SPECIFICATIONS

FUME EXHAUST ARM (FEA)

A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE TOF THE FOLLOWING:
1. MOVEX
2. PLYMOVENT
3. APPROVED EQUAL

B. LOCAL EXTRACTOR WITH ARTICULATING JOINTS, 4" ALUMINUM TUBES AND PP JOINTS.
C. PROVIDE AIR-TIGHT DAMPER AND A 360 DEGREE ROTATIONAL SWIVEL WHEN MOUNTED IN PLACE. ARTICULATING JOINTS SHALL BE EASILY ADJUSTABLE.
D. PROVIDE 60" (CONFIRM LENGTH IN FIELD) ANODIZED ALUMINUM CEILING (OR WALL) BRACKET WITH ABOVE-CEILING DUCT CONNECTION. PROVIDE WITH ESCUTCHION FOR STABLIZING AND TO COVER THE HOLE IN THE FINISHED CEILING.

PIPES, TUBES AND FITTING

A.AIR AND HELIUM: COPPER TUBING
1.MATERIAL SHALL BE DOMESTIC HARD DRAWN VIRGIN COPPER, PURITY TO BE 99.90 WITH .02% PHOSPHORUS; ASTM B88. ALL SURFACES (O.D. & I.D.) OF ALL TUBE AND FITTINGS SHALL BE MECHANICALLY/CHEMICALLY POLISHED TO REMOVE TARNISH, STAINS AND DISCOLORATION. AFTER CHEMICAL POLISHING, ALL COMPONENTS ARE TO BE RINSED IN DI1 WATER FOR FINAL CLEANING TO REMOVE ANY TRACE OF HYDROCARBON RESIDUE AND PARTICULATE CONTAMINATION. ALL SURFACES ARE TO RETAIN A UNIFORM MATTE FINISH THAT RESISTS RE-TARNISHING. TUBING SHALL BE PURGED WITH FILTERED (.2 MICRON ABSOLUTE) NITROGEN FROM A CRYOGENIC SOURCE.
2.TUBING SHALL BE O.D. CAPPED WHILE UNDER FILTERED NITROGEN PURGE. TUBE END CAPS OF HARD URETHANE ARE TO BE COLOR CODED RED. TUBES ARE TO BE PACKAGED IN CLEAN 6 MIL POLYETHYLENE SLEEVE; ENDS FOLDED AND HEAT SEALED. FITTINGS AND OTHER COMPONENTS ARE TO BE HEAT SEALED IN 6 MIL POLYETHYLENE BAGS.
3.A PRODUCT CERTIFICATION IS AVAILABLE WITH EACH SHIPMENT TO IDENTIFY COMPLIANCE WITH NFPA 99, CGA-G4.1, SPECIFICATIONS AND ASTM B-280 AND ASTM B-819 SPECIFICATIONS.

B.ACETYLENE AND HYDROGEN: STAINLESS STEEL INSTRUMENTATION TUBING
1. TYPE 316L: CHEMICALLY CLEANED AND PASSIVATED, ASTM G-93, LEVEL A REQUIREMENT FOR NON-VOLATILE RESIDUE LEVELS AND ALSO MEETS REQUIREMENTS OF CGA G4.1. TUBING ENDS ARE PROTECTED WITH POLYAMIDE NYLON FILM AND POLYETHYLENE CAPS. TUBING IS PACKED IN SINGLE POLYETHYLENE, HEAT-SEALED BAGS.

FITTINGS AND JOINING MATERIALS - FITTINGS FOR ACETYLENE SHALL NOT CONTAIN COPPER SILVER OR ACETYENE FORMING MATERIALS. PROVIDE PER NFPA 51.

A.STRAIGHT TUBE FITTING: BRASS SWAGELOK TUBE FITTING, MALE CONNECTOR, 1/8 IN. TUBE OD X 1/8 IN. MALE NPT
B.FERRULE: SWAGELOK B-200-SET, BRASS FERRULE SET (1 FRONT FERRULE/1 BACK FERRULE) FOR 1/8" SWAGELOK TUBE FITTING.
C.NUT: SWAGELOK B201-1, BRASS NUT FOR 1/8" SWAGELOK TUBE FITTING.
D.PLUG: SWAGELOK SS-400-P, 316SS PLUG FOR ¼" SWAGELOK TUBE FITTING.
E.TEE: SWAGELOK B-400-3TTM BRASS TUBE FITTING, MAKE BRANCH TEE, ½" X ½" X 1/8" MALE NPT.

PIPE SUPPORTS

A.SWAGELOK CHANNEL MOUNTED TUBE SUPPORTS WITH CLAMPS, ELECTRO-DICHROMATE FINISHED CARBON STEEL AND THERMOPLASTIC CUSHION; RUN ¼" PIPING EXPOSED ALONG WALL BEHIND BENCH. MAXIMUM SPACING BETWEEN SUPPORTS: 5 FEET.

VALVES

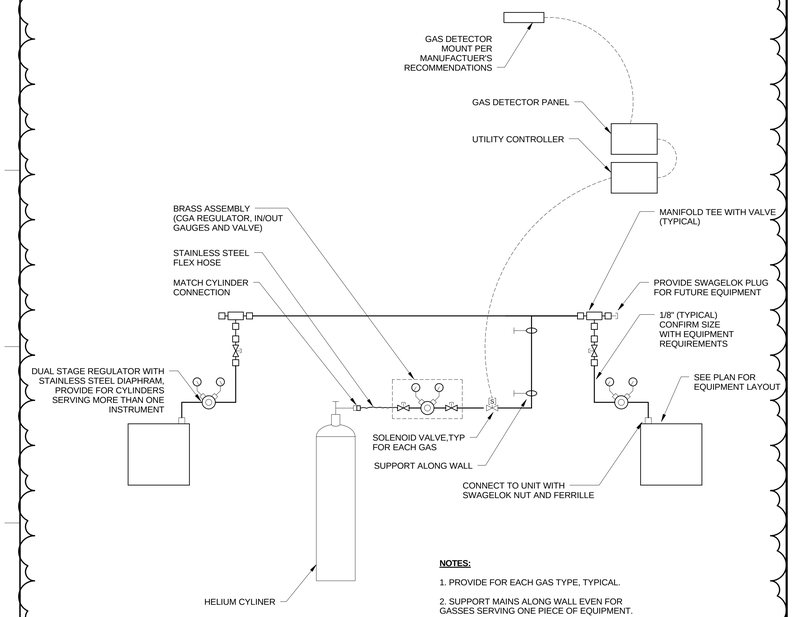
A.BRASS QUARTER-TURN INSTRUMENT PLUG VALVE, SWAGELOK B-2P4T4.

REGULATOR ASSEMBLY

A.MATHESONTRIGAS GASTRAK DELIVERY/CONTROL SYSTEM.
1.IDEAL FOR HIGH (UHP 99.999%+) OR LOW PURITY GAS DELIVERY
2.CONTROL FEATURES INCLUDE: PRESSURE REGULATION, PURIFICATION AND FLOW CONTROL.
3.PROVIDES INDIVIDUAL GAS CONTROL/DELIVERY STATIONS FOR "POINT-OF-USE" DELIVERY TO ANALYTICAL INSTRUMENTS.
4.GAS SPECIFIC LABELING FOR EACH INDIVIDUAL CONTROL/DELIVERY STATION.
5.1/4" COMPRESSION FITTING STANDARD INLET & OUTLET CONNECTIONS.
6.DESIGN ALLOWS CONVENIENT ACCESS TO ALL COMPONENTS.
7.PRE-ASSEMBLED SYSTEM DESIGN PRIOR TO SHIPMENT.
8.WALL MOUNTED U-CHANNEL FRAMES MAKE IT EASY TO INSTALL.
9. PROVIDE LABELS WITH GAS NAME PER NFPA 51.
10. PROVIDE SIX FOOT FLEX HOSE WITH CGA CONNECTION AND INTEGRAL CHECK VALVE.
11. A FLASHBACK ARRESTOR SHALL BE FITTED TO ACETYLENE REGULATOR OUTLETS.

B.PROVIDE REGULATOR, PURIFIER, AND PRESSURE RANGE COMPATIBLE WITH GAS TYPE.

E6 SPECIFICATIONS



NOTES:

1. PROVIDE FOR EACH GAS TYPE, TYPICAL.

2. SUPPORT MAINS ALONG WALL EVEN FOR GASSES SERVING ONE PIECE OF EQUIPMENT. PROVIDE PLUG FOR FUTURE EQUIPMENT.

3. PROVIDE SIZE AND PRESSURE OF GAS PIPING PER MANUFACTURER'S RECOMMENDATION.

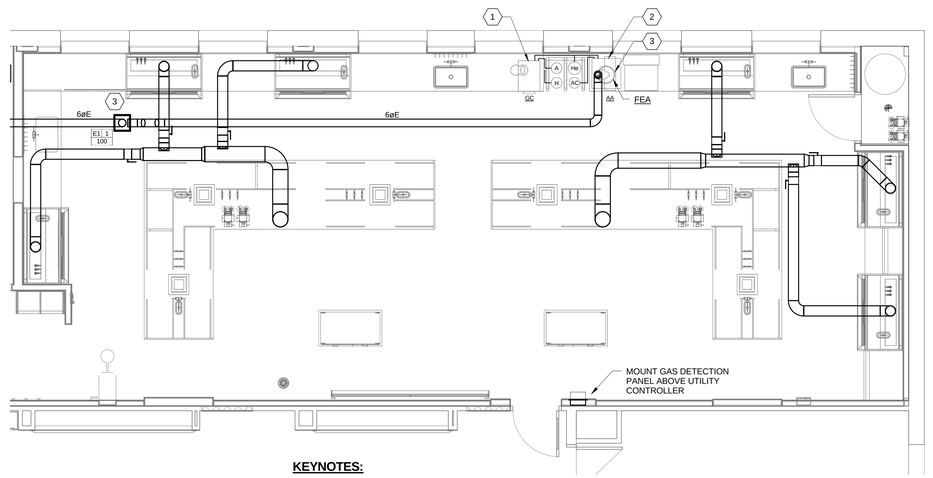
4. THERMO-FISHER START UP KIT FOR GC INCLUDES TUBING FOR FINAL CONNECTION TO EQUIPMENT. CONNECTIONS ON THE BACK ARE 1/8" SWAGELOK FITTINGS, TYPICAL FOR HYDROGEN AND AIR.

5. ACETYLENE GAS TUBING TERMINATING IN 3/8" BSP LEFT HAND TIGHTEN THREAD CONNECTIONS WILL BE INCLUDED WITH AA SPECTROMETER.

6. HELIUM SHALL BE 99.999% PURITY.

7. INSTALLATION OF GA AND AA SHALL BE BY USM VENDOR.

A1 DETAIL - GAS PIPING SCHEMATIC



KEYNOTES:

1. GAS CHROMATOGRAPH (GC) INSTALLED BY VENDOR. PROVIDE HELIUM AND HYDROGEN WITH SOLENOID VALVES IN SUPPLY MAINS, CONNECTED TO UTILITY CONTROLLER. (AIR DOES NOT REQUIRE SOLENOID VALVE).

2. SPECTROMETER (AA) INSTALLED BY VENDOR. PROVIDE HELIUM AND ACETYLENE WITH SOLENOID VALVE IN SUPPLY MAIN, CONNECTED TO UTILITY CONTROLLER.

3. ALTERNATE #2: INSTALLATION OF SPECTROMETER (AA). REMOVE EXHAUST GRILL AND DUCTWORK DOWN TO GRILL. CONNECT TO HORIZONTAL DUCT AND TRANSITION TO 4" DIAMETER TO FUME EXHAUST ARM: FEA.

A6 THIRD FLOOR PLAN - LAB EQUIPMENT

1/4" = 1'-0"

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NO.	DESCRIPTION	DATE
1	ADDENDUM 1	01/23/15

N

CONTENT:
MECHANICAL FLOOR PLAN, SPECIFICATIONS AND DETAILS

DRAWN BY:	SGH
PROJECT NO:	14-075-00
DATE:	01/09/2015
REVISED:	
SCALE:	AS NOTED

M2.0

Project Phase
BID DOCUMENTS

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