MAHARASHTRA INDUSTRIAL DEVELOPMENT CORPORATION

Item Specification

Work Name: Nandurbar Industrial Area...M & R to WSS...Providing services pumping arrangement ,misc. annual maintenance work and Allied misc. work.

Sub Estimate:Sub Estimate

1 Providing all services for pumping arrangement to lift the water at jack well, Nandurbar including providing pump operator & Helper for operation of installed pumps , electrical panels of motors with its all accessories, minor repairs related to electric motor such as replacement of lugs etc. communicating with MSEDCL authorities in case of major failures to re-instate supply at the earliest etc. for 1 shifts daily including all labour etc. complete, at Jackwell (1 operator and 1 helper) Rate Excluding GST.

Specification:

The work consists of providing day-to-day pumping arrangement at jack well Nandurbar, for which the contractor have to engage the person who have minimum required qualification for pump operator & Helper as per standard norms. The item includes operation of pumps with electric motor of installed capacity, electrical panels of motors with its all accessories. The operation of pumps shall be done in such a way that the power factor shall be within 0.95. All the pumps shall be used simultaneously along with stand-bye pump to avoid over use of any one of the pumps. Record of daily pumping along with connected information will have to be maintained by the persons deployed by the contractor. The contracting agency should take Permit from MSEDCL authorities in case of working in 11 KV substation, if MSEDCL authorities insist upon MIDC to execute the work. The cleaning of machineries, is also included in the scope of work.complete. The contractor will be totally responsible for any liability about the manpower deployed for the work during the contract period or after expiry of contract period. There will not be any liability on MIDC about the manpower deployed for the work during the contract period or after expiry of contract period. The contractor shall be liable for the loss of any property of MIDC due to negligence of the manpower deployed for the work. The age of all the person deployed for the work shall be more than 18 years. The contractor will be totally responsible for any accident / mishappening during the execution of the work. The rate is inclusive of all taxes etc., no any additional payment will be made to the contracting authority. The personnel engaged /employed by Contractor in relation to this contract shall be under the direct control of the contractor and any Employee- Employer Relationship shall not exist between MIDC & Contractor/his personnel engaged under the scope of this whole contract. MIDC shall not bear any liability of the personnel engaged by the contractor under this contract.

Mode of Measurement – The contract rate shall be **Per Day** basis

2 Providing all services for pumping arrangement to lift the water at WTP, Nandurbar including providing pump operator & Helper for operation of installed pumps , electrical

panels of motors with its all accessories, minor repairs related to electric motor such as replacement of lugs etc. communicating with MSEDCL authorities in case of major failures to re-instate supply at the earliest etc. for 1 shifts daily including all labour etc. complete, at WTP (1 operator & 1 Helper) Rate Excluding GST

Specification:

The work consists of providing day-to-day pumping arrangement at WTP Nandurbar, for which the contractor have to engage the person who have minimum required qualification for pump operator as per standard norms. The item includes operation of pumps with electric motor of installed capacity, electrical panels of motors with its all accessories. The operation of pumps shall be done in such a way that the power factor shall be within 0.95. All the pumps shall be used simultaneously along with stand-bye pump to avoid over use of any one of the pumps. Record of daily pumping along with connected information will have to be maintained by the persons deployed by the contractor. The contracting agency should take Permit from MSEDCL authorities in case of working in 11 KV substation, if MSEDCL authorities insist upon MIDC to execute the work. The cleaning of machineries, Premises etc. is also included in the scope of work. Also, day to day maintenance at WTP Including all labor etc. complete The contractor will be totally responsible for any liability about the manpower deployed for the work during the contract period or after expiry of contract period. There will not be any liability on MIDC about the manpower deployed for the work during the contract period or after expiry of contract period. The contractor shall be liable for the loss of any property of MIDC due to negligence of the manpower deployed for the work. The age of all the person deployed for the work shall be more than 18 years. The contractor will be totally responsible for any accident / mishappening during the execution of the work. The rate is inclusive of all taxes etc., no any additional payment will be made to the contracting authority. The personnel engaged /employed by Contractor in relation to this contract shall be under the direct control of the contractor and any Employee- Employer Relationship shall not exist between MIDC & Contractor/his personnel engaged under the scope of this whole contract. MIDC shall not bear any liability of the personnel engaged by the contractor under this contract.

Mode of Measurement – The contract rate shall be day **per day** basis.

3 Providing all services for Maintenance works on Raw Water Rising Main and Pure water and distribution line system in the area, The petroling line work and the lines to check & stop the leakages also with all Including all related materials i.e welding machine ,pipeline cutter machine and man powers etc. complete. As and when Required. (2 Helpers & 1 Fitter) Rate Excluding GST.

Specification:

General : The work consists of providing all services for day-to-day maintenance works on Raw Water Rising Main, Pure Water Rising Main and distribution system in the area , patrolling on the lines to check & stop the leakages found if any including all related works at Nardana G. C. The contractor has to engage fitter & helper to assist the fitter daily . The people who have minimum required knowledge for this work. The item includes providing arrangement for patrolling, repairing of the faults on Raw Water Rising Main, Pure Water Rising Main distribution network pipelines as

and when required, contact Engineer-in-charge if the major fault is observed and help to repair it, opening and closing of valves in the distribution network for water supply in the area as and where required, collecting electricity bill, sending it to Sub-Division Office, Dhule and depositing the cheque / DD for it when made available from MIDC office etc. The item includes providing services as above per throughout the period of one year. Material required for the repairs will be supplied by the MIDC at free of cost. The contractor will be totally responsible for any liability about the manpower deployed for the work during the contract period or after expiry of contract period. There will not be any liability on MIDC about the manpower deployed for the work during the contract period or after expiry of contract period. The contractor shall be liable for the loss of any property of MIDC due to negligence of the manpower deployed for the work. The age of the entire person deployed for the work shall be more than 18 years. The contractor will be totally responsible for any accident / mishappening during the execution of the work. The rate is inclusive of all taxes etc., no any additional payment will be made to the contracting authority. The personnel engaged /employed by Contractor in relation to this contract shall be under the direct control of the contractor and any Employee- Employer Relationship shall not exist between MIDC & Contractor/his personnel engaged under the scope of this whole contract. MIDC shall not bear any liability of the personnel engaged by the contractor under this contract. Mo**de of Measurement** – The contract rate shall be per **Job** basis.

4 Providing JCB for excavation during repairs of pipeline , leakage work as and when required. Providing JCB for excavation during repairs of pipeline.

Specification:

General - Item include providing JCB with driver, fuel, oil etc. complete. The contractor will be responsible for any mis-hap during execution of work. The work is to be executed as per the direction of Engineer–in–charge.

Mode of Measurement – The contract rate shall be per **Hours** basis

5 Welding machine (Electric Transformer) Use for M.S. pipeline and other pipeline leakage works.

Specification:

The assembly as described above shall be transferred to an automatic welding machine for full welding. The circumferential as well as longitudinal joints shall be welded on this machine. hand welding shall not be permitted except for sealing runs and such other minor works at the discretion of the Engineer. The strength of the joint shall be at least equal to that of the parent metal. The automatic welding machine shall be of approved make. The Engineer shall from time to time during the progress of work, supply working drawings or instructions specifying details of welded joints for different elements of the fabrication work. The contractors shall use electrodes of approved make and size, the size depending on the thickness of plate and the type of joint. They shall also use standard current and arc voltage required for the machine in use with such modifications as may be found necessary after experimental welding. For this purpose, samples of welded joints shall be prepared and tested in the presence of the Engineer-in-Charge. The value once determined shall be maintained throughout the work and if any modifications are to be made, a written permission of the Engineering-Charge shall be obtained. In the case of thin sheets, electric arc welding may not

give satisfactory results, the gas welding shall be resorted to. Gas welding shall be subject to the same Specifications and tests as those for electric welds. In order to maintain a good standard in welding, welder's skill shall be tested by the contractors before they are entrusted with the job. A periodical test as regards their efficiency shall also be taken at intervals of about 6 months and those found inefficient shall be removed from the job. Those who pass the test only shall be posted on the job. Electrodes : The contractors shall use standard electrodes depending on the thickness of plate and the type of joint. They shall also use standard current and voltage required for the machine in use as per Manufacturer's directions. Welding electrodes shall conform to I.S.S. No.814 of 1967/1974 "Specifications for covered electrodes for metal arc welding of mild steel (second or latest revision)". Indian made or equivalent foreign made electrodes of the required quality approved by the Engineer, shall be used wherever possible. After completing the welding of joints of pipes or plates from one side, the welding on the other side shall be taken up. Before starting welding on the other side, the joints shall be gauged to remove irregular penetration till the even surface is exposed. Gauging shall be resorted to when the plate thickness is above 6 mm. (b) Testing of Welded Joints : (i) The welded joints shall be tested in accordance with the procedure laid down

Mode of Measurement :- Contract rate shall be **per day of 08 Hrs.** of item executed

6 Electrician for electrical panels of motors with its all accessories, minor repairs related to electric motor such as replacement of lugs etc. communicating with MSEDCL authorities in case of major failures to re-instate supply at the earliest etc.

Specification:

General : The work consists of providing day-to-day electrical maintenance works including minor repairs, tools etc. related to electrical motors of pumps , WTP accessories and general lighting at WTP, jack well , minor electrical works at jackwell & WTP with street lighting in premises of WTP & Jackwell etc. including all labour etc. complete. Since MIDC has provided Hi Tech 11 KV Substations both at Jackwell & WTP, the scope of this item includes minor electrical maintenance of both these substations. The engaged person must have Supervisory electrical license so as to operate & maintain 11 KV substations. The scope also includes Communicating with MSEDCL authorities in case of major failures to re-instate supply at the earliest is also included in the scope of the item. The contractor has to engage the person who has minimum required qualification for Page 73 Tender ID - 37959 electrician as per standard norms for this work. The item includes providing services as above throughout the period of one year. The contracting agency should take Permit from MSEDCL authorities in case of working in 11 KV substation, if MSEDCL authorities insist upon MIDC to execute the work. The contractor should provide electrical safety instruments to the operating personnel so as to avoid any electrical accident. The contractor will be totally responsible for any liability about the manpower deployed for the work during the contract period or after expiry of contract period. There will not be any liability on MIDC about the manpower deployed for the work during the contract period or after expiry of contract period. The contractor shall be liable for the loss of any property of MIDC due to negligence of the manpower deployed for the work. The age of the entire person deployed for the work shall be more than 18 years. The contractor will be totally responsible for any accident / mis happening during the execution of the

work. The rate is inclusive of all taxes etc., no any additional payment will be made to the contracting authority. The personnel engaged /employed by Contractor in relation to this contract shall be under the direct control of the contractor and any Employee- Employer Relationship shall not exist between MIDC & Contractor/his personnel engaged under the scope of this whole contract. MIDC shall not bear any liability of the personnel engaged by the contractor under this contract.

Mode of Measurement – The contract rate shall be per **Job** basis.

7 Providing and supplying I.S.I. mark rubber gasket suitable for C.I. or D. I. pipe of all class for tyton joints including inspection charges, transportation upto departmental stores excluding GST levied by GOI & GOM in all respect etc. complete.

7.1 S.B.R. Gaskets for C. I. / D.I. Pipes

7.1.1 100 mm

7.1.2 150 mm

7.1.3 200 mm

7.1.4 300 mm

7.1.5 400 mm

Specification:

Mechanical joint rubber gaskets for ductile iron pipes are manufactured to standards (ANSI/AWWA C111/A21.11). They are typically composed of vulcanized styrene-butadiene rubber (SBR), or optional materials like EPDM or Nitrile, designed for water, sewage, or sanitary service in sizes from 3 to 48 inches.

- Material: SBR (Standard), Neoprene, EPDM, Nitrile/NBR, FKM (Viton).
- Hardness: SBR/Nitrile typically 75 (+/-5) Shore A, compliant with ASTM D2240.
- Dimensions: Standardized conical shape for Mechanical Joint (MJ) fittings, often compliant with IS 12820 (India) or AWWA C111.
- Testing: Certified to NSF-61 (Potable Water), ASTM D412 (Tensile strength 1500 psi minimum), and ASTM D395 (Compression set).
- Application: Used to create a positive seal via a tee-head bolt and gland assembly.
- **Mode of Measurement –** The contract rate shall be per **Number** basis.

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8 Supply of C. I . Mechanical Compression Collar Coupling suitable for C. I. Spun Pipes (as per - IS - 1536 /2001) and complete with sealing rubber gasket of SBR,.C.I. follower Glands and M.S. nut Bolts. The whole assembly should be mechanically and hydraulically tested to the provisions as laid down in IS:1538 /1993.

8.1 100 mm dia

8.2 150 mm dia

8.3 200 mm dia

8.4 300 mm dia

8.5 400 mm dia

Specification:

1.General : The item provides to supply at departmental store the Cast Iron jiffy collar coupling with rings etc. complete as per the specified diameter of pipe / pipes. (Dia. between 80 mm & 750 mm).

The joints shall conform the provisions of IS: 1538-1993, 1536 / 2001 and IS 5382-1985 .2 Material : All Cast iron specials such as C.I. mechanical compression collar coupling shall confirm to I.S. 1538-1993, 1536 / 2001 (Part 1 to 24). The Supply at departmental stores shall be of various diameters as specified in supply order. The specials shall be free from any defects. It should be possible to cut it drill the special to suit the site condition and fit in position etc. The hardness of the external surface shall not exceed 210 HBS. Sealing Rings shall confirm to IS 5382-1985. Ring shall be homogeneous and free from porosity, grit and surface defects, such as pitting, irregularities. Dimension of rings shall be as per IS 10292- 3. Manufacture : Generally as per item WS/B/2.3. The dimensions of jiffy collar coupling shall be as per 1538-1993, 1536 / 2001 . 4. Supply and Stacking at Departmental Store : Specified under agreement. 5. Testing : The fittings shall be tested for: 1. Tensile Test : Minimum Tensile strength of 150 MPa. 2. Brinell Hardness Test : shall not exceed 210 HBS. 3. Hydrostatic Test : As per IS: 1538- 1993, 1536 / 2001 , which shall be: For Dia. upto and including 300 mm - 2.5 MPa. Dia over 300 mm & up to & include 600 mm - 2.0 MPa. Dia over 600 mm - 1.5 MPa. 6. Markings : Each fitting shall have cast stamped or indelibly painted on it the following markings: 1. Manufacturer’s Name or trademark or identification mark. 2. The nominal diameter, 3. Mass of fitting, 4. Last 2 digits of year of manufacture, 5. Any other mark required by the purchaser. 7. Item to Include : The item includes the supply of Cast Iron jiffy collar coupling, including all taxes, levies excluding octroi, transporting, loading, unloading and stacking at departmental store or work site as directed. The necessary test certificate also shall be provided along with the supply. Octroi paid shall be reimbursed on producing documentary evidence of payment made.

Mode of Measurement and Payment : The item shall be measured as numbers of collar couplings for the specified diameter of pipe. The measurement and payment shall be per **Number** basis.

9 Providing double flange sluice valve confirming for IS- 14846 including worn gear arrangements as per test pressure, stainless steel spindle, caps, including inspection charges, transportation upto departmental store, unloading, stacking excluding GST levied by GOI & GOM in all respect etc. complete.

9.1 Sluice valve - PN - 1.6 (Without by pass arrangement)

9.1.1 100 mm.

9.1.2 150 mm.

9.1.3 200 mm.

9.2 Sluice valves - PN -1 (Without by pass)

9.2.1 80 mm.

Specification:

Sluice valves are typically specified under **IS: 14846** for water works, ranging from \(50\text{mm}\) to \(1200\text{mm}\), with PN 1.0 or PN 1.6 pressure ratings. Common specifications include Cast Iron (CI) bodies, non-rising spindles, gun metal/stainless steel seats, and flanged ends. These valves are designed for full isolation of water flow in municipal and industrial systems.

Common Technical Specifications (IS:14846)

- Manufacturing Standard: IS:14846 (replaces IS:780 and IS:2906).
- Size Range: 50 mm to 1200 mm (up to 1800 mm per).
- Pressure Ratings: PN 1.0 (\(10\text{ kg/cm}^2\)) or PN 1.6 (\(16\text{ kg/cm}^2\)).
- Type: Non-Rising Spindle (NRS) or Rising Spindle.
- Material of Construction:
- Body/Dome/Wedge: Cast Iron (IS:210 Gr. FG200/FG260).
- Seat/Face Rings: Leaded Tin Bronze (IS:318 Gr. LTB2) or Stainless Steel.
- Spindle: Stainless Steel (AISI 410 or IS:6603 Gr. 12Cr12).
- Gland Packing: Expanded Pure Flexible Graphite or Jute.
- End Connections: Flanged End, Drilled as per IS:1538.
- Operation: Handwheel (for < 300mm), Gearbox
- **Mode of Measurement and Payment :** The item shall be measured as numbers of sluice valve for the specified diameter of pipe. The measurement and payment shall be per **Number** basis.

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- Body/Dome/Wedge: Cast Iron (IS:210 Gr. FG200/FG260).
- Seat/Face Rings: Leaded Tin Bronze (IS:318 Gr. LTB2) or Stainless Steel.
- Spindle: Stainless Steel (AISI 410 or IS:6603 Gr. 12Cr12).
- Gland Packing: Expanded Pure Flexible Graphite or Jute.
- End Connections: Flanged End, Drilled as per IS:1538.
- Operation: Handwheel (for < 300mm), Gearbox
- **Mode of Measurement and Payment :** The item shall be measured as numbers of sluice valve for the specified diameter of pipe. The measurement and payment shall be per **Number** basis.

10 Dewatering the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by Engineer-in-charge (including cost of machinery, labour, fuel), etc. complete. (Bd-A-9/261) (i) The Contractor at his request may be allowed to start construction of masonry steining so as not to allow silting of well in oncoming monsoon and while paying masonry, 25%

amount shall be withheld and released only when excavation to the full depth is completed. (ii) Dewatering : Total dewatering charges are to be proposed in the tender as lumpsum amount and 75% is payable for excavation and 25% is payable for construction of well / gallery. Out of 75% excavation, break-up shall be as under
25% for last 1 M depth. 20% for 2 M depth which is just above last 1 M depth.
15% for 2 M depth which is just above last 3 M depth.
15% for the rest of depth from water table level. The above conditions will restrict the tendencies of agencies to avoid deepening of wells, etc. to the required depth.
Specification:
Genral - The item include Providing Dewatering Set HP for dewatering repairs of pipeline. The contractor will be responsible for any mis-hap during execution of work. The work is is to be executed as per direction of Engineer – in – charge.
Mode of Measurement – The contract rate shall be **Horse Power per hour** basis

11 Providing at departmental store or worksite fabricated M. S. Pipe and specials with socket and spigot ends for plain ends with necessary longitudinal and circumferential joints with required number of welding runs including cost of plates, welding rods & all kind of duties except octroi including loading unloading and transportation, etc. complete (Rates excluding GST)

11.1 M. S. pipes & Specials of all sizes without plain ends

Specification:

2.1 General : The item includes providing at departmental store or work site fabricated M.S. Pipes and Specials of specified diameter/s, length and thickness including testing of pipes and specials, loading, transportation, unloading, manufacturing and stacking.

2.2 Material : Required for fabrication of pipes, bends and specials etc.

The steel plates of required size and thickness shall be procured at contractor’s cost conforming to BIS - 3589-2001 (or latest revision) of grade FE-410. Where as the other structural steel such as channels, angles, nuts bolts etc. shall confirm to IS : 2062-1992 (or latest revision) of grade FE-410.

2.3 Fabrication of Pipes : Pipes shall be fabricated from the M.S. Plates and other structural components etc. shall be fabricated from steel plates and other steel material procured by the Contractors as mentioned in Clause 2.2. The welded joints shall be tested in accordance with the procedure laid down in I.S. 3600 (Part I) : 1985. Minimum length of pipe shall be 5.40 metre to 7.50 metre.

2.3.1 Cutting Plates to Sizes :

The Contractors shall procure the plates in such a length so as to have minimum wastage and make the pipes only with one longitudinal joint.
Before cutting, all the edges of the plate shall be cleaned by brushing/grinding on both the sides.

The plates shall be cut on all four sides to the exact dimensions and shape required, by a suitable plate cutting machine such as Oxy-acetylene cutting machine or a guillotine. Plates shall be cut accurately to the required length with a tolerance of not more than plus or minus 3 mm in length

and width. The plates shall be given a bevel at the edges wherever necessary, depending upon the type of welding machine to be used by the contractors. The ends of the finished pipe in the factory shall necessarily have bevel edge or V edge with or without shoulder cut/root face to facilitate hand-welding in the field. As field welding is to be carried out from inside in the case of bigger diameter pipes i.e. 1200 mm (48”) dia and above, the bevel for them shall usually be from the inside. For pipes of smaller diameters, field welding has to be done from outside and the edges shall as a rule have bevels to suit welding from outside. The Engineer may at his discretion, make changes, in this respect and order external beveling for bigger pipes (i.e. pipes of 1200 mm dia and above) and internal beveling for smaller pipes (i.e. pipes less than 1200 mm dia). Under exceptional circumstances, either types of bevels may be required and the pipes shall be manufactured accordingly if so ordered by the Engineer. Where the automatic welding machines in the factory have sufficient penetration, the edges of the plates should have a square cut. The type of joint to be adopted in the factory shall depend upon the type of welding machines and the method of welding to be adopted. Details such as current, voltage, flux, etc. shall be decided after carrying out experimental welding and testing the samples, cut out of it. The entire cost of all such preliminary experiments shall be borne by the contractors.

After the plates are cut, the edges shall be made smooth and even by polishing with an electrical or pneumatic grinder to remove all inequalities. Care shall be taken to see that the cut edges of the plate are perfectly straight. Jigs to be used for this purpose shall depend upon the type of cutting machine used. The plates cut to the required shape shall be checked for correctness before they are rolled into pipe drums. If any corrections are required, the contractors shall do the same by re-cutting if necessary, if in doing so, there is any unnecessary wastage of plates, the same shall be borne by the contractors. If any plate or flat is found to be warped to have corrugations, the defects shall be removed by putting the plate or flat into a roller press and no extra payment for this rectification work shall be made. If, during cutting, any plates are found to be laminated, the same shall not be allowed to use. Such plates shall be stacked separately in the yard and the Contractors shall make arrangements to remove the same immediately. The contractors are not entitled to claim any compensation for handling and cutting such laminated plates. Similarly, if any badly corroded steel plates, are detected at the time of cutting, the same shall be rejected by the Engineer, and such plates should be removed immediately.

Marginal cuttings as well as left-over pieces of plates and of other steel sections shall be collected by the Contractors and stacked in the separate heap in their yard. All such scrap resulting from the work of fabrication of various items of work under this contract shall be the property of the Contractors.
No claim whatsoever against any wastage and/or scrap shall be considered.

2.3.2 Rolling of Plates :

The plates cut to the exact size as described above shall be put into a rolling machine to form a pipe of the required diameter. The contractors shall adjust the rolling machine so as to give a uniform curvature to the pipe throughout its circumference. The curvature obtained shall be checked by the contractors foreman during the process of rolling and if proper curvature is not obtained at any place including the ends the rolling operation shall be repeated at this stage or even after its longitudinal welding of the drum where directed. Heating of plates to obtain desired

curvature shall not be permitted.

2.3.3 Tacking the Drums :

The rolled drums shall be kept on an assembly platform for tacking, care being taken to ensure that the tacked drums have their end faces at right angles to the axis of the pipe. While tacking the drum, the uniform gap of about 2 to 4 mm, shall be maintained, where hand welding is permitted. However, where the welding is to be done on automatic welding machine, there is not need of maintaining such a gap depending on the penetration through complete thickness of the welding required. To achieve this objective, clamp spiders, tightening rings and/or any other approved gadgets shall be used. Each such drums, before being taken to the assembly platform, shall be numbered on the inside with oil paint, stating the plate thickness as well.

2.3.4 Assembly of Drums into Pipes :

The tacked drums shall then be transported to an assembly platform where they shall be tack-welded together to form suitable pipe-lengths. Plate shall be bent in the maximum possible width to reduce the number of circumferential joints.

The longitudinal joints shall be staggered at 90 deg. The drums when tacked together shall have no circumferential gap when the welding is done on automatic welding machine. But when hand welding is adopted as gap of 2 mm to 4 mm shall be maintained to obtain a good butt welded joint.

The assembly shall be truly cylindrical and without any kinks. The faces shall be at right angles to the axis of the cylinder. A suitable arrangement for testing the correctness of the face shall be provided by the Contractor at the assembly platform.

2.3.5 Full Welding of the Pipes :

The assembly as described above shall be transferred to an automatic welding machine for full welding. The circumferential as well as longitudinal joints shall be welded on this machine. hand welding shall not be permitted except for sealing runs and such other minor works at the discretion of the Engineer. The strength of the joint shall be atleast equal to that of the parent metal. The automatic welding machine shall be of approved make. The Engineer shall from time to time during the progress of work, supply working drawings or instructions specifying details of welded joints for different elements of the fabrication work.

The contractors shall use electrodes of approved make and size, the size depending on the thickness of plate and the type of joint. They shall also use standard current and arc voltage required for the machine in use with such modifications as may be found necessary after experimental welding. For this purpose, samples of welded joints shall be prepared and tested in the presence of the Engineer-in-Charge. The value once determined shall be maintained throughout the work and if any modifications are to be made, a written permission of the Engineer-in-Charge shall be obtained. In the case of thin sheets, electric arc welding may not give satisfactory results, the gas welding shall be resorted to. Gas welding shall be subject to the same

Specifications and tests as those for electric welds.

In order to maintain a good standard in welding, welder's skill shall be tested by the contractors before they are entrusted with the job. A periodical test as regards their efficiency shall also be taken at intervals of about 6 months and those found inefficient shall be removed from the job. Those who pass the test only shall be posted on the job.

A record shall be maintained showing the names of welders and operators who have worked on each individual joint. Hand- welding shall preferably be carried out by a pair of welders so that, by observing proper sequence, distortion can be avoided. A joint entrusted to a particular individual or a pair shall be as far as possible completed by them in all respects, including sealing run. No helper or other unauthorised person shall be permitted to do any welding whatsoever. In case of infringement of above, the persons shall be punished as directed by the Engineer-in-Charge.

2.3.6 Welding Joints :

(a) Electrodes :

The contractors shall use standard electrodes depending on the thickness of plate and the type of joint. They shall also use standard current and voltage required for the machine in use as per Manufacturer's directions. Welding electrodes shall conform to I.S.S. No.814 of 1967/1974 "Specifications for covered electrodes for metal arc welding of mild steel (second or latest revision)". Indian made or equivalent foreign made electrodes of the required quality approved by the Engineer, shall be used wherever possible. After completing the welding of joints of pipes or plates from one side, the welding on the other side shall be taken up. Before starting welding on the other side, the joints shall be gauged to remove irregular penetration till the even surface is exposed. Gauging shall be resorted to when the plate thickness is above 6 mm.

(b) Testing of Welded Joints :

(i) The welded joints shall be tested in accordance with the procedure laid down in I.S. No.3600 of 1966. "Code of procedure for testing of fusion welded joints and weld metals in steel".

(ii) Test pieces shall be taken out by the contractors from the welded joints at the positions pointed out by the Engineer. This must be done without any delay and in any case within 3 days time. Any further delay in this case will lead to levy of penalty. The sample so taken out shall then be cut to the exact shape and dimensions and machined as described hereunder, before the same is handed over to the Engineer for testing. This shall be done within a week. All the work upto machining shall be done by the contractors at their own cost.

(iii) The shape of the test pieces removed from the pipe shall be such as to give specimen of the required dimensions and at the same time leave a hole in the pipe with rounded comers. This hole shall be patched up immediately by inserting and welding a piece of steel plate of the same size and shape and having the same thickness and curvature. Great care shall be taken in preparing these patch plates so as to get a good butt weld.

(iv) The entire cost of the tests including taking out test samples, machining the test pieces, transport to and from the laboratory and testing them in a laboratory, the cost of patching up the test piece hole in the pipe, payment of all testing fees, cleaning and painting etc. shall be borne by the contractors. The tests shall be carried out in some Government or Semi-Government institute approved by the Engineer. This shall be arranged by the Engineer entirely at the contractors cost.

(v) The following Tests shall be carried out :

Tensile Test :- The test specimen taken perpendicularly across the weld shall be shaped in accordance with the latest I.S.S. No.1663 (Part I & II). The specimen shall be taken from the end of the pipe or at any point in the pipe as directed by the Engineer and shall be cut with the weld approximately in the middle of the specimen. The tensile test specimen shall be flattened and the sides shall be machined. The protruding welded portion from both inside and outside shall be removed by machining before the specimen is handed over to the Engineer for testing.

At least one test specimen shall be taken out from every 200 metres length of pipes fabricated.

If a test specimen shows defective machining or develops flaws not associated with welding, it may be discarded and another specimensubmitted. The welded joint shall show a strength of not less than the minimum tensile strength specified for the plate. (Please refer to I.S. No.226-1969 or/and I.S. No.2062/1969 or latest revisions). “Specifications for structural steel (Standard quality)”.

Bend Test :- Bend test shall be carried out by the contractors at the discretion of the Engineer. A bend test specimen shall be prepared in the same way as for tensile test and tested in the factory by the contractors at their cost in the presence of the Engineer. The specimen shall be taken from the same pipe from which a specimen for tensile test is taken out. The specimen shall stand being bent cold through 180 degrees round a pin, the diameter of which is equal to 4.5 times, the thickness of plate, without developing cracks. In making the bend test the body of the welded metal should be on the outside and the root should be placed next to the pin.

Random Ultrasonic Test :- Random Ultrasonic Test shall be conducted, either on the strips from which the pipes are made or on the peripheral surface of the parent material, of the pipe, for detection of injurious steel defects such as lamination, segregation, slag inclusion etc. one test for every lot of 20 pipes.

2.3.7 Procedure to be adopted in case of Failure of the above

Tests :

(a) Re-Test : If the results of tensile or bend test of any lot do not conform to the requirements specified, re-tests of two additional specimens from the same lot shall be made, each of which shall confirm to the required Specifications. In case of a failure of one or both, extensive gauging and repairing shall be carried out to the lot of joints from which samples have been taken as directed by the Engineer-in-charge before the lot can be accepted.

In case both the samples yield satisfactory results in the re-test described above, gauging and

repairing will be required to be carried out on the joint which has failed in the initial test only.

(b) Expenses for re-testing : All charges in connection with re-testing of the welded samples including machining, testing etc. shall be borne by the contractors.

2.3.8 Workmanship :
All Pipes and Specials shall be manufactured out of steel plates which shall be free from any cracks, surface flaws, laminations, excessive pittings or any other defects. The pipes shall be truly cylindrical and straight in axis. The ends shall be accurately cut and shaped for field welding. The external circumference of the pipe particularly at the ends, shall not deviate from the theoretical one by more than plus or minus 5 mm for shell thickness of 12 mm and above and not more than plus or minus 3 mm for thinner plates less than 12 mm. The external circumference of pipe pieces which are to be fixed adjacent to flange adopter with fixed outer diameter shall not deviate from theoretical one by more than 1 mm. To obtain this accuracy the pipe shall be rolled several times, if necessary, as pipe pieces should be truly cylindrical. The external longitudinal welding of this pipe shall be ground smooth in flush with surface to the satisfaction of the Engineer, for a length of 200 mm. No extra cost shall be charged by the contractors for this grinding work.

Minor repairs by welding or otherwise shall be permitted at the discretion of the Engineer, but such repairs shall be done only after obtaining the previous permission of the Engineer. Any pipe or part thereof which develops injurious defects during shop welding or other operations shall be rejected and the same will not be allowed to transport it to the site and use on the pipe laying work.

2.4 Hydraulic Test : Depending on the requirements of the pipe laying works, pipes will have to be manufactured in standard length of about 5.4 m or 7.50 m. the contractors shall provide machines and apparata for testing all pipes of lengths standardised by the Engineer from time to time.

The pipe to be tested shall be given a serial No. which shall be painted on its inside together with details such as pipe Nos. shell thickness, dia, length etc. as directed. It shall be entered in the register to be maintained by the contractors.

Prior to testing, the pipe shall be inspected thoroughly and all the apparent defects in welding such as jumps, porosity etc. shall be repaired by gauging and re-welding.

The hydraulic test shall be carried out under cover at the fabrication shop at 2 times working pressure, in the presence of and to the satisfaction of the Engineer. Under no circumstances, the hydraulic test shall be carried out in the absence of the Engineer or his representative.

For indicating the pressure inside the pipe, an accurate pressure gauge of approved make duly tested for the correctness of readings shall be mounted on one of the closures which close the pipe ends.

The test pressure for pipes fabricated shall be 12 Kg./Sq.cm. (as per IS 3589 of 1991). The pipes having length of 2.0 mtrs. and less may be accepted hydraulically untested at the discretion of the Engineer.

The pressure shall be applied gradually by approved means and shall be maintained for atleast 2 minutes as per I.S. 3589 during which time the pipes shall be hammered throughout its length, with sharp blows, by means of a 1 Kg. hand hammer.

The pipe shall stand the test without showing any signs of weakness, leakage, oozing or sweating. If any leak or sweating is observed in the welded joints, the same shall be repaired by gauging and rewelding, after dewatering the pipe. The repaired pipe shall be re-tested to confirm to the specified pressure.

If any leak or sweating is observed in the pipe shell, the pipe under test shall be rejected temporarily. The contractors, shall stack such rejceted pipes separately in their yard. The Engineer shall inspect the same and after taking cuts if necessary shall determine the nature of repairs to be carried out thereon and shall then decide as to how and where they shall be used. No payment shall be made for handling or carrying out repairs, but payment for the fabrication and hydraulic testing of the pipe shall be released as per the relevant B.O.Q. items after necessary repairs etc. carried out by the contractors to the satisfaction of the Engineer-in-Charge.

No pipes shall be transported out of the factory to the site of work unless they are hydraulically tested except permitted by the Engineer in writing to do so. Any failure to comply with this may cause the contractors payments to be withheld.

2.5 After the tests the pipe shall be painted inside and outside with one coat of red oxide paint.

2.6 Storing & Stacking :

2.6.1 The pipes shall be checked by the consignee for any visible damage (such as broken edges, cracking or spalling of pipe) while unloading and shall be sorted out for reclamation. Any pipe, which shows sufficient damage used, shall be discarded.

2.6.2 Stacking : The pipes specials shall be stacked separately for each type and diameter at the location as directed. If required the stacking pile of pipes may be supported by wooden bullies.

2.7 Item to Include : providing and manufacturing at specified site or departmental store, the Mild Steel Pipes and Specials of various diameter/s as per the agreement, including manufacturing with all tools
& plants, transporting, loading, unloading, stacking etc. as directed with all leads, testing certificates, labour, taxes and levies etc except octroi, which will be reimbursed on production of documentary evidence for payment made.

2.**8 Mode of Measurement and Payment** : The providing and manufacturing of pipes and specials shall be measured by weight in **kg**. The defective pipes and specials shall be rejected and shall not be measured unless replaced by the new ones of acceptable standard. The payment shall be made at the rate per kg, as per agreement. The payment shall be made if the acceptable test certificate is produced along with the supply. Minimum of actual and theoretical weight will be paid. For actual weight, weighing charges shall be borne by the contractor.

12 Providing and supplying Air Valves as per IS- 14845-2000 and MJP's standard

specifications of approved make and quality of following diameters including railway freight, inspection charges, unloading from railway wagons, loading into truck, transportation upto departmental stores, unloding and stacking excluding GST levied by GOI & GOM in all respect etc. complete.

12.1 Air Valve Single Ball Flanged / Screwed Type - PN -1.6

12.1.1 25 mm.

Specification:

Specification: Kinetic Air Valve type: For water mains, a 50mm valve will typically be a combination air valve, which performs three functions: Releases large volumes of air during pipeline filling. Admits large volumes of air to prevent vacuum conditions during draining or a pipe burst. Releases small, accumulated air pockets during normal pressurized operation. Pressure rating: The air valve should have a pressure rating that meets or exceeds the pipeline's maximum operating pressure. Common ratings include PN 1.0 (10 bar) and PN 1.6 (16 bar). Materials: For durability and to prevent corrosion, the valve body should typically be constructed from materials like ductile iron or cast iron with internal components made of stainless steel. Connection: A 50mm (DN50) air valve is most often flanged for connection to the pipeline. For smaller connections, a threaded alternative may be available. Installation requirements Location High points: The primary installation point for air valves is at the highest points of a pipeline profile, where air naturally collects due to its buoyancy. Long pipeline runs: For very long horizontal pipelines, air valves should be installed at regular intervals (e.g., every 800m) to release smaller air pockets. Other points of accumulation: Additional locations include areas with sudden changes in slope, downstream of pumps, and after flow-throttling devices. Installation procedure Safety: Before starting, isolate the section of the pipeline and ensure it is drained and depressurized. For installations inside manholes, confirm the area is well-ventilated and safe to enter. Mounting: The air valve must be installed in a vertical position (within 5° of vertical) to ensure the internal float operates correctly. A riser pipe can be used to mount the valve from the main line, and this riser should be strapped to a support to maintain its vertical position. Connection to the main: Install a branch connection or tapping saddle onto the top of the main pipeline. For pipes 50mm and larger, use a full-port isolation valve (gate valve or butterfly valve) that is the same size as the air valve's inlet. The inlet piping and the isolation valve should have an internal diameter at least equal to the orifice size of the air valve to prevent Page 81 Tender ID - 37212 4. 5. 6. 7. 8. reduced airflow. Assembly: Connect the 50mm air valve to the isolation valve and ensure all connections are leak-free. Drainage: Install proper drainage for the air valve chamber or pit. A small amount of water may be ejected with released air, so a drain (e.g., a sewage grate) is necessary. Protection: Place a security screen or net on the valve's outlet to prevent the entry of insects or other contaminants. Commissioning: Once the pipeline is refilled and re-pressurized, perform a final inspection to confirm the valve is operating properly and there are no leaks. Manufacturer specifications (example: Kirloskar Brothers).

Mode of Measurement – : Contract rate shall be per **Number** basis

13 Supply of C. I . Mechanical Joint Double Socket 900 (11/4'') Bends as dimensionally described in Table-14 of IS-13382/ 1992 complete with sealing rubber gasket of SBR (dimensionally described in IS-12820/1989) with cast iron follower gland and mild steel nut bolts coated or otherwise protected from rusting and suitable for C. I. pipes.

13.1 80 mm dia

Specification:

1.General : The item provides to supply at departmental store the Cast Iron jiffy collar coupling with rings etc. complete as per the specified diameter of pipe / pipes. (Dia. between 80 mm & 750 mm).

The joints shall conform the provisions of IS: 1538-1993, 1536 / 2001 and IS 5382-1985 .2 Material : All Cast iron specials such as C.I. mechanical compression collar coupling shall confirm to I.S. 1538-1993, 1536 / 2001 (Part 1 to 24). The Supply at departmental stores shall be of various diameters as specified in supply order. The specials shall be free from any defects. It should be possible to cut it drill the special to suit the site condition and fit in position etc. The hardness of the external surface shall not exceed 210 HBS. Sealing Rings shall confirm to IS 5382-1985. Ring shall be homogeneous and free from porosity, grit and surface defects, such as pitting, irregularities. Dimension of rings shall be as per IS 10292- 3. Manufacture : Generally as per item WS/B/2.3. The dimensions of jiffy collar coupling shall be as per 1538-1993, 1536 / 2001 . 4. Supply and Stacking at Departmental Store : Specified under agreement. 5. Testing : The fittings shall be tested for: 1. Tensile Test : Minimum Tensile strength of 150 MPa. 2. Brinell Hardness Test : shall not exceed 210 HBS. 3. Hydrostatic Test : As per IS: 1538- 1993, 1536 / 2001 , which shall be: For Dia. upto and including 300 mm - 2.5 MPa. Dia over 300 mm & up to & include 600 mm - 2.0 MPa. Dia over 600 mm - 1.5 MPa. 6. Markings : Each fitting shall have cast stamped or indelibly painted on it the following markings: 1. Manufacturer’s Name or trademark or identification mark. 2. The nominal diameter, 3. Mass of fitting, 4. Last 2 digits of year of manufacture, 5. Any other mark required by the purchaser. 7. Item to Include : The item includes the supply of Cast Iron jiffy collar coupling, including all taxes, levies excluding octroi, transporting, loading, unloading and stacking at departmental store or work site as directed. The necessary test certificate also shall be provided along with the supply. Octroi paid shall be reimbursed on producing documentary evidence of payment made.

Mode of Measurement and Payment : The item shall be measured as **Numbers** of C I mechanical joint.

14 Providing and supplying Kinetic Double Orifice type Air Valves confirming to IS 14845 as per MJP’s standard specifications combined with screw down isolating valve, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including insurance, third party inspection charges, loading, unloading, transportation upto departmental stores, excluding GST levied by GOI & GOM in all respect etc. complete.

14.1 Kinetic Air Valve Flanged Type - PN -1.6

14.1.1 40 mm.

Specification:

Specification: Kinetic Air Valve type: For water mains, a 50mm valve will typically be a combination air valve, which performs three functions: Releases large volumes of air during pipeline filling. Admits large volumes of air to prevent vacuum conditions during draining or a pipe burst. Releases small, accumulated air pockets during normal pressurized operation. Pressure rating: The air valve should have a pressure rating that meets or exceeds the pipeline's maximum operating pressure. Common ratings include PN 1.0 (10 bar) and PN 1.6 (16 bar). Materials: For durability and to prevent corrosion, the valve body should typically be constructed from materials like ductile iron or cast iron with internal components made of stainless steel. Connection: A 50mm (DN50) air valve is most often flanged for connection to the pipeline. For smaller connections, a threaded alternative may be available. Installation requirements Location High points: The primary installation point for air valves is at the highest points of a pipeline profile, where air naturally collects due to its buoyancy. Long pipeline runs: For very long horizontal pipelines, air valves should be installed at regular intervals (e.g., every 800m) to release smaller air pockets. Other points of accumulation: Additional locations include areas with sudden changes in slope, downstream of pumps, and after flow-throttling devices.

Installation procedure Safety: Before starting, isolate the section of the pipeline and ensure it is drained and depressurized. For installations inside manholes, confirm the area is well-ventilated and safe to enter. Mounting: The air valve must be installed in a vertical position (within 5° of vertical) to ensure the internal float operates correctly. A riser pipe can be used to mount the valve from the main line, and this riser should be strapped to a support to maintain its vertical position. Connection to the main: Install a branch connection or tapping saddle onto the top of the main pipeline. For pipes 50mm and larger, use a full-port isolation valve (gate valve or butterfly valve) that is the same size as the air valve's inlet. The inlet piping and the isolation valve should have an internal diameter at least equal to the orifice size of the air valve to prevent Page 81 Tender ID - 37212 4. 5. 6. 7. 8. reduced airflow. Assembly: Connect the 50mm air valve to the isolation valve and ensure all connections are leak-free. Drainage: Install proper drainage for the air valve chamber or pit. A small amount of water may be ejected with released air, so a drain (e.g., a sewage grate) is necessary. Protection: Place a security screen or net on the valve's outlet to prevent the entry of insects or other contaminants. Commissioning: Once the pipeline is refilled and re-pressurized, perform a final inspection to confirm the valve is operating properly and there are no leaks. Manufacturer specifications (example: Kirloskar Brothers).
Mode of Measurement – : Contract rate shall be per **Number** basis

15 D.I. Socket and flanged fittings :-Providing and supplying D.I. fitting with I SI mark socket pushon joints or flanged joints confirming to table 12 to 31 of IS 9523/2000 upto latest amendments including cost of SBR/ EDPM tyton rings. Fittings should be with internally ordinary portland cement mortor lined and externally metallic zinc coating/zinc rich paint with finishing layer of black bitumen coating including transportation & excluding all statutary duties and taxes such as GST levied by GoI and GoM in all respect etc. complete. Diameter in mm

15.1 All Flange Tee -PN-10
15.1.1 80 x 80 mm dia
15.1.2 100 x 100 mm dia
15.1.3 150 x 80 mm dia
15.1.4 150 x 100 mm dia
15.1.5 200 x 100 mm dia
15.1.6 200 x 200 mm dia
15.1.7 250 x 250 mm dia
15.1.8 300 x 300 mm dia
15.1.9 150 x 150 mm dia
15.2 Double socket concentric reducer
15.2.1 150 x 100 mm dia
15.2.2 200 x 100 mm dia
15.2.3 200 x 150 mm dia
15.2.4 250 x 200 mm dia
15.2.5 300 x 150 mm dia
15.2.6 300 x 200 mm dia
15.2.7 300 x 250 mm dia
15.3 Double Flange Bend 90 Deg -PN-‘10
15.3.1 100 mm dia
15.3.2 150 mm dia
15.3.3 200 mm dia

15.4 Double Socket Tee with Flange branch-PN-10

15.4.1 100 x 80 mm dia

15.4.2 100 x 100 mm dia

15.4.3 150 x 80 mm dia

15.4.4 150 x 150 mm dia

15.4.5 200 x 80 mm dia

15.4.6 200 x 150 mm dia

15.4.7 200 x 200 mm dia

15.4.8 250 x 80 mm dia

15.4.9 300 x 80 mm dia

15.4.10 300 x 300 mm dia

Specification:

1.General : The item provides to supply at side D.I. Socket and flanged fitting with rings etc. complete as per the specified diameter of pipe / pipes. (Dia. between 80 mm & 750 mm). The joints shall conform the provisions of IS: 1538-1993, 1536 / 2001 and IS 5382-1985 .2 Material : All Cast iron specials such as C.I. mechanical compression collar coupling shall confirm to I.S. 1538-1993, 1536 / 2001 (Part 1 to 24). The Supply at departmental stores shall be of various diameters as specified in supply order. The specials shall be free from any defects. It should be possible to cut it drill the special to suit the site condition and fit in position etc. The hardness of the external surface shall not exceed 210 HBS. Sealing Rings shall confirm to IS 5382-1985. Ring shall be homogeneous and free from porosity, grit and surface defects, such as pitting, irregularities. Dimension of rings shall be as per IS 10292- 3. Manufacture : Generally as per item WS/B/2.3. The dimensions of jiffy collar coupling shall be as per 1538-1993, 1536 / 2001 . 4. Supply and Stacking at Departmental Store : Specified under agreement. 5. Testing : The fittings shall be tested for: 1. Tensile Test : Minimum Tensile strength of 150 MPa. 2. Brinell Hardness Test : shall not exceed 210 HBS. 3. Hydrostatic Test : As per IS: 1538- 1993, 1536 / 2001 , which shall be: For Dia. upto and including 300 mm - 2.5 MPa. Dia over 300 mm & up to & include 600 mm - 2.0 MPa. Dia over 600 mm - 1.5 MPa. 6. Markings : Each fitting shall have cast stamped or indelibly painted on it the following markings: 1. Manufacturer’s Name or trademark or identification mark. 2. The nominal diameter, 3. Mass of fitting, 4. Last 2 digits of year of manufacture, 5. Any other mark required by the purchaser. 7. Item to Include : The item includes the supply of Cast Iron jiffy collar coupling, including all taxes, levies excluding octroi, transporting, loading, unloading and stacking at departmental store or work site as directed. The necessary test certificate also shall be provided along with the supply. Octroi paid shall be reimbursed on producing documentary evidence of payment made.

Mode of Measurement and Payment : The item shall be measured as numbers of D.I. socket and flanged fitting for the specified diameter of pipe. The measurement and payment shall be per **Number**basis

16 Providing and supplying D.I. fittings with I SI mark Mechanical j oint confirming to tables 12 to table 31 of IS 9523/2000 upto latest amendments including cost of SBR/ EDPM gaskets, Nuts, Bolts, Washers and Ductile iron follower glands. Fittings should be with internally Ordinary portland cement mortor lined and externally metallic zinc coating/zinc rich paint with finishing layer of black bitumen coating including transportation and excluding all statutary duties and taxes such as GST levied by Gol and GoM in all respect etc. complete. D.I. FITTINGS (Mechanical Joints)

16.1 MJ Collar/Coupling

16.1.1 80 mm dia
16.1.2 100 mm dia
16.1.3 150 mm dia
16.1.4 200 mm dia
16.1.5 250 mm dia
16.1.6 300 mm dia
16.1.7 400 mm dia

Specification:

1.General : The item provides to supply at departmental store the D.I. fitting with mechanical jiont rings etc. complete as per the specified diameter of pipe / pipes. (Dia. between 80 mm & 750 mm). The joints shall conform the provisions of IS: 1538-1993, 1536 / 2001 and IS 5382-1985 .2 Material : All Cast iron specials such as C.I. mechanical compression collar coupling shall confirm to I.S. 1538-1993, 1536 / 2001 (Part 1 to 24). The Supply at departmental stores shall be of various diameters as specified in supply order. The specials shall be free from any defects. It should be possible to cut it drill the special to suit the site condition and fit in position etc. The hardness of the external surface shall not exceed 210 HBS. Sealing Rings shall confirm to IS 5382-1985. Ring shall be homogeneous and free from porosity, grit and surface defects, such as pitting, irregularities. Dimension of rings shall be as per IS 10292- 3. Manufacture : Generally as per item WS/B/2.3. The dimensions of jiffy collar coupling shall be as per 1538-1993, 1536 / 2001 . 4. Supply and Stacking at Departmental Store : Specified under agreement. 5. Testing : The fittings shall be tested for: 1. Tensile Test : Minimum Tensile strength of 150 MPa. 2. Brinell Hardness Test : shall not exceed 210 HBS. 3. Hydrostatic Test : As per IS: 1538- 1993, 1536 / 2001 , which shall be: For Dia. upto and including 300 mm - 2.5 MPa. Dia over 300 mm & up to & include 600 mm - 2.0 MPa. Dia over 600 mm - 1.5 MPa. 6. Markings : Each fitting shall have cast stamped or indelibly painted on it the following markings: 1. Manufacturer’s Name or trademark or identification mark. 2. The nominal diameter, 3. Mass of fitting, 4. Last 2 digits of year of manufacture, 5. Any other mark required by the purchaser. 7. Item to Include : The item includes the supply of Cast Iron jiffy collar coupling, including all taxes, levies excluding octroi, transporting, loading, unloading and stacking at departmental store or work site as directed. The necessary test certificate also shall be provided along with the supply. Octroi paid shall be reimbursed on producing documentary evidence of payment made.

Mode of Measurement and Payment : The item shall be measured as numbers of D.I. mechanical joint for the specified diameter of pipe. The measurement and payment shall be per **Number**basis.

Signature Not Verified
Digitally signed by Sudhakar Sanduji Gandhile
Date: 2026.05.19 16:50:43 IST
Location: Maharashtra-MH