LEGEND

SYMBOL TYPE IDENTIFICATION

HARDWIRED

Tag	Description
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
AI	ANALOG INPUT
AO	ANALOG OUTPUT

VIA COMMUNICATION BUS

Tag	Description
SI	SOFTWARE INPUT
SO	SOFTWARE OUTPUT
SAI	SOFTWARE ANALOG INPUT
SAO	SOFTWARE ANALOG OUTPUT

TAGS

DEVICE FUNCTION \ DEVICE LOCATION	FIELD MOUNTED	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR (HMI-OPERATORS PANEL)	PRIMARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR (HMI-OPERATORS PANEL)	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR (REMOTE PANEL) (P/E PANEL, PUMP PANEL, ETC.)	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR (REMOTE PANEL) (P/E PANEL, PUMP PANEL, ETC.)
DISCRETE INSTRUMENTS	XXXX 888888A	XXXX 888888A	XXXX 888888A	XXXX 888888A	XXXX 888888A
SHARED DISPLAY/CONTROL	XXXX 888888A	XXXX 888888A	XXXX 888888A	XXXX 888888A	XXXX 888888A
COMPUTER FUNCTIONS	XXXX 888888A	XXXX 888888A	XXXX 888888A	XXXX 888888A	XXXX 888888A
PROGRAMMABLE LOGIC CONTROL	888888A	888888A	888888A	888888A	888888A

TAG NUMBER FORMAT

XXXX 88 888 8 A

- XXXX — ISA PREFIX
- 88 — EQUIPMENT TYPE
- 888 — DEVICE
- 88 888 8 — COMPONENT OR FUNCTION NUMBER
- 8 — RESERVED FOR MULTIPLE INSTANCES
- A — ISA SUFFIX

IDENTIFICATION LETTERS

	FIRST-LETTER		SUCCEEDING-LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL, CLOSED, CLOSE	
D	USER'S CHOICE	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	HUMIDITY (USER'S CHOICE)		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	NORMAL
O	USER'S CHOICE		ORIFICE, RESTRICTION	OPENED, OPEN	
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATUS OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	CALCULATED VALUE
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

SYMBOLS

SYMBOL	DESCRIPTION
	GENERAL VALVE (UNDEFINED)
	GLOBE VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	DRAIN VALVE
	OPEN OR FLOOR DRAIN
	MANUAL VALVE 2-WAY
	MANUAL VALVE 3-WAY
	BALL VALVE
	DIAPHRAGM SPRING OPPOSED, UNSPECIFIED ACTUATOR 2-WAY VALVE
	DIAPHRAGM SPRING OPPOSED, UNSPECIFIED ACTUATOR 3-WAY VALVE
	PISTON ACTUATED 2-WAY VALVE
	PISTON ACTUATED VALVE (FAIL CLOSED)
	SPRING RETURN 2-WAY VALVE (FAIL CLOSED)
	SPRING RETURN 3-WAY VALVE (FAIL CLOSED)
	MODULATING DIAPHRAGM 2-WAY VALVE (FAIL CLOSED)
	MODULATING DIAPHRAGM 3-WAY VALVE
	PISTON ACTUATED 4-WAY VALVE
	DUAL PISTON ACTUATED 4-WAY VALVE
	PISTON ACTUATED 5-WAY VALVE
	DUAL PISTON ACTUATED 5-WAY VALVE
	PISTON ACTUATED 5-WAY VALVE WITH AND GATE

SYMBOL	DESCRIPTION
S	SOLENOID ACTUATED 2-WAY VALVE
S	SOLENOID ACTUATED 3-WAY VALVE
S	SOLENOID ACTUATED 4-WAY VALVE
S S	DUAL SOLENOID ACTUATED 4-WAY VALVE
	SELF CONTAINED REGULATOR
	EXTERNAL TAP PRESSURE REGULATOR
	PRESSURE REGULATOR WITH PRESSURE GAUGE
	AIR VOLUME BOOSTER
	AIR VOLUME BOOSTER WITH PRESSURE GAUGE
	PRESSURE GAUGE / INDICATOR
	SILENCER
	MUFFLER
	CHECK VALVE (SPRING LOADED)
	CHECK VALVE (PILOT OPERATED)
	SHUTTLE VALVE
	FLOW CONTROL VALVE
	EXHAUST VALVE
	VARIABLE RESTRICTION THROTTLE VALVE
	FIXED RESTRICTION
	PRESSURE RELIEF OR SAFETY VALVE
	VACUUM RELIEF VALVE
	PNEUMATIC CHECK VALVE
	PNEUMATIC SEAL
	PINCH VALVE
	HAND WINCH
	FLOAT ACTUATED 2-WAY VALVE
	PISTON ACTUATED 3-WAY VALVE
	ROTARY VALVE
	DIAPHRAGM VALVE

SYMBOL	DESCRIPTION
	PISTON OR CYLINDER (POSITIONER)
	DIAPHRAGM, SPRING-OPPOSED UNSPECIFIED ACTUATOR DAMPER OR FLAP
	PISTON ACTUATED DAMPER OR FLAP
	SPRING RETURN DAMPER OR FLAP
	PNEUMATIC ACTUATED MODULATING DAMPER OR FLAP
	SPRING RETURN LOUVER
	MODULATING FACE AND BYPASS DAMPER OR FLAP
	INFLATABLE BLADDER DAMPER
	BIRDSCREEN
	MANUAL SLIDE GATE
GCA-1-1.1 GCA-1-1.2	GAS CARTRIDGE ACTUATOE EXPLOSION ISOLATION VALVE
GCA-1-1.1	GAS CARTRIDGE ACTUATOR SUPPRESSION CONTAINER

SYMBOL	DESCRIPTION
I/P	CURRENT TO PRESSURE I/P TRANSDUCER
E/E	GENERAL RELAY
√	SQUARE ROOT FUNCTION
XL 203020	LIGHT
	PNEUMATIC PUSHBUTTON
I	UNDEFINED INTERLOCK
I X	(X) REFERS TO SPECIFIC INTERLOCK DESCRIPTION NUMBER
T	CONDENSATE TRAP
	STRAINER
AV	AIR VENT
VB	VACUUM BRAKE
	CIRCUIT BALANCING VALVE
	FLEXIBLE CONNECTION
	WIP NOZZLE
	WIP SPRAY JET ASSEMBLY
	TRI-CLOVER SEAL
	ASEPTIC TRI-CLOVER SEAL
	DOP TEST PORT
	SPRAY NOZZLE
	LONG STROKE CYLINDER ASSEMBLY
	PNEUMATIC MOTOR
	PNEUMATIC BRAKE
	PISTON ACTIVATED SIDE DISCHARGE VALVE
	MANUAL SIDE DISCHARGE VALVE
	PRODUCT SAMPLE PORT
	SLOPE LINE

SYMBOL	DESCRIPTION
	AVERAGING PITOT TUBE WITH INTEGRAL FLOW STRAIGHTENER
	VORTEX SENSOR
	VENTURI FLOW SENSOR
	PRODUCT SAMPLING VENTURI FLOW SENSOR
	SAMPLE JAR
	LUBRICATOR
	IN-LINE FILTER
	IN-LINE HEPA FILTER
	HEPA FILTER
	POCKET OR PRE-FILTER
	PLATE PRE-FILTER
	AIR BLENDER
	ELECTRIC HEATER
	GENERAL COIL SYMBOL
	ELECTRIC COIL
	HUMIDIFIER/ STEAM INJECTION
SEPARATOR	MOISTURE SEPARATOR
1	REVISION SYMBOL

SYMBOL	DESCRIPTION
	SOLUTION TANK
HYDRAULIC FLUID RESERVOIR	HYDRAULIC FLUID RESERVOIR
	AGITATOR
	DUST COLLECTOR
	COMPRESSOR
	FAN
ATTENUATOR X122070	ATTENUATOR
	FAN (TURBINE)
	PUMP
	PUMP WITH MULTIPLE HEADS
	MOTOR
GEAR REDUCER	GEAR REDUCER
	HYDRAULIC CYLINDER
M	HYDRAULIC SWIVEL MOTOR
	POSITION LATCH (POST HOIST)

SYMBOL	DESCRIPTION
N_2	GLATT, QUICK ACTING STOP VALVE (QASV) WITH NITROGEN BOTTLE
N_2	SUPPRESANT CANNISTER
	VENTEX EXPLOSION BARRIER VALVE
GAS CARTRIDGE ACTUATOR (GCA) GCA	FIKE, QUICK ACTING STOP VALVE (QASV) WITH GAS CARTRIDGE ACTUATOR (GCA)
	ELECTRICAL SIGNAL
	PNEUMATIC SIGNAL
	HYDRAULIC SIGNAL
	CAPILLARY
	SOLUTION LINES
	MAIN AIR FLOW
	CUSTOMER SUPPLIED FIELD INSTRUMENTS OR PIPING
	INTERNAL SYSTEM LINK, SOFTWARE OR DATA
CN CN	CONTROLNET COMMUNICATION
DN DN	DEVICENET COMMUNICATION
EN EN	ETHERNET COMMUNICATION
EP EP	ETHERNET/IP COMMUNICATION
FF FF	FACTORY FIELD BUS COMMUNICATION
PB PB	PROFIBUS COMMUNICATION
RI RI	REMOTE I/O COMMUNICATION
SL SL	SERIAL COMMUNICATION
	QUICK DISCONNECT
	QUICK DISCONNECT 1-WAY (PNEUMATIC)
	QUICK DISCONNECT 2-WAY (PNEUMATIC)

CUSTOMER NOTES

INSTRUMENT AIR SPECIFICATIONS:

1. CUSTOMER SUPPLIED INSTRUMENT AIR SHALL CONFORM TO THE FOLLOWING FOUR STANDARDS AS DEFINED IN THE INSTRUMENT SOCIETY OF AMERICA'S STANDARD HANDBOOK, PARAGRAPH S7.3, SECTION 4:
   - A. DEW POINT AT LINE PRESSURE - SHALL BE AT LEAST 18°F BELOW MINIMUM AIR TEMPERATURE AT THE PLANT SITE AT THE SPECIFIC AREAS IN WHICH THE INSTRUMENT IS BEING USED.
   - B. PARTICLE SIZE - PARTICLES THAT MAY BE CONTAINED IN THE INSTRUMENT AIR SHALL BE 3 MICRONS OR LESS IN SIZE.
   - C. OIL CONTENT - MAXIMUM SHALL BE AS CLOSE TO 0 PPM AS POSSIBLE AND SHOULD NOT EXCEED 1 PPM.
   - D. CONTAMINANTS - INSTRUMENT AIR SHALL BE FREE OF CONTAMINANTS, CORROSIVES, ETC.

NOTE: THIS DRAWING IS A DIAGRAMMATICAL REPRESENTATION OF THE SYSTEM.
FOR EXACT LOCATIONS OF COMPONENTS REFER TO THE RESPECTIVE EQUIPMENT LAYOUT DRAWINGS.

SUPPLIED BY GLATT | SUPPLIED BY CUSTOMER

NOTE:
SYMBOL * DENOTES NEW ITEMS SUPPLIED ON **SO-052406 BY GLATT.**
SYMBOL ** DENOTES NEW ITEMS SUPPLIED ON **SO-052406 BY CUSTOMER.**

GLATT AIR TECHNIQUES INC

FILE NAME	DRAWING NO.	REV	SHEET
SPN003000-P001-S1-R2.DWG	SPN003000-P001	2	1 OF 8

REFERENCE DRAWINGS

SIZE	DRAWING NUMBER	DESCRIPTION
E	SPN003000-P001-SHEET-1	P & ID LEGEND, SYMBOLS AND NOTES
E	SPN003000-P001-SHEET-2	P & ID AIR HANDLING UNIT (AHU)
E	SPN003000-P001-SHEET-3	P & ID MACHINE TOWER GPCG PRO 300
E	SPN003000-P001-SHEET-4	P & ID MACHINE TOWER GPCG PRO 300
E	SPN003000-P001-SHEET-5	P & ID MACHINE TOWER EXHAUST AIR
E	SPN003000-P001-SHEET-6	P & ID WIP ZONE MANIFOLD
E	SPN003000-P001-SHEET-7	P & ID SOLUTION PUMP SYSTEM
E	SPN003000-P001-SHEET-8	P & ID SPRAY ATOMIZATION AIR SYSTEM

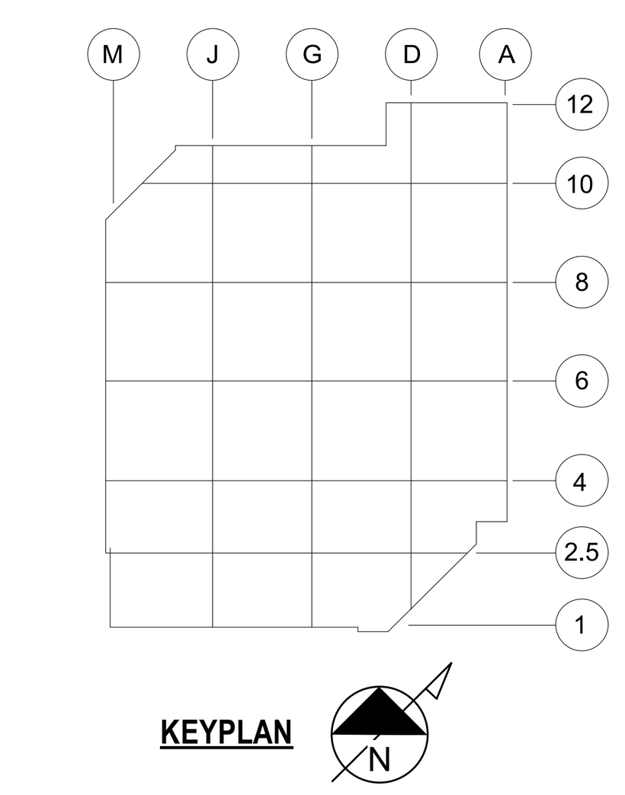
PROJECT LOCATION

6701 EVANSTAD DR N
MAPLE GROVE, MN 55369

GENERAL NOTES

1. REFER TO P&ID LEAD SHEETS FOR SYMBOLS AND ABBREVIATIONS
2. ALL PIPING AND DUCT SHOWN INSIDE VENDOR BUBBLE FURNISHED AND SUPPLIED BY CONTRACTOR

SHEET NOTES



KEYPLAN

CLIENT

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NEW HOPE, MN 55428
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www.horwitzinc.com

PROJECT TITLE

PROJECT KEYSTONE - PHASE 1

REV	BY	DATE	DESCRIPTION
A		17DEC21	FOR RECORD
0	RS	05/25/22	AS RECORDED

LICENSEE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Date 05/25/22 LIC NO

PROJ. NO.	2022.1720	DESIGNED BY:	Designer
SCALE:	6" = 1'-0"	CHECKED BY:	Checker
SHEET SIZE:	30x42	APPROVED BY:	Approver

DRAWING TITLE

P&ID LEGEND, SYMBOLS AND NOTES
VENDOR SHEET 1

DRAWING NUMBER

PID-3000.1

BIM 360://Upsher/Horwitz_USL-Project Keystone_ M19_PID.rvt