

## **Specifications:**

### **M-1 (ARGON MANIFOLD)**

DISTRICT PROVIDED HARRIS 220-3R-3L-580 MANIFOLD, SINGLE INERT WALL MOUNTED GAS

MANIFOLD SYSTEM DESIGNED TO PROVIDE DUAL SOURCE WITH PRIMARY AND RESERVE

CYLINDERS FOR ARGON, COMPLETE WITH MASTER SHUT-OFF VALVES, INDIVIDUAL STATION

SHUT-OFF VALVES, (2) BRASS HEADERS AND (2) 72" LONG FLEXIBLE STAINLESS STEEL PIGTAILS WITH CHECK VALVES FOR CONNECTION TO THE PRIMARY AND RESERVE CYLINDERS

AT BUNDLE PACK, WALL MOUNT KIT, HIGH FLOW REGULATOR, AND RELIEF VALVE.

### **M-2 (ARGON/CO2 MANIFOLD)**

DISTRICT PROVIDED HARRIS 220-3R-3L-580 MANIFOLD, SINGLE INERT WALL MOUNTED GAS

MANIFOLD SYSTEM DESIGNED TO PROVIDE DUAL SOURCE WITH PRIMARY AND RESERVE

CYLINDERS FOR ARGON/CO2MIX, COMPLETE WITH MASTER SHUT-OFF VALVES, INDIVIDUAL

STATION SHUT-OFF VALVES, (2) BRASS HEADERS AND (2) 72" LONG FLEXIBLE STAINLESS STEEL PIGTAILS WITH CHECK VALVES FOR CONNECTION TO THE PRIMARY AND RESERVE

CYLINDERS AT BUNDLE PACK, WALL MOUNT KIT, HIGH FLOW REGULATOR, AND RELIEF VALVE.

### **FR-1 (FLOWMETER REGULATOR)**

DISTRICT PROVIDED 351 PIPELINE FLOWMETER

#### PIPING SPECIFICATIONS:

1. CODES AND REGULATIONS: ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE AUTHORITY HAVING JURISDICTION. NOTHING IN THESE DRAWINGS OR SPECIFICATIONS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. THE APPLICABLE CODES AND REGULATIONS FOR THIS PROJECT INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
  - A. CALIFORNIA BUILDING CODE - CBC - 2016
  - B. CALIFORNIA MECHANICAL CODE - CMC - 2016
  - C. CALIFORNIA PLUMBING CODE - CPC - 2016
  - D. CALIFORNIA FIRE CODE - CFC - 2016
  - E. CALIFORNIA ELECTRICAL CODE - CEC - 2016
  - F. CALIFORNIA CODE OF REGULATIONS, TITLE 8, INDUSTRIAL RELATIONS  
TITLE 19, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
  - G. CALIFORNIA CODE OF REGULATIONS, TITLE 24, BUILDING STANDARDS
  - H. TITLE 24, PART 11, CALIFORNIA GREEN BUILDING CODE, 2016 EDITION
  - I. OSHA REQUIREMENTS, INCLUDING SPECIFIC REQUIREMENTS FROM STANDARD 1910. SEE PARAGRAPH 15
  - J. CAL-OSHA REQUIREMENTS
  - K. NFPA 101 - 2015 EDITION
  - L. NFPA 51 - 2018 EDITION
  - M. NFPA 54 - 2018 EDITION
  - N. NFPA 56 - 2017 EDITION
2. LAYOUT OF MATERIALS, EQUIPMENT AND SYSTEMS IS GENERALLY DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED. SOME WORK MAY BE SHOWN OFFSET FOR CLARITY. THE PLUMBING BUILDING PLANS HAVE BEEN PREPARED TO MATCH THE ARCHITECTURAL PLANS. IF DIFFERENCES OCCUR, THE ARCHITECTURAL PLANS ARE TO TAKE PRECEDENCE. THE ACTUAL LOCATIONS OF ALL MATERIALS, PIPING, DUCTWORK, FIXTURES, EQUIPMENT, SUPPORTS, ETC. SHALL BE CAREFULLY PLANNED, PRIOR TO INSTALLATION OF ANY WORK, TO AVOID ALL INTERFERENCE WITH EACH OTHER, OR WITH STRUCTURAL, ELECTRICAL, ARCHITECTURAL, OR OTHER ELEMENTS. ALL PIPE OFFSET ELBOWS FOR COORDINATION BETWEEN TRADES ARE NOT SHOWN. CONTRACTOR SHALL INCLUDE SUFFICIENT FUNDS FOR THE COORDINATION OFFSETS IN THE BID. VERIFY THE PROPER VOLTAGE AND PHASE OF ALL EQUIPMENT WITH THE ELECTRICAL PLANS. ALL CONFLICTS SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT AND THE ENGINEER PRIOR TO INSTALLATION OF ANY WORK OR THE ORDERING OF ANY EQUIPMENT.
3. ALL PIPING AND CONDUIT REQUIRING SEISMIC BRACE AND SUPPORT SHALL BE SUPPORTED PER MASON WEST, INC. "SEISMIC RESTRAINT COMPONENTS FOR SUSPENDED DISTRIBUTION SYSTEMS", 1ST EDITION, 2016; OSHPD PRE-APPROVED ANCHORAGE OPM-0043-13, OR OTHER OSHPD PRE-APPROVED SYSTEM.
4. FIELD VERIFY THE EXACT LOCATION, DEPTH AND SIZE OF ALL NEW POINTS OF CONNECTION TO EXISTING UTILITIES PRIOR TO COMMENCING NEW UTILITY WORK.
5. PERMIT AND INSPECTION CHARGES: OBTAIN ALL PERMITS REQUIRED FOR PERFORMING WORK AND PAY ALL RELATED FEES. CALL FOR ALL REQUIRED INSPECTIONS AND PAY ALL RELATED FEES.
6. GUARANTEE: THE CONTRACTOR SHALL REPAIR ANY DEFECTS DUE TO FAULTY MATERIALS OR WORKMANSHIP AND PAY FOR ANY DAMAGE TO OTHER WORK RESULTING THERE FROM WHICH APPEARS WITHIN A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.
7. MATERIALS, EQUIPMENT AND INSTALLATION: EACH ITEM REFERRED TO ON THE DRAWINGS AND IN THE SPECIFICATIONS REPRESENTS THE STANDARD OF QUALITY DESIRED FOR MATERIALS, EQUIPMENT AND INSTALLATION. ALL SUBSTITUTIONS MUST BE REVIEWED IN WRITING BY THE ENGINEER. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND FREE FROM DEFECTS. ALL INSTALLATIONS SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND AS SHOWN ON DRAWINGS.
8. PIPING LAYOUT: ROUTE PIPING TO AVOID CUTTING STRUCTURAL MEMBERS. WHERE CUTTING OR NOTCHING IS REQUIRED, THE STRUCTURAL MEMBER SHALL BE REINFORCED IN ACCORDANCE WITH THE UNIFORM BUILDING CODE. PIPING SHALL BE INSTALLED TO ENSURE UNRESTRICTED FLOW, ELIMINATE AIR POCKETS, PREVENT UNUSUAL NOISE AND PERMIT COMPLETE DRAINAGE OF THE SYSTEM. PROVIDE INDIVIDUAL SHUT OFF VALVES AT EACH FIXTURE AND EQUIPMENT ITEM.

9. PIPES PASSING THROUGH FIRE RATED SURFACES: PIPES PASSING THROUGH FIRE RATED WALLS, FLOORS, CEILINGS, PARTITIONS, ETC. SHALL HAVE THE ANNULAR SPACE SURROUNDING THE PIPE OR PIPE INSULATION SEALED WITH FIRE RATED MATERIALS IN ACCORDANCE WITH THE REQUIREMENTS OF 2016 CBC SECTION 714.
10. PIPING MATERIALS: INSTALLATION SHALL COMPLY WITH CPC, NFPA 51 AND NFPA 54 (AS APPLICABLE). STATION OUTLETS SHALL BE MARKED, SIGNS SHALL BE POSTED AT EACH LOCATION INDICATING SECTION SHUT OFF VALVES.
  - A. ARGON AND ARGON/CARBON DIOXIDE PIPING (DOWNSTREAM FROM PRESSURE REGULATOR): SCHEDULE 80 BLACK STEEL PIPE, ASTM A53. EXTRA STRONG CARBON STEEL WELDING FITTINGS, LONG RADIUS ELLS, ANSI B16.9.
    1. MANIFOLD AND ACCESSORIES:
      - A. GENERAL: ALL MANIFOLD EQUIPMENT AND ACCESSORIES SHALL BE UL LISTED AND SHALL MEET OSHA REQUIREMENTS.
      - B. MANIFOLD AND CYLINDER MODULES: ALL PIPING, FITTINGS AND VALVES UPSTREAM FROM PRESSURE REGULATOR SHALL BE CAPABLE OF WITHSTANDING 3000 PSI. MANIFOLD SHALL BE FACTORY PREFABRICATED MODULAR ASSEMBLIES CONSISTING OF BRASS TEE, EXTENSION, MOUNTING BRACKET AND HEADER VALVE. METAL-TO-METAL SEALS. SILVER SOLDERED JOINTS. REGO, VICTOR.
      - C. PIGTAIL ASSEMBLY (CONNECTION OF CYLINDER TO MANIFOLD PIPING): METAL-TO-METAL SEALS, SILVER SOLDERED JOINTS AND INTEGRAL CHECK VALVES. MATERIAL SHALL BE FLEXIBLE TYPE WITH STAINLESS STEEL BRAID. REGO, VICTOR.
      - D. MANIFOLD PRESSURE REGULATOR: SINGLE-STAGE TYPE WITH INLET AND OUTLET GAGES, INTEGRAL INLET FILTER, UNION NUT CONNECTION, AND SAFETY RELIEF VALVE. REGULATOR SHALL PROVIDE GAS FLOW AT A CONSTANT DELIVERY PRESSURE NOT TO EXCEED 100 PSI. REGO, VICTOR.
      - E. STATION PRESSURE REGULATOR: SINGLE-STAGE TYPE WITH INLET AND OUTLET GAGES, INTEGRAL INLET FILTER, UNION NUT CONNECTION, AND SAFETY RELIEF VALVE. REGULATOR SHALL PROVIDE GAS FLOW AT A CONSTANT DELIVERY PRESSURE NOT TO EXCEED 100 PSI. REGO, VICTOR.
      - E. SHUTOFF VALVE: EACH VALVE SHALL BE SPECIFICALLY DESIGNED FOR THE APPLICABLE GAS AND PRESSURE RANGE. REGO, VICTOR.
    2. ALL MATERIALS, INSTALLATION AND TESTING SHALL BE IN ACCORDANCE WITH NFPA 51. CONNECTIONS TO BRANCHES AND RISERS SHALL BE MADE FROM TOP OF MAIN. PROVIDE SHUTOFF AND DIRT LEG (SEDIMENT TRAP) AT EACH INDIVIDUAL STATION REGULATOR.
    3. CLEANING: CHEMICAL COMPOUND IDENTIFICATIONS ARE FROM SAN JOAQUIN CHEMICALS, INC. ALL PIPING SHALL BE CLEANED WITH A SOLUTION OF 5 GALLONS OF ALKALINE LIQUID SANASOLV 6103 PER 1000 GALLONS OF WATER. PROVIDE TEMPORARY DRUM, PUMP, AND RETURN HOSE TO CIRCULATE SOLUTION FOR 2 HOURS MINIMUM TO REMOVE ALL TRACES OF OIL, SCALE AND OXIDES FROM ALL SECTIONS OF PIPING INCLUDING EACH DROP TO WELDING STATIONS. AT END OF 2 HOUR PERIOD, RINSE OUT SYSTEM WITH COLD WATER UNTIL NEUTRAL TO PHENOLPHTHALEIN TEST SOLUTION. NITROGEN AT 80-100 PSI SHALL BE USED TO BLOW OUT AND DRY ALL PIPING BEFORE CONNECTION TO SUPPLY.
11. BALL VALVES: FULL PORT. BRASS BODY, CAP, STEM, DISK AND BALL. SCREWED CONNECTION. LEVER HANDLE. PTFE SEAT AND STEM PACKING. 600 PSI WOG. UL LISTED FOR GAS SERVICE. FNW 410A.
12. TESTS AND PURGING: MAINTAIN 150 PSIG AIR PRESSURE FOR 4 HOURS. TEST IN ACCORDANCE WITH CCR, TITLE 8. TEST MEDIUM MUST BE OIL FREE. TEST SHALL BE MADE IN THE PRESENCE OF THE INSPECTOR. 2016 CMC 1405.2.2.