PIPE ELBOW TURNED DN
PIPE ELBOW TURNED UP
PIPING TEE DOWN
PIPING TEE UP
PIPE RISER
45° ELBOW DOWN
PIPING TO BE REMOVED
CAPPED PIPING
CAPPED BELOW FINISHED FLOOR
CONCENTRIC REDUCER
ECCENTRIC REDUCER
DIRECTION OF FLOW
PIPE PITCHES DOWN
PIPE GUIDE
EXPANSION JOINT
PIPE ANCHOR
UNION
FLANGED CONNECTION
BACKFLOW PREVENTER
FLEXIBLE CONNECTION
SHUT-OFF/ISOLATION VALVE REFER TO SPECIFICATIONS
GATE VALVE ~ OUTSIDE SCREW & YOKE (OS&Y)

GLOBE VALVE
LOCKABLE BALL VALVE
PLUG VALVE
2-WAY CONTROL VALVE
3-WAY CONTROL VALVE
LOCK & SHIELD VALVE
CHECK VALVE
BALANCING VALVE CIRCUIT SETTER
AIR VENT ~ REFER TO SPECIFICATIONS
STRAINER WITH BLOWDOWN VALVE AND CAP
EXPANSION VALVE (AUTOMATIC)
RELIEF/SAFETY VALVE
PRESSURE GAUGE WITH COCK
SIGHT GLASS
PRESSURE REDUCING VALVE
FLOW SWITCH
SELF-CONTAINED TEMP. CONTROL VALVE WITH REMOTE SENSOR

STEAM TRAP (FLOAT & THERMOSTATIC INDICATED T.T.= THERMOSTATIC TRAP, B.T.= BUCKET TRAP)
PUMP ~ POINT OF TRIANGLE INDICATES DIRECTION OF FLOW
GAS SHUT-OFF VALVE
HOSE END DRAIN VALVE W/CAP
TEMPERATURE/PRESSURE TAP (PETE'S PLUG)
THERMOMETER WITH COCK
SOLENOID VALVE
ORIFICE FLOWMETER
DIFFERENTIAL PRESSURE TRANSMITTER
HUMIDIFIER (DUCT/AHU MOUNTED)
FINNED TUBE BASEBOARD
HOSE BIB/WALL HYDRANT
FLOOR CLEANOUT
FUSIBLE LINK VALVE
WALL CLEANOUT
AQUASTAT

EXPANSION LOOP
EXPANSION LOOP (BRAIDED/MANUFACTURED)
FLOOR DRAIN
SHOCK ABSORBER (WATER HAMMER ARRESTER)
FIRE DEPARTMENT CONNECTION
FREE STANDING FIRE DEPARTMENT CONNECTION
WATER GONG
DUCTWORK ~ FIRST DIMENSION IS SIDE SHOWN IN INCHES S= SUPPLY, R= RETURN, E= EXHAUST AIR, OA= OUTSIDE AIR F.O. = FLAT OVAL
ACCOUSTICAL LINING (DUCT DIMENSION FOR NET FREE AREA)
DUCTWORK TO BE REMOVED
SINGLE LINE DUCTWORK TO BE REMOVED
DUCT TRANSITION
SQUARE TO ROUND DUCT TRANSITION
FLEX DUCT ~ DOUBLE LINE
FLEX DUCT ~ SINGLE LINE

CHANGE IN ELEVATION (UP, DOWN, RISE OR DROP)
SUPPLY DUCT TURNED UP/DN
RETURN DUCT TURNED UP/DN
EXHAUST DUCT TURNED UP/DN
ROUND DUCT TURNED UP/DN
MITERED DUCT ELBOW W/TURNING VANES
RADIUS DUCT ELBOW
DUCT/PIPE CAP (SINGLE/DOUBLE LINE)
VOLUME DAMPER
FIRE DAMPER
SMOKE DAMPER
FIRE AND SMOKE DAMPER
BACKDRAFT DAMPER

MOTORIZED DAMPER
FLEXIBLE CONNECTION
TEMPERATURE SENSOR OR THERMOSTAT (AS SPECIFIED)
HUMIDISTAT OR HUMIDITY SENSOR (AS SPECIFIED)
CARBON DIOXIDE SENSOR
CARBON MONOXIDE SENSOR
ACCESS PANEL
DUCT SMOKE DETECTOR
ROOFTOP EXHAUST FAN
ROOFTOP SUPPLY FAN
CEILING DIFFUSER ~ 4-WAY BLOW
CEILING DIFFUSER ~ 3-WAY BLOW
CEILING DIFFUSER ~ 2-WAY BLOW
CEILING DIFFUSER ~ CORNER BLOW
CEILING RETURN GRILLE
CEILING EXHAUST GRILLE
POINT OF CONNECTION - EXISTING TO NEW
DIRECTION OF AIR FLOW

REGISTER, GRILLE & DIFFUSER TAG
DIFFUSER, REGISTER OR GRILLE No.
QUANTITY
CFM AIR FLOW

FINTUBE TAG
FINTUBE No.
LENGTH
GPM

VAV TAG
VAV No.
MINIMUM CFM
MAXIMUM CFM
GPM

EQUIPMENT TAG
TYPE DESIGNATOR
NUMBER

EQUIPMENT TAG (ON FLOOR/ROOF ABOVE)
TYPE DESIGNATOR
NUMBER

DETAIL REFERENCE SYMBOL
DETAIL No.
SHEET DETAIL LOCATED ON

SECTION REFERENCE SYMBOL
SECTION No.
SHEET SECTION LOCATED ON

E1 SYMBOLS LEGEND

NONE

ACID WASTE
AIR RELIEF
BOILER BLOWDOWN
CONDENSATE (HVAC DRAIN PAN)
CONDENSATE (HVAC DRAIN PAN)
COMPRESSED AIR
CHILLED WATER RETURN
CHILLED WATER SUPPLY
CONDENSER WATER RETURN
CONDENSER WATER SUPPLY
DOMESTIC COLD WATER
DOMESTIC HOT WATER
DOMESTIC HOT WATER RECIRC.
DRAIN
PUMP FORCE MAIN
FUEL OIL FILL
FUEL OIL RETURN
FUEL OIL SUPPLY
FUEL OIL TANK VENT
FEEDWATER
GLYCOL RETURN
GLYCOL SUPPLY
HUMIDIFICATION LINE
HYDROGEN GAS
HEAT PUMP WATER RETURN
HEAT PUMP WATER SUPPLY
HIGH PRESSURE CONDENSATE
HIGH PRESSURE STEAM
HIGH-TEMP HOT WATER RETURN
HOT WATER RETURN
HOT WATER SUPPLY
INDUSTRIAL WASTE
INDIRECT WASTE
LIQUID NITROGEN
LIQUID OXYGEN
LOW PRESSURE CONDENSATE
LIQUID PETROLEUM GAS

LOW PRESSURE CONDENSATE
LOW PRESSURE STEAM
MEDICAL AIR
MEDIUM PRESSURE CONDENSATE
MEDIUM PRESSURE STEAM
MAKE-UP WATER
NITROGEN
NATURAL GAS
NITROUS OXIDE
NON-POTABLE WATER
OXYGEN
PUMPED CONDENSATE
PROCESS COLD WATER RETURN
PROCESS COLD WATER SUPPLY
REFRIGERANT DISCHARGE
REFRIGERANT LIQUID
REFRIGERANT SUCTION
REVERSE OSMOSIS WATER
RAIN WATER - ABOVE FLOOR
RAIN WATER - BELOW GRADE
SPRINKLER MAIN PIPING
SOLAR WATER RETURN
SOLAR WATER SUPPLY
TRAP PRIMER - ABOVE FLOOR
TRAP PRIMER - BELOW GRADE
TEMPERED WATER RETURN
TEMPERED WATER SUPPLY
SANITARY SOIL VENT - ABOVE FLOOR
SANITARY SOIL VENT - BELOW GRADE
VACUUM (AIR)
VACUUM CLEANING (HOUSE)
VACUUM PUMP DISCHARGE
SANITARY SOIL WASTE - ABOVE FLOOR
SANITARY SOIL WASTE - BELOW GRADE
SANITARY WET VENT - ABOVE FLOOR
SANITARY WET VENT - BELOW GRADE

A1 PIPING LINETYPE LEGEND

NONE

A5 ABBREVIATIONS

NONE

AAV	AUTOMATIC AIR VENT
AC	ABOVE CEILING
ACC	AIR COOLED CONDENSER
ACU	AIR CONDITIONING UNIT
ADA	AMERICANS WITH DISABILITIES ACT
AD	ACCESS DOOR
AE	ACID EXHAUST
AW	ACID WASTE
AFF; A.F.F.	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
APPROX.	APPROXIMATE; APPROXIMATELY
APMR	AS PER MFR'S RECOMMENDATIONS
ATC	AUTOMATIC TEMPERATURE CONTROL
AV	AIR VENT
BC	BALANCING COCK
BDD	BACKDRAFT DAMPER
BG	BLAST GATE
BF	BARRIER FREE
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BOD	BOTTOM OF DUCT
B.T.U.; BTU	BRITISH THERMAL UNIT
C; CONV.	CONVECTOR
CCW	COUNTER CLOCKWISE
CFF	CAPPED FOR FUTURE
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
CO	CLEANOUT
CM	CONSTRUCTION MANAGER
CNTR	COUNTER; COUNTER TOP
CONN	CONNECT; CONNECTION
CONT.	CONTINUE; CONTINUATION
COORD.	COORDINATE
CORR	CORRIDOR
CR	CHEMICAL RESISTING
CT	COOLING TOWER
CTE	CONNECT TO EXISTING
CTR	CENTER
CTRLN	CENTERLINE
CU	COPPER; CONDENSING UNIT
CUH	CABINET UNIT HEATER
C.V.	CONTROL VALVE
CW	COLD WATER; CLOCKWISE
DB	DRY BULB TEMPERATURE
DC	DOUBLE CONTAINED
DDC	DIRECT DIGITAL CONTROL
DET	DETAIL
DIA	DIAMETER
DIC	DOWN IN CHASE
DIW	DOWN IN WALL
DN	DOWN
DS	DOWNSPOUT
DT	DROP AND TRANSITION
DV	DRAIN VALVE
DWG	DRAWING
EA	EXHAUST AIR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ELEV	ELEVATION
ELONG	ELONGATE
ENC	ENCLOSURE
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
(E)	EXISTING
F&T	FLOAT AND THERMOSTATIC
FBO	FURNISHED BY OTHERS
FBP	FACE AND BYPASS
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEANOUT
FD-#	FLOOR DRAIN TAG
FD	FIRE DAMPER
FIN	FINISH
FL	FLOOR
FTG	FOOTING
FTR	FINNED TUBE RADIATION
FS	FLOW SWITCH
FM	FORCE MAIN
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
GV	GRAVITY VENTILATOR
H	HUMIDIFIER
HB	HOSE BIBB
HC; HDC	HANDICAP ACCESS
HGT; HT	HEIGHT
HP	HEAT PUMP
HRU	HEAT RECOVERY UNIT
HTR	HEATER
H&V	HEATING AND VENTILATION
HVAC	HEATING, VENTILATING AND AIR COND.
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
ID	INSIDE DIAMETER
IN WG	INCHES WATER GAUGE
INCL.	INCLUDING
INV. EL.	INVERT ELEVATION
IPS	IRON PIPE SIZE
KE-#	KITCHEN EQUIPMENT NUMBER
LD	LINEAR DIFFUSER
LE-#	SCIENCE LAB EQUIPMENT NUMBER
LP	LIQUID PETROLEUM GAS
LPR	LOW PRESSURE STEAM RETURN
LPS	LOW PRESSURE STEAM SUPPLY
MAX	MAXIMUM
MBH	1000 BTUH/hr.
MFR	MANUFACTURER
MIN	MINIMUM
MOD	MOTOR OPERATED DAMPER
MPG	MEDIUM PRESSURE GAS
MPV	MULTI-PURPOSE VALVE
MTD	MOUNTED
MTG	MOUNTING
MUA	MAKE UP AIR
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NIC	NOT IN CONTRACT
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
P-#	PLUMBING FIXTURE TAG
PD	PUMPED DISCHARGE
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE
RA	RETURN AIR
RD	ROOF DRAIN
REC	RECOMMENDATION
REG	REGULAR
RF	RETURN FAN
RG	RETURN GRILLE
RHC	REHEAT COIL
RM	ROOM
RPZ	PREDUCED PRESSURE BFP
RR	RETURN REGISTER
RV	RELIEF VALVE
RW	RAIN WATER
S	SUPPLY AIR
SA-" "	SHOCK ABSORBER OF PDI SIZE (" ") AS INDICATED
SCV	SELF-CONTAINED VALVE
SD	SMOKE DAMPER
SF	SUPPLY FAN
SG	SUPPLY GRILLE
SGL	SINGLE
SHT	SHEET
SPLR	SPRINKLER
SQ. FT; SF	SQUARE FEET
SR	SUPPLY REGISTER
S/O	SHUT-OFF
S.S.	STAINLESS STEEL
TD	TRENCH DRAIN
TG	TRANSFER GRILLE
TOD	TOP OF DUCT
TP	TRAP PRIMER
TSP	TOTAL STATIC PRESSURE
TTS	TIGHT TO STEEL
TV	TURNING VANE
TW	TEMPERED WATER
TYP	TYPICAL
UH	UNIT HEATER
UIC	UP IN CHASE
UIW	UP IN WALL
UV	UNIT VENTILATOR
V	VENT
VAC	VACUUM
VB	VACUUM BREAKER
VCFF	VALVE & CAP FOR FUTURE
VD	VOLUME DAMPER - MANUAL
VLV	VALVE
VS	VENT STACK
VTR	VENT TO ROOF
W	WASTE
W/	WITH
WB	WET BULB TEMPERATURE, °F
WCO	WALL CLEANOUT
WH	WATER HEATER
WHYD	WALL HYDRANT
Ø	DIAMETER
@	AT
&	AND
%	PERCENT

NOTE

ALL GENERAL NOTES, SYNMBOL LEGENDS AND DETAILS ARE TO BE CONSIDERED AS APPLICABLE TO ALL PLUMBING AND HVAC DRAWINGS FOR THIS PROJECT. SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET ARE FOR REFERENCE ONLY AND DO NOT INDICATE THEIR INCORPORATION INTO THE DESIGN.

LAVALLEE BRENSINGER ARCHITECTS
Boston | Manchester | Portland
305 Commercial Street, Portland, ME 04101
603.622.5450
www.LBPA.com

Allied Engineering
Structural Mechanical Electrical Commissioning
160 Veranda Street
Portland, Maine 04103
T: 207.221.2266
F: 207.221.2266
Web: www.allied-eng.com

University of Southern Maine

Science Building Lab A203 Renovation

70 Falmouth Street
Portland, ME 04104

NO.	DESCRIPTION	DATE
	ISSUED FOR PERMIT	03/17/2016

N

FOR ADDITIONAL INFORMATION, REFER TO PROJECT MANUAL.

CONTENT:
PLUMBING AND HVAC NOTES, LEGEND AND ABBREVIATIONS

DRAWN BY:	SCL
PROJECT NO:	16-005-00
DATE:	3/17/2016
REVISED:	
SCALE:	12" = 1'-0"

P-000

Project Phase
BID DOCUMENTS

COPYRIGHT © 2015 BY LAVALLEE/BRENSINGER PROFESSIONAL ASSOCIATION. ALL RIGHTS RESERVED. NO REPRODUCTION WITHOUT PERMISSION.

3/11/2016 11:56:07 AM N:\Projects\2016\16039 - USM Lab A203 Upgrade\1 Design Phase\2 DRAWINGS\16039A1.rvt