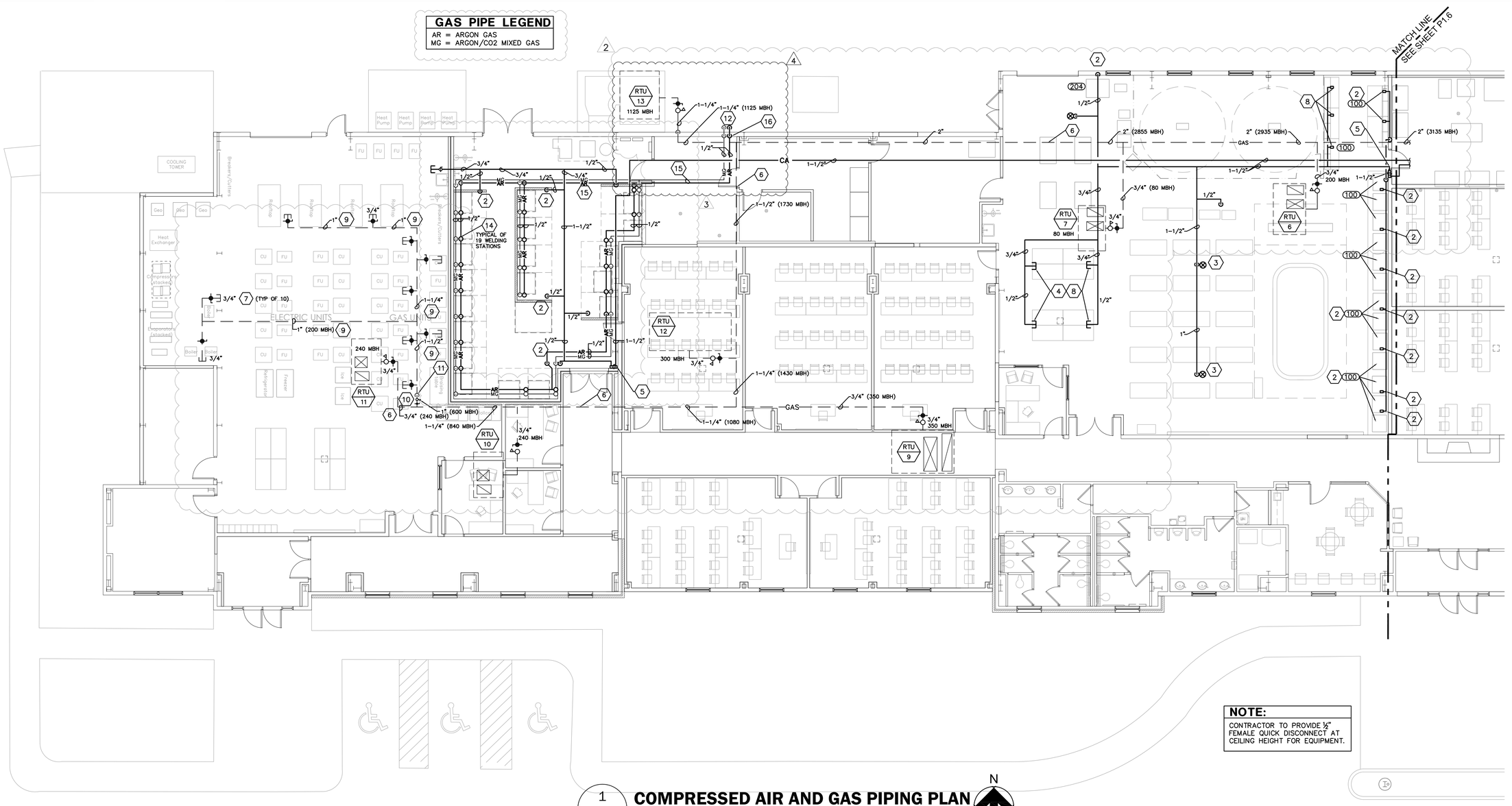
GAS PIPE LEGEND

AR = ARGON GAS
MG = ARGON/CO2 MIXED GAS



NOTE:

CONTRACTOR TO PROVIDE ½" FEMALE QUICK DISCONNECT AT CEILING HEIGHT FOR EQUIPMENT.

1 P1.5 COMPRESSED AIR AND GAS PIPING PLAN

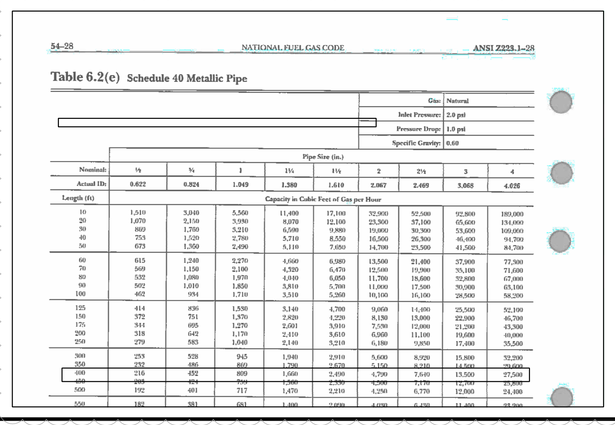
1/8" = 1'-0"

N

EQUIPMENT SCHEDULE

EQUIP NO.	DESCRIPTION
100	HYDRAULIC/PNEUMATIC TRAINERS
200	CNC VERTICAL MACHINE–VF0E
201	CNC VERTICAL MACHINE–VF3
202	CNC VERTICAL MACHINE–VF2
203	CNC MINI MILL
204	SAND BLASTER
213	CNC LATHE–ST10
214	CNC LATHE–EZ PATH SD
223	BUFFER
224	BUFFER
239	HYDRAULIC PRESS

VERIFY EXACT NUMBERS AND LOCATIONS WITH EQUIPMENT DRAWINGS PRIOR TO WORK



54–28 NATIONAL FUEL GAS CODE ANSI Z223.1–28

Table 6.2(e) Schedule 40 Metallic Pipe

Gas: Natural
Inlet Pressure: 2.0 psi
Pressure Drop: 1.0 psi
Specific Gravity: 0.60

Pipe Size (in.)								
Nominal:	⅛	¼	⅜	1½	1¼	2	2½	3	4
Actual ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026
Length (ft)	Capacity in Cubic Feet of Gas per Hour								
10	1,519	3,040	5,560	11,490	17,100	32,900	52,500	92,800	189,000
20	1,070	2,150	3,980	8,070	12,100	23,500	37,100	65,600	134,000
30	869	1,760	3,210	6,590	9,880	19,000	30,300	53,600	109,000
40	753	1,520	2,780	5,710	8,550	16,500	26,300	46,400	94,700
50	673	1,350	2,490	5,110	7,650	14,700	23,500	41,500	84,700
60	615	1,240	2,270	4,660	6,980	13,500	21,400	37,900	77,300
70	569	1,150	2,100	4,320	6,470	12,500	19,900	35,100	71,600
80	532	1,080	1,970	4,040	6,050	11,700	18,600	32,800	67,000
90	502	1,010	1,850	3,810	5,700	11,000	17,500	30,900	63,100
100	462	934	1,710	3,510	5,260	10,100	16,100	28,500	58,200
125	414	836	1,530	3,140	4,700	9,060	14,400	25,500	52,100
150	372	751	1,370	2,820	4,220	8,130	13,000	22,900	46,700
175	344	695	1,270	2,601	3,910	7,570	12,000	21,200	43,300
200	318	642	1,170	2,410	3,610	6,960	11,100	19,600	40,000
250	279	583	1,040	2,140	3,210	6,180	9,850	17,400	35,500
300	253	528	945	1,940	2,910	5,600	8,920	15,800	32,200
350	232	486	869	1,790	2,678	5,150	8,210	14,500	29,600
400	216	452	809	1,660	2,490	4,790	7,640	13,500	27,500
450	203	424	759	1,560	2,339	4,500	7,170	12,700	25,900
500	192	401	717	1,470	2,210	4,250	6,770	12,000	24,400
550	182	381	681	1,400	2,099	4,030	6,430	11,400	23,200

PLUMBING KEYED NOTES

1. ROUTE COMPRESSED AIR PIPING ON WALL RACK WITH HPS AND HPC.
2. ROUTE COMPRESSED AIR DOWN TO UNIT CONNECT. PROVIDE SHUT OFF BALL VALVE, PRESSURE REGULATOR AND QUICK CONNECT. SEE DETAIL ON DRAWING P3.0. COORDINATE EXACT COMPRESSED AIR CONNECTION LOCATION WITH MANUFACTURERS INSTALLATION MANUALS PRIOR TO ROUGH IN. REFER TO T–DROP DETAIL SHEET P2.
3. ROUTE COMPRESSED AIR TO HOSE REEL
4. PROVIDE COMPRESSED AIR SHUT OFF VALVE AND QUICK DISCONNECT BELOW CEILING. SEE DETAIL FOR MORE INFORMATION.
5. PROVIDE MASTER COMPRESSED AIR SHUT OFF VALVES TO ISOLATE EACH LAB SEPARATELY. INSTALL IN AN ACCESSIBLE AREA ABOVE CEILING.
6. NEW GAS PIPING ON ROOF.
7. GAS PIPING IN JOIST SPACE TO STUB OUT FOR CONNECTION TO HVAC LAB EQUIPMENT. PROVIDE SHUT OFF VALVE BEFORE STUB.
8. RUN COMPRESSED AIR IN CEILING SPACE. PROVIDE STUB OUT. REFER TO TO COMPRESSED AIR DROP DETAIL P2.0.
9. GAS PIPING TO RUN ABOVE IN CEILING SPACE.
10. PROVIDE 2" PSI TO LOW PRESURE REGULATOR PRIOR GAS GOING DOWN THROUGH ROOF.
11. 1–1/2" GAS AT LOW PRESSURE DOWN THROUGH ROOF.
12. ROUTE WELDING GAS TUBING DOWN TO AUTOMATIC CHANGEOVER MANIFOLD AND/OR OWNER PROVIDED ARGON GAS TANKS. COORDINATE WITH MANUFACTURERS MANUALS FOR EXACT INSTALLATION REQUIREMENTS PRIOR TO ANY WORK.
13. ROUTE WELDING GAS TUBING DOWN TO BELOW WELDING STATION TABLE. ROUTE PIPING AT 20" AFF.
14. ROUTE COPPER TUBING FOR ARGON AND MIXED WELDING GAS PIPING UP TO SHUT OFF VALVE AND FLOW METER AT WELDING STATION. COORDINATE WITH WELDER MANUFACTURER FOR EXACT CONNECTION REQUIREMENTS ALL ACCESSORIES AND REGULATING PRIOR TO ANY WORK. SHUT OFF VALVE ROUGH IN LOCATION AT 28" AFF. PROVIDE WITH QUICK CONNECT FITTINGS FOR EQUIPMENT CONNECTIONS.
15. ROUTE COPPER TUBING FOR ARGON(AR) AND MIXED WELDING GAS (MG) AS HIGH AS POSSIBLE IN JOIST SPACE. COORDINATE ROUTE WITH EXISTING FIELD CONDITIONS AND OTHER DISCIPLINES PRIOR TO WORK.
16. PROVIDE EMERGENCY SOLENOID VALVE PRIOR TO ROUTING TO JOIST SPACE. INTERLOCK WITH EMERGENCY SHUT–OFF BUTTONS. COORDINATE EXACT INSTALLATION AND CONTROLS FOR SOLENOID VALVE WITH MANUFACTURER AND EC PRIOR TO ANY WORK.

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• Architecture
• Site Development
• General Consulting
• Master Planning

Two working days prior to the start of any excavation on this site, contractor shall call Missouri One Call for utility location information.

All OSHA rules & regulations established for the type of excavation involved on these plans shall be strictly followed (ie. Trenching, Blasting, etc.)

STATE OF MISSOURI DARNELL CASE NUMBER E-23303 REGISTERED ENGINEER
10/20/15

EAST CENTRAL COLLEGE
CENTER FOR ADVANCED MANUFACTURING AND WORKFORCE TRAINING
Union, Missouri 63084

NO.	DATE:	REVISIONS:	DRN. BY:	APPD. BY:
1	04-22-2016	ASI 4	--	--
2	05-18-2016	CONSTRUCTION CHANGE DIRECTIVE #2	--	--
3	06-06-2016	PROPOSAL REQUEST #3	--	--
4	07-07-2016	CONSTRUCTION CHANGE DIRECTIVE #3	--	--
5	08-12-2016	CONSTRUCTION CHANGE DIRECTIVE #7	--	--
6	09-30-2016	WELDING GAS PIPING	--	--

DRN. BY: -- APPD. BY: --

DATE: 1/25/16

SCALE: AS NOTED

PROJ. NO: 15–6038

EDA No. 05–01–05778

DWG. NO: P1.5

COMPRESSED AIR AND GAS PIPING PLAN