

## ANNEXURE - A

### 1. Description

- 1.1 Supply, Erection, Testing and Commissioning of Acetylene & Carbon-di-oxide gas Manifold system including laying of pipeline for Oxygen, Acetylene & CO<sub>2</sub> Gases and provision of outlet points, in existing Body Repair Shop and newly extended shed of Body Repair shop at CRWS/BPL.
- 1.2 **Reference** – Sketch no. H1/DA/CRWS, H2/CO<sub>2</sub>/CRWS, & CRW/SK-881

### 2. Scope of Work

The detailed scope of work is as given below:

- 2.1. Supply of all materials required for erection & commissioning of Gas pipeline of Oxygen, Acetylene, CO<sub>2</sub> and Gas manifold system for Acetylene & CO<sub>2</sub> gases as per Annexure - B.
- 2.2. Installation of Manifold for Acetylene cylinders of 2 banks each of 10 cylinders (10x2 = 20 cyls.) of stainless steel pipe with valves, Acetylene Regulators, Flash back arrestor, flexible hose as Sketch No. H1/DA/CRWS.
- 2.3. Installation of Manifold for CO<sub>2</sub> cylinders of 2 banks each of 20 cylinders (20x2 = 40 cyls.) of stainless steel pipe with valves, CO<sub>2</sub> Regulators, heaters, flexible hose, Electrical contact gauge for alarm warning signals as per Sketch No. H2/CO<sub>2</sub>/CRWS.
- 2.4. Erection and laying of overhead pipelines and down take pipes for oxygen, Acetylene & CO<sub>2</sub> as per Sketch No. CRW/SK-881.
- 2.5. Installation of 64 nos. outlet points for oxygen with regulators, copper socket, distributor block and ball valve.
- 2.6. Installation of 64 nos. outlet points for Acetylene gas with regulators; Flash back arrestor, ball valve and unions.
- 2.7. Installation of 40 nos. outlet points for CO<sub>2</sub> with regulators, ball valves, M.S. 'U' bends, flange, distributor pipe along with nipple, end connectors.
- 2.8. Commissioning of all components of manifold systems. After complete installation of the system, the desired performance of the system shall be demonstrated by the contractor for at least two

working days (02 shifts each). After such demonstration and imparting necessary training to the concerned staff, the plant shall be handed over to CRWS staff for trial operation for 30 days. On successful completion of such trial, commissioning certificate shall be issued by CRWS Bhopal, provided, all necessary obligations of the contract on the part of the contractor are met.

### **3. Special Conditions of the Contract**

- 3.1 Tenderers are advised to make a visit to the site where the manifold system is required to be installed before participating in this tender to ensure proper assessment of material requirement and the work content. The scope of supply shall be as per Annexure-B. However, the contractor should bring additional quantity of items as spares to take care of wastage during erection/fabrication or any unanticipated requirement. The same will be at no extra cost. Such additional quantity/items should be so declared at the time of supply and on completion of work the same can be taken back under proper documentation from the consignee.
- 3.2 The Contractor shall submit an activity chart showing the schedule of the work planned along with the tender schedule.
- 3.3 For reference a sketch has been provided by CRWS. On the basis of it, The Contractor shall provide his planning of work duly including details such as-
  - a) Proposed pipeline layout including main supply lines from the nearest available source, before commencement of erection work on site.
  - b) Details of drop lines planned.
  - c) Material schedule (item description in full quantity proposed etc. planned for the work).
  - d) IS specification for the individual items planned, weld joint details, leak and pressure testing procedures applicable.
  - e) Copy of the IS specifications referred.
- 3.4 Deleted.
- 3.5 All the materials supplied for the subject work shall be in accordance with the relevant standards/ specification as mentioned in the schedule as per Annexure-B.
- 3.6 The header pipelines shall be taken along the longitudinal array of main structural pillars of the shop at a height of minimum 6 meters from the ground level and shall be mounted on to the pillars with suitably fabricated supports.

- 3.7 There shall be one drop line for each gas as per Annexure-C. The drop lines will normally have two distribution points each at the bottom end.
- 3.8 All drop lines shall be secured properly with suitable clamps/ supports to the pillars with minimum bends, routed in such a way to provide necessary protection from any impact/ damage from materials being handled in the shop floor and to avoid any EOT crane movements that could come up at a later stage.
- 3.9 All the drop lines shall terminate at a height of 1.5 meters from the ground and all the valves and connector points shall be easily accessible from the ground for easy operation of the same.
- 3.10 Features of all drop points for all the gas lines shall be uniform throughout and all similar material/ hardware shall be of similar specification, construction and make and shall be easily available in the market.
- 3.11 Before the demonstration of the performance of the system after installation, all the pipelines shall be pressure tested in accordance with the relevant IS standards and all other relevant rules applicable to such gas pipelines and its application. In absence of any standard test procedure, the pipelines shall be tested atleast at 1.5 times the working pressure.
- 3.12 Welding Machines, Gas Welding Plant and Electrodes for all type of welding and gases for gas welding shall be arranged by the Contractor at his own cost.
- 3.13 Consumables/ agents required for the cleaning work and pressure or leak tests, such as Nitrogen Gas for Purging, and other cleaning agents, nitrogen gas for pressure/ leak testing required for the work shall be arranged by the Contractor at his own cost.
- 3.14 All gas pipelines, fittings, erected structures and securing arrangements shall be given anti corrosive treatment by painting with red oxide zinc chromate primer to IS: 2074 1992 followed by synthetic enamel exterior paint to IS: 8662 1998 in different colours for identification as per National Safety council regulations/Duly approved by the competent authority (WCR officials).
- 3.15 All the equipments and pipelines should be selected and erected in such a way that it shall facilitate carrying out inspection, cleaning, replacement and repairs.
- 3.16 The pipelines shall be properly secured and laid at safe distance from Power cable, OHE Cranes & DSL, Jib Cranes etc.

- 3.17 Contractor shall ensure that the routine work of shops should not hamper during installation and commissioning of gas pipelines in shop.
- 3.18 The contractor shall be responsible for proper disposal of off cuts/ scrap generated & debris etc. if arises, during execution of the work, at no extra cost.
- 3.19 Any tools/ tackles/ fixtures/ machines etc. required for erection & commissioning of pipeline/gas manifold system will be in scope of contractor and while taking these inside the premises of CRWS, the same should be endorsed/ declared to security personnel at main gate and SSE concerned to facilitate the process for taking these items back.
- 3.20 The conditions of contract contained herein in Annexure A shall be supplemented to the Indian Railway Standard Conditions of the contract and Tender Schedule Booklet. In the event of any conflict or inconsistency between them, conditions of contract contained in Annexure A herein shall prevail.
- 3.21 Electricity, compressed air and raw water will be provided by CRWS in "as available condition" FREE OF COST. However the Contractor is requested to use these resources judiciously avoiding wastage.
- 3.22 The successful Contractor shall ensure that the labour employed by him inside the factory comply with all instructions given by the security staff on duty.
- 3.23 The successful Contractor shall maintain close Co-ordination with the engineer in-charge of the work so as to ensure the work is in progress according to the Contract schedule.
- 3.24 It is to be ensured by the contractor that good workmanship is put in by his staff while installation of all the components of the complete manifold system. Symmetry, alignment of pipelines, their supporting structures, firm clamping arrangements, leak proof threaded joints & welded joints etc. shall be ensured. In case any deficiency in any of these areas is pointed out later during final inspection stage, the same shall be required to be rectified up to the satisfaction of the inspecting officer without any extra cost.
- 3.25 The entire work shall be carried out under contractor's technically qualified Engineers and expert supervisors. The Administration shall have the power to direct the contractor to engage sufficient number of people, if it is felt that the contractor's execution and supervising

arrangements are insufficient for the successful completion of the work as per schedule.

- 3.26 All safety rules/ factory act prevalent in the premises of CRWS/BPL will have to be followed by the staff deployed for installation & commissioning of oxygen, acetylene & CO<sub>2</sub> gas manifold system and pipelines.
- 3.27 The staff deployed must bear a photo I-card issued by the supplier company, based on which CRWS can issue gate pass for entry/exit to/from CRWS/Bhopal.
- 3.28 Wherever electrical shutdown is required for safe working, prior work permit should be obtained before commencing the work in consultation with the SSE nominated for this purpose.
- 3.29 Normal working hours permitted for working at CRWS premises will be from 08.00 hrs. to 17.00 hrs. on all working days. For working on holidays/Sundays prior permission may be sought from CWM/CRWS/Bhopal.
- 3.30 Contractor shall be responsible for the discipline of the men engaged by him inside the CRWS area and ensure that the labourers employed by him are confined to their places of working and shall not go around the workshop.
- 3.31 The successful Contractor shall ensure that the labour, equipment and materials comply with all the provisions of Madhya Pradesh Factories act and all other relevant rules and regulations applicable for this factory.
- 3.32 Deleted.
- 3.33 **Drawing, Manuals and Literatures:** Firm shall supply all drawings of pipelines system, literature of items supplied, operation & maintenance manuals, along with required Safety Certificates.
- 3.34 The safe custody of the materials supplied, rests with tenderer till they are fixed, erected in position and finally handed over to CRWS Administration.
- 3.35 The Contractor should make his own arrangements for the required vehicles such as lorries, mobile cranes etc., other tools, plants, machinery like portable tools, welding & gas plants, consumables and other accessories for the expeditious progress of work.

3.36 The contractor shall be responsible to see that the work executed by their staff, does not in any way infringe or damage the existing structures or other works in that area. The contractor is liable for paying the cost of damage if any caused to the Railways/CRWS property during the execution of their work.

3.37 Conditions related to entry and work permit system are as under:

3.37.1 Once the Purchase Order is issued to the successful Contractor, the Contractor shall apply in a prescribed format to obtain proper entry and work permit for the period of contract from CRWS authorities.

3.37.2 The display board containing the details of nature of work, maximum number of staff working per shift, period of work, site in charge name and phone number and main office phone numbers is to be placed at prominent place near the area of work.

3.37.3 If total staff engaged on any day of the contract period is 20 or more, Contractor has to register with Central Labour Commissioner Bhopal and obtain license from them. The copy of which shall be submitted with the Engineer-in-charge for this tender before starting the work.

3.37.4 Contractor's staffs deployed at CRWS shall be insured during the work period, evidence on support of the same shall be submitted with the Engineer-in-charge for this tender before starting the work.

3.37.5 The supervisor deployed by the contractor must ensured that:

- a) Hand operated electrical tools are to be properly earthed and should not have any livewire.
- b) Always use three way plug supply for connecting the electrical appliances.
- c) Suitable plat form ladders are to be used while performing work at height.
- d) All instrument used for the work is to be complied with IE rules.

- e) Staffs under your control should wear the personal protective equipment such as safety shoes, safety helmets, hand gloves, safety harness, hand screen, safety net etc. as per working condition to prevent injuries.
- f) The Factories Act – 1948 and Madhya Pradesh Factories Rules - 1950 & Contract Labour (Regulation & Abolition) Act, 1970 are to be followed.
- g) The terms and conditions as laid down by the Madhya Pradesh Pollution Control Board are to be strictly followed.
- h) Suitable ladders/ scaffolding are to be used for climb up.
- i) Activities other than the specified activities as per the contract clauses, which are assigned to you, are not permitted at our premises.
- j) Ensure the Suitable guards are provided to the hand operating machine.
- k) In case, any accident occurs during the work, the supervisor deployed by the contractor shall report immediately to the Chief Safety Officer, CRWS Bhopal. However, if any injury is caused to contractor's staff, the contractor will be responsible for arranging the necessary first aid/ treatment at his own expenses.
- l) Suitable lifting machineries and tackles are to be used to handle the materials.
- m) Off cuts and wastes scrap generated during the course of your work must be suitably disposed to the designated dumpsites as directed by the engineer in charge.

3.37.6 Any loss caused to CRWS because of negligence/ ignorance on the part of contractor shall be recovered from the contractor.

3.37.7 The equipments & materials stored inside CRWS premises will be at contractor's own risk.

- 3.37.8 Factory Manager/ Occupier is fully empowered to stop the work if any safety instructions/ conditions/ precautions/ procedures is violated by the contractor's staff.
- 3.37.9 Any claim arising/ necessary compensation to the victim/ relative of the victim/ legal expenditure cost (if any) arising due to any accident (fatal/ causing disability to contractor's staff/ causing damage) while working inside CRWS premises due to negligence/ ignorance on the part of the contractor/ contractor's staff, shall be borne by the contractor.
- 3.37.10 On every day during the currency of contract the contractor/ or his supervisor shall report to SSE in charge of the work and also shall obtain clearance from Electrical & Mechanical Department (if necessary). At the end of the day, the contractor or his supervisor shall submit a brief report on the days work to the respective SSE's in charge of the work.
- 3.37.11 Initially permit will be issued for one week only. The renewal of permit will be issued only on the basis of compliance of the said rules, regulations, conditions and safety norms by the contractor's staff during the first week.
- 3.37.12 The Contractor shall be required to give an undertaking to the engineer-in-charge of this tender that all the safety norms mentioned in special conditions of the tender will be followed by the contractor's supervisors and staff while working inside CRWS premises.
- 3.37.13 The list given in annexure-B is indicative, since it is a supply & commissioning contract, the responsibility of completing the gas manifold and demonstrating its use is with the contractor.  
The contractor should indicate any additional requirement, if any for completing the installation of manifold in his bid otherwise any shortfall in material will have to be made good by contractor it his own cost.
- 3.37.14 For testing purposes (destructive or otherwise) one sample will be randomly chosen out of following items:

S. No.	Name of item
1.	Any one no. Copper flexible hose pipe out of item no.2



S. No.	Name of item
2	Any one slip on tee out of item no. 3
3.	Any one no. non return valve out of item no. 4
4.	Any one no. Aluminum bracket with chain facility out of item no. 6
5.	Any one meter length of header pipe line for Oxygen out of item no. 14
6.	Any one meter length of drop pipe line for Oxygen out of item no. 15
7.	Any one no. ball valve for 41.6mm pipe out of item no.16
8.	Any one no. copper socket size 41.6mm out of item no.17
9.	Any one no. copper tee size 41.6mm out of item no.18
10.	Any one no. copper elbow size 41.6mm out of item no.19
11.	Any one no. copper reducer size 41.6 x 16 mm out of item no.20
12.	Any one meter length of header pipe line for DA out of item no.21
13.	Any one meter length of drop pipe line for DA out of item no.22
14.	Any one no. ball valve for 25 mm pipe out of item no.23
15.	Any one no. MS forged tee out of item no.24
16.	Any one MS bend size 19 mm out of item no.25
17.	Any one meter length of header pipe line for CO2 out of item no. 26
18.	Any one meter length of drop pipe line for CO2 out of item no.27
19.	Any one no. ball valve size 50mm out of item no. 28
20.	Any one set MS flange size 50 mm out of item no. 29
21	Any one no. copper socket size 16 mm out of item no.30
22.	Any one no. forged brass distributor block for oxygen drop line item no.31
23.	Any one no. 90 degree ball valve out of item no. 32
24.	Tetra chloride wash 1 liter out of item no.33
25.	G. I. U' clamp and nylon packing one Kg. out of item no.34
26.	Enamel paint and primer one liter each out of item no.35

S. No.	Name of item
27.	Any one no. flash back arrestor for oxygen drop line out of item no.36
28.	Any one regulator for oxygen drop line out of item no.37
29.	Any one no. flash back arrestor for DA drop line out of item no.38
30.	Any one no. 90 degree, 1/2" ball valve out of item no. 39
31.	Any one no. MS forged union, 1/2" size out of item no.40
32.	Any one MS bend for flash back arrestor out of item no.41
33.	One Kg. angle and clamping material out of item no.42
34.	Any one no. DA tapping point regulator out of item no.43
35.	Any one no. CO2 tapping point regulator out of item no.44
36.	Any one no. MS 'U' bend for CO2 drop line out of item no.45
37.	Brass body 90 degree 1/2" angle ball valve for CO2 out of item no.46
38.	Any one no.19mm MS bend for CO2 drop line out of item no.47
39.	Any one no. header distributor pipe along with nipple out of item no.48
40.	G. I. U' clamp and nylon packing one Kg. for CO2 pipes out of item no.49

Contractor will have to replace these items at its own cost.

#### **4.0 Inspection and Certification**

4.1 All the material supplied shall be accompanied by test certificate issued from test houses approved for the purpose by the government/ test certificate issued by original manufacturers and all the material supplied shall be pre- inspected by RITES before delivery.

4.2 All the measuring equipments supplied must accompany calibration certificate issued by the original manufacturer/ **NABL** accredited laboratories.

#### **5.0 Completion period**

5.1 The period of completion for this work is 90 days (Ninety days) from the date of issue of purchase order unless there is any delay on railway's account.

## **6.0 Warranty**

6.1 As per IRS conditions of contract.

## **7.0 Payment Terms**

- 7.1 Payment of Sixty Five percent (65%) of the total value of the contract will be made after supply of the materials and acceptance by the consignee (i.e. Receipt and physical verification of the material for condition & quantity).
- 7.2 Payment of Twenty Five percent (25%) of the total value of the contract will be made after completion of installation and commissioning of all the works mentioned in clause 2.8.
- 7.3 Payment of Remaining Ten percent (10%) of the total value of the contract will be made after successful commissioning of the system and after submission of Bank Guarantee of the value equivalent to 10% of total value of the contract amount which should be valid up to six months claim period after completion of the warranty period.