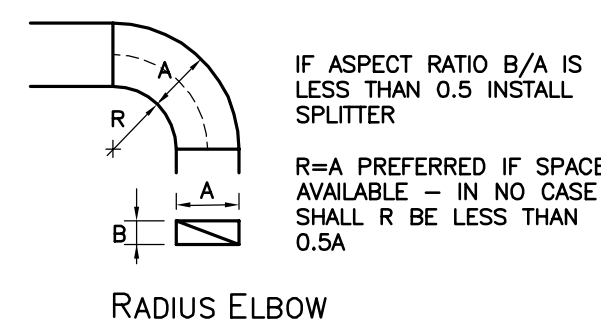
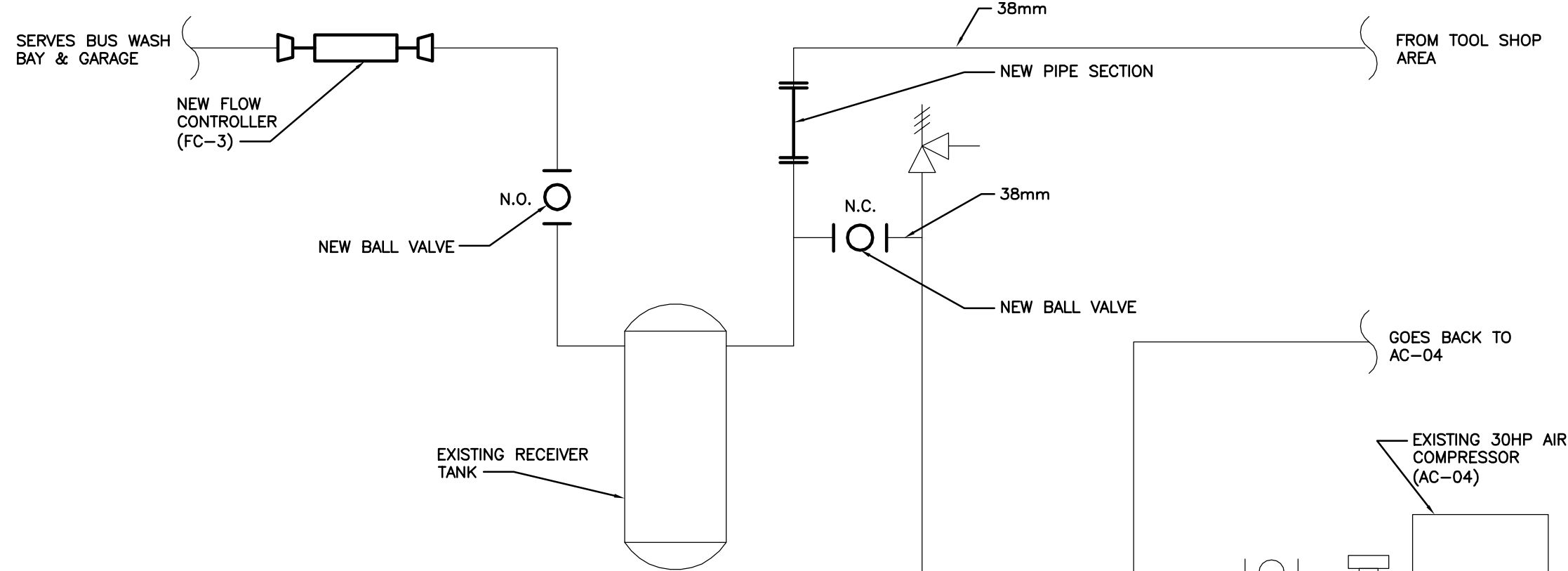


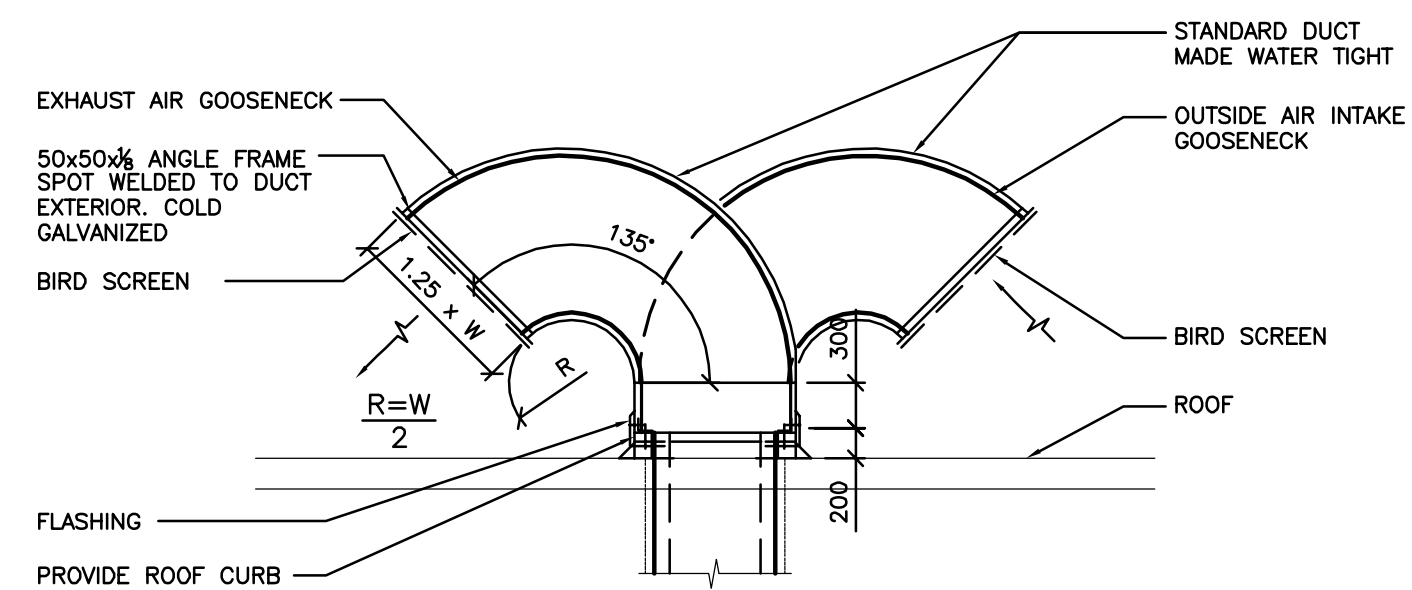
COMPRESSED AIR PIPING SCHEMATIC
NTS



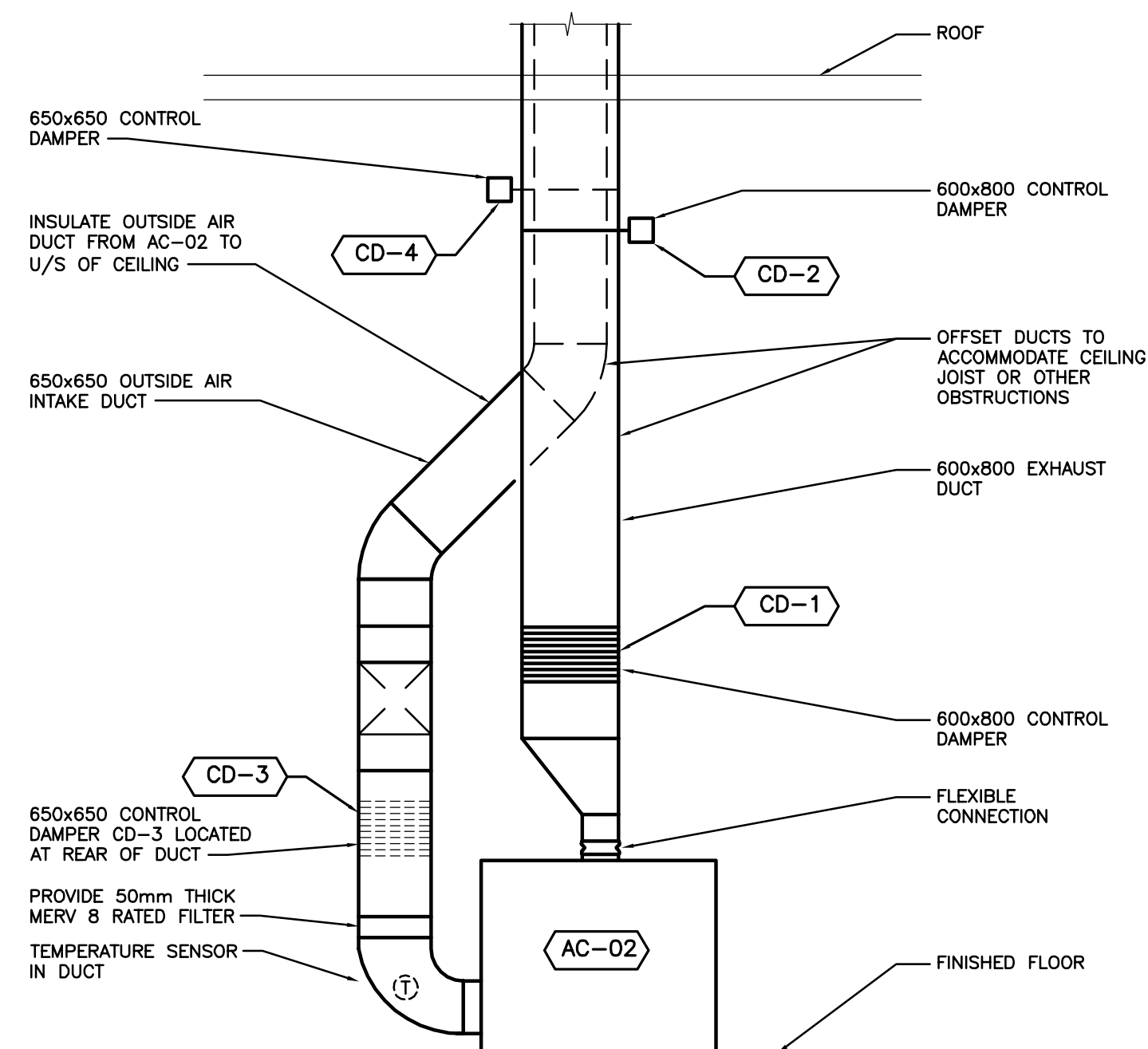
RECTANGULAR SHEET METAL FITTING
NTS



EXISTING COMPRESSED AIR PIPING SCHEMATIC FOR AC-04 & RECEIVER TANK
NTS



DETAIL - GOOSENECK ON ROOF
NTS



AC-02 COOLING SYSTEM DETAIL
1:50

EQUIPMENT SCHEDULE

- AC-01**
INGERSOLL RAND MODEL UP6-150-150 (BASE MOUNT) @ 150 PSIG RATED DISCHARGE PRESSURE, 15HP ROTARY SCREW AIR COMPRESSOR, 575V/3Ø. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- AC-02**
INGERSOLL RAND MODEL R45N, 261 CFM (MAX. SPEED) @ 110 PSIG RATED DISCHARGE PRESSURE 60HP VARIABLE SPEED ROTARY SCREW AIR COMPRESSOR, 575V/3Ø, C/W XE-145M CONTROLLER. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- D-1**
INGERSOLL RAND MODEL NVC300 CYCLING AIR DRYER, 300 CFM CAPACITY, R-404A REFRIGERANT, 575V/3Ø, 230 PSIG MAX. OPERATING PRESSURE. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- D-2**
INGERSOLL RAND MODEL D108IN REFRIGERANT DRYER, 64 CFM CAPACITY, R-134A REFRIGERANT, 115V/1Ø. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- F-1**
INGERSOLL RAND MODEL F108IG GENERAL PURPOSE LINE FILTER, 64 CFM CAPACITY, 250 PSIG MAX. OPERATING PRESSURE. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- FC-1**
PNEUMATECH CONSERVAIR MODEL S-150 INTERMEDIATE CONTROL. MAX. FLOW: 750 CFM, MAX. INLET PRESSURE: 200 PSIG, MAX. OUTLET PRESSURE: 195 PSIG. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- FC-2**
PNEUMATECH CONSERVAIR MODEL S-30 INTERMEDIATE CONTROL. MAX. FLOW: 150 CFM, MAX. INLET PRESSURE: 200 PSIG, MAX. OUTLET PRESSURE: 195 PSIG. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- FC-3**
PNEUMATECH CONSERVAIR MODEL S-60 INTERMEDIATE CONTROL. MAX. FLOW: 250 CFM, MAX. INLET PRESSURE: 200 PSIG, MAX. OUTLET PRESSURE: 195 PSIG. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- RT-1**
PROVIDE A 400 GALLON COMPRESSED AIR RECEIVER TANK C/W PRESSURE RELIEF VALVE & PRESSURE GAUGE. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
- AUTOMATIC DRAIN VALVE**
MONROE MD-25 ELECTRONIC DRAIN VALVE. ADJUSTABLE 'ON' TIME 0.5-10 SECONDS, ADJUSTABLE 'OFF' TIME 0.5-45 MINUTES, MAXIMUM WORKING PRESSURE 230PSI, SUPPLY VOLTAGE: 120VAC

AC-02 COOLING SYSTEM SEQUENCE OF OPERATION

- WHEN AC-02 IS OFF, CONTROL DAMPER CD-1 & CD-3 ARE FULLY OPENED, AND CONTROL DAMPERS CD-2 & CD-4 ARE FULLY CLOSED. ALL FOUR CONTROL DAMPERS SHALL OPERATE IN UNISON.
 - WHEN AC-02 IS ENABLED, CONFIRM CONTROL DAMPERS CD-1 & CD-3 ARE FULLY OPENED, AND CONTROL DAMPERS CD-2 & CD-4 ARE FULLY CLOSED VIA END SWITCH.
 - MODULATE CONTROL DAMPERS CD-1, CD-2, CD-3 & CD-4 TO MAINTAIN MIXED AIR TEMPERATURE SET POINT ABOVE 20°C (ADJUSTABLE) AND BELOW 25°C (ADJUSTABLE) AS FOLLOWS:
 - WHEN MIXED AIR TEMPERATURE IS ABOVE 25°C, MODULATE CONTROL DAMPERS CD-1 & CD-3 TOWARDS THE CLOSED POSITION, AND MODULATE CONTROL DAMPERS CD-2 & CD-4 TOWARDS THE OPEN POSITION.
 - WHEN MIXED AIR TEMPERATURE IS BELOW 20°C, MODULATE CONTROL DAMPERS CD-1 & CD-3 TOWARDS THE OPEN POSITION, AND MODULATE CONTROL DAMPERS CD-2 & CD-4 TOWARDS THE CLOSE POSITION.
 - PROVIDE MIXED AIR TEMPERATURE LOW TEMPERATURE ALARM SET AT 2°C. ALARM & DISABLE AC-02.
 - PROVIDE MIXED AIR TEMPERATURE HIGH TEMPERATURE ALARM SET AT 38°C (ADJUSTABLE). ALARM & DISABLE AC-02.
- CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR SPECIFYING ALL CONTROL WIRING AND CONTROLS TO MEET THE SEQUENCE OF OPERATION.

AC-02 & AC-05 SEQUENCE OF OPERATION

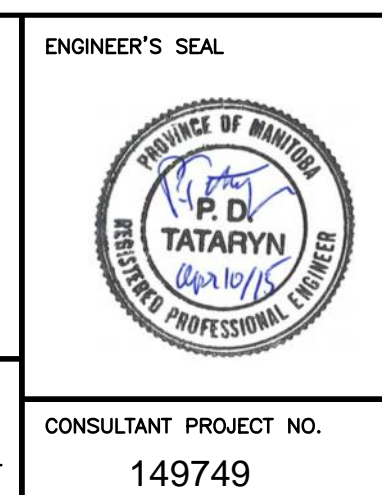
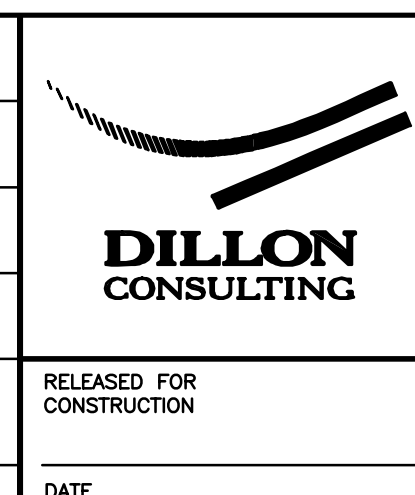
- AC-02 & AC-05 SHALL OPERATE ON A LEAD/LAG BASIS. OPERATE LEAD/LAG ON A WEEKLY BASIS (ADJUSTABLE).
 - WHEN THE LEAD COMPRESSOR CAN NOT KEEP UP WITH COMPRESSED AIR DEMAND, THEN ENERGIZE SECOND COMPRESSOR.
 - IF LEAD COMPRESSOR DOES NOT START, ALARM AND ENERGIZE SECOND COMPRESSOR. IF SECOND COMPRESSOR DOES NOT START, ALARM.
 - PRESSURE SETTINGS:
DISCHARGE PRESSURE TARGET: 110 PSI (ADJUSTABLE)
UNLOAD PRESSURE: 115 PSI (ADJUSTABLE)
LOAD PRESSURE: 95 PSI (ADJUSTABLE)
 - WHEN DISCHARGE PRESSURE EXCEEDS 120 PSI, STOP LEAD COMPRESSOR AND ALARM.
- CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR SPECIFYING ALL CONTROL WIRING AND CONTROLS TO MEET THE SEQUENCE OF OPERATION.



LOCATION	APPROVED	B.M.	DESIGNED
UNDERGROUND	STRUCTURES	ELEV.	BY
SUPV. U/O STRUCTURES COMMITTEE	DATE		
NOTE: LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.			
3	ISSUED FOR CONSTRUCTION	APR.10/15	PDT
2	CLIENT REVIEW 100%	MAR.20/15	PDT
1	CLIENT REVIEW 99%	MAR.9/15	PDT
0	CLIENT REVIEW 66%	FEB.24/15	PDT
NO.	REVISIONS	DATE	BY

APPROVED BY	EP
DRAWN BY	TKD
CHECKED BY	JVH
APPROVED BY	PDT
HOR. SCALE	NOTED
VERTICAL	NOTED
DATE	2015-02-20

RELEASED FOR CONSTRUCTION	DATE
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THE CITY OF WINNIPEG TRANSIT DEPARTMENT	
FORT ROUGE GARAGE COMPRESSED AIR SYSTEM UPGRADE	CITY DRAWING NUMBER P-XXXX- ----
COMPRESSED AIR PIPING SCHEMATIC, DETAILS, EQUIPMENT SCHEDULE & SEQUENCE OF OPERATION	SHEET 4 OF 4
CONSULTANT PROJECT NO. 149749	CONSULTANT DRAWING NUMBER M3