Technical Specification of Industrial Gases Pipelines

1. This specification covers supply at site, fabrication, erection, testing, flushing, cleaning, corrosion protection, earthing, painting and commissioning of Industrial gases pipelines i.e. (i) Oxygen gas pipelines (ii) Co2 gas pipelines & (iii) DA gas pipelines including safety fittings and other features on Turn Key Basis in Carriage Repair Shop, Heavy Repair Shop and Light Repair Shop of Harnaut Rail Karkhana.

2.0 Description of Work:

1.1 The gas pipeline would generally run over head position throughout inside shops at height stipulated normally along the structure / column and shall be clamped on support bracket to be fixed on the column / beam girder etc. Out side shop, the pipe lines shall be clamped on bracket carried on support structure without infringing any equipment / structure suitable for wind and other loads. The support structure should be fabricated from standard steel section conforming to IS:226 latest version.

2.2 Main lines for all three gas pipelines shall be of MS seamless pipes of 40 mm NB with 3.2 mm wall thickness confirming to IS :1239 (Pt-I)-2004 and of reputed make.

All pipelines shall be connected at the corners by suitable elbow joints and pipe bends and sufficient expansion loop and bends shall also be provided.

2.3 Drop lines for all three gas pipelines shall be of MS seamless pipes of 25 mm NB with 3.2 mm wall thickness confirming to IS : 1239)Pt-I)- 2004 and of reputed make and terminated at a height of 1.5 M from the floor level and clamped rigidly using required fittings.
2.4 The welding / brazing for joining pipelines shall be done as per relevant IS standards.

2.5 The standard pressure gauges shall be provided at beginning and end of each main lines for all three gases which should be fitted at height from floor level for easy visibility of readings.

2.6 The system shall be fitted with all safeguard and safety feature stipulated by statutory board and other regulations enforce from time to time such as Indian explosive acts and Indian factory act etc and shall be executed as per relevant Indian Standards.

2.7 All the pipelines shall be cleaned with nitrogen gas / suitable other gases for leak testing of pipelines.

2.8 Painting:

All pipes shall be de-greased, cleaned inside and outside including welded portion. Surface preparation is to be done by sand blasting. Total paint thickness (DFT) shall be 230 (micron) which includes one coat primer,( 70 micron ) one coat intermediate ( 100 micron ) and two coats final paint.( 30 micron each ) Painting should be carried out as per IS 2379 – 1990 or its latest version.

Painting work subject to inspection by Engineer-in-Charge of EPI in following stages:

a) Surface preparation
b) Primer application
c) Each coat of paint

Dry film thickness (DFT) shall be checked and recorded after application of each coat & extra coat of paint should be applied to make-up the DFT specified. Any defect noticed during various stages of inspection, the contractor shall be responsible to rectify the same.

2.9 There shall be total 90 Nos. down take points, 50 in carriage repair shop, 20 each in heavy repair shop & light repair shop.
3. This drawing is for tender purpose only and is indicative of the nature and extent or work covered in this specification and shall from the basis of further engineering. The successful tenderer shall, however, prepare additional drawings and Bill of Quantities, as required to facilitate fabrication of fittings, supports etc.

4. The successful tenderer shall carry out erection, testing, flushing, cleaning and commissioning of all pipe works from the Gas supply sources.

5. The tenderer shall also include for supply and erection of earthing for pipe work as and when requires.

6. This tenderer shall obtain approval of all work covered in his scope from relevant statutory authorities such as Factory Inspectorate, Electrical Inspectorate, Chief Controller of Explosives and others. He shall prepare necessary drawings, designs and explanations for obtaining such approvals and shall also include fees for such approvals.

7. Co-ordination with other suppliers where needed.

8. All forged fitting shall conform to ASME B 16.11 -2005. SW fittings shall be class 3000 and threaded fittings shall be class 2000. Fittings which do not conform to this standard shall be manufactured as per relevant IS/BS/ASTM with prior approval.

9. Pressure Testing:
The working pressure for the pipelines vis (i) Oxygen gas pipelines gas – 8 Kg/cm2, (ii) Co2 gas pipelines – 4 Kg / cm2 and DA gas pipelines – 0.65 Kg/cm2. All the gas pipeline should be tested pneumatically for leakage and pressure drop at least two times the working pressure. Soap solution or other suitable methods shall be applied on welded joints, flange fittings / valves etc. to find out any leak. Further each pipelines will be charged with the respective gas and will be kept in the system for 24 hours to find out any pressure drop. The contractor should make own arrangement for requisite equipment / gadgets to conduct the testing. The whole system along with installation should be completed by the contractor for satisfactory certification by EPI and/or EPI’s Client.

*****