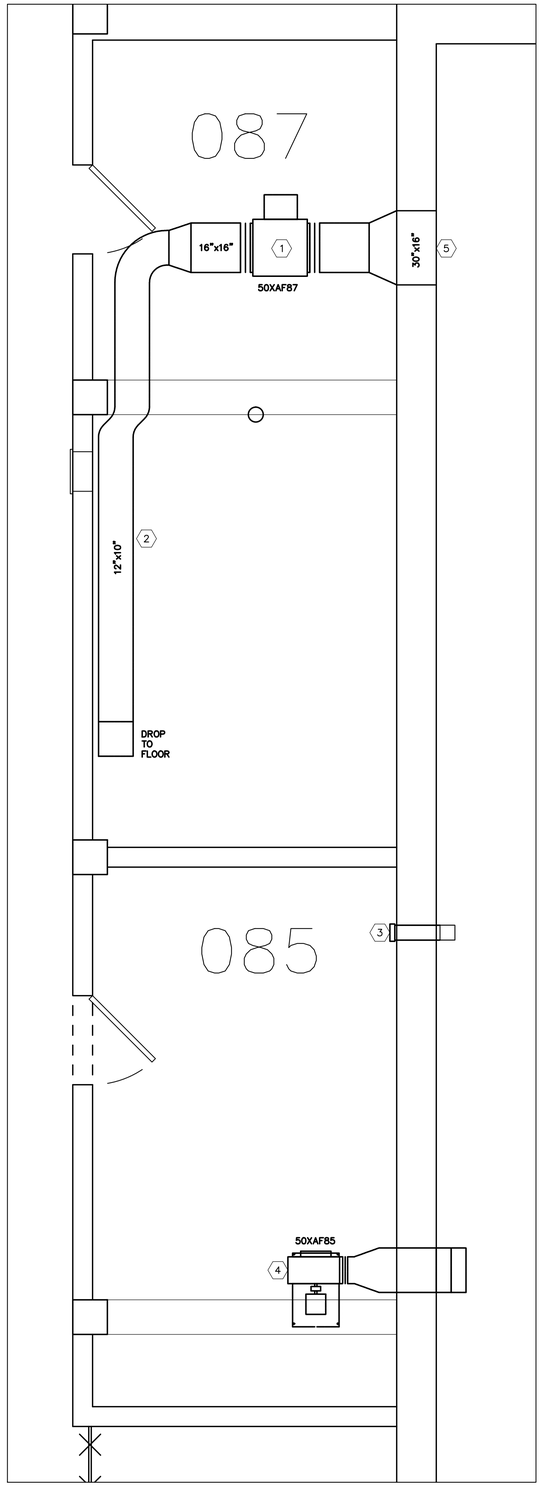
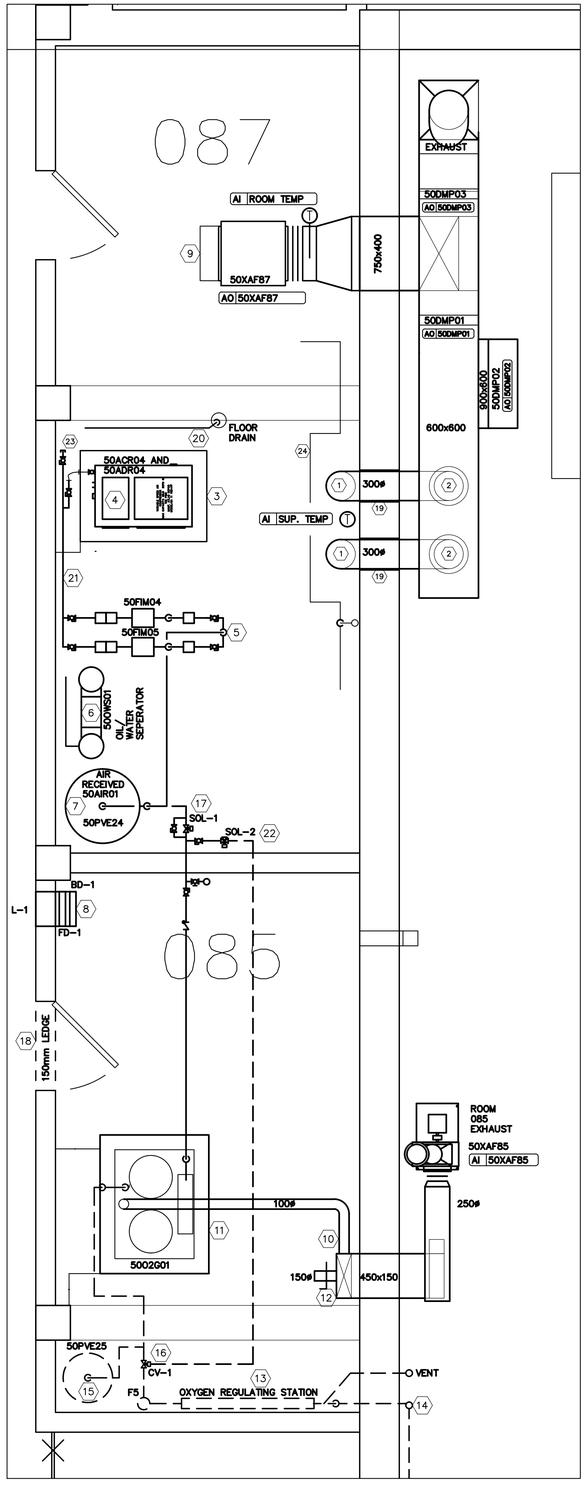


1 M01 DEMOLITION PLAN

SCALE 1:30

DETAIL 1: DRAWING NOTES:

1. EXISTING EXHAUST FAN AND RELATED FLEXIBLE CONNECTIONS AND SUPPORTS TO BE REMOVED.
2. EXISTING DUCTWORK RANGING FROM 250x250 TO 900x900 DUCTWORK TO BE REMOVED.
3. EXISTING 200x50 DUCTWORK TO BE REMOVED AND OPENING IN WALL TO BE FILLED WITH RDXUL INSULATION.
4. EXISTING EXHAUST FAN AND RELATED FLEXIBLE CONNECTIONS, EXHAUST DUCTWORK AND SUPPORTS TO BE REMOVED.



2 M01 NEW EQUIPMENT LAYOUT

SCALE 1:30

DETAIL 1: DRAWING NOTES:

1. NEW 300ø GALVANIZED DUCTWORK TO EXTEND DOWN TO 300mm ABOVE FINISHED FLOOR (AFF). ALL DUCTWORK TO BE INSULATED AND C/W JACKET.
2. NEW 300ø GALVANIZED DUCTWORK TRANSITION TO 350ø DUCTWORK AND CONNECT TO EXTERIOR DUCTWORK.
3. NEW 1300x900x150 CONCRETE HOUSEKEEPING PAD, EXACT LOCATION TO BE COORDINATED ON SITE WITH NRC. SEE PAD DETAIL.
4. NEW AIR COMPRESSOR AND DRYER, SEE SCHEDULES AND COMPRESSED AIR P&ID FOR LAYOUT OF COMPRESSED AIR SYSTEM.
5. NEW COMPRESSED AIR FILTRATION ASSEMBLY, SEE SCHEDULES.
6. NEW OIL AND WATER SEPARATOR, SEE SCHEDULE.
7. NEW COMPRESSED AIR RECEIVER, SEE SCHEDULE.
8. NEW INTAKE LOUVER, FIRE DAMPER AND BACK DRAFT DAMPER. SEE SCHEDULE. CUT EXISTING BLOCK WALL AS REQUIRED TO SUIT NEW ASSEMBLY. SEE DETAIL.
9. PROVIDE A 150mm SECTION OF DUCTWORK AT INLET OF EXHAUST FAN C/W INLET SCREEN (25x25x2mm@).
10. NEW 100ø GALVANIZED EXHAUST DUCTWORK TO BE CONNECTED TO NEW EXHAUST DUCT, USE NOMINAL 100mm MJ CLAMP TO CONNECT NEW EXHAUST DUCT TO NEW OXYGEN GENERATOR EXHAUST PIPE.
11. NEW 1400x1100x150 CONCRETE HOUSE KEEPING PAD, EXACT LOCATION TO BE COORDINATED ON SITE WITH NRC. SEE PAD DETAIL.
12. NEW 450x150 EXHAUST DUCTWORK FROM EXTERIOR EXHAUST FAN DOWN TO 250mm AFF. PROVIDE 150x150 BRANCH CONNECTION AT TOP OF DUCTWORK C/W BALANCING DAMPER. PROVIDE BALANCING DAMPER AT BOTTOM. CONTRACTOR SHALL OFFSET EXISTING 25ø INSULATED DOMESTIC HOT AND COLD WATER TUBING TO SUIT NEW DUCTWORK. FILL VOID BETWEEN DUCTWORK AND CONCRETE WITH EXPANDING INSULATING FOAM SEALANT (WINDOW & DOOR).
13. NEW OXYGEN PRESSURE REDUCING STATION, SEE OXYGEN P&ID.
14. NEW OXYGEN TUBING TO OUTSIDE, CORE A 50ø HOLE IN EXISTING WALL FOR NEW OXYGEN AND VENT TUBING, FILL VOID BETWEEN TUBING AND CONCRETE WITH EXPANDING INSULATING FOAM SEALANT.
15. NEW OXYGEN RECEIVER, SEE SCHEDULES.
16. PROVIDE NEW PNEUMATIC ACTUATED CONTROL VALVE "CV-1" (SWAGELOK, MODEL: SS-65TF16-SC11-35C (BODY MATERIAL-STAINLESS STEEL, CONNECTION 1 FNPT, ACTUATOR- FAIL CLOSED, CLEANED FOR OXYGEN SERVICE
17. PROVIDE NEW SOLENOID VALVE (ASCO-8210G054) C/W BYPASS VALVE AT THIS LOCATION, CORE 75ø HOLE IN EXISTING CONCRETE WALL, FILL VOID BETWEEN WALL AND TUBING WITH FIRESTOP SILICON SEALANT.
18. EXISTING NOMINAL 150mm LEDGE TO REMAIN.
19. CORE A NEW 325ø HOLE IN EXISTING 300mm THICK CONCRETE WALL FOR NEW DUCTWORK. FILL VOID BETWEEN DUCTWORK AND CONCRETE WITH EXPANDING INSULATING FOAM SEALANT (WINDOW & DOOR).
20. 150N PVC SCHEDULE 40 TO BE PIPED FROM NEW OIL AND WATER SEPARATOR TO EXISTING FLOOR DRAIN. PIPING SHALL EXTEND 12mm INTO EXISTING DRAIN, DRILL HOLD IN TOP OF FLOOR DRAIN TO SUIT NEW PVD PIPE. PIPE SHALL BE SUPPORTED ON WALL WITH PIPE STAY AND ON FLOOR WITH TYPICAL ONE HOLE GALVANIZED TUBING CLAMP.
21. NEW COMPRESSED AIR TUBING TO BE CONNECTED TO WALL WITH EPOXY COATED PIPE STAY AT MAXIMUM 1.5 METER O.C.
22. PROVIDE NEW SOLENOID VALVE SOL-2 (ASCO-83205186 - 0.25 FNPT CONNECTIONS, 120V, MAXIMUM PRESSURE DIFFERENCE 150 PSIG, BODY MATERIAL BRASS).
23. NEW ISOLATION VALVE AND THREADED CAP FOR FUTURE USE.
24. CONTRACTOR SHALL OFFSET/REINSTATE EXISTING 25ø INSULATED 15 PSIG STEAM/CONDENSATE PIPING TO SUIT NEW DUCTWORK. SHUTDOWN OF EXISTING STEAM SYSTEM TO BE COORDINATED WITH NRC.

GENERAL PROJECT NOTES (APPLIES TO ALL DRAWINGS:

1. CONTRACTOR TO VERIFY ALL DIMENSIONS AND CLEARANCES ON SITE PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES AND/OR OMISSIONS TO DEPARTMENTAL REPRESENTATIVE.
2. CONTRACTORS MUST VISIT THE SITE AND FULLY FAMILIARIZE THEMSELVES WITH THE SCOPE OF THE WORK PRIOR TO PROJECT COMMENCEMENT.
3. ALL TRADES TO COORDINATE WORK ON SITE, WITH APPROVAL OF DEPARTMENTAL REPRESENTATIVE TO AVOID ANY CONFLICTS AND/OR INTERFERENCE.
4. ANY AND ALL REQUIRED SHUTDOWNS SHALL BE COORDINATED WITH DEPARTMENTAL REPRESENTATIVE.
5. INSTALLATION OF ALL SYSTEMS SHALL BE IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.
6. CONTRACTOR TO BE RESPONSIBLE FOR REINSTATEMENT AND REPAIR OF ANY DAMAGED CAUSED INSIDE AND OUTSIDE AREA OF WORK.
7. PROVIDE MILL TEST REPORT FOR ALL PIPING/TUBING USED.
8. THE CONTRACTOR IS RESPONSIBLE TO ORGANIZE AND ARRANGE FOR ALL LICENSE AND WELDING PROCEDURES AND WELDERS QUALIFICATION VERIFICATION BY TSSA. THIS SHALL ALSO INCLUDE INSPECTION COSTS ASSOCIATED WITH TSSA.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING OF ALL LABOR AND MATERIAL NECESSARY TO BLANK OFF SECTION OF PIPING BEING TESTED AND REMOVE ITEMS WHICH CANNOT SUSTAIN TEST PRESSURE.
10. CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH ALL TESTING AND INSPECTIONS WHICH SHALL INCLUDE BUT NOT BE LIMITED TO RADIOGRAPHY TESTING. CONTRACTOR SHALL PROVIDE NRC WITH AN INDEPENDENT REPORT DETAILING EVALUATION OF ALL RADIOGRAPHY RESULTS. RADIOGRAPHY REPORT SHALL BE COMPLETED BY INDIVIDUAL CERTIFIED TO CAN-CGSB-48.9712 OR EQUIVALENT.
11. CONTRACTOR SHALL PROVIDE RECORDS OF THE ALL PRESSURE TESTS, DATA ON INSTRUMENTATION USED AND CALIBRATION INFORMATION OF EQUIPMENT USED. ALL PRESSURE TEST RESULTS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: DATE/TIME OF TEST, PIPE SECTION BEING TESTED, TESTING FLUID, STARTING TEST PRESSURE, ENDING TEST PRESSURE, DURATION OF TEST, FULL RANGE OF PRESSURE GAUGE, OUTSIDE TEMPERATURE, INDIVIDUAL/COMPANY COMPLETING TEST, INDEPENDENT INDIVIDUAL/COMPANY WITNESSING TEST, TSSA INSPECTOR NAME PRESENT DURING TEST IF DIFFERENT THEN ABOVE. PRESSURE SCALE ON ANY TESTING GAUGE SHALL NOT EXCEED 1.2 TIMES TEST PRESSURE.
12. THIS DRAWING SET WAS PREPARED FOR TENDER PURPOSES AND IS INTENDED TO CONVEY GENERAL INSTALLATION REQUIREMENTS OF NEW PIPING. CONTRACTOR IS RESPONSIBLE TO VERIFY SITE CONDITIONS AND MEASUREMENTS AT TIME OF BIDDING. SUBMITAL OF TENDER SHALL MEAN THE ACCEPTANCE OF SITE CONDITIONS. AS SUCH CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE ANY OFFSETS OR ADJUSTMENTS INCLUDING EXTRA FITTINGS AND/OR OTHER MATERIAL AND LABOR WHICH MAY BE REQUIRED TO SUIT SITE CONDITION AND MEASUREMENTS.
13. PROVIDE SHOP DRAWINGS FOR REVIEW BY NRC.
14. PRIOR TO CORING HOLES FOR NEW MECHANICAL SYSTEM IN CONCRETE STRUCTURE. THE CONTRACTOR SHALL SCAN THE CONCRETE FOR EMBEDDED STRUCTURAL AND ELECTRICAL MATERIAL.
15. ALL CONTROL WIRING AND PROGRAMMING SHALL BE BY OTHERS.
16. CONTRACTOR CERTIFICATION AND QUALIFICATIONS REQUIREMENTS:
    - .1 CERTIFICATE OF AUTHORIZATION FROM TSSA (PV 09397) TO UNDERTAKE WORK ON PROCESS PIPING B31.1 AND B31.3. NO WORK ON PIPING SHALL START UNTIL NRC HAS CONFIRMED THAT CONTRACTOR HAS A VALID TSSA CERTIFICATES.
    - .2 SUBMIT WELDING PROCEDURE FOR ALL WELDING TYPES.
    - .3 COPY OF A VALID WELDING QUALIFICATION RECORD FOR ALL EMPLOYEES THAT COMPLETE WELDING.
    - .4 TSSA REGISTRATION P NUMBER TO BE PROVIDED BY NRC.
    - .5 CONTRACTOR SHALL ARRANGE FOR A SITE KICKOFF MEETING BETWEEN THE CONTRACTOR, TSSA AND NRC BEFORE ANY WORK ON THE PIPING SYSTEM SHALL START.
    - .6 REGISTRATION OF THE PIPING SYSTEM WITH TSSA SHALL BE BY NRC. ALL TSSA INSPECTIONS/TESTING RELATED SCHEDULING/COSTS SHALL BE BY THE CONTRACTOR.
17. ALL EXTERIOR PIPING TO BE PAINTED WITH A MINIMUM OF TWO LAYERS OF PAINT ON EXTERIOR PIPING. PAINT TO BE APPLIED AS PER MANUFACTURER RECOMMENDATIONS. STANDARD OF ACCEPTANCE: MANUFACTURER SHERWIN WILLIAMS, PRODUCT: SILVER-BRITE HI HEAT RESISTING ALUMINUM PAINT ON EXTERIOR PIPING.
19. ALL SHUTDOWN REQUIRED TO CONNECT TO EXISTING SERVICES SHALL BE STRICTLY COORDINATED AND APPROVED BY NRC.

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No.	Date	Revision	By: Par:
1	19 10 2016	ISSUED FOR TENDER	RGC

Date Printed — Date imprimée

- Verify all dimensions and site conditions and be responsible for same
- Vérifier toutes les dimensions et l'etat des liéux et en assumer la responsabilité

A Detail no. No. du détail
B Location drawing no. sur dessin no.
C Drawing no. dessin no.

project / projet
M-50 NEW OXYGEN GENERATION SYSTEM

MONTREAL ROAD CAMPUS

drawing / dessin
DEMOLITION AND NEW COMPRESSED AIR AND OXYGEN TUBING AND EQUIPMENT LAYOUT

designed / conçu: RGC	date / date: 19 10 2016
drawn / dessiné: RGC	scale / échelle: AS INDICATED
checked / vérifié: B.V	sheet / feuille: 1 of/de 8
approved / approuvé: B.V	W.O.no.: A1-008421-02 / D.T.no.

dwg.no. / dessin no.: 5200-M01

ASPM A1 (841x594)

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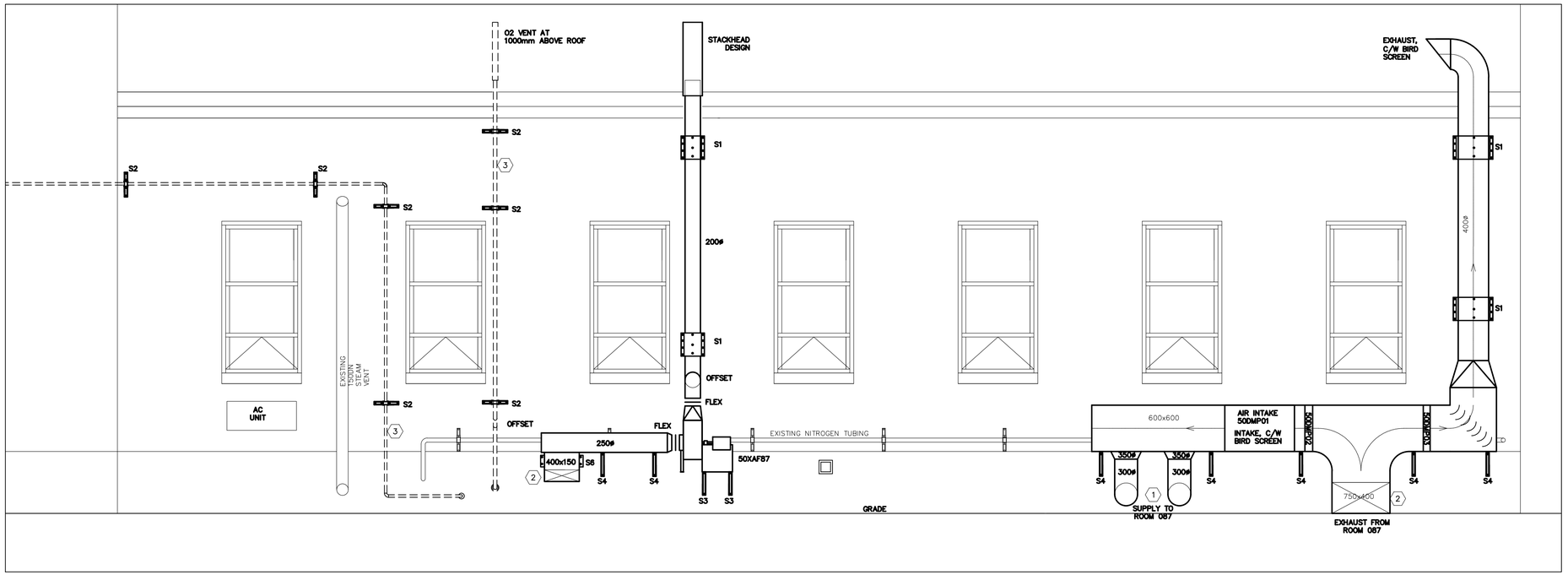

1 M02 EXTERIOR ELEVATION LAYOUT

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DETAIL 1: DRAWING NOTES:

1. NEW INSULATED 300ø DUCTWORK TO DOWN 300mm CENTERLINE ABOVE TOT OF FINISHED FLOOR IN ROOM 087, CORE A 325ø HOLD IN 300mm THICK CONCRETE WALL.
2. CONTRACTOR SHALL RUN NEW DUCTWORK THROUGH EXISTING OPENING.
3. OXYGEN TUBING AND VENT PIPING TO BE BY OTHERS.

No.	Date	Revision	By: Par:
1	17 10 2016	ISSUED FOR TENDER	RGC

Date Printed / Date imprimée

- Verify all dimensions and site conditions and be responsible for same
- Vérifier toutes les dimensions et l'etat des liéux et en assumer la responsabilité

A Detail no. / No. du détail
B Location drawing no. / sur dessin no.
C Drawing no. / dessin no.

project / projet
M-50 NEW OXYGEN GENERATION SYSTEM

MONTREAL ROAD CAMPUS

drawing / dessin
EXTERIOR ELEVATION LAYOUT

designed / conçu: RGC	date / date: 17 10 2016
drawn / dessiné: RGC	scale / échelle: AS INDICATED
checked / vérifié: B.V	sheet / feuille: 2 of/de 8
approved / approuvé: B.V	W.O.no.: A1-008421-02 / D.T.no.

dwg.no. / dessin no.: 5200-M02

ASPM A1 (841x594)

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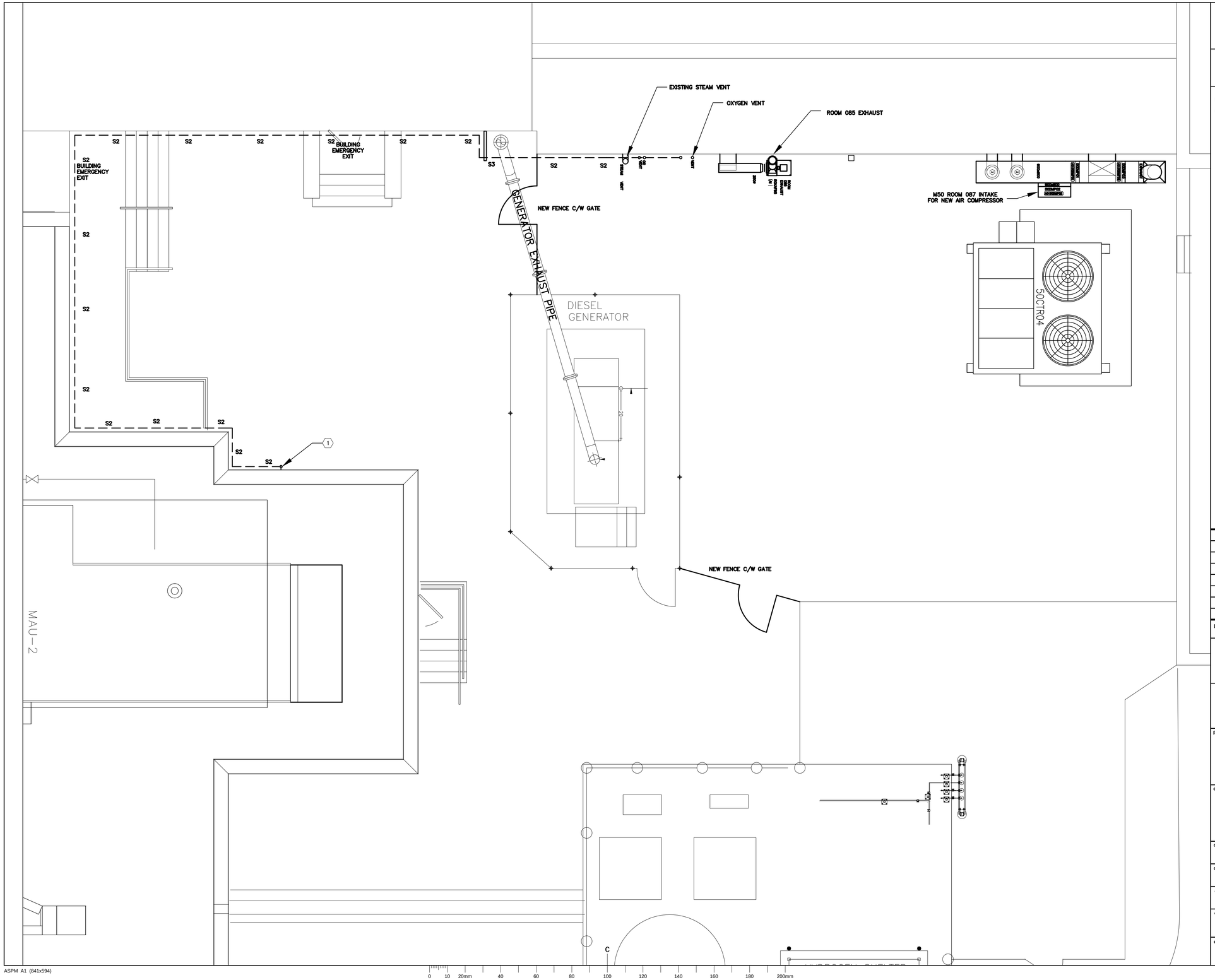

ASPM A1 (841x594)

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DRAWING NOTES:

1. NEW OXYGEN TUBING TO BASEMENT OF CPFC, CORE A 300 HOLE IN EXISTING 250mm THICK CONCRETE WALL FOR NEW OXYGEN TUBING, FILL VOID BETWEEN TUBING AND CONCRETE WITH EXPANDING INSULATING FOAM SEALANT. TO BE COMPLETED BY OTHERS.

No.	Date	Revision	By: Par:
1	17 10 2016	ISSUED FOR TENDER	RGC

Date Printed / Date imprimée

- Verify all dimensions and site conditions and be responsible for same
- Vérifier toutes les dimensions et l'etat des liéux et en assumer la responsabilité

A Detail no. No. du détail
B Location drawing no. sur dessin no.
C Drawing no. dessin no.

project / projet

M-50 NEW OXYGEN GENERATION SYSTEM

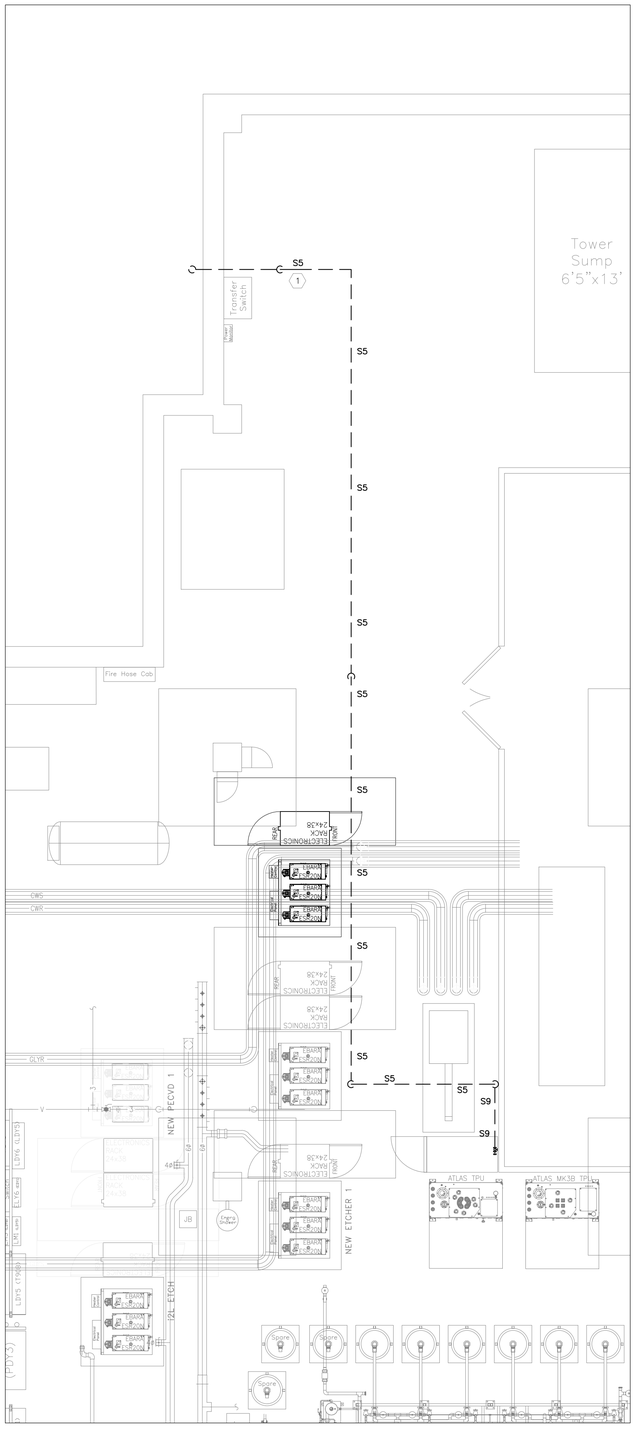
MONTREAL ROAD CAMPUS

drawing / dessin

EXTERIOR LAYOUT OF NEW INTAKES AND EXISTING BUILDING AREA

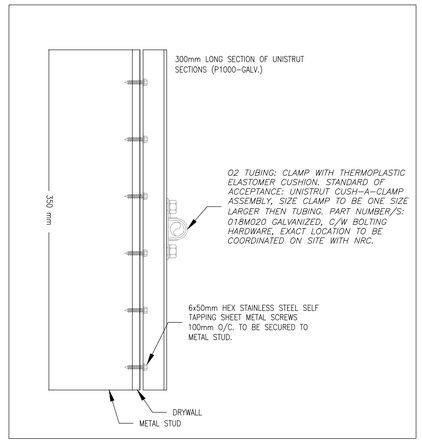
designed / conçu: RGC	date / date: 17 10 2016
drawn / dessiné: RGC	scale / échelle: 1:60
checked / vérifié: B.V	sheet / feuille: 3 of/de 8
approved / approuvé: B.V	W.O.no.: A1-008421-02 / D.T.no.

dwg.no. / dessin no.: 5200-M03



1 M06 TUBING LAYOUT IN BASEMENT (N.I.C)

SCALE : 1:50



2 M06 TUBING SUPPORT (S9-N.I.C)

STEAM AND CONDENSATE PIPING

	WORKING FLUID/GAS	SATURATED STEAM AND CONDENSATE
	DESIGN TEMPERATURE	-20 TO 340 'F
	DESIGN PRESSURE	15 PSIG
	PIPING SCHEDULE	STEAM-SCH 40 CONDENSATE- SCH 80
	TEST PRESSURE	1.5 x DESIGN-WATER/1.2xDESIGN-AIR
	TESTING FLUID	WATER / AIR
	TEST DURATION (MIN.)	90
	RADIOGRAPHY	NO
	SYSTEM DESIGN	ASME B31.1
	PIPE CONNECTION	<=50ø-THREADED
ASME STANDARDS	DESIGN CODE	B31.1
	FITTINGS	B16.5
	FLANGES	B16.5-A105
	NUTS	B18.2.2-A194-Gr 7
	BOLTS	B18.2.1-A193-Gr B7
	GASKETS	B16.20/B16.21
	THREADS	B16.5/B16.11
	PIPING MATERIAL	A106/A53 - Gr B - SEAMLESS
	VALVES	B16.34
	FLANGE CLASS	150/300

COMPRESSED AIR TUBING - FROM FILTER "F1" TO OXYGEN GENERATOR

	LOCATION	ROOM 087 AND 085
	WORKING FLUID	COMPRESSED AIR
	DESIGN TEMPERATURE ('F)	-20 TO 160
	DESIGN PRESSURE (PSIG)	150
	SIZE / TYPE	6 TO 50 DN / TYPE L
	OUTER JACKET MATERIAL	NONE
	SIZE (IN) / THICKNESS (IN)	-
	COAXIAL TEST PRESSURE (PSIG)	-
	TEST PRESSURE (PSIG)	175 - ALL JOINTS TO BE LEAKED CHECKED DURING TEST.
	TESTING FLUID	99.99% PURE NITROGEN
	TEST DURATION (MIN.)	90
	RADIOGRAPHY	NONE
	SYSTEM DESIGN STANDARD:	ASME B31.1
	TUBING CONNECTION	BRAZED (SIL-FS 15)-FITTINGS/SWAGELOK-VALVES
ASME STANDARDS	DESIGN CODE	B31.3
	FITTINGS	B16.5
	THREADS	B16.5/B16.11
	VALVES	B16.34
	PIPING MATERIAL	COPPER TUBING TYPE L DRAWN - TO ASTM B-819, TUBING TO BE CLEANED FOR OXYGEN SERVICE TO ASTM G93.

1. CONTRACTOR SHALL COORDINATE WITH TSSA TIME FOR INSPECTOR/PRESSURE TESTING.
2. TSSA APPROVAL DESIGN REGISTRATION NUMBER TO BE PROVIDED BY NRC.
3. CONTRACTOR SHALL BARE ALL COSTS ASSOCIATED WITH TSSA INSPECTION.
4. NITROGEN GAS (N2)
5. ALL EMPLOYEES INSTALLING COMPRESSION FITTINGS SHALL HAVE A VALID CERTIFICATED FROM COMPRESSION FITTING MANUFACTURER CERTIFYING THAT THEY HAVE BEEN TRAINED BY THE MANUFACTURER TO INSTALL COMPRESSION FITTINGS.
6. CONTRACTOR SHALL ENSURE THAT INTERIOR OF TUBING IS KEPT CLEAN OF ALL DUCT, OILS AND TYPICAL SITE MATERIALS DURING INSTALLATION. CONTRACTOR SHALL WEAR WHITE NYLON GLOVES DUCTING CONSTRUCTION TO INSURE THAT HAND OILS ARE NOT TRANSFERRED TO TUBING.
7. CONTRACTOR SHALL ENSURE THAT CLEANED, DEGREASED CUTTING TOOLS ARE USED FOR THIS TUBING.
8. ALL NPT CONNECTIONS TO BE SEALED WITH TEFLON TAPE.
9. CONTRACTOR TO CLEAN EXTERIOR OF TUBING TO REMOVE DISCOLORATION DUE TO BRAZING PROCEDURE.

COMPRESSED AIR TUBING - FROM COMPRESSORS TO FILTER "F1"

	LOCATION	ROOM 087
	WORKING FLUID	COMPRESSED AIR
	DESIGN TEMPERATURE ('F)	-20 TO 160
	DESIGN PRESSURE (PSIG)	125
	SIZE / TYPE	6 TO 50 DN / TYPE L
	OUTER JACKET MATERIAL	NONE
	SIZE (IN) / THICKNESS (IN)	-
	COAXIAL TEST PRESSURE (PSIG)	-
	TEST PRESSURE (PSIG)	175 - ALL JOINTS TO BE LEAKED CHECKED DURING TEST.
	TESTING FLUID	COMPRESSED AIR
	TEST DURATION (MIN.)	90
	RADIOGRAPHY	NONE
	SYSTEM DESIGN STANDARD:	ASME B31.1
	TUBING CONNECTION	BRAZED (SIL-FS 15)-FITTINGS/SWAGELOK-VALVES/THREADED
ASME STANDARDS	DESIGN CODE	B31.3
	FITTINGS	B16.5
	THREADS	B16.5/B16.11
	VALVES	B16.34
	PIPING MATERIAL	COPPER TUBING TYPE L DRAWN - TO ASTM B 88.

1. CONTRACTOR SHALL COORDINATE WITH TSSA TIME FOR INSPECTOR/PRESSURE TESTING.
2. TSSA APPROVAL DESIGN REGISTRATION NUMBER TO BE PROVIDED BY NRC.
3. CONTRACTOR SHALL BARE ALL COSTS ASSOCIATED WITH TSSA INSPECTION.
4. NITROGEN GAS (N2)
5. CONTRACTOR SHALL HAVE A VALID CERTIFICATED WITH TSSA FOR BRAZING APPLICATIONS.
6. OXYGEN SHALL BE REMOVED FROM INTERIOR OF COPPER TUBING DURING BRAZING BY CONTINUOUSLY PURGING COPPER WITH 99.99% PURE NITROGEN OR ARGON DURING BRAZING PROCESS.
7. ALL NPT CONNECTION TO BE SEALED WITH TEFLON TAPE SUITABLE FOR OXYGEN SERVICE, STANDARD OF ACCEPTANCE: SWAGELOK, PART NO.: MS-STR-8
8. ALL ELBOWS, REDUCERS, TEES, UNIONS, NPT MALE CONNECTOR/S, CAPS AND AXIALLY FITTINGS TO BE BRASS AND SHALL BE CLEAN FOR OXYGEN SERVICE (ASTM G93). STANDARD OF ACCEPTANCE: MANUFACTURER SWAGELOK.
9. THE USE OF FITTINGS AND COUPLINGS SHALL BE KEPT TO A MINIMUM. UNLESS ABSOLUTELY REQUIRED ALL 90° AND 45° TO BE COMPLETED BY BENDING TUBING. BENDING RADIUS TO MANUFACTURER RECOMMENDATIONS.
10. ALL BRAZED JOINTS TO BE CLEANED AFTER BRAZING.

OXYGEN TUBING - FROM OXYGEN GENERATOR (N.I.C)

	LOCATION	ROOM 085 AND EXTERIOR
	WORKING FLUID	90 TO 95% PURE OXYGEN
	DESIGN TEMPERATURE ('F)	-40 TO 160
	DESIGN PRESSURE (PSIG)	125
	SIZE	6 TO 25 DN
	OUTER JACKET MATERIAL	NONE
	SIZE (IN) / THICKNESS (IN)	-
	COAXIAL TEST PRESSURE (PSIG)	-
	TEST PRESSURE (PSIG)	150 - ALL JOINTS TO BE LEAKED CHECKED DURING TEST.
	TESTING FLUID	99.9% PURE NITROGEN
	TEST DURATION (HOURS)	24
	RADIOGRAPHY	ALL INTERIOR TUBING AND 10% OF EXTERIOR TUBING
	SYSTEM DESIGN STANDARD:	ASME B31.3
	TUBING CONNECTION TYPES	TUBE TO TUBE: ORBITAL WELDED TUBE TO VALVES, FILTER, GAUGES: SWAGELOK COMPRESSION FITTINGS AND THREADED
ASME STANDARDS	DESIGN CODE	B31.3
	FITTINGS	B16.5
	THREADS	B16.5/B16.11
	VALVES	B16.34
	PIPING MATERIAL	316 SEAMLESS STAINLESS STEEL TUBING -WALL THICKNESS (<=15DN): 0.049",(>15DN): 0.065". TUBING TO BE CLEANED FOR OXYGEN SERVICE TO ASTM G93.

1. CONTRACTOR SHALL COORDINATE WITH TSSA TIME FOR INSPECTOR/PRESSURE TESTING.
2. TSSA APPROVAL DESIGN REGISTRATION NUMBER TO BE PROVIDED BY NRC.
3. CONTRACTOR SHALL BARE ALL COSTS ASSOCIATED WITH TSSA INSPECTION.
4. NITROGEN GAS (N2)
5. ALL EMPLOYEES INSTALLING COMPRESSION FITTINGS SHALL HAVE A VALID CERTIFICATED FROM COMPRESSION FITTING MANUFACTURER CERTIFYING THAT THEY HAVE BEEN TRAINED BY THE MANUFACTURER TO INSTALL COMPRESSION FITTINGS.
6. CONTRACTOR SHALL ENSURE THAT INTERIOR OF TUBING IS KEPT CLEAN OF ALL DUCT, OILS AND TYPICAL SITE MATERIALS DURING INSTALLATION. CONTRACTOR SHALL WEAR WHITE NYLON GLOVED DUCTING CONSTRUCTION TO INSURE THAT HAND OILS ARE NOT TRANSFERRED TO TUBING.
7. CONTRACTOR SHALL ENSURE THAT CLEANED, DEGREASED CUTTING TOOLS ARE USED FOR CUTTING TUBING.
8. THE USE OF FITTINGS AND COUPLINGS SHALL BE KEPT TO A MINIMUM. UNLESS ABSOLUTELY REQUIRED ALL 90° AND 45° TO BE COMPLETED BY BENDING TUBING. BENDING RADIUS TO MANUFACTURER RECOMMENDATIONS.
9. ALL ELBOWS, REDUCERS, TEES, UNIONS, NPT MALE CONNECTOR/S, CAPS AND AXIALLY FITTINGS TO BE 316 STAINLESS STEEL AND SHALL BE CLEAN FOR OXYGEN SERVICE (ASTM G93). STANDARD OF ACCEPTANCE: MANUFACTURER SWAGELOK.
10. ALL NPT CONNECTION TO BE SEALED WITH TEFLON TAPE SUITABLE FOR OXYGEN SERVICE. STANDARD OF ACCEPTANCE: SWAGELOK, PART NO.: MS-STR-8

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DRAWING NOTES:

1. NEW OXYGEN TUBING TO BASEMENT OF CPFC, EXACT ROUTING TO BE COORDINATED ON SITE WITH NRC. FIRST 3 METERS OF TUBING ENTERING BASEMENT TO BE INSULATED. SEE PIPING SCHEMATIC. TO BE COMPLETED BY OTHERS.

No.	Date	Revision	By: Par:
1	17 10 2016	ISSUED FOR TENDER	RGC

Date Printed / Date imprimée

- Verify all dimensions and site conditions and be responsible for same
- Vérifier toutes les dimensions et l'etat des liéux et en assumer la responsabilité

A Detail no. No. du détail
B Location drawing no. sur dessin no.
C Drawing no. dessin no.

project / projet
M-50 NEW OXYGEN GENERATION SYSTEM

MONTREAL ROAD CAMPUS

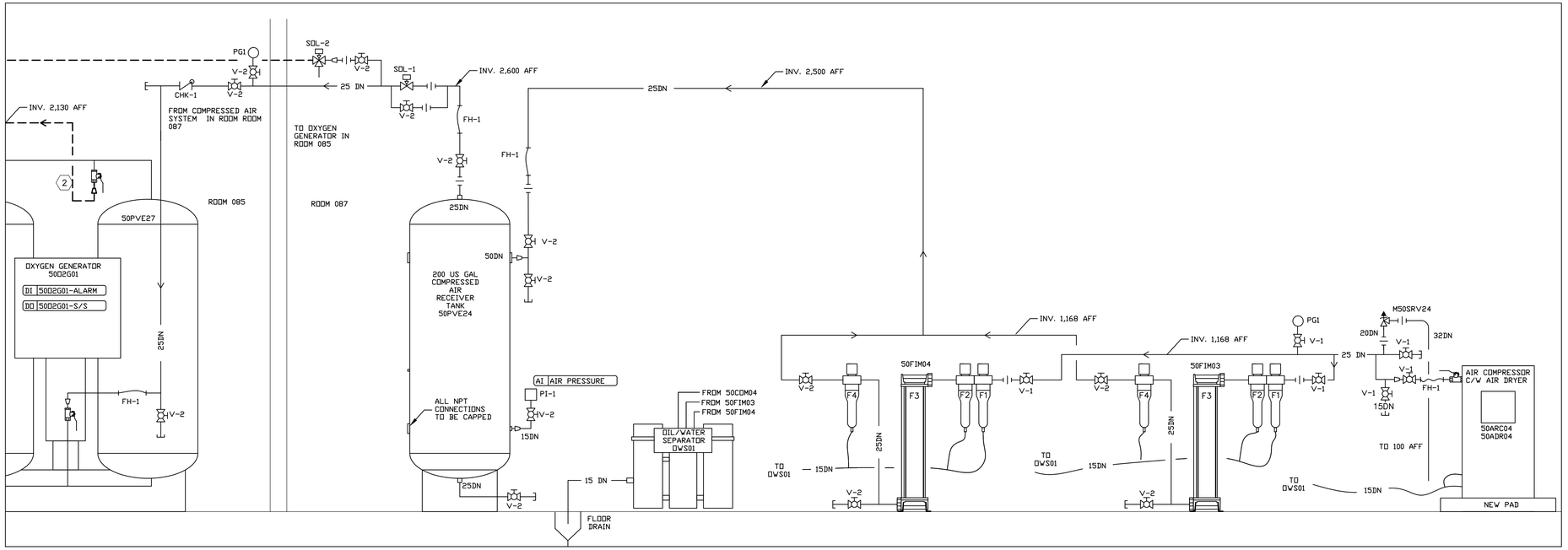
drawing / dessin
BASEMENT OXYGEN TUBING LAYOUT AND SCHEDULES

designed / conçu: RGC	date / date: 17 10 2016
drawn / dessiné: RGC	scale / échelle: AS INDICATED
checked / vérifié: B.V	sheet / feuille: 4 of/de 8
approved / approuvé: B.V	W.O.no.: A1-008421-02 / D.T.no.

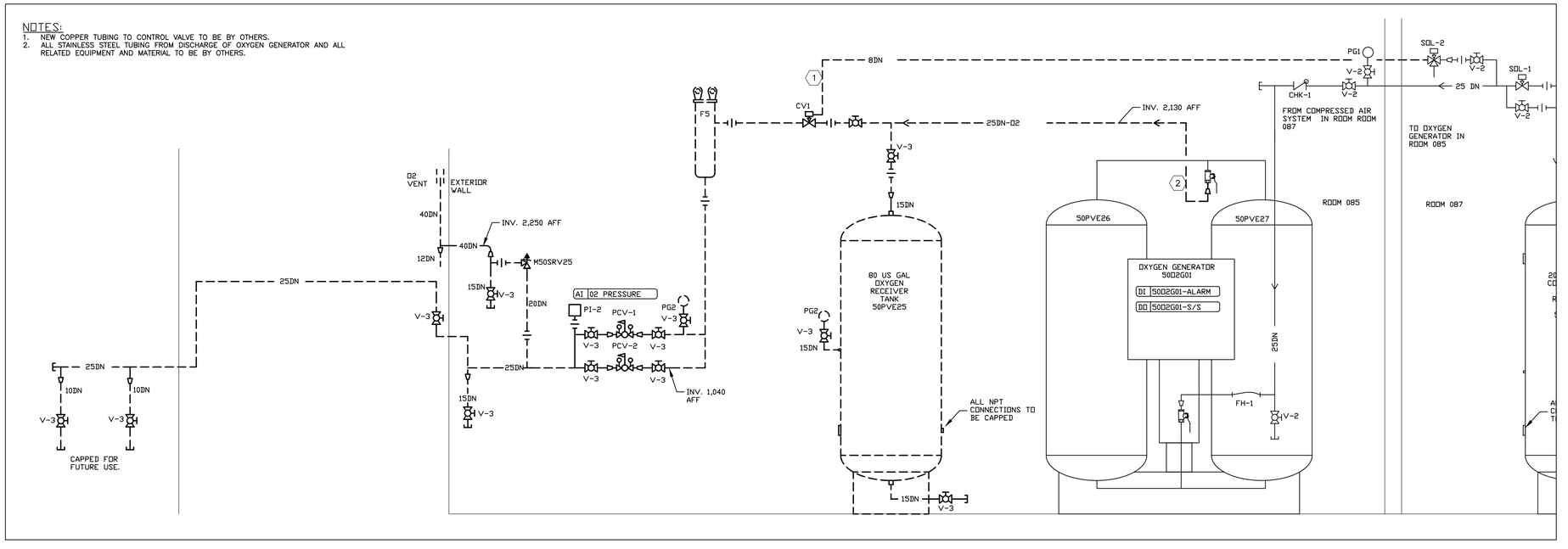
dwg.no. / dessin no.: 5200-M04

ASPM A1 (841x594)

0 10 20mm 40 60 80 100 120 140 160 180 200mm



1 M05 COMPRESSED AIR P&ID



2 M05 OXYGEN P&ID

C

0 10 20mm 40 60 80 100 120 140 160 180 200mm

ASPM A1 (841x594)

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MECHANICAL PIPING LEGEND	
SYMBOL	DESCRIPTION
	BALL VALVE
	GLOBE VALVE
	GENERAL VALVE
	CHECK VALVE
	VERTICAL ISOLATION VALVE
FAIL CLOSE	2-WAY CONTROL VALVE (DDC)
	SAFETY RELIEF VALVE
FAIL CLOSE / FAIL OPEN	PRESSURE REGULATING VALVE
	PIPE UP
	PIPE DOWN
	STRAINER
	FLEXIBLE HOSE
	REDUCER – CONCENTRIC
	UNION
	PIPE CAP
	CONTROL LINE
	PRESSURE GAUGE WITH COCK
	PRESSURE GAUGE WITH PIGTAIL
	FLOW DIRECTION ARROW
	CONTINUATION BREAK
P	PRESSURE SENSOR
	DRAWING NOTES
T	THERMOMETER (DDC)
AFF	ABOVE FINISHED FLOOR
AFF	THERMOMETER (DDC)
V-#	VALVE TAG
S#	SUPPORT TAG
PG#	PRESSURE GAUGE TAG
L-#	LOUVER TAG
BD#	BACKDRAFT DAMPER TAG
FD#	FIRE DAMPER TAG
PCV-#	PRESSURE CONTROL VALVE
SOL-#	SOLENOID VALVE
CHK-#	CHECK VALVE
N.I.C	NOT INCLUDED IN CONTRACT

- Verify all dimensions and site conditions and be responsible for same
- Vérifier toutes les dimensions et l'etat des lîéux et en assumer la responsabilité

A Detail no. / No. du détail
B Location drawing no. / sur dessin no.
C Drawing no. / dessin no.

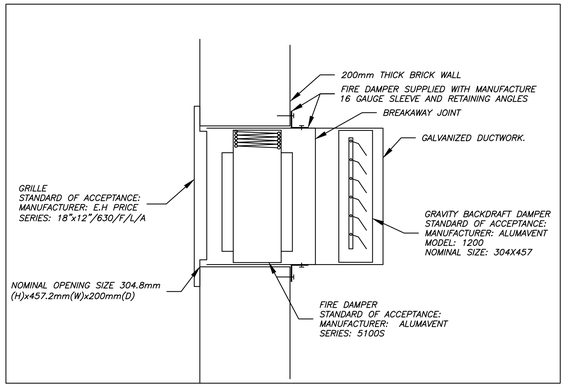
project / projet
M-50 NEW OXYGEN GENERATION SYSTEM

MONTREAL ROAD CAMPUS

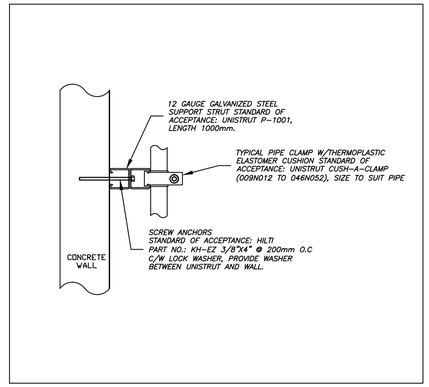
drawing / dessin
NEW COMPRESSED AIR AND OXYGEN SCHEMATIC

designed / conçu	date / date
RGC	17 10 2016
drawn / dessiné	scale / échelle
RGC	AS INDICATED
checked / vérifié	sheet / feuille
B.V	5 of/de 8
approved / approuvé	W.O.no. / D.T.no.
B.V	A1-008421-02

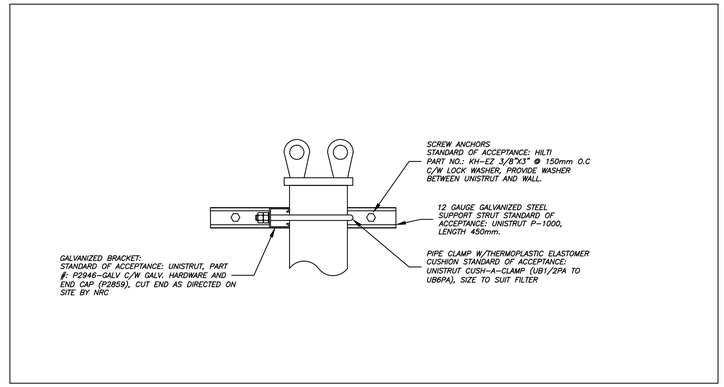
dwg.no. / dessin no.
5200-M05



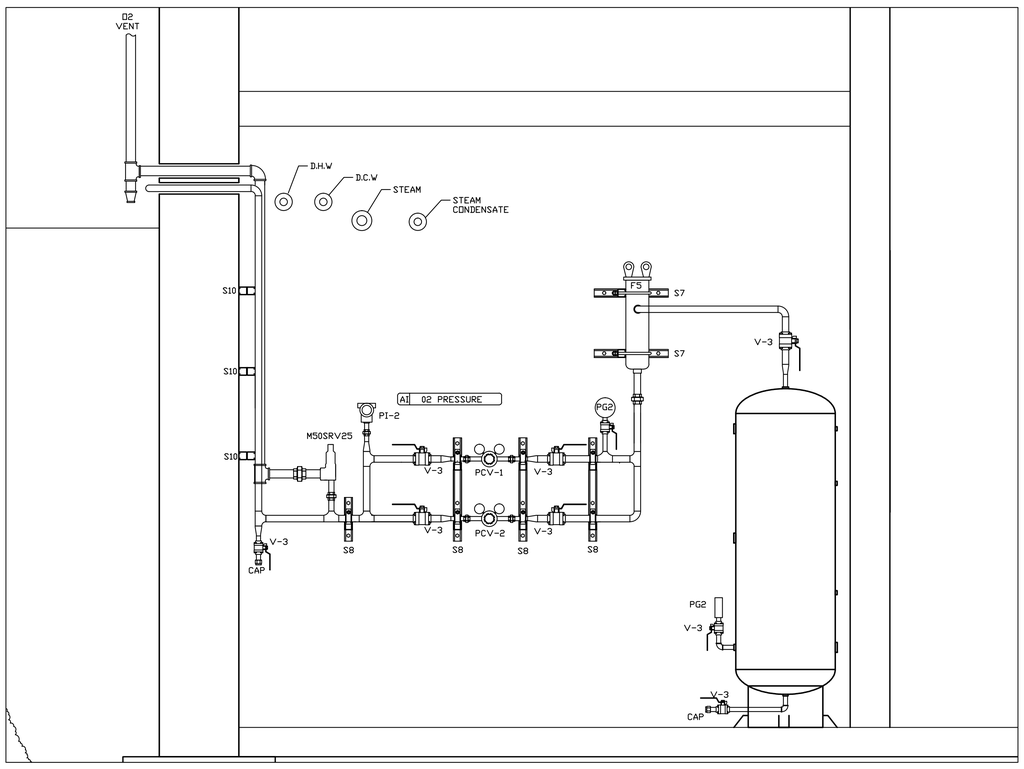
1 M06 GRILLE AND FIRE/BACKDRAFT DAMPER DETAIL



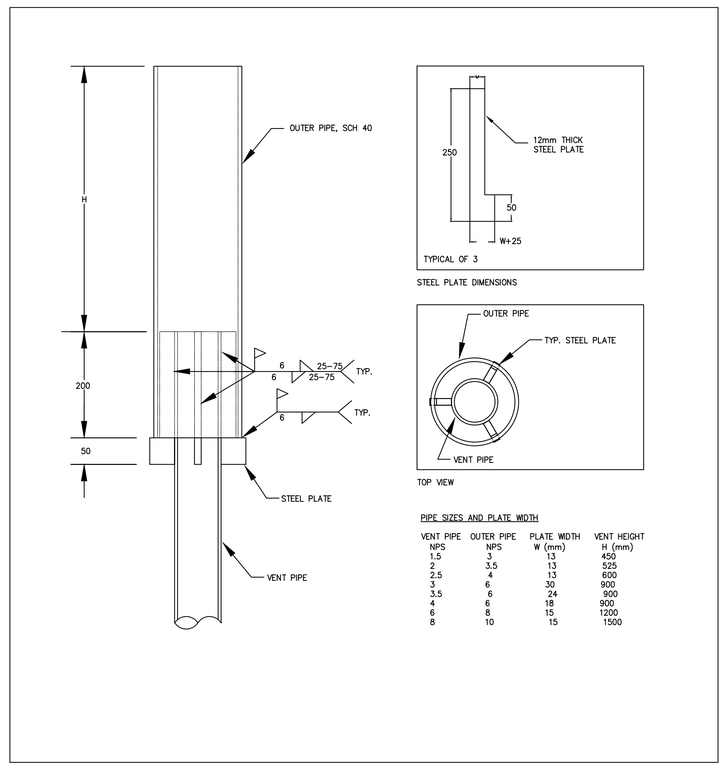
2 M06 TUBING SUPPORT (S10) (N.I.C)



3 M06 MECHANICAL SUPPORT (S7) (N.I.C)



4 M06 PIPING ELEVATION DETAIL IN ROOM 085 (N.I.C)



PIPE SIZES AND PLATE WIDTH

VENT PIPE NPS	OUTER PIPE NPS	PLATE WIDTH W (mm)	VENT HEIGHT H (mm)
1.5	3	13	450
2	3.5	13	525
2.5	4	13	600
3	6	30	900
3.5	6	24	900
4	6	18	900
6	8	15	1200
8	10	15	1500

5 M06 OXYGEN VENT (N.I.C)

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Division des services administratifs et gestion de l'immobilier
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No.	Date	Revision	By: Par:
1	17 10 2016	ISSUED FOR TENDER	RGC

Date Printed — Date imprimée

- Verify all dimensions and site conditions and be responsible for same
- Vérifier toutes les dimensions et l'etat des liéux et en assumer la responsabilité

A Detail no. No. du détail
B Location drawing no. sur dessin no.
C Drawing no. dessin no.

project / projet
M-50 NEW OXYGEN GENERATION SYSTEM

MONTREAL ROAD CAMPUS

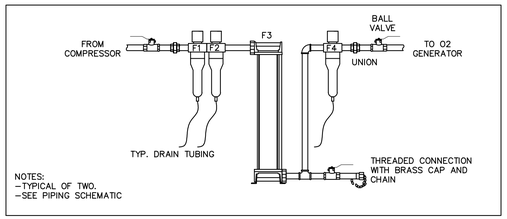
drawing / dessin
ELEVATION AND MECHANICAL DETAILS

designed / conçu	date / date
RGC	17 10 2016
drawn / dessiné	scale / échelle
RGC	AS INDICATED
checked / vérifié	sheet / feuille
B.V	6 of/de 8
approved / approuvé	W.O.no. / D.T.no.
B.V	A1-008421-02

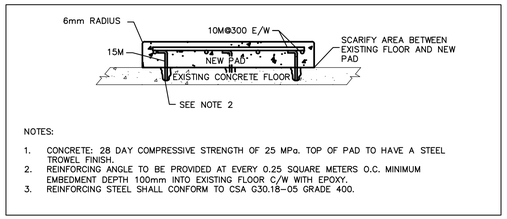
dwg.no. / dessin no.
5200-M06

ASPM A1 (841x594)

C
0 10 20mm 40 60 80 100 120 140 160 180 200mm



1 M07 COMPRESSED AIR FILTRATION ASSEMBLY (50FIM03/04)



NOTES:

1. CONCRETE: 28 DAY COMPRESSIVE STRENGTH OF 25 MPa. TOP OF PAD TO HAVE A STEEL TROWEL FINISH.
2. REINFORCING ANGLE TO BE PROVIDED AT EVERY 0.25 SQUARE METERS O.C. MINIMUM EMBEDMENT DEPTH 100mm INTO EXISTING FLOOR C/W WITH EPOXY.
3. REINFORCING STEEL SHALL CONFORM TO CSA G30.18-09 GRADE 400.

2 M07 NEW CONCRETE HOUSE KEEPING PAD DETAIL

FAN SCHEDULE

No.	LOCATION	DRIVE TYPE	FAN TYPE	CFM	S.P. IN WG.	FAN RPM	SONES	VOLTAGE	AMPS	MOTOR (HP)	NOTES
50XAF87	M50 ROOM 087	DIRECT	IN-LINE	3320	0.5	1725	14.8	230	–	1	STANDARD OF ACCEPTANCE: GREENHECK MODEL: SQ 160 C/W VG MOTOR, 0 TO 10VDC CONTROL WIRE INPUT AND STANDING NEOPRENE ISOLATORS.
50XAF85	M50: EXT.	DIRECT	CENTRIFUGAL	667	0.25	1725	–	115	–	1/4	STANDARD OF ACCEPTANCE: GREENHECK MODEL: SFD 06 C/W VG MOTOR, POSITION CCWUB, C/W: 0 TO 10VDC CONTROL WIRE INPUT AND RUBBER MOUNTS

NOTE:
1. PROVIDE FLEXIBLE CONNECTION AT INLET AND OUTLET OF FAN. FAN TO BE.
2. ALTERNATE/S MANUFACTURER: PENNBARRY, LOREN COOK
3. FANS TO BE SUPPLIED WITH A VERY GREEN (VG) MOTOR WHERE INDICATED.

CONTROL DAMPER SCHEDULE

No.	LOCATION	MOTOR (Y/N)	DIMENSIONS LENGTH X HEIGHT (MM)	TYPE	VOLTAGE	CONNECTION	AMPS /WATTS	CONTROL TYPE	NOTES
50DMP01	AIR INLET	Y	600x600	PARALLEL	120/1/60	FLANGED	TBD	DDC	STANDARD OF ACCEPTANCE:
50DMP02	BYPASS INLET	Y	600x600	OPPOSED	120/1/60	FLANGED	TBD	DDC	MANF.: TAMCO
50DMP03	OUTLET	Y	600x600	PARALLEL	120/1/60	FLANGED	TBD	DDC	SERIES: 9000 BF

NOTE:
1. DAMPERS MOTOR TO BE SIZED BY DAMPER MANUFACTURER. ACTUATOR TO BE CONTROLS BY A 4 TO 20mA CONTROL SINGLE.
2. ALTERNATE/S MANUFACTURER: ALUMAVENT

PRESSURE TRANSMITTER:
TAG: PT-1
WORKING FLUID COMPRESSED AIR
ACCURACY: +/- 0.06% OF READING
OPERATING PRESSURE RANGE: 0 TO 348 PSIG.
MAXIMUM PRESSURE: 150 PSIG.
OUTPUT: 4 TO 20MA
CERTIFICATE OF CALIBRATION
CANADIAN REGISTRATION NUMBER REQUIRED
CLEANED FOR OXYGEN SERVICE
CONNECTION: ¼ NPT-F
REQUIRED POWER: 24v, 20mA
PIPING MATERIAL: 316 ST
STANDARD OF ACCEPTANCE:
MANUFACTURER: ABB
MODEL: 266HSHPSBA1-E4-L5-P1-C1

TAG: PT-2 (N.I.C)

WORKING FLUID: 90 TO 95% PURE OXYGEN
ACCURACY: +/- 0.06% OF READING
OPERATING PRESSURE RANGE: 0-87 PSIG.
MAXIMUM PRESSURE: 50 PSIG.
OUTPUT: 4 TO 20MA
CERTIFICATE OF CALIBRATION
CANADIAN REGISTRATION NUMBER REQUIRED
CLEANED FOR OXYGEN SERVICE
CONNECTION: ¼ NPT-F
REQUIRED POWER: 24V, 20MA
PIPING MATERIAL: 316 ST
STANDARD OF ACCEPTANCE:
MANUFACTURER: ABB
MODEL: 266HSHMFBA1-E4-L5-P1-C1

PRESSURE GAUGE (PG#)

TAG	PG1	PG2 (N.I.C)
WORKING FLUID	COMPRESSED AIR	OXYGEN
MAXIMUM SYSTEM PRESSURE (kPa)	700	700
MAXIMUM SYSTEM TEMPERATURE (°C)	100	100
POINTER	ANODIZED BLACK	ANODIZED BLACK
MINIMUM SYSTEM TEMPERATURE (°C)	70	70
CONNECTION (NPT)	1/2	1/2
CONNECTION TYPE	S.T	S.T
BOURDON TUBE	S.T	S.T
ACCURACY (FULL SCALE)	1%	1%
CANADIAN REGISTRATION NUMBER	YES	YES
CASE MATERIAL	S.T	S.T
CONNECTION	LOWER/S.T	LOWER/S.T
DIAL SIZE	100mm	100mm
GLYCERIN FILLED	NO	NO
STANDARD – ASME	B40.100	B40.100
INTERNALS MATERIAL	S.T	S.T
GAUGE DUAL SCALES: PSIG (kPa)	0–150 (1,035)	0–150 (1,035)
STANDARD OF ACCEPTANCE MANUFACTURERS	WIKA, WEISS, WINTERS (PFP)	

NOTES:
- ALL GAUGES C/W WHITE FACE WITH BLACK FIGURES, ALUMINUM POINTER, ISOLATION VALVE.
- STAINLESS STEEL = S.T , THERMO PLASTIC – T.P
- GAUGES TO BE C/W 12Ø ISOLATION BALL VALVE
- GAUGES TO BE CLEANED FOR OXYGEN SERVICE AT ASTM G93

COMPRESSED AIR FILTERS:

TAG: F1 AND F4
TYPE: GENERAL PURPOSE COALESCING FILTER
INLET/OUTLET CONNECTION: 1" F-NPT
MAX. PRESSURE RATING: 232 PSIG
CRN NO.: TO BE PROVIDED
PARTIAL FILTRATION: 1 MICRON
REMAINING OIL AEROSOL: 0.1 PPM
RATED CAPACITY: 148 SCFM @ 102 PSIG
MAXIMUM WET PRESSURE DROP: 180 mbar
NOMINAL DIMENSION: 110x99x141mm
NOMINAL WEIGHT: 2.1 Kg
TEST METHOD: ISO 8573-2, ISO 12500-1
HOUSING TO BE C/W :
- DIFFERENTIAL PRESSURE INDICATOR
- AUTOMATIC DRAIN VALVE
- LIQUID LEVEL SIGHT GAUGE
- DRAIN QUICK DISCONNECT FITTING (1/4" NPS)
MANUFACTURER: ATLAS COPCO
MODEL: DD70+
CRN NO.: TO BE PROVIDED
NOTE:
- C/W 2 SPARE ELEMENTS
- C/W MOUNTING BRACKET

TAG: F2
TYPE: GENERAL PURPOSE COALESCING FILTER
INLET/OUTLET CONNECTION: 1" F-NPT
MAX. PRESSURE RATING: 232 PSIG
CRN NO.: TO BE PROVIDED
FILTRATION: 0.01 MICRON
REMAINING OIL AEROSOL: 0.01 PPM
RATED CAPACITY: 148 SCFM @ 102 PSIG
MAXIMUM WET PRESSURE DROP: 180 mbar
NOMINAL DIMENSION: 110x99x141mm
NOMINAL WEIGHT: 2.1 Kg
TEST METHOD: ISO 8573-2, ISO 12500-1
HOUSING TO BE C/W :
- DIFFERENTIAL PRESSURE INDICATOR
- AUTOMATIC DRAIN VALVE
- LIQUID LEVEL SIGHT GAUGE
- DRAIN QUICK DISCONNECT FITTING (1/4" NPS)
MANUFACTURER: ATLAS COPCO
MODEL: DD70+
CRN NO.: TO BE PROVIDED
NOTE:
- C/W 2 SPARE ELEMENTS
- C/W MOUNTING BRACKET

TAG: F3
TYPE: ACTIVATED CARBON FILTER
INLET/OUTLET CONNECTION: 1" F-NPT
MAX. PRESSURE RATING: 232 PSIG
NOMINAL DIMENSION: 715x387x190mm
CRN NO.: TO BE PROVIDED
RESIDUAL OIL CONTENT: 0.003 PPM
NOMINAL WEIGHT: 29Kg
FILTRATION: CLASS 1 - ISO 8571-1
RATED CAPACITY: 201 SCFM AT 102 PSIG
HOUSING TO BE C/W :
- OIL INDICATOR
MANUFACTURER: ATLAS COPCO
MODEL: QDT 95
CRN NO.: TO BE PROVIDED
NOTE:
- C/W 2 SPARE ELEMENTS
- C/W MOUNTING BRACKET
- TO BE SECURED TO CONCRETE FLOOR WITH 2 HILTI HAS SS RODS - 3/4"

OXYGEN GENERATOR:
TAG: 50O2G01
INLET CONNECTION: 3/4" F-NPT
OUTLET CONNECTION: 1/2" F-NPT
MANUFACTURER: ATLAS COPCO
MAXIMUM/MINIMUM INLET PRESSURE: 145/45 PSIG
MAXIMUM/MINIMUM AMBIENT TEMPERATURE: 113/41 °F
OXYGEN FLOW RATE: 7.2 SCFM @ 95% PURITY
MAXIMUM OXYGEN FLOW RATE: 8.4 SCFM @ 90% PURITY
MAXIMUM COMPRESSED AIR INLET FLOW RATE: 92.7 SCFM
MINIMAL DIMENSION (mm): 1180 (L)x860(w)x2200(H)
INSTALLATION WEIGHT: 840 Kg
OUTLET DUE POINT: -40°C
MUFFLER DISCHARGE CONNECTION: 100ømm
MINIMUM AIR INLET QUALITY: ISO 8573-1 CLASS 1-4-1
MANUFACTURER: ATLAS COPCO
MODEL: OGP 14
NOTES:
- C/W O2 MONITOR AND DISPLAY
- C/W 1 YEAR 100% WARRANTY ON ALL PARTS AND LABOR.
- C/W 1 YEAR SERVICE CONTRACTOR
- STARTUP AND COMMISSIONING
- ALL WORK ON UNIT/S TO BE COMPLETED AN AUTHORIZED SERVICE REPRESENTATIVE

AIR COMPRESSOR:
TAG: 50ACR04/50ADR04
OUTLET AIR CONNECTION: 3/4" F-NPT
DISCHARGE PRESSURE RANGE: 80 TO 181 PSIG
COMPRESSED AIR CAPACITY: 15.5-68.8 SCFM @ 102 PSIG
STANDARD OPERATING PRESSURE: 100 PSIG
COMPRESSOR TYPE: SINGLE STAGE ROTARY SCREW
NOMINAL DRIVE MOTOR EFFICIENCY: 94.3%
COOLING AIR CAPACITY: 2,077 CFM
MINIMUM/MAXIMUM AIR INTAKE TEMPERATURE: 32/115°F
MOTOR SHAFT SPEED: 1900 TO 7700 RPM
NOMINAL MOTOR POWER: 15 H.P
AUTOMATIC AND MANUAL DRAIN CONNECTION: 1/8" NPT
REFRIGERANT: 0.4 Kg-R 134a
MAXIMUM SOUND LEVEL AT 1 METER: 65 dB(A)
MAXIMUM/MINIMUM AMBIENT TEMPERATURE: 113/41 °F
FLOW RATE: 7.2 SCFM @ 95% PURITY
MAXIMUM COMPRESSED AIR INLET FLOW RATE: 92.7 SCFM
MINIMAL DIMENSION (mm): 445(L)x320(W)x590(H)
NOMINAL WEIGHT: 268 Kg
DISCHARGE DEW POINT: 38°F
POWER: 575V/3 PH/60Hz
NOTES:
- C/W INTEGRATED DRYER, AND ELEKRONIKON MK5 GRAPHIC CONTROLLER AND MONITORING DISPLAY
- C/W 1 YEAR 100% WARRANTY ON ALL PARTS AND LABOR.
- C/W 1 YEAR SERVICE CONTRACTOR
- STARTUP AND COMMISSIONING
- ALL WORK ON UNIT/S TO BE COMPLETED AN AUTHORIZED SERVICE REPRESENTATIVE

STANDARD OF ACCEPTANCE:
MANUFACTURER: ATLAS COPCO
MODEL: GA11VSD+FF

COMPRESSED AIR RECEIVER:
TAG: 50PVE24
CAPACITY: 200 USGAL
MAXIMUM ALLOWABLE WORKING PRESSURE : 200 PSIG @ 400°F
MINIMUM ALLOWABLE WORKING PRESSURE : -20°F @ 200 PSIG
NOMINAL DIMENSION: 750ø x 1800mm
STANDARD WALL MATERIAL: SA414G
MAXIMUM ALLOWABLE WORKING PRESSURE: 200 PSIG @400°F
NOMINAL SHIPPING WEIGHT: 210 Kg
SHIPPING MANUFACTURER: STEEL FAB
PART NO.: A10051
CRN NO.: REQUIRED
NOTE:
-TO BE SECURED TO CONCRETE FLOOR WITH 4 HILTI HAS SS RODS - 1/2"
-PROVIDE NON SHRINK GROUT BETWEEN BASE AND CONCRETE FLOOR AS REQUIRED FOR LEVELING.
-ALL CONNECTIONS TO BE C/W STEEL PLUG
-RECEIVED TO BE CLEANED FOR OXYGEN SERVICE (ASTM G93)

OXYGEN RECEIVER: (N.I.C)
TAG: 50PVE25
CAPACITY: 80 USGAL
MAXIMUM ALLOWABLE WORKING PRESSURE: 200 PSIG @ 400°F
MINIMUM ALLOWABLE WORKING PRESSURE: -20°F @ 200 PSIG
NOMINAL DIMENSION: 500ø x 1575mm
STANDARD WALL MATERIAL: 304 STAINLESS STEEL
MAXIMUM ALLOWABLE WORKING PRESSURE: 200 PSIG @400°F
NOMINAL SHIPPING WEIGHT: 210 KG
SHIPPING MANUFACTURER: STEEL FAB
ALL CONNECTIONS TO BE C/W STEEL PLUG
PART NO.: A10325 (304 STAINLESS STEEL)
CRN NO.: REQUIRED
NOTE:
-TO BE SECURED TO CONCRETE FLOOR WITH 4 HILTI HAS SS RODS - 1/2"
-PROVIDE NON SHRINK GROUT BETWEEN BASE AND CONCRETE FLOOR AS REQUIRED FOR LEVELING.
-ALL CONNECTIONS TO BE C/W STEEL PLUG
-RECEIVER TO BE CLEANED FOR OXYGEN SERVICE (ASTM G93)

OIL AND WATER SEPARATOR:
TAG: 50DWS01
4 INLET CONNECTION: 1/2" NPT-F
DRAIN CONNECTION: 1/2" NPT-F
MANUFACTURER: ATLAS COPCO
MODEL: DSC 95
NOTE: TO BE C/W 1 SPARE MAINTENANCE KIT

FLEXIBLE HOSE:
TAG: FH-1
MINIMUM ALLOWABLE WORKING PRESSURE: 875 PSIG @ 100°F
CRN #: REQUIRED
CORRUGATED LINER TUBE MATERIAL:
-SA240 - T321 STAINLESS STEEL
END CONNECTIONS: FEMALE JIC SWIVEL/MALE JIC×
MALE NPT ADAPTOR
BRAID MATERIAL: SA240-T304 STAINLESS STEEL
C/W RETAINER COLLAR
LIVE LENGTH: 400MM
MINIMUM STATIC BENDING RADIUS: 100MM
STANDARD: ASME B31.1
MANUFACTURER: FLEX-PRESSION LTD
MODEL NO.:
25DN# FP08-16-400MM-CS-CRN
20DN# FP08-12-400MM-CS-CRN

OXYGEN FILTER: (N.I.C)
TAG: F5
TYPE: PARTIAL FILTER
INLET/OUTLET CONNECTION: 1/2" F-NPT
MAX. PRESSURE RATING: 232 PSIG
CRN NO.: TO BE PROVIDED
HOUSING MATERIAL: 304 STAINLESS STEEL
FILTRATION: 1 MICRON
PRESSURE DROP: LESS THEN 1 PSIG @ 85 SCFM
MANUFACTURER: NANO PURIFICATION
MODEL: PF-0085-M1-D2
CRN NO.: TO BE PROVIDED
NOTE:
- C/W SPARE ELEMENT
- C/W MOUNTING BRACKET

PRESSURE CONTROL VALVE (N.I.C)

TAG	PCV-1 AND PCV-2
MAX. INLET PRESSURE	1000 kPa (145 PSIG)
OPERATING INLET PRESSURE	655 kPa (90 PSIG)
OPERATING OUTLET PRESSURE	275 kPa (40 PSIG)
MAXIMUM REQUIRED FLOW	11 SCFM
INLET CONNECTION	1/2" F-NPT
OUTLET CONNECTION	1/2" F-NPT
MAXIMUM OPERATING TEMPERATURE	350°C
CANADIAN REGISTRATION NUMBER	REQUIRED
BODY MATERIAL	316 STAINLESS STEEL
LEAKAGE	ANSI CLASS 6
MINIMUM RANGEABILITY	1:20
INTERNALS	STAINLESS STEEL
SENSING LINE CONNECTION	6.35 NPT
MAXIMUM ALLOWABLE PRESSURE AT 232°C	3,447 kPa (500 PSIG)
MAXIMUM FLOW COEFFICIENT (MAX.–Cv)	1
INLET/OUTLET GAUGES FACE DIAMETER	63mmø
INLET RANGE	0 TO 150 PSIG
OUTLET RANGE	0 TO 50 PSIG
CONNECTION	1/4" M-NPT
STANDARD OF ACCEPTANCE MANUFACTURER	SWAGELOK
MODEL	KHFAEJF818E20050

NOTES:
- STEAM CONTROL VALVE ASSEMBLY TO BE FACTORY ASSEMBLED AND TESTED. STARTUP OF VALVE ASSEMBLY TO BE BY MANUFACTURER'S REPRESENTATIVE.
- TO BE CLEANED FOR OXYGEN SERVICE TO ASTM G93

COMPRESSED AIR SAFETY RELIEF VALVE

TAG	50SRV24
SET PRESSURE	125 PSIG (862 kPa)
WORKING FLUID	COMPRESSED AIR
INLET CONNECTION	3/4" M-NPT
OUTLET CONNECTION	3/4" M-NPT
ASME	SECTION VIII
CANADIAN REGISTRATION NUMBER	REQUIRED
ORIFICE SIZE	D
BODY MATERIAL	BRASS
ASME SECTION	1 – 10% OVER PRESSURE
INTERNALS MATERIAL	STAINLESS STEEL
CAPACITY AT SET PRESSURE	397 SCFM
OPTIONS TO BE INCLUDED :	–EXTERNAL LIFT LEAVER –EXPOSED SPRING –BUBBLE TIGHT SEALING
STANDARD OF ACCEPTANCE MANUFACTURERS	APOLLO, SERIES 19, – ASME SECTIONS VIII

OXYGEN SAFETY RELIEF VALVE (N.I.C)

TAG	50SRV25
SET PRESSURE	45 PSIG (310 kPa)
WORKING FLUID	90 TO 95% PURE OXYGEN
INLET CONNECTION	1/2" M-NPT
OUTLET CONNECTION	3/4" M-NPT
ASME	SECTION VIII
CANADIAN REGISTRATION NUMBER	REQUIRED
ORIFICE SIZE	D
BODY MATERIAL	STAINLESS STEEL
ASME SECTION	1 – 10% OVER PRESSURE
INTERNALS MATERIAL	STAINLESS STEEL
CAPACITY AT SET PRESSURE	131 SCFM
OPTIONS TO BE INCLUDED :	–EXTERNAL LIFT LEAVER –EXPOSED SPRING –BUBBLE TIGHT SEALING –CLEANED FOR OXYGEN SERVICE (ASTM G93)
STANDARD OF ACCEPTANCE MANUFACTURERS	APOLLO, SERIES 511, – ASME SECTIONS VIII

VALVES (V-#)

TAG	V-1	V-2	V-3 (N.I.C)
WORKING FLUID	AIR	AIR	OXYGEN
MINIMUM PRESSURE RATING (kPa)	15,000@-28°C	15,000@-28°C	15,000@-28°C
TEMPERATURE RATING (°C)	-28 TO 93	-28 TO 93	-28 TO 93
CONNECTION TYPE	SWAGELOK	SWAGELOK	SWAGELOK
OXYGEN CLEANED	NO	(ASTM G93)	(ASTM G93)
SEAT MATERIAL	PTFE	PTFE	PTFE
LOCKABLE	OPEN & CLOSED	OPEN & CLOSED	OPEN & CLOSED
BODY MATERIAL	BRASS	BRASS	STAINLESS STEEL
CANADIAN REGISTRATION NUMBER	YES	YES	YES
CONNECTION SIZE	LINE SIZE	LINE SIZE	LINE SIZE
STANDARD OF ACCEPTANCE MANUFACTURER	SWAGELOK	SWAGELOK	SWAGELOK
PART NUMBER	SERIES 60	SERIES 60	SERIES 60
ALTERNATE MANUFACTURER:	DK-LOK	DK-LOK	DK-LOK

NOTES:

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1	17 10 2016	ISSUED FOR TENDER	RGC

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project / projet
M-50 NEW OXYGEN GENERATION SYSTEM

MONTREAL ROAD CAMPUS

drawing / dessin
DETAILS AND SCHEDULES

designed / conçu: RGC	date / date: 17 10 2016
drawn / dessiné: RGC	scale / échelle: AS INDICATED
checked / vérifié: B.V	sheet / feuille: 7 of/de 8
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dwg.no.: 5200-M07	D.T.no. / dessin no.

ASPM A1 (841x594)

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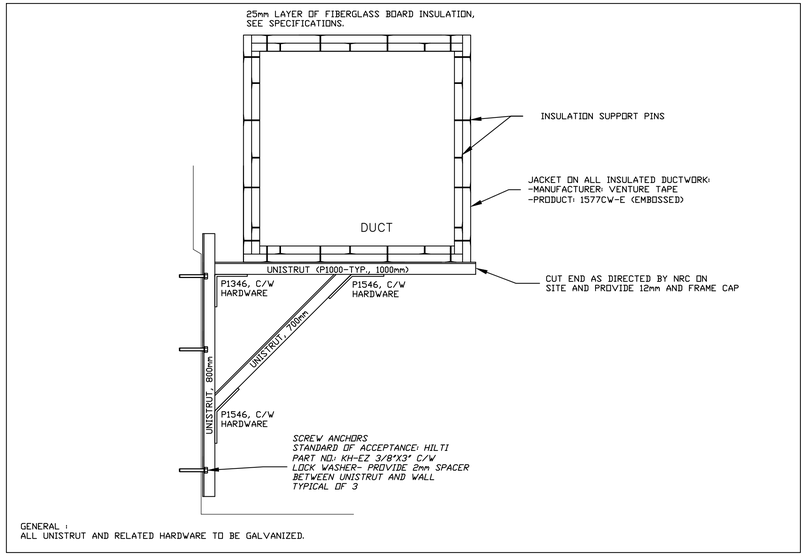
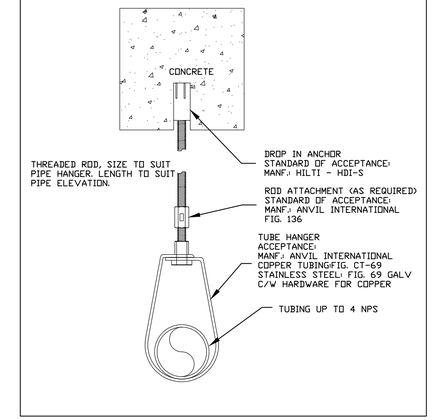


3 M08 INSULATED DUCTWORK SUPPORT (S4)



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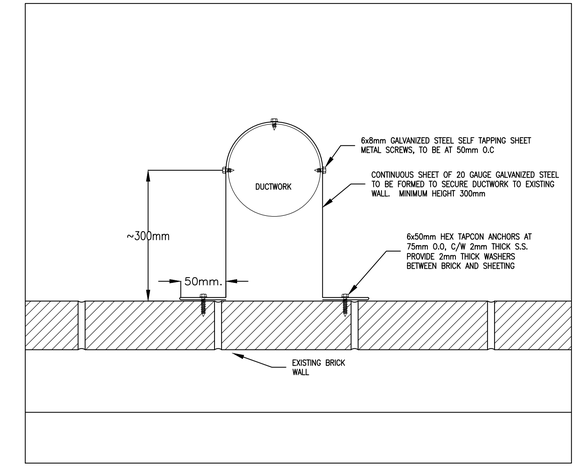
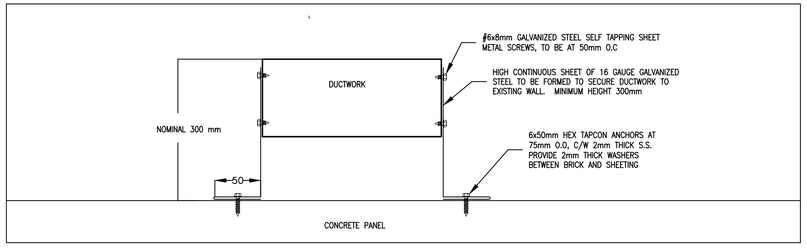
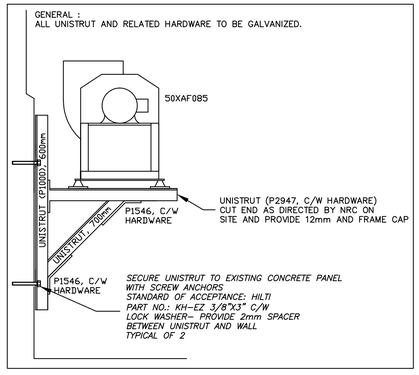


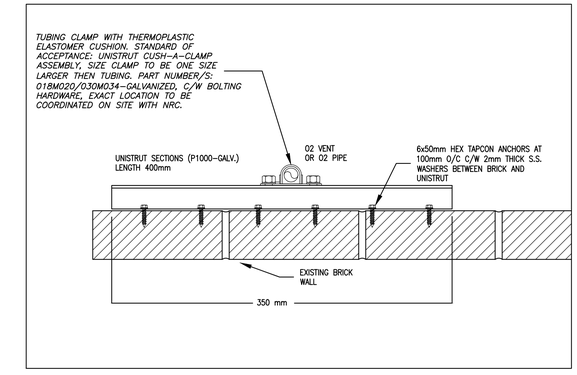
2 M08 DUCTWORK SUPPORT (S1)



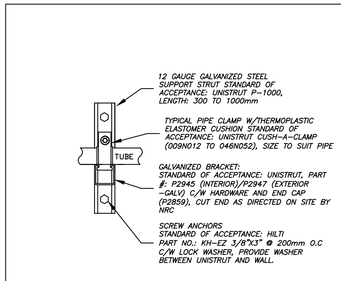
6 M08 DUCTWORK SUPPORT (S6)



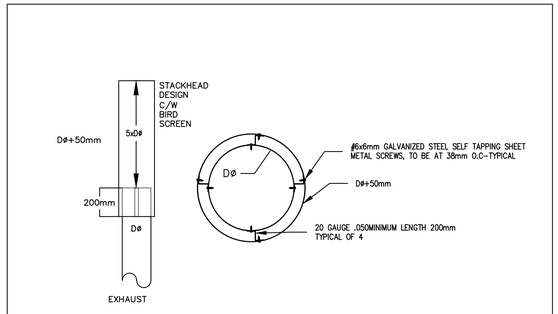
4 M08 MECHANICAL SUPPORT (S3)



5 M08 TUBING SUPPORT (S2)



2 M08 TUBING SUPPORT (S8)



8 M08 DUCTWORK STACKHEAD DESIGN DETAIL

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CONTROLS SEQUENCES OF OPERATION.

1. EXHAUST FAN (50XAF85) AND DAMPERS (50DMP01, 02 AND 03)
   OUTSIDE AIR TEMPERATURE >=65° F
   DAMPERS: 50DMP01 AND 03 100% OPEN
   50DMP02 100% CLOSED
   EXHAUST FAN: MODULATE TO MAINTAIN ROOM TEMPERATURE A SET POINT OF 72° F
   OUTSIDE AIR TEMPERATURE < 65° F
   DAMPERS: MODULATE DAMPERS TO MAINTAIN SUPPLY AIR TEMPERATE AT A SET-POINT OF 65° F.
   EXHAUST FAN: MODULATE TO MAINTAIN ROOM TEMPERATURE AT SET POINT OF 72° F.
2. PRESSURE INDICATORS (P1-1 AND 2)
   P1-1: COMPRESSED AIR PRESSURE SENSOR:
   IF PRESSURE <= 80 PSIG SOUND LEVEL 2 ALARM
   P1-2: OXYGEN PRESSURE SENSOR:
   IF PRESSURE >= 40 PSIG
   SOUND LEVEL 1 ALARM, CLOSE SOL-1 AND SOL-2 AND DE-ENERGIZE COMPRESSOR AND OXYGEN GENERATOR.

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MONTREAL ROAD CAMPUS

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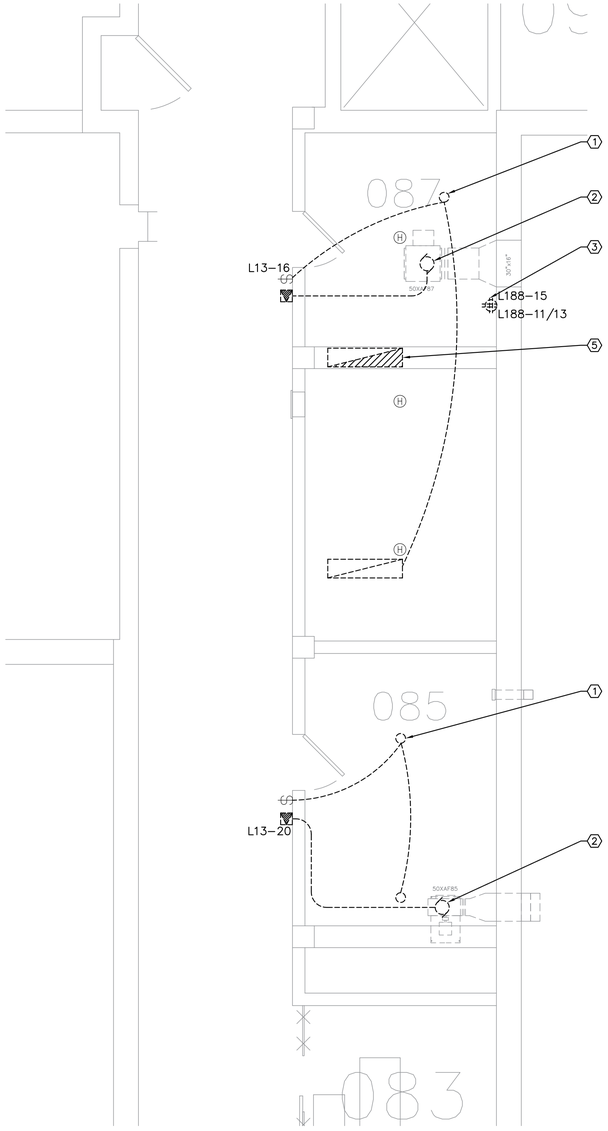
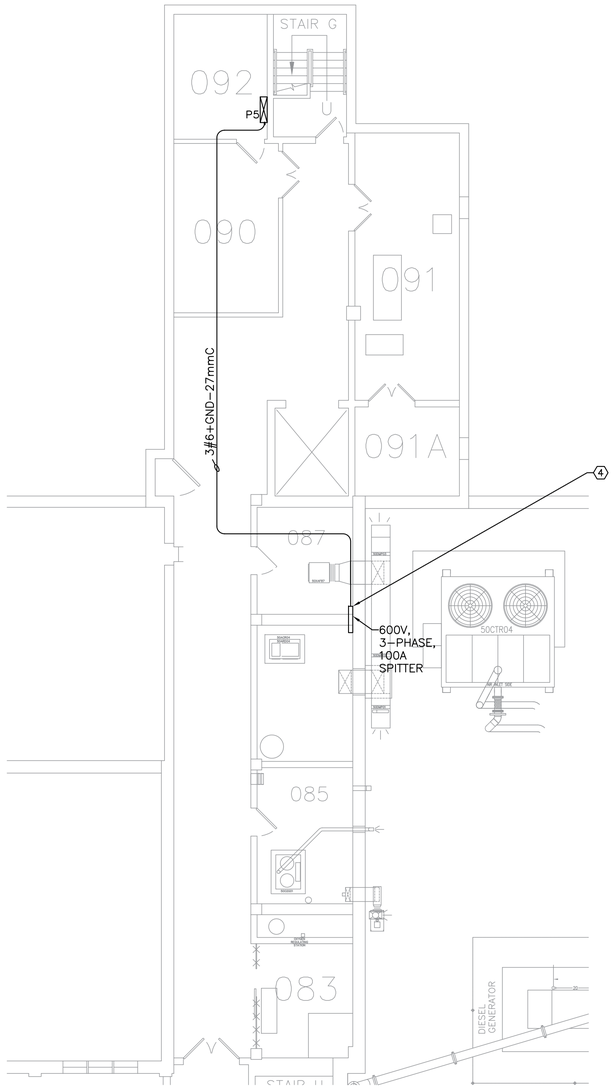


1 E01 POWER AND LIGHTING – DEMOLITION

SCALE: 1:50



2 E01 POWER – NEW DISTRIBUTION WORK

SCALE: 1:100

DRAWING NOTES

1. TYPICAL:
DISCONNECT AND REMOVE EXISTING LIGHTING FIXTURE C/W WIRING AND CONDUITS WITHIN ROOM AND RETAIN CIRCUIT FOR RE–USE IN NEW CONSTRUCTION.

2. TYPICAL:
EXISTING EXHAUST FAN TO BE REMOVED BY MECHANICAL CONTRACTOR. DISCONNECT AND REMOVE ASSOCIATED WIRING, CONDUIT AND STARTER SWITCH. RETAIN CIRCUIT FOR RE–USE IN NEW CONSTRUCTION. COORDINATE ON SITE WITH MECHANICAL CONTRACTOR.

3. 120V AND 240V RECEPTACLES TO BE DISCONNECTED AND REMOVED. RETAIN CIRCUITS FOR RE–USE IN NEW CONSTRUCTION. REFER TO 1/E02 FOR DETAILS.

4. PROVIDE NEW SPLITTER WITHIN ROOM 087 AND NEW 600V, 3P, 60A BREAKER WITHIN PANEL P5 AND MAKE CONNECTIONS AS SHOWN.

5. DISCONNECT AND REMOVE EXISTING EMERGENCY LIGHTING FIXTURE AND RETAIN EXISTING EMERGENCY CIRCUIT FOR REUSE IN NEW CONSTRUCTION.

LEGEND

SYMBOL	DESCRIPTION
	NEW LIGHTING FIXTURE – TYPE AS SHOWN
	LIGHTING FIXTURE ON EMERGENCY POWER
	EXISTING LIGHTING FIXTURE – TO BE REMOVED
$	LIGHT SWITCH
H	FIRE ALARM HEAT DETECTOR
	HARDWIRED CONNECTION
J	JUNCTION BOX
	DISCONNECT SWITCH
	1–PHASE ELECTRIC MOTOR
	MANUAL STARTER
	DUPLEX RECEPTACLE
	QUAD RECEPTACLE
	SURFACE MOUNTED PANEL
	SPLITTER
W.P	WEATHER PROOF
VFD	VARIABLE FREQUENCY DRIVE
———	DARK SOLID LINE DENOTES NEW OR RELOCATED
———	LIGHT SOLID LINE DENOTES EXISTING TO REMAIN
- - - - - -	DARK DASHED LINE DENOTES DEMOLITION

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GENERAL NOTES

A READ THIS DRAWING IN CONJUNCTION WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS.

B CONTRACTORS TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO DEMOLITION OR CONSTRUCTION AND REPORT ANY ERRORS OR OMISSIONS TO NRC DEPARTMENTAL REPRESENTATIVE.

C CONTRACTORS MUST VISIT THE SITE & FULLY FAMILIARIZE THEMSELVES WITH THE SCOPE OF THE WORK.

D PREVENT THE SPREAD OF DUST & DEBRIS BEYOND THE WORK AREA AND CLEAN ALL SURFACES AT COMPLETION.

E MAKE GOOD ALL SURFACES AFFECTED BY THIS WORK.

F COORDINATE ALL SHUTDOWNS WITH THE NRC DEPARTMENTAL REPRESENTATIVE.

G FILL ALL HOLES, PATCH & PAINT ALL SURFACES IN CONTRACT AREA. COLOUR SCHEME TO MATCH EXISTING.

H REMOVE MEANS REMOVE AND DISPOSE OF OFF SITE UNLESS OTHERWISE NOTED.

I PROVIDE LABELS TO NEW DEVICES TO INDICATE POWER SOURCE. UPDATE PANEL SCHEDULES AFTER JOB COMPLETION.

J REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR FINAL PLACEMENT OF LIGHT FIXTURES.

K ALL WIRE TO BE IN EMT UNLESS OTHERWISE NOTED.

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MONTREAL ROAD CAMPUS

drawing / dessin
POWER NEW AND DEMOLITION

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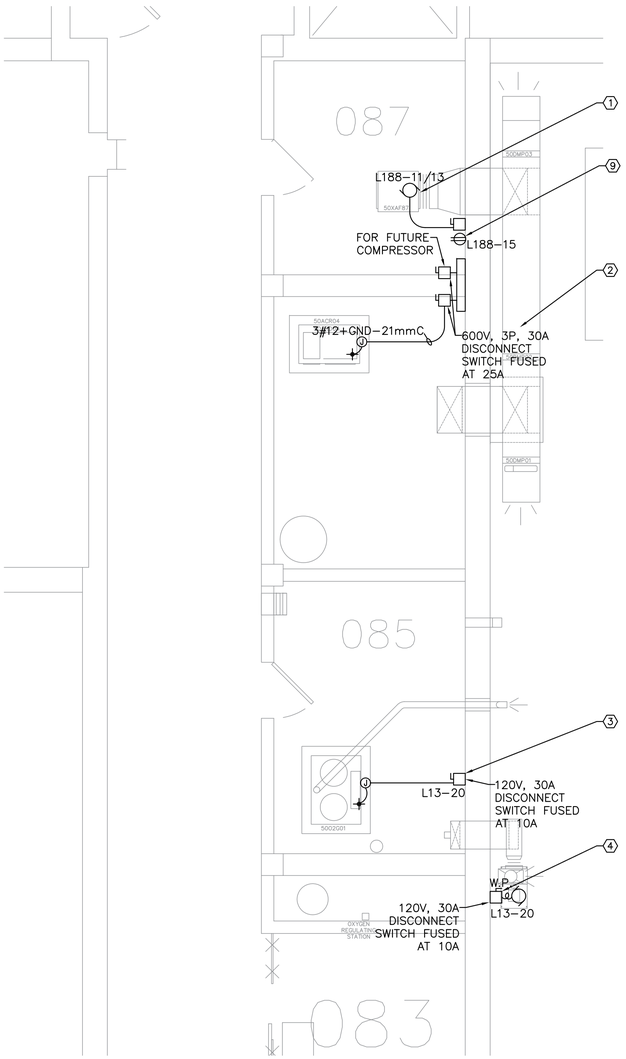
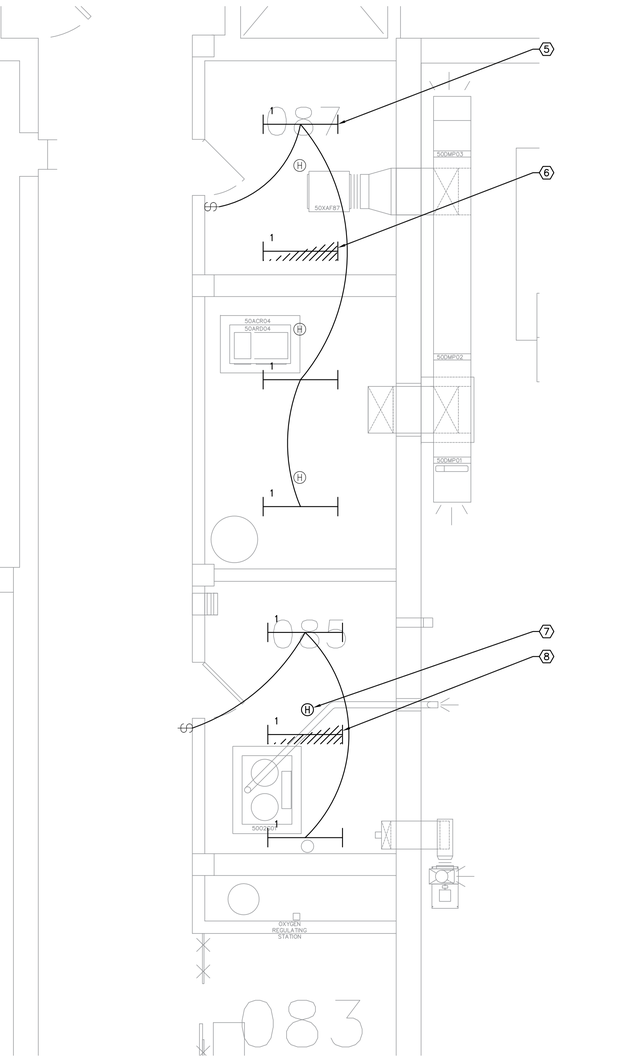


1 E02 POWER – NEW WORK

SCALE: 1:50



2 E02 LIGHTING – NEW WORK

SCALE: 1:100

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	CATALOG NUMBER	LAMPS PER FIXTURE				VOLT	MOUNTING	REMARKS
			QTY	TYPE	WATTS	COLOUR			
1	LED LINEAR	*PHILIPS CFI DAY-BRITE LF-4-FR-39-40-U-LAG	1	LED	41W	4000K	120V	SUSPENDED	C/W 305mm STEM AND CANOPY SET

*OR EQUIVALENT APPROVED BY NRC DEPARTMENTAL REPRESENTATIVE

3 E02 LIGHTING FIXTURE SCHEDULE

SCALE: 1:50

DRAWING NOTES

1. NEW 240V, 1–PHASE, 1H.P. EXHAUST FAN BY MECHANICAL CONTRACTOR. PROVIDE NEW DISCONNECT SWITCH AND CONNECTION TO EXHAUST FAN. RE–USE CIRCUITS MADE AVAILABLE BY DEMOLITION WORK. REFER TO 1/E01. COORDINATE ON SITE WITH MECHANICAL CONTRACTOR.
2. TYPICAL: PROVIDE NEW FUSED DISCONNECT SWITCH AT NEW SPLITTER AND CONNECT TO NEW COMPRESSOR. COMPRESSOR BY MECHANICAL CONTRACTOR. COORDINATE INSTALLATION ON SITE WITH MECHANICAL CONTRACTOR.
3. PROVIDE NEW FUSED DISCONNECT SWITCH AND CONNECT TO NEW OXYGEN GENERATOR. RE–USE CIRCUIT MADE AVAILABLE BY DEMOLITION WORK. REFER TO 1/E01 AND UPDATE PANEL SCHEDULE. OXYGEN GENERATOR BY MECHANICAL CONTRACTOR. COORDINATE INSTALLATION ON SITE WITH MECHANICAL CONTRACTOR.
4. NEW EXHAUST FAN BY MECHANICAL CONTRACTOR. PROVIDE NEW W.P. FUSED DISCONNECT SWITCH AND MAKE CONNECTIONS. RE–USE EXISTING CIRCUIT MADE AVAILABLE BY DEMOLITION WORK. REFER TO 1/E01 AND UPDATE PANEL SCHEDULE. COORDINATE INSTALLATION AND EXACT LOCATION ON SITE WITH MECHANICAL CONTRACTOR.
5. TYPICAL: PROVIDE NEW LIGHTING FIXTURE AND CONNECT TO EXISTING LIGHTING CIRCUIT FOR THIS ROOM. REFER TO LUMINAIRE SCHEDULE ON E02.
6. PROVIDE NEW LIGHTING FIXTURE AND CONNECT TO EXISTING EMERGENCY CIRCUIT FOR THIS ROOM. REFER TO LUMINAIRE SCHEDULE ON E02.
7. PROVIDE NEW CONVENTIONAL HEAT DETECTOR TO MATCH EXISTING AND CONNECT TO LOCAL INITIATING DEVICE LOOP. PROVIDE VERIFICATION UPON JOB COMPLETION. REFER TO SPECIFICATIONS FOR DETAILS. EXISTING SYSTEM IS EDWARDS.
8. PROVIDE NEW LIGHTING FIXTURE AND CONNECT TO EXISTING EMERGENCY CIRCUIT IN ROOM 087. REFER TO LUMINAIRE SCHEDULE ON E02.
9. PROVIDE NEW DUPLEX RECEPTACLE AND CONNECT TO EXITING CIRCUIT AS SHOWN.

PANEL L188

VOLTAGE	120/240			
PHASE	1			
WIRE	3			
RATING AMPS	225			
LOCATION	1ST FL.CORRIDOOR			
MODEL NO.	SQUARE D			
	NQO			
FED FROM	LD4			
LIGHTS	15	1	2	15 LIGHTS
LIGHTS	15	3	4	15 TWO SPEED EXAUST
HEATER	15	5	6	15 TWO SPEED EXAUST
A/C UNIT	15	7	8	15 RM 189G LIGHTS AND REC.
A/C UNIT	15	9	10	15 GARAGE DOOR (RECEIVING)
		11	12	15 .50 UNH 13 + 14
EXHAUST FAN RM.87 *	20	13	14	15 SINGLE REC.
RECEPTACLE	15	15	16	15 30A REC.
		17	18	15 30A REC.
SPARE	15	19	20	15 5–20R REC RM 090
ROOF SOLVENT UNIT	15	21	22	15 5–20R REC RM 090
ROOF SOLVENT UNIT	15	23	24	15 5–20R REC RM 090
20A WALL REC. RM 090	20	25	26	15 5–20R REC CORRIDOR
		27	28	
		29	30	

* NEW LOAD ON EXISTING BREAKER
△ PROVIDE NEW BREAKER CONNECT TO NEW LOAD

4 E02 PANEL SCHEDULE

NTS

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