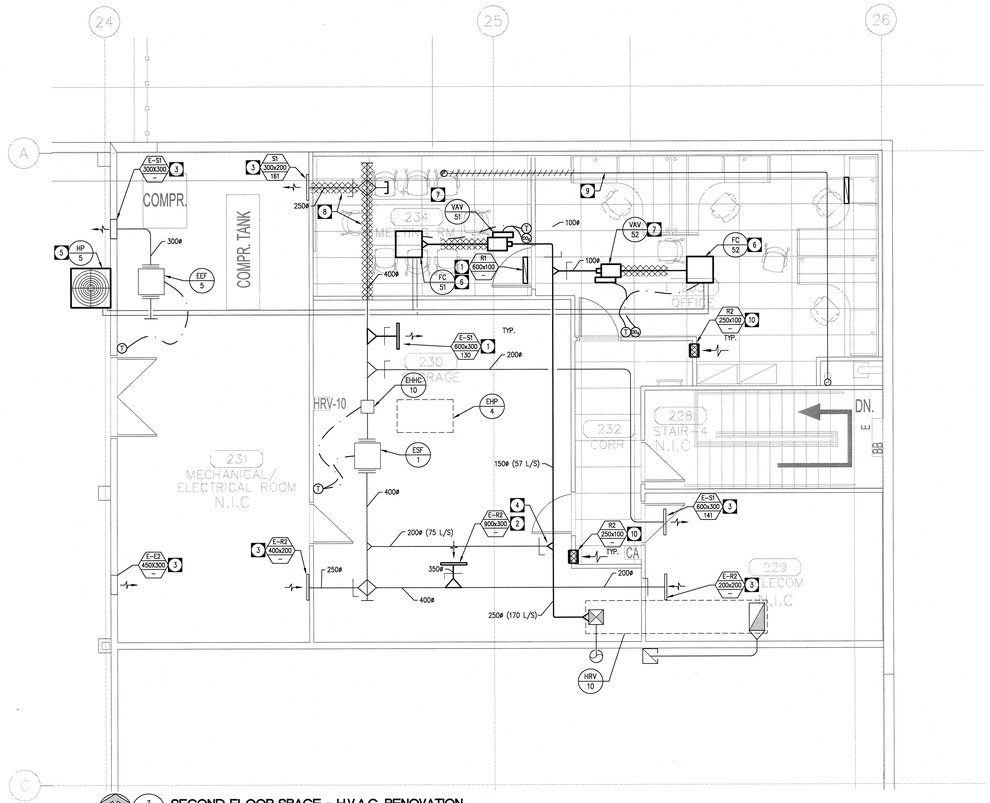
THE CONTRACTOR SHALL BE RESPONSIBLE TO PATCH AND MAKE GOOD ALL EXISTING CONSTRUCTION AFFECTED BY THE REMOVAL OF ALL ITEMS FORMING THE PART OF THE RENOVATION WORK.

WHERE NEW FLOORING AND BASE IS TO BE INSTALLED IN EXISTING AREAS (REFER TO FLOOR PLAN AND ROOM SCHEDULE) THE EXISTING FLOORING SURFACE AND BASE MUST BE REMOVED, UNLESS OTHERWISE NOTED. ALL FLOOR SURFACES SHALL BE PREPARED IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF NEW FLOOR.

WHERE PAINTING OF EXISTING WALLS IS INDICATED ON THE ROOM SCHEDULE, THESE WALLS MUST BE CLEANED OF ANY EXISTING WALL COVERING, PATCHED & PREPARED TO ACCEPT NEW MATERIAL, UNLESS OTHERWISE NOTED.



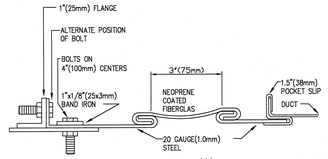
1 M1.0 **SITE PLAN**
N.T.S.



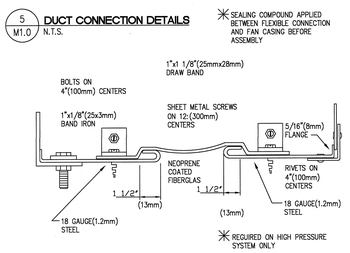
3 M1.0 **SECOND FLOOR SPACE - H.V.A.C. RENOVATION**
SCALE: 1:50

DRAWING NOTES - RENOVATION

1. SUPPLY DIFFUSER IN PRE-RENOVATION STORAGE ROOM TO BE RELOCATED TO SUIT RENOVATED STORAGE ROOM IN APPROXIMATE LOCATION SHOWN. RE-BALANCE AS NEEDED.
2. RETURN AIR GRILLE SERVING PRE-RENOVATION STORAGE ROOM TO BE RELOCATED TO SUIT RENOVATED STORAGE ROOM IN APPROXIMATE LOCATION SHOWN. RE-BALANCE TO VALUE INDICATED.
3. EXISTING GRILLES TO REMAIN. RE-BALANCE TO VALUE INDICATED.
4. TIE EXISTING 200ø SUPPLY DUCT INTO NEW SUPPLY DUCT RUN FROM EHRV-10 IN APPROXIMATE LOCATION SHOWN. PROVIDE BALANCING DAMPER AND BALANCE AS REQUIRED.
5. NEW HEAT PUMP (HP-5) TO BE MOUNTED AT HIGH LEVEL IN SERVICE GARAGE ON WALL BRACKETS. CONFIRM MOUNTING BRACKET WITH STRUCTURE ON SITE. EXTEND REFRIGERANT PIPING TO NEW FAN COILS. FIRE STOP PENETRATIONS AT WALL LINE.
6. NEW FAN COIL TO BE INSTALLED IN APPROXIMATE LOCATION SHOWN. TIE REFRIGERANT LINES INTO NEW HEAT PUMP (HP-5) LOCATED AT HIGH LEVEL IN SERVICE GARAGE. PROVIDE UNITS WITH BUILT IN CONDENSATE PUMPS AND TIE CONDENSATE DISCHARGE LINES INTO NEAREST EXISTING CONDENSATE DRAIN AS REQUIRED.
7. NEW VAV TERMINAL UNIT TO BE INSTALLED IN CEILING SPACE C/W VIBRATION ISOLATORS AND 3" SOUND ATTENUATOR. PROVIDE TRANSITION AND A LENGTH OF 5 DUCT DIAMETERS OF INLET DUCT BETWEEN THE NEAREST CONNECTION/ELBOW IN DUCT WORK TO UNIT INLET. MODIFY/EXTEND DUCT WORK AS REQUIRED TO FACILITATE INTERCONNECTION.
8. ACOUSTICALLY INSULATE EXISTING DUCTWORK SERVING MECHANICAL/ELECTRICAL ROOM ALONG ENTIRETY OF RUN WITHIN NEW MEETING ROOM SPACE.
9. EXISTING EXHAUST DUCTWORK SERVING RANGE HOOD IN BREAK ROOM ON MAIN LEVEL TO REMAIN.
10. NEW RETURN AIR GRILLE TO BE INSTALLED IN APPROXIMATE LOCATION SHOWN. COORDINATE FINAL LOCATION WITH ARCHITECTURAL.



5 M1.0 **DUCT CONNECTION DETAILS**
N.T.S.



VENTILATION SUMMARY

FC-51 MEETING ROOM

1. Summary

Ventilation Sizing Method	ASHRAE Std 62.1-2007
Design Condition	Heating operation
Occupant Diversity (D)	1.000
Uncorrected Outdoor Air Intake (Vou)	24 L/s
System Ventilation Efficiency (Ev)	1.000
Outdoor Air Intake (Vot)	30 L/s

2. Space Ventilation Analysis Table

		Supply Air (L/s)	Space Floor Area (m²)	Area Outdoor Air Rate (L/(s-m²))	Time Averaged Occupancy (Occupants)	People Outdoor Air Rate (L/s/person)	Air Distribution Effectiveness	Space Outdoor Air (L/s)
Zone Name / Space Name	Mult.	(Vpz)	(Az)	(Ra)	(Pz)	(Rp)	(Ez)	(Voz)
Zone 1								
234 - MEETING RM	1	101	17.2	0.30	8.0	2.36	0.80	30
Totals (Incl. Space Multipliers)		101						

FC-52 OFFICE SPACE

1. Summary

Ventilation Sizing Method	ASHRAE Std 62.1-2007
Design Condition	Heating operation
Occupant Diversity (D)	1.000
Uncorrected Outdoor Air Intake (Vou)	22 L/s
System Ventilation Efficiency (Ev)	1.000
Outdoor Air Intake (Vot)	27 L/s

2. Space Ventilation Analysis Table

		Supply Air (L/s)	Space Floor Area (m²)	Area Outdoor Air Rate (L/(s-m²))	Time Averaged Occupancy (Occupants)	People Outdoor Air Rate (L/s/person)	Air Distribution Effectiveness	Space Outdoor Air (L/s)
Zone Name / Space Name	Mult.	(Vpz)	(Az)	(Ra)	(Pz)	(Rp)	(Ez)	(Voz)
Zone 1								
233 - OFFICE	1	164	40.9	0.30	4.0	2.36	0.80	27
Totals (Incl. Space Multipliers)		164						

FAN COILS (BASED ON DAIKIN OR APPROVED EQUAL)

TAG	MODEL NUMBER	TOTAL COOLING (kW)	HEATING CAPACITY (kW)	AIRFLOW (L/S)	WEIGHT (KG)	COMMENTS/ACCESSORIES
FC-51	FFQ09LVAJ	2.640	2.640	101	17.700	1,2,3
FC-52	FFQ12LVAJ	3.520	3.520	164	17.700	1,2,3

1) PROVIDE ATT ATTENUATOR SECTION 2) CO2 SENSOR 3) SINGLE POWER-CONNECTION W/ DISCONNECT

VAV SCHEDULE (BASED ON PRICE OR APPROVED EQUAL)

TAG	LOCATION	MODEL	MAX FLOW (L/S)	INLET (MM)	CONTROL TYPE	VOLTAGE	AMPERAGE	COMMENTS/ACCESSORIES
VAV-51	234 - MEETING ROOM	SDV-5000	30	102	DIGITAL	120/60/1	FRAC.	1,2
VAV-52	233 - OFFICE	SDV-5000	27	102	DIGITAL	120/60/1	FRAC.	1,2

1) PROVIDE ATT ATTENUATOR SECTION 2) CONTROL TO BE WIRED TO BASE BUILDING CONTROL SYSTEM

HEAT PUMPS (BASED ON DAIKIN OR APPROVED EQUAL)

TAG	LOCATION	MODEL	SUPPLY FAN	COOLING		HEATING	ELECTRICAL		PHYSICAL DIMENSIONS				COMMENTS/ACCESSORIES
			AIR FLOW RATE (L/S)	TOTAL CAPACITY (KW)	SENSIBLE CAPACITY (KW)	TOTAL HEATING (KW)	MCA	VOLTAGE	HEIGHT (MM)	WIDTH (IN)	DEPTH (IN)	WEIGHT (KG)	
HP-5	SERVICE GARAGE, WALL MOUNTED	3MXS24JVJU	975	8	7	8.8	17.8	208-230/60/1	770	900	320	76.2	1,2,3

1) INSULATED CABINET 2) SINGLE POWER-POINT CONNECTION W/ DISCONNECT 3) HEAT COIL/AUTO THERMOSTAT

GRILLES AND DIFFUSERS SCHEDULE (BASED ON PRICE)

TAG	MODEL	COMMENT
R-1	80/TB/B12	FACE SIZES ON DRAWINGS
R-2	500/F/L/D/A/B12	FACE SIZES ON DRAWINGS

NOVA 3 ENGINEERING LTD.
CONSULTING ENGINEERS
201-120 FORT STREET TEL.: (204) 943-6142
WINNIPEG, MANITOBA R3C 1C7 FAX.: (204) 942-1276
WWW.NOVA3.CA JN.: 36-055

APEGM
Certificate of Authorization
Nova 3 Engineering Ltd.
No.962 Date: 2016/06/10

ISSUED FOR CONSTRUCTION

No.	REVISION/DESCRIPTION	BY	DATE
0	ISSUED FOR CONSTRUCTION	JHG	2016.06.10

SEAL

PROVINCE OF MANITOBA — J.H. BUENTHER — 2016/06/10 — REGISTERED ENGINEER

DRAWN	CHECKED	DESIGNED	APPROVED
CD	JSUHG	JSUCD	JHG

DATE 2016.06.10 USER APPROVAL

Winnipeg
THE CITY OF WINNIPEG
PLANNING, PROPERTY AND DEVELOPMENT DEPARTMENT
MUNICIPAL ACCOMMODATIONS DIVISION
3-65 GARRY STREET, R3C 4K4

PROJECT
PUBLIC WORKS DEPARTMENT
EAST YARDS COMPLEX
FLEET MANAGEMENT
960 THOMAS AVENUE

SHEET TITLE
SECOND FLOOR OFFICE ADDITION
MECHANICAL H.V.A.C. PLAN

SCALE	PROJECT No.	SHEET No.
AS SHOWN	36055M.DWG	M1.0

DRAWING SHEET SIZE: A0 (1189mm x 841mm) PLOT 1:1