GOVERNMENT OF MADHYA PRADESH

DEPARTMENT OF
URBAN ADMINISTRATION & DEVELOPMENT

INTEGRATED STANDARD SCHEDULE OF RATES
(VOLUME I)

WATER SUPPLY, SEWERAGE
AND TUBE WELL WORKS

IN FORCE FROM
10th MAY, 2012

COMMISSIONER
URBAN ADMINISTRATION AND DEVELOPMENT
PALIKA BHAWAN, SHIVAJI NAGAR, NEAR 6 No. STOP,
BHOPAL, MADHYA PRAEDSH
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FOREWORD

India is part of the global trend of increasing urbanisation. The urban population in India has increased by 5 times as compared to the overall population growth of 2.5 times during last 5 decades. As per 2001 census, 27.8% of India's population lived in 4378 towns/ cities. This share increased to 31.16% in Census 2011. Urbanization in Madhya Pradesh has also expanded rapidly. As per provisional figures of Census 2011, in Madhya Pradesh, 27.63% of the population lives in towns and cities.

Cities hold tremendous potential as engines of socio-economic development, creating jobs and generating wealth through economies of scale. They need to be sustained and augmented through the high urban productivity for country's economic growth. For cities to become growth oriented and productive, it is essential to achieve a world class urban system. This, in turn, depends on attaining efficiency and equity in the delivery and financing of urban infrastructure.

74th Constitutional Amendment Act created a focus on improving and strengthening Urban infrastructure and Services in Urban Local Bodies. With the availability of substantial funds from various sources and with our own increased revenues, availibility of development funds is no longer a major constraint. However, tapping these sources effectively is a major concern.

While preparing Detailed Project Reports, accurate Cost estimation is one of the most important and challenging aspects. Till 31st May 2011, in the absence of Departmental Schedule of Rates, Urban Local Bodies had to depend on Schedule of Rates of various Works Departments of the State Government such as MP Public Health Engineering Department, MP Public Works Department, Water Resource Department etc. for civil works and Madhya Pradesh State Electricity Board for electrical works. The infrastructure and maintenance works done by our Urban Local Bodies are town specific as well as need specific. The SoRs of these departments do not contain many such items.

Looking to the problems faced by the ULBs in cost estimation, Department of Urban Administration and Development decided to develop its own Integrated Standard Schedule of Rates for all Building and other Infrastructure works keeping in view the current and future requirements of the Urban Local Bodies and to provide them effective tool for preparing accurate cost estimates. The Department prepared and adopted its first Integrated Standard Schedule of Rates in four volumes along with related specifications, on 1st June 2011.

The prices are ever changing. To accommodate the annual price rise, Department intends to update the ISSR annually. We are extremely happy that the Department, with

the able assistance of Project Utthan, Madhya Pradesh Urban Services for the Poor (MPUSP), a DFID assisted programme, has not only successfully completed the task of ISSR preparation but also has updated the ISSR well within time.

To complete this task, a Working Group was formed which deliberated about the new items and revisions required by Urban Local Bodies to carry out the infrastructure development and construction works smoothly.

An Output Review Panel was also constituted to review the process outputs and finalize various reports including Rate Analysis for various items under Integrated Standard Schedule of Rates.

The updated ISSR has been prepared in four parts i.e. Volume - 1 Water Supply, Sewerage & Tube well works, Volume - 2 Building works, Volume - 3 Roads & Bridges works, Volume - 4 Municipal Electrical works. Specifications for various works have also been illustrated in four separate volumes.

All the volumes of the ISSR along with the applications are also available on the Website of UADD (mpurban.gov.in). This will help the Urban Local Bodies in preparing cost estimates reflecting prevailing market values and hence, avoid high tender rates.

I extend my sincere thanks to all the members of Working Group and the Output Review Panel for taking keen interest in completing the voluminous job of updation & completion of ISSR well in time.

I am sure that this Updated Integrated Standard Schedule of Rates will be quite useful for all the Urban Local Bodies of Madhya Pradesh to prepare accurate cost estimates in Detailed Project Reports.

(Sanjay Kumar Shukla)
Commissioner
Urban Administration and Development
Government of Madhya Pradesh
Bhopal

MEMBERS OF WORKING GROUP

1.	Shri Ashok Khare, Chief Engineer, Directorate of Urban Administration and Development, Bhopal	Chairman
2.	Shri S.K. Sogani, Superintending Engineer, UADD, Indore	Member
3.	Shri J.M. Dagaonkar Superintending Engineer, Municipal Corporation, Ujjain	Member
4.	Shri H.K. Jain Superintending Engineer, Municipal Corporation, Indore	Member
5.	Shri Pawan Sharma, Executive Engineer, UADD, Jabalpur	Member
6.	Shri S.K. Devgan Deputy City Engineer, Municipal Corporation, Bhopal	Member
7.	Shri B.K. Sonwani, Executive Engineer, UADD, Sagar	Member
8.	Shri A.G. Khan, Executive Engineer, UADD, Bhopal	Member
9.	Shri Alok Chokse, Executive Engineer, UADD, Rewa	Member
10.	Shri Pradeep Nigam, Executive Engineer, UADD, Indore	Member
11.	Shri Anand Singh, Executive Engineer, Directorate of UAD	Member
12.	Shri Kamlesh Bhatnagar, Engineer, Project Utthan, Municipal Support Unit, MPUSP, Urban Administration and Development, Bhopal	Member
13.	Shri Rakesh Rawat, Assistant Engineer, Municipal Council, Vidisha	Member
14.	Shri P.P. Kaithwas, Assistant Engineer, Municipal Council, Neemuch	Member
15.	Shri Suresh Sejkar, Executive Engineer, Directorate of Urban Administration and Development, Bhopal	Member Secretary

MEMBERS OF OUTPUT REVIEW PANEL

1.	Shri Ashok Khare, Chief Engineer, Directorate of Urban Administration and Development, Bhopal	Chairman
2.	Shri M.J.S Tulsi, Deputy Director (Engineering), Project Utthan, Municipal Support Unit, MPUSP, Urban Administration and Development, Bhopal	Convener
3.	Shri Kamlesh Bhatnagar, Engineer, Project Utthan, Municipal Support Unit, MPUSP, Urban Administration and Development, Bhopal	Member

ITEMS OF UNIFIED SSR FOR WATER SUPPLY , SEWERAGE, DRAINAGE & TUBE WELL

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GENERAL NOTES

1 The SOR of UADD Department consists of 4 Volumes

VOLUME - I	Water Supply, Sewerage and Tube Well Works
VOLUME - II	Building Works
VOLUME - III	Road & Bridge Works
VOLUME - IV	Electrical Works

2 The contents of each Volume are given below

VOLUME - I
WATER SUPPLY, SEWERAGE AND TUBE WELL WORKS

1	Cast Iron Pipes and Specials with with Socket & Spigot lead joints.
2	Cast Iron Tyton Pipes with Tyton Joints.
3	Cast Iron Pipes and Specials with flanged joints.
4	Ductile Iron Pressure Pipes and Special with Tyton joints.
5	Unplasticized PVC Pipes & Fittings for potable water supply.
6	Cast Iron Valves.
7	Galvanised Iron Pipes, Specials and Gun Metal/Brass Metal Fittings.
8	HDPE Pipes, MDPE Pipe & Specials and Zero Velocity Valves.
9	GRP Pipes and Specials.
10	Asbestos Cement Pressure Pipe and Cast Iron Fittings.
11	Salt Glazed Stoneware Pipes.
12	Unplasticized Non-Pressure Polyvinyl Chloride (PVC-U) Pipes, DWC Pipes for use in underground sewerage system.
13	Reinforced Cement concrete Pipes.
14	Sewer Appurtenances.
15	Civil Works for Water Supply & Sewerage works.
16	Miscellaneous.
17	Drawings for Water Supply & Sewerage.
18	Drilling of Tube Wells.

VOLUME - II
BUILDING WORKS

1	Carriage of Material
2	Earth work
3	Mortars
4	Concrete work
5	Reinforced Cement Concrete
6	Brick work
7	Stone work
8	Marble work
9	Wood Work & P.V.C. Work
10	Steel work
11	Flooring
12	Roofing

13	Finishing
14	Repair to Building
15	Dismantling & Demolishing
16	Pile work
17	Aluminum work
18	Water proofing
19	Horticulture & Landscaping
20	Form Work
21	Hire Charges of Machine
22	Rain Water Harvesting, Recycle and Reuse of waste water
23	Building Water Supply
24	Building Drainage
25	Sanitary Installation

VOLUME - III
ROAD & BRIDGES WORKS

ROAD

1	Carriage of Material
2	Site Clearance
3	Earth work, erosion control and Drainage
4	Sub-Bases, Bases (Non-Bituminous) and Shoulders
5	Bases and Surface courses (Bituminous)
6	Cement Concrete Pavements
7	Geosynthetics and Reinforced Earth
8	Traffic Signs, marking & other Road Appurtenances.
9	Supply of Material
10	Maintenance of Roads
11	Horticulture
12	Survey & investigation, Preparation of D.P.R. and other Miscellaneous items
BRIDGE	
13	Foundations
14	Sub-Structure
15	Super-Structure
16	River Training and protection works
17	Repair and Rehabilitation

VOLUME - IV
ELECTRICAL WORKS
PART – 1 – INTERNAL ELECTRIFICATION

1	Wiring in surface /concealed rigid P.V.C. conduit system.
2	Wiring in surface /concealed rigid Steel conduit system.
3	Wiring in surface rigid P.V.C. casing capping system
4	Wiring in existing/conduit/P.V.C. casing capping system
5	Sub Mains in surface/concealed rigid steel conduit system.
6	Rewiring in existing conduit.
7	Control switch gear/Bus bar.
8	MCCB's, Isolators, MCB's, MCB-DB and fixing.
9	Accessories/Panel/Lamp/Telephone wires/Fans/Luminaries.

10	Miscellaneous
11	Earthing
12	Labour rates for wiring.

PART – 2 – EXTERNAL ELECTRIFICATION

13	External Electrification and over head lines
14	Power Cable & laying.
15	Transformers. & Fire Extinguishers.
16	High Mast
17	Pump Set with G.I. Pipe
18	Solar Street Light System
19	Supply of Materials

General Notes

3 Rate for completed items include the cost of following :-

3.1 All material, labour, workmanship, templates, tools, hire and running charges of plants & machinery required to complete the work, unless specified otherwise.

3.2 All lead & lift of materials required for execution of work inclusive of charges like duties, tax, royalty etc.

3.3 Provision for erection, removal of centering form works, scaffolding, benching, ladders and all other applications etc, required for execution of the work, unless otherwise specified.

3.4 Provision for necessary covering to protect the work/structure from inclement weather etc. and damage arising from falling of materials or rains, fire etc shall be the responsibility of the contractor.

3.5 Curing wherever required including arrangement of water and also including its lead or lift whatsoever.

4 The mode of measurements shall be as per provisions contained in the relevant chapters and in specifications/relevant IS codes.

5 All materials shall conform to the relevant prevailing Indian Standard Specifications. All material before use in works shall require approval of the Engineer in charge, who will get them sampled, tested as per relevant IS code at contractor's cost and samples so approved shall be kept in the office of the concerned Engineer-in-charge till finalization of the work.

6 Material obtained from excavation shall be the property of the Local body (Municipal Corporation, Municipal Council & Nagar Panchayat).

7 Hard Rock available from excavation, shall be used for conversion into coarse aggregates or for other construction material and shall be issued to the contractor on the rate as decided by competent authority.

8 Cement :-

8.1 Where contract provides for cement to be arranged by the Contractor himself, only I.S.I. Marked cement as per IS for 33 grade cement, IS 269 for 43 grade cement, IS 8112 for 53 grade cement, IS 12269 for Portland Pozzolana cement, IS 1489 Part - I & II specifications shall be allowed to be used in the work subject to the prescribed tests.

8.2 Make of cement shall be got approved by the Engineer-in-charge. The engineer in charge shall get cement tested as per relevant IS codes, at the cost of the contractor, before use in work.

8.3 Pozzolona cement is now being widely produced all over the country. This may be used in structures as per provisions of IS code.

8.4 When the strength of concrete required upto M-30, then O.P.C. 33 grade conforming to IS 269-1989 or P.P.C. conforming to IS : 1489-1991 may be used.

8.5 When the strength of concrete required is more than M-30, the O.P.C. 43 grade conforming to IS : 8112-1989 shall be used.

8.6 For prestressed concrete works where the strength of concrete required is more than M-30, then O.P.C. 53 grade cement conforming to IS : 12269-1987 shall be used.

8.7 In specific cases requiring higher grade of strength, use of Ordinary Portland Cement (OPC) should be invariably ensured.

8.8 The arrangement for necessary equipment and testing shall have to be made by the contractor himself at site, as decided by the Engineer-in-Charge. All expenses shall be borne by the contractor.

8.9 Any lot of cement brought to site by the contractor, would be permitted to be used in the work only after the satisfactory results of the tests, under the supervision of the Engineer-in- Charge or his authorised representative. The record of the test results shall be maintained in register mentioned in subsequent para.

8.10 A duplicate register as prescribed by the competent authority of technical authority shall be maintained at the site of the work. Extract certified copies of the entries for each month shall be submitted to the Engineer-in-Charge by the Contractor.

8.11 The original register shall also be submitted to the Engineer-in-Charge on completion of the work by the Contractor.

9 Nominal mix would be adopted for cement concrete M-7.5, M-10, M-15 and M-20 Design mix shall have to be adopted for concrete of higher strengths as per IS 456-2000.

10 Steel :-

10.1 Steel used for reinforcement shall conform as per under :-

(a) Mild Steel and medium tensile steel bars shall conform to IS : 432 (Part-I),
(b) Hot rolled deformed bars shall conform to IS : 1139,
(c) Cold twisted bars shall conform to IS : 1786,
(d) Hard drawn steel wire fabric shall conform to IS : 1566 and
(e) Rolled steel made from structural steel shall conform to IS : 226.

10.2 All reinforcement shall be free from loose mill scales, loose rust and coats of paints, oil, mud or other coatings which may destroy or reduce bond.

10.3 Only such steel obtained from main producers of steel i.e. SAIL, IISCO, TISCO or such steel rolling mills as having license from the B.I.S. to manufacture such steel for reinforcements, shall be allowed to be used in the work. The make of the steel shall be approved by engineer-in-charge.

10.4 The Contractor shall have to produce Test Certificate in the proforma prescribed approved by B.I.S. from the manufacturer for every batch of steel brought to the site of work.

10.5 Before commencement of use of steel, from any batch brought to site the of the work by the contractor, the Engineer-in-Charge shall arrange to get samples tested for nominal mass, tensile strength, bend test and rebend test from any Laboratory of his choice at the cost of Contractor. The selection of test specimens and frequency shall be as per relevant I.S. specification of the steel used.

11 If any item of work is found not upto the prescribed standard but the Engineer-in-charge is of the opinion that the same is structurally adequate and can be accepted at a reduced rate, then in such case, the Engineer-in-charge shall submit proposal for the same, supported by an analysis in justification thereof, through proper channel to the Superintending Engineer UADD to obtain his approval expeditiously (ordinarily within 15 days). The approved analysis along with orders of the Superintending Engineer should be appended to the final bill of the contractor.

12 In case of any contradiction in the provisions of the specifications and this schedule of rates, the decision of Chief Engineer, UADD will be of precedence.

13 (a) Rates of items would apply for work order/piece work system also.
(b) Rates payable for any work to be done departmentally then rates should be reduced by 10.434% (contractor profit percentage 10% + T&P charge 2%) i.c. 100x12/115 = 10.434%.

14 Interpretations :- The Chief Engineer, UADD, Bhopal shall be the sole deciding Authority as to the meaning, interpretation and implications of various provisions in this schedule of rates. His decision shall be final and binding on all concerned.

15 Safety :- The contractor shall be fully and solely responsible for making all the safety arrangements pertaining to the work. The contractor shall be fully responsible and liable in all respects for any accidents and subsequent legal action initiated by any party including the department.

16 Latest IS codes with up to date amendments shall be applicable.

17 Labour rate as per labour Commissioner Madhya Pradesh Order No. 29105-354 Dt. 30.9.2010.

18 All commiditey Price Index

SPECIAL NOTES FOR
WATER SUPPLY, SEWERAGE AND TUBE WELL WORKS

1 The materials such as pipes specials, valves etc either supply by local body or by the contractor shall conform to the specification mentioned in the schedule of rates and should in variably conform to the relevant I.S. Standards, B.S. standards/ material of best quality available in the market shall only to be used.

2 The work shall be executed in accordance with the U.A.D.D. specifications. In all cases, the latest revision of the Indian standards/codes for pipes, specials, valves etc. shall also be referred to. Latest C.P.H.E.E.O. manual, published by the Ministry of Urban Development, Govt. of India shall also be applicable. Incase of any discrepancy, the decision of C.E., U.A.D.D. shall be final.

3 Complete: The provision of all such materials and labour and the performance of all such workmanship which may be necessary for the proper execution of the work in best workmanship, manner but not particularly described in the items of schedule of rates.

4 Best: shall mean that in the opinion of the Engineer-in-Charge, there is no superior material or article or class of workmanship available in the market.

5 No alternative materials other than specified will generally be allowed to be used in the works except when their use becomes absolutely necessary in the interest of work on such grounds as non-availability in the market due to reasons beyond control.

6 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

7 The labour only provided in the Schedule of Rates includes the cost of all labour including necessary handling of the materials at site of work and all workmanship. The labour rates adopted for preparation of S.O.R. are inclusive of provision for weekly holiday.

8 The rates for completed items in the schedule of rates include the following.

1	2% for T&P
2	3% for over head charges
3	10% for contractor's profit

9 In exceptional cases if any work is found to be sub-standard, but the Engineer-in-charge is of the opinion that the same can be accepted at a reduced rate, then the Engineer-in-charge shall submit proposals for the same, supported by an analysis and justification of such reduction, to the next higher authority to obtain his/her approval expeditiously (ordinarily within 15 days). The approved analysis along with orders of the competent authority of Technical sanction should be appended to the final bill of the contractor.

10 For Departmental Works rates should be reduced by 10.434% (Contractor profit percentage 10% + T & P charge 2% i.e. 100x12/115 = 10.434%)

11 (a) Rates for transportation in Chapter No. 16 (Miscellaneous) Item No. 16.15 "Carriage of Material" includes :-
(i) Loading and unloading
(ii) Stacking at suitable places as directed by the Engineer-in-charge, the weights of the container of any material shall be ignored.

12 Testing :-

12.1 The testing of the pipe line work shall be as per the provisions of the relevant IS codes.

12.2 The contractor, on completion, or whenever required by the Engineer-in-Charge, shall prove all materials and pipes, fittings, joints and other accessories etc. to be clear, clean, perfect in working conditions and strong enough to withstand the test so specified in different items of the specifications/applicable IS codes.

12.3 For this purpose the contractor at his own expense, shall provide all instruments & suitable appliances and carry out the necessary test before the Engineer-in-Charge or his authorised representative to his entire satisfaction.

12.4 The contractor shall rectify any defects as to the materials or workmanship, so noticed during the test and the defective portions re-tested at this expense.

12.5 Till such time the test is completed 10% of the bill amount shall be withheld from the contractor's running bill and same will be released only after testing, up to the entire satisfaction of the Engineer-in-Charge.

13 If Govt./local body water source like water supply distribution pipe line, tube well, well etc. is used for construction activity by the contractor then water charges shall be deducted at the rate of 1% of the amount paid to the contractor from the item involving the use of water.

CHAPTER 1
CAST IRON SOCKET AND SPIGOT PIPES AND SPECIALS WITH LEAD JOINTS

1 C.I. Pipes shall confirm to IS: 1536 -1989 duly inspected and tested and having BIS certification mark.

2 Specials shall confirm to IS: 1538 - 1993 duly inspected and tested and having BIS certification mark.

3 jointing material lead shall confirm to IS:782 - 1978 duly inspected and tested and having BIS certification mark.

4 Code of practice for laying of cast iron pipes shall be as per IS:3114 - 1994

Methods for sampling of Cast Iron Pipes & fittings shall be as per IS : 11606

5 Each pipe shall have the following mark either cast, stamped or indelivery painted on it, Marking may be done on the socket faces of pipe centrifugally cast in metal mould or on the outside of the socket or on the barrel of pipe centrifugally cast in sand mould

a) Manufacturer's name, initials or identification mark;
b) The nominal diameter;
c) Class reference;
d) Mass of Pipe
e) The last two digits of the year of manufacture.

6 The pipes and fittings shall be inspected for defects and be rung with a light hammer, preferably while suspended, to detect cracks. Smearing the outside with chalk dust helps the location of cracks. If doubt persists further confirmation may be obtained by purring a kerosene which seeps through and shows on the outer surface.

7 Tolerance for thickness and length of pipe shall be acceptable as given below :

Tolerance on Thickness

	Dimensions	Tolerance in mm	
a)	Wall thickness	- (1+0.05 e)	
Where e = is the thickness of the wall in millimeters			

Tolerance on Length

	Type of Casting	Tolerance in mm	
a)	Socket and spigot, and plain ended pipes	± 100	
Where e = is the thickness of the wall in millimeters			

8 Tolerance in length and thickness of specials shall be as given below :

Tolerances on thickness

The tolerances on the wall thickness and flange thickness of fittings are limited as follows

Dimension	Tolerance, mm	
Wall thickness	- (2 + 0.05 e)	
Where e = the standard thickness of the wall in millimeters		

Tolerances on Lengths

The tolerances on lengths of fittings, normally manufactured, shall be as follows :

Type of fittings	Nominal Dia	Tolerance (mm)
Socket fittings and spigot pieces	Up to and including 450 mm	± 20
	All diameters	± 10

9 Laying :

Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

10 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material/class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

11 **Measurement:**

The net length of pipes as laid or fixed should be measured in running meters correct to a cm. Specials should be excluded and enumerated and paid for separately. The portion of the pipe within the collar at the joints shall not be included in the length of pipe work.

12 **Rates**

a) The rates include charges for all tools & plants, chain pulley blocks, other appliances etc. required for lifting and laying the pipes and specials in positions as per approved drawing.

b) The rates include provision and use of all coverings etc. to protect the works from inclement weather etc. and from damages from fall of materials, and other causes.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Codes & CPHEEO Manual)

CHAPTER 1- CAST IRON SOCKET AND SPIGOT PIPES AND SPECIALS WITH LEAD JOINTS

S.No.	Particulars of Items	Unit	Rates (in Rs.)		
1.1	Providing, laying and jointing of socket and spigot cast iron (Spun) Pipes including testing of joints, cost of pipes and jointing materials etc. complete. [socket & spigot cast iron (spun) pipes shall conform to IS 1536 : 1989 and laying work shall conform to IS 3114 : 1994, Pig lead shall conform to IS 782:1978]		LA Class	A Class	B Class
	80mm diameter	RM	1185.00	1281.00	1370.00
	100mm diameter	RM	1433.00	1568.00	1668.00
	125mm diameter	RM	1805.00	1962.00	2138.00
	150mm diameter	RM	2184.00	2380.00	2554.00
	200mm diameter	RM	3183.00	3439.00	3706.00
	250mm diameter	RM	4266.00	4643.00	4951.00
	300mm diameter	RM	5491.00	5976.00	6452.00
	350mm diameter	RM	6887.00	7442.00	8041.00
	400mm diameter	RM	8388.00	9131.00	9827.00
	450mm diameter	RM	10338.00	10380.00	12157.00
	500mm diameter	RM	12060.00	13088.00	14116.00
	600mm diameter	RM	15997.00	17398.00	18786.00
	700mm diameter	RM	20557.00	22382.00	24113.00
	750mm diameter	RM	23023.00	25084.00	27131.00
	800mm diameter	RM	25828.00	28041.00	30242.00
	900mm diameter	RM	31395.00	34137.00	36879.00
	1000mm diameter	RM	37672.00	41015.00	44205.00
1.2	Labour for laying in position socket & spigot cast iron (Spun) pipes. [Laying work shall conform to IS 3114 : 1994]				
			LA Class	A' Class	B' Class
	80mm diameter	RM	12.00	13.00	14.00
	100mm diameter	RM	15.00	16.00	18.00
	125mm diameter	RM	20.00	21.00	23.00
	150 mm diameter	RM	24.00	27.00	28.00
	200mm diameter	RM	36.00	39.00	41.00
	250mm diameter	RM	49.00	53.00	57.00
	300mm diameter	RM	63.00	68.00	74.00
	350mm diameter	RM	80.00	87.00	93.00
	400mm diameter	RM	97.00	106.00	113.00
	450mm diameter	RM	118.00	129.00	138.00
	500mm diameter	RM	137.00	148.00	159.00
	600mm diameter	RM	185.00	200.00	216.00
	700mm diameter	RM	235.00	254.00	273.00
	750mm diameter	RM	260.00	282.00	304.00
	800mm diameter	RM	289.00	313.00	337.00
	900mm diameter	RM	357.00	387.00	417.00
	1000mm diameter	RM	432.00	469.00	503.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
1.3	Jointing of socket & spigot cast iron (spun) pipes and specials class 'LA' 'A' and 'B' including labour & cost of jointing materials (i.e. pig lead and spun yarn) etc. and testing of the joints complete. [Caulking lead shall conform to IS 782 : 1978]			
	80mm diameter	Each	303.00	
	100mm diameter	Each	356.00	
	125mm diameter	Each	451.00	
	150mm diameter	Each	545.00	
	200mm diameter	Each	777.00	
	250mm diameter	Each	953.00	
	300mm diameter	Each	1132.00	
	350mm diameter	Each	1281.00	
	400mm diameter	Each	1506.00	
	450mm diameter	Each	2055.00	
	500mm diameter	Each	2177.00	
	600mm diameter	Each	2793.00	
	700mm diameter	Each	3187.00	
	750mm diameter	Each	3581.00	
	800mm diameter	Each	4332.00	
	900mm diameter	Each	4926.00	
	1000mm diameter	Each	5683.00	
1.4	Labour for jointing of socket & spigot cast iron (spun) pipes and specials class 'LA' 'A' and 'B' including testing of joints but excluding cost of jointing materials (i.e. pig lead and spun yarn). [conforming to IS 3114 : 1994,]			
	80mm diameter	Each	83.00	
	100mm diameter	Each	88.00	
	125mm diameter	Each	129.00	
	150mm diameter	Each	133.00	
	200mm diameter	Each	176.00	
	250mm diameter	Each	218.00	
	300mm diameter	Each	260.00	
	350mm diameter	Each	274.00	
	400mm diameter	Each	353.00	
	450mm diameter	Each	395.00	
	500mm diameter	Each	418.00	
	600mm diameter	Each	564.00	
	700mm diameter	Each	602.00	
	750mm diameter	Each	656.00	
	800mm diameter	Each	721.00	
	900mm diameter	Each	825.00	
	1000mm diameter	Each	894.00	
1.5	Providing and laying in position double socket cast iron 90° bend. [conforming to IS 1538 - 1993 , IS 3114 : 1994		Medium Class	Heavy Class
	80mm diameter	Each	NA	1278.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	100mm diameter	Each	1633.00	1705.00
	125mm diameter	Each	2202.00	2344.00
	150mm diameter	Each	2912.00	3054.00
	200mm diameter	Each	4474.00	4758.00
	250mm diameter	Each	6463.00	6960.00
	300mm diameter	Each	8878.00	9588.00
	350mm diameter	Each	12830.00	13906.00
	400mm diameter	Each	16518.00	17978.00
	450mm diameter	Each	20360.00	22280.00
	500mm diameter	Each	25968.00	28427.00
	600mm diameter	Each	38107.00	41948.00
	700mm diameter	Each	53549.00	59158.00
	750mm diameter	Each	62385.00	69069.00
	800mm diameter	Each	73622.00	81655.00
	900mm diameter	Each	97253.00	108328.00
	1000mm diameter	Each	124550.00	138822.00
1.6	Providing and laying in position 45° bend double socket cast iron. [conforming to IS 1538 -1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	80mm diameter	Each	NA	1278.00
	100mm diameter	Each	1633.00	1705.00
	125mm diameter	Each	2131.00	2273.00
	150mm diameter	Each	2770.00	2912.00
	200mm diameter	Each	4119.00	4403.00
	250mm diameter	Each	5895.00	6321.00
	300mm diameter	Each	8025.00	8594.00
	350mm diameter	Each	11371.00	12216.00
	400mm diameter	Each	14444.00	15519.00
	450mm diameter	Each	17594.00	19053.00
	500mm diameter	Each	22050.00	23817.00
	600mm diameter	Each	31653.00	34419.00
	700mm diameter	Each	43639.00	47557.00
	750mm diameter	Each	50323.00	55009.00
	800mm diameter	Each	58960.00	64498.00
	900mm diameter	Each	76430.00	83995.00
	1000mm diameter	Each	96941.00	106690.00
1.7	Providing and laying in position double socket cast iron 22½° bend. [conforming to IS 1538 - 1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	80mm diameter	Each	NA	1136.00
	100mm diameter	Each	1420.00	1491.00
	125mm diameter	Each	1847.00	1918.00
	150mm diameter	Each	2415.00	2486.00
	200mm diameter	Each	3622.00	3764.00
	250mm diameter	Each	5114.00	5327.00
	300mm diameter	Each	6747.00	7102.00
	350mm diameter	Each	9450.00	9988.00
	400mm diameter	Each	11908.00	12600.00
	450mm diameter	Each	14290.00	15135.00
	500mm diameter	Each	17824.00	18900.00
	600mm diameter	Each	25277.00	26967.00
	700mm diameter	Each	34265.00	36724.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	750mm diameter	Each	39720.00	42332.00
	800mm diameter	Each	45858.00	49290.00
	900mm diameter	Each	58804.00	63406.00
	1000mm diameter	Each	73934.00	79862.00
1.8	Providing and laying in position double socket cast iron 11¼° bend. [conforming to IS 1538 - 1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	80mm diameter	Each	994.00	1065.00
	100mm diameter	Each	1278.00	1349.00
	125mm diameter	Each	1705.00	1776.00
	150mm diameter	Each	2202.00	2273.00
	200mm diameter	Each	3267.00	3409.00
	250mm diameter	Each	4616.00	4758.00
	300mm diameter	Each	6108.00	6321.00
	350mm diameter	Each	8451.00	8835.00
	400mm diameter	Each	10602.00	11063.00
	450mm diameter	Each	12600.00	13214.00
	500mm diameter	Each	15750.00	16518.00
	600mm diameter	Each	22050.00	23202.00
	700mm diameter	Each	29656.00	31346.00
	750mm diameter	Each	34035.00	36033.00
	800mm diameter	Each	39073.00	41647.00
	900mm diameter	Each	49992.00	53189.00
	1000mm diameter	Each	62392.00	66447.00
1.9	Providing and laying in position all socket cast iron Tees (all sizes in Millimeters) Body x Branch Dia. [conforming to IS 1538 -1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	80x80	Each	1537.00	1607.00
	100x80	Each	1886.00	1956.00
	100x100	Each	2026.00	2096.00
	125x80	Each	2375.00	2515.00
	125x100	Each	2515.00	2655.00
	125x125	Each	2725.00	2864.00
	150x80	Each	3004.00	3144.00
	150x100	Each	3144.00	3283.00
	150x125	Each	3283.00	3493.00
	150x150	Each	3493.00	3703.00
	200x80	Each	4401.00	4681.00
	200x100	Each	4541.00	4820.00
	200x125	Each	4681.00	4960.00
	200x150	Each	4890.00	5170.00
	200x200	Each	5379.00	5659.00
	250x80	Each	6148.00	6567.00
	250x100	Each	6287.00	6707.00
	250x125	Each	6497.00	6916.00
	250x150	Each	6707.00	7126.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	250x200	Each	7126.00	7545.00
	250x250	Each	7615.00	8104.00
	300x80	Each	8313.00	8942.00
	300x100	Each	8383.00	9012.00
	300x125	Each	8593.00	9221.00
	300x150	Each	8732.00	9361.00
	300x200	Each	9291.00	9920.00
	300x250	Each	9780.00	10479.00
	300x300	Each	10409.00	11108.00
	350x200	Each	12984.00	13983.00
	350x250	Each	13599.00	14597.00
	350x300	Each	14290.00	15289.00
	350x350	Each	14982.00	16057.00
	400x200	Each	16288.00	17594.00
	400x250	Each	16902.00	18208.00
	400x300	Each	17517.00	18900.00
	400x350	Each	18285.00	19668.00
	400x400	Each	19207.00	20590.00
	450x250	Each	21051.00	22664.00
	450x300	Each	21742.00	23356.00
	450x350	Each	22511.00	24124.00
	450x400	Each	23279.00	24892.00
	450x450	Each	24201.00	25891.00
	500x250	Each	25123.00	27351.00
	500x300	Each	25814.00	28042.00
	500x350	Each	26583.00	28811.00
	500x400	Each	27351.00	29656.00
	500x450	Each	28273.00	30578.00
	500x500	Each	29348.00	31730.00
	600x300	Each	36570.00	40028.00
	600x350	Each	37339.00	40796.00
	600x400	Each	38261.00	41718.00
	600x450	Each	39182.00	42717.00
	600x500	Each	40181.00	43715.00
	600x600	Each	42563.00	46251.00
	700x350	Each	51321.00	56008.00
	700x400	Each	52243.00	57007.00
	700x450	Each	53242.00	58082.00
	700x500	Each	54241.00	59081.00
	700x600	Each	56315.00	61079.00
	700x700	Each	59004.00	63921.00
	750x400	Each	60003.00	65688.00
	750x450	Each	61079.00	66764.00
	750x500	Each	62154.00	67916.00
	750x600	Each	64229.00	69991.00
	750x700	Each	66610.00	72372.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	750x750	Each	68300.00	74139.00
	800x400	Each	69879.00	76586.00
	800x450	Each	70893.00	77678.00
	800x500	Each	71985.00	78770.00
	800x600	Each	74324.00	81109.00
	800x700	Each	76742.00	83605.00
	800x750	Each	77990.00	84931.00
	800x800	Each	79862.00	86881.00
	900x450	Each	91248.00	100451.00
	900x500	Each	92340.00	101543.00
	900x600	Each	94914.00	104272.00
	900x700	Each	97565.00	106924.00
	900x750	Each	98813.00	108250.00
	900x800	Each	100217.00	109576.00
	900x900	Each	103805.00	113319.00
	1000x500	Each	116439.00	128527.00
	1000x600	Each	118935.00	131101.00
	1000x700	Each	122054.00	134377.00
	1000x750	Each	123380.00	135780.00
	1000x800	Each	124862.00	137184.00
	1000x900	Each	127825.00	140148.00
	1000x1000	Each	132037.00	144437.00
1.10	Providing and laying in position all socketed cast iron crosses (all sizes in millimeter). [conforming to IS 1538 - 1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	80 mm	Each	2161.00	2235.00
	100 mm	Each	2757.00	2906.00
	125 mm	Each	3725.00	3874.00
	150 mm	Each	4768.00	4992.00
	200 mm	Each	7227.00	7600.00
	250 mm	Each	10207.00	10803.00
	300 mm	Each	13858.00	14678.00
1.11	Providing and laying in position socket & spigot cast iron tapers (Reducer) (all sizes in mm). [conforming to IS 1538 - 1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	100x80	Each	1048.00	1118.00
	125x80	Each	1397.00	1467.00
	125x100	Each	1467.00	1607.00
	150x80	Each	1746.00	1886.00
	150x100	Each	1816.00	1956.00
	150x125	Each	1956.00	2166.00
	200x100	Each	2585.00	2794.00
	200x125	Each	2725.00	2934.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	200x150	Each	2934.00	3144.00
	250x125	Each	3703.00	3912.00
	250x150	Each	3842.00	4122.00
	250x200	Each	4261.00	4611.00
	300x150	Each	5170.00	5589.00
	300x200	Each	5659.00	6148.00
	300x250	Each	6148.00	6776.00
	350x200	Each	7487.00	8111.00
	350x250	Each	8111.00	8813.00
	350x300	Each	8735.00	9593.00
	400x250	Each	10217.00	11153.00
	400x300	Each	10997.00	12010.00
	400x350	Each	11776.00	12946.00
	450x350	Each	13180.00	14428.00
	450x400	Each	14116.00	15520.00
	500x350	Each	15130.00	16456.00
	500x400	Each	16066.00	17548.00
	500x450	Each	17080.00	18718.00
	600x400	Each	21447.00	23397.00
	600x450	Each	22539.00	24645.00
	600x500	Each	23709.00	25971.00
	700x500	Each	28466.00	31040.00
	700x600	Each	31118.00	34082.00
	750x600	Each	35017.00	38371.00
	750x700	Each	38215.00	42037.00
	800x600	Each	36878.00	40300.00
	800x700	Each	39920.00	43874.00
	800x750	Each	41668.00	45851.00
	900x700	Each	47751.00	52162.00
	900x750	Each	49500.00	56420.00
	900x800	Each	51325.00	54215.00
	1000x800	Each	58245.00	63643.00
	1000x900	Each	62199.00	68282.00

1.12	Providing and laying in position Double Socket cast iron tapers (reducer) (all sizes in mm). [conforming to IS 1538 - 1993 , IS 3114 : 1994]		Medium Class	Heavy Class
	100x80	Each	1048.00	1257.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	125x80	Each	1397.00	1886.00
	125x100	Each	1467.00	2096.00
	150x80	Each	1746.00	2166.00
	150x100	Each	1816.00	2375.00
	150x125	Each	1956.00	2655.00
	200x100	Each	2585.00	3004.00
	200x125	Each	2725.00	3283.00
	200x150	Each	2934.00	3563.00
	250x125	Each	3703.00	4052.00
	250x150	Each	3842.00	4331.00
	250x200	Each	4261.00	5030.00
	300x150	Each	5170.00	5239.00
	300x200	Each	5659.00	5868.00
	300x250	Each	6148.00	6637.00
	350x200	Each	7487.00	9125.00
	350x250	Each	8111.00	10217.00
	350x300	Each	8735.00	11387.00
	400x250	Each	10217.00	11620.00
	400x300	Each	10997.00	12790.00
	400x350	Each	11776.00	14116.00
	450x350	Each	13180.00	15208.00
	450x400	Each	14116.00	16612.00
	500x350	Each	15130.00	17314.00
	500x400	Each	16066.00	18796.00
	500x450	Each	17080.00	19965.00
	600x400	Each	21447.00	23397.00
	600x450	Each	22539.00	24177.00
	600x500	Each	23709.00	25893.00
	700x500	Each	28466.00	30260.00
	700x600	Each	31118.00	34082.00
	750x600	Each	35017.00	36655.00
	750x700	Each	38215.00	40711.00
	800x600	Each	34856.00	38296.00
	800x700	Each	38602.00	42577.00
	800x750	Each	40895.00	45099.00
	900x700	Each	43647.00	48080.00
	900x750	Each	46093.00	53049.00
	900x800	Each	49991.00	52896.00
	1000x800	Each	53584.00	59011.00
	1000x900	Each	58323.00	64438.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
1.13	Providing and laying in position cast iron collars. [conforming to IS 1538 - 1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	80mm diameter	Each	908.00	978.00
	100mm diameter	Each	1118.00	1188.00
	125mm diameter	Each	1467.00	1537.00
	150mm diameter	Each	1886.00	1956.00
	200mm diameter	Each	2655.00	2794.00
	250mm diameter	Each	3633.00	3842.00
	300mm diameter	Each	4750.00	4960.00
	350mm diameter	Each	6507.00	6810.00
	400mm diameter	Each	7794.00	8323.00
	450mm diameter	Each	9610.00	10064.00
	500mm diameter	Each	11426.00	12031.00
	600mm diameter	Each	15512.00	16344.00
	700mm diameter	Each	20354.00	21414.00
	750mm diameter	Each	23003.00	24213.00
	800mm diameter	Each	26595.00	28076.00
	900mm diameter	Each	33068.00	34939.00
	1000mm diameter	Each	40399.00	42660.00
1.14	Providing and laying in position cast iron socket caps. [conforming to IS 1538 - 1993 , IS 3114 : 1994]			
				Heavy Class
	80mm diameter	Each		489.00
	100mm diameter	Each		629.00
	125mm diameter	Each		838.00
	150mm diameter	Each		1048.00
	200mm diameter	Each		1677.00
	250mm diameter	Each		2375.00
	300mm diameter	Each		3214.00
	350mm diameter	Each		4616.00
	400mm diameter	Each		5826.00
	450mm diameter	Each		7340.00
	500mm diameter	Each		8929.00
	600mm diameter	Each		12939.00
	700mm diameter	Each		17782.00
	750mm diameter	Each		20581.00
	800mm diameter	Each		24489.00
	900mm diameter	Each		31586.00
	1000mm diameter	Each		40087.00
1.15	Providing and laying in position cast iron plugs. [conforming to IS 1538 - 1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	80mm diameter	Each	140.00	210.00
	100mm diameter	Each	210.00	279.00
	125mm diameter	Each	349.00	419.00
	150mm diameter	Each	559.00	629.00
	200mm diameter	Each	908.00	978.00
	250mm diameter	Each	1397.00	1537.00
	300mm diameter	Each	1956.00	2096.00
	350mm diameter	Each	2787.00	3007.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	400mm diameter	Each	3741.00	3961.00
	450mm diameter	Each	4767.00	5061.00
	500mm diameter	Each	5941.00	6308.00
	600mm diameter	Each	8801.00	9315.00
	700mm diameter	Each	12542.00	13202.00
	750mm diameter	Each	14742.00	15476.00
	800mm diameter	Each	17782.00	18614.00
	900mm diameter	Each	23230.00	24289.00
	1000mm diameter	Each	29813.00	31099.00
1.16	Providing and laying in position sizes of socket & spigot or all socketed cast iron specials class MEDIUM or HEAVY which does not appear in above items of schedule. [conforming to IS 1538 - 1993 , IS 3114 : 1994]			
			Medium Class	Heavy Class
	80mm to 300mm dia	Kg	70.00	70.00
	Above 300mm Dia	Kg	73.00	73.00
1.17	Labour for laying in position double socket cast iron 45° bends. [conforming to IS 3114 : 1994]		Medium Class	Heavy Class
	80mm diameter	Each	NA	24.00
	100mm diameter	Each	30.00	31.00
	125mm diameter	Each	39.00	42.00
	150mm diameter	Each	51.00	54.00
	200mm diameter	Each	76.00	81.00
	250mm diameter	Each	109.00	117.00
	300mm diameter	Each	148.00	158.00
	350mm diameter	Each	194.00	208.00
	400mm diameter	Each	246.00	265.00
	450mm diameter	Each	300.00	325.00
	500mm diameter	Each	376.00	406.00
	600mm diameter	Each	540.00	587.00
	700mm diameter	Each	744.00	811.00
	750mm diameter	Each	858.00	938.00
	800mm diameter	Each	990.00	1083.00
	900mm diameter	Each	1284.00	1411.00
	1000mm diameter	Each	1628.00	1792.00
1.18	Labour for laying in position double socket cast iron 90^0 bends. [conforming to IS 3114 : 1994]		Medium Class	Heavy Class
	80mm diameter	Each	NA	24.00
	100mm diameter	Each	30.00	31.00
	125mm diameter	Each	41.00	43.00
	150mm diameter	Each	54.00	56.00
	200mm diameter	Each	83.00	88.00
	250mm diameter	Each	119.00	128.00
	300mm diameter	Each	164.00	177.00
	350mm diameter	Each	219.00	237.00
	400mm diameter	Each	282.00	306.00
	450mm diameter	Each	347.00	380.00
	500mm diameter	Each	443.00	485.00
	600mm diameter	Each	650.00	715.00
	700mm diameter	Each	913.00	1008.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	750mm diameter	Each	1064.00	1177.00
	800mm diameter	Each	1236.00	1371.00
	900mm diameter	Each	1633.00	1819.00
	1000mm diameter	Each	2092.00	2331.00
1.19	Labour for laying in position double socket cast iron 22½°. bends. [conforming to IS 3114 : 1994]		Medium Class	Heavy Class
	80mm diameter	Each	NA	21.00
	100mm diameter	Each	26.00	28.00
	125mm diameter	Each	34.00	35.00
	150mm diameter	Each	45.00	46.00
	200mm diameter	Each	67.00	69.00
	250mm diameter	Each	94.00	98.00
	300mm diameter	Each	124.00	131.00
	350mm diameter	Each	161.00	170.00
	400mm diameter	Each	203.00	215.00
	450mm diameter	Each	244.00	258.00
	500mm diameter	Each	304.00	322.00
	600mm diameter	Each	431.00	460.00
	700mm diameter	Each	584.00	626.00
	750mm diameter	Each	677.00	722.00
	800mm diameter	Each	770.00	828.00
	900mm diameter	Each	988.00	1065.00
	1000mm diameter	Each	1242.00	1341.00
1.20	Labour for laying in position double socket cast iron 11¼ ° bends. [conforming to IS 3114 : 1994]		Medium Class	Heavy Class
	80mm diameter	Each	NA	20.00
	100mm diameter	Each	24.00	25.00
	125mm diameter	Each	31.00	33.00
	150mm diameter	Each	41.00	42.00
	200mm diameter	Each	60.00	63.00
	250mm diameter	Each	85.00	88.00
	300mm diameter	Each	113.00	117.00
	350mm diameter	Each	144.00	151.00
	400mm diameter	Each	181.00	189.00
	450mm diameter	Each	215.00	225.00
	500mm diameter	Each	268.00	282.00
	600mm diameter	Each	376.00	396.00
	700mm diameter	Each	506.00	534.00
	750mm diameter	Each	580.00	614.00
	800mm diameter	Each	656.00	699.00
	900mm diameter	Each	840.00	893.00
	1000mm diameter	Each	1048.00	1116.00
1.21	Labour for laying in position all socket cast iron, tees (all Sizes in mm). [conforming to IS 3114 : 1994]		Medium Class	Heavy Class
	80x80	Each	29.00	30.00
	100x80	Each	35.00	37.00
	100x100	Each	38.00	39.00
	125x80	Each	45.00	47.00
	125x100	Each	47.00	50.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	125x125	Each	51.00	54.00
	150x80	Each	56.00	59.00
	150x100	Each	59.00	62.00
	150x125	Each	62.00	65.00
	150x150	Each	65.00	69.00
	200x80	Each	83.00	88.00
	200x100	Each	85.00	90.00
	200x125	Each	88.00	93.00
	200x150	Each	92.00	97.00
	200x200	Each	101.00	106.00
	250x80	Each	115.00	123.00
	250x100	Each	118.00	126.00
	250x125	Each	122.00	130.00
	250x150	Each	126.00	134.00
	250x200	Each	134.00	141.00
	250x250	Each	143.00	152.00
	300x80	Each	156.00	168.00
	300x100	Each	157.00	169.00
	300x125	Each	161.00	173.00
	300x150	Each	164.00	176.00
	300x200	Each	174.00	186.00
	300x250	Each	183.00	196.00
	300x300	Each	195.00	208.00
	350x200	Each	221.00	238.00
	350x250	Each	232.00	249.00
	350x300	Each	244.00	261.00
	350x350	Each	255.00	274.00
	400x200	Each	278.00	300.00
	400x250	Each	288.00	310.00
	400x300	Each	299.00	322.00
	400x350	Each	312.00	335.00
	400x400	Each	327.00	351.00
	450x250	Each	359.00	386.00
	450x300	Each	371.00	398.00
	450x350	Each	384.00	411.00
	450x400	Each	397.00	424.00
	450x450	Each	413.00	441.00
	500x250	Each	428.00	466.00
	500x300	Each	440.00	478.00
	500x350	Each	453.00	491.00
	500x400	Each	466.00	506.00
	500x450	Each	482.00	521.00
	500x500	Each	500.00	541.00
	600x300	Each	623.00	682.00
	600x350	Each	637.00	695.00
	600x400	Each	652.00	711.00
	600x450	Each	668.00	728.00
	600x500	Each	685.00	745.00
	600x600	Each	726.00	788.00
	700x350	Each	875.00	955.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	700x400	Each	891.00	972.00
	700x450	Each	908.00	990.00
	700x500	Each	925.00	1007.00
	700x600	Each	960.00	1041.00
	700x700	Each	1006.00	1090.00
	750x400	Each	1023.00	1120.00
	750x450	Each	1041.00	1138.00
	750x500	Each	1060.00	1158.00
	750x600	Each	1095.00	1193.00
	750x700	Each	1136.00	1234.00
	750x750	Each	1164.00	1264.00
	800x400	Each	1174.00	1286.00
	800x450	Each	1191.00	1304.00
	800x500	Each	1209.00	1323.00
	800x600	Each	1248.00	1362.00
	800x700	Each	1289.00	1404.00
	800x750	Each	1310.00	1426.00
	800x800	Each	1341.00	1459.00
	900x450	Each	1532.00	1687.00
	900x500	Each	1551.00	1705.00
	900x600	Each	1594.00	1751.00
	900x700	Each	1638.00	1796.00
	900x750	Each	1659.00	1818.00
	900x800	Each	1683.00	1840.00
	900x900	Each	1743.00	1903.00
	1000x500	Each	1955.00	2158.00
	1000x600	Each	1997.00	2202.00
	1000x700	Each	2050.00	2257.00
	1000x750	Each	2072.00	2280.00
	1000x800	Each	2097.00	2304.00
	1000x900	Each	2147.00	2354.00
	1000x1000	Each	2217.00	2426.00
1.22	Labour for laying in position all socket cast iron crosses. (all sizes in mm. [conforming to IS 3114 : 1994]).			
			Medium Class	Heavy Class
	80mm diameter	Each	38.00	39.00
	100mm diameter	Each	48.00	51.00
	125mm diameter	Each	65.00	68.00
	150mm diameter	Each	84.00	88.00
	200mm diameter	Each	127.00	134.00
	250mm diameter	Each	179.00	190.00
	300mm diameter	Each	244.00	258.00
1.23	Labour for laying in position socket and spigot cast iron tapers, (reducer) (all Sizes in mm). [conforming to IS 3114 : 1994]			
			Medium Class	Heavy Class
	100x80	Each	20.00	21.00
	125x80	Each	26.00	28.00
	125x100	Each	28.00	30.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	150x80	Each	33.00	35.00
	150x100	Each	34.00	37.00
	150x125	Each	38.00	41.00
	200x100	Each	48.00	52.00
	200x125	Each	51.00	55.00
	200x150	Each	55.00	59.00
	250x125	Each	69.00	73.00
	250x150	Each	72.00	77.00
	250x200	Each	80.00	86.00
	300x150	Each	97.00	105.00
	300x200	Each	106.00	115.00
	300x250	Each	115.00	127.00
	350x200	Each	126.00	136.00
	350x250	Each	136.00	148.00
	350x300	Each	147.00	161.00
	400x250	Each	172.00	187.00
	400x300	Each	185.00	202.00
	400x350	Each	198.00	217.00
	450x350	Each	221.00	242.00
	450x400	Each	237.00	261.00
	500x350	Each	254.00	276.00
	500x400	Each	270.00	295.00
	500x450	Each	287.00	314.00
	600x400	Each	360.00	393.00
	600x450	Each	379.00	414.00
	600x500	Each	398.00	436.00
	700x500	Each	478.00	521.00
	700x600	Each	523.00	572.00
	750x600	Each	588.00	644.00
	750x700	Each	642.00	706.00
	800x600	Each	635.00	694.00
	800x700	Each	688.00	756.00
	800x750	Each	718.00	790.00
	900x700	Each	823.00	898.00
	900x750	Each	853.00	972.00
	900x800	Each	884.00	934.00
	1000x800	Each	1003.00	1096.00
	1000x900	Each	1071.00	1176.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
1.24	Labour for laying in position Double Socket cast iron tapers (Reducer) (all sizes in mm). [conforming to IS 3114 : 1994]		Medium Class	Heavy Class
	100x80	Each	20.00	24.00
	125x80	Each	26.00	35.00
	125x100	Each	28.00	39.00
	150x80	Each	33.00	41.00
	150x100	Each	34.00	45.00
	150x125	Each	37.00	50.00
	200x100	Each	48.00	56.00
	200x125	Each	51.00	62.00
	200x150	Each	55.00	67.00
	250x125	Each	69.00	76.00
	250x150	Each	72.00	81.00
	250x200	Each	80.00	94.00
	300x150	Each	97.00	98.00
	300x200	Each	106.00	110.00
	300x250	Each	115.00	124.00
	350x200	Each	126.00	153.00
	350x250	Each	136.00	172.00
	350x300	Each	147.00	191.00
	400x250	Each	172.00	195.00
	400x300	Each	185.00	215.00
	400x350	Each	198.00	237.00
	450x350	Each	221.00	255.00
	450x400	Each	237.00	279.00
	500x350	Each	254.00	291.00
	500x400	Each	270.00	316.00
	500x450	Each	287.00	335.00
	600x400	Each	360.00	393.00
	600x450	Each	379.00	406.00
	600x500	Each	398.00	435.00
	700x500	Each	478.00	508.00
	700x600	Each	523.00	572.00
	750x600	Each	588.00	616.00
	750x700	Each	642.00	684.00
	800x600	Each	597.00	656.00
	800x700	Each	661.00	730.00
	800x750	Each	701.00	773.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	900x700	Each	748.00	824.00
	900x750	Each	790.00	909.00
	900x800	Each	857.00	906.00
	1000x800	Each	918.00	1011.00
	1000x900	Each	999.00	1104.00
1.25	Labour for laying in position cast Iron Collars. [conforming to IS 3114 : 1994]		Medium Class	Heavy Class
	80mm diameter	Each	17.00	18.00
	100mm diameter	Each	21.00	22.00
	125mm diameter	Each	28.00	29.00
	150mm diameter	Each	35.00	37.00
	200mm diameter	Each	50.00	52.00
	250mm diameter	Each	68.00	72.00
	300mm diameter	Each	89.00	93.00
	350mm diameter	Each	113.00	118.00
	400mm diameter	Each	135.00	144.00
	450mm diameter	Each	166.00	174.00
	500mm diameter	Each	198.00	208.00
	600mm diameter	Each	268.00	283.00
	700mm diameter	Each	352.00	371.00
	750mm diameter	Each	398.00	419.00
	800mm diameter	Each	447.00	472.00
	900mm diameter	Each	555.00	587.00
	1000mm diameter	Each	678.00	716.00
1.26	Labour for laying in position socketed cast iron caps. [conforming to IS 3114 : 1994]			Heavy Class
	80mm diameter	Each		9.00
	100mm diameter	Each		12.00
	125mm diameter	Each		16.00
	150mm diameter	Each		20.00
	200mm diameter	Each		31.00
	250mm diameter	Each		45.00
	300mm diameter	Each		60.00
	350mm diameter	Each		80.00
	400mm diameter	Each		101.00
	450mm diameter	Each		127.00
	500mm diameter	Each		155.00
	600mm diameter	Each		224.00
	700mm diameter	Each		308.00
	750mm diameter	Each		356.00
	800mm diameter	Each		411.00
	900mm diameter	Each		530.00
	1000mm diameter	Each		673.00
1.27	Labour for laying in position cast iron plugs. [conforming to IS 3114 : 1994]			
			Medium Class	Heavy Class
	80mm diameter	Each	3.00	4.00
	100mm diameter	Each	4.00	5.00
	125mm diameter	Each	7.00	8.00
	150mm diameter	Each	10.00	12.00

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	200mm diameter	Each	17.00	18.00
	250mm diameter	Each	26.00	29.00
	300mm diameter	Each	37.00	39.00
	350mm diameter	Each	50.00	54.00
	400mm diameter	Each	67.00	71.00
	450mm diameter	Each	85.00	90.00
	500mm diameter	Each	106.00	113.00
	600mm diameter	Each	157.00	166.00
	700mm diameter	Each	224.00	236.00
	750mm diameter	Each	263.00	276.00
	800mm diameter	Each	308.00	322.00
	900mm diameter	Each	402.00	420.00
	1000mm diameter	Each	516.00	538.00
1.28	Labour for laying in position sizes of socket & spigot or all socketed cast iron standard specials class 'MEDIUM' or 'HEAVY' Which do not appear in above items of the schedule. [conforming to IS 3114 : 1994]		Medium Class	Heavy Class
	80 mm to 1000 mm Dia	Kg	1.00	1.00

CHAPTER - 2
CAST IRON TYTON PIPES WITH TYTON JOINTS

1 C.I. Pipes shall confirm to IS: 1536 - 1989 duly inspected and tested and having BIS certification mark.

2 Specials shall confirm to IS: 1538 - 1983 duly inspected and tested and having BIS certification mark.

3 Tyton rubber sealing ring/Tyton rubber gasket shall be as per IS:5382- 1985 and ISI marked.

4 The rings shall be homogeneous, free from porosity, frit, excessive blooms, blisters or other visible surface imperfections. The fin or flash shall be reduce as much possible and in any case the thickness of it shall not exceed 0.4 mm and the width 0.8 mm. Unless otherwise specified, the materials shall be black.

5 Rubber ring tyton joints shall be used for jointing of CI pipe lines outside the building and other external water supply installations. Wherever required, for internal water supply piping arrangements with CI pipes, shall be connected by flanged joints.

6 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

7 Laying of pipe shall be as per clause IS:3114 - 1994
Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

8 **Measurement**
The net length of pipes as laid or fixed should be measured in running meters correct to a cm. Specials should be excluded and enumerated and paid separately. The portion of the pipe within the collar at the joints shall not be included in the length of pipe work.

9 **Rates**

a) The rates include charges for all tools & plants, chain pulley blocks, other appliances etc. required for lifting and laying the pipes and specials in positions as per approved drawing.

b) The rates include provision and use of all coverings etc. to protect the works from inclement weather etc. and from damages from fall of materials, and other causes.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Codes & CPHEEO Manual)

CHAPTER 2- CAST IRON TYTON PIPES WITH TYTON JOINTS

S.No.	Particulars of Items	Unit	Rates (in Rs.)		
2.1	Providing, laying and jointing cast iron tyton pipes with tyton joints including testing of joints, cost of pipes and jointing materials etc complete. [Cast iron (tyton) pipes shall conform to IS 1536 : 1989 and rubber sealing rings shall conform to IS 5382:1985)		LA Class	A Class	B Class
	80mm diameter	Meter	1137.00	1233.00	1322.00
	100mm diameter	Meter	1396.00	1511.00	1611.00
	125mm diameter	Meter	1734.00	1891.00	2068.00
	150mm diameter	Meter	2096.00	2293.00	2467.00
	200mm diameter	Meter	3059.00	3315.00	3582.00
	250mm diameter	Meter	4117.00	4495.00	4803.00
	300mm diameter	Meter	5317.00	5803.00	6279.00
	350mm diameter	Meter	6691.00	7247.00	7846.00
	400mm diameter	Meter	8166.00	8910.00	9606.00
	450mm diameter	Meter	10021.00	10062.00	11839.00
	500mm diameter	Meter	11735.00	12763.00	13791.00
	600mm diameter	Meter	15580.00	16981.00	18369.00
	700mm diameter	Meter	20110.00	21934.00	23665.00
	750mm diameter	Meter	22522.00	24583.00	26631.00
	800mm diameter	Meter	25211.00	27423.00	29624.00
	900mm diameter	Meter	30694.00	33436.00	36179.00
	1000mm diameter	Meter	36539.00	40234.00	43423.00
2.2	Labour for laying in position cast iron tyton pipes.		LA Class	A Class	B Class
	80mm diameter	Meter	12.00	13.00	14.00
	100mm diameter	Meter	15.00	16.00	18.00
	125mm diameter	Meter	20.00	21.00	23.00
	150mm diameter	Meter	24.00	27.00	28.00
	200mm diameter	Meter	36.00	39.00	41.00
	250mm diameter	Meter	49.00	53.00	57.00
	300mm diameter	Meter	63.00	68.00	74.00
	350mm diameter	Meter	80.00	87.00	93.00
	400mm diameter	Meter	97.00	106.00	113.00
	450mm diameter	Meter	118.00	129.00	138.00
	500mm diameter	Meter	137.00	148.00	159.00
	600mm diameter	Meter	185.00	200.00	216.00
	700mm diameter	Meter	235.00	254.00	273.00
	750mm diameter	Meter	260.00	282.00	304.00
	800mm diameter	Meter	289.00	313.00	337.00
	900mm diameter	Meter	357.00	387.00	417.00
	1000mm diameter	Meter	432.00	469.00	503.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)
2.3	Jointing of tyton pipes of class 'LA' 'A' and 'B' including testing of joints and cost of jointing materials (i.e. Rubber Gasket and Soap solution etc.). [Conform to IS 5382: 1985]		
	80mm diameter	Each	49.00
	100mm diameter	Each	51.00
	125mm diameter	Each	76.00
	150mm diameter	Each	81.00
	200mm diameter	Each	117.00
	250mm diameter	Each	160.00
	300mm diameter	Each	207.00
	350mm diameter	Each	237.00
	400mm diameter	Each	320.00
	450mm diameter	Each	356.00
	500mm diameter	Each	448.00
	600mm diameter	Each	582.00
	700mm diameter	Each	799.00
	750mm diameter	Each	906.00
	800mm diameter	Each	1021.00
	900mm diameter	Each	1139.00
	1000mm diameter	Each	1444.00
2.4	Labour for jointing of tyton pipes class 'LA' 'A' and 'B' including testing of joints but excluding cost of Rubber Gasket.		
	80mm diameter	Each	13.00
	100mm diameter	Each	13.00
	125mm diameter	Each	26.00
	150mm diameter	Each	26.00
	200mm diameter	Each	35.00
	250mm diameter	Each	43.00
	300mm diameter	Each	52.00
	350mm diameter	Each	52.00
	400mm diameter	Each	69.00
	450mm diameter	Each	77.00
	500mm diameter	Each	81.00
	600mm diameter	Each	111.00
	700mm diameter	Each	131.00
	750mm diameter	Each	135.00
	800mm diameter	Each	143.00
	900mm diameter	Each	168.00
	1000mm diameter	Each	185.00

CHAPTER - 3
CAST IRON PIPES AND SPECIALS WITH FLANGED JOINTS

1 The Horizontal Cast C.I. double flanged pipes shall conform to IS 7181-1986 (reaffirmed 2005) duly inspected and tested and having BIS certification mark.

2 The C.I. fittings shall conform to IS - 1538- 1993 duly inspected and tested and having BIS certification mark.

3 Method of sampling of cast iron pipes & fittings shall conform to IS 11606-1986.

4 Specification for rubber and insertions shall conform to IS 1638.

5 Code of structural steel in general building construction (for nuts and bolts) shall conform to IS 800.

6 Flanged pipes centrifugally cast with screwed/welded flanges shall conform to IS 1536-2001

7 Tolerance :

7.1 Tolerance on thickness-

The tolerances on the wall thickness of pipes and flange thickness of pipes shall be as follows:

Dimension	**Tolerance mm**
Wall thickness	-(1+ 0.05e)
Flange thickness	±(2 + 0.05ь)
Where e = Thickness of pipe in mm, and ь = Thickness of flange in mm	

7.2 Tolerance on Mass of fittings-

The mass of fittings are given in the specification prepared by UADD. Tolerance on mass of fittings shall be as below :-

(i) The permissible tolerances on standard mass of fittings shall be ± 8 percent except for bends, fittings with more than one branch and non-standard fittings, in which case the tolerance shall be ± 12 percent. Fittings of a heavier mass than the maximum may be accepted provided they comply in every other respect with the requirement of this standard.

7.3 Permissible Deviation in double flanged cast iron pipe (Horizontal) from a straight Line. The pipes shall be straight. When rolled along two gantries separated by approximately two thirds the lengths of the pipes to be checked, the maximum deviation fm, shall be thus

fm < 1.25L.

8 Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

9 **Fixing** means laying in specified position to ensure interconnection between all flanged pipes, fittings and valves. It is also to ensure that the bolt holes of two flanges of the pipe/ fittings are correctly aligned.

10 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

11 Measurement :

The net length of pipes as laid or fixed should be measured in running meters correct to a cm. Specials should be excluded and enumerated and paid for separately. The portion of the pipe

within the collar at the joints should not be included in the length of pipe work.

12 Rates :

(i) The rates include the charge for all tools and plant such as chain pulley blocks and other appliances etc. required for lifting and laying the pipes and specials in position.

(ii) The rates include provision and use of all coverings etc. to protect the works from inclement weather etc. and from damages from fall of materials and other causes.

(iii) The rates include provision of handling, storing under cover as required and returning of empty cases or container to the store without any extra cost, for such materials as may be supplied by the Department.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 3 -CAST IRON PIPES AND SPECIALS WITH FLANGED JOINTS

S.No.	Particulars of Items	Unit	Rates (in Rs.)
3.1	Providing and fixing double flanged cast iron (horizontal cast) pipe as per IS : 7181 of <u>One Meter</u> length.		
	80mm diameter	Each	1929.00
	100mm diameter	Each	2396.00
	125mm diameter	Each	3098.00
	150mm diameter	Each	3615.00
	200mm diameter	Each	5175.00
	250mm diameter	Each	6948.00
	300mm diameter	Each	8911.00
	350mm diameter	Each	12160.00
	400mm diameter	Each	14847.00
	450mm diameter	Each	17727.00
	500mm diameter	Each	20809.00
	600mm diameter	Each	27973.00
	700mm diameter	Each	36448.00
	750mm diameter	Each	41344.00
3.2	Labour only for fixing including positioning of pipe cleaning of pipes/flange ends, local carriage for pipe at site etc. double flanged cast iron (horizontal cast) pipe as per IS : 7181 of One Meter length.		
	80mm diameter	Each	32.00
	100mm diameter	Each	40.00
	125mm diameter	Each	51.00
	150mm diameter	Each	60.00
	200mm diameter	Each	85.00
	250mm diameter	Each	115.00
	300mm diameter	Each	146.00
	350mm diameter	Each	201.00
	400mm diameter	Each	245.00
	450mm diameter	Each	293.00
	500mm diameter	Each	344.00
	600mm diameter	Each	462.00
	700mm diameter	Each	602.00
	750mm diameter	Each	683.00
3.3	Providing and fixing double flanged cast iron (horizontal cast) pipe as per IS : 7181 of <u>Two Meter</u> length.		
	80mm diameter	Each	3278.00
	100mm diameter	Each	4128.00
	125mm diameter	Each	5356.00
	150mm diameter	Each	6346.00
	200mm diameter	Each	9093.00
	250mm diameter	Each	12415.00
	300mm diameter	Each	16096.00
	350mm diameter	Each	21273.00
	400mm diameter	Each	25945.00
	450mm diameter	Each	31178.00
	500mm diameter	Each	36461.00
	600mm diameter	Each	48895.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)
	700mm diameter	Each	63351.00
	750mm diameter	Each	71617.00
3.4	Labour only for fixing including positioning of pipe cleaning of pipes/flange ends, local carriage for pipe at site etc. double flanged cast iron (horizontal cast) pipe as per IS : 7181 of Two Meter length.		
	80mm diameter	Each	55.00
	100mm diameter	Each	69.00
	125mm diameter	Each	90.00
	150mm diameter	Each	107.00
	200mm diameter	Each	152.00
	250mm diameter	Each	208.00
	300mm diameter	Each	269.00
	350mm diameter	Each	357.00
	400mm diameter	Each	436.00
	450mm diameter	Each	524.00
	500mm diameter	Each	612.00
	600mm diameter	Each	821.00
	700mm diameter	Each	1064.00
	750mm diameter	Each	1203.00
3.5	Providing and fixing double flanged cast iron (horizontal cast) pipe as per IS : 7181 of 2.75 M length		
	80mm diameter	Each	4281.00
	100mm diameter	Each	5415.00
	125mm diameter	Each	7026.00
	150mm diameter	Each	8422.00
	200mm diameter	Each	12060.00
	250mm diameter	Each	16392.00
	300mm diameter	Each	21468.00
	350mm diameter	Each	28020.00
	400mm diameter	Each	34168.00
	450mm diameter	Each	41143.00
	500mm diameter	Each	48055.00
	600mm diameter	Each	64392.00
	700mm diameter	Each	83275.00
	750mm diameter	Each	94044.00
3.6	Labour only for fixing including positioning of pipe cleaning of pipes/flange ends, local carriage for pipe at site etc. double flanged cast iron (horizontal cast) pipe as per IS : 7181 of 2.75 Meter length.		
	80mm diameter	Each	72.00
	100mm diameter	Each	92.00
	125mm diameter	Each	119.00
	150mm diameter	Each	142.00
	200mm diameter	Each	204.00
	250mm diameter	Each	278.00
	300mm diameter	Each	363.00
	350mm diameter	Each	474.00
	400mm diameter	Each	579.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)
	450mm diameter	Each	697.00
	500mm diameter	Each	814.00
	600mm diameter	Each	1090.00
	700mm diameter	Each	1410.00
	750mm diameter	Each	1593.00
3.7	Jointing of double flanged cast iron (horizontal cast) pipes and specials class 'A' and 'B' including labour & cost of jointing materials (i.e. Bolt, Nuts and Rubber insertions) including testing of joint etc. complete [Conform to IS 800 Nuts & Bolts & IS 1638 rubber insertions:]		
	80mm diameter	Each	83.00
	100mm diameter	Each	143.00
	125mm diameter	Each	160.00
	150mm diameter	Each	188.00
	200mm diameter	Each	209.00
	250mm diameter	Each	314.00
	300mm diameter	Each	326.00
	350mm diameter	Each	432.00
	400mm diameter	Each	621.00
	450mm diameter	Each	700.00
	500mm diameter	Each	858.00
	600mm diameter	Each	1127.00
	700mm diameter	Each	1377.00
	750mm diameter	Each	1604.00
3.8	Labour for jointing of flanged cast iron pipes and specials class 'A' and 'B' including testing of joints but excluding cost of jointing materials (i.e. Bolts & Nut, Rubber insertion)		
	80mm diameter	Each	23.00
	100mm diameter	Each	32.00
	125mm diameter	Each	38.00
	150mm diameter	Each	44.00
	200mm diameter	Each	51.00
	250mm diameter	Each	63.00
	300mm diameter	Each	65.00
	350mm diameter	Each	76.00
	400mm diameter	Each	84.00
	450mm diameter	Each	86.00
	500mm diameter	Each	88.00
	600mm diameter	Each	97.00
	700mm diameter	Each	103.00
	750mm diameter	Each	112.00
3.9	Labour only for jointing double flanged horizontally cast iron pipes and specials in vertical or inclined direction including testing of joints but excluding cost of jointing materials (i.e. bolts, nuts and rubber insertion sheet) [Conform to IS 800 IS 1638:]		

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
3.9.1	80mm to 750mm dia in truly vertical position	200% above the rates provided vide item No. 3.2, 3.4 & 3.6		
3.9.2	In inclined position at inclination 45% & above	100% above rates provided vide item No. 3.2, 3.4 & 3.6		
3.9.3	In inclined position at inclination less than 45%	Same as rates provided vide item No. 3.2, 3.4 & 3.6		
3.10	Providing & Laying in position cast iron flanged sockets (confirming to IS 1538)		Medium Class	Heavy Class
	80mm diameter	Each	842.00	912.00
	100mm diameter	Each	1052.00	1122.00
	125mm diameter	Each	1333.00	1403.00
	150mm diameter	Each	1754.00	1824.00
	200mm diameter	Each	2526.00	2596.00
	250mm diameter	Each	4069.00	4350.00
	300mm diameter	Each	5191.00	5542.00
	350mm diameter	Each	7072.00	7524.00
	400mm diameter	Each	8728.00	9254.00
	450mm diameter	Each	10082.00	10684.00
	500mm diameter	Each	12264.00	13016.00
	600mm diameter	Each	16628.00	17606.00
	700mm diameter	Each	21744.00	23023.00
	750mm diameter	Each	24678.00	26108.00
3.11	Providing and laying in position cast iron flanged spigot (tail piece) [Conform to IS 1538]		Medium Class	Heavy Class
	80mm diameter	Each	772.00	842.00
	100mm diameter	Each	912.00	982.00
	125mm diameter	Each	1193.00	1333.00
	150mm diameter	Each	1473.00	1614.00
	200mm diameter	Each	2455.00	2736.00
	250mm diameter	Each	3297.00	3718.00
	300mm diameter	Each	4209.00	4770.00
	350mm diameter	Each	5718.00	6395.00
	400mm diameter	Each	6922.00	7825.00
	450mm diameter	Each	8201.00	9254.00
	500mm diameter	Each	9781.00	10985.00
	600mm diameter	Each	15123.00	17079.00
	700mm diameter	Each	19637.00	22196.00
	750mm diameter	Each	22271.00	25130.00
3.12	Providing and laying in position cast iron double flanged 90° bends [Conform to IS 1538]		Medium Class	Heavy Class
	80mm diameter	Each	862.00	933.00
	100mm diameter	Each	1149.00	1221.00
	125mm diameter	Each	1508.00	1651.00
	150mm diameter	Each	2082.00	2226.00
	200mm diameter	Each	3231.00	3518.00
	250mm diameter	Each	4667.00	5170.00
	300mm diameter	Each	6462.00	7180.00
	350mm diameter	Each	9226.00	10276.00
	400mm diameter	Each	12151.00	13576.00
	450mm diameter	Each	15076.00	16951.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	500mm diameter	Each	19351.00	21752.00
	600mm diameter	Each	29402.00	33152.00
	700mm diameter	Each	42453.00	47928.00
	750mm diameter	Each	50104.00	56629.00
3.13	Providing and laying in position cast iron double flanged 45° bends [Conform to IS 1538]			Heavy Class
	80mm diameter	Each		1005.00
	100mm diameter	Each		1292.00
	125mm diameter	Each		1795.00
	150mm diameter	Each		2441.00
	200mm diameter	Each		3877.00
	250mm diameter	Each		5744.00
	300mm diameter	Each		8042.00
	350mm diameter	Each		8626.00
	400mm diameter	Each		11176.00
	450mm diameter	Each		13876.00
	500mm diameter	Each		17326.00
	600mm diameter	Each		25652.00
	700mm diameter	Each		36378.00
	750mm diameter	Each		42903.00
3.14	Providing and laying in position cast iron double flanged 90° Duck Foot Bend. [Conform to IS 1538]		Medium Class	Heavy Class
	80mm diameter	Each	1438.00	1510.00
	100mm diameter	Each	1798.00	1869.00
	125mm diameter	Each	2445.00	2588.00
	150mm diameter	Each	3236.00	3379.00
	200mm diameter	Each	5033.00	5321.00
	250mm diameter	Each	7478.00	7981.00
	300mm diameter	Each	10498.00	11217.00
	350mm diameter	Each	15314.00	16386.00
	400mm diameter	Each	20061.00	21516.00
	450mm diameter	Each	24885.00	26799.00
	500mm diameter	Each	31700.00	34150.00
	600mm diameter	Each	48009.00	51837.00
3.15	Providing and laying in position cast iron all flanged Tees (all sizes in mm) Body x Branch. [Conform to IS 1538]		Medium Class	Heavy Class
	80x80	Each	1475.00	1549.00
	100x80	Each	1697.00	1844.00
	100x100	Each	1771.00	1918.00
	125x80	Each	2139.00	2361.00
	125x100	Each	2361.00	2508.00
	125x125	Each	2435.00	2656.00
	150x80	Each	2803.00	3025.00
	150x100	Each	2877.00	3099.00
	150x125	Each	3025.00	3320.00
	150x150	Each	3172.00	3467.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	200x80	Each	4131.00	4574.00
	200x100	Each	4205.00	4648.00
	200x125	Each	4426.00	4869.00
	200x150	Each	4574.00	5017.00
	200x200	Each	4943.00	5459.00
	250x80	Each	5902.00	6566.00
	250x100	Each	5976.00	6640.00
	250x125	Each	6197.00	6861.00
	250x150	Each	6418.00	7082.00
	250x200	Each	6787.00	7525.00
	250x250	Each	7304.00	8041.00
	300x80	Each	8041.00	9000.00
	300x100	Each	8189.00	9148.00
	300x125	Each	8336.00	9296.00
	300x150	Each	8558.00	9517.00
	300x200	Each	9000.00	10033.00
	300x250	Each	9517.00	10550.00
	300x300	Each	10033.00	11140.00
	350x200	Each	11436.00	12715.00
	350x250	Each	11737.00	13016.00
	350x300	Each	12791.00	14145.00
	350x350	Each	13167.00	14672.00
	400x200	Each	14220.00	15875.00
	400x250	Each	14521.00	16176.00
	400x300	Each	15650.00	17456.00
	400x350	Each	16101.00	17982.00
	400x400	Each	16628.00	18509.00
	450x250	Each	17456.00	19562.00
	450x300	Each	18584.00	20841.00
	450x350	Each	19036.00	21368.00
	450x400	Each	19487.00	21819.00
	450x450	Each	19938.00	22271.00
	500x250	Each	21142.00	23700.00
	500x300	Each	22421.00	25130.00
	500x350	Each	22948.00	25732.00
	500x400	Each	23475.00	26258.00
	500x450	Each	23926.00	26785.00
	500x500	Each	24453.00	27312.00
	600x300	Each	31149.00	35061.00
	600x350	Each	31901.00	35739.00
	600x400	Each	32503.00	36491.00
	600x450	Each	32955.00	37018.00
	600x500	Each	33481.00	37544.00
	600x600	Each	34685.00	38823.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	700x350	Each	42886.00	48304.00
	700x400	Each	43488.00	48981.00
	700x450	Each	44165.00	49658.00
	700x500	Each	44767.00	50335.00
	700x600	Each	45971.00	51614.00
	700x700	Each	47551.00	53194.00
	750x400	Each	49808.00	56128.00
	750x450	Each	50410.00	56730.00
	750x500	Each	51238.00	57633.00
	750x600	Each	52216.00	58611.00
	750x700	Each	53194.00	59589.00
	750x750	Each	54172.00	60568.00
	800x400	Each	57332.00	64555.00
	800x450	Each	57934.00	65232.00
	800x500	Each	58611.00	65985.00
	800x600	Each	60041.00	67490.00
	800x700	Each	61470.00	68919.00
	800x750	Each	62298.00	69822.00
	800x800	Each	63276.00	70800.00
	900x450	Each	72681.00	82086.00
	900x500	Each	73734.00	83215.00
	900x600	Each	75239.00	84870.00
	900x700	Each	76744.00	86450.00
	900x750	Each	77647.00	87353.00
	900x800	Each	78550.00	88256.00
	900x900	Each	79829.00	89535.00
3.16	Providing and laying in position cast iron double flanged Tapers (all size in mm) Body x Branch. [Conform to IS 1538]		Medium Class	Heavy Class
	100x80	Each	791.00	863.00
	125x80	Each	1294.00	1438.00
	125x100	Each	1438.00	1582.00
	150x80	Each	1510.00	1654.00
	150x100	Each	1654.00	1798.00
	150x125	Each	1798.00	1941.00
	200x100	Each	2085.00	2229.00
	200x125	Each	2229.00	2445.00
	200x150	Each	2445.00	2660.00
	250x125	Each	2732.00	2948.00
	250x150	Each	2876.00	3164.00
	250x200	Each	3308.00	3595.00
	300x150	Each	3379.00	3667.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	300x200	Each	3811.00	4170.00
	300x250	Each	4314.00	4674.00
	350x200	Each	5944.00	6546.00
	350x250	Each	6546.00	7223.00
	350x300	Each	7223.00	7975.00
	400x250	Each	7373.00	8201.00
	400x300	Each	8126.00	9029.00
	400x350	Each	8953.00	9932.00
	450x300	Each	8803.00	9781.00
	450x350	Each	9856.00	10910.00
	450x400	Each	10759.00	11888.00
	500x350	Each	10834.00	12038.00
	500x400	Each	11813.00	13092.00
	500x450	Each	12640.00	13994.00
	600x400	Each	14295.00	15800.00
	600x450	Each	15048.00	16703.00
	600x500	Each	16252.00	17982.00
	700x500	Each	19111.00	21142.00
	700x600	Each	21594.00	23851.00
	750x600	Each	23023.00	25431.00
	750x700	Each	25882.00	28591.00
	800x600	Each	25130.00	27688.00
	800x700	Each	27989.00	30848.00
	800x750	Each	29193.00	32202.00
	900x700	Each	31224.00	34460.00
	900x750	Each	32579.00	35964.00
	900x800	Each	34685.00	38222.00
	1000x800	Each	38974.00	42886.00
	1000x900	Each	42134.00	46423.00
3.17	Providing and laying in position all flanged cast iron crosses [Conform to IS 1538]		Medium Class	Heavy Class
	80mm diameter	Each	1881.00	2031.00
	100mm diameter	Each	2332.00	2558.00
	125mm diameter	Each	3085.00	3461.00
	150mm diameter	Each	4063.00	4514.00
	200mm diameter	Each	6320.00	6997.00
	250mm diameter	Each	9179.00	10157.00
	300mm diameter	Each	12414.00	13543.00
3.18	Providing and laying in position all flanged cast iron blank flanges [Conform to IS 1538]			Heavy Class

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	80mm diameter	Each		351.00
	100mm diameter	Each		421.00
	125mm diameter	Each		561.00
	150mm diameter	Each		772.00
	200mm diameter	Each		1122.00
	250mm diameter	Each		1614.00
	300mm diameter	Each		2245.00
	350mm diameter	Each		3235.00
	400mm diameter	Each		4138.00
	450mm diameter	Each		5041.00
	500mm diameter	Each		6395.00
	600mm diameter	Each		9480.00
	700mm diameter	Each		13317.00
	750mm diameter	Each		15575.00
	800mm diameter	Each		18434.00
	900mm diameter	Each		23550.00
	1000mm diameter	Each		30547.00
3.19	Labour for laying in position cast iron flanged sockets. Excluding cost of the cast iron flanged socket which is to be provided by the local body.		Medium Class	Heavy Class
	80mm diameter	Each	16.00	17.00
	100mm diameter	Each	20.00	21.00
	125mm diameter	Each	25.00	27.00
	150mm diameter	Each	33.00	35.00
	200mm diameter	Each	48.00	49.00
	250mm diameter	Each	77.00	83.00
	300mm diameter	Each	98.00	105.00
	350mm diameter	Each	125.00	133.00
	400mm diameter	Each	154.00	164.00
	450mm diameter	Each	178.00	189.00
	500mm diameter	Each	217.00	230.00
	600mm diameter	Each	294.00	311.00
	700mm diameter	Each	385.00	407.00
	750mm diameter	Each	437.00	462.00
3.20	Labour for laying in position cast iron flanged Spigot. Excluding cost of the cast iron flanged spigot which is to be provided by the local body.		Medium Class	Heavy Class
	80mm diameter	Each	15.00	16.00
	100mm diameter	Each	17.00	19.00
	125mm diameter	Each	23.00	25.00
	150mm diameter	Each	28.00	31.00
	200mm diameter	Each	47.00	52.00
	250mm diameter	Each	63.00	71.00
	300mm diameter	Each	80.00	91.00
	350mm diameter	Each	101.00	113.00
	400mm diameter	Each	122.00	138.00
	450mm diameter	Each	145.00	164.00
	500mm diameter	Each	173.00	194.00
	600mm diameter	Each	268.00	302.00
	700mm diameter	Each	347.00	393.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	750mm diameter	Each	394.00	445.00
3.21	Labour for laying in position cast iron double flanged 90° Bend. Excluding cost of the cast iron double flanged 90 degree bend which is to be provided by the local body.		Medium Class	Heavy Class
	80mm diameter	Each	16.00	17.00
	100mm diameter	Each	21.00	23.00
	125mm diameter	Each	28.00	31.00
	150mm diameter	Each	39.00	41.00
	200mm diameter	Each	60.00	65.00
	250mm diameter	Each	87.00	96.00
	300mm diameter	Each	120.00	133.00
	350mm diameter	Each	164.00	182.00
	400mm diameter	Each	216.00	241.00
	450mm diameter	Each	268.00	301.00
	500mm diameter	Each	343.00	386.00
	600mm diameter	Each	522.00	588.00
	700mm diameter	Each	753.00	850.00
	750mm diameter	Each	889.00	1005.00
3.22	Labour for laying in position cast iron double flanged 45° bend . Excluding cost of the cast iron double flanged 45 degree bend which is to be provided by the local body.			Heavy Class
	80mm diameter	Each		19.00
	100mm diameter	Each		24.00
	125mm diameter	Each		33.00
	150mm diameter	Each		45.00
	200mm diameter	Each		72.00
	250mm diameter	Each		106.00
	300mm diameter	Each		149.00
	350mm diameter	Each		153.00
	400mm diameter	Each		198.00
	450mm diameter	Each		246.00
	500mm diameter	Each		307.00
	600mm diameter	Each		455.00
	700mm diameter	Each		645.00
	750mm diameter	Each		761.00
3.23	Labour for laying in position cast iron double flanged 90° duck foot bend. Excluding cost of the cast iron double flanged 90 degree duck foot bend which is to be provided by the local body.		Medium Class	Heavy Class
	80mm diameter	Each	27.00	28.00
	100mm diameter	Each	33.00	35.00
	125mm diameter	Each	45.00	48.00
	150mm diameter	Each	60.00	63.00
	200mm diameter	Each	93.00	98.00
	250mm diameter	Each	138.00	148.00
	300mm diameter	Each	194.00	208.00
	350mm diameter	Each	266.00	285.00
	400mm diameter	Each	349.00	374.00
	450mm diameter	Each	433.00	466.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	500mm diameter	Each	551.00	594.00
	600mm diameter	Each	834.00	901.00
3.24	Labour for laying in position cast iron all flanged tees (all sizes in mm). Excluding cost of the cast iron double flanged tees (all sizes in mm) which is to be provided by the local body.		Medium Class	Heavy Class
	Body x Branch			
	80x80	Each	27.00	28.00
	100x80	Each	31.00	33.00
	100x100	Each	32.00	35.00
	125x80	Each	39.00	43.00
	125x100	Each	43.00	45.00
	125x125	Each	44.00	48.00
	150x80	Each	51.00	55.00
	150x100	Each	52.00	56.00
	150x125	Each	55.00	60.00
	150x150	Each	57.00	63.00
	200x80	Each	75.00	83.00
	200x100	Each	76.00	84.00
	200x125	Each	80.00	88.00
	200x150	Each	83.00	91.00
	200x200	Each	89.00	98.00
	250x80	Each	106.00	118.00
	250x100	Each	108.00	120.00
	250x125	Each	112.00	124.00
	250x150	Each	116.00	128.00
	250x200	Each	122.00	136.00
	250x250	Each	132.00	145.00
	300x80	Each	145.00	162.00
	300x100	Each	148.00	165.00
	300x125	Each	150.00	168.00
	300x150	Each	154.00	172.00
	300x200	Each	162.00	181.00
	300x250	Each	172.00	190.00
	300x300	Each	181.00	201.00
	350x200	Each	202.00	225.00
	350x250	Each	208.00	230.00
	350x300	Each	226.00	250.00
	350x350	Each	233.00	260.00
	400x200	Each	252.00	280.80
	400x250	Each	257.00	286.00
	400x300	Each	277.00	309.00
	400x350	Each	285.00	318.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	400x400	Each	294.00	327.00
	450x250	Each	309.00	346.00
	450x300	Each	329.00	369.00
	450x350	Each	337.00	378.00
	450x400	Each	345.00	386.00
	450x450	Each	353.00	394.00
	500x250	Each	374.00	419.00
	500x300	Each	397.00	445.00
	500x350	Each	406.00	455.00
	500x400	Each	415.00	464.00
	500x450	Each	423.00	474.00
	500x500	Each	433.00	483.00
	600x300	Each	551.00	620.00
	600x350	Each	564.00	632.00
	600x400	Each	575.00	645.00
	600x450	Each	583.00	655.00
	600x500	Each	592.00	664.00
	600x600	Each	614.00	687.00
	700x350	Each	759.00	854.00
	700x400	Each	769.00	866.00
	700x450	Each	781.00	878.00
	700x500	Each	792.00	890.00
	700x600	Each	813.00	913.00
	700x700	Each	841.00	941.00
	750x400	Each	881.00	993.00
	750x450	Each	892.00	1003.00
	750x500	Each	906.00	1019.00
	750x600	Each	924.00	1037.00
	750x700	Each	941.00	1054.00
	750x750	Each	958.00	1071.00
	800x400	Each	1014.00	1142.00
	800x450	Each	1025.00	1154.00
	800x500	Each	1037.00	1167.00
	800x600	Each	1062.00	1194.00
	800x700	Each	1087.00	1219.00
	800x750	Each	1102.00	1235.00
	800x800	Each	1119.00	1252.00
	900x450	Each	1286.00	1452.00
	900x500	Each	1304.00	1472.00
	900x600	Each	1331.00	1501.00
	900x700	Each	1358.00	1529.00
	900x750	Each	1373.00	1545.00
	900x800	Each	1389.00	1561.00
	900x900	Each	1412.00	1584.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
3.25	Labour for laying in position cast iron double flanged Tapers (all sizes in mm). Excluding cost of the cast iron double flanged Tapers (all sizes in mm) which is to be provided by the local body.		Medium Class	Heavy Class
	Body x Branch			
	100x80	Each	15.00	16.00
	125x80	Each	24.00	27.00
	125x100	Each	27.00	29.00
	150x80	Each	28.00	31.00
	150x100	Each	31.00	33.00
	150x125	Each	33.00	36.00
	200x100	Each	39.00	41.00
	200x125	Each	41.00	45.00
	200x150	Each	45.00	49.00
	250x125	Each	51.00	55.00
	250x150	Each	53.00	59.00
	250x200	Each	61.00	67.00
	300x150	Each	63.00	68.00
	300x200	Each	71.00	77.00
	300x250	Each	80.00	87.00
	350x200	Each	105.00	116.00
	350x250	Each	116.00	128.00
	350x300	Each	128.00	141.00
	400x250	Each	130.00	145.00
	400x300	Each	144.00	160.00
	400x350	Each	158.00	176.00
	450x300	Each	156.00	173.00
	450x350	Each	174.00	193.00
	450x400	Each	190.00	210.00
	500x350	Each	192.00	213.00
	500x400	Each	209.00	232.00
	500x450	Each	224.00	248.00
	600x400	Each	253.00	279.00
	600x450	Each	266.00	295.00
	600x500	Each	287.00	318.00
	700x500	Each	338.00	374.00
	700x600	Each	382.00	422.00
	750x600	Each	407.00	450.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	750x700	Each	458.00	506.00
	800x600	Each	445.00	490.00
	800x700	Each	495.00	546.00
	800x750	Each	516.00	570.00
	900x700	Each	552.00	610.00
	900x750	Each	576.00	636.00
	900x800	Each	614.00	676.00
	1000x800	Each	689.00	759.00
	1000x900	Each	745.00	821.00
3.26	Labour for laying in position all flanged cast iron crosses . Excluding cost of the all flanged cast iron crosses which is to be provided by the local body.		Medium Class	Heavy Class
	80mm diameter	Each	33.00	36.00
	100mm diameter	Each	41.00	45.00
	125mm diameter	Each	55.00	61.00
	150mm diameter	Each	72.00	80.00
	200mm diameter	Each	112.00	124.00
	250mm diameter	Each	162.00	180.00
	300mm diameter	Each	220.00	240.00
3.27	Labour for laying in position cast iron blank flanges. Excluding cost of the cast iron blank flanges which is to be provided by the local body.			Heavy Class
	80mm diameter	Each		7.00
	100mm diameter	Each		8.00
	125mm diameter	Each		11.00
	150mm diameter	Each		15.00
	200mm diameter	Each		21.00
	250mm diameter	Each		31.00
	300mm diameter	Each		43.00
	350mm diameter	Each		57.00
	400mm diameter	Each		73.00
	450mm diameter	Each		89.00
	500mm diameter	Each		113.00
	600mm diameter	Each		168.00
	700mm diameter	Each		236.00
	750mm diameter	Each		275.00
	800mm diameter	Each		326.00
	900mm diameter	Each		417.00
	1000mm diameter	Each		540.00
3.28	Providing and laying in position sizes of flanged cast iron standard specials class medium or heavy which does not appear in above items of the schedule.		Medium Class	Heavy Class
	80mm to 300mm dia	Kg	72.00	72.00
	Above 300mm Dia	Kg	75.00	75.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)
3.29	Labour for laying in position sizes of flanged cast iron standard specials which does not appear in above items of the schedule. Excluding the cost of the special which are to be provided by the local body.		
	80mm to 750mm	Kg	1.00

CHAPTER- 4
DUCTILE IRON PRESSURE PIPES AND SPECIALS WITH TYTON JOINTS

1 (i) Centrifugally cast (spun) Dutice Iron pressure pipes shall conform to IS 8329-2000 duly inspected and tested and having BIS certification mark.

(ii) The Cement Mortar lining in the pipe shall be as per IS - 11906-1986.

2 Ductile Iron fittings for pressure pipes shall conform to IS 9523-2000 duly inspected and tested and having BIS certification mark.

3 Rubber sealing rings shall conform to IS 5382-2000 duly inspected and tested and having BIS certification mark.

4 The laying of D.I. Pipe shall conform to IS - 12288 - 1987.

5 Permissible Deviation from a straight line :-

The pipes shall be reasonably straight. When the pipe is rolled along gantries, separated by distance approximately two-thirds the length of the pipe to be checked, the maximum deviation from a straight line in mm shall not be greater than 1.25 times the length L, in meters of the pipe; thus:

$$f_m \leq 1.25 \; x \; L$$

Where

f_m = maximum deviation from straight line, and

L = length of the pipe.

6 Marking on pipes

Each pipe shall have as cast or stamped or legibly and indelibly painted on it with the following appropriate marks:

(a) Indication of the source of manufacture:
(b) the nominal diameter
(c) Class reference :
(d) The last two digits of the year of manufacture:
(e) The non-standard length of the pipe if specially ordered:
(f) Where applicable, an indication of length over which the pipe is suitable for cutting on site: and
(g) A short white line at the spigot end of the Pipe with push-on joint in sizes DN 700 and above, to indicate the major axis of the spigot.
(h) on the socket faces of pipe centrifugally cast in metal mould, and
(i) on the outside of the socket or on the barrel of pipe centrifugally cast in sand mould.

7 Marking on fittings

Each fittings shall have as cast, stamped or indelibly painted on it, the following appropriate marks.

(a) Indication of the source of manufacture.
(b) The nominal diameter
(c) The last two digits of the year of manufacture.
(d) PN rating of flanges when applicable, and
(e) Any other mark required by the purchaser.
(f) Marking may be done on the barrel of castings or on the outside of the sockets.
(g) The fittings may also be marked with the Standard Mark.

8 Bedding of Pipes:

The trench bottom shall be even and smooth so as to provide a proper support for the pipe over its entire length, and shall be free from stones, lumps, roots and other hard objects that may endure the pipe or coating. Holes shall be dug in the trench bottom to accommodate sockets so as to ensure continuous contact between the trench and the entire pipe barrel between socket holes.

9 Laying of DI Pipes :-

9.1 Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

9.2 Pipes should be lowered into the trench with tackle suitable for the weight of pipes. For smaller sizes, upto 200 mm nominal bore, the pipe may be lowered by the use of ropes but for heavier pipes suitable mechanical equipment have to be used.

10 Tolerance of Length

The tolerance on length of pipes shall be as follows:

Type of Casting	Tolerance mm
(i) Socket and spigot and plain ended pipes	± 100
(ii) Flanged pipes	± 10

11 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

12 Rubber gasket

12.1 The material of rubber gaskets for use with mechanical joints and push-on-joints shall conform to IS : 5382, unless otherwise agreed between the manufacturer and the purchaser.

12.2 In the case of push-on-joints for sizes "DN 600" and above the sockets may be with or without centering rings.

12.3 Marking - Each sealing ring or packing or both shall be marked indelibly with :

(a) The manufacturer's name or trade-mark, if any:
(b) The month and year of manufacture: and
(c) The type followed by a word, 'Water'.

13 Tyton Joints (Rubber Ring Joints)

13.1 Tyton joint is sturdy push on type joint. The sockets of the pipes to receive tyton joints are specially designed to contain elongated grooved gasket. The inside contour of the socket bell provides a seat for the circular rubber ring in a modified bulb shaped gasket. An internal ridge in the socket fits into the groove of the gasket. A slight taper on the plain end (chamfer) of the pipe facilitates assembly.

13.2 Flanged Joints

Flanged cast iron pipes, screwed / welded flanged cast iron pipes and flanged specials are joint by means of flanges. The jointing material used between flanges shall be rubber insertion 3 mm thick. Each bolt should be tyton a little at a time taking care to tighten diametrically opposite bolts alternatively. The practice of fully tightening the bolts one after another is highly undesirable.

14 Measurement

All measurements should be of the finished work.

15 Rates

(i) The rates include charges for all tools and plant, chain pulley blocks, other appliances etc. required for lifting and laying of the pipes and specials in position as per approved drawings.

(ii) The rates include provision and use of all coverings etc. to protect the works from inclement weather etc. and from damages from fall of materials, and other causes.

(iii) The rate include provision of handling, storing under cover as required and returning of empty cases or container to U.A.D. Department stores without any extra cost, for such materials as may be supplied by the department.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 4- DUCTILE IRON PRESSURE PIPES AND SPECIAL WITH TYTON JOINTS

S. No.	Particulars of Items	Unit	Rate (in Rs.)
4.1	Providing, laying and jointing socket & spigot centrifugally cast (Spun) Ductile Iron pressure pipes with inside cement mortar lining (class K-7) conforming to IS 8329/2000 with suitable Rubber Gasket (Push on) joints as per IS:5382/85 including testing of joint (laying conforming to IS 12288 : 1987)		
	80mm diameter	Meter	967.00
	100mm diameter	Meter	1004.00
	150mm diameter	Meter	1470.00
	200mm diameter	Meter	1876.00
	250mm diameter	Meter	2456.00
	300mm diameter	Meter	3102.00
	350mm diameter	Meter	3876.00
	400mm diameter	Meter	4835.00
	450mm diameter	Meter	5628.00
	500mm diameter	Meter	6570.00
	600mm diameter	Meter	8335.00
	700mm diameter	Meter	12097.00
	750mm diameter	Meter	14133.00
	800mm diameter	Meter	15762.00
	900mm diameter	Meter	19099.00
	1000mm diameter	Meter	22946.00
4.2	Labour for laying in position socket & spigot Ductile Iron(k-7) pressure pipes. [Conform to IS 12288:1987]		
	80mm diameter	Meter	10.00
	100mm diameter	Meter	12.00
	150mm diameter	Meter	18.00
	200mm diameter	Meter	24.00
	250mm diameter	Meter	32.00
	300mm diameter	Meter	40.00
	350mm diameter	Meter	54.00
	400mm diameter	Meter	64.00
	450mm diameter	Meter	76.00
	500mm diameter	Meter	87.00
	600mm diameter	Meter	117.00
	700mm diameter	Meter	152.00
	750mm diameter	Meter	167.00
	800mm diameter	Meter	191.00
	900mm diameter	Meter	228.00
	1000mm diameter	Meter	284.00
4.3	Providing, laying and jointing socket & spigot centrifugally cast (Spun) Ductile Iron pressure pipes with inside cement mortar lining (class K-9) conforming to IS 8329/2000 with suitable Rubber Gasket (Push on) joints as per IS:5382/85 including testing of joint (laying conforming to IS 12288 : 1987)		
	80mm diameter	Meter	1074.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	100mm diameter	Meter	1102.00
	150mm diameter	Meter	1621.00
	200mm diameter	Meter	2167.00
	250mm diameter	Meter	2898.00
	300mm diameter	Meter	3664.00
	350mm diameter	Meter	4860.00
	400mm diameter	Meter	5498.00
	450mm diameter	Meter	6785.00
	500mm diameter	Meter	8145.00
	600mm diameter	Meter	10596.00
	700mm diameter	Meter	13737.00
	750mm diameter	Meter	15376.00
	800mm diameter	Meter	16896.00
	900mm diameter	Meter	20590.00
	1000mm diameter	Meter	24253.00
4.4	Labour for laying in position socket & spigot Ductile Iron (k-9) pressure pipes. [Conform to IS 12288:1987]		
	80mm diameter	Meter	13.00
	100mm diameter	Meter	14.00
	150mm diameter	Meter	20.00
	200mm diameter	Meter	28.00
	250mm diameter	Meter	38.00
	300mm diameter	Meter	48.00
	350mm diameter	Meter	64.00
	400mm diameter	Meter	76.00
	450mm diameter	Meter	90.00
	500mm diameter	Meter	104.00
	600mm diameter	Meter	138.00
	700mm diameter	Meter	173.00
	750mm diameter	Meter	191.00
	800mm diameter	Meter	208.00
	900mm diameter	Meter	256.00
	1000mm diameter	Meter	306.00
4.5	Jointing DI pipes class k-7 and k-9 including testing of joints and cost of jointing materials (rubber ISI marked Gasket (push on) joint as per IS-5382/85 and soap solution etc.)		
	80mm diameter	Each	86.00
	100mm diameter	Each	76.00
	150mm diameter	Each	115.00
	200mm diameter	Each	160.00
	250mm diameter	Each	212.00
	300mm diameter	Each	268.00
	350mm diameter	Each	307.00
	400mm diameter	Each	388.00
	450mm diameter	Each	428.00
	500mm diameter	Each	536.00
	600mm diameter	Each	651.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	700mm diameter	Each	870.00
	750mm diameter	Each	994.00
	800mm diameter	Each	1113.00
	900mm diameter	Each	1220.00
	1000mm diameter	Each	1537.00
4.6	Labour Charges for jointing D.I. Pipes class K7 & K9 including joints but excluding cost of Rubber Gasket. (push on) [Conform to IS 12288:1987]		
	80mm diameter	Each	51.00
	100mm diameter	Each	39.00
	150mm diameter	Each	61.00
	200mm diameter	Each	78.00
	250mm diameter	Each	95.00
	300mm diameter	Each	112.00
	350mm diameter	Each	121.00
	400mm diameter	Each	134.00
	450mm diameter	Each	147.00
	500mm diameter	Each	164.00
	600mm diameter	Each	173.00
	700mm diameter	Each	190.00
	750mm diameter	Each	207.00
	800mm diameter	Each	216.00
	900mm diameter	Each	225.00
	1000mm diameter	Each	242.00
4.7	Providing and Laying ductile iron PN-16 type flanged sockets conforming to IS-9523/2000 having dimension as per table 23 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987)		
	80mm	Each	617.00
	100mm	Each	698.00
	150mm	Each	1076.00
	200mm	Each	1529.00
	250mm	Each	1992.00
	300mm	Each	2684.00
	350mm	Each	4595.00
	400mm	Each	5622.00
	450mm	Each	6954.00
	500mm	Each	8580.00
	600mm	Each	13826.00
	700mm	Each	20829.00
	750mm	Each	23564.00
	800mm	Each	27673.00
	900mm	Each	34058.70
	1000mm	Each	45325.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
4.8	Labour charges only for Laying Ductile Iron PN-16 type flanged sockets conforming to IS-9523/2000 having dimension as per table 23 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987)		
	80mm	Each	19.00
	100mm	Each	22.00
	150mm	Each	29.00
	200mm	Each	34.00
	250mm	Each	49.00
	300mm	Each	68.00
	350mm	Each	93.00
	400mm	Each	119.00
	450mm	Each	151.00
	500mm	Each	175.00
	600mm	Each	219.00
	700mm	Each	336.00
	750mm	Each	414.00
	800mm	Each	475.00
	900mm	Each	536.00
	1000mm	Each	670.00
4.9	Providing and Laying ductile PN-16 type iron flanged spigot conforming to IS-9523/2000 having dimension as per table 24 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987)		
	80mm	Each	617.00
	100mm	Each	769.00
	150mm	Each	1225.00
	200mm	Each	1753.00
	250mm	Each	2441.00
	300mm	Each	3278.00
	350mm	Each	5686.00
	400mm	Each	7211.00
	450mm	Each	8936.00
	500mm	Each	11152.00
	600mm	Each	16083.00
	700mm	Each	25176.00
	750mm	Each	28570.00
	800mm	Each	31937.00
	900mm	Each	38172.00
	1000mm	Each	47794.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
4.10	Labour only for Laying Ductile Iron PN-16 type flanged Spigot conforming to IS-9523/2000 having dimension as per table 24 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987)		
	80mm	Each	19.00
	100mm	Each	22.00
	150mm	Each	29.00
	200mm	Each	34.00
	250mm	Each	49.00
	300mm	Each	63.00
	350mm	Each	83.00
	400mm	Each	107.00
	450mm	Each	132.00
	500mm	Each	146.00
	600mm	Each	175.00
	700mm	Each	256.00
	750mm	Each	361.00
	800mm	Each	439.00
	900mm	Each	475.00
	1000mm	Each	609.00
4.11	Providing & laying Ductile iron Mechanical joint collar with follower glands conforming to IS-9523/2000 having dimension as per table 24 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	1189.00
	100mm	Each	1445.00
	150mm	Each	2427.00
	200mm	Each	3040.00
	250mm	Each	4605.00
	300mm	Each	5404.00
	350mm	Each	9273.00
	400mm	Each	11400.00
	450mm	Each	13107.00
	500mm	Each	15568.00
	600mm	Each	19697.00
	700mm	Each	36735.00
	750mm	Each	41161.00
	800mm	Each	47014.00
	900mm	Each	54962.00
	1000mm	Each	71133.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
4.12	Labour only for Laying Ductile Iron Mechanical Joint collar with follower glands conforming to IS-9523/2000 having dimension as per table 24 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	33.00
	100mm	Each	40.00
	150mm	Each	63.00
	200mm	Each	77.00
	250mm	Each	105.00
	300mm	Each	135.00
	350mm	Each	184.00
	400mm	Each	233.00
	450mm	Each	270.00
	500mm	Each	312.00
	600mm	Each	395.00
	700mm	Each	591.00
	750mm	Each	675.00
	800mm	Each	779.00
	900mm	Each	935.00
	1000mm	Each	1193.00
4.13	Providing & Laying Ductile Iron Double Socket 90° Bends conforming to IS-9523/2000 having dimension as per table 15 of IS-9523/2000 in the following nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	637.00
	100mm	Each	779.00
	125mm	Each	1062.00
	150 mm	Each	1416.00
	200mm	Each	2266.00
	250mm	Each	3192.00
	300mm	Each	4609.00
	350mm	Each	8471.00
	400mm	Each	10932.00
	450mm	Each	14376.00
	500mm	Each	17821.00
	600mm	Each	27655.00
	700mm	Each	48320.00
	750mm	Each	55840.00
	800mm	Each	67049.00
	900mm	Each	88758.00
	1000mm	Each	117616.00
4.14	Labour charges for Laying Ductile Iron Double Socket 90° Bends conforming to IS-9523/2000 having dimension as per table 15 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	80mm	Each	16.00
	100mm	Each	20.00
	125mm	Each	27.00
	150 mm	Each	36.00
	200mm	Each	58.00
	250mm	Each	87.00
	300mm	Each	124.00
	350mm	Each	163.00
	400mm	Each	209.00
	450mm	Each	272.00
	500mm	Each	336.00
	600mm	Each	510.00
	700mm	Each	745.00
	750mm	Each	899.00
	800mm	Each	999.00
	900mm	Each	1335.00
	1000mm	Each	1817.00
4.15	Providing & Laying Ductile Iron Double Socket 45° Bends conforming to IS-9523/2000 having dimension as per table 16 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	567.00
	100mm	Each	708.00
	125mm	Each	921.00
	150 mm	Each	1133.00
	200mm	Each	1845.00
	250mm	Each	2480.00
	300mm	Each	3472.00
	350mm	Each	6300.00
	400mm	Each	7882.00
	450mm	Each	10439.00
	500mm	Each	12610.00
	600mm	Each	19486.00
	700mm	Each	33334.00
	750mm	Each	37809.00
	800mm	Each	45470.00
	900mm	Each	59593.00
	1000mm	Each	79178.00
4.16	Labour charges for Laying Ductile Iron Double Socket 45° Bends conforming to IS-9523/2000 having dimension as per table 16 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	15.00
	100mm	Each	18.00
	125mm	Each	24.00
	150 mm	Each	29.00
	200mm	Each	51.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	250mm	Each	65.00
	300mm	Each	91.00
	350mm	Each	118.00
	400mm	Each	154.00
	450mm	Each	200.00
	500mm	Each	245.00
	600mm	Each	360.00
	700mm	Each	490.00
	750mm	Each	618.00
	800mm	Each	672.00
	900mm	Each	908.00
	1000mm	Each	1174.00
4.17	Providing & Laying Ductile Iron Double Socket 22.5° Bends conforming to IS-9523/2000 having dimension as per table 17 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	496.00
	100mm	Each	637.00
	125mm	Each	850.00
	150 mm	Each	1062.00
	200mm	Each	1631.00
	250mm	Each	2128.00
	300mm	Each	2978.00
	350mm	Each	5218.00
	400mm	Each	6503.00
	450mm	Each	8367.00
	500mm	Each	10137.00
	600mm	Each	15550.00
	700mm	Each	25739.00
	750mm	Each	28719.00
	800mm	Each	34811.00
	900mm	Each	43771.00
	1000mm	Each	56417.00
4.18	Labour charges for Laying Ductile Iron Double Socket 22.5° Bends conforming to IS-9523/2000 having dimension as per table 17 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	13.00
	100mm	Each	16.00
	125mm	Each	22.00
	150 mm	Each	27.00
	200mm	Each	44.00
	250mm	Each	58.00
	300mm	Each	80.00
	350mm	Each	98.00
	400mm	Each	127.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	450mm	Each	156.00
	500mm	Each	187.00
	600mm	Each	287.00
	700mm	Each	381.00
	750mm	Each	463.00
	800mm	Each	518.00
	900mm	Each	663.00
	1000mm	Each	872.00
4.19	Providing & Laying Ductile Iron Double Socket 11.25° bends conforming to IS-9523/2000 having dimension as per table 18 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	496.00
	100mm	Each	637.00
	125mm	Each	779.00
	150 mm	Each	991.00
	200mm	Each	1487.00
	250mm	Each	1986.00
	300mm	Each	2695.00
	350mm	Each	4626.00
	400mm	Each	5708.00
	450mm	Each	7294.00
	500mm	Each	8664.00
	600mm	Each	13184.00
	700mm	Each	21202.00
	750mm	Each	23445.00
	800mm	Each	28922.00
	900mm	Each	36166.00
	1000mm	Each	47300.00
4.20	Labour charges for Laying Ductile Iron Double Socket 11.25° bends conforming to IS-9523/2000 having dimension as per table 18 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987)		
	80mm	Each	13.00
	100mm	Each	16.00
	125mm	Each	20.00
	150 mm	Each	25.00
	200mm	Each	38.00
	250mm	Each	54.00
	300mm	Each	73.00
	350mm	Each	85.00
	400mm	Each	105.00
	450mm	Each	145.00
	500mm	Each	163.00
	600mm	Each	240.00
	700mm	Each	312.00
	750mm	Each	381.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	800mm	Each	425.00
	900mm	Each	545.00
	1000mm	Each	690.00
4.21	Providing & Laying Ductile Iron All socket Tees conforming to IS-9523/2000 having dimension as per table 21 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987) (All sizes in mm)		
	80x80	Each	851.00
	100x80	Each	992.00
	100x100	Each	1063.00
	150x80	Each	1418.00
	150x100	Each	1490.00
	150x150	Each	1774.00
	200x80	Each	1986.00
	200x100	Each	2128.00
	200x150	Each	2414.00
	200x200	Each	2838.00
	250x80	Each	2484.00
	250x100	Each	2628.00
	250x150	Each	2982.00
	250x250	Each	3902.00
	300x100	Each	3546.00
	300x200	Each	4413.00
	300x300	Each	5467.00
4.22	Labour charges for Laying Ductile Iron All socket Tees conforming to IS-9523/2000 having dimension as per table 21 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987) (All sizes in mm)		
	80x80	Each	23.00
	100x80	Each	26.00
	100x100	Each	28.00
	150x80	Each	38.00
	150x100	Each	41.00
	150x150	Each	49.00
	200x80	Each	54.00
	200x100	Each	58.00
	200x150	Each	68.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	200x200	Each	78.00
	250x80	Each	69.00
	250x100	Each	75.00
	250x150	Each	84.00
	250x250	Each	107.00
	300x100	Each	96.00
	300x200	Each	135.00
	300x300	Each	154.00
4.23	Providing & Laying Ductile Iron Double Socket branch flange Tee conforming to IS-9523/2000 having dimension as per table 21 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987) (All sizes in mm)		
	80x80	Each	996.00
	100x80	Each	1149.00
	100x100	Each	1228.00
	150x80	Each	1609.00
	150x100	Each	1584.00
	150x150	Each	2071.00
	200x80	Each	2222.00
	200x100	Each	2377.00
	200x150	Each	2760.00
	200x200	Each	3222.00
	250x80	Each	2760.00
	250x100	Each	2913.00
	250x150	Each	3381.00
	250x200	Each	3913.00
	250x250	Each	4526.00
	300x80	Each	3678.00
	300x100	Each	3833.00
	300x150	Each	4369.00
	300x200	Each	4909.00
	300x250	Each	5599.00
	300x300	Each	6370.00
	350x100	Each	6115.00
	350x200	Each	7750.00
	350x350	Each	11024.00
	400x80	Each	6934.00
	400x100	Each	7242.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	400x150	Each	8165.00
	400x200	Each	9080.00
	400x300	Each	11222.00
	400x400	Each	14187.00
	450x100	Each	8971.00
	450x250	Each	12234.00
	500x100	Each	10499.00
	500x200	Each	12745.00
	500x400	Each	18657.00
	500x500	Each	22835.00
	600x200	Each	17432.00
4.24	Labour charges for Laying Ductile Iron Double Socketed Branch Flange Tee Conforming to IS-9523/2000 having dimension as per table 21 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining. (laying conforming to IS 12288 : 1987) (All sizes in mm)		
	80x80	Each	24.00
	100x80	Each	28.00
	100x100	Each	32.00
	150x80	Each	39.00
	150x100	Each	43.00
	150x150	Each	52.00
	200x80	Each	54.00
	200x100	Each	60.00
	200x150	Each	69.00
	200x200	Each	82.00
	250x80	Each	69.00
	250x100	Each	73.00
	250x150	Each	92.00
	250x200	Each	101.00
	250x250	Each	116.00
	300x80	Each	90.00
	300x100	Each	95.00
	300x150	Each	108.00
	300x200	Each	125.00
	300x250	Each	142.00
	300x300	Each	166.00
	350x100	Each	112.00
	350x200	Each	146.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	350x350	Each	219.00
	400x80	Each	131.00
	400x100	Each	138.00
	400x150	Each	161.00
	400x200	Each	176.00
	400x300	Each	217.00
	400x400	Each	280.00
	450x100	Each	166.00
	450x250	Each	228.00
	500x100	Each	194.00
	500x200	Each	239.00
	500x400	Each	347.00
	500x500	Each	424.00
	600x200	Each	323.00
4.25	Providing & Laying Ductile Iron Double Socket Reducer conforming to IS-9523/2000 having dimension as per table 21 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987) (All sizes in mm)		
	100x80	Each	568.00
	150x80	Each	923.00
	150x100	Each	924.00
	200x100	Each	1419.00
	200x150	Each	1423.00
	250x150	Each	1991.00
	300x150	Each	2699.00
	300x200	Each	2699.00
	300x250	Each	2486.00
	350x200	Each	4932.00
	350x250	Each	4737.00
	350x300	Each	4445.00
	400x250	Each	6111.00
	400x300	Each	5914.00
	400x350	Each	5419.00
	450x350	Each	7290.00
	450x400	Each	6799.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	500x350	Each	9170.00
	500x400	Each	8581.00
	600x400	Each	13274.00
	600x500	Each	12070.00
4.26	Labour charges for Laying ductile iron double socket reducer conforming to IS-9523/2000 having dimension as per table 20 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987) (All sizes in mm)		
	100x80	Each	16.00
	150x80	Each	26.00
	150x100	Each	27.00
	200x100	Each	39.00
	200x150	Each	43.00
	250x150	Each	59.00
	300x150	Each	77.00
	300x200	Each	77.00
	300x250	Each	71.00
	350x200	Each	102.00
	350x250	Each	100.00
	350x300	Each	98.00
	400x250	Each	122.00
	400x300	Each	118.00
	400x350	Each	106.00
	450x350	Each	141.00
	450x400	Each	133.00
	500x350	Each	186.00
	500x400	Each	177.00
	600x400	Each	275.00
	600x500	Each	243.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
4.27	Providing and Laying ductile iron PN-10 type flanged sockets conforming to IS-9523/2000 having dimension as per table 23 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987)		
	80mm	Each	555.00
	100mm	Each	627.00
	150mm	Each	971.00
	200mm	Each	1388.00
	250mm	Each	1804.00
	300mm	Each	2427.00
	350mm	Each	4145.00
	400mm	Each	5066.00
	450mm	Each	6249.00
	500mm	Each	7715.00
	600mm	Each	12467.00
	700mm	Each	18828.00
	750mm	Each	21326.00
	800mm	Each	24978.00
	900mm	Each	30807.00
	1000mm	Each	41008.00
4.28	Labour only for Laying Ductile Iron PN-10 type flanged sockets conforming to IS-9523/2000 having dimension as per table 23 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987)		
	80mm	Each	17.00
	100mm	Each	19.00
	150mm	Each	29.00
	200mm	Each	42.00
	250mm	Each	55.00
	300mm	Each	71.00
	350mm	Each	92.00
	400mm	Each	113.00
	450mm	Each	126.00
	500mm	Each	151.00
	600mm	Each	221.00
	700mm	Each	384.00
	750mm	Each	492.00
	800mm	Each	500.00
	900mm	Each	636.00
	1000mm	Each	819.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
4.29	Providing and Laying ductile PN-10 type iron flanged spigot conforming to IS-9523/2000 having dimension as per table 24 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987)		
	80mm	Each	556.00
	100mm	Each	695.00
	150mm	Each	1113.00
	200mm	Each	1600.00
	250mm	Each	2225.00
	300mm	Each	2986.00
	350mm	Each	5163.00
	400mm	Each	6540.00
	450mm	Each	8105.00
	500mm	Each	10122.00
	600mm	Each	14625.00
	700mm	Each	22976.00
	750mm	Each	25995.00
	800mm	Each	28989.00
	900mm	Each	34754.00
	1000mm	Each	43469.00
4.30	Labour only for Laying Ductile Iron PN-10 type flanged Spigot conforming to IS-9523/2000 having dimension as per table 24 of IS-9523/2000 in the nominal diameter/sizes with external bitumen coating and internal cement mortar lining with finishing as per clause 13 of IS-9523/2000. (laying conforming to IS 12288 : 1987)		
	80mm	Each	18.00
	100mm	Each	23.00
	150mm	Each	36.00
	200mm	Each	52.00
	250mm	Each	72.00
	300mm	Each	93.00
	350mm	Each	120.00
	400mm	Each	147.00
	450mm	Each	181.00
	500mm	Each	217.00
	600mm	Each	308.00
	700mm	Each	548.00
	750mm	Each	607.00
	800mm	Each	641.00
	900mm	Each	826.00
	1000mm	Each	1003.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
4.31	Providing, Laying & Jointing of welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS:8329/2000 in the length of 1m. for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	6321.00
	150mm	Each	8510.00
	200mm	Each	12029.00
	250mm	Each	15135.00
	300mm	Each	19369.00
	350mm	Each	27686.00
	400mm	Each	34597.00
	450mm	Each	43293.00
	500mm	Each	48596.00
	600mm	Each	65875.00
	700mm	Each	81793.00
4.32	Providing, Laying & jointing of welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS:8329/2000 in the length of 2m. for class K-9 with inside cement mortar, lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	8092.00
	150mm	Each	11106.00
	200mm	Each	15600.00
	250mm	Each	19929.00
	300mm	Each	25424.00
	350mm	Each	35178.00
	400mm	Each	43532.00
	450mm	Each	53872.00
	500mm	Each	60923.00
	600mm	Each	82054.00
	700mm	Each	102231.00
4.33	Providing , Laying and Jointing of welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS:8329/2000 in the length of 3m for class K-9 with inside cement mortar, lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	9923.00
	150mm	Each	13782.00
	200mm	Each	19282.00
	250mm	Each	24861.00
	300mm	Each	31657.00
	350mm	Each	42928.00
	400mm	Each	52789.00
	450mm	Each	64853.00
	500mm	Each	73702.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	600mm	Each	98844.00
	700mm	Each	123651.00
4.34	Providing, Laying and Jointing welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS 8329/2000 in the length of 4m for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	11753.00
	150mm	Each	16458.00
	200mm	Each	22964.00
	250mm	Each	29793.00
	300mm	Each	37891.00
	350mm	Each	50677.00
	400mm	Each	62045.00
	450mm	Each	75834.00
	500mm	Each	86480.00
	600mm	Each	115634.00
	700mm	Each	144958.00
4.35	Providing, Laying and Jointing welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS:8329/2000 in the length of 4.5m. for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	12668.00
	150mm	Each	17795.00
	200mm	Each	24804.00
	250mm	Each	32259.00
	300mm	Each	41006.00
	350mm	Each	54551.00
	400mm	Each	66672.00
	450mm	Each	81325.00
	500mm	Each	92868.00
	600mm	Each	124030.00
	700mm	Each	155614.00
4.36	Providing, Laying and Jointing welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS:8329/2000 in the length of 5m. for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	13585.00
	150mm	Each	19137.00
	200mm	Each	26650.00
	250mm	Each	34740.00
	300mm	Each	44141.00
	350mm	Each	58474.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	400mm	Each	71370.00
	450mm	Each	86910.00
	500mm	Each	99396.00
	600mm	Each	132636.00
	700mm	Each	166478.00
4.37	Providing, Laying and Jointing of welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS:8329/2000 in the length of 5.2m. for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	13950.00
	150mm	Each	19672.00
	200mm	Each	27386.00
	250mm	Each	35725.00
	300mm	Each	45388.00
	350mm	Each	60024.00
	400mm	Each	73219.00
	450mm	Each	89105.00
	500mm	Each	101951.00
	600mm	Each	135993.00
	700mm	Each	170739.00
4.38	Labour only for Laying welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS:8329/2000 in the length of 1m. for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	52.00
	150mm	Each	79.00
	200mm	Each	107.00
	250mm	Each	114.00
	300mm	Each	184.00
	350mm	Each	221.00
	400mm	Each	261.00
	450mm	Each	308.00
	500mm	Each	357.00
	600mm	Each	480.00
	700mm	Each	615.00
4.39	Labour only for Laying welded double flanged centrifugal cast (spun) ductile Iron pressure pipes confirming to IS: 8329/2000 in the length of 2m. for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	86.00
	150mm	Each	129.00
	200mm	Each	176.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	250mm	Each	229.00
	300mm	Each	292.00
	350mm	Each	327.00
	400mm	Each	378.00
	450mm	Each	433.00
	500mm	Each	474.00
	600mm	Each	604.00
	700mm	Each	830.00
4.40	Labour only for Laying welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS: 8329/2000 in the length of 3m. for class K-9 with inside cement mortar, lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	120.00
	150mm	Each	180.00
	200mm	Each	245.00
	250mm	Each	314.00
	300mm	Each	399.00
	350mm	Each	433.00
	400mm	Each	495.00
	450mm	Each	557.00
	500mm	Each	591.00
	600mm	Each	729.00
	700mm	Each	1044.00
4.41	Labour only for Laying welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS: 8329/2000 in the length of 4m. for class K-9 with inside cement mortar, lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	154.00
	150mm	Each	231.00
	200mm	Each	314.00
	250mm	Each	400.00
	300mm	Each	506.00
	350mm	Each	539.00
	400mm	Each	612.00
	450mm	Each	682.00
	500mm	Each	708.00
	600mm	Each	853.00
	700mm	Each	1259.00
4.42	Labour only for Laying and Jointing welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS: 8329/2000 in the length of 4.5m. for class K-9 with inside cement mortar, lining for the sizes/dia pipe. (laying conforming to IS 12288 : 1987)		
	100mm	Each	171.00

S. No.	Particulars of Items	Unit	Rate (in Rs.)
	150mm	Each	256.00
	200mm	Each	348.00
	250mm	Each	442.00
	300mm	Each	559.00
	350mm	Each	592.00
	400mm	Each	671.00
	450mm	Each	744.00
	500mm	Each	767.00
	600mm	Each	915.00
	700mm	Each	1366.00
4.43	Labour only for Laying welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS: 8329/2000 in the length of 5m. for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	200.00
	150mm	Each	294.00
	200mm	Each	405.00
	250mm	Each	550.00
	300mm	Each	700.00
	350mm	Each	886.00
	400mm	Each	1067.00
	450mm	Each	1282.00
	500mm	Each	1516.00
	600mm	Each	2032.00
	700mm	Each	2529.00
4.44	Labour only for Laying welded double flanged centrifugal cast (spun) ductile Iron pressure pipes conforming to IS:8329/2000 in the length of 5.2m for class K-9 with inside cement mortar lining for the sizes/dia pipes. (laying conforming to IS 12288 : 1987)		
	100mm	Each	207.00
	150mm	Each	305.00
	200mm	Each	419.00
	250mm	Each	567.00
	300mm	Each	721.00
	350mm	Each	907.00
	400mm	Each	1090.00
	450mm	Each	1306.00
	500mm	Each	1539.00
	600mm	Each	2057.00
	700mm	Each	2572.00

CHAPTER- 5
UNPLASTICIZED PVC PIPES & FITTINGS FOR POTABLE WATER SUPPLY

1 Unplasticized PVC pipes for potable water supply as per IS 4985-2000 duly inspected and tested and having BIS certification mark.

2 Selection, Handling, storage and installation of UPVC Pipes as per IS 7634 (Part-3) - 2003

3 Specification of Injection Moulded PVC socket fittings with solvent cement joints shall be as per IS 7834 (Part-I to VIII) - 1987.

4 Visual Appearance

(i) The colour of the pipes shall be light grey. Slight variations in the appearance of the colour are permitted.

(ii) The internal and external surfaces of the pipe shall be smooth, clean and free from grooving and other defects. Slight shallow longitudinal grooves or irregularities in the pipe shall be permissible provided the wall thickness remains within the permissible limits.

(iii) Each pipe may also be marked with the standard mark of BIS certification.

5 Storage

(i) PVC solvent cement should be stored in a cool place except when actually in use at the site. The solvent cement has a limited self life when not stored in hermetically sealed containers.

(ii) Pipes should be stacked on a surface flat and free from sharp objects, stones or projection in order to avoid deformation of damage. Ends of pipes should be protected from abrasion and chipping.

6 In rocky area 15 cm. cushion of sand or moorum below and above the pipes should be provided as per IS 7634 (Part III) : 2003. *(See Drawing No.-3)*

7 Marking

Each pipe shall be clearly and indelibly marked in ink/paint or hot embossed on white base at intervals of not more than 3 meters, in colour as indicated below.

(a) Manufacturer's name or trade-mark
(b) Out side diameter,
(c) Out side diameter,
(d) Class of pipe and pressure rating
(e) Batch and lot number
(f) The word plumbing in the case of plumbing pipes.
(g) Each pipe may also be marked with the standard mark BIS certification.

Class of Pipe	Colour
Class 3	Green
Class 4	Brown
Class 5	Yellow

8 Marking of fittings

(i) All fittings shall be clearly and indelibly marked at a prominent place visible even after the installation of the fittings with the following :
(a) Manufacturer's identification mark, and
(b) Size of the fitting and the appropriate class (working pressure) of IS : 4985 - 1988 to which the pressure rating of the fitting corresponds.
(ii) PVC fittings also conforming to specific requirements as prescribed in the relevant parts of the standard may also be marked with the standard Mark.

9 The work shall be executed in accordance with the specifications in of work and all relevant latest IS codes.

10 Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

11 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

12 Measurement

All measurement should be of the finished work only. The net length of pipes as laid or fixed shall be measured in running meters correct to 10mm. Specials shall be excluded and measured and paid separately under the relevant item. The portion of the pipe inside the joints shall not be included in the length of pipe work. Excavation, refilling, masonry and concrete work wherever required shall be measured and paid for separately under relevant items of work.

13 Rates

(i) The rate include the charges for all tools and plants and other appliances required for lifting, laying and jointing of pipes, specials and fittings in position as per approved drawings.

(ii) The rate includes provision for use of all coverings etc. to protect the works and inclement weather etc. and damages from fall of materials and other causes.

(iii) The rate includes provision of handling, storing as required and returning of empty bags or containers to the local body /departmental stores, without any extra cost for such materials as may be supplied by the department.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 5 - UNPLASTICIZED PVC PIPES & FITTINGS FOR POTABLE WATER SUPPLY

S.No.	Particulars of Items	Unit	Rates (in Rs.)		
5.1	Providing, laying and jointing following P.V.C. pipes with solvent cement joint for 6, 8 and 10 kg/ sq. cm. pressures including testing of joints, cost of jointing materials etc. complete in all respect. [Conform to IS 4985:2000 and IS 7634 (PT-3)		6Kg/Cm^2	8 Kg/Cm^2	10Kg/Cm^2
	90 mm dia.	RM.	128.00	160.00	195.00
	110 mm dia.	RM.	182.00	238.00	292.00
	140 mm dia.	RM.	313.00	402.00	481.00
	160 mm dia.	RM.	493.00	524.00	630.00
	180 mm dia.	RM.	489.00	658.00	800.00
	200 mm dia.	RM.	623.00	814.00	990.00
	250 mm dia	RM.	1071.00	1361.00	1688.00
	315 mm dia	RM.	1643.00	2143.00	2671.90
5.2	Labour for laying in position following PVC pipes of 6, 8 and 10Kg/Sqcm. pressure.		6Kg/Cm^2	8 Kg/Cm^2	10Kg/Cm^2
	90 mm dia.	RM.	4.00	4.00	4.00
	110 mm dia.	RM.	4.00	4.00	4.00
	140 mm dia.	RM.	4.00	4.00	4.00
	160 mm dia.	RM.	6.00	6.00	6.00
	180 mm dia.	RM.	6.00	6.00	6.00
	200 mm dia.	RM.	6.00	6.00	6.00
	250 mm dia	RM.	7.00	7.00	7.00
	315 mm dia	RM.	7.00	7.00	7.00
5.3	Providing, Solvent Cement Joints to PVC Pipes and fittings of 6, 8 and 10 Kg/Sq cm. Pressure including testing of joints and cost of jointing materials (i.e. socket, coupler & solvent cement) [conform to IS 7634 (PT-3) : 2003]		6Kg/Cm^2	8 Kg/Cm^2	10Kg/Cm^2
	90 mm dia.	Each	14.00	14.00	14.00
	110 mm dia.	Each	16.00	16.00	16.00
	140 mm dia.	Each	22.00	22.00	22.00
	160 mm dia.	Each	26.00	26.00	26.00
	180 mm dia.	Each	33.00	33.00	33.00
	200 mm dia.	Each	39.00	39.00	39.00
	250 mm dia	Each	56.00	56.00	56.00
	315 mm dia	Each	66.00	66.00	66.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)		
5.4	Labour for providing solvent cement joints to PVC pipes and fittings of 6, 8 and 10Kg /Sq cm. Pressure including testing of joints but excluding cost of jointing materials (i.e. coupler and solvent cement) [Conform to IS 4985:2000 and IS 7634 (PT-3)				
			6Kg/Cm^2	8 Kg/Cm^2	10Kg/Cm^2
	90 mm dia.	Each	8.00	8.00	8.00
	110 mm dia.	Each	8.00	8.00	8.00
	140 mm dia.	Each	11.00	11.00	11.00
	160 mm dia.	Each	13.00	13.00	13.00
	180 mm dia.	Each	17.00	17.00	17.00
	200 mm dia.	Each	21.00	21.00	21.00
	250 mm dia	Each	30.00	30.00	30.00
	315 mm dia	Each	34.00	34.00	34.00
5.5	Providing and laying in position following PVC bends suitable for 6, 8 and 10 Kg/Sq. cm. pressure pipes. [Conform to IS 4985:2000 and IS 7634 (PT-3) :2003, IS 7834 (PT-I to VIII: 1987]				
			6Kg/Cm^2	8 Kg/Cm^2	10Kg/Cm^2
	90 mm dia.	Each	108.00	160.00	208.00
	110 mm dia.	Each	154.00	248.00	319.00
	140 mm dia.	Each	478.00	583.00	854.00
	160 mm dia.	Each	688.00	1041.00	1119.00
	180 mm dia.	Each	992.00	1219.00	1733.00
	200 mm dia.	Each	1343.00	2019.00	1996.00
	250 mm dia	Each	3177.00	-	5185.00
	315 mm dia	Each	6299.00	-	10267.00
5.6	Providing and laying in position following PVC Tees, suitable for 6, 8 and 10 Kg/Sqcm. Pressure pipes. [Conform to IS 4985:2000 and IS 7634 (PT-3) :2003, IS 7834 (PT-I to VIII: 1987]				
			6Kg/Cm^2	8 Kg/Cm^2	10Kg/Cm^2
	90 mm dia.	Each	60.00	80.00	95.00
	100 mm dia.	Each	105.00	140.00	153.00
	140 mm dia.	Each	180.00	211.00	252.00
	160 mm dia.	Each	223.00	365.00	437.00
	180 mm dia.	Each	441.00	508.00	609.00
	200 mm dia.	Each	660.00	744.00	834.00
5.7	Providing and laying in position following PVC flanged tail pieces suitable for 6, 8 and 10 Kg./Sq. cm. Pressure pipes. [Conform to IS 4985:2000 and IS 7634 (PT-3) :2003, IS 7834 (PT-I to VIII: 1987]				
			6Kg/Cm2	8 Kg/Cm2	10Kg/Cm2
	90 mm dia.	Each	45.00	69.00	90.00
	110 mm dia.	Each	62.00	81.00	140.00
	140 mm dia.	Each	104.00	111.00	227.00
	160 mm dia.	Each	125.00	162.00	258.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)		
	180 mm dia.	Each	147.00	192.00	333.00
	200 mm dia.	Each	180.00	232.00	421.00
5.8	Providing and laying in position following PVC end Cap (plugs) suitable for 6, 8 and 10 Kg/Sq cm. Pressure pipes. [Conform to IS 4985:2000 and IS 7634 (PT-3) :2003, IS 7834 (PT-I to VIII: 1987]				
			6Kg/Cm2	8 Kg/Cm2	10Kg/Cm2
	90 mm dia.	Each	22.00	23.00	28.00
	110 mm dia.	Each	28.00	34.00	44.00
	140 mm dia.	Each	37.00	57.00	85.00
	160 mm dia.	Each	72.00	84.00	115.00
	180 mm dia.	Each	94.00	130.00	181.00
	200 mm dia.	Each	133.00	151.00	196.00
5.9	Providing and laying in position PVC coupler suitable for 6, 8 and 10 Kg/Sq. cm. Pressure pipes [Conform to IS 4985:2000 and IS 7634 (PT-3) :2003, IS 7834 (PT-I to VIII: 1987]				
			6Kg/Cm2	8 Kg/Cm2	10Kg/Cm2
	90 mm dia.	Each	38.00	51.00	55.00
	110 mm dia.	Each	61.00	76.00	95.00
	140 mm dia.	Each	118.00	162.00	181.00
	160 mm dia.	Each	187.00	201.00	259.00
	180 mm dia.	Each	242.00	326.00	361.00
	200 mm dia	Each	310.00	406.00	513.00
	250 mm dia	Each	708.00	-	1149.00
	315 mm dia	Each	1407.00	-	2288.00
5.10	Providing and laying in position of following PVC Reducers suitable for 6, 8 and 10 Kg/Sq cm. Pressure pipes. [Conform to IS 4985:2000 and IS 7634 (PT-3) :2003, IS 7834 (PT-I to VIII: 1987]				
			6Kg/Cm2	8 Kg/Cm2	10Kg/Cm2
	110x90 mm dia.	Each	43.00	45.00	61.00
	140x90 mm dia.	Each	58.00	67.00	76.00
	160x90 mm dia.	Each	64.00	99.00	87.00
	140x110 mm dia.	Each	59.00	86.00	96.00
	160x110 mm dia.	Each	75.00	100.00	135.00
	160x140 mm dia.	Each	78.00	159.00	191.00
	180x90 mm dia	Each	96.00	123.00	148.00
	180x110 mm dia	Each	102.00	157.00	211.00
	180x140 mm dia	Each	119.00	183.00	247.00
	180x160 mm dia	Each	134.00	204.00	274.00
	200x110 mm dia.	Each	157.00	172.00	233.00
	200x140 mm dia	Each	179.00	197.00	209.00
	200x160 mm dia	Each	212.00	231.00	250.00
	200x180 mm dia	Each	238.00	247.00	296.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)		
5.11	Labour for laying in position all types of PVC fittings such as bends, tees, plugs etc. for following PVC pipes. [Conform to IS 4985:2000 and IS 7634 (PT-3) :2003, IS 7834 (PT-I to VIII: 1987]		6Kg/Cm^2	8 Kg/Cm^2	10Kg/Cm^2
	90 mm dia.	Each	3.00	3.00	3.00
	110 mm dia.	Each	3.00	3.00	3.00
	140 mm dia.	Each	3.00	3.00	3.00
	160 mm dia.	Each	3.00	3.00	3.00
	180 mm dia.	Each	4.00	4.00	4.00
	200 mm dia.	Each	4.00	4.00	4.00

CHAPTER- 6
CAST IRON VALVES

1 Sluice valves for water works purposes (50 to 1200 mm size) shall be as per IS 14846 - 2000 duly inspected and tested and having BIS certification mark.

2 Butterfly valves for General purpose shall be as per IS 13095 - 1996 duly inspected and tested and having BIS certification mark.

3 Installation and maintenance of sluice valves shall be as per IS 2685 - 1971.

4 Non return valve/reflux valve shall be as per IS 5312 - 2003 (Part I & II) duly inspected and tested and having BIS certification mark.

5 For air valve shall be as per IS 14845 - 2000 duly inspected and tested and having BIS certification mark.

6 All Joints shall conform to relevant Indian Standards.

7 Marking & testing
(i) The standard marking and packing of the valves shall be done as per IS : 14846. The direction of rotation for OPEN, CLOSE position shall be marked on the hand wheel and on the bonnet of the valve.
(ii) Testing of sluice valve should be done for close end in accordance with IS : 14846.

(iii) All the valves should be inspected for flaw detection test in accordance with the IS: 14846.

8 (i) All grit and foreign matters are removed from the inside of the valves before placing in pipes.
(ii) All the four faces are thoroughly cleaned and coated with a thin layer of mineral grease.

(iii) It is important to check tightening of gland with a pair of inside calipers. Clearance between the top of the stuffing box and the underside of the gland should be uniform on all the sides.

9 **Fixing** means laying in specified position to ensure interconnection between all flanged pipes, fittings and valves. It is also to ensure that the bolt holes of two flanges of the pipe/ fittings are correctly aligned.

10 Cast Iron Sluice Gate as per IS-13349.

10.1 APPLICATION:
Wall thimble mounted Sluice gates are used either for isolation of flow from a sump / chamber to a closed conduit or to another sump / chamber or for isolation of flow from a conduit to a sump / chamber. Standard sluice gates have to be modified to make them suitable for modulation application and hence standard sluice gates should not be used for modulation application.

10.2 SALIENT FEATURES:

10.2.1 Flange back frame gate suitable for mounting on the face of a Cast iron Wall thimble using studs and with a gasket between gate frame and wall thimble flange.

10.2.2 Wall thimble to have cross section “F” and depth of 150 mm for the gate size up to and including 600 mm and depth of 300 mm for the gate size above 600 mm unless until specified otherwise. Gates having square / rectangular opening to be provided with thimble having square/ rectangular opening aperture with square / rectangular flange for gate frame mounting.

10.2.3 Square shaped natural rubber Gasket with predrilled holes for positioning in between machined face of wall thimble flange and frame flange.

10.2.4 Open top frame provided with short length extension guides to support ½ vertical height of the slide when the slide is in full open position.

10.2.5 Frame specially designed to permit front access for tightening of thimble mounting nuts so as to enable mounting of gates side by side or near corners.

10.2.6 Rigid shutter designed to withstand the applicable water head. Shutter to be provided with cast integral pocket to house the stem-connecting block, which connects the spindle to the shutter for up and down operation.

10.2.7 Seat facing fitted on machined Plain Surface of frame and shutter-using counter sunk screws for better fitments.

10.2.8 Rising stem / spindle to suit the distance between centerline of gate opening and top of operating platform as stated below in price schedule. The spindle is provided with square / trapezoidal threading with the threaded length being approximately 400mm more than the height of waterway opening.

10.2.9 Operation of gates by means of manual lift mechanism comprise of pillar mounted geared gate operating mechanism suitable for opening / closing of gate by a single person with an effort not exceeding 20 Kgs on the hand wheel / crank handle.

10.2.10 Economical and faster erection due to flange back design.

11 Measurement

All measurements should be of the finished work

12 Rates

(i) The rates include all tools and plants, chain pulley block, other appliances etc. required for lifting and laying the valves in position as per approved drawings.

(ii) The rates include provision and use of all coverings etc. to protect, the works from inclement whether etc. from damaging by fall of materials and due to other causes.

(iii) The rates include provision of handling and storing under cover as required and returning of empty cases or containers if any to the local body stores without any extra cost, for such materials as may be supplied by the department.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 6 - CAST IRON VALVES

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
6.1	Providing & fixing of Cast iron double flanged sluice valves as per I.S.:14846-2000 fitted with cast iron cap including jointing & testing with cost of jointing material such as bolts, nuts, rubber insertions etc. all complete			
			PN-1.0	PN-1.6
	50mm dia	Each	2117.00	2288.00
	65mm dia	Each	2244.00	2414.00
	80mm dia	Each	2891.00	3121.00
	100mm dia	Each	3938.00	4115.00
	125mm dia	Each	4874.00	5152.00
	150mm dia	Each	6237.00	6415.00
	200mm dia	Each	10173.00	11407.00
	250 mm dia	Each	17101.00	17702.00
	300mm dia	Each	19397.00	20732.00
6.2	Fixing including Jointing of Cast iron double flanged sluice valves fitted with cast iron cap testing with cost of jointing material such as bolts, nuts, rubber insertions etc. all complete (only valve to be supplied by the department free of cost). [conform to IS 2685 : 1971]			
			PN-1.0	PN-1.6
	50mm dia	Each	135.00	135.00
	65mm dia	Each	143.00	143.00
	80mm dia	Each	148.00	148.00
	100mm dia	Each	249.00	249.00
	125mm dia	Each	263.00	263.00
	150mm dia	Each	287.00	287.00
	200mm dia	Each	531.00	531.00
	250mm dia	Each	616.00	616.00
	300mm dia	Each	691.00	691.00
	350 mm dia	Each	1000.00	1000.00
	400 mm dia	Each	1135.00	1135.00
	450 mm dia	Each	2200.00	2200.00
	500 mm dia	Each	2118.00	2118.00
	600 mm dia	Each	3108.00	3108.00
	700 mm dia	Each	3476.00	3476.00
	750 mm dia	Each	3699.00	3699.00
	800 mm dia	Each	3805.00	3805.00
	900 mm dia	Each	3901.00	3901.00
	1000 mm dia	Each	4008.00	4008.00
6.3	Labour for laying and fixing of cast iron double flanged sluice valves (vide item no.2) including jointing and testing but without cost of Jointing materials. (Conforming to I.S.:14846-2000)			
			PN-1.0	PN-1.6
	50mm dia	Each	36.00	36.00
	65mm dia	Each	41.00	41.00
	80mm dia	Each	43.00	43.00
	100mm dia	Each	54.00	54.00
	125mm dia	Each	65.00	65.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	150mm dia	Each	79.00	79.00
	200mm dia	Each	124.00	124.00
	250mm dia	Each	177.00	177.00
	300mm dia	Each	234.00	234.00
	350mm dia	Each	406.00	406.00
	400mm dia	Each	491.00	491.00
	450mm dia	Each	550.00	550.00
	500mm dia	Each	696.00	696.00
	600mm dia	Each	1078.00	1078.00
	700mm dia	Each	1242.00	1242.00
	750mm dia	Each	1287.00	1287.00
	800mm dia	Each	1469.00	1469.00
	900mm dia	Each	1560.00	1560.00
	1000mm dia	Each	1651.00	1651.00
6.4a	Providing & fixing cast iron double flanged single door reflux (non return) valves including jointing & testing with cost of jointing material such as bolts, nuts and rubber insertion all complete as per IS :5312 (Part I)		PN- 1.0	
	50mm dia	Each	1170.00	
	65mm dia	Each	1525.00	
	80mm dia	Each	1851.00	
	100mm dia	Each	2625.00	
	150mm dia	Each	4286.00	
	200mm dia	Each	7703.00	
	250mm dia	Each	10930.00	
	300mm dia	Each	15227.00	
	350mm dia	Each	27874.00	
6.4b	Providing & fixing cast iron double flanged multi door reflux (non return) valves including jointing & testing with cost of jointing material such as bolts, nuts and rubber insertion all complete as per IS : 5312 (Part II)		PN- 0.6	PN- 1.0
	400mm dia	Each	60016.00	66594.00
	450mm dia	Each	76053.00	82631.00
	500mm dia	Each	106449.00	126683.00
	600mm dia	Each	158747.00	180174.00
	700mm dia	Each	186683.00	250401.00
	750mm dia	Each	289441.00	303348.00
	800mm dia	Each	331540.00	358697.00
6.5	Labour for laying and fixing of Cast Iron Double Flanged reflux (non return) valves including jointing & testing but without cost and jointing materials.		PN- 0.6	PN- 1.0
	50mm dia	Each	36.00	36.00
	65mm dia	Each	41.00	41.00
	80mm dia	Each	43.00	43.00
	100mm dia	Each	53.00	53.00
	150mm dia	Each	79.00	79.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
	200mm dia	Each	124.00	124.00
	250mm dia	Each	177.00	177.00
	300mm dia	Each	234.00	234.00
	350mm dia	Each	359.00	359.00
	400mm dia	Each	491.00	491.00
	450mm dia	Each	550.00	550.00
	500mm dia	Each	696.00	696.00
	600mm dia	Each	1078.00	1078.00
	700mm dia	Each	1242.00	1242.00
	750mm dia	Each	1287.00	1287.00
	800mm dia	Each	1424.00	1424.00
	900 mm dia	Each	1560.00	1560.00
	1000mm dia	Each	1651.00	1651.00
6.6	Providing & fixing cast iron butterfly valves including jointing & testing with cost of jointing material such as bolts, nuts and rubber insertion all complete as per IS :13095-1991		PN- 1.0	PN- 1.6
	50mm dia	Each	1821.00	1873.00
	65mm dia	Each	2230.00	2239.00
	80mm dia	Each	2361.00	2427.00
	100mm dia	Each	2988.00	3073.00
	150mm dia	Each	4517.00	4647.00
	200mm dia	Each	8999.00	9261.00
	250mm dia	Each	12715.00	13085.00
	300mm dia	Each	15532.00	15983.00
6.7	Labour for laying and fixing of Cast Iron butterfly valves including jointing & testing but without cost and jointing materials		PN- 1.0	PN- 1.6
	50mm dia	Each	36.00	36.00
	65mm dia	Each	41.00	41.00
	80mm dia	Each	43.00	43.00
	100mm dia	Each	53.00	53.00
	150mm dia	Each	79.00	79.00
	200mm dia	Each	97.00	97.00
	250mm dia	Each	127.00	127.00
	300mm dia	Each	205.00	205.00
6.8	Providing & fixing cast iron single air valves, small orifice with screwed end as per IS : 14845-2000 including jointing & testing with cost of jointing material and rubber insertion all complete as per IS :13095-1991		PN- 1.0	PN- 1.6
	25mm dia	Each	684.00	763.00
	40mm dia	Each	832.00	898.00
6.9	Labour for laying and fixing of Cast Iron Air valves small orifice with screwed end .		PN- 1.0	PN- 1.6
	25mm dia	Each	16.00	16.00
	40mm dia	Each	18.00	18.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
6.10	Providing & fixing cast iron single air valves, large orifice with screwed end as per IS : 14845-2000 including jointing & testing with cost of jointing material and rubber insertion all complete as per IS :13095-1991		PN- 1.0	PN- 1.6
	25mm dia	Each	882.00	1027.00
	40mm dia	Each	898.00	1279.00
	50mm dia	Each	1101.00	1299.00
6.11	Labour for laying and fixing of Cast Iron Air valves large orifice with screwed end.		PN- 1.0	PN- 1.6
	25mm dia	Each	16.00	16.00
	40mm dia	Each	18.00	18.00
	50mm dia	Each	25.00	25.00
6.12	Providing & fixing cast iron double air valves, flanged without in-built isolating valve as per IS : 14845-2000 including jointing & testing with cost of jointing material and rubber insertion all complete as per IS :13095-1991		PN- 1.0	PN- 1.6
	40mm dia	Each	1768.00	1689.00
	50mm dia	Each	2313.00	2115.00
	65mm dia	Each	2768.00	2795.00
	80mm dia	Each	2963.00	3042.00
	100mm dia	Each	3792.00	3727.00
	150mm dia	Each	5995.00	6324.00
	200mm dia	Each	8758.00	10009.00
6.13	Labour for laying and fixing of Cast Iron double air valves, flanged without in-built isolating valve.		PN- 1.0	PN- 1.6
	40mm dia	Each	23.00	23.00
	50mm dia	Each	41.00	41.00
	65mm dia	Each	49.00	49.00
	80mm dia	Each	49.00	49.00
	100mm dia	Each	68.00	68.00
	150mm dia	Each	93.00	93.00
	200mm dia	Each	146.00	146.00
6.14	Providing & fixing cast iron double air valves, flanged with in-built isolating valve as per IS : 14845-2000 including jointing & testing with cost of jointing material and rubber insertion all complete as per IS :13095-1991		PN- 1.0	PN- 1.6
	40mm dia	Each	1634.00	1831.00
	80mm dia	Each	2121.00	2450.00
	100mm dia	Each	2476.00	7411.00
	150mm dia	Each	2508.00	12707.00
	200mm dia	Each	9482.00	20668.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)	
6.15	Labour for laying and fixing of Cast Iron double air valves, flanged with in-built isolating valve.		PN- 1.0	PN- 1.6
	40mm dia	Each	23.00	23.00
	80mm dia	Each	49.00	49.00
	100mm dia	Each	68.00	68.00
	150mm dia	Each	93.00	93.00
	200mm dia	Each	146.00	146.00
6.16	Providing and fixing of cast iron plain ended sluice valves as per IS : 14846-2000 fitted with cast iron cap including jointing and testing with cost of jointing material C.I. detachable joints confirming to IS 8794/1988 with bolts, nuts and rubber rings confirming to IS 5382/85 & IS-10292/88 (Class 10) all complete.		PN- 1.0	
	80mm dia	Each	3275.00	
	100mm dia	Each	4434.00	
	150mm dia	Each	7145.00	
	200mm dia	Each	11623.00	
	300mm dia	Each	21756.00	
6.17	Providing and supply of Cast Iron Sluice Gate Square type as per IS-13349 duly tested inclusive of all taxes related to central, state and municipal, inclusive of excise duty, inspection charges, transpotation charges, transit insuranse, loading/ unloading and stacking at site/ store etc, complete.			
6.17.1	Sluice Gate Square type as per IS 13349, Size 300X300 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	179972.00	
6.17.2	Sluice Gate Square type as per IS 13349, Size 400X400 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closur	Each	209593.00	
6.17.3	Sluice Gate Square type as per IS 13349, Size 500X500 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	242874.00	
6.17.4	Sluice Gate Square type as per IS 13349, Size 600X600 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : Meter,Class – I, Flush Bottom Closure	Each	274156.00	
6.17.5	Sluice Gate Square type as per IS 13349, Size 700X700 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	289826.00	
6.17.6	Sluice Gate Square type as per IS 13349, Size 800X800 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	329793.00	
6.17.7	Sluice Gate Square type as per IS 13349, Size 900X900 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	364616.00	

S.No.	Particulars of Items	Unit	Rates (in Rs.)
6.17.8	Sluice Gate Square type as per IS 13349, Size 1000X1000 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	419461.00
6.17.9	Sluice Gate Square type as per IS 13349, Size 1100X1100 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	438382.00
6.17.10	Sluice Gate Square type as per IS 13349, Size 1200X1200 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.5 Meter,Class – I, Flush Bottom Closure	Each	509585.00
6.17.11	Sluice Gate Square type as per IS 13349, Size 1300X1300 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	575134.00
6.17.12	Sluice Gate Square type as per IS 13349, Size 1400X1400 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	701221.00
6.17.13	Sluice Gate Square type as per IS 13349, Size 1500X1500 mm. Cast Iron Wall Thimble mounted,Manually operated, CL-PL : 5.50 Meter,Class – I, Flush Bottom Closure	Each	738815.00

CHAPTER- 7
GALVANISED IRON PIPES, SPECIALS AND GUN METAL OR BRASS FITTINGS

1 The pipes (tubes) shall be galvanized mild steel hot finished seamless (HFS) or welded (ERW) HRIW or HFW screwed and socketed conforming to the requirements of IS 1239 for light, medium & heavy grade. They shall be of the diameter (nominal bore) specified in the description of the item. The sockets shall be designated by the respective nominal bore of the pipes for which they are intended.

2 Galvanizing shall conform to IS 4736 : The zinc coating shall be uniform, adherent, reasonably smooth and free from such imperfections as flux, ash and dross inclusions, bare batches, black spots, pimples, lumping runs, rust stains, bulky white deposits and blisters. The pipes and sockets shall be cleanly finished, well galvanized in and out and free from cracks, surfaces flaws, laminations and other defects. All screw threads shall be clean and well cut. The ends shall be cut cleanly and square with the axis of the tube.

3 Marking

(i) Each tube shall be marked with manufacturer's name or trade-mark, IS No. i.e. IS 1239 (Part I) and class of tubes, i.e. is, L, M., and H, for light, medium and heavy class.

(ii) The different classes of tubes shall be distinguished by colour bands, which shall be applied as follows before the tubes leave the manufacturer's works :

4 Thickness, dimension & Mass of the tube shall be as per Class 8.1.1 of IS: 1239 - 2004.

5 The Tolerances on thickness and Mass

(a)

Nominal bore : in mm	Mass of Screwed & Socketed G.I. Pipes (in Kg per mtr.)		
	Light	Medium	Heavy
6	0.363	0.407	0.49
8	0.519	0.645	0.769
10	0.676	0.845	1.03
15	0.956	1.22	1.45
20	1.39	1.57	1.88
25	2	2.43	2.95
32	2.57	3.13	3.82
40	3.27	3.6	4.41
50	4.15	5.1	6.26
65	5.83	6.54	8.05
80	6.89	8.53	10.1
100	10	12.5	14.8
125		16.4	18.4
150		19.5	21.9

(b) Tolerance Mass :

(i) Single tube (Light series) + not limited

			- 8 percent
	(ii)	Single tube (medium and heavy series)	± 10 percent
	(iii)	For quantities per load of 10 tonnes, Min (light series)	+ 7.5 percent - 5 percent
	(iv)	For quantities per load of 10 tonnes, Min (medium and heavy series)	± 7.5 percent

(c)	Tolerance Thickness :		
	(i)	Welded tubes :	
		Light tubes	+ not limited - 8 percent
		Medium and heavy	+ not limited - 10 percent
	(ii)	Seamless tubes	+ not limited - 10 percent

6 Tolerances in length of tubes

(i) Each tubes shall be within mm $^{+\ 6}_{-\ 0}$ the specified exact lengths.

(ii) Each tube shall be within ± 150 mm of the specified approximate length, when approximate lengths are required either for screwed and socketed tubes or for plain end tubes.

7 Work shall be executed in accordance with the specifications in vogue in U.A.D.D. and all the relevant latest version of I.S. specifications detailed below :-

S.No.	IS Number	Title
1.	IS 1239 (PT-I) : 2004	Mild steel tubes, tubular and other wrought steel fittings, Part-I Steel Tubes.
2.	IS 1239 (PT-II) : 1992	Mild steel tubes, tubular and other wrought steel fittings, Part-II Mild steel tubular and other wrought steel pipes fittings.
3.	IS 1978 : 1982	Line pipes
4.	IS 4736 : 1986	Hot-dip zinc coating on mild steel tubes
5.	IS 778:1984 (Reaffirmed 2005)	Copper alloy gates, globe and check valves for water works purposes.
6.	IS 2692 : 1989	Ferrules for water services - Specifications.

8 Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

9 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

10 Measurement

All measurements should be of the finished work.

11 Rates :

(i) The rates include charges for all tools and plants, other appliances etc. required for lifting and laying the pipes, specials and fittings in position as per approved drawings.

(ii) The rates include provision and use of all coverings etc. to protect the works from inclement weather etc. and from damages from fall of materials and other causes.

(iii) If the material is supplied by department, then it shall be issued from departmental store and no extra charges for carting the same from store to site of work shall be paid.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 7 - GALVANISED IRON PIPES, SPECIALS AND GUN METAL OR BRASS FITTINGS

S.No.	Particulars of Items	Unit	Rates (in Rs.)		
7.1	Providing laying and jointing of galvanised Iron (MS) Pipes with specials (such as bends, elbows, tees etc) class light, medium & heavy including testing of joints, cost of pipes, specials and jointing materials all complete. Pipes and sockets conforming to IS-1239/2004 Part-I & Part-II.		Light	Medium	Heavy
	15mm dia	RM	98.00	103.00	112.00
	20mm dia	RM	113.00	121.00	142.00
	25mm dia	RM	156.00	168.00	206.00
	32mm dia	RM	198.00	208.00	265.00
	40mm dia	RM	252.00	252.00	313.00
	50mm dia	RM	309.00	317.00	428.00
	65mm dia	RM	423.00	412.00	564.00
	80mm dia	RM	498.00	532.00	689.00
	100mm dia	RM	706.00	835.00	988.00
	125mm dia	RM	-	1097.00	1222.00
	150mm dia	RM	-	1296.00	1471.00
7.2	Labour for laying and jointing of galvanised Iron (MS) pipes with specials (such as bends, elbows, tees etc) class light, medium & heavy including testing of joints and cost of jointing materials but excluding cost of pipes & specials.		Light	Medium	Heavy
	15mm dia	RM	8.00	8.00	8.00
	20mm dia	RM	8.00	8.00	9.00
	25mm dia	RM	13.00	13.00	13.00
	32mm dia	RM	14.00	14.00	15.00
	40mm dia	RM	18.00	18.00	18.00
	50mm dia	RM	22.00	22.00	31.00
	65mm dia	RM	35.00	35.00	43.00
	80mm dia	RM	37.00	39.00	48.00
	100mm dia	RM	52.00	56.00	61.00
	125mm dia	RM	52.00	69.00	78.00
	150mm dia	RM	52.00	94.00	95.00
7.3	Providing and fixing full way gate valves tested to 21.00 kg/sq.cm. confirming to IS 778/1984 (Reaffirmed 2005) Class-I		Screwed	Flanged	
	15mm dia	Each	135.00	201.00	
	20mm dia	Each	211.00	359.00	
	25mm dia	Each	245.00	417.00	
	32mm dia	Each	373.00	507.00	
	40mm dia	Each	494.00	607.00	

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	50mm dia	Each	744.00	1115.00
	65mm dia	Each	1401.00	2513.00
	80mm dia	Each	2199.00	3629.00
	100mm dia	Each	4169.00	5264.00
7.4	Providing and fixing full way gate valves tested to 21.00 kg/sq.cm. confirming to IS 778/1984 (Reaffirmed 2005) Class-II		Screwed	Flanged
	15mm dia	Each	189.00	201.00
	20mm dia	Each	373.00	379.00
	25mm dia	Each	417.00	420.00
	32mm dia	Each	494.00	505.00
	40mm dia	Each	606.00	606.00
	50mm dia	Each	1095.00	1115.00
	65mm dia	Each	2512.00	2513.00
	80mm dia	Each	3522.00	3635.00
	100mm dia	Each	5264.00	5283.00
7.5	Providing and fixing class-I Globe wheel valves, confirming to IS 778/1984 (Reaffirmed 2005), tested to 21.09 kg/sq.cm.		Screwed	Flanged
	15mm dia	Each	181.00	219.00
	20mm dia	Each	192.00	280.00
	25mm dia	Each	208.00	308.00
	32mm dia	Each	288.00	416.00
	40mm dia	Each	388.00	559.00
	50mm dia	Each	654.00	917.00
	65mm dia	Each	1069.00	1504.00
	80mm dia	Each	1260.00	2775.00
	100mm dia	Each	4133.00	4518.00
7.6	Providing and fixing class-II Globe wheel valves, confirming to IS 778/1984 (Reaffirmed 2005), tested to 21.09 kg/sq.cm.		Screwed	Flanged
	15mm dia	Each	221.00	231.00
	20mm dia	Each	277.00	280.00
	25mm dia	Each	299.00	308.00
	32mm dia	Each	415.00	416.00
	40mm dia	Each	551.00	566.00
	50mm dia	Each	921.00	922.00
	65mm dia	Each	1299.00	1509.00
	80mm dia	Each	2731.00	2773.00
	100mm dia	Each	4516.00	4516.00
7.7	Providing and fixing gun metal/ brass check (non-return) valves Class-I, confirming to IS-778/1984 (Reaffirmed 2005) female ends, tested to 21.09 kg/sq.cm.		Screwed	Flanged

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	15mm dia	Each	99.00	252.00
	20mm dia	Each	138.00	264.00
	25mm dia	Each	209.00	309.00
	32mm dia	Each	295.00	475.00
	40mm dia	Each	384.00	692.00
	50mm dia	Each	494.00	803.00
	65mm dia	Each	658.00	1196.00
	80mm dia	Each	1424.00	1874.00
	100mm dia	Each	2402.00	2371.00
7.8	Providing and fixing gun metal/ brass check (non-return) valves Class-II, confirming to IS-778/1984 (Reaffirmed 2005) female ends, tested to 21.09 kg/sq.cm.		Screwed	Flanged
	15mm dia	Each	253.00	252.00
	20mm dia	Each	264.00	264.00
	25mm dia	Each	308.00	309.00
	32mm dia	Each	475.00	474.00
	40mm dia	Each	695.00	703.00
	50mm dia	Each	869.00	870.00
	65mm dia	Each	1842.00	1250.00
	80mm dia	Each	1863.00	1874.00
	100mm dia	Each	2371.00	2371.00
7.9	Providing and fixing GM or brass ferrules confirming to IS-2692/1984 (Reaffirmed 2005), tested to 21.09 kg/sq.cm. i/c boring and tapping the main		Screwed	
	15mm dia	Each	330.00	
	20mm dia	Each	581.00	
	25mm dia	Each	771.00	
	32mm dia	Each	1130.00	
	40mm dia	Each	1637.00	
	50mm dia	Each	2114.00	
7.10	Labour for laying and fixing Screwed or flanged full way gate valves Class-I		Screwed	Flanged
	15mm dia	Each	8.00	9.00
	20mm dia	Each	10.00	12.00
	25mm dia	Each	10.00	15.00
	32mm dia	Each	12.00	16.00
	40mm dia	Each	15.00	17.00
	50mm dia	Each	25.00	33.00
	65mm dia	Each	50.00	83.00
	80mm dia	Each	75.00	125.00
	100mm dia	Each	133.00	166.00
7.11	Labour for laying and fixing Screwed or flanged full way gate valves Class-II		Screwed	Flanged

S.No.	Particulars of Items	Unit		Rates (in Rs.)
	15mm dia	Each	9.00	9.00
	20mm dia	Each	12.00	12.00
	25mm dia	Each	15.00	15.00
	32mm dia	Each	16.00	16.00
	40mm dia	Each	17.00	17.00
	50mm dia	Each	33.00	33.00
	65mm dia	Each	83.00	83.00
	80mm dia	Each	125.00	125.00
	100mm dia	Each	166.00	166.00
7.12	Labour for laying and fixing Screwed or flanged globe wheel valves Class-I		Screwed	Flanged
	15mm dia	Each	8.00	8.00
	20mm dia	Each	8.00	8.00
	25mm dia	Each	8.00	10.00
	32mm dia	Each	8.00	13.00
	40mm dia	Each	12.00	20.00
	50mm dia	Each	23.00	30.00
	65mm dia	Each	33.00	50.00
	80mm dia	Each	42.00	75.00
	100mm dia	Each	78.00	109.00
7.13	Labour for laying and fixing Screwed or flanged globe wheel valves Class-II		Screwed	Flanged
	15mm dia	Each	8.00	8.00
	20mm dia	Each	8.00	8.00
	25mm dia	Each	10.00	10.00
	32mm dia	Each	13.00	13.00
	40mm dia	Each	20.00	20.00
	50mm dia	Each	30.00	30.00
	65mm dia	Each	50.00	50.00
	80mm dia	Each	75.00	75.00
	100mm dia	Each	100.00	100.00
7.14	Labour for laying and fixing Screwed or flanged check (non-return) valves Class-I,		Screwed	Flanged
	15mm dia	Each	4.00	8.00
	20mm dia	Each	4.00	8.00
	25mm dia	Each	8.00	11.00
	32mm dia	Each	8.00	15.00
	40mm dia	Each	12.00	23.00
	50mm dia	Each	15.00	23.00
	65mm dia	Each	22.00	37.00
	80mm dia	Each	43.00	58.00
	100mm dia	Each	67.00	75.00
7.15	Labour for laying and fixing Screwed or flanged check (non-return) valves Class-II,		Screwed	Flanged
	15mm dia	Each	8.00	8.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)		
	20mm dia	Each	8.00	8.00	
	25mm dia	Each	11.00	11.00	
	32mm dia	Each	15.00	15.00	
	40mm dia	Each	23.00	23.00	
	50mm dia	Each	23.00	23.00	
	65mm dia	Each	37.00	37.00	
	80mm dia	Each	58.00	58.00	
	100mm dia	Each	75.00	75.00	
7.16	Labour for laying and fixing GM or brass ferrules		Screwed		
	15mm dia	Each	75.00		
	20mm dia	Each	116.00		
	25mm dia	Each	150.00		
	32mm dia	Each	233.00		
	40mm dia	Each	333.00		
	50mm dia	Each	432.00		
7.17	Providing & fixing water taps		Stainless Steel	CI self closing	Brass Heavy Duty
	15mm dia	Each	579.00	367.00	367.00
	20mm dia	Each	643.00	419.00	410.00
	25mm dia	Each	660.00	447.00	463.00
7.18	Labour for laying & fixing water taps		Stainless Steel	CI self closing	Brass Heavy Duty
	15mm dia	Each	27.00	27.00	27.00
	20mm dia	Each	27.00	27.00	27.00
	25mm dia	Each	27.00	27.00	27.00
7.19	Painting G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new work :				
	15 mm diameter pipe. -	Meter	6.00		
	20 mm diameter pipe.	Meter	7.00		
	25 mm diameter pipe	Meter	9.00		
	32 mm diameter pipe.	Meter	10.00		
	40 mm diameter pipe.	Meter	12.00		
	50 mm diameter pipe.	Meter	15.00		
7.20	Repainting G.I. pipes and fittings with synthetic enamel white paint of approved quality :				
	15 mm diameter pipe.	Meter	3.00		
	20 mm diameter pipe.	Meter	3.00		
	25 mm diameter pipe	Meter	4.00		
	32 mm diameter pipe.	Meter	5.00		
	40 mm diameter pipe.	Meter	6.00		
	50 mm diameter pipe.	Meter	7.00		

S.No.	Particulars of Items	Unit	Rates (in Rs.)
7.21	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality :		
	15 mm diameter pipe.	Meter	3.00
	20 mm diameter pipe.	Meter	4.00
	25 mm diameter pipe	Meter	5.00
	32 mm diameter pipe.	Meter	5.00
	40 mm diameter pipe.	Meter	6.00
	50 mm diameter pipe.	Meter	7.00
	65 mm diameter pipe	Meter	9.00
	80 mm diameter pipe	Meter	11.00
7.22	Providing and fixing G.I. Union in G.I. pipe line including cutting and threading the pipe and making long screws etc complete (new work) :		
	15 mm diameter pipe.	Meter	95.00
	20 mm diameter pipe.	Meter	118.00
	25 mm diameter pipe	Meter	130.00
	32 mm diameter pipe.	Meter	164.00
	40 mm diameter pipe.	Meter	205.00
	50 mm diameter pipe.	Meter	274.00
	65 mm diameter pipe	Meter	518.00
	80 mm diameter pipe	Meter	623.00
7.23	Providing and fixing G.I. Union in existing G.I. pipe line, cutting and threading the pipe and making long screws including excavation, refilling the earth or cutting of wall and making good the same complete wherever required :		
	15 mm diameter pipe.	Each	187.00
	20 mm diameter pipe.	Each	210.00
	25 mm diameter pipe	Each	222.00
	32 mm diameter pipe.	Each	257.00
	40 mm diameter pipe.	Each	297.00
	50 mm diameter pipe.	Each	400.00
	65 mm diameter pipe	Each	644.00
	80 mm diameter pipe	Each	748.00
7.24	Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete (The tail pieces, tapers etc if required will be paid separately) :		
	50 mm diameter	Each	2135.00
	80 mm diameter	Each	3067.00
	100 mm diameter	Each	3752.00

CHAPTER- 8
HDPE Pipes, MDPE Pipe & Specials and Zero Velocity Valves.

1 High Density polyethylene pipes for Water Supply shall be as per IS : 4984

2 Rubber sealing rings for gas mains, water mains and sewers shall be as per IS : 5382.

3 Laying & jointing of polyethylene (PE) Pipes shall be as per IS : 7634

4 Providing and Supplying Blue MDPE pipes shall be conforming to ISO 4427:1996.

5 Providing & Supply of Electro Fusion Tapping Ferrule (Branch Tapping Saddle) female BSP Threaded with SS 304 insert fittings shall be in accordance with BS EN 12201.

6 Providing & Supply of PVC Ball Valves in PN16 shall be conforming to ISO:4422-4.

7 Colour

4.1 The colour of the pipe shall be black for the purpose of identification of the pipes covered in this standard. Each pipe shall contain minimum three equispaced longitudinal stripes of width 3 mm (Min) in blue colour. These stripes shall be more than 0.2 mm in depth. The material of the stripes shall be of the same type of resin, as used in the base compound for the pipe.

8 Length of straight Pipe & marking on pipe

8.1 The length of straight pipe used shall be more than 6 m or as agreed by Engineer in charge. Short lengths of 3 meter (minimum) up to a Maximum of 10 % of the total supply may be permitted.

8.2 Each straight length of pipe shall be clearly marked in indelible ink/paint on either end and for coil at both ends or hot embossed on white base every meter throughout the length of pipe/coil with the following information:

8.2.1 Manufacturer's name/Trade-mark,

8.2.2 Designation of pipe

8.2.3 Lot No./Batch No.

8.2.4 BIS certification marking on each pipe.

9 Appearance

Pipe shall be free from all defect including indentation, delaminating, bubbles, pinholes, cracks, pits, blisters, foreign inclusion that due to their nature degree or extent detrimentally affect the strength and Serviceability of the pipe. The pipe shall be as uniform as commercially practicable in colour opacity, density and other physical properties as per relevant IS code or equivalent International Code. The inside surface of each pipe shall be free of scouring, cavities, bulges, dents, ridges and other defects that result in a variation of inside diameter from that obtained on adjacent unaffected portions of the surface. The pipe ends shall be cut clearly and square to the axis of the pipe within the tolerance as per IS: 4984

10 Handling, Transportation storage and Lowering of pipes.

• If transportation of HDPE pipes from a distance greater than 300km than pipes shall be received only when bare coils of pipe have been wrapped with Hessian cloth.

• The truck for transportation of the PE pipes shall be exclusively used for PE pipes only with no other material loaded-especially no metallic, glass and wooden items. The truck shall not have sharp edges that can damage the pipe.

• At the time of opening coils it must be remembered that the coils are under tension and must be open in control manner

• Straight length should be stored on horizontal racks giving continuous support.

• Loss/damages during transit, handling, storage will be to the contractor's account.

11 Fittings and specials :

All HDPE fittings/specials shall be fabricated or injection moulded at factory as per IS: 8360 (Part-I & Part-III) and as per IS: 8008 (Part-I to Part-IX). Fittings will be butt welded on the pipes or other fittings by use of heat fusion.

12 Test to Establish Perfectibility/portability of work

Specimen of pipe shall be tested to establish the suitability for use in carrying potable water

(i) Smell of the extract
(ii) Clarity of the colour of the extract
(iii) Acidity and Alkality
(iv) Global migration UV absorbing material Heavy metals
(v) Unreacted monomers (styrens) and biological tests

13 Hydraulic Test

After laying the pipe hydraulic test shall be done to conform the quality of work and material. There should not be any signs of localized swelling, leakage or weeping.

14 Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

15 Providing and supply of MDPE pipes house services connections with necessary Electo Fusion & compression fittings are also given. MDPE pipes conforming to ISO 4427/1996 with quality assurance certifiates from WRC/CIPET etc, are to be used. Electo Fusion & compression fittings are to be used as per ISO norms as given in the relevant items.

16 Providing and supply items for zero velocity valves and air cushion valves conforming also norms are to be used after thired party quality assurance certificate.

17 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

18 Measurement

The net length of fixed pipe shall be measured in running meters correct to 10mm. The portion of the pipe inside the joints shall not be included in the length of pipe work. Specials shall be excluded and measured and paid separately under the relevant item.

19 Rates :

The rate shall include the cost of the material and labour involve in all operations described in the item.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 8 -- HDPE Pipes, MDPE Pipe & Specials and Zero Velocity Valves.

S.No	Particulars of Items	Unit	Rate (in Rs.)		
8.1	Providing, laying, Jointing & field testing of High Density Polyethylene pipes, (HDPE) confirming to IS 4984/ 14151/ 12786/ 13488 with necessary jointing material like mechanical connector or jointing pipes by heating to the ends of pipes with the help of Teflon coated electric mirror/ heater to the required temperature and then pressing the ends together against each other, to form a monolithic & leak proof joint by thermosetting process. It may be required to be done with Jacks/Hydraulic Jacks/ But fusion machine. (50mm & above fusion jointed & below 50mm mechanical jointed)		6 Kg/sq.cm :	8 Kg/sq.cm :	10 Kg/sq.cm :
	PE-100				
1	20 mm dia	RM	33.00	34.00	35.00
2	25 mm dia	RM	39.00	41.00	43.00
3	32 mm dia	RM	49.00	50.00	50.00
4	40 mm dia	RM	61.00	64.00	74.00
5	50 mm dia	RM	74.00	89.00	106.00
6	63 mm dia	RM	112.00	139.00	165.00
7	75 mm dia	RM	159.00	195.00	233.00
8	90 mm dia	RM	218.00	273.00	326.00
9	110 mm dia	RM	312.00	400.00	478.00
10	125 mm dia	RM	405.00	514.00	614.00
11	140 mm dia	RM	504.00	638.00	763.00
12	160 mm dia	RM	655.00	833.00	998.00
13	180 mm dia	RM	820.00	1045.00	1270.00
14	200 mm dia	RM	1013.00	1293.00	1560.00
15	225 mm dia	RM	1279.00	1632.00	1963.00
16	250 mm dia	RM	1568.00	2007.00	2414.00
17	280 mm dia	RM	1958.00	2508.00	3016.00
18	315 mm dia	RM	2470.00	3163.00	3812.00
19	355 mm dia	RM	3150.00	4031.00	4883.00
20	400 mm dia	RM	4065.00	5215.00	6317.00
21	450 mm dia	RM	5147.00	6611.00	7974.00
22	500 mm dia	RM	6361.00	8152.00	9849.00
23	560 mm dia	RM	7958.00	10229.00	12333.00
24	630 mm dia	RM	10054.00	12921.00	15605.00
25	710 mm dia	RM	10335.00	13078.00	16202.00
8.2	Providing and laying Bend 90˚confirming to IS specifications.		6 Kg/sq.cm :	8 Kg/sq.cm :	10 Kg/sq.cm :
1	20 mm dia	Each	26.00	27.00	28.00
2	25 mm dia	Each	29.00	31.00	33.00

S.No	Particulars of Items	Unit	Rate (in Rs.)		
3	32 mm dia	Each	37.00	39.00	40.00
4	40 mm dia	Each	42.00	44.00	45.00
5	50 mm dia	Each	55.00	59.00	65.00
6	63 mm dia	Each	75.00	80.00	107.00
7	75 mm dia	Each	116.00	120.00	137.00
8	90 mm dia	Each	179.00	192.00	220.00
9	110 mm dia	Each	238.00	278.00	297.00
10	125 mm dia	Each	341.00	326.00	499.00
11	140 mm dia	Each	464.00	578.00	683.00
12	160 mm dia	Each	665.00	835.00	993.00
13	180 mm dia	Each	918.00	1161.00	1391.00
14	200 mm dia	Each	1230.00	1563.00	1879.00
15	225 mm dia	Each	1730.00	2200.00	2642.00
16	250 mm dia	Each	2336.00	2987.00	3591.00
17	280 mm dia	Each	3253.00	4167.00	5009.00
18	315 mm dia	Each	4604.00	5900.00	7112.00
19	355 mm dia	Each	6536.00	8373.00	10149.00
20	400 mm dia	Each	9496.00	12198.00	14786.00
21	450 mm dia	Each	13469.00	17336.00	20936.00
22	500 mm dia	Each	18486.00	23749.00	28731.00
23	560 mm dia	Each	25844.00	33310.00	40228.00
24	630 mm dia	Each	36757.00	47365.00	57292.00
25	710 mm dia	Each	52395.00	67541.00	81899.00
8.3	Providing and laying Bend 45˚confirming to IS specifications.		6 Kg/sq.cm :	8 Kg/sq.cm :	10 Kg/sq.cm :
1	20 mm dia	Each	26.00	27.00	28.00
2	25 mm dia	Each	28.00	30.00	32.00
3	32 mm dia	Each	28.00	31.00	37.00
4	40 mm dia	Each	35.00	38.00	47.00
5	50 mm dia	Each	49.00	49.00	65.00
6	63 mm dia	Each	86.00	86.00	114.00
7	75 mm dia	Each	132.00	132.00	174.00
8	90 mm dia	Each	190.00	190.00	257.00
9	110 mm dia	Each	281.00	281.00	408.00
10	125 mm dia	Each	391.00	302.00	600.00
11	140 mm dia	Each	571.00	407.00	858.00
12	160 mm dia	Each	823.00	581.00	1232.00
13	180 mm dia	Each	1114.00	799.00	1689.00
14	200 mm dia	Each	1468.00	1068.00	2238.00
15	225 mm dia	Each	2070.00	1494.00	3175.00
16	250 mm dia	Each	2796.00	2020.00	4277.00
17	280 mm dia	Each	3833.00	2810.00	5783.00
18	315 mm dia	Each	5882.00	3967.00	8855.00
19	355 mm dia	Each	8464.00	5350.00	12776.00
20	400 mm dia	Each	11545.00	6925.00	18427.00
21	450 mm dia	Each	15141.00	8837.00	23670.00
22	500 mm dia	Each	21181.00	10895.00	33281.00
23	560 mm dia	Each	29367.00	13637.00	33520.00
24	630 mm dia	Each	37659.00	17221.00	34000.00

S.No	Particulars of Items	Unit	Rate (in Rs.)		
25	710 mm dia	Each	42463.00	17636.00	34419.00
8.4	Providing and laying Equal Tee confirming to IS specifications.		6 Kg/sq.cm :	8 Kg/sq.cm :	10 Kg/sq.cm :
1	20 mm dia	Each	28.00	30.00	31.00
2	25 mm dia	Each	37.00	39.00	40.00
3	32 mm dia	Each	37.00	41.00	41.00
4	40 mm dia	Each	42.00	45.00	46.00
5	50 mm dia	Each	56.00	62.00	73.00
6	63 mm dia	Each	92.00	102.00	113.00
7	75 mm dia	Each	153.00	159.00	195.00
8	90 mm dia	Each	271.00	275.00	333.00
9	110 mm dia	Each	396.00	409.00	478.00
10	125 mm dia	Each	437.00	547.00	647.00
11	140 mm dia	Each	597.00	748.00	887.00
12	160 mm dia	Each	863.00	1089.00	1298.00
13	180 mm dia	Each	1199.00	1521.00	1825.00
14	200 mm dia	Each	1615.00	2057.00	2476.00
15	225 mm dia	Each	2283.00	2908.00	3493.00
16	250 mm dia	Each	3083.00	3946.00	4745.00
17	280 mm dia	Each	4305.00	5517.00	6630.00
18	315 mm dia	Each	6108.00	7827.00	9432.00
19	355 mm dia	Each	8685.00	11124.00	13476.00
20	400 mm dia	Each	12608.00	16191.00	19612.00
21	450 mm dia	Each	17112.00	22010.00	26559.00
22	500 mm dia	Each	24567.00	31541.00	38127.00
23	560 mm dia	Each	34380.00	44279.00	53428.00
24	630 mm dia	Each	48901.00	62961.00	76083.00
25	710 mm dia	Each	69759.00	89842.00	108830.00
8.5	Providing and laying Pipe end confirming to IS specifications.		6 Kg/sq.cm :	8 Kg/sq.cm :	10.0 Kg/sq.cm :
1	20 mm dia	Each	38.00	41.00	43.00
2	25 mm dia	Each	41.00	43.00	45.00
3	32 mm dia	Each	43.00	45.00	48.00
4	40 mm dia	Each	45.00	51.00	51.00
5	50 mm dia	Each	53.00	55.00	58.00
6	63 mm dia	Each	66.00	68.00	71.00
7	75 mm dia	Each	85.00	93.00	93.00
8	90 mm dia	Each	124.00	140.00	140.00
9	110 mm dia	Each	158.00	186.00	186.00
10	125 mm dia	Each	245.00	278.00	278.00
11	140 mm dia	Each	309.00	351.00	351.00
12	160 mm dia	Each	314.00	369.00	369.00
13	180 mm dia	Each	485.00	554.00	554.00
14	200 mm dia	Each	480.00	572.00	566.00
15	225 mm dia	Each	500.00	609.00	609.00
16	250 mm dia	Each	817.00	835.00	951.00
17	280 mm dia	Each	758.00	926.00	926.00
18	315 mm dia	Each	1137.00	1403.00	1403.00

S.No	Particulars of Items	Unit	Rate (in Rs.)		
19	355 mm dia	Each	1566.00	1904.00	1904.00
20	400 mm dia	Each	1949.00	2379.00	2379.00
21	450 mm dia	Each	2304.00	2848.00	2848.00
22	500 mm dia	Each	2904.00	3576.00	3576.00
23	560 mm dia	Each	4129.00	4972.00	4972.00
24	630 mm dia	Each	3540.00	4606.00	4606.00
25	710 mm dia	Each	5437.00	7062.00	7062.00
8.6	Providing and laying Reducer 6 kg/sq.cm : confirming to IS specifications.		STEP I	STEP II	STEP III
1	20 mm dia	Each	-	-	-
2	25 mm dia	Each	43.00	-	-
3	32 mm dia	Each	49.00	49.00	-
4	40 mm dia	Each	56.00	56.00	60.00
5	50 mm dia	Each	67.00	69.00	72.00
6	63 mm dia	Each	82.00	83.00	85.00
7	75 mm dia	Each	104.00	106.00	112.00
8	90 mm dia	Each	113.00	118.00	124.00
9	110 mm dia	Each	112.00	138.00	136.00
10	125 mm dia	Each	120.00	160.00	153.00
11	140 mm dia	Each	142.00	177.00	182.00
12	160 mm dia	Each	185.00	231.00	222.00
13	180 mm dia	Each	218.00	295.00	275.00
14	200 mm dia	Each	252.00	344.00	335.00
15	225 mm dia	Each	326.00	443.00	422.00
16	250 mm dia	Each	382.00	429.00	513.00
17	280 mm dia	Each	504.00	536.00	539.00
18	315 mm dia	Each	666.00	650.00	703.00
19	355 mm dia	Each	948.00	909.00	1109.00
20	400 mm dia	Each	1000.00	1135.00	1291.00
21	450 mm dia	Each	1319.00	1490.00	4574.00
22	500 mm dia	Each	1609.00	1885.00	5447.00
23	560 mm dia	Each	2308.00	2428.00	10690.00
24	630 mm dia	Each	2736.00	2854.00	11420.00
25	710 mm dia	Each	3573.00	3681.00	23220.00
8.7	Providing and laying Reducer 8 kg/sq.cm : confirming to IS specifications.		STEP I	STEP II	STEP III
1	20 mm dia	Each	-	-	-
2	25 mm dia	Each	44.00	-	-
3	32 mm dia	Each	49.00	49.00	-
4	40 mm dia	Each	56.00	56.00	61.00
5	50 mm dia	Each	68.00	70.00	73.00
6	63 mm dia	Each	93.00	96.00	99.00
7	75 mm dia	Each	111.00	116.00	120.00
8	90 mm dia	Each	122.00	129.00	136.00
9	110 mm dia	Each	111.00	131.00	152.00
10	125 mm dia	Each	133.00	173.00	171.00
11	140 mm dia	Each	168.00	211.00	219.00
12	160 mm dia	Each	208.00	275.00	281.00

S.No	Particulars of Items	Unit	Rate (in Rs.)		
13	180 mm dia	Each	244.00	335.00	319.00
14	200 mm dia	Each	302.00	414.00	397.00
15	225 mm dia	Each	370.00	455.00	492.00
16	250 mm dia	Each	482.00	511.00	550.00
17	280 mm dia	Each	615.00	674.00	680.00
18	315 mm dia	Each	856.00	884.00	965.00
19	355 mm dia	Each	1016.00	1073.00	1261.00
20	400 mm dia	Each	1275.00	1445.00	1546.00
21	450 mm dia	Each	1600.00	1779.00	1764.00
22	500 mm dia	Each	2088.00	2293.00	2316.00
23	560 mm dia	Each	2672.00	2761.00	2595.00
24	630 mm dia	Each	2975.00	3070.00	2980.00
25	710 mm dia	Each	3018.00	3274.00	3204.00
8.8	Providing and laying Reducer 10 kg/sq.cm : confirming to IS specifications.		STEP I	STEP II	STEP III
1	20 mm dia	Each	-	-	-
2	25 mm dia	Each	49.00	-	-
3	32 mm dia	Each	55.00	56.00	-
4	40 mm dia	Each	62.00	62.00	67.00
5	50 mm dia	Each	73.00	75.00	77.00
6	63 mm dia	Each	88.00	92.00	97.00
7	75 mm dia	Each	110.00	116.00	122.00
8	90 mm dia	Each	123.00	132.00	136.00
9	110 mm dia	Each	129.00	153.00	141.00
10	125 mm dia	Each	145.00	173.00	165.00
11	140 mm dia	Each	152.00	192.00	197.00
12	160 mm dia	Each	199.00	252.00	240.00
13	180 mm dia	Each	235.00	322.00	299.00
14	200 mm dia	Each	273.00	377.00	366.00
15	225 mm dia	Each	356.00	488.00	464.00
16	250 mm dia	Each	419.00	472.00	566.00
17	280 mm dia	Each	590.00	601.00	604.00
18	315 mm dia	Each	736.00	813.00	829.00
19	355 mm dia	Each	1052.00	1009.00	1234.00
20	400 mm dia	Each	1108.00	1260.00	1435.00
21	450 mm dia	Each	1566.00	1771.00	1816.00
22	500 mm dia	Each	1910.00	2097.00	2171.00
23	560 mm dia	Each	2573.00	2707.00	2746.00
24	630 mm dia	Each	3052.00	3110.00	3239.00
25	710 mm dia	Each	3227.00	3298.00	3386.00

S.No	Particulars of Items	Unit	Rate (in Rs.)		
8.9	Providing butt fusion welded joint/jointing by heating to the ends with the help of Teflon coated electric mirror/heater ends together etc. by thermosetting process to HDPE Pipe and specials. (6kg, 8kg, 10kg) (50mm & above fusion jointed & below 50mm mechanical jointed)	Unit	Rate		
1	20 mm dia	Each	59.00		
2	25 mm dia	Each	59.00		
3	32 mm dia	Each	65.00		
4	40 mm dia	Each	79.00		
5	50 mm dia	Each	73.00		
6	63 mm dia	Each	95.00		
7	75 mm dia	Each	119.00		
8	90 mm dia	Each	132.00		
9	110 mm dia	Each	145.00		
10	125 mm dia	Each	175.00		
11	140 mm dia	Each	185.00		
12	160 mm dia	Each	201.00		
13	180 mm dia	Each	212.00		
14	200 mm dia	Each	226.00		
15	225 mm dia	Each	251.00		
16	250 mm dia	Each	295.00		
17	280 mm dia	Each	316.00		
18	315 mm dia	Each	345.00		
19	355 mm dia	Each	385.00		
20	400 mm dia	Each	451.00		
21	450 mm dia	Each	603.00		
22	500 mm dia	Each	722.00		
23	560 mm dia	Each	888.00		
24	630 mm dia	Each	1005.00		
25	710 mm dia	Each	1154.00		
8.10	Providing and laying End Cap confirming to IS specifications.		6 Kg	8 Kg	10 Kg
1	20 mm dia	Each	39.00	39.00	40.00
2	25 mm dia	Each	39.00	40.00	42.00
3	32 mm dia	Each	41.00	42.00	44.00
4	40 mm dia	Each	43.00	44.00	46.00
5	50 mm dia	Each	50.00	56.00	58.00
6	63 mm dia	Each	67.00	68.00	72.00
7	75 mm dia	Each	84.00	88.00	92.00
8	90 mm dia	Each	95.00	96.00	102.00
9	110 mm dia	Each	84.00	99.00	104.00
10	125 mm dia	Each	119.00	164.00	167.00
11	140 mm dia	Each	172.00	195.00	200.00
12	160 mm dia	Each	204.00	285.00	296.00
13	180 mm dia	Each	294.00	342.00	356.00
14	200 mm dia	Each	351.00	409.00	426.00

S.No	Particulars of Items	Unit	Rate (in Rs.)		
15	225 mm dia	Each	419.00	417.00	556.00
16	250 mm dia	Each	552.00	641.00	669.00
17	280 mm dia	Each	663.00	737.00	1060.00
18	315 mm dia	Each	841.00	922.00	1336.00
19	355 mm dia	Each	1091.00	1253.00	2288.00
20	400 mm dia	Each	1684.00	1901.00	2937.00
21	450 mm dia	Each	2391.00	2571.00	4859.00
22	500 mm dia	Each	3541.00	3808.00	5697.00
23	560 mm dia	Each	5003.00	5318.00	8325.00
24	630 mm dia	Each	7055.00	7815.00	10196.00
25	710 mm dia	Each	7382.00	8604.00	11768.00

MDPE Pipes House Services Connection with necessary Electro Fusion & Compression fittings.

8.11	Providing and Supplying Blue MDPE pipes conforming to ISO 4427:1996 manufactured from virgin resin PE 80 Food grade compounded Raw Material having Blue Colour only with quality assurance certificate from quality agencies like WRC/ CIPET (India)/ DVGM/KIWA/SPGN etc. for usage in Drinking Water System The cost shall include testing of all materials, all taxes Central, State, Municipal, Inspection charges, transportation upto site, transitinsurance, loading, unloading, stacking etc. complete.		
8.11.1	PN 16 (SDR 9)		
	20mm dia	Rmt	33.00
	25mm dia	Rmt	45.00
	32mm dia	Rmt	75.00
	40mm dia	Rmt	97.00
	50mm dia	Rmt	148.00
	63mm dia	Rmt	222.00
	75mm dia	Rmt	295.00
	90mm dia	Rmt	426.00
	110mm dia	Rmt	633.00
8.11.2	PN 12.5 (SDR 11)		
	25mm dia	Rmt	45.00
	32mm dia	Rmt	75.00
	40mm dia	Rmt	90.00
	50mm dia	Rmt	130.00
	63mm dia	Rmt	175.00
	75mm dia	Rmt	245.00
	90mm dia	Rmt	355.00
	110mm dia	Rmt	526.00
8.11.3	PN 10 (SDR 13.6)		
	63mm dia	Rmt	150.00
	75mm dia	Rmt	212.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
	90mm dia	Rmt	305.00
	110mm dia	Rmt	450.00
8.12	Providing & Supply of Electro Fusion Tapping Ferrule (Branch Tapping Saddle) female BSP Threaded with SS 304 insert fittings in accordance with BS EN 12201 : Part-3 suitable for drinking water with in black/blue colour manufactured from compounded PE80/PE 100 virgin polymer and compatible with PE80/PE100 pipes, in pressure rating SDR 11 with min PN 12.5 rated for water application and shall be inclusive of all cost such as testing, all taxes related to central, state & municipal, inspection charges, transportation upto site, transit insurance, loading, unloading, stacking etc. complete.		
8.12.1	Electo Fusion Tapping Ferrule Saddle		
8.12.1.1	63x15mm	Each	999.00
8.12.1.2	63x20mm	Each	999.00
8.12.1.3	63x25mm	Each	999.00
8.12.1.4	75x15mm	Each	999.00
8.12.1.5	75x20mm	Each	999.00
8.12.1.6	75x25mm	Each	999.00
8.12.1.7	90x15mm	Each	999.00
8.12.1.8	90x20mm	Each	999.00
8.12.1.9	90x25mm	Each	999.00
8.12.1.10	90x32mm	Each	1296.00
8.12.1.11	90x40mm	Each	1296.00
8.12.1.12	90x50	Each	1296.00
8.12.1.13	110x15mm	Each	999.00
8.12.1.14	110x20mm	Each	999.00
8.12.1.15	110x25mm	Each	999.00
8.12.1.16	110x32mm	Each	1296.00
8.12.1.17	110x40mm	Each	1296.00
8.12.1.18	110x50mm	Each	1296.00
8.12.1.19	160x15mm	Each	999.00
8.12.1.20	160x20mm	Each	999.00
8.12.1.21	160x25mm	Each	999.00
8.12.1.22	160x32mm	Each	1416.00
8.12.1.23	160x40mm	Each	1416.00
8.12.1.24	160x50mm	Each	1416.00
8.12.1.25	200x15mm	Each	1410.00
8.12.1.26	200x20mm	Each	1410.00
8.12.1.27	200x25mm	Each	1410.00
8.12.1.28	200x32mm	Each	2040.00
8.12.1.29	200x40mm	Each	2040.00
8.12.1.30	200x50mm	Each	2040.00
8.12.1.31	250x15mm	Each	1410.00
8.12.1.32	250x20mm	Each	1410.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
8.12.1.33	250x25mm	Each	1410.00
8.12.1.34	250x32mm	Each	2040.00
8.12.1.35	250x40mm	Each	2040.00
8.12.1.36	250x50mm	Each	2040.00
8.12.1.37	315x15mm	Each	1680.00
8.12.1.38	315x20mm	Each	1680.00
8.12.1.39	315x25mm	Each	1680.00
8.12.1.40	315x32mm	Each	2280.00
8.12.1.41	315x40mm	Each	2280.00
8.12.1.42	315x50mm	Each	2280.00
8.13	Providing & Supply of Compression fittings, PN16 rated in conformation to ISO:14236-2000 and shall be tested as per ISO:3459, ISO : 3501 & ISO: 3503, suitable for drinking water & approved by WRAS, UKI KIWA etc., in food grade polypropylene and shall be inclusive of all cost such as testing, all taxes related to central, state & municipal, inspection charges, transportation up to site, transit insurance, loading, unloading, stacking etc. complete.		
8.13.1	Compression Fittings Metal inserted Compression Female Threaded Adaptor with SS 304 Material		
8.13.1.1	20x15mm	Each	170.00
8.13.1.2	25x20mm	Each	220.00
8.13.1.3	32x25mm	Each	300.00
8.13.1.4	40x32mm	Each	510.00
8.13.1.5	50x40mm	Each	660.00
8.13.1.6	63x50mm	Each	900.00
8.13.2	Metale inserted Compression Male Threaded Adaptor with SS 304 Material		
8.13.2.1	20x15mm	Each	170.00
8.13.2.2	25x20mm	Each	220.00
8.13.2.3	32x25mm	Each	300.00
8.13.2.4	40x32mm	Each	510.00
8.13.2.5	50x40mm	Each	660.00
8.13.2.6	63x50mm	Each	900.00
8.13.3	Compression 90 Deg. Elbow threaded male off take in Metal		
8.13.3.1	20x15mm	Each	180.00
8.13.3.2	25x20mm	Each	240.00
8.13.3.3	32x25mm	Each	330.00
8.13.3.4	40x32mm	Each	1150.00
8.13.3.5	50x40mm	Each	1500.00
8.13.3.6	63x50mm	Each	2200.00
8.13.4	Compression 90 Deg. Elbow threaded Female off take in Metal		
8.13.4.1	20x15mm	Each	180.00
8.13.4.2	25x20mm	Each	240.00
8.13.4.3	32x25mm	Each	330.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
8.13.4.4	40x32mm	Each	1150.00
8.13.4.5	50x40mm	Each	1500.00
8.13.4.6	63x50mm	Each	2200.00
8.13.5	Compression 90 Deg. Elbow		
8.13.5.1	20mm	Each	110.00
8.13.5.2	25mm	Each	150.00
8.13.5.3	32mm	Each	195.00
8.13.5.4	40mm	Each	390.00
8.13.5.5	50mm	Each	554.00
8.13.5.6	63mm	Each	751.00
8.14	Providing & Supply of PVC Ball Valves in PN16 rating with one end compression using Blue colour compression nut in polypropylene material & other end with female threads conforming to ISO:4422-4, certified from WRAS UK/KIWA etc. suitable for food products & drinking water, female threads in accordance with ISO:7/BS:21/ IS: 554 and shall be inclusive of all cost such as testing, all taxes related to central, state & municipal, inspection charges, transportation upto site, transit insurance, loading, unloading, stacking etc. complete.		
8.14.1	PVC Ball Valve with Compression & Female Threads		
8.14.1.1	20x15mm	Each	175.00
8.14.1.2	25x20mm	Each	227.00
8.14.1.3	32x25mm	Each	256.00
8.14.1.4	40x32mm	Each	550.00
8.14.1.5	50x40mm	Each	737.00
8.14.1.6	63x50mm	Each	1133.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
8.15	Providing & Supply of Clamp Saddle (DI Strap Saddle) for House Service connections from metal pipe Water Distribution mains shall be of fastened strap type with threaded outlet for service connection. Clamp Saddle shall be suitable for nominal size of distribution mains pipe line. The strap shall be elastomer coated (insulated) type for firm grip on pipe as well as to protect the coating on the pipe and to insulate the unidentical metals. The saddle shall be single strap type upto pipe sizes of NB 600 and service outlet 15mm, 20mm & 25mm. Fasteners shall be of threaded nut-bolt- washer type. The sealing between the saddle and mains shall be obtained by using a profiled elastomer seal matching to the curvature of the pipe. The seal shall be of elastomer type, suitable for all potable water application. The material of construction of the body, straps, fasteners etc, shall be of non corrosive material such as engineering plastic (PE/PP) or stainless steel or a combination of both.		
8.15.1.1	80 NB x 15mm, 20mm, 25mm	Each	1000.00
8.15.1.2	100 NB x 15mm, 20mm, 25mm	Each	1100.00
8.15.1.3	150 NB x 15mm, 20mm, 25mm	Each	1300.00
8.15.1.4	200 NB x 15mm, 20mm, 25mm	Each	1500.00
8.15.1.5	250 NB x 15mm, 20mm, 25mm	Each	1700.00
8.15.1.6	300 NB x 15mm, 20mm, 25mm	Each	1900.00
8.16	Providing & Supply of Electro Fusion Fittings in accordance with BS EN 12201 : Part-3 suitable for drinking water with in black/blue colour manufactured from compounded PE80/PE100 virgin polymer and compatible with PE80/PE100 pipes, in pressure rated SDR11 with min PN 12.5 rated for water application and shall be inclusive of all cost such as testing, all taxes related to central, state & municipal, inspection charges, transportation upto site, transit insurance, loading, unloading, stacking etc. complete.		
8.16.1	Electro Fusion Coupler		
8.16.1.1	20mm	Each	100.00
8.16.1.2	25mm	Each	100.00
8.16.1.3	32mm	Each	100.00
8.16.1.4	40mm	Each	185.00
8.16.1.5	50mm	Each	229.00
8.16.1.6	63mm	Each	247.00
8.16.1.7	75mm	Each	444.00
8.16.1.8	90mm	Each	476.00
8.16.1.9	110mm	Each	678.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
8.16.1.10	125mm	Each	689.00
8.16.1.11	140mm	Each	1478.00
8.16.1.12	160mm	Each	1620.00
8.16.1.13	180mm	Each	2419.00
8.16.1.14	200mm	Each	3158.00
8.16.1.15	225mm	Each	3749.00
8.16.1.16	250mm	Each	4568.00
8.16.1.17	280mm	Each	9153.00
8.16.1.18	315mm	Each	9186.00
8.16.2	Electro Fusion Equal Tee		
8.16.2.1	20mm	Each	250.00
8.16.2.2	25mm	Each	250.00
8.16.2.3	32mm	Each	250.00
8.16.2.4	40mm	Each	848.00
8.16.2.5	50mm	Each	942.00
8.16.2.6	63mm	Each	1050.00
8.16.2.7	75mm	Each	1400.00
8.16.2.8	90mm	Each	1740.00
8.16.2.9	110mm	Each	2100.00
8.16.2.10	125mm	Each	2600.00
8.16.2.11	140mm	Each	5892.00
8.16.2.12	160mm	Each	5892.00
8.16.2.13	180mm	Each	8600.00
8.16.2.14	200mm	Each	11000.00
8.16.2.15	225mm	Each	13000.00
8.16.2.16	250mm	Each	19000.00
8.16.2.17	280mm	Each	21000.00
8.16.2.18	315mm	Each	23000.00
8.16.3	Electro Fusion Elbow 90 Deg.		
8.16.3.1	20mm	Each	190.00
8.16.3.2	25mm	Each	190.00
8.16.3.3	32mm	Each	190.00
8.16.3.4	40mm	Each	500.00
8.16.3.5	50mm	Each	500.00
8.16.3.6	63mm	Each	500.00
8.16.3.7	75mm	Each	1100.00
8.16.3.8	90mm	Each	1500.00
8.16.3.9	110mm	Each	2000.00
8.16.3.10	125mm	Each	2400.00
8.16.3.11	140mm	Each	5100.00
8.16.3.12	160mm	Each	6600.00
8.16.3.13	180mm	Each	8500.00
8.16.3.14	200mm	Each	16000.00
8.16.3.15	225mm	Each	18000.00
8.16.3.16	250mm	Each	20000.00
8.16.3.17	280mm	Each	22000.00
8.16.3.18	315mm	Each	25000.00
8.16.4	Electro Fusion Reducer		
8.16.4.1	25x20mm	Each	200.00
8.16.4.2	32x20mm	Each	200.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
8.16.4.3	32x25mm	Each	200.00
8.16.4.4	40x32mm	Each	670.00
8.16.4.5	50x32mm	Each	840.00
8.16.4.6	50x40mm	Each	928.00
8.16.4.7	63x32mm	Each	990.00
8.16.4.8	63x40mm	Each	1001.00
8.16.4.9	63x50mm	Each	1160.00
8.16.4.10	90x63mm	Each	1641.00
8.16.4.11	90x75mm	Each	2100.00
8.16.4.12	110x75mm	Each	2650.00
8.16.4.13	110x90mm	Each	3020.00
8.16.4.14	125x90mm	Each	3820.00
8.16.4.15	125x110mm	Each	3820.00
8.16.4.16	140x90mm	Each	4200.00
8.16.4.17	140x110mm	Each	4200.00
8.16.4.18	140x125mm	Each	4200.00
8.16.4.19	160x110mm	Each	5500.00
8.16.4.20	160x125mm	Each	5500.00
8.16.4.21	160x140mm	Each	5500.00
8.16.4.22	180x125mm	Each	6200.00
8.16.4.23	180x140mm	Each	6200.00
8.16.4.24	180x160mm	Each	6200.00
8.16.4.25	200x160mm	Each	7400.00
8.16.4.26	200x180mm	Each	7400.00
8.16.4.27	225x160mm	Each	9000.00
8.16.4.28	225x180mm	Each	9000.00
8.16.4.29	225x200mm	Each	9000.00
8.16.4.30	250x160mm	Each	11000.00
8.16.4.31	250x200mm	Each	11000.00
8.16.4.32	250x225mm	Each	11000.00
8.16.5	Electro Fusion End Cap		
8.16.5.1	20mm	Each	152.00
8.16.5.2	25mm	Each	152.00
8.16.5.3	32mm	Each	152.00
8.16.5.4	40mm	Each	330.00
8.16.5.5	50mm	Each	400.00
8.16.5.6	63mm	Each	580.00
8.16.5.7	75mm	Each	870.00
8.16.5.8	90mm	Each	1100.00
8.16.5.9	110mm	Each	1400.00
8.16.5.10	125mm	Each	1700.00
8.16.5.11	140mm	Each	2500.00
8.16.5.12	160mm	Each	3600.00
8.16.5.13	180mm	Each	4400.00
8.16.5.14	200mm	Each	5200.00
8.16.5.15	225mm	Each	8500.00
8.16.5.16	250mm	Each	10000.00
8.16.5.17	280mm	Each	11000.00
8.16.5.18	315mm	Each	12000.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
8.16.6	Spigot Long Neck Pipe End (Stub End) for Electro Fusion Joint		
8.16.6.1	63mm	Each	358.00
8.16.6.2	75mm	Each	403.00
8.16.6.3	90mm	Each	505.00
8.16.6.4	110mm	Each	770.00
8.16.6.5	125mm	Each	1213.00
8.16.6.6	140mm	Each	1380.00
8.16.6.7	160mm	Each	1975.00
8.16.6.8	180mm	Each	2663.00
8.16.6.9	200mm	Each	3130.00
8.16.6.10	225mm	Each	3755.00
8.16.6.11	250mm	Each	4313.00
8.16.6.12	280mm	Each	4828.00
8.16.6.13	315mm	Each	6275.00
8.17	Providing and supply of Zero Velocity Valves of renowned make duly tested inclusive of all taxes related to central, state and municipal, inclusive of excise duty, inspection charges, transpotation charges, transit insuranse, loading/ unloading and stacking at site/ store etc, complete.		
8.17.1	100mm 10 kg/cm2	Each	59000.00
8.17.2	100mm 15 kg/cm2	Each	63500.00
8.17.3	100mm 20 kg/cm2	Each	65000.00
8.17.4	100mm 25 kg/cm2	Each	74600.00
8.17.5	150mm10 kg/cm2	Each	75900.00
8.17.6	150mm15 kg/cm2	Each	81600.00
8.17.7	150mm20 kg/cm2	Each	89800.00
8.17.8	150mm25 kg/cm2	Each	103200.00
8.17.9	200mm10 kg/cm2	Each	79300.00
8.17.10	200mm15 kg/cm2	Each	85300.00
8.17.11	200mm20 kg/cm2	Each	93800.00
8.17.12	200mm25 kg/cm2	Each	108000.00
8.17.13	250mm10 kg/cm2	Each	89500.00
8.17.14	250mm15 kg/cm2	Each	96300.00
8.17.15	250mm20 kg/cm2	Each	105800.00
8.17.16	250mm25 kg/cm2	Each	121700.00
8.17.17	300mm10 kg/cm2	Each	100800.00
8.17.18	300mm15 kg/cm2	Each	108300.00
8.17.19	300mm20 kg/cm2	Each	119100.00
8.17.20	300mm25 kg/cm2	Each	136800.00
8.17.21	350mm10 kg/cm2	Each	104400.00
8.17.22	350mm15 kg/cm2	Each	112300.00
8.17.23	350mm20 kg/cm2	Each	123400.00
8.17.24	350mm25 kg/cm2	Each	142000.00
8.17.25	400mm10 kg/cm2	Each	115400.00
8.17.26	400mm15 kg/cm2	Each	124000.00
8.17.27	400mm20 kg/cm2	Each	136500.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
8.17.28	400mm25 kg/cm2	Each	157000.00
8.17.29	450mm10 kg/cm2	Each	134200.00
8.17.30	450mm15 kg/cm2	Each	144300.00
8.17.31	450mm20 kg/cm2	Each	158700.00
8.17.32	450mm25 kg/cm2	Each	182600.00
8.17.33	500mm10 kg/cm2	Each	155100.00
8.17.34	500mm15 kg/cm2	Each	166700.00
8.17.35	500mm20 kg/cm2	Each	183500.00
8.17.36	500mm25 kg/cm2	Each	211100.00
8.17.37	600mm10 kg/cm2	Each	190100.00
8.17.38	600mm15 kg/cm2	Each	204400.00
8.17.39	600mm20 kg/cm2	Each	224800.00
8.17.40	600mm25 kg/cm2	Each	258500.00
8.17.41	700mm10 kg/cm2	Each	268100.00
8.17.42	700mm15 kg/cm2	Each	288200.00
8.17.43	700mm20 kg/cm2	Each	317000.00
8.17.44	700mm25 kg/cm2	Each	364600.00
8.17.45	750mm10 kg/cm2	Each	303200.00
8.17.46	750mm15 kg/cm2	Each	326000.00
8.17.47	750mm20 kg/cm2	Each	358500.00
8.17.48	750mm25 kg/cm2	Each	412400.00
8.17.49	800mm10 kg/cm2	Each	334600.00
8.17.50	800mm15 kg/cm2	Each	359700.00
8.17.51	800mm20 kg/cm2	Each	359700.00
8.17.52	800mm25 kg/cm2	Each	455200.00
8.17.53	900mm10 kg/cm2	Each	397800.00
8.17.54	900mm15 kg/cm2	Each	427700.00
8.17.55	900mm20 kg/cm2	Each	470300.00
8.17.56	900mm25 kg/cm2	Each	541000.00
8.17.57	1000mm10 kg/cm2	Each	505800.00
8.17.58	1000mm15 kg/cm2	Each	543700.00
8.17.59	1000mm20 kg/cm2	Each	598000.00
8.17.60	1000mm25 kg/cm2	Each	687900.00
8.17.61	1100mm10 kg/cm2	Each	620500.00
8.17.62	1100mm15 kg/cm2	Each	667100.00
8.17.63	1100mm20 kg/cm2	Each	733800.00
8.17.64	1100mm25 kg/cm2	Each	843900.00
8.17.65	1200mm10 kg/cm2	Each	765500.00
8.17.66	1200mm15 kg/cm2	Each	823000.00
8.17.67	1200mm20 kg/cm2	Each	905200.00
8.17.68	1200mm25 kg/cm2	Each	1041100.00
8.17.69	1300mm10 kg/cm2	Each	1102400.00
8.17.70	1300mm15 kg/cm2	Each	1171900.00
8.17.71	1300mm20 kg/cm2	Each	1247800.00
8.17.72	1300mm25 kg/cm2	Each	1371100.00
8.17.73	1400mm10 kg/cm2	Each	1203200.00
8.17.74	1400mm15 kg/cm2	Each	1293400.00
8.17.75	1400mm20 kg/cm2	Each	1422700.00
8.17.76	1400mm25 kg/cm2	Each	1636200.00
8.17.77	1500mm10 kg/cm2	Each	1533500.00

S.No	Particulars of Items	Unit	Rate (in Rs.)
8.17.78	1500mm15 kg/cm2	Each	1648400.00
8.17.79	1500mm20 kg/cm2	Each	1813200.00
8.17.80	1500mm25 kg/cm2	Each	2085300.00
8.18	Providing and supply of Air cushion Valves of renowned make duly tested inclusive of all taxes related to central, state and municipal, inclusive of excise duty, inspection charges, transpotation charges, transit insuranse, loading/ unloading and stacking at site/ store etc, complete.		
8.18.1	Air cushion valves 100 mm TP 10 kg/cm2	Each	65800.00
8.18.2	Air cushion valves 100 mm TP 15 kg/cm2	Each	72300.00
8.18.3	Air cushion valves 100 mm TP 20 kg/cm2	Each	79500.00
8.18.4	Air cushion valves 100 mm TP 25 kg/cm2	Each	91500.00
8.18.5	Air cushion valves 150 mm TP 10 kg/cm2	Each	99800.00
8.18.6	Air cushion valves 150 mm TP 15 kg/cm2	Each	109700.00
8.18.7	Air cushion valves 150 mm TP 20 kg/cm2	Each	120700.00
8.18.8	Air cushion valves 150 mm TP 25 kg/cm2	Each	138800.00
8.18.9	Air cushion valves 200 mm TP 10 kg/cm2	Each	106500.00
8.18.10	Air cushion valves 200 mm TP 15 kg/cm2	Each	117200.00
8.18.11	Air cushion valves 200 mm TP 20 kg/cm2	Each	128900.00
8.18.12	Air cushion valves 200 mm TP 25 kg/cm2	Each	148100.00
8.18.13	Air cushion valves 300 mm TP 10 kg/cm2	Each	149800.00
8.18.14	Air cushion valves 300 mm TP 15 kg/cm2	Each	164900.00
8.18.15	Air cushion valves 300 mm TP 20 kg/cm2	Each	189600.00
8.18.16	Air cushion valves 300 mm TP 25 kg/cm2	Each	218000.00

CHAPTER- 9
GRP PIPES AND SPECIALS

1 GRP Pipes, Joints and Fittings for use for Potable Water Supply shall be as per IS 12709 : 1994

2 Glass Fibre reinforced plastics (GRP) Pipes, Joints and fittings for use for sewerage, industrial waste and water (other than Potable) shall be as per IS 14402 : 1996

3 Installation of GRP Piping system –code of practice shall be as per IS 13916 : 1994

4 Rubber sealing rings for gas mains, water mains and sewers shall be as per IS 5382 : 1985

5 For fiber glass pressure pipe shall be as per American Water Works Association (AWWA) 950

6 Standard practice for clarifying visual defects in glass reinforced plastic laminated parts shall be as per American Society for Testing & Material (ASTM) 2563

7 Specification for fiber Glass Pressure Pipes shall be as per ASTM 3517

8 Standard specification for contact moulded “Fibre glass” flanges shall be as per ASTM D 5421.

9 Specification for Glass Fibre resin forced Plastic Pressure Pipes, Joints & Fittings shall be as per British Standard (BS) -5480

10 Handling of Pipe :-

(i) All pipe sections and fittings shall be supported on timber saddles spaced at 4m center to center with a maximum overhang of 2 m. Pipes with diameter greater than 1 m may be stored on their delivery cradles at a maximum distance of 6 m c/c. Stock height should not generally exceed 2 m. Pipe shall be strapped to the vehicle over the support points using non-metallic pliable straps or ropes only.

(ii) Pipes and fittings with diameters of less than 1 m may be stored directly on sandy soil, the ground should be flat and free from sharp projection and stones/rocks bigger than 40 mm in diameter or of other potentially damaging debris. If the surface is not flat or is slopping, then all the pipes shall be checked to prevent rolling.

(iii) All rubber rings, gasket and other items shall be stored in a cool, dry and dark place to avoid damage of any kind.

(iv) During delivery, all sections shall be handled by such means and in such a manner that no distortion or damage is done to the protection or to the section as a whole.

(v) Pipes shall be handled and transported to the site carefully as per the general Specifications for laying of Pipes and fittings given in this chapter and as per IS 783.

11 Transportation of pipes :-

(i) Pipes manufactured at factory are to be carried to the site of work directly or stacked suitably and neatly along the alignment/road side/elsewhere near by the work site, as directed by the Engineer.

(ii) All pipes shall be loaded in trucks by mechanical crane/tripod and unloaded carefully using crane/tripod. No unloading using crow bars or on tyres will be allowed in any case. Rubber belt may be used instead of crow bars or chains.

(iii) Extreme care shall be taken while handling the pipes. Damages during transit will be to the Contractor's account and replacement for such pipes has to be made by the contractor without any extra cost.

12 Tolerances for GRP fitting :-

Except for flanged pipe work, which may require closer tolerances, the permissible deviations on the manufacturer's declared length of a fitting, exclusive of the socket where applicable, shall be 25 mm taken from the point of intersection to the end of the fitting.

13 Soundness :-

Each length of pipe of nominal diameter upto 1400 mm shall withstand without leakage or cracking the internal hydrostatic test pressures.

14 Marking :-

Both ends of pipe shall be marked with bold letters not less than 12mm in height and in a colour and type that remains legible under normal handling and installation procedures. The marking shall include the following :

(i) The manufacturer's name or trade-mark.
(ii) The nominal pipe diameter
(iii) Class of pipe (pressure and stiffness), and
(iv) Batch No. or date of manufacture.

15 Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

16 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

17 **GRP Pipes conforming to IS 14402 : 1996** for use for Sewerage, Industrial waste and water (other than potable) shall not be tested as mentioned above at 9.13.1. This pipes may be used for raw water pumping also. While placing order for procurement of pipes relevant code should be clearly mentioned according to the purpose for which pipes are to be used.

18 Measurement :-

The net length of pipes as laid or fixed shall be measured in running meter correct to 10mm. Special shall be excluded & measured and paid for separately. The part of the pipe within the joint shall not be included in the length of pipe. Other work like masonry, concrete etc. shall also be measured separately.

19 Rates :-

The rate shall include the cost of material and labour involved in all the operation described in the item including the cost of concrete which shall be paid separately.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 9 -- GRP PIPES AND SPECIALS

S.No.	Particulars of Items	Unit	Rate (in Rs.)
9.1	Supplying, laying, jointing, field testing, commissioning, complete at site of GRP pipes PN-6.0(6.0kg/sqcm) conforming to IS 12709 for water application/ IS 14402 for sewerage application, including cost of coupling, pipe material, transportation, loading, unloading, stacking and labour work complete stiffness class 124kpa (2500N/m²)		
1	300 mm dia	RM	2113.00
2	350 mm dia	RM	2462.00
3	400 mm dia	RM	2728.00
4	450 mm dia	RM	3145.00
5	500 mm dia	RM	3593.00
6	600 mm dia	RM	4636.00
7	700 mm dia	RM	5836.00
8	800 mm dia	RM	7322.00
9	900 mm dia	RM	8602.00
10	1000 mm dia	RM	11077.00
11	1100 mm dia	RM	12851.00
12	1200 mm dia	RM	14409.00
9.2	Supplying, laying, jointing, field testing, commissioning, complete at site of GRP pipes PN-9.0(9.0kg/sqcm) conforming to IS 12709 for water application/ IS 14402 for sewerage application, including cost of coupling, pipe material, transportation, loading, unloading and stacking and labour work complete stiffness class 124kpa (2500N/m²)		
1	300 mm dia	RM	2180.00
2	350 mm dia	RM	2541.00
3	400 mm dia	RM	2859.00
4	450 mm dia	RM	3293.00
5	500 mm dia	RM	3739.00
6	600 mm dia	RM	4856.00
7	700 mm dia	RM	6093.00
8	800 mm dia	RM	7679.00
9	900 mm dia	RM	8974.00
10	1000 mm dia	RM	11251.00
11	1100 mm dia	RM	13240.00
12	1200 mm dia	RM	15640.00
13	1300 mm dia	RM	18365.00
14	1400 mm dia	RM	20882.00
15	1500 mm dia	RM	23539.00
16	1600 mm dia	RM	26125.00
17	1700 mm dia	RM	28706.00
18	1800 mm dia	RM	30372.00
9.3	Supplying, laying, jointing, field testing, commissioning, complete of GRP pipes PN-12.0(12.0kg/sqcm) conforming to IS 12709 for water application/ IS 14402 for sewerage application, including cost of coupling, pipe material, transportation, loading, unloading and stacking and labour work complete stiffness class 124kpa (2500N/m²)		

S.No.	Particulars of Items	Unit	Rate (in Rs.)
1	300 mm dia	RM	2241.00
2	350 mm dia	RM	2637.00
3	400 mm dia	RM	2920.00
4	450 mm dia	RM	3411.00
5	500 mm dia	RM	3872.00
6	600 mm dia	RM	5094.00
7	700 mm dia	RM	6428.00
8	800 mm dia	RM	8034.00
9	900 mm dia	RM	9604.00
10	1000 mm dia	RM	12165.00
11	1100 mm dia	RM	14321.00
12	1200 mm dia	RM	16556.00
13	1300 mm dia	RM	19412.00
14	1400 mm dia	RM	20726.00
15	1500 mm dia	RM	23997.00
16	1600 mm dia	RM	26151.00
17	1700 mm dia	RM	28218.00
18	1800 mm dia	RM	29504.00
9.4	Supplying, laying, jointing, field testing, commissioning, complete of GRP pipes specials conforming to IS 12709 for water application, including cost of material, transportation, loading, unloading and stacking and labour complete.		rates in terms of per meter cost of GRP pipe
	90˚ Bend with one coupling	Each	5.50 times per mtr. Cost of pipe
	60˚ Bend with one coupling	Each	4.50 times per mtr. Cost of pipe
	45˚ Bend with one coupling	Each	3.75 times per mtr. Cost of pipe
	30˚ Bend with one coupling	Each	3.25 times per mtr. Cost of pipe
	22.5˚ Bend with one coupling	Each	2.25 times per mtr. Cost of pipe
	11.25˚ Bend with one coupling	Each	1.75 times per mtr. Cost of pipe
	GRP Equal Tee.	Each	1.00 times per mtr. Cost of pipe
	Flanged tailpiece (length 0.65 mtr)	Each	1.00 times per mtr. Cost of pipe
	Lamination (Butt strap joint) joint	Each	2.50 times per mtr. Cost of pipe
	Double belt coupling	Each	6.50 times per mtr. Cost of pipe

CHAPTER- 10
ASBESTOS CEMENT PRESSURE PIPES AND CAST IRON FITTINGS

1 Asbestos Cement Pressure Pipes & Asbestos Cement Couplings – Asbestos cement pressure pipes & Asbestos Cement Couplings shall conform to IS:1592-2003

2 Cast Iron detachable Joints for use with asbestos cement pressure pipe shall be as per IS 8794 : 1988

3 Cast Iron Specials for ACP Pipe shall conform to the material and strength requirements of IS: 5531-1988.

4 Rubber rings – Rubber rings used in jointing shall comply with the requirements of IS: 10292 -1988.

5 Laying of pipe shall be as per IS Code : 6530 : 1972.

6 All the pipes, Specials Joints to be used in the work shall confirm to relevant Indian Standards only, inspected and tested and having B.I.S. certification marks.

7 Asbestos Cement Pipes & AC Couplings suitable for use in Sewerage & drainage, applications shall be confirming to IS 6908:1991 with up to date amendments.

8 Trenches and Excavation

8.1 The trenches shall be so dug that the pipes may be laid to the required alignment and at required depth.

8.1.1 Width- the width of the trench above pipe level shall be as small as possible but shall provide sufficient space necessary for jointing the pipes. The trench width shall be such as to provide a space of 300 mm on either side of the pipe.

8.1.2 Depth – The pipe shall have a minimum soil cover of 750 mm when laid under foot paths and side walks. 900 mm when laid under roads with light traffic or under cultivated soils and 1.25 m when laid under roads with heavy traffic. When the soil has a poor bearing capacity and is subject to heavy traffic, the pipes shall be laid on a concrete cradle. An extra trench depth of 100 mm shall be provided for each jointing pit.

8.2 The excavation of the trench shall be so carried out that the digging of the trenches does not get far ahead of the laying operations.

8.2.1 The wall of the trench shall be cut generally to a slope of ¼ : 1 or ½ : 1 depending on the nature of the soil.

8.3 To protect person from injury and to avoid damage to property, adequate barricades, construction signs, red lanterns and guards as required shall be placed and maintained during the progress of the construction work and until it is safe for the traffic to use the roadways.

9 Testing

9.1 The pipes shall be tested as specified in IS: 5913-1970 in the factory. Hence the purpose of field testing is to check the quality of workman ship and also to check whether the pipes have been damaged in transits. As such, the test pressure shall be kept as 1.5 times the actual operating pressure, unless a higher test pressure is specified.

9.2 It is recommended to test the portions of the line by subjecting to pressure test as the laying progresses before the entire line is completed. In this way any error of workmanship will be found immediately and can be corrected at a minimum cost.

9.3 Usually the length of the section to be tested shall not exceed 500m.

9.4 Prior to testing enough back fill shall be placed over the pipeline to resist upward thrust. All thrust blocks forming part of the finished line shall have been sufficiently cured and no temporary bracing shall be used.

9.5 The open end of the section can be sealed temporarily with an end cap having an outlet which can serve as an air relief vent or for filling the line or for filling the line, as may be required.

9.6 The blind face of the end cap shall be properly braced during testing by screw jacks and wooden planks or steel plate.

9.7 The section of the line to be tested shall be filled with water manually or by a low pressure pump. Air shall be vented from all high spots in the pipeline before making the pressure strength test because required pressure for the pressure strength test.

9.8 Asbestos cement pipes always absorb a certain amount of water. Therefore, after the line is filled, it should be allowed to stand for 24 hours, before pressure testing and the line shall be again filled.

9.9 The test pressure shall be gradually raised at the rate of approximately one kg/cm^2/min.

9.10 The duration of the test period if not specified shall be sufficient to make a careful check on the pipeline section.

9.11 After the test has been completed, the trench shall be filled back. Care shall be taken to avoid back filling with large stones which might damage the pipe.

10 Items of ACP Pipes shall be used in repair work only. As far as possible ACP Pipes shall be replaced preferably by PVC Pipe using suitable detachable joints.

11 Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

12 As per prevailing excise duty norms there is excise duty exemption on certain diameter of Water Supply Pipes of different material class. All though in the computation of item rates for pipes, the rates are inclusive of excise duty but excise duty exemption shall be obtained as per prevailing rules for such pipes. This benefit shall be availed by the local bodies. All the concerned officers shall be responsible to get all the exemptions of such taxes and duties.

13 Measurements :-

All measurement should be of the finished work.

14 Rates :-

(i) The rates include charges for all tools and plants, chain, pulley blocks and other appliances etc for lifting and laying the pipes and fittings in position as per approved drawings.

(ii) The rates include provision and use of all covering etc. to protect the work from inclement weather etc. and from damages from fall for materials and other causes.

(iii) The rates include provision of handling, storing under cover as required and returning of empty cases or containers to the Urban local body store. The material may be supplied from local body store, without any extra cost for all such materials. No transportation charges from carting of material to site of work from store shall be paid.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER NO. 10 ASBESTOS CEMENT PRESSURE PIPES AND CAST IRON FITTINGS

S.No.	Particulars of Items	Unit	Rate (in Rs)		
10.1	Providing and laying of Asbestos cement pressure pipe ISI marked and conforming to IS-1592/03 tested to the required pressure including cost of pipes all complete.				
			Class 25	Class 15	Class 20
	80mm	Meter	344.00	199.00	252.00
	100mm	Meter	410.00	261.00	329.00
	125mm	Meter	537.00	340.00	425.00
	150mm	Meter	779.00	497.00	619.00
	200mm	Meter	1347.00	834.00	1059.00
	250mm	Meter	1696.00	1061.00	1356.00
	300mm	Meter	2485.00	1513.00	1949.00
	350mm	Meter	3016.00	1847.00	2408.00
10.2	Providing, laying and jointing of Asbestos cement pressure pipe with A.C. coupler Joint ISI marked and conforming to IS-1592/03 tested to the required pressure including testing of joints, cost of pipes all complete.				
			Class 25	Class 15	Class 20
	80mm	Meter	441.00	266.00	329.00
	100mm	Meter	482.00	308.00	389.00
	125mm	Meter	631.00	401.00	499.00
	150mm	Meter	910.00	580.00	723.00
	200mm	Meter	1532.00	954.00	1206.00
	250mm	Meter	1932.00	1208.00	1545.00
	300mm	Meter	2709.00	1646.00	2126.00
	350mm	Meter	3306.00	2029.00	2641.00
10.3	Labour for laying in position Asbestos cement pressure pipes Class 25,15,20				
	80mm	Meter	4.00		
	100mm	Meter	5.00		
	125mm	Meter	7.00		
	150mm	Meter	9.00		
	200mm	Meter	16.00		
	250mm	Meter	21.00		
	300mm	Meter	29.00		
	350mm	Meter	33.00		
10.4	Providing & fixing detachable joints to asbestos cement pressure pipes and fittings including C.I. detachable joints confirming to IS/8794/1988 with bolts, nuts and rubber rings confirming to IS-5382/85 & IS-10292/88				
			Class 25	Class 15	Class 20
	80mm	Each	280.00	268.00	276.00

S.No.	Particulars of Items	Unit	Rate (in Rs)		
	100mm	Each	352.00	340.00	355.00
	125mm	Each	479.00	430.00	471.00
	150mm	Each	581.00	535.00	545.00
	200mm	Each	880.00	776.00	851.00
	250mm	Each	1113.00	984.00	1096.00
	300mm	Each	1408.00	1211.00	1389.00
	350mm	Each	2558.00	2081.00	2255.00
10.5	Labour for providing detachable joints to asbestos cement pressure pipes and fittings Class 25, 15 & 20 including testing of joints but excluding cost of C.I. Detachable joints.				
	80mm	Each	40.00		
	100mm	Each	56.00		
	125mm	Each	66.00		
	150mm	Each	72.00		
	200mm	Each	81.00		
	250mm	Each	86.00		
	300mm	Each	98.00		
	350mm	Each	109.00		
10.6	Providing and laying in position Cast Iron plain ended 90 degree bends confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	675.00	523.00	598.00
	100mm	Each	1012.00	729.00	894.00
	125mm	Each	1402.00	1019.00	1238.00
	150mm	Each	1988.00	1445.00	1768.00
	200mm	Each	3476.00	2510.00	3075.00
	250mm	Each	4978.00	3670.00	4494.00
	300mm	Each	7288.00	5359.00	6583.00
	350mm	Each	10623.00	7500.00	9133.00
10.7	Labour for laying in position Cast Iron plain ended 90 degree bends confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	12.00	9.00	10.00
	100mm	Each	18.00	11.00	15.00
	125mm	Each	22.00	17.00	20.00
	150mm	Each	33.00	24.00	29.00
	200mm	Each	59.00	40.00	50.00
	250mm	Each	78.00	56.00	69.00
	300mm	Each	116.00	81.00	100.00
	350mm	Each	129.00	104.00	117.00
10.8	Providing and laying in position Cast Iron plain ended 45 degree bends confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	684.00	532.00	607.00

S.No.	Particulars of Items	Unit	Rate (in Rs)		
	100mm	Each	1002.00	718.00	884.00
	125mm	Each	1348.00	967.00	1188.00
	150mm	Each	1874.00	1353.00	1651.00
	200mm	Each	3174.00	2252.00	2777.00
	250mm	Each	4390.00	3164.00	3903.00
	300mm	Each	6322.00	4504.00	5575.00
	350mm	Each	8793.00	6073.00	7504.00
10.9	Labour for laying in position Cast Iron plain ended 45 degree bends confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	11.00	9.00	9.00
	100mm	Each	17.00	11.00	14.00
	125mm	Each	23.00	15.00	19.00
	150mm	Each	32.00	21.00	26.00
	200mm	Each	55.00	36.00	45.00
	250mm	Each	75.00	51.00	63.00
	300mm	Each	111.00	73.00	90.00
	350mm	Each	130.00	86.00	108.00
10.10	Providing and laying in position Cast Iron plain ended 22.5 degree bends confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	504.00	378.00	431.00
	100mm	Each	741.00	510.00	637.00
	125mm	Each	993.00	676.00	841.00
	150mm	Each	1390.00	954.00	1179.00
	200mm	Each	2372.00	1589.00	1988.00
	250mm	Each	3187.00	2166.00	2723.00
	300mm	Each	4585.00	3073.00	3875.00
	350mm	Each	6713.00	4404.00	5564.00
10.11	Labour for laying in position Cast Iron plain ended 22.5 degree bends confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	9.00	6.00	8.00
	100mm	Each	12.00	9.00	11.00
	125mm	Each	16.00	11.00	14.00
	150mm	Each	23.00	16.00	20.00
	200mm	Each	40.00	26.00	34.00
	250mm	Each	54.00	36.00	46.00
	300mm	Each	78.00	51.00	65.00
	350mm	Each	95.00	61.00	80.00
10.12	Providing and laying in position Cast Iron plain ended 11¼ degree bends confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	439.00	323.00	365.00
	100mm	Each	660.00	434.00	550.00

S.No.	Particulars of Items	Unit	Rate (in Rs)		
	125mm	Each	872.00	570.00	715.00
	150mm	Each	1230.00	810.00	1010.00
	200mm	Each	2116.00	1355.00	1718.00
	250mm	Each	2778.00	1794.00	2296.00
	300mm	Each	3992.00	2544.00	3265.00
	350mm	Each	5463.00	3440.00	4434.00
10.13	Labour for laying in position Cast Iron plain ended 11¼ degree bends confirming to IS/5531/1988 (Reaffirmed 2002)				
			Class 25	Class 15	Class 20
	80mm	Each	7.00	5.00	6.00
	100mm	Each	10.00	8.00	9.00
	125mm	Each	13.00	9.00	11.00
	150mm	Each	20.00	12.00	16.00
	200mm	Each	32.00	23.00	28.00
	250mm	Each	46.00	29.00	38.00
	300mm	Each	63.00	41.00	53.00
	350mm	Each	82.00	54.00	69.00
10.14	Providing and laying in position Cast Iron plain ended Tees Body & Branch confirming to IS/5531/1988 (Reaffirmed 2002)				
			Class 25	Class 15	Class 20
	80 x 80 mm	Each	856.00	650.00	744.00
	100 x 80 mm	Each	1098.00	844.00	971.00
	100 x 100mm	Each	1319.00	930.00	1152.00
	125 x 80 mm	Each	1426.00	1071.00	1273.00
	125 x 100mm	Each	1702.00	1186.00	1513.00
	125 x 125mm	Each	1863.00	1333.00	1634.00
	150 x 80mm	Each	2210.00	1621.00	1962.00
	150 x 100mm	Each	2346.00	1694.00	2077.00
	150 x125 mm	Each	2487.00	1788.00	2190.00
	150 x 150 mm	Each	2700.00	1949.00	2385.00
	200 x 80 mm	Each	3805.00	2773.00	3376.00
	200 x100mm	Each	3939.00	2853.00	3614.00
	200 x125 mm	Each	4087.00	2953.00	3814.00
	200 x 150mm	Each	4308.00	3168.00	4279.00
	200 x 200mm	Each	4870.00	3489.00	4286.00
	250 x 80 mm	Each	5502.00	4098.00	5114.00
	250 x 100mm	Each	5643.00	4178.00	5117.00
	250 x 125mm	Each	5804.00	4293.00	5251.00
	250 x 150mm	Each	6038.00	4460.00	5457.00
	250 x 200mm	Each	6614.00	4855.00	5947.00
	250 x250mm	Each	7103.00	5217.00	6409.00
	300 x 80mm	Each	8109.00	6034.00	7367.00
	300x 100mm	Each	8245.00	6114.00	7501.00
	300 x 125mm	Each	8446.00	6235.00	7634.00
	300 x 150mm	Each	8579.00	6335.00	7768.00
	300 x 200mm	Each	9248.00	6831.00	8371.00

S.No.	Particulars of Items	Unit	Rate (in Rs)		
	300 x 250mm	Each	9520.00	7233.00	8840.00
	300 x 300mm	Each	10655.00	7768.00	9577.00
	350x200mm	Each	12787.00	9039.00	11047.00
	350x250mm	Each	13391.00	9440.00	11517.00
	350x300mm	Each	14258.00	10043.00	12253.00
	350x350mm	Each	15067.00	10579.00	12989.00
10.15	Labour for laying in position Cast Iron plain ended Tees Body & Branch confirming to IS/5531/1988 (Reaffirmed 2002)				
			Class 25	Class 15	Class 20
	80 x 80 mm	Each	14.00	11.00	13.00
	100 x 80 mm	Each	18.00	14.00	16.00
	100 x 100mm	Each	22.00	15.00	19.00
	125 x 80 mm	Each	24.00	18.00	21.00
	125 x 100mm	Each	29.00	20.00	25.00
	125 x 125mm	Each	32.00	23.00	28.00
	150 x 80mm	Each	37.00	28.00	33.00
	150 x 100mm	Each	41.00	28.00	35.00
	150 x125 mm	Each	43.00	30.00	36.00
	150 x 150 mm	Each	46.00	33.00	40.00
	200 x 80 mm	Each	65.00	46.00	56.00
	200 x100mm	Each	67.00	48.00	58.00
	200 x125 mm	Each	70.00	49.00	60.00
	200 x 150mm	Each	74.00	53.00	64.00
	200 x 200mm	Each	82.00	58.00	71.00
	250 x 80 mm	Each	96.00	68.00	83.00
	250 x 100mm	Each	98.00	69.00	85.00
	250 x 125mm	Each	101.00	71.00	88.00
	250 x 150mm	Each	104.00	74.00	90.00
	250 x 200mm	Each	114.00	80.00	99.00
	250 x250mm	Each	122.00	87.00	106.00
	300 x 80mm	Each	140.00	100.00	123.00
	300x 100mm	Each	144.00	101.00	125.00
	300 x 125mm	Each	148.00	104.00	127.00
	300 x 150mm	Each	149.00	105.00	129.00
	300 x 200mm	Each	160.00	114.00	139.00
	300 x 250mm	Each	168.00	120.00	147.00
	300 x 300mm	Each	184.00	129.00	159.00
	350x200mm	Each	210.00	150.00	183.00
	350x250mm	Each	222.00	156.00	192.00
	350x300mm	Each	233.00	166.00	203.00
	350x350mm	Each	251.00	175.00	215.00
10.16	Providing and laying in position Cast Iron plain ended Crosses confirming to IS/5531/1988 (Reaffirmed 2002)				
			Class 25	Class 15	Class 20
	80 x 80mm	Each	1126.00	860.00	973.00
	100 x 100mm	Each	1749.00	1219.00	1516.00
	125 x 125mm	Each	2454.00	1735.00	2129.00

S.No.	Particulars of Items	Unit	Rate (in Rs)		
	150x 150mm	Each	3560.00	2545.00	3116.00
	200 x 200mm	Each	6417.00	4561.00	5598.00
	250 x 250mm	Each	9310.00	6761.00	8319.00
	300 x 300mm	Each	13893.00	10081.00	12408.00
	350x350mm	Each	21098.00	14836.00	18124.00
10.17	Labour for laying in position Cast Iron plain ended Crosses confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80 x 80mm	Each	16.00	14.00	15.00
	100 x 100mm	Each	28.00	19.00	24.00
	125 x 125mm	Each	39.00	28.00	34.00
	150x 150mm	Each	56.00	40.00	49.00
	200 x 200mm	Each	102.00	71.00	89.00
	250 x 250mm	Each	151.00	106.00	131.00
	300 x 300mm	Each	223.00	158.00	195.00
	350x350mm	Each	298.00	216.00	263.00
10.18	Providing and laying in position Cast Iron plain ended Reducers confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	100 x80mm	Each	785.00	577.00	688.00
	125 x 80mm	Each	928.00	681.00	811.00
	125 x 100mm	Each	1066.00	757.00	929.00
	150 x 80mm	Each	1142.00	833.00	998.00
	150 x 100mm	Each	1285.00	908.00	1121.00
	150 x 125 mm	Each	1430.00	1011.00	1238.00
	200 x 100mm	Each	1802.00	1252.00	1548.00
	200 x 125mm	Each	1954.00	1348.00	1665.00
	200 x 150mm	Each	2168.00	1506.00	1857.00
	250 x 125mm	Each	2360.00	1637.00	1968.00
	250 x 150mm	Each	2580.00	1795.00	2229.00
	250 x 200mm	Each	3094.00	2133.00	2655.00
	300 x 150mm	Each	3267.00	2236.00	2793.00
	300 x 200mm	Each	3793.00	2579.00	3220.00
	300 x 250mm	Each	4180.00	2855.00	3439.00
	350 x 300mm	Each	7622.00	5365.00	6606.00
10.19	Labour for laying in position Cast Iron plain ended Reducers confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	100 x80mm	Each	13.00	9.00	11.00
	125 x 80mm	Each	14.00	11.00	12.00
	125 x 100mm	Each	17.00	13.00	15.00
	150 x 80mm	Each	18.00	14.00	16.00
	150 x 100mm	Each	19.00	15.00	17.00
	150 x 125 mm	Each	23.00	16.00	20.00
	200 x 100mm	Each	29.00	20.00	25.00
	200 x 125mm	Each	39.00	21.00	28.00
	200 x 150mm	Each	36.00	24.00	30.00

S.No.	Particulars of Items	Unit	Rate (in Rs)		
	250 x 125mm	Each	38.00	26.00	33.00
	250 x 150mm	Each	42.00	29.00	36.00
	250 x 200mm	Each	48.00	35.00	42.00
	300 x 150mm	Each	52.00	36.00	45.00
	300 x 200mm	Each	63.00	41.00	53.00
	300 x 250mm	Each	65.00	46.00	55.00
	350 x 300mm	Each	115.00	81.00	100.00
10.20	Providing and laying in position Cast Iron Flange spigot (Adopter) confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	595.00	518.00	552.00
	100mm	Each	769.00	636.00	713.00
	125mm	Each	1028.00	818.00	910.00
	150mm	Each	1308.00	1071.00	1196.00
	200mm	Each	2007.00	1587.00	1804.00
	250mm	Each	3206.00	2574.00	2959.00
	300mm	Each	4245.00	3342.00	3867.00
	350mm	Each	5556.00	4266.00	4934.00
10.21	Labour for laying in position Cast Iron Flange spigot (Adopter) confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	10.00	9.00	9.00
	100mm	Each	12.00	10.00	11.00
	125mm	Each	17.00	13.00	15.00
	150mm	Each	21.00	18.00	19.00
	200mm	Each	32.00	25.00	29.00
	250mm	Each	54.00	41.00	48.00
	300mm	Each	68.00	53.00	61.00
	350mm	Each	87.00	67.00	78.00
10.22	Providing and laying in position Cast Iron end plugs (Dead end cap) confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	309.00	238.00	259.00
	100mm	Each	496.00	343.00	385.00
	125mm	Each	692.00	476.00	567.00
	150mm	Each	1022.00	714.00	848.00
	200mm	Each	1903.00	1303.00	1569.00
	250mm	Each	2645.00	1849.00	2220.00
	300mm	Each	3948.00	2739.00	3286.00
	350mm	Each	5443.00	3848.00	4606.00
10.23	Labour for laying in position Cast Iron end plugs (Dead end cap) confirming to IS/5531/1988 (Reaffirmed 2002)		Class 25	Class 15	Class 20
	80mm	Each	5.00	4.00	4.00
	100mm	Each	7.00	5.00	6.00
	125mm	Each	9.00	8.00	9.00

S.No.	Particulars of Items	Unit	Rate (in Rs)		
	150mm	Each	16.00	11.00	14.00
	200mm	Each	28.00	21.00	25.00
	250mm	Each	40.00	29.00	35.00
	300mm	Each	60.00	44.00	53.00
	350mm	Each	78.00	56.00	68.00
10.24	Providing and supply of ISI marked Asbestos Cement Pipes conforming to IS 6908:1991 for Sewerage & Drainage Class-I with suitable A.C. coupling & ISI marked rubber ring, duly tested inclusive of all taxes related to central, state and municipal, inclusive of excise duty, inspection charges, transpotation charges, transit insuranse, loading/ unloading and stacking at site/ store etc, complete of following sizes:-				
10.24.1	150mm (Length 3mtrs., min.)	Meter	309.00		
10.24.2	200mm (Length 3mtrs., min.)	Meter	483.00		
10.24.3	250mm (Length 4mtrs., min.)	Meter	632.00		
10.24.4	300mm (Length 4mtrs., min.)	Meter	816.00		
10.24.5	350mm (Length 4mtrs., min.)	Meter	1057.00		
10.24.6	400mm (Length 4mtrs., min.)	Meter	1302.00		
10.24.7	450mm (Length 4mtrs., min.)	Meter	1537.00		
10.24.8	500mm (Length 4mtrs., min.)	Meter	1958.00		
10.24.9	600mm (Length 4mtrs., min.)	Meter	2709.00		
10.25	Providing and supply of ISI marked Asbestos Cement Pipes conforming to IS 6908:1991 for Sewerage & Drainage Class-II with suitable A.C. coupling & ISI marked rubber ring, duly tested inclusive of all taxes related to central, state and municipal, inclusive of excise duty, inspection charges, transpotation charges, transit insuranse, loading/ unloading and stacking at site/ store etc, complete of following sizes:-				
10.25.1	200mm (Length 3mtrs., min.)	Meter	631.00		
10.25.2	250mm (Length 4mtrs., min.)	Meter	809.00		
10.25.3	300mm (Length 4mtrs., min.)	Meter	1116.00		
10.25.4	350mm (Length 4mtrs., min.)	Meter	1438.00		
10.25.5	400mm (Length 4mtrs., min.)	Meter	1857.00		
10.25.6	450mm (Length 4mtrs., min.)	Meter	2172.00		
10.25.7	500mm (Length 4mtrs., min.)	Meter	2728.00		
10.25.8	600mm (Length 4mtrs., min.)	Meter	3883.00		

S.No.	Particulars of Items	Unit	Rate (in Rs)
10.26	Providing and supply of ISI marked Asbestos Cement Pipes conforming to IS 6908:1991 for Sewerage & Drainage Class-III with suitable A.C. coupling & ISI marked rubber ring, duly tested inclusive of all taxes related to central, state and municipal, inclusive of excise duty, inspection charges, transpotation charges, transit insuranse, loading/ unloading and stacking at site/ store etc, complete of following sizes:-		
10.26.1	100mm (Length 3mtrs., min.)	Meter	265.00
10.26.2	150mm (Length 3mtrs., min.)	Meter	362.00
10.26.3	200mm (Length 3mtrs., min.)	Meter	619.00
10.26.4	250mm (Length 4mtrs., min.)	Meter	1029.00
10.26.5	300mm (Length 4mtrs., min.)	Meter	1439.00
10.26.6	350mm (Length 4mtrs., min.)	Meter	1859.00
10.26.7	400mm (Length 4mtrs., min.)	Meter	2426.00
10.26.8	450mm (Length 4mtrs., min.)	Meter	2877.00
10.26.9	500mm (Length 4mtrs., min.)	Meter	3596.00
10.26.10	600mm (Length 4mtrs., min.)	Meter	5040.00

CHAPTER- 11
SALT GLAZED STONEWARE PIPE

1 Salt glazed stone ware pipe shall be as per IS 651 - 2007. SP1 pipe shall be used having crushing strength of 16kN/m duly inspected and tested and having BIS certification mark.

2 Laying of glazed stone ware pipe shall be as per IS 4127.
Laying of pipes and fittings/specials includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

3 Transportation of Pipe
(i) While unloading, pipes shall not be thrown from the truck on hard ground.

(ii) Unloading of pipes on timber skids without a steadying rope and thus allowing the pipes to bump hard against one another should not be allowed.

(iii) In order to avoid damage to the pipes and especially to the spigot end, pipes should not be dragged along concrete and similar pavements with hard surfaces.

4 Testing
(i) The pipe and fittings shall be inspected for defects and be rung with a light hammer preferably while suspended, to detect cracks.

(ii) Hydraulic test, Absorption test, test for resistance to action of acid & test for crushing strength etc. shall be done as per IS 651 and IS 4147.

(iii) Necessary tests of the pipe shall be as per IS 651 and test results shall be kept for record.

(iv) Each section of sewer shall be tested for water tightness preferably between manhole to man hole.

(v) Before commencing the hydraulic test the pipelines shall be filled with water for about a week before commencing the application of pressure to allow for the absorption by pipe wall.

(vi) The sewers are tested by plugging the upper end (with a provision for an air out let) of the pipe with stopcock. The water is filled through a funnel connected at the lower end provided with a plug. After the air has expelled through the air out let, the stop cock is closed and water level in the funnel is noted after 30 minutes and gravity of water required to restore the original water level is determined. The pipe line under pressure is then inspected while the funnel is still in position. There shall be no leaks in the pipe or joints (small sweating on the pipe surface is permitted).

(vii) Any sewer or part there of that does not meet the test shall be emptied and repaired or re-laid as required and tested again.

(viii) The leakage of quantity of water to be supplied to maintain the test pressure during the period of 10 minutes shall not exceed 0.2 litres/mm dia. of pipe per kilometer length per day.

5 Stone ware pipe shall be cement jointed.

6 Back filling of the trench shall not be commenced until the length of pipes there in has been tested and passed.

7 Where pipe are laid under road and pavement subjected to heavy traffic loads the trenches may be covered with R.C.C. slab.

8 Providing and laying cement concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) up to haunches of SW – pipes including bed concrete i/c curing, testing etc complete for 100mm to 300mm dia SW pipe For Type "Concrete up to Haunches " shall be as per *Drawing No. 8 (1)*

9 Providing and laying cement concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) around S.W. pipe including bed concrete 15 cm thick i/c curing, testing etc. complete for 100 mm dia. to 300 mm dia pipe. (For type" Concrete Alround") shall be as per *Drawing No. 8 (2)*

10 Measurement

The length of pipes shall be measured in the running meters nearest to 10mm as laid or fixed, from inside of one manhole to the inside of the other manhole. The length shall be taken, along the centre line of the pipes. Overall fittings, such as bends, junctions, etc., shall not be measured separately. Excavation, refilling, shoring and timbering in trenches and cement concretising where ever required shall be measured separately under relevant item of work.

11 Rates

The rate shall include the cost of material and labour involved in all the operation described above excluding the cost of concrete which shall be paid separately.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 11 -- SALT GLAZED STONEWARE PIPE

S.No.	Particulars of Items	Unit	Rate (in Rs.)
11.1	Providing and Laying and Jointing salt glazed stone ware (S.W.) pipes socket and spigot ISI marked as per IS 651-2007 SP1 class with stiff cement mortar 1:1 including testing of joints etc. complete.		
	100 mm	Per Meter	164.00
	150 mm	Per Meter	277.00
	200 mm	Per Meter	507.00
	250 mm	Per Meter	797.00
	300 mm	Per Meter	1314.00
11.2	Laying and Jointing salt glazed stone ware (S.W.) pipes s&s (socket and spigot) with stiff cement mortar 1:1 including testing of joints complete.		
	100mm	Per Meter	56.00
	150 mm	Per Meter	83.00
	200 mm	Per Meter	106.00
	250 mm	Per Meter	134.00
	300 mm	Per Meter	155.00
11.3	Providing and laying Cement concrete grade M-5 (Nominal Mix) with 40 mm nominal size stone aggregate up to haunches of SW – pipes including bed concrete i/c curing, testing etc complete for 100mm to 300mm dia SW pipe For Type "Concrete up to Haunches ") *Drawing No. 8 (1)*		
	100mm dia pipe	Per Meter	209.00
	150mm dia	Per Meter	339.00
	200mm dia	Per Meter	398.00
	250mm dia	Per Meter	463.00
	300mm dia	Per Meter	535.00
11.4	Providing and laying Cement concrete grade M-5 (Nominal Mix) with 40 mm nominal size stone aggregate around S.W. pipe including bed concrete 15 cm thick i/c curing, testing etc. complete for 100 mm dia. to 300 mm dia pipe. (For type" Concrete Alround") *Drawing No. 8 (2)*		
	100mm dia SW pipe	Per Meter	440.00
	150mm dia	Per Meter	538.00
	200mm dia	Per Meter	627.00
	250mm dia	Per Meter	725.00
	300mm dia	Per Meter	832.00

CHAPTER- 12
Unplasticized Non-Pressure Polyvinyl Chloride (PVC-U) Pipes, DWC Pipes for use in underground sewerage system.

1 Unplasticized polyvinyl chloride (PVC - U) pipes shall be as per IS 15328. & having BIS Certification mark.

2 Laying of Unplasticized polyvinyl chloride (PVC - U) pipe shall be as per IS 7634 (Part-3) : 2003

3 The solvent cement shall conform to the requirements laid down in IS 14182.

4 Integral sockets for either solvent-cement welding or for jointing with elastomeric sealing rings pipes made of uplastticized polyvinyl chloride (PVC-U) of nominal outside diameters ranging from 110mm upto and including 630 mm, intended for underground (buried) non-pressure gravity drain and sewer applications for transportation of soil and waste discharge of domestic origin, surface water (storm water).

5 Dimensions of Pipes :

(i) Mean outside diameter :- The mean outside diameter, outside diameter at any point and tolerances shall be as give in the table 1 of IS 15328 and shall be measured according to the method in IS:12235 (part-1).

(ii) Wall thickness :- The nominal wall thickness, e, shall be in accordance with table 2 of IS 15328. Tolerances in outside diameters shall be those given in IS 4985.

6 Marking :-

The colour of marking shall be different from the basic colour of the pipe. It shall be as

(i) Identification of the source of manufacture.

(ii) Outside diameter,

(iii) Stiffness class, and

(iv) Batch or lot number

7 Joints :

Elastomeric Sealing rings :- Elastomeric sealing rings shall be free from substances (for example, plasticizers) that can have a detrimental effect on the polyvinyl chloride of the pipe or fittings used in conjunction with the pipes.

8 Laying of pipes includes all precautions to guard against possible damaged to the existing structure/pipes lines, cables etc., taking precautions to prevent dirt from entering the pipe ends, lowering and laying pipes and specials in the trenches with specials arrangement such as cranes, tripods with chain pulley block, use of slings of canvas etc. to fit the ends of pipes and fittings/ specials to lift and lower the same. Inspection of pipes and fittings for defects by striking with a light hammer while suspended. Laying of pipes perfectly true in alignment and to gradient etc.

9 Minimum Cover

9.1 A minimum cover of 0.9 m should be ensured when normal truck traffic is expected and 1.8m should ensured when heavy truck traffic is expected.

9.2 Bedding and backfill material must be free from boulders, sharp stones, flints etc.

9.3 Bedding should be prepared by laying on soft soil duly compacting and watering so that thickness of bedding is 100 mm to 150 mm. Please refer *Drawing No. 3*

10 Providing and supply of DWC HDPE pipes class SN8 for non pressure underground sewrage drainage application as per EN: 13476-3 is also given in the given chapter. Pipes and fittings shall be as per relevant BIS/ISO specifications. Material should be used after obtaining third party quality assurance certificate

11 Providing and supply items for zero velocity valves and air cushion valves conforming aIso norms are to be used after obtaining third party quality assurance certificate.

12 Measurement

All measurement should be of the finished work only. The net length of pipes as laid or fixed shall be measured in running meters correct to 10mm. The portion of the pipe inside the joints shall not be included in the length of pipe work. Excavation, refilling, masonry and concrete work wherever required shall be measured and paid for separately under relevant items of work.

13 Rates

The rate shall include the cost of material and labour involved in all the operation described above excluding the cost of concrete which shall be paid separately.

CHAPTER 12 -- Unplasticized Non-Pressure Polyvinyl Chloride (PVC-U) Pipes, DWC Pipes for use in underground sewerage system.

S.No.	Particulars of Items	Unit	Rates (in Rs.)
12.1	Providing, laying and jointing following P.V.C. - U pipes with solvent cement joint for Non-pressure gravity drain and sewer applications including testing of joints, cost of jointing materials etc. complete in all respect. [Conform to IS 15328:2003, solvent cement shall conform to IS 14182].		
	110 mm dia.	Per Meter	185.00
	125 mm dia	Per Meter	249.00
	160 mm dia	Per Meter	343.00
	200 mm dia	Per Meter	606.00
	250 mm dia	Per Meter	991.00
12.2	Providing and supply of DWC HDPE Pipes of renowned duly tested inclusive of all taxes related to central, state and municipal, inclusive of excise duty, inspection charges, transpotation charges, transit insuranse, loading/ unloading and stacking at site/ store etc, complete.		
12.2.1	Internal dia /Outer dia		
12.2.1.1	76 mm / 90 mm	Meter	88.00
12.2.1.2	100 mm / 120 mm	Meter	135.00
12.2.1.3	135 mm / 160 mm	Meter	191.00
12.2.1.4	170 mm / 200 mm	Meter	298.00
12.2.1.5	250 mm / 295 mm	Meter	767.00
12.2.1.6	400 mm / 480 mm	Meter	1524.00
12.2.1.7	600 mm / 715 mm	Meter	3640.00
12.2.1.8	800 mm / 950 mm	Meter	6004.00
12.2.1.9	1000 mm / 1200 mm	Meter	9055.00

CHAPTER- 13
REINFORCED CEMENT CONCRETE PIPES

1 All the pipes, specials, joints to be used in the work shall be as per Indian Standards 458 - 2003 duly inspected and tested and having BIS certification mark

2 Laying and Jointing shall be as per IS 783:1985

3 Transportation :-
(1) Reasonable care shall be exercised in loading, transporting and unloading concrete pipes. Handling shall be such as to avoid impact. Gradual unloading by inclined plane or by chain block is recommended.

4 Tests to be conducted at manufacturing units before taking delivery :-
4.1 All samples for testing purpose shall be selected at random.
4.2 Samples of pipes shall be subjected to following test in accordance with IS : 3597

4.2.1 Hydrostatic test
4.2.2 Three edge bearing test
4.2.3 Permeability test
4.3 At the time manufacture of such pipes compressive strength of the concrete cubes shall be tested as per IS : 516.

5 Laying of Pipe :-
5.1 Pipes shall be lowered in to the trench carefully by mechanical appliances. Under no circumstances shall the pipes be dropped or dumped in to the trench.

5.2 All pipe sections and connections shall be inspected carefully before being laid. Broken or defective pipes or connections shall not be used.

5.3 All lumps, blisters and excess coating materials shall be removed gently from the ends of each pipe and they should be wiped clean and dry before the pipe is laid.

5.4 In the case of pipes with joints to be made with loose collars, the collars shall be slipped on before the next pipe is laid.

5.5 Every precaution shall be taken to prevent foreign materials from entering the pipe when it is being placed in the line

5.6 Pipes shall be laid true to line and grade as specified.

5.7 Sight rails provided at all change of directions or gradients and at distances of about 15 meters. Straight lengths with centre line marked on each horizontal rail which is fixed at true level, shall be used for laying all inverts with the help of proper boning rods.

4.8 Laying of pipes shall always proceed upgrade of a slope. If the pipes have spigot and socket joints, the socket ends shall face upstream. In the case of pipes with joints to be made with loose collars, the collars shall be slipped on before the next pipe is laid.

5.9 The pipe shall be secured in place with approved back fill material or concrete tamped under it except at the joint portion.

5.10 Precautions shall be taken to prevent dirt from entering the joint space.

5.11 At times when pipe laying is not in progress the open ends of pipe shall be closed by a water tight plug or canvas or other means approved by the Engineer in charge.

5.12 Trench shall be kept free from water until the material in the joints has hardened.

5.13 When the pipe is closed and the trench liable to be flooded by rain, care shall be taken to prevent the pipe from damage.

5.14 Walking or working on the completed pipe shall not be permitted until the trench has been back filled to a height of at least 30 cm over the pipe, except as may be necessary in tamping or back filling.

5.15 The cutting of pipe for inserting, fittings or closure pieces shall be done in a neat and workmanlike manner without danger to the pipe so as to leave a smooth surface and at right angles to the axis of the pipe.

5.16 The connection to an existing sewer shall be done through manholes.

5.17 Before connecting a pipe to a manhole, a relieving arch or any other similar protection device should be made in the manhole for the safety of the pipe.

5.18 The pipe when laid should not be subjected to super imposed load beyond what the pipe can safely take up.

6 Pipe Bedding: *(See Drawing No.- 9)*

6.1 In case where the foundation conditions are unsafe such as in the proximity of trees or poles, under existing or proposed tracks, under manholes etc; the pipe shall be encased, in low strength concrete bedding or compacted sand or gravel.

6.2 The following class of pipe beddings are recommended as per CPHEEO manual. The class of bedding depends upon the site condition and loading.

Class A bedding- It may be either concrete cradle or concrete arch depending upon the design.

Class B bedding- It is having a shaped bottom or compacted granular bedding with a carefully compacted back fill.

Class C bedding- It is ordinary bedding having a compacted granular bedding with a lightly compacted back fill.

6.3 The pipe bedding materials must remain firm and not permit displacement of pipes. Where rock or other unyielding foundation material is encountered, bedding shall be according to one of the classes A, B or C but with the following additional requirements.

6.3.1 Class A bedding-The hard unyielding material should be excavated down to the bottom of the concrete cradle.
6.3.2 Class B or C bedding- The hard unyielding material should be excavated below the bottom of the pipe and pipe bell to depth of at least 15cm.
6.3.3 The width of trench should be at least 1.25 times the outside dia of pipe and it should be refilled with granular material.

6.4 When the pipe is laid in a trench in rock, hard clay, shale or other hard material, the space below the pipe shall be excavated and replaced with an equalising bed of concrete, sand or compacted earth. In no place the pipe shall be laid directly on such hard material.

7 Jointing : *(See Drawing No.-10)*
7.1 The socket and spigot pipes are laid and jointed with rubber gasket.

7.2 In case of collar jointed pipe, the jointing shall be done with hemp yarn soaked in cement slurry tamped with just sufficient quantity of water to have a consistency of semi dry condition, well packed and thoroughly rammed with caulking tools and then filled with cement mortar 1:2. The joint shall be finished off with a fillet slopping at 45 degrees to the surface of the pipe. The finished joint shall be protected and cured for at least 24 hours. For jointing procedure should be followed as per I.S. 783 – 1985.

8 Testing :- Sampling & testing of pipe shall be done as per IS 458.
8.1 Each section of sewer shall be tested for water tightness preferably between manholes.

8.2 In case of cement mortar joints, the sewer line shall be tested three days after the cement mortar joints have been made.

8.3 The pipe line shall be filled with water for about a week before commencing the application of pressure to allow for the absorption by pipe wall.

8.4 The pipe line shall be tested by plugging the upper end with a provision for an air outlet pipe with stop cock. The water shall be filled through a funnel connected at the lower end provided with a plug. After expelling the air through the air outlet, the stop cock shall be closed and water level in the funnel shall be raised to 2.5 m above the invert at the upper end. Water level in the funnel is noted after 30 minutes and the quantity of water required to restore the original water level in the funnel is determined. The pipe line under pressure is then inspected while funnel is still in position. There shall not be any leaks in the pipe or joints (small sweating on the pipe surface is permitted).

8.5 Any sewer or part thereof that doesn’t meet the test shall be emptied and repaired or re-laid as required and tested again.

8.6 The leakage or quantity of water to be supplied to maintain the test pressure during the period of 10 minutes should not exceed 0.2 liters / mm diameter of pipe per Km. length per day.

8.7 For no+n pressure pipes the leakage should be observed for a period of 24 hours if feasible.

8.8 Ex filtration test for detection of leakage shall be carried out at a time when the ground water table is low.

8.9 Air testing shall be done particularly in large diameter pipes when the required quantity of water is not available for testing. It is done as per procedure given in CPHEEO manual.

9 Back filling of trenches:

9.1 The method of backfilling to be used shall vary with the width of trench, the character of material excavated, the method of excavation and degree of compaction required.

9.2 In open country, it shall be sufficient to mound the trench and after natural settlement return to regrade the areas.

9.3 In developed streets, it shall be compacted to minimize the load.

9.4 Soft material screened free from stones or hard substances shall first be used and hand pressed under and around the pipes to half the height. Similar soft material shall then be put up to a height of 30 cm. above the top of pipe and this will be moistened with water and well rammed. The remaining trench can be filled with hard material, in layers each not exceeding 60 cm. At each stage the filling shall be well rammed, consolidated and completely saturated with water and then only further filling shall be continued.

10 Measurements

All RCC pipes should be measured according to the work actually done and on allowance should be made for any waste in cutting to the exact length required. The measurement for pipes should be in running meter nearest to a cm. of length along the centre line of pipe as actually laid at work site.

11 Rates :

The rate shall include the cost of the material and labour involved in all the operation described in the items.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 13 -- REINFORCED CEMENT CONCRETE PIPES

SI NO.	Particulars of Items	Unit	Rate (in Rs.)
13.1	Providing, Laying and jointing non-pressure (NP2) RCC socket & spigot pipes with rubber gasket joint including testing of joints. [Conforming to IS ; 458-1988, ISI marked laying as per IS 783:1985)		
	100 mm dia	Per Meter	330.00
	150 mm dia	Per Meter	339.00
	200 mm dia	Per Meter	356.00
	225 mm dia	Per Meter	390.00
	250 mm dia	Per Meter	422.00
	300 mm dia	Per Meter	598.00
	350 mm dia	Per Meter	708.00
	400 mm dia	Per Meter	807.00
	450 mm dia	Per Meter	968.00
	500 mm dia	Per Meter	1048.00
	600 mm dia	Per Meter	1369.00
	700 mm dia	Per Meter	1742.00
	800 mm dia	Per Meter	2420.00
	900 mm dia	Per Meter	2978.00
	1000 mm dia	Per Meter	3477.00
	1100 mm dia	Per Meter	4114.00
	1200 mm dia	Per Meter	5050.00
	1600 mm dia	Per Meter	8522.00
	1800 mm dia	Per Meter	9995.00
13.2	Labour only for Laying and Jointing non-pressure (NP2) RCC socket & spigot pipes with rubber gasket joint including testing of joints. (IS 783:1985)		
	100 mm dia	Per Meter	14.00
	150 mm dia	Per Meter	19.00
	200 mm dia	Per Meter	24.00
	225 mm dia	Per Meter	30.00
	250 mm dia	Per Meter	30.00
	300 mm dia	Per Meter	49.00
	350 mm dia	Per Meter	55.00
	400 mm dia	Per Meter	63.00
	450 mm dia	Per Meter	78.00
	500 mm dia	Per Meter	85.00
	600 mm dia	Per Meter	115.00
	700 mm dia	Per Meter	132.00
	800 mm dia	Per Meter	170.00
	900 mm dia	Per Meter	211.00
	1000 mm dia	Per Meter	213.00
	1100 mm dia	Per Meter	251.00
	1200 mm dia	Per Meter	294.00
	1600 mm dia	Per Meter	383.00
	1800 mm dia	Per Meter	536.00

SI NO.	Particulars of Items	Unit	Rate (in Rs.)
13.3	Providing and Laying non-pressure (NP3) RCC socket & spigot pipes with rubber gasket joint including testing of joints. [Conforming to IS ; 458-1988, ISI marked laying as per IS 783:1985)		
	150 mm dia	Per Meter	376.00
	225 mm dia	Per Meter	484.00
	250 mm dia	Per Meter	558.00
	300 mm dia	Per Meter	827.00
	350 mm dia	Per Meter	1390.00
	400 mm dia	Per Meter	1710.00
	450 mm dia	Per Meter	1936.00
	500 mm dia	Per Meter	2117.00
	600 mm dia	Per Meter	2997.00
	700 mm dia	Per Meter	3516.00
	800 mm dia	Per Meter	4845.00
	900 mm dia	Per Meter	5965.00
	1000 mm dia	Per Meter	6349.00
	1100 mm dia	Per Meter	7617.00
	1200 mm dia	Per Meter	9010.00
	1400 mm dia	Per Meter	10804.00
	1600 mm dia	Per Meter	13050.00
	1800 mm dia	Per Meter	15204.00
13.4	Labour only for Laying and Jointing non-pressure (NP3) RCC socket & spigot pipes with rubber gasket joint including testing of joints. (IS 783:1985)		
	150 mm dia	Per Meter	18.00
	225 mm dia	Per Meter	35.00
	250 mm dia	Per Meter	38.00
	300 mm dia	Per Meter	63.00
	350 mm dia	Per Meter	147.00
	400 mm dia	Per Meter	160.00
	450 mm dia	Per Meter	180.00
	500 mm dia	Per Meter	197.00
	600 mm dia	Per Meter	243.00
	700 mm dia	Per Meter	285.00
	800 mm dia	Per Meter	371.00
	900 mm dia	Per Meter	451.00
	1000 mm dia	Per Meter	477.00
	1100 mm dia	Per Meter	528.00
	1200 mm dia	Per Meter	571.00
	1400 mm dia	Per Meter	596.00
	1600 mm dia	Per Meter	713.00
	1800 mm dia	Per Meter	854.00

SI NO.	Particulars of Items	Unit	Rate (in Rs.)
13.5	Providing, Laying and Jointing non-pressure (NP4) RCC socket & spigot pipes with rubber gasket joint including testing of joints. [Conforming to IS ; 458-1988, ISI marked laying as per IS 783:1985)		
	150 mm dia	Per Meter	502.00
	225 mm dia	Per Meter	490.00
	250 mm dia	Per Meter	671.00
	300 mm dia	Per Meter	958.00
	350 mm dia	Per Meter	1717.00
	400 mm dia	Per Meter	1896.00
	450 mm dia	Per Meter	2248.00
	500 mm dia	Per Meter	2494.00
	600 mm dia	Per Meter	3512.00
	700 mm dia	Per Meter	4227.00
	800 mm dia	Per Meter	5440.00
	900 mm dia	Per Meter	6633.00
	1000 mm dia	Per Meter	7075.00
	1100 mm dia	Per Meter	8380.00
	1200 mm dia	Per Meter	9608.00
	1400 mm dia	Per Meter	12263.00
	1600 mm dia	Per Meter	14625.00
	1800 mm dia	Per Meter	17126.00
13.6	Labour only for Laying and Jointing non-pressure (NP4) RCC socket & spigot pipes with rubber gasket joint including testing of joints. (IS 783:1985)		
	150 mm dia	Per Meter	19.00
	225 mm dia	Per Meter	40.00
	250 mm dia	Per Meter	40.00
	300 mm dia	Per Meter	65.00
	350 mm dia	Per Meter	149.00
	400 mm dia	Per Meter	168.00
	450 mm dia	Per Meter	184.00
	500 mm dia	Per Meter	201.00
	600 mm dia	Per Meter	273.00
	700 mm dia	Per Meter	302.00
	800 mm dia	Per Meter	388.00
	900 mm dia	Per Meter	451.00
	1000 mm dia	Per Meter	485.00
	1100 mm dia	Per Meter	528.00
	1200 mm dia	Per Meter	583.00
	1400 mm dia	Per Meter	607.00
	1600 mm dia	Per Meter	713.00
	1800 mm dia	Per Meter	854.00

CHAPTER- 14
SEWER APPURTENANCES

1 Manhole :-

(i) Manhole are the Important & essential Items in any Sewerage System. Manhole are classified as

(a) Straight-through manholes, (b) Junction Manholes, (c) Side Entrance Manholes, (d) Drop Manholes, (e) Scraper (Service) Type Manhole, (f) Flushing manholes.

(ii) Manholes are the essential ancillary structure in any sewerage system. They are provided for inspection, testing, cleaning, repairing and removal of obstruction from sewer line.

(iii) Manhole should be built at every change of alignment, gradient or diameter, at the head of all sewer and branches and at every junction of two or more sewers on sewer, which is to be cleaned manually or which cannot be entered for cleaning or inspection.

(iv) The Maximum spacing of manholes in the sewer shall be kept as follows: -

Pipe dia (mm)	Max. Spacing (meter)
Upto 900	30
900 to 1500	90 - 150
1500 to 2000	150 - 200
Above 2000	300

A spacing allowance of 100m per 1m dia of sewer is a general rule in case of very large sewers.

(v) Manhole Covers :-

The covers and frames shall conform to IS 1726 for cast iron and IS 12592 for pre-cast concrete covers. The size of manhole covers should be such that there should be clear opening of not less than 560mm diameter for manholes exceeding 0.9m depths.

2 **Inverted siphon**

When it is found necessary to cross obstruction like nallah by sewers line that shall be crossed by Inverted Syphon i.e. by laying the sewer under the obstruction (nallah) and regaining as much elevation as possible after the nallah is passed. As the siphons are depressed below the hydraulic grade line, maintenance of self cleaning velocity at all flows is very important. Two considerations, which govern the profile of a siphon, are provision for hydraulic losses and provisions for cleaning.

3 **Storm Water Inlets :-**

(i) Storm water inlets are device meant to admit the surface run off to the sewers and form a very important part of the systems. Therefore their location and design shall be given careful considerations.

(ii) Storm water inlets may be categorised under three major groups viz. curb inlets, gutter inlets and combination inlets, each being either depressed or flush depending upon their elevation with reference to the pavement surface.

4 **Sewer Ventilators :-**

(i) It is necessary to make provision for the escape of air to take care of the exigencies of full flow and also to keep the sewage as fresh as possible especially in outfall sewers. In case of storm sewers providing ventilating manhole covers serves the purpose.

(ii) Ventilating columns/ shafts shall be provided at an internal of 180m in all mains intercepting and outfall sewers, near the manholes.

(iii) The connections of house drains to the sewer shall be allowed without the use of any intercepting trap and thus permitting ventilation of laterals and branch sewers via. House drains and their ventilating pipes.

5 **Measurement :-**

Manholes shall be enumerated under relevant items. The depth of the manhole shall be reckoned from the top level of C.I. cover to the invert level of channel. The depth shall be measured correct to 10mm. The extra depth shall be measured and paid as extra over the specified depth.

6 **Rates :-**

The rate shall include the cast of the material and labour involved in all the operation described in the items.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 14 - SEWER APPURTENANCES

S.No.	Particulars of Items	Unit	Rate (in Rs.)
14.1	Providing and fixing SW gully trap complete with CI grating, Brick masonry chamber in cement mortar 1:4 (1 cement : 4 fine sand) water tight CI cover with frame of 30x30cm size including necessary Excavation, cement concrete grade M-5 (Nominal Mix) with stone aggregate 40mm nominal size, fixing CI cover with frame in Cement concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size, 12 mm thick cement plaster 1:2 (1 cement:2 coarse sand) finished with a floating coat of neat cement complete.		
14.1.1	100x100mm size "P" Gully Trap Chamber	Each	1369.00
14.1.2	125x100mm size "p", "Q" or "S" type Gully trap chamber	Each	1421.00
14.1.3	180x150mm size "P" or "S" type	Each	1493.00
14.2	Constructing Brick masonry manhole in cement mortar 1:4 (1cement:4 fine sand) RCC top slab Cement Concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size, foundation in cement concrete grade M-7.5 (Nominal Mix) with stone aggregate 40mm nominal size, inside plastering 12 mm thick with cement mortar 1:3 (1 cement:3 coarse sand) finished with a floating coat of neat cement and making channels in Cement Concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size including finishing the channel to shape, curing etc. with CI cover with frame etc.		
14.2.1	Man hole with above specifications having inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg):	Each	7290.00
14.2.2	Man hole with above specifications having inside size 90x80 cm and 60 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg):	Each	8028.00
14.2.3	Man hole with above specifications having inside size 120x90 cm and 90 cm deep including C.I. cover with frame (medium duty) 500 mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg):	Each	16145.00
14.2.4	Man hole with above specifications having inside size 120x90 cm and 90 cm deep including C.I. cover with frame (heavy duty) 560 mm internal diameter, total weight of cover and frame to be not less than 208 kg (weight of cover 108 kg and weight of frame 100 kg)	Each	20391.00
14.2.5	Man hole for property connection (House connection) in narrow lanes.		
14.2.5.1	Man hole with above specifications having inside size 900x450mm and 900mm deep including Pre Cast RCC Man hole Cover (Heavy Duty) 500mm dia having 100mm thickness conforming to IS : 12592 - 2002 complete. (See Drawing No.-24)	Each	6557.00
14.2.5.2	Man hole with above specifications having inside size 600x450mm and 900mm deep including Pre Cast RCC Man hole Cover (Heavy Duty) 500mm dia having 100mm thickness conforming to IS : 12592 - 2002 complete. (See Drawing No.-25)	Each	4818.00
14.3	Extra for depth of man holes given at item 14.2		

S.No.	Particulars of Items	Unit	Rate (in Rs.)
14.3.1	90x80cm size manhole	per meter	4878.00
14.3.2	120x90cm size manhole over item.	per meter	5836.00
14.4	Construction of circular type of manhole 1500 mm internal dia. at bottom, 560 mm dia at top, total depth of manhole 2650mm in brick masonry with 1:5 cement mortar (1 cement : 5 fine sand), 12 mm thick Cement plaster 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement. 30 cm thick foundation in Cement concrete grade M-7.5 (Nominal Mix) with stone aggregate 40 mm nominal size, RCC Cement Concrete grade M-20 (Nominal Mix) with 20mm Nominal size on top slab and making channel in cement concrete grade M-15 (Nominal Mix) with stone aggregate 20 mm nominal size neatly finished, curing fixing of ISI marked reinforced concrete heavy duty cover (including transportation of cover) complete. as per standard design *(Drawing No. 15)*	Each	19683.00
14.4.1	Construction of circular type of manhole 1500 mm internal dia; depth 2650 mm as per item 11.4 but fitted with circular type C.I. manhole cover with frame having 116 kg weight (58 Kg cover + 58 Kg frame) in place of RCC heavy duty cover.	Each	24260.00
14.4.2	Extra for increasing depth of manhole mentioned at Item No. 14.4 from depth 2.65m to 4.25 m	per meter	8758.00
14.4.3	Extra for increasing depth of manhole mentioned at Item No. 14.4 from depth 4.25m to 9.75m	per meter	14979.00
14.5	Construction of circular type manhole 900 mm internal dia. at bottom, 560 mm dia at top total depth of manhole 900 mm in brick masonry with 1:5 cement mortar (1 cement : 5 fine sand), 12 mm thick Cement plaster 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement. 22.5 cm foundation in cement concrete grade M-10 (Nominal Mix) with stone aggregate 40mm nominal size, RCC top slab cement concrete M-20 (Nominal Mix) with stone aggregate 20mm nominal size and making channel in cement concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size neatly finished, curing fixing of ISI marked heavy duty SFRC cover etc. complete as per standard design.	Each	6913.00
14.5.1	Extra for increasing depth of manhole mentioned at Item No. 14.5 from depth of 900mm to 1650mm.	Meter	3934.00
14.6	Providing MS/CI foot rests and fixing in manhole with CC blocks of Cement Concrete grade M-10 (Nominal Mix) with stone aggregate 20 mm nominal size of size 20x20x10cm		
14.6.1	With 20mm square bar/ casting one foot rest (average weight of 1 foot rest 2.35kg)	Kg.	66.00
14.6.2	With 20mm round bar foot rest (average weight of 1 foot rest 1.85kg)	Kg.	71.00

S.No.	Particulars of Items	Unit	Rate (in Rs.)
14.7	Making connection of drain or sewer line with existing service lines manhole including breaking into and making good the walls, floors etc. with cement concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size plastered with Cement Mortar 1:3 (1 Cement : 3 coarse sand) finished with a floating coat of neat cement and making necessary channels etc. complete.		
14.7.1	For 100 to 150 mm dia pipes	Each	321.00
14.7.2	For 250 to 300 mm dia pipes	Each	362.00
14.7.3	For 350 to 450 mm dia pipes	Each	493.00
14.8	Providing SCI drop connection with SCI drop pipe and bend encased alround with Cement concrete grade M-5 (Nominal Mix) with stone aggregate 40mm nominal size including cutting holes and making good with brick work in cement mortar 1:5(1 cement:5 fine sand) plastered with cement mortar 1:3 (1 cement: 3 coarse sand) on inside walls including lead caulked joints and jointing SW pipes & SCI pipes with stiff cement mortar 1:1(1 cement: 1sand) including making required channel etc. complete.		
	(i) For 100 mm drop connection	each	3801.00
	(ii) For 150mm dia drop connection	each	4510.00
	(iii) Extra rate for depths of drop more than 60 cm		
	(a) 100mm dia Sand cast iron drop connection	Per meter	1264.00
	(b) 150mm dia Sand cast iron drop connection	Per meter	1830.00
14.9	Road Gully Chambers :- Construction of Brick masonry road gully chambers with brick work in cement mortar 1:5 (1 cement: 5 fine sand) and 12mm plaster 1:3 including foundation in cement concrete grade M-5 (Nominal Mix) with stone aggregate 40mm nominal size		
14.9.1	Chamber 45x45x77.5cm with vertical grating 450x100 mm size	each	3745.00
14.9.2	Chamber 50x45x60cm with 500x450mm CI Horizontal grating with frame.	each	3274.00
14.9.3	Chamber 110 x 50 x 77.5cm with 500x450 mm horizontal and 450x100 mm vertical gratings both.	each	6149.00
14.9.4	Providing & fixing of ISI marked pre cast reinforced cement concrete manhole cover including frame and transporting at site, cost of all material etc.		
	1. 560 mm dia heavy duty	Each	1300.00
	2. 600 mm dia heavy duty	Each	1662.00
	3. 560 mm dia extra heavy duty	Each	1740.00
	4 450x900 mm dia extra heavy duty	Each	3384.00
	5. 600 mm x 900 mm extra heavy duty rectangular	Each	3392.00

S.No.	Particulars of Items	Unit	Rate (in Rs.)
14.10	Construction of circular type manhole 1200mm internal dia at bottom, 560mm dia at top in brick masonry class designation 40 with 1:4 cement mortar 1:4 (1 cement : 4 Coarse sand) 1680m depth, 12mm thick cement plaster 1:3 cement plaster (1 cement : 3 Coarse sand) finished with a floating coat of neat cement. 30cm thick foundation in cement concrete grade M-10 (Nominal Mix) with stone aggregate 40mm nominal size, RCC grade M-20 (Nominal Mix) with stone aggregate M-20 nominal size on top slab and making channel in cement concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size neatly finished, curing and fixing of SFRC cover and frame (heavy duty HD-20) 560mm internal dia conforming to IS 12592.	Each	13215.00
14.11	Extra for increasing depth of manhole mentioned at Item No. 14.10 from 1680 mm to 2290 mm with modular brick class designation 40.	Meter	5400.00
14.12	Supplying and fixing C.I. cover without frame for manholes :		
14.12.1	455x610 mm rectangular C.I. cover (light duty) the weight of the cover to be not less than 23 kg.	Each	1477.00
14.12.2	500 mm diameter C.I. cover (medium duty) the weight of the cover to be not less than 58 kg.	Each	3645.00
14.12.3	560 mm diameter C.I, cover (heavy duty) the weight of the cover to be not less than 108 kg.	Each	5942.00
14.13	Replacement of M.S. foot rests in manholes including dismantling concrete blocks and fixing with 20x20x10 cm cement concrete blocks cement concrete grade M-10 (Nominal Mix) with stone aggregate 20mm nominal size.		
14.13.1	With 20x20 mm square bar	Each	169.00
14.13.2	With 20 mm diameter round bar	Each	171.00
14.14	Dismantling of manhole including R.C.C. top slab, C.I. cover with frame including stacking of useful materials near the site and disposal of unserviceable materials into municipal dumps/within 50 m lead :		
14.14.1	Rectangular manhole 90x80 cm and 45 cm deep	Each	555.00
14.14.2	Rectangular manhole 120x90 cm and 90 cm deep	Each	974.00
14.14.3	Rectangular arch type manhole 140x90cm and 2.45m deep.	Each	2075.00
14.14.4	Circular manhole 1.22 m diameter and 1.68 m deep.	Each	1181.00
14.15	Extra for depth of manholes dismantled:		
14.15.1	Rectangular manhole 90x80 cm and 45 cm deep	Meter	400.00
14.15.2	Rectangular manhole 120x90 cm and 90 cm deep	Meter	476.00
14.15.3	Rectangular arch type manhole 140x90 cm and 2.45m deep (upto 4.25 m depth).	Meter	693.00
14.15.4	Circular manhole 122 cm diameter and 1.68 m deep (upto 2.29 m depth)	Meter	824.00
14.16	Cleaning of sewers		

S.No.	Particulars of Items	Unit	Rate (in Rs.)
14.16.1	Cleaning of sewers by means of manual labour using hand tools like pick axes, manhole guards, tripod stands, danger flags, lanterns, batteries, safety lamps, lead acetate paper, silt drums, ropes, iron hooks, hand carts, plunger rods (cleaning rods), observation rods, shovels etc. Qty of silt, debris etc. to be removed from manholes chambers after cleaning of sewers and manholes.		
(A)	Not exceeding a total length of 50 meters from manhole or cleaning eyes to the next manhole		
	100 mm	50 Mtr.	95.00
	150 mm	50 Mtr.	133.00
	200 mm	50 Mtr.	205.00
	300 mm	50 Mtr.	319.00
(B)	Exceeding 50 meters but not exceeding 100 meters		
	100 mm	50 Mrt to 100 Mtr.	191.00
	150 mm	50 Mrt to 100 Mtr.	265.00
	200 mm	50 Mrt to 100 Mtr.	410.00
	300 mm	50 Mrt to 100 Mtr.	645.00
14.16.2	Pumping out to removed the sewers blockage my using suitable pump sets operated by generators, whole assembly mounted on four wheel trailer/ pickup van.	Per Hour	65.00
14.16.3	Cleaning of sewers upto 300mm dia by manila rod and cloth ball/ sewer rod/ Roding machine with flexible sewer rods etc. including removal of blockage of manhole complete.	Each	410.00
14.16.4	Cleaning of sewers (all sizes) by jetting machine/ sewer cleaning machine equipped with air and water jetting by removal of blockage of manhole and cleaning sewers manhole to manhole by jetting complete.	Day	2149.00
14.16.5	Removal of debris/malwa collected in manholes by manual means/ mechanical means complete.	Cum	161.00

CHAPTER- 15
REQUIRED CIVIL WORKS FOR WATER SUPPLY & SEWERAGE WORKS

1 Earth work shall be done as per IS 1200 (Part-1) : 1992

2 Excavation shall be done as per safety codes IS 3764 : 1992

3 Concrete work shall be done as per IS 456 : 2000

4 Cement shall be used as IS standard given below :-

4.1 When the strength of concrete required is upto M-20, then O.P.C. conforming to IS 269-1989 or P.P.C. confirming to IS : 1498-1976 may be used.

4.2 When the strength of concrete required is more than M-20 but upto M-30, then O.P.C. conforming to IS : 8112 - 1989 shall be used.

4.3 Pozzolona cement is now being widely produced all over country. This may be used in structures contact with water as per I.S. code. In specific cases requiring higher grade of strength, use of Ordinary Portland Cement (OPC) should invariably be ensured.

4.4 For prestressed concrete works if the strength of concrete required is more than M-30, then O.P.C. conforming to IS : 12269-1987 shall be used.

5 Steel shall be used as per IS standard given below :-

5.1 Mild steel and medium tensile steel bars shall conform to IS :432 (Part- I),
5.2 Hot rolled deformed bars shall conform to IS : 1139,
5.3 Cold Twisted bars shall conform to IS : 1786,
5.4 Hard drawn steel wire fabric shall conform to IS : 1566 and
5.5 Rolled steel made from structural steel shall conform to IS : 226.

6 Sand

6.1 Sand is the fine aggregate which is obtained either from natural source like river bank or from pits etc. Sand can also be produce by crushing stone are gravels. It should pass through 4.75 mm IS sieve.

6.2 Sand should be free from clay, dust or silt. The permissible limit for the same is 5% by weight.

6.3 Sand should be free from organic impurities as determined is in accordance with IS : 2386 (Part-II)

6.4 For plaster sand used should conform to IS : 1542/1960

6.5 For masonry work sand used should conform to is : 166/1965

7 Coarse aggregate

7.1 Coarse aggregate should retain on 4.75 mm IS sieve.
7.2 (a) Uncrushed gravel/Stone obtain from natural sources,
7.3 (b) crushed gravel/stone obtain from crushing of gravel/hard stone or

7.4 (c) partially crushed gravel/stone by mixing of the above two (a & b) is called coarse aggregate.

7.5 It should not contain coal, lignite, pyrites mica , shale, clay, soft fragments, and other organic impurities

7.6 It should not contain any material which is liable to caused detrimental effect on steel reinforcement.

7.7 The maximum quantity of deleterious material should not exceed the limits as shown in table 1 of IS: 383/1970, when tested in accordance with IS:2386/1963.

7.8 The crushing value of the aggregate should not exceed 45 % when determined in accordance with the IS: 2386 (Part-IV)-1963 for concrete other than wearing surfaces and 30 % for concrete for wearing surfaces such as runways, roads and pavement.

7.9 The coarse aggregate shall satisfy the following requirement of grading.

I.S. Sieve	Percentage by Weight Passing the sieve		
	40 mm	**20 mm**	**12.5 mm**
63 mm	100	-----	--
40 mm	95-100	100	--
20 mm	30-70	95-100	100
12.5 mm	---	---	90-100
10 mm	10-35	25-55	40-85

8 Bricks

8.1 Common burnt clay bricks should be as per IS:1077 classes of common burnt bricks

8.2 Class: Classes of Common Burnt Clay Bricks as under :

Class Designation	Average Compressive strength not less than	
	N/mm^2	Kgf/cm^2 (aprox)
25	25.0	250
20	20..0	200

9 Mortar

9.1 The mortar mixing shall preferably be done in mechanical mixer operated manually or by power. Hand mixing can be restored to as long as uniform density of the mix and its strength are assured subject to prior approval of Engineer-in-charge.

9.2 Hand mixing operation, if permitted, carried out on clean water tight platform when cement and sand shall be first mixed dry in required proportion several times till the mixture is of uniform. Minimum quantity of water shall be added to bring the mortar to the consistency of stiff paste.

9.3 Mortar shall be mixed only in such quantity as required for immediate use. The mortar normally be considered to use within 30 minutes. Mortar remains unused after 30 minutes shall be rejected and removed from site.

10 Plaster

Plastering shall be done where shown on as per drawing. Plastering shall be started from top and worked down. Wooden screeds 75mm wide and of the thickness of the plaster shall be fixed vertically 2.5 to 4 meter. apart to act as gauge and guide in applying plaster. The mortar shall be laid on the wall between the screeds using the plasters float and pressing the mortar so that packed joints are properly filled. The plaster shall there be finished off with a wooden straight edge reaching across the screeds. The straight edge shall be worked on the screeds with small upward and side ways motion 50mm to 75mm at a time. Finally, the surface shall be finished off with a plasters wooden float. Metal floats shall not be used.

Curing shall be commenced as soon as mortar used for finishing has hardened sufficiently and not to be damaged during curing. It shall be kept wet for a period of at least 7 days.

11 Form work :-

11.1 Form work shall include all temporary form for forming concrete of shape with all props, staging, centering required for support.

11.2 All material shall confirm to relevant I.S. specifications

11.3 Form work shall be constructed with metal or timber, for metal all bolts should be counter sunk.

11.4 The form work should be robust and strong and joint shall be leak proof. Staging must have cross bracing and diagonal bracing in both direction.

11.5 The rates include provision of gradient in form work for terrace roof and gradient shall be provided necessarily for water drained out quickly and effectively. Concrete shall not be freely dropped into place from height exceeding 1.50 meter. And it shall be compacted in its final position within 30 minutes of its discharge from mixer. It shall be compacted thoroughly by vibration or other means during placing so as to produce a dense homogenous void free mass having required surface finish.

11.6 No plaster is permitted on the concrete surface. Bottom and side surfaces shall give a uniform in textured smooth surface and good appearance. Concrete having rough non-uniform texture and honey combing in more than 5% area shall be rejected and payment for the form work shall not be made.

12 Measurements :-

Measurements shall be taken for complete finished item as per details given in specification.

13 Rates :-

Rates include labour, material equipment and machineries required for completion of items.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 15 - REQUIRED CIVIL WORKS FOR WATER SUPPLY & SEWERAGE WORKS

S.No.	Particulars of Items	Unit	Rates (in Rs.)
15.1	Earth work in Excavation for pipe trench in all kinds of soil and WBM in areas including dressing, watering and ramming and disposal of Excavated earth lead upto 50 meters and lift upto 1.5m, disposal earth to be leveled, neatly dressed.	Per cum	129.10
15.2	For muddy area	Per cum	155.00
15.3	Earth work in excavation for pipe trench in all kinds of rocks in areas including dressing, stacking of useful material and disposal of unserviceable one upto 50 m lead and lift upto 1.5 m.		
	(a) Soft rock with or without blasting or bituminous pavement.	Per cum	206.00
	(b) Hard rock requiring blasting.	Per cum	342.00
	(c) Hard rock requiring chiseling / where blasting is prohibited.	Per cum	408.00
15.4	Extra for every additional lift of 1.5m or part there of over item 18.1 to 18.3.	Per cum	5.00
15.5	Extra for every additional lead up to 50 m or part thereof over item 18.1 to 18.3.	Per cum	49.00
15.6	Earth work in Excavation of Foundation for Structures as per drawing and technical specification including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material etc. and as per relevant clause of section 300 & 2100		
	Ordinary soil		
	1) upto 3 m depth	Per cum	73.00
	2) 3.0 m to 6.0 m depth	Per cum	94.00
15.7	Pumping out water caused by springs, tides or river seepage, broken water mains or drains or well or the like.	Per KL	51.00
15.8	(a) Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20cm. in depth including consolidation of each layer by ramming watering, lead up to 50m and lift up to 1.5m in all kinds of soils	Per cum	29.00
	(b) Filling available excavated earth in trenches, lead up to 50m and lift up to 1.5m in all kind of soil excluding watering and ramming.	Per Cum	19.00
15.9	Filling with moorum for pipe bedding or over the pipe including supply of moorum	Per cum	625.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)
15.10.1	Demolishing stone rubble masonry manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge:	Cum	166.00
15.10.2	Demolishing stone rubble masonry in cement mortar in any mix including stacking of serviceable material and disposal of unserviceable material with in 50 meter lead.	Cum	401.00
15.11	Demolishing stone rubble masonry in lime mortar including stacking of serviceable material and disposal of unserviceable material with in 50 meter lead	Cum	226.00
15.12	Demolishing stone rubble masonry in cement mortar in any mix including stacking of serviceable material and disposal of unserviceable material with in 50 meter lead.	Cum	430.00
15.13	(a) Dismantling stone slab paving of any thickness in cement or lime mortar of any ratio including all leads and lifts.	Sqm	45.00
	(b) Dismantling kharanja of any thickness in cement mortar of any mix.	Sqm	38.00
15.14	(a) Fixing in cement mortar 1:6 (1 cement : 6 sand) stone slab 30 mm thick.	Sqm	586.00
	(b) Labour only for fixing of stone set paving of any thickness.	Sqm	82.00
	(c) Fixing in C.M. 1:6 Kharanja of any thickness	Sqm.	296.00
	(d) Labour only for fixing of stone in Kharanja.	Sqm	82.00
15.15	Cutting of Water bound macadam road and making good the same including supply of extra quantities of materials i.e. aggregate, moorum screening and labour required.	Cum	693.00
15.16	Cutting of bituminous road portion and making good the same including supply of extra quantities of materials i.e. aggregate, moorum screening and labour required.	Cum	1495.00
15.16.1	Demolishing C.C./R.C.C. work by mechanical means including stacking of serviceable material and disposal of unserviceable material with in 50m, lead.	Cum	703.00
15.17	Providing and laying mechanically mixed cement concrete with crushed stone aggregate excluding centering and shuttering (with 40mm nominal size graded stone aggregate)		
(a)	In foundation and plinth		
i	M-5	cum	2971.00
ii	M-7.5	cum	3212.00
iii	M-10	cum	3529.00
iv	M-15	cum	4094.00
(b)	(b) In walls & Superstructure up to 4 meter. height above plinth (with 40mm nominal graded metal)		

S.No.	Particulars of Items	Unit	Rates (in Rs.)
i.	M-10	cum	3528.00
ii.	M-15	cum	4261.00
15.18	Providing & laying mechanically mixed cement concrete 20mm maximum size graded crushed stone including cost of centering & shuttering.		
(a)	In Plinth & foundation		
i	M-10	cum	3595.00
ii	M-15	cum	4321.00
iii	M-20	cum	4778.00
(b)	In walls and superstructure up to 4 meter. height above plinth (with 20mm nominal graded metal) excluding the cost of centering shuttering.		
i	M-10 (Nominal mix)	cum	3666.00
ii	M-15 (Nominal mix)	Cum	4225.00
iii	M-20 (Nominal Mix)	Cum	4665.00
iv	M-25 (design mix)	cum	5246.00
(c)	Providing plain cement concrete M-10 nominal mix with 40mm maximum size stone aggregate in foundation (excluding form work) as per relevant I.S. Standard.		
(i)	Base concrete for coloums	cum	3970.00
15.19	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete work including concrete laying, cost of centering, shuttering, finishing and including Admixtures in recommended proportions as per IS 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. M-20 grade design mix reinforced cement concrete by using 405 kg. of cement per cum of concrete. All work up to plinth level excluding the cost of reinforcement.		
(i)	RCC Grade M20	cum	5387.00
(ii)	RCC Grade M30	cum	5464.00
(iii)	RCC Grade M35	cum	5492.00
(iv)	RCC Grade M25	cum	5410.00
(v)	PCC Grade M25	cum	5346.00
(vi)	PCC Grade M30	cum	5373.00
15.20	Providing and laying Plain/ Reinforcement cement concrete in sub structure or complete section including cost of form work staging/bracing and shuttering complete as per drawing and technical specification and as per relevant I.S. Standard (Height above average ground level).		
(i)	PCC Grade M-20		
a)	Height upto 5m	cum	5054.00
b)	Height beyond 5m and upto 10m	cum	5157.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)
(ii)	PCC Grade M-25		
a)	Height upto 5m	cum	5668.00
b)	Height beyond 5m and upto 10m	cum	5784.00
c)	Height above 10m	cum	5957.00
(iii)	PCC Grade M30		
a)	Height upto 5m	cum	5738.00
b)	Height beyond 5m and upto 10m	cum	5842.00
c)	Height above 10m	cum	5999.00
(iv)	RCC Grade M20		
a)	Height upto 5m	cum	5698.00
b)	Height beyond 5m and upto 10m	cum	5802.00
c)	Height above 10m	cum	5957.00
(v)	RCC Grade M25		
a)	Height upto 5m	cum	5735.00
b)	Height beyond 5m and upto 10m	cum	5840.00
c)	Height above 10m	cum	5996.00
(vi)	RCC Grade M30		
a)	Height upto 5m	cum	5807.00
b)	Height beyond 5m and upto 10m	cum	5913.00
c)	Height above 10m	cum	6071.00
(vii)	RCC Grade M35		
a)	Height upto 5m	cum	5865.00
b)	Height beyond 5m and upto 10m	cum	5972.00
c)	Height above 10m	cum	6132.00
15.21	Providing and Laying plain/ Reinforcement cement concrete in super structure ring beam Dom, walls, beam etc section including cost of form work staging/bracing and shuttering complete as per drawing and technical specification and as per relevant clauses of I.S. Standard.		
(A)	RCC Grade M20		
a)	Height upto 5m	cum	6515.00
b)	Height beyond 5m and upto 10m	cum	6776.00
c)	Height above 10m	cum	7036.00
B	RCC Grade M25		
a)	Height upto 5m	cum	6634.00
b)	Height beyond 5m and upto 10m	cum	6899.00
c)	Height above 10m	cum	7164.00
C	RCC Grade M 30		
a)	Height upto 5m	cum	6781.00
b)	Height beyond 5m and upto 10m	cum	7052.00
c)	Height above 10m	cum	7324.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)
15.22	STEEL		
A	Providing and placing in position cold twisted or un-coated HYSD steel bar and hot rolled deformed steel reinforcement for R.C.C. work i/c cutting, bending, binding etc. complete i/c cost of binding wire and wastage.		
	Sub structure	Kg	55.00
	Super structure	Kg	55.00
B	Steel work in single section i/c cutting, hoisting, fixing in position and applying a primary coat of lead paint. In R.S. Joint in flat iron/angle/ tee/channel/ square/round bar.	Kg	59.00
C	Steel work in riveted /bolted in built-up section truss and frame i/c cutting/hoisting/fixing in position and applying a priming coat of paint. In R.S. Joint in flat iron /angle /tee/ channel / square / round bar.	Kg	61.00
D	Steel work is welded in built-up section tee & frame i/c cutting hoisting/fixing and painting with red lead paint. (i) In R.S. Joint in flat iron /angle / channel / bar.	Kg	67.00
E	Supplying ,Fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specification and relevant clauses of section	Kg	55.00
F	Supplying ,Fitting and placing un-coated HYSD bar reinforcement in Sub - structure complete as per drawing and technical specification and relevant clauses of section 1600	Kg	54.00
G	Supplying ,Fitting and placing un-coated HYSD bar reinforcement in Super - structure complete as per drawing and technical specification and relevant clauses of section 1600	Kg	55.00
15.23	CEMENT MORTAR		
A	Cement Mortar 1:3 (1 Cement : 3 sand)	Cum	4230.00
B	Cement Mortar 1:4 (1 Cement : 4 sand)	Cum	3520.00
C	Cement Mortar 1:5 (1 Cement : 5 sand)	Cum	3138.00
D	Cement Mortar 1:6 (1 Cement : 6 sand)	Cum	2810.00
E	Cement Mortar 1:8 (1 Cement : 8 sand)	Cum	2532.00
15.24	BRICK WORK		
a	Brick work with well burnt chimney bricks having crushing strength not less than 25 kg/cm^2 and water absorption not more than 25% in foundation & plinth.		
i	In Cement Mortar 1:3	Cum	3816.00
ii	In Cement Mortar 1:4	Cum	3610.00
iii	In Cement Mortar 1:5	Cum	3499.00
iv	In Cement Mortar 1:6	Cum	3403.00

S.No.	Particulars of Items	Unit	Rates (in Rs.)
b	Brick work with well burnt chimney bricks having crushing strength not less than 25 kg/cm2 and water absorption not more than 20% above plinth level including cost of form work.		
i	In Cement Mortar 1:3	Cum	3854.00
ii	In Cement Mortar 1:4	Cum	3649.00
iii	In Cement Mortar 1:5	Cum	4387.00
iv	In Cement Mortar 1:6	Cum	4292.00
C	Extra rate for Brick work with well burnt chimney bricks having crushing strength not less than 25 kg/cm² and water absorption not more than 20% above four meter height.	Cum	81.00
D	Half brick work with well burnt chimney bricks crushing strength not less than 40kg/cm² and water absorption not more than 20% is superstructure including cost of form work upto floor 2 level.		
i	Cement mortar 1:4	Sqm	559.00
ii	Cement mortar 1:6	Sqm	540.00
E	Brick work with open bhatta bricks having crushing strength not less than 20 Kg/ cm2 and water absorption not more than 25 % in foundation of plinth. In cement mortar 1:8	Cum	2951.00
15.25	PLASTER		
a	12mm thick cement plaster in single coat including finishing even, smooth and curing including cost of form work complete.		
i	1:3(Cement 1: Sand 3)	Sqm	121.00
ii	1:4(Cement 1: Sand 4)	Sqm	109.00
iii	1:5(Cement 1: Sand 5)	Sqm	102.00
iv	1:6(Cement 1: Sand 6)	Sqm	95.00
b	15mm thick cement plaster in single coat finished even, smooth and curing including cost of form work complete.		
i	in CM 1:3	Sqm	141.00
ii	in CM 1:4	Sqm	127.00
iii	in CM 1:5	Sqm	120.00
iv	in CM 1:6	Sqm	113.00
c	Neat cement punning	Sqm	24.00
d	18mm thick cement plaster in 2 coats under layer 12mm CM 1:5 (1 cement:5 coarse sand) and top layer 6mm thick cement plaster 1:3 (1 cement:3 fine sand) finished even, smooth and curing including cost of form work complete.	Sqm	160.00
15.26	Excavation of DUG-WELL/SEPTIC TANK ETC.		
15.26.1	Excavation in soft or ordinary soil including 50 m lead and 1.5 m lift with dressing. (As per Item No.- 15.1)	Cum	129.10

S.No.	Particulars of Items	Unit	Rates (in Rs.)
15.26.2	Excavation in hard soil/moorum - moorum mixed with boulder etc. including 50 m lead and 1.5 m lift with dressing. (As per Item No.- 15.3.1)	Cum	206.00
15.26.3	Add Extra in items 15.26.1 to 15.26.2 above for depth.		
	(a) Beyond 1.5 m to 3 m	Cum	24.00
	(b) Beyond 3 m to 4.5 m	cum	49.00
	(c) Beyond 4.5 m to 6 m	Cum	73.00
	(d) Beyond 6 m to 7.5 m	cum	98.00
	(e) Beyond 7.5 to 9 m	cum	122.00
	(f) Beyond 9 m to 10.5 m	cum	146.00
	(g) Beyond 10.5 m to 12 m	cum	171.00
	(h) Beyond 12 m to 13.5 m	cum	195.00
	(i) Beyond 13.5 m to 15 m	cum	220.00
	(j) Beyond 15 m to 16.5 m	cum	244.00
	(k) Beyond 16.5 m to 18 m	cum	268.00
	(l) Beyond 18 m to 19.5 m	cum	293.00
	(m) Beyond 19.5 m to 21 m	cum	317.00
	(n) Beyond 21 m to 22.5 m	cum	341.00
	(o) Beyond 22.5 m to 24 m	cum	366.00
15.26.4	Excavation in muddya area including 50 m lead and 1.5 m lift with dressing. (As per Item No.- 15.2)	cum	155.00
15.26.5	Excavation in hard rock including 50 m lead and 1.5 m lift-		
	(a) Blasting permitted	cum	342.00
	(b) Blasting prohibited (i.e. wedged and chiselled)	cum	408.00
15.26.6	Add extra in items Nos. 15.26.4 to 15.26.5 above for depth.		
	(a) Beyond 1.5 m to 3 m	cum	39.00
	(b) Beyond 3 m to 4.5 m	cum	77.00
	(c) Beyond 4.5 m to 6 m	cum	116.00
	(d) Beyond 6 m to 7.5 m	cum	154.00
	(e) Beyond 7.5 to 9 m	cum	193.00
	(f) Beyond 9 m to 10.5 m	cum	232.00
	(g) Beyond 10.5 m to 12 m	cum	270.00
	(h) Beyond 12 m to 13.5 m	cum	309.00
	(i) Beyond 13.5 m to 15 m	cum	348.00
	(j) Beyond 15 m to 16.5 m	cum	386.00
	(k) Beyond 16.5 m to 18 m	cum	425.00
	(l) Beyond 18 m to 19.5 m	cum	463.00
	(m) Beyond 19.5 m to 21 m	cum	502.00
	(n) Beyond 21 m to 22.5 m	cum	541.00
	(o) Beyond 22.5 m to 24 m	cum	579.00
	(p) Beyond 24 m to 25.5 m	cum	618.00
	(q) Beyond 25.5 m to 27 m	cum	657.00
	® Beyond 27 m to 28.5 m	cum	695.00
	(s) Beyond 28.5 m to 30 m	cum	734.00
15.27	CLEANING OF DUG-WELL		

S.No.	Particulars of Items	Unit	Rates (in Rs.)
	Cleaning of open well/step well by removal of refuse materials, vegitable, silt, mud, rubbles, etc excluding pumping of water from well.	cum	49.00
	Extra rate for lifting the material during the cleaning of well for every 1.5m additional depth	Cum	4.00
15.28	CONSTRUCTION OF STOP DAM		
15.28.1	Labour only for fixing in position single steel shutter for stop dam including all handling, cleaning of grooves i.e. removal of foreign materials such as dust, sand, silt etc. including greasing, oiling where ever required , excluding cost of all materials & staking at site. (Over all dimension of shutters to be considered.)	Sqm	55.00
15.28.2	Labour only for removing single steel shutter for stop dam including all handling, unscrewing, oiling where ever required ,excluding cost of all materials & staking at site. (Over all dimension of shutters to be considered.)	Sqm	55.00
15.28.3	Labour only for fixing in position the steel/wooden karri shutters for stop dam excluding filling the puddle earth but including all handling ,cleaning of grooves of foreign materials such as dust, sand, silt etc. including greasing, oiling where ever required ,excluding cost of all materials. (Over all dimension of karri shutters to be considered.)	Sqm	53.00
15.28.4	Labour only for removing the steel/wooden karri shutters for stop dam without removal of puddle earth but including handling , unscrewing ,oiling where ever necessary excluding cost of all materials & stacking at site. (Over all dimension of karri shutters to be considered.)	Sqm	53.00
15.28.5	Detailed Geo referenced topographical mapping and development of graphic database for any selected area using digital state of art total station G.P.S., Automatic levels etc. including transfer of entire area data to computer system in different Geo referenced layer/themes using features of standard software compatible with urban area project system design software package including supply of soft copies and hard copies in appropriate state.	Hect.	143.00
15.28.6	Catchment area survey –		
	(a) Chain and compass survey along ridge line by Departmental Officer	km	1143.00
	(b) Leveling along ridgeline and cross-sections.	km	705.00
15.29	Cutting Kharanja road and making good the same including supply of extra quantities of Kharanja, moorum.	Sqm	703.00

CHAPTER- 16
MISCELLANEOUS

1 The works to be executed in accordance with the General specifications of the Urban Administration & Development Department, relevant IS codes for pipes/specials, jointing materials and laying works.

2 All materials shall conform to relevant ISS.

3 Where cracked pipe or cut piece is required to be used on line to take a tyton ring joint, it is necessary to cut the cracked portion and chamfer the pipe. In a cut piece, only chamfering would be required. These rates have been introduced separately for cutting and chamfering. The rates include requirement of tools and plants, lead and lift etc.

4 During the course of execution, it sometimes becomes necessary to provide a non-standard special to fit into the pipeline. This can be conveniently made out of steel plates. An item to cover such emergency is also provided for in the schedule. Similarly, item to provide a mild steel flange has also been introduced to over the specific requirement during execution.

5 An item for laying and jointing steel pipes, incorporating field welding has also been introduced to cover the special requirements during execution.

6 All pavements, paved foot paths, curbing, gutters, shrubbery, fences, poles, rod or other property and surface structures removed or disturbed as a part of the work shall be restored to a condition equal to that before the work began, furnishing all labour and material incidental thereto. In restoring the pavement sound materials may be reuse. No Permanent pavement shall be restored unless and until, in the opinion of the Engineer in charge the condition of the backfill is such as to properly support the pavement.

7 Pavement and road surface may be removed as a part of the trench excavation and the amount removed shall depend upon the width of trench specified for the installation of the pipe and the width and length of the pavement area required to be removed for laying pipes. The width of pavement removal along the normal trench for the installation of the pipe shall not exceed the width of the trench specified by more then 15 cm on each side of the trench. Wherever in the opinion of the Engineer in charge existing conditions make it necessary or advisable to remove additional pavement, it shall be removed as directed by the Engineer in charge.

8 All construction material, and all tools and temporary structures shall be removed form the site as directed by the Engineer in charge. All dirt, rubbish and excess earth form the excavation shall be taken off to a specified dumping site as directed by Engineer in Charge and the construction site shall be kept clean to the satisfaction of the Engineer-in-charge.

9 Where any pavement, shrubbery, fence, poles or other property and surface structures have been damaged, removed or disturbed during the course of the work, such property and surface structures shall be replaced or repaired after completion of work.

10 Measurements

Measurement shall be made according to the work actually done and pavement shall be made accordingly.

11 Rates :

The rate shall include the cost of the material and labour involved in all the operation described in the items. The rates include all plants, chain, pulley blocks, other appliances etc. required for execution of the works. Rates for items and making good roads etc. include lead for the materials.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 16 -- MISCELLANEOUS

S. No.	Particulars of Items	Unit	Rates (in Rs.)
16.1	Labour for cutting following cast iron pipes of any type and class.		
	80 mm dia.	Per Cut	25.00
	100 mm dia.	Per Cut	32.00
	150 mm dia.	Per Cut	57.00
	200 mm dia.	Per Cut	77.00
	250 mm dia.	Per Cut	96.00
	300 mm dia.	Per Cut	135.00
	350 mm dia.	Per Cut	153.00
	400 mm dia.	Per Cut	174.00
	450 mm dia.	Per Cut	192.00
	500 mm dia.	Per Cut	234.00
	600 mm dia.	Per Cut	269.00
	700 mm dia.	Per Cut	292.00
	750 mm dia.	Per Cut	309.00
	800 mm dia.	Per Cut	356.00
	900 mm dia.	Per Cut	384.00
	1000mm dia	Per Cut	410.00
16.2	Labour for cutting following Asbestos Cement Pressure Pipes of any type and class.		
	80 mm dia.	Per Cut	13.00
	100 mm dia.	Per Cut	17.00
	150 mm dia.	Per Cut	32.00
	200 mm dia.	Per Cut	42.00
	250mm dia	Per Cut	51.00
	300mm dia	Per Cut	69.00
	350mm dia	Per Cut	79.00
16.3	Labour for cutting following Ductile iron pipes of any type and class.		
	80 mm dia.	Per Cut	23.00
	100 mm dia.	Per Cut	29.00
	150 mm dia.	Per Cut	54.00
	200 mm dia.	Per Cut	71.00
	250 mm dia.	Per Cut	88.00
	300 mm dia.	Per Cut	126.00
	350 mm dia.	Per Cut	139.00
	400 mm dia.	Per Cut	156.00
	450 mm dia.	Per Cut	174.00
	500 mm dia.	Per Cut	208.00
	600 mm dia.	Per Cut	245.00
	700 mm dia.	Per Cut	260.00
	750 mm dia.	Per Cut	278.00
	800 mm dia.	Per Cut	312.00
	900 mm dia.	Per Cut	345.00
	1000mm dia	Per Cut	367.00

S. No.	Particulars of Items	Unit	Rates (in Rs.)		
16.4	Labour for cutting following Galvanised iron (MS) pipes of any type and class.				
	15 mm dia.	Per Cut	4.00		
	20 mm dia.	Per Cut	7.00		
	25 mm dia.	Per Cut	10.00		
	32 mm dia.	Per Cut	11.00		
	40 mm dia.	Per Cut	14.00		
	50 mm dia.	Per Cut	16.00		
	65 mm dia.	Per Cut	19.00		
	80 mm dia.	Per Cut	20.00		
	100 mm dia.	Per Cut	25.00		
	125 mm dia.	Per Cut	28.00		
	150 mm dia.	Per Cut	32.00		
16.5	Labour for cutting following P.V.C pipes of any type and class.				
	90mm dia	Per Cut	5.00		
	110mm dia	Per Cut	8.00		
	140mm dia	Per Cut	14.00		
	160mm dia	Per Cut	15.00		
	180mm dia	Per Cut	17.00		
	200mm dia	Per Cut	19.00		
16.6	Chamfering cast iron pipes of all types and classes to make suitable for tyton joints.				
	80mm to150 mm dia.	Per End	425.00		
	200 mm dia.	Per End	526.00		
	250 mm dia.	Per End	584.00		
	300 mm dia.	Per End	651.00		
	400 mm dia.	Per End	755.00		
	450 mm dia.	Per End	860.00		
	500 mm dia.	Per End	921.00		
	600 mm dia.	Per End	1019.00		
	700 mm dia.	Per End	1169.00		
	750 mm dia.	Per End	1253.00		
	800 mm dia.	Per End	1420.00		
	900 mm dia.	Per End	1495.00		
	1000 mm dia.	Per End	1646.00		
16.7	Dismantling following old cast iron socket and spigot pipes class 'L.A.' 'A' & 'B' including breaking lead caulked joints, melting of lead and making it in to blocks including stacking of pipes at site lead upto 50 meters.		LA	A	B
	80 mm dia.	RM	7.00	7.00	8.00
	100 mm dia.	RM	8.00	9.00	9.00
	125 mm dia.	RM	11.00	12.00	12.00
	150 mm dia.	RM	13.00	14.00	15.00
	200 mm dia.	RM	18.00	20.00	22.00
	250 mm dia.	RM	26.00	27.00	29.00
	300 mm dia.	RM	34.00	35.00	38.00

S. No.	Particulars of Items	Unit	Rates (in Rs.)		
	350 mm dia.	RM	40.00	44.00	47.00
	400 mm dia.	RM	48.00	53.00	57.00
	450 mm dia.	RM	58.00	64.00	70.00
	500 mm dia.	RM	67.00	74.00	80.00
	600 mm dia.	RM	91.00	99.00	106.00
	700 mm dia.	RM	117.00	123.00	139.00
	750 mm dia.	RM	133.00	144.00	155.00
	800 mm dia	RM	151.00	158.00	172.00
	900 mm dia	RM	177.00	193.00	211.00
	1000 mm dia.	RM	217.00	234.00	252.00
16.8	Manufacturing and supply of specials made out of M.S. steel plate or HR coil conforming to IS 3589-2001 or its latest revision/amendment, 5mm to 6mm thick plate in shapes and sizes required as per site conditions including cost of steel plate & other electrical & mechanical material, including Submerged Arc welded, including cost of transportation, loading and unloading complete approved by Engineer-in-Charge. (This is applicable only when standard special are not available).	Kg		88.00	
16.9	Providing & fixing in position Cast Iron Manhole Covers and frame conforming to IS-1726. All the exposed edges rounded end finished in cement mortar 1:3 etc. complete.	Kg		52.00	
16.10	Labour only for fixing in position Cast Iron Manhole Covers & frame conforming to IS-1726.	Kg		4.00	
16.11	Provision of public stand posts for urban poor				
16.11.1	Providing and constructing two stand post as per type design with excavation 15 cm thick PCC 1:3:6 bedding 20 mm thick PCC 1:2:4 convert for platform of 1.75 M dia. with side curb and bucket rest, 80 mm dia , heavy duty GI pipe central post duly filled therein with C.C. 1:2:4, 2.4 M long, 20mm dia medium G.I. pipe from point of tapping to stand post additional 20mm dia G.I. pipe 6 m long fixed up to 15 mm dia self closing water taps, one brass ferule etc. complete together with all labour and material charges as per drawing and as directed by Engineer-in-charge when good foundation in available. Rate includes draining arrangement by excavating open gutters complete. (Drawing No.- 22)	Each		4611.00	

S. No.	Particulars of Items	Unit	Rates (in Rs.)
16.11.2	Providing and constructing two taps stand post as per type design with excavation 30 cm thick boulder filling j15 cm thick PCC in 1:3:6 , 20 mm thick RCC 1:2:4 platform of 1.75 M dia. with side curb and bucket rest, 80 mm dia, heavy duty GI pipe central post duly filled therein with C.C. 1:2:4, 2.4 M long, 20mm dia medium G.I. pipe 6 m long fixed up to two 15 mm dia self closing water taps, one brass ferule etc. complete together with all labour and material charges as per directed by Engineer-in-charge when B.C. soil is available. Rate includes draining arrangement by excavating open gutters complete. *(Drawing No.-23)*	Each	4971.00
16.12	Disinfecting C.I. water mains by flushing with water containing bleaching powder at 0.5 gms per liter of water and cleaning the same with fresh water, operation to be repeated three times including getting the sample of water from the disinfected main tested in the Govt. / Municipal/ Authorised laboratory :		
	80mm diameter	100 Meter	361.00
	100mm diameter	100 Meter	473.00
	125mm diameter	100 Meter	592.00
	150mm diameter	100 Meter	714.00
	200mm diameter	100 Meter	960.00
	250mm diameter	100 Meter	1221.00
	300mm diameter	100 Meter	1382.00
	350mm diameter	100 Meter	1553.00
	400mm diameter	100 Meter	1738.00
	450mm diameter	100 Meter	1931.00
	500mm diameter	100 Meter	2137.00
	600mm diameter	100 Meter	2571.00
16.13	Extra for every operation of disinfecting the C.I. main by flushing with water containing bleaching powder at 0.5 gms per liter of water and cleaning the same with fresh water, including getting the samples of water tested in the Govt. / Municipal/ Authorised laboratory :		
	80mm diameter	100 Meter	133.00
	100mm diameter	100 Meter	162.00
	125mm diameter	100 Meter	197.00
	150mm diameter	100 Meter	231.00
	200mm diameter	100 Meter	344.00
	250mm diameter	100 Meter	406.00
	300mm diameter	100 Meter	467.00
	350mm diameter	100 Meter	554.00
	400mm diameter	100 Meter	644.00
	450mm diameter	100 Meter	738.00
	500mm diameter	100 Meter	793.00

S. No.	Particulars of Items	Unit		Rates (in Rs.)
	600mm diameter	100 Meter		1035.00
16.14	Manufacturing, providing and supplying spirally welded/ERW/SAW/ fabricated M.S. Pipes (Commercial Quality) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pipes, welding on automatic welding machine and forming "V" edge on both ends of pipes including all taxes (Central and local), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores /site unloading, stacking etc, complete as per IS 3589 and IS 5504 as applicable as per specifications (No negative tolerance in thickness is permissible).			
		Per Kg		78.00
16.15	Carriage of Material by Mechanical transport including loading unloading & stacking etc.			
16.15.1	Lime, Alum, Bleaching powder, moorum, building rubbish (Malba)	Distance	Per	Rate in Rs.
	1. Distance	1 Km	Cum	49.00
	2. Distance	2 Km	Cum	56.00
	3. Distance	3 Km	Cum	64.00
	4. Distance	4 Km	Cum	71.00
	5. Distance	5 Km	Cum	78.00
	6. Beyond 5 km upto 10km. Add per km		Cum	6.00
	7. Beyond 10 km, upto 20km add per km		Cum	5.00
	8. Beyond 20 km, add per km		Cum	4.00
16.15.2	Earth			
	1. Distance	1 Km	Cum	61.01
	2. Distance	2 Km	Cum	70.43
	3. Distance	3 Km	Cum	79.72
	4. Distance	4 Km	Cum	88.69
	5. Distance	5 Km	Cum	97.39
	6. Beyond 5 km upto 10km. Add per km		Cum	8.00
	7. Beyond 10 km, upto 20km add per km		Cum	6.79
	8. Beyond 20 km, add per km		Cum	5.18
16.15.3	G.I, C.I., D.I., CC, ACP pipes below 100mm dia and other heavy material and machinery Cement, Stone blocks.			
	1. Distance	1 Km	Per Tonne	43.39
	2. Distance	2 Km	Per Tonne	50.09
	3. Distance	3 Km	Per Tonne	56.69
	4. Distance	4 Km	Per Tonne	63.07
	5. Distance	5 Km	Per Tonne	69.26
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	5.69
	7. Beyond 10 km, upto 20km add per km		Per Tonne	4.83

S. No.	Particulars of Items	Unit	Rates (in Rs.)	
	8. Beyond 20 km, add per km		Per Tonne	3.68
16.15.4	Steel			
	1. Distance	1 Km	Per Tonne	43.39
	2. Distance	2 Km	Per Tonne	50.09
	3. Distance	3 Km	Per Tonne	56.69
	4. Distance	4 Km	Per Tonne	63.07
	5. Distance	5 Km	Per Tonne	69.26
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	5.69
	7. Beyond 10 km, upto 20km add per km		Per Tonne	4.83
	8. Beyond 20 km, add per km		Per Tonne	3.68
16.15.5	R.C.C., Pipes, Steel Pipes, ACP pipes, CI & DI Pipes			
16.15.5.1	100mm dia			
	1. Distance	1 Km	Per Tonne	106.69
	2. Distance	2 Km	Per Tonne	123.16
	3. Distance	3 Km	Per Tonne	139.39
	4. Distance	4 Km	Per Tonne	155.09
	5. Distance	5 Km	Per Tonne	170.30
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	13.99
	7. Beyond 10 km, upto 20km add per km		Per Tonne	11.88
	8. Beyond 20 km, add per additional km		Per Tonne	9.06
16.15.5.2	150mm dia			
	1. Distance	1 Km	Per Tonne	177.81
	2. Distance	2 Km	Per Tonne	205.27
	3. Distance	3 Km	Per Tonne	232.32
	4. Distance	4 Km	Per Tonne	258.49
	5. Distance	5 Km	Per Tonne	283.84
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	23.32
	7. Beyond 10 km, upto 20km add per km		Per Tonne	19.80
	8. Beyond 20 km, add per additional km		Per Tonne	15.10
16.15.5.3	200mm dia			
	1. Distance	1 Km	Per Tonne	289.24
	2. Distance	2 Km	Per Tonne	333.91
	3. Distance	3 Km	Per Tonne	377.91
	4. Distance	4 Km	Per Tonne	420.47
	5. Distance	5 Km	Per Tonne	461.71
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	37.93
	7. Beyond 10 km, upto 20km add per km		Per Tonne	32.20
	8. Beyond 20 km, add per additional km		Per Tonne	24.55
16.15.5.4	250mm dia			
	1. Distance	1 Km	Per Tonne	411.03
	2. Distance	2 Km	Per Tonne	474.50
	3. Distance	3 Km	Per Tonne	537.03
	4. Distance	4 Km	Per Tonne	597.51
	5. Distance	5 Km	Per Tonne	656.11
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	53.90
	7. Beyond 10 km, upto 20km add per km		Per Tonne	45.76

S. No.	Particulars of Items	Unit	Rates (in Rs.)	
	8. Beyond 20 km, add per additional km		Per Tonne	34.89
16.15.5.5	300mm dia			
	1. Distance	1 Km	Per Tonne	508.04
	2. Distance	2 Km	Per Tonne	586.48
	3. Distance	3 Km	Per Tonne	663.77
	4. Distance	4 Km	Per Tonne	738.53
	5. Distance	5 Km	Per Tonne	810.97
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	66.62
	7. Beyond 10 km, upto 20km add per km		Per Tonne	56.56
	8. Beyond 20 km, add per additional km		Per Tonne	43.13
16.15.5.6	350mm dia			
	1. Distance	1 Km	Per Tonne	711.26
	2. Distance	2 Km	Per Tonne	821.08
	3. Distance	3 Km	Per Tonne	929.28
	4. Distance	4 Km	Per Tonne	1033.95
	5. Distance	5 Km	Per Tonne	1135.35
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	93.27
	7. Beyond 10 km, upto 20km add per km		Per Tonne	79.19
	8. Beyond 20 km, add per additional km		Per Tonne	60.38
16.15.5.7	400mm dia			
	1. Distance	1 Km	Per Tonne	969.89
	2. Distance	2 Km	Per Tonne	1119.65
	3. Distance	3 Km	Per Tonne	1267.20
	4. Distance	4 Km	Per Tonne	1409.93
	5. Distance	5 Km	Per Tonne	1548.21
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	127.19
	7. Beyond 10 km, upto 20km add per km		Per Tonne	107.98
	8. Beyond 20 km, add per additional km		Per Tonne	82.34
16.15.5.8	450mm & 500mm dia			
	1. Distance	1 Km	Per Tonne	1185.43
	2. Distance	2 Km	Per Tonne	1368.46
	3. Distance	3 Km	Per Tonne	1548.80
	4. Distance	4 Km	Per Tonne	1723.24
	5. Distance	5 Km	Per Tonne	1892.25
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	155.45
	7. Beyond 10 km, upto 20km add per km		Per Tonne	131.98
	8. Beyond 20 km, add per additional km		Per Tonne	100.63
16.15.5.9	600, 700, 750mm & 800mm dia			
	1. Distance	1 Km	Per Tonne	1778.14
	2. Distance	2 Km	Per Tonne	2052.70
	3. Distance	3 Km	Per Tonne	2323.21
	4. Distance	4 Km	Per Tonne	2584.86
	5. Distance	5 Km	Per Tonne	2838.38
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	233.18
	7. Beyond 10 km, upto 20km add per km		Per Tonne	197.97
	8. Beyond 20 km, add per additional km		Per Tonne	150.95

S. No.	Particulars of Items	Unit	Rates (in Rs.)	
16.15.5.10	900mm dia			
	1. Distance	1 Km	Per Tonne	2667.21
	2. Distance	2 Km	Per Tonne	3079.04
	3. Distance	3 Km	Per Tonne	3484.81
	4. Distance	4 Km	Per Tonne	3877.29
	5. Distance	5 Km	Per Tonne	4257.57
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	349.77
	7. Beyond 10 km, upto 20km add per km		Per Tonne	296.95
	8. Beyond 20 km, add per additional km		Per Tonne	226.43
16.15.5.11	1000, 1100 and 1200mm dia			
	1. Distance	1 Km	Per Tonne	3556.28
	2. Distance	2 Km	Per Tonne	4105.39
	3. Distance	3 Km	Per Tonne	4646.41
	4. Distance	4 Km	Per Tonne	5169.73
	5. Distance	5 Km	Per Tonne	5676.76
	6. Beyond 5 km upto 10km. Add per km		Per Tonne	466.35
	7. Beyond 10 km, upto 20km add per km		Per Tonne	395.94
	8. Beyond 20 km, add per additional km		Per Tonne	301.90
16.16	Hire Charges of Plants & Machinery inclusive of operator and cleaner but excluding Diesel and oil.			
	1. Truck		Per Day	1150.00
	2. Water Tanker		Per Day	1275.00
	3. Dumper		Per Day	1300.00
	4. Tractor with Trolley		Per Day	800.00
	5. Road Roller		Per Day	1200.00
	6. Concrete Mixer		Per Day	700.00
16.17	**Electromagnetic Bulk Flow Meters** Supply of Electromagnetic full bore meter complete as per specification including transportation to site, storage, safety, installation, testing, commissioning, making connections with existing pipe line, including excavation at site, cuts in the existing pipe system, dewatering and reinstating the same after completion of installation as per specification and drawings including all taxes. Accuracy of meter + 0.3% of measured value, Flange connection as per AWWA & IS, Liner:			
	Hard Rubber, Fully welded sensor housing complying to IP 68 standard, Electrodes SS 316, Sensor housing SS 304, Cable gland 1/2" NPT, Sensor housing fully welded SS 304 housing with protective Polyurethane paint, Flow Transmitter/ Converter : Microprocessor based, modular design display 2 line back lit LCD for indication of actual flow rate, forward, reverse, sumtotalizer, Perfection category : IP 65			
	Dia in mm			

S. No.	Particulars of Items	Unit	Rates (in Rs.)
1	50mm	Each	96993.00
2	65mm	Each	99205.00
3	80mm	Each	103037.00
4	100 mm	Each	113948.00
5	150mm	Each	120457.00
6	200 mm	Each	127663.00
7	250 mm	Each	155823.00
8	300 mm	Each	181360.00
9	400 mm	Each	211387.00
10	450 mm	Each	304759.00
11	500 mm	Each	380070.00
12	600 mm	Each	389741.00
13	700 mm	Each	500396.00
14	900 mm	Each	821284.00
15	1000 mm	Each	912159.00
16	1200 mm	Each	1072109.00
17	1400 mm	Each	1381881.00
18	2000 mm	Each	1485171.00
19	Lightening Arrester Unit	Each	7513.00
20	MS Panel with Transmitter, Totalizer, etc as per specifications	Each	12552.00
21	Uninterruptible Power Supply [6hr Battery Backup (500 VA)]	Each	25105.00
16.18	Supply & Installation of Domestic Water Meters of inferential type, multijet, magnetically coupled, having dry dial, straight reading Class B conforming to is : 779/1994, ISO and EEC approved, including transportation to site, storage, safety, installation, testing, commissioning, making connections with existing pipeline, including excavation at site, dewatering and reinstating the same after completion of installation as per specifications including all taxes.		
	Dia in mm		
	15 mm	No	1152.00
	20 mm	No	1941.00
	25 mm	No	3488.00
	40 mm	No	6515.00
16.19	Woltman Turbine Bulk Meters Supply of Woltman Turbine Bulk meters class B, multijet, magnetically coupled as per specifications conforming to is 770/1994, ISO 4064/1 and EEC approved, including transportation to site, storage, safety, installation, testing, commissioning, making connections with existing pipeline, including excavation at site, dewatering and reinstating the same after completion of installation as per specifications and drawings including all taxes.		

S. No.	Particulars of Items	Unit	Rates (in Rs.)
	Dia in mm		
	50 mm	No	9608.00
	65 mm	No	10529.00
	80 mm	No	12523.00
	100 mm	No	16543.00
	125 mm	No	21255.00
	150 mm	No	26980.00
	200 mm	No	26980.00
	250 mm	No	84231.00
	300 mm	No	138191.00
	400 mm	No	247428.00
16.20	Dirt Box with S.S. Strainer		
	Dirt Box with S.S. Strainer as per specifications		
	Dia in mm		
	50 mm	No	3027.00
	65 mm	No	3356.00
	80 mm	No	4317.00
	100 mm	No	5922.00
	125 mm	No	10417.00
	150 mm	No	12378.00
	200 mm	No	18557.00
	250 mm	No	32310.00
	300 mm	No	47196.00
	400 mm	No	78966.00

CHAPTER- 17
DRILLING OF TUBE WELLS

1 Tube well construction shall be as per IS 2800 (Pt-1) - 2001

2 Tube well testing shall be as per IS 2800 (Pt-2) - 1999

3 Specification for Gravel for use as pack in tube wells shall be as per IS 4097 - 1999 (Reaffirmed 1999)

4 Methods of tube well development shall be as per IS 11189 - 1999

5 Unplasticized PVC screen and casing pipes for bore/tube well shall be as per IS 12818-1992.

6 Mild Steel tubes, tubular & other wrought steel fittings specification IS 1239 (Part-1&2)- 1990.

7 Deep well hand pumps, components and special tools shall be as per IS 15500 (Pt- 1 to 8)

8 Specification for un-plasticized PVC pipes for potable water supply IS 4985-2000.

9 A complete tube well shall mean :-
(a) A borehole vertical within the prescribed non-vertical limits drilled upto designed depth in alluviums or rocky areas.

(b) Installation of requisite well assembly i.e., housing pipe, blind pipe, slotted pipe or strainers, bail plug and other accessories.

(c) Placing of suitable gravel pack (in case of gravel, packed tube-wells). Placing of suitable sand pack (in case of sand packed tube-wells)

(d) Development of tube-well with object of :-
(i) Producing effect of natural gravel pack (in case of naturally packed design).

(ii) Producing maximum sand free yield of water for the specified standard draw down in alluvium and rocky areas.

(e) Conducting yield test by over pumping of the tube well.

(F) The tube well shall be disinfected after completion of the yield test.

9 Tube wells drilled shall be perfectly vertical. The rates for drilling are inclusive of the verticality test required to be conducted. All the relevant Indian Standards specifications of the B.I.S. shall also be applicable.

10 For locating the proper site for tube well construction within the selected habitation, if resistivity survey is required then the resistively survey shall be carried out by a well qualified and experienced geohydrologist using his own suitable resistively meter.

11 Yield test shall be done as per para 5.3 of IS - 2800 (Pt-2)

12 In all types of tube wells the casing pipe of specified diameter shall be lowered up to a minimum depth of 9 meters below ground level. If the collapsible strata in overburden continue beyond 9 meters depth then the casing pipe shall be lowered up to rock level and embedded in rock in a depth of 0.15 meter. The casing pipe shall also be extended above ground level in a height of about 0.3 meter.

13 The diameter of ordinary tube wells shall be 125 mm up to bottom level of the casing pipe and 115 mm in the rock below the casing. Such tube wells shall be designated as 125/115 mm dia ordinary tube wells.

14 The telescopic tube wells in the basaltic rock area where intertrappean formation (collapsible strata between the rocks) is present. The nominal diameter of the tube well upto the level of intertrappean formation shall be 150 mm. The intertrappean formation shall be encased by 125 mm dia G.I. casing pipe. Therefore, the finished nominal diameter of tube well in the intertrappean formation shall be 125 mm but in the rock below the intertrappean formation, the nominal diameter of tube well shall be 115 mm. Such tube wells shall be designated as 150/125/115 mm dia (telescopic) ordinary tube wells.

15 The nominal diameter of ordinary tube well constructed for installation of power pumps shall be 150 mm or 200 mm for the entire depth depending upon the type of size of pump to be installed in the tube well. Such tube wells shall be designated as 150 mm dia ordinary tube well & 200 mm dia ordinary tube wells.

16 The gravel packed tube wells shall be constructed in alluvial formations, suitable for such tube wells, in which the fine and uniform sand is present in the water bearing aquifer. The gravel packed tube wells should be constructed after obtaining necessary clearance from the competent authority.

17 Precautions should be taken to prevent damage to the tube well during the drilling. Precautions should also be taken to avoid any accident during drilling.

18 Precautions should be taken to prevent damage to the pipes and other assembly during lowering in to the well.

19 Development of tube well :-

19.1 The well shall be developed either by surging and agitating or by over pumping and back washing with an air lift and velocity jetting etc. Any other acceptable method may also be adopted. This development process shall be continued until the stabilization of sand and gravel pack has taken place.

19.2 The development of the tube well by over pumping should be done at 15 percent to 25 percent higher discharge than the expected discharge from the tube well. The final discharge should be free from sand with a maximum tolerance of 20 parts of sand in one million parts of water by volume after 20 minutes of starting the pump.

20 Testing of yield and draw down :

20.1 The drawing off of water through a tube well results in a lowering of water level. This drawdown creates a hydraulic gradient in the water bearing material with the result that under ground flow into the tube well takes place. The rate of inflow depends upon the hydraulic gradient, permeability and saturated thickness of water bearing material and of tube well construction.

20.2 After the well has been completely constructed and cleaned out and the depth of the well accurately measured, this test should be carried out.

20.3 This test is conducted by installing a test pump in the tube well temporarily and pumping out water. At each rate of discharge, pumping is carried out at least for 30 minutes. If the water level and discharge are found to fluctuating, development is carried out for some more hours, until the discharge becomes steady and sand content is with in tolerable limits. The specific capacities of the well for various pumping rates are computed based on drawdown test data. Discharge may be measured by any method detailed in 13.7 of IS : 5120-1977 "Technical requirements for rot dynamic special purpose pumps (first revision).

20.4 Since the yield is influenced by a number of factors such as geological formation, rainfall. Neighboring tube wells, etc. the pumping rate shall, in general, not exceed 60 percent of the yield determined by test.

21 The water sample for chemical analysis shall be collected in 2 liters plastic bottle and samples for bacteriological analysis shall be collected in 300 ml sterilized bottle as per the direction of Engineer in charge. Only testing charges will be borne by the urban local body.

22 All care and precautions shall be taken and it shall be ensured that there shall be no accidents while drilling the borehole. Proper dress and equipments like gumboots, helmets etc. shall be provided by the contractor to the workmen at site.

23 If a tube well is found dry or with less yield and if it is not to be used for water supply due to any reason, the tube well shall be fitted with MS cap securely and a concrete block of 0.45m X 0.45m X 0.45m with M15 cement concrete would be constructed on it to prevent any accident or damage to the tube well and also to use the bore at any later stage for recharging or for any other purpose.

24 Measurement :-

Depth of the bore & length of the pipes shall be measured in Rmt. Cap shall be measured in number. Gravel shall be measured in cum after deducting the voids.

25 Rates :-

The rate shall include the cost of the material and labour involved in all the operation described in the items.

(For Detail Refer to Specifications prepared by the Urban Administration and Development Department, IS Code & CPHEEO Manual)

CHAPTER 17 -- DRILLING OF TUBE WELLS

S.No.	Particulars of Items	Unit	Rate (In Rs.)
A	**Resisitivity Survey**		
17.1	Carrying out the resistivity survey by VES method using Schlumberger configuration for locating the proper spot for drilling of tube well with in the selected habitation, including Photography, interpretation of resistivity data and submission of report in the desired format along with resistivity necessary graph, photographs and readings.	Per Successful point	1187.00
B	**Construction of Ordinary Tube well**		
17.2	Drilling of perfectly vertical bore hole of a diameter suitable to receive 125mm nominal diameter casing pipe upto desired depth below ground level inclusive of the labour charges for transporting, lowering and fixing of 125mm nominal diameter M.S./G.I./U.P.V.C. casing pipe inside the bore hole including all works pertaining to drilling such as transportation, installation and removal of drilling machine etc. complete.		
17.2.1	in all types of collapsible strata consisting of soils, clays, sand, moorum, gravel, boulders etc.	Meter	326.00
17.2.2	in all types of rocks.	Meter	412.00
17.3	Drilling of perfectly vertical bore hole of 115 mm diameter up to desired depth below ground level in all types of rocks including all works pertaining to drilling such as transportation, installation and removal of drilling machine etc. complete.	Meter	365.00
17.4	Drilling of perfectly vertical bore hole of a diameter suitable to receive 150mm nominal diameter casing pipe upto desired depth below ground level inclusive of the labour charges for transporting, lowering and fixing of 150mm nominal diameter M,S./G.I./U.P.V.C. casing pipe inside the bore hole including all works pertaining to drilling such as transportation, installation and removal of drilling machine etc. complete.		
17.4.1	in all types of collapsible strata consisting of soils, clays, sand, moorum, gravel, boulders etc.	Meter	335.00
17.4.2	in all types of rocks.	Meter	429.00
17.5.	Drilling of perfectly vertical bore hole of 150mm diameter upto desired depth below ground level in all types of rock including all works pertaining to drilling such as transportation, installation and removal of drilling machine etc. complete	Meter	439.00

S.No.	Particulars of Items	Unit	Rate (In Rs.)
17.6	Drilling of perfectly vertical bore hole of a diameter suitable to receive 200mm nominal diameter casing pipe upto desired depth below ground level inclusive of the labour charges for transporting, lowering and fixing of 200mm nominal diameter M,S./G.I./U.P.V.C. casing pipe inside the bore hole including all works pertaining to drilling such as transportation, installation and removal of drilling machine etc. complete.		
17.6.1	in all types of collapsible strata consisting of soils, clays, sand, moorum, gravel, boulders etc.	Meter	358.00
17.6.2	in all types of rocks.	Meter	456.00
17.7.	Drilling of perfectly vertical bore hole of 200mm diameter upto desired depth below ground level including all works pertaining to drilling such as transportation, installation and removal of drilling machine etc. complete.		
17.7.1	In all types of collapsible strata (intertrappean formation) including charges for transportation, lowering and fixing of 150mm nominal diameter GI casing pipe, welded joints only.	Meter	382.00
17.7.2	in all types of rocks.	Meter	458.00
17.8	Drilling of perfectly vertical bore hole of 150mm diameter up to desired depth below ground level in all types of strata including all works pertaining to drilling such as transportation, installation and removal of drilling machine etc. complete. In intertrappean formations (collapsible strata between rocks) including charges for transportation and making all necessary arrangements etc. including lowering and fixing of 125mm nominal diameter (gig. or U.P.V.C.) Casing pipe.	Meter	437.00
17.9	Providing and fixing of well cap on top of the tube well for protection M.S. Caps		
17.9.1	100mm dia	each	178.00
17.9.2	125mm dia	each	197.00
17.9.3	150mm dia	each	229.00
17.9.4	200mm dia	each	271.00

C Construction of Gravel Packed Tube well

S.No.	Particulars of Items	Unit	Rate (In Rs.)
17.10	Drilling of perfectly vertical bore hole of following diameters for construction of Gravel Packed tube well up to desired depth in alluvial formation consisting of Soils, Clays, Sand, Gravel, Moorum, Boulders etc. and retaining the bore hole by using suitable drilling mud or foam or temporary housing pipe including all works pertaining to drilling such as transportation, installation and removal of drilling machine etc. complete.		
17.10.1	300mm diameter	Meter	481.00
17.10.2	350mm diameter	Meter	526.00
17.10.3	400mm diameter	Meter	549.00
17.11	Labour charges for assembling, centering and lowering of properly designed casing pipe assembly inside the bore hole drilled for construction of Gravel Packed tube well including the cost of providing and fixing of centraliser, and transportation of casing assembly etc. complete.		
17.11.1	Casing assembly composed of 100mm diameter blank and slotted G.I. Casing pipes	Meter	36.00
17.11.2	Casing assembly composed of 150mm diameter blank and slotted G.I. Casing pipes	Meter	55.00
17.11.3	Casing assembly composed of 200mm diameter blank and slotted G.I. Casing pipes	Meter	67.00
17.11.4	Casing assembly composed of 100mm dia. UPVC blank and screened pipes.	Meter	26.00
17.11.5	Casing assembly composed of 150mm dia UPVC blank and screened pipes.	Meter	31.00
17.11.6	Casing assembly composed of 200mm dia UPVC blank and screened pipes.	Meter	40.00
17.12	Providing and fixing of M.S. bail plug as per I.S. 2800 (PART-I) 2001 in the bottom of casing assembly		
17.12.1	100mm dia	each	292.00
17.12.2	150mm dia	each	368.00
17.12.3	200mm dia	each	450.00
17.13	Providing gravel packing with uniformly graded gravel as per I.S. 4097 of 1999 (revised up to date) in the annular space between outer wall of casing pipe assembly and inner wall of bore hole including cost of gravel, transportation, stacking, washing and packing in layers of suitable thickness including all lead and lifts complete.	Cu.m	607.00
D	**Installation of Hand Pumps**		

S.No.	Particulars of Items	Unit	Rate (In Rs.)
17.14.1	Labour charges for installation of India Mark II Hand Pump with 30 meter long 32mm dia riser pipe assembly and all other accessories including transportation of Hand Pump from specified departmental stores to site.	each	346.00
17.14.2	Add to Item No.-1, above for fixing the extra length of riser pipe assembly beyond 30 meters	Meter	10.00
E	**Development, yield test of Tube wells**		
17.15	Labour charges for installation of submersible pumping sets at 50m or more depth temporarily in the tubewell for a maximum of eight hours for the purpose of conducting yield test for tube well. (Any one of the below depending on the approximate yield observed during drilling operations).		
17.15.1	Submersible pumping sets upto 2.2 kW.	Each	887.00
17.15.2	Submersible pumping set upto 2.2 kW to 7.5 kW.	Each	967.00
17.15.3	Submersible pumping set above 7.5 kW	Each	1007.00
17.16	Conducting the yield test of tube well by operating the pumping set continuously for a desired time period and measuring the discharge and drawdown of tube well at a suitable time interval as per the direction of Engineer in Charge including cost of energy, cost of installation of suitable measuring device and hire charges of pumping set etc. complete.		
17.16.1	Submersible pumping sets upto 2.2 kW.	Per Hour	297.00
17.16.2	Submersible pumping set upto 2.2 kW to 7.5 kW.	Per Hour	312.00
17.16.3	Submersible pumping set above 7.5 kW	Per Hour	356.00
17.17	Labour charges for taking out the submersible pumping set from tube well after completion of yield test or development of tube well.		
17.17.1	Submersible pumping sets upto 2.2 kW.	Each	686.00
17.17.2	Submersible pumping set upto 2.2 kW to 7.5 kW.	Each	750.00
17.17.3	Submersible pumping set above 7.5 kW	Each	806.00
17.18	Development of gravel packed tube well by Air compressor of suitable capacity including hire charges for all the required tools and plants etc. complete, for maximum duration of eight hours.	Per Hour	445.00
17.19	Measurement of yield of tube well by operating hand pump continuously for four hours manually.	Each	400.00
F	**Supply of ISI mark Hand Pumps : G.I. Riser, G.I. Casing & UPVC Casing Pipes**		

S.No.	Particulars of Items	Unit	Rate (In Rs.)
17.20	ISI mark India mark-II deep well hand pump complete with 10 Nos. MS connecting rods, (12mm x 3M long) Normal stand assembly.	Each	6926.00
17.21	ISI mark India mark -II deep well hand pump complete with 10 Nos. MS connecting rods, (12mm x 3M long) telescopic stand assembly.	Each	6977.00
17.22	ISI mark India Mark-II extra deep well hand pump complete with 20 Nos. MS connecting rods (12mm x 3M)2 counter weight electro galvanized & passivated normal stand assembly.	Each	10105.00
17.23	ISI mark India mark-II extra deep well hand pump complete with 20 Nos. MS connecting rods (12mm x 3m)2 counter weight electro galvanized & passivated telescopic stand assembly.	Each	10333.00
17.24	ISI Mark 32mm dia G.I. riser pipe in 3 meter length socketed on one end as per I.S. 1239 (Part-I) 1990 up-to-date amendments and socket as per I.S. 2062/1990 up-to-date amendment.	Meter	197.00
17.25	Supply of I.S.I. marked G.I. casing pipe (Plain) medium class in 4 to 7 meters length one end fitted with socket as per I.S. 1239 (Part-1 & Part-2) 1992 with IVth revision (Up-to-date amendments)		
17.25.1	100mm dia	Meter	844.00
17.25.2	125mm dia	Meter	1126.00
17.25.3	150mm dia	Meter	1340.00
17.26	I.S.I. marked UPVC casing pipe confirming to IS 4985/1988 (with up-to-date amendments)		
17.26.1	Screen pipes with ribs 100mm dia	Meter	351.00
17.26.2	Screen pipes with ribs 125mm dia	Meter	554.00
17.26.3	Screen pipes with ribs 150mm dia	Meter	731.00
17.26.4	Screen pipes with ribs 200mm dia	Meter	1287.00
17.26.5	CM casing pipes 100mm dia	Meter	249.00
17.26.6	CM casing pipes 125mm dia	Meter	398.00
17.26.7	CM casing pipes 150mm dia	Meter	487.00
17.26.8	CM casing pipes 200mm dia	Meter	1024.00
17.26.9	CS casing pipes 150mm dia	Meter	430.00
17.26.10	CS casing pipes 200mm dia	Meter	818.00
G	**Disinfection of tube wells**		
17.27	Disinfection of tube well by using bleaching powder solution as per direction of Engineer-in-Charge including cost of all material & labour.	Each tube well	24.00

S.No.	Particulars of Items	Unit	Rate (In Rs.)
17.28	Construction of platforms in different strata and as per site conditions.		
17.28.1	Construction of 76 cm x 76 cm x 40 cm foundation block in M-15 cement concrete for fixing the pedestal of Hand Pump including excavation, cost of material and labour etc. complete	Each	940.00
17.28.2	Construction of cement concrete platform as per design around the hand pump in M-15 cement concrete including excavation, centering, shuttering, cost of all the materials and labour and curing etc. complete.	Each	3026.00
17.28.3	Construction of cement concrete platform as per design around the hand pump in M-15 cement concrete including excavation, centering, shuttering, cost of all the materials and labour and curing etc. complete. Including filling in 30 cm depth after removing Black cotton soil including ramming, watering etc. complete in areas of Black cotton soils.	Each	3584.00
17.28.4	Construction of cement concrete drain as per design in M-15 cement concrete including excavation, centering, shuttering, cost of all the materials and labour and curing etc. complete.	Meter	334.00
17.28.5	Construction of cement concrete drain as per design in M-15 cement concrete including excavation, centering, shuttering, cost of all the materials and labour and curing etc. complete. Including filling in 30 cm depth after removing Black cotton soil including ramming, watering etc. complete in areas of Black cotton soils.	Meter	436.00
17.29	Construction of concrete block over dry tube wells for protection of size 0.45m x 0.45m x 0.45m in M-15 cement concrete mix.	Each	378.00

S.No.	Particulars of Items	Unit	Rate (In Rs.)

ANNEXURE-1

RESISTIVITY SURVEY REPORT

Name of local body ……..…….District ……

Ward Number …….. Mohalla/Basti……

Name of Contractor .....……. Registration no. of machine

Work Order No…… Date ……

Date of Survey ……

Name of Geohydrologist ……

Model No. & Make of Resistivity meter used for sounding ……

Maps (Not to scale) Showing the location of survey point (To be attached separately in A-4 size sheet).

DATA SHEET OF FIELD MEASUREMENTS

S.No.	AB/2 Meters	MN/2 Meters	Spacing Factor K K = 3.14 (AM/AN)/MN	Measured resistance (OHMS)	Resistively OHM-M

S.No.	Particulars of Items	Unit	Rate (In Rs.)

ANNEXURE-2

STRATA - CHART

Name of local boby ……..District ……

Ward Number …… Mohalla/Basti …….

Name of Contractor …….. Registration No. of Machine

Work Order No. …… Date ……

Date of Starting of Tube well construction …….

Date of completion of tube well construction ……

Name of Sub-Engineer in charge of work …….

Measurement Book Number ……

Exact location of drilling ……

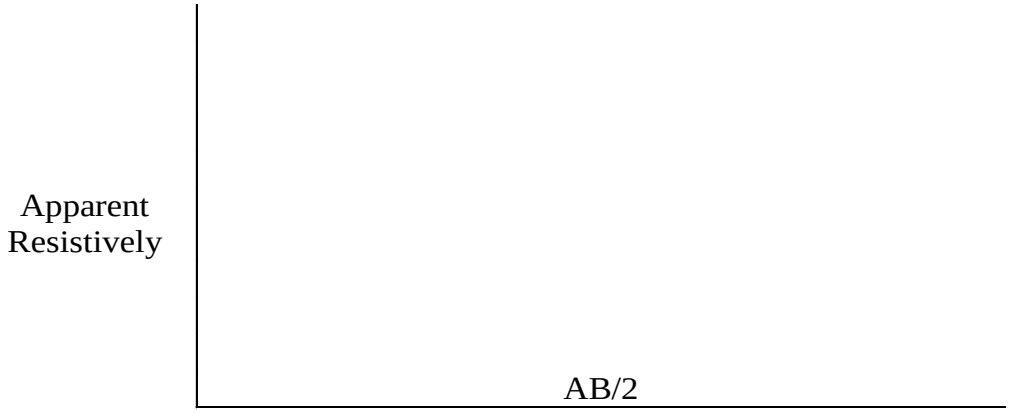
G		L	Details
Depth		Strata	1. Type of tube well .....
			2. Diameter of tube well .....
			3. Total depth of tube well .....
			4. Details of casing pipe
			Type (G.I./UPVC/BLANK/SLOTTED)
			Diameter ..... mm
			Length ..... meter
			5. Static water level in the tube well .....
			6. Type of pump installed .....
			7. Length of riser pipe installed
			Type (G.I./UPVC) .....
			8. Yield of tube well .....
			9. Draw down at above yield

Signature of Contractor

Signature of
Sub Engineer
Office .....

Signature of
Assistant Engineer
Office .....

Location



Interpretation Report

Possible Strata expected at the spot

S.No.	Possible Strata Form	Depth below Ground Level to		Remark

Recommendation :-

Signature of Geohyrologist

ANNEXURE -3

Name of local body ……..…….District …….

Ward Number ……..…. Mohalla/Basti……

Name of Contractor .....……. Registration no. of machine

Work Order No…… Date ……

Date of yield test …….

Diameter of tube well ……. Depth of tube well …….

Result of the Test

S.No.	Type of tube well	Dia of bore	Dia. of casing	Drift in mm at 30m depth (all in one direction) **to be filled by concerned engineer**	Permissible limit of vertically in 30m depth (all in one direction)
1.	Shallow	up to 30 cm	15 cm		15 mm
2.	Shallow & deep	37.2 cm or 40 cm	20 cm		30 mm
3.	Deep	45 cm or more	25 cm or more		50 mm

Signature of Contractor

Signature of Sub-Engineer

Signature of Assistant Engineer

ANNEXURE-4

YIELD TEST OF TUBE WELLS

Name of local body ……..…….District ……

Ward Number ……. Mohalla/Basti……

Name of Contractor .....……. Registration no. of machine

Work Order No…… Date ……..

Date of yield test ……

Diameter of tube well …….. Depth of tube well ……

Static water level in tube well ……

Type and K.W. of pumping set used for yield test ……

Type of measuring device used for measurement of discharge ……

Depth at which the pumping set installed ……

Time at which the yield test started ……

Data Sheet of field measurement

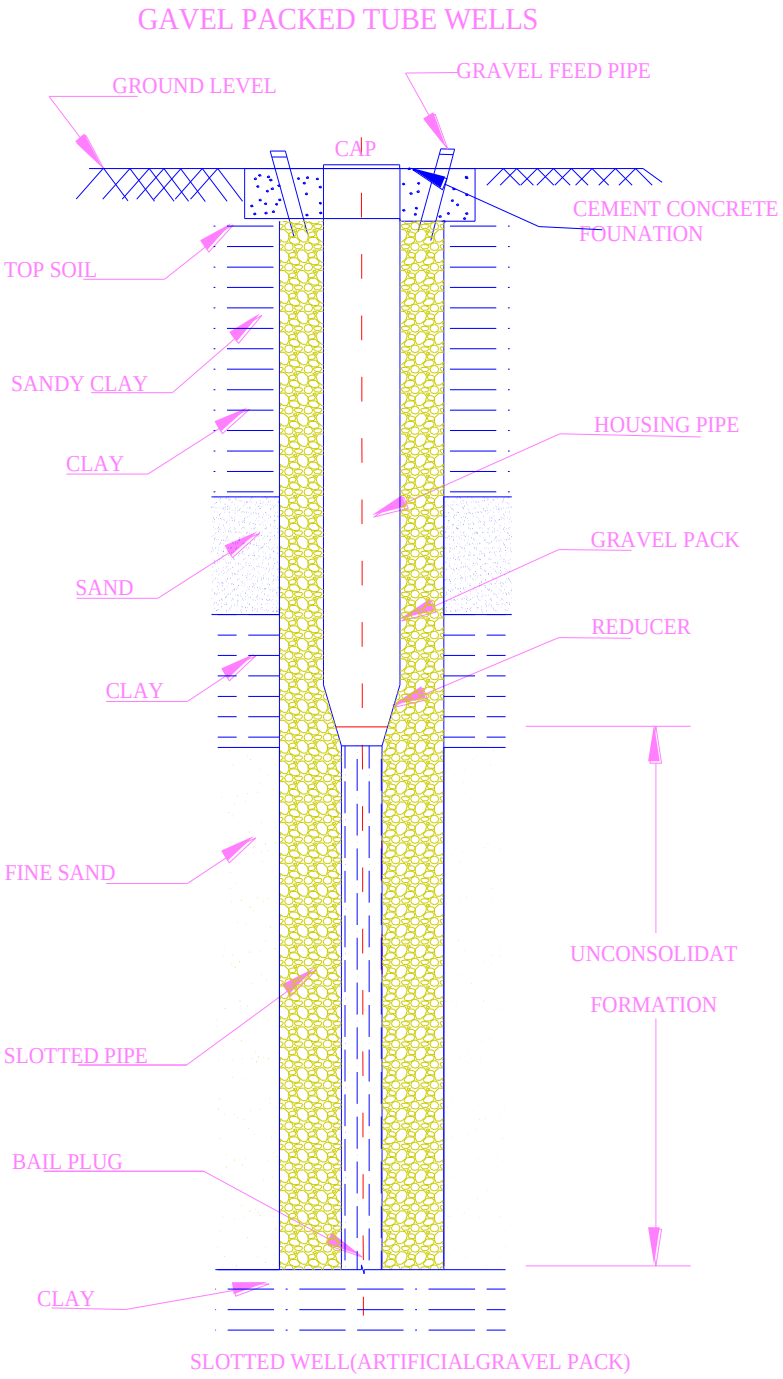
S.No.	Time	Water level in the tube well measured from top of casing pipe	Discharge of tube well
1 2 3			

Signature of Contractor

Signature of Sub-Engineer

Signature of Assistant Engineer

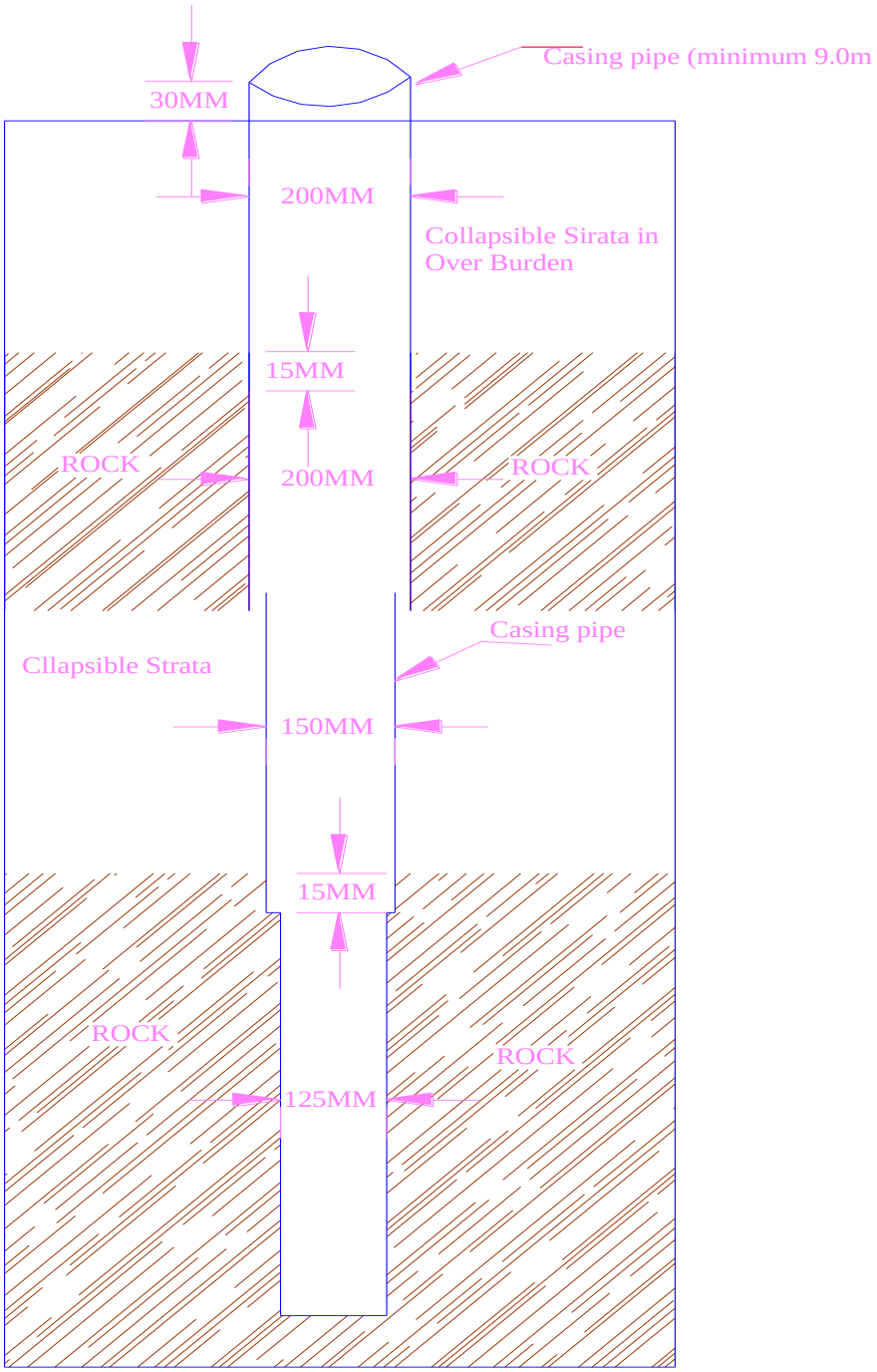
S.No.	Particulars of Items	Unit	Rate (In Rs.)



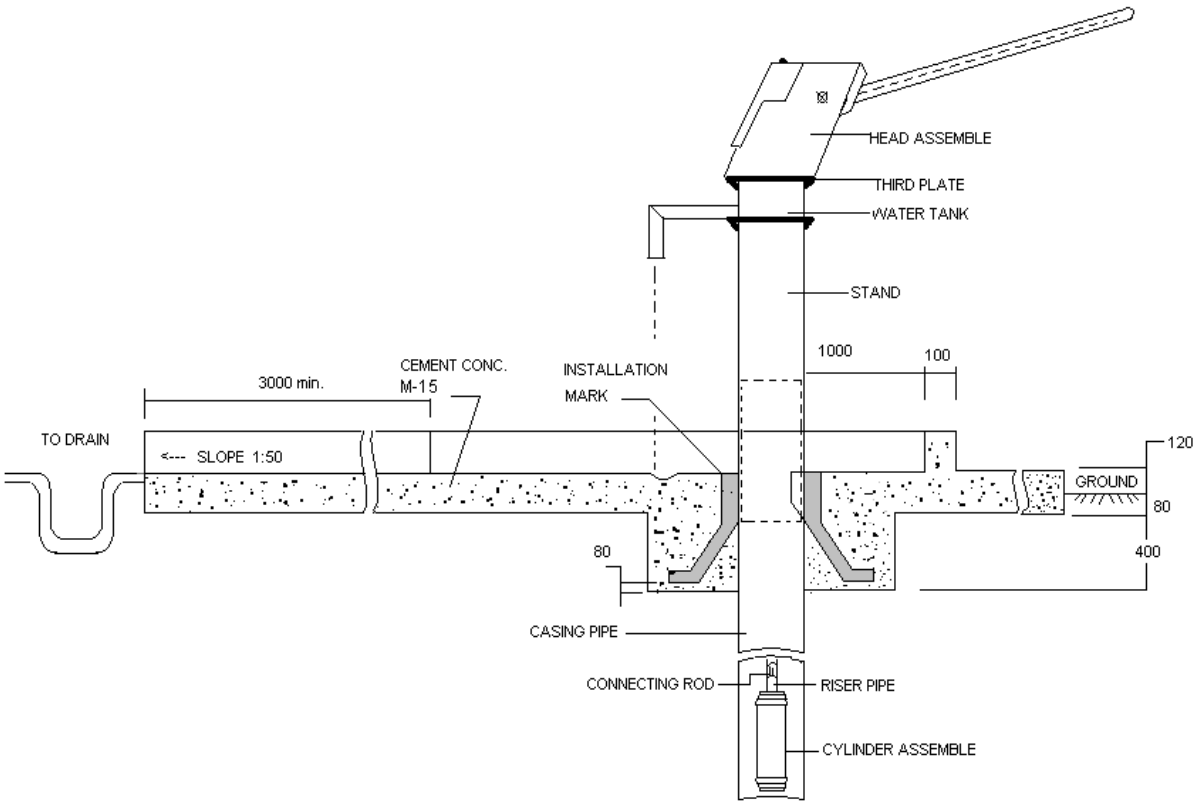
S.No.	Particulars of Items	Unit	Rate (In Rs.)

TELESCOPIC TUBE EWLL

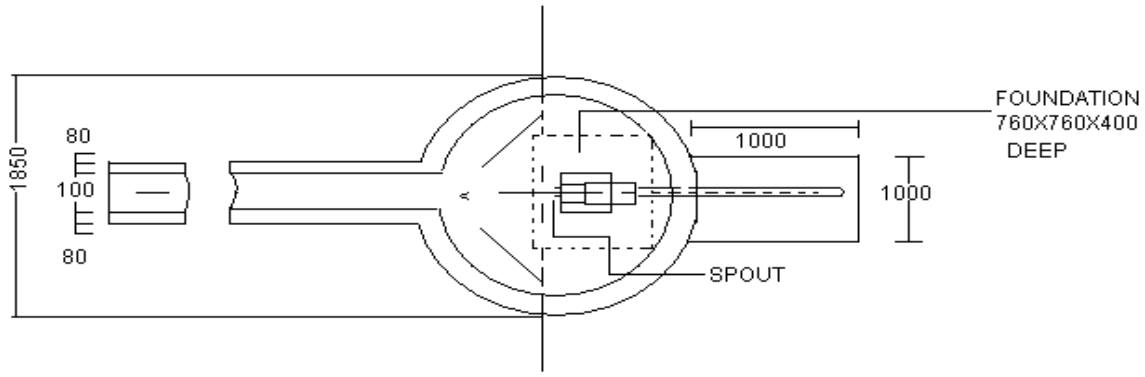
200/150 125mm dia



S.No.	Particulars of Items	Unit	Rate (In Rs.)



S.No.	Particulars of Items	Unit	Rate (In Rs.)

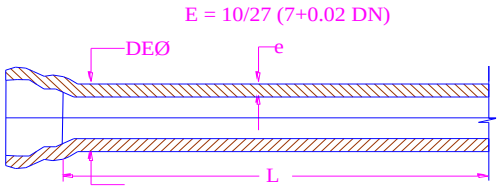


All dimensions in millimeters

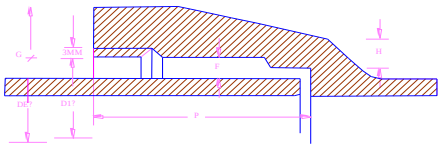
Figure not to scale

Typical Set-Up For Deepwell Handpumb

Drawings for Water Supply & Sewerage.

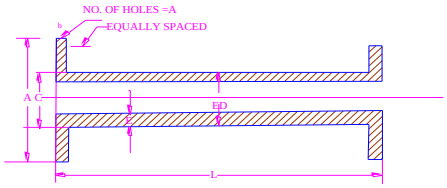


CANTRIFUGALLY CAST SOCKET & SPIGOT PIPE

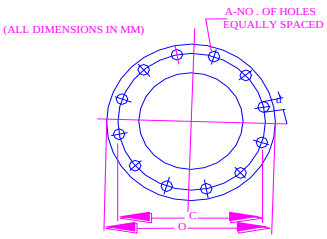


Dimensions of socket and spigot pipes (IS - 1536)

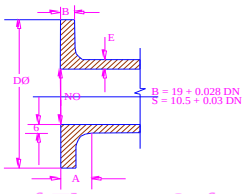
SOCKET & SPIGOT VERTICAL CAST PIPE



Flanged plpes - Vertlically Cast



Standard Flange Drilling of Flanged pipes



Dim of Flanges & fittiags

Drawing No.-1

Fitting & Specials

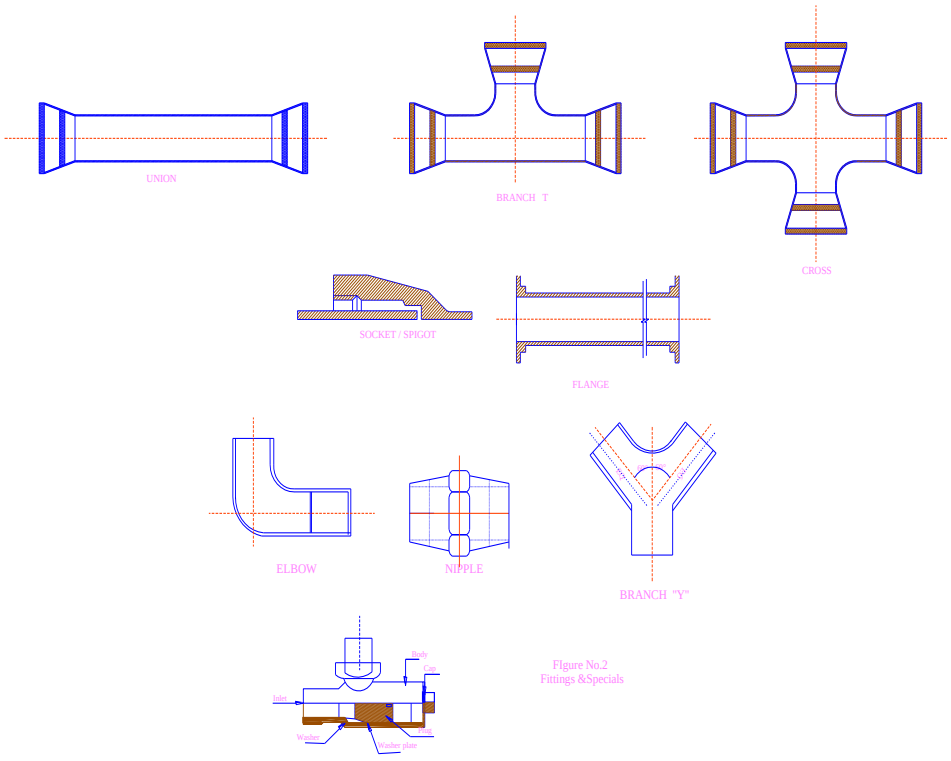
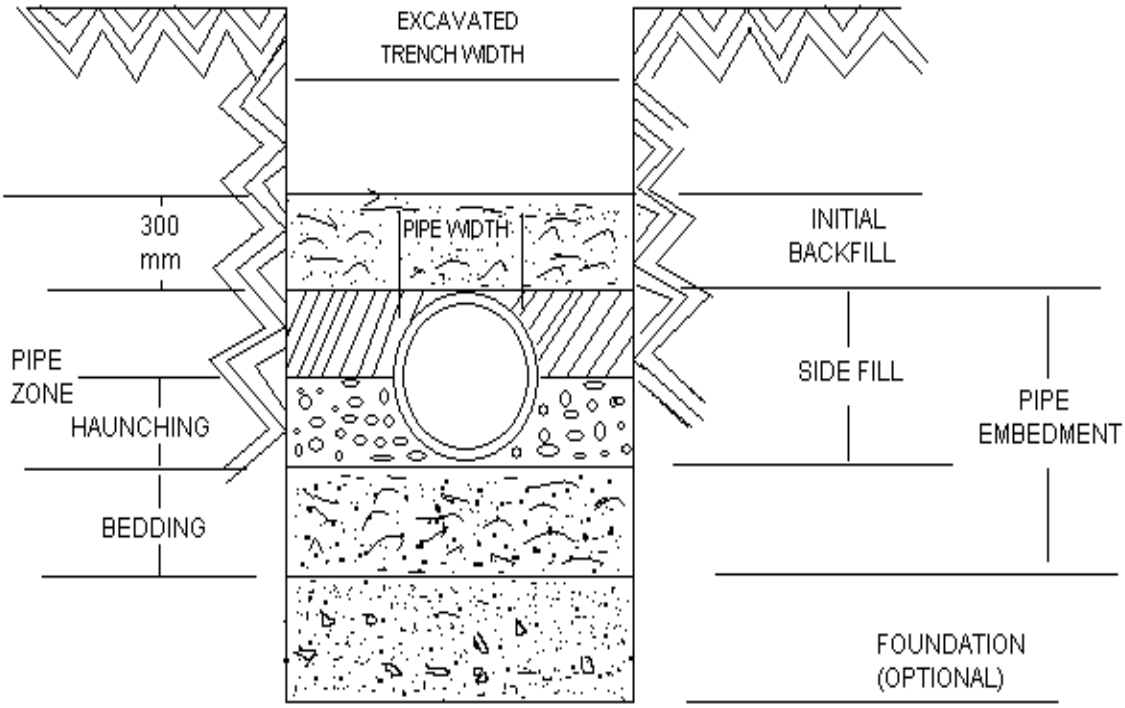


FIgure No.2
Fittings &Specials

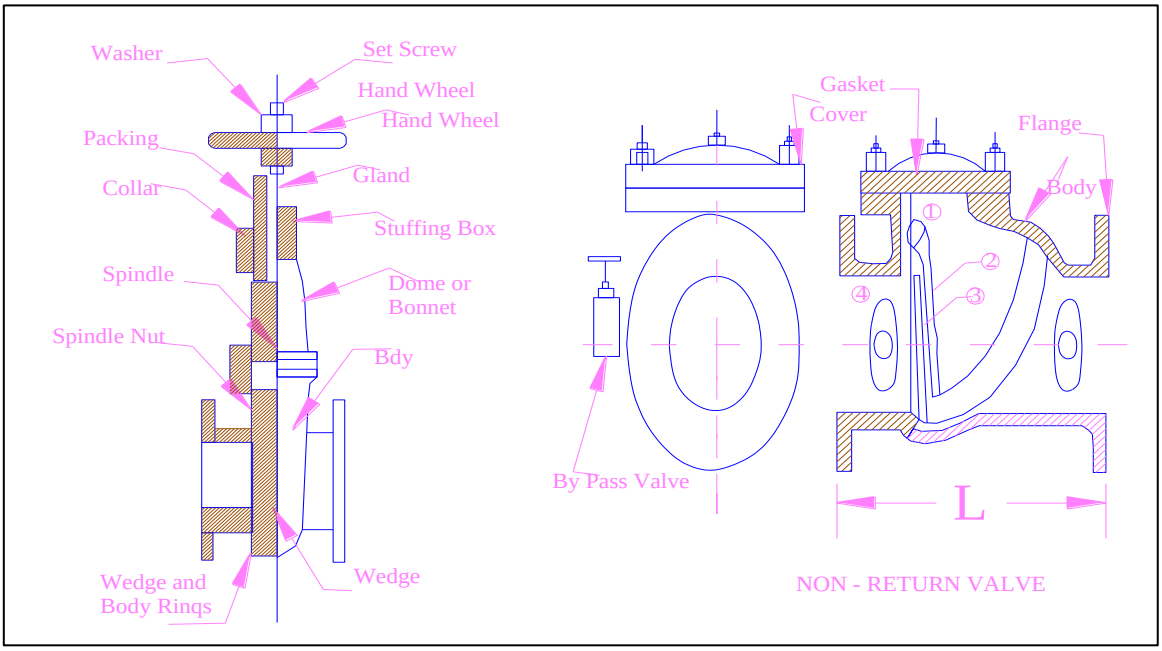
Drawing No.-2

Terminology of Trench Cross-Sections for UPVC & PVC - U Pipes



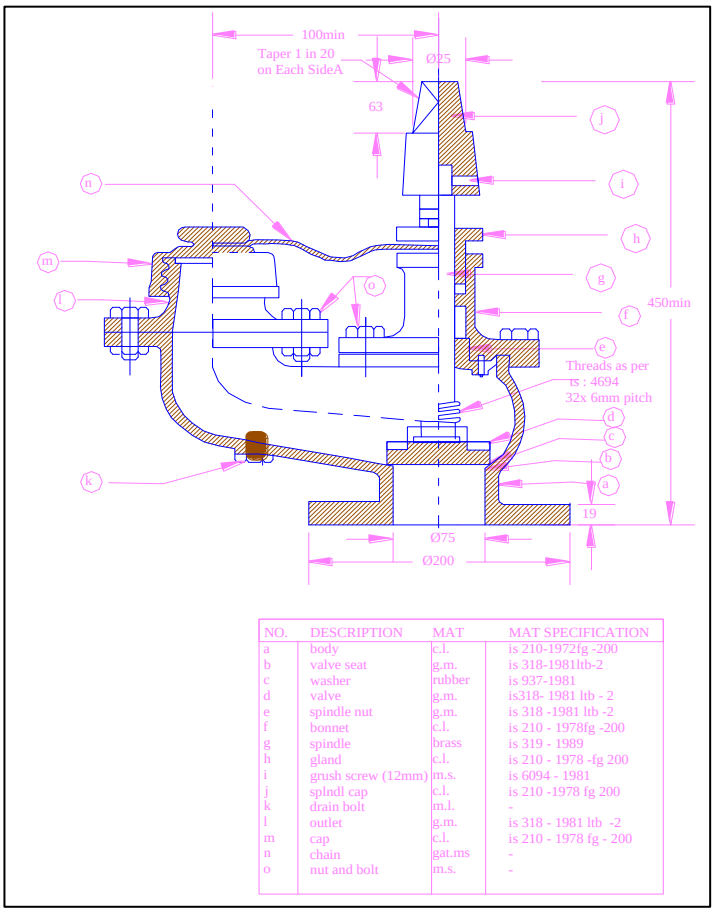
Drawing No. 3

Sluice Valve & Non Return Valve



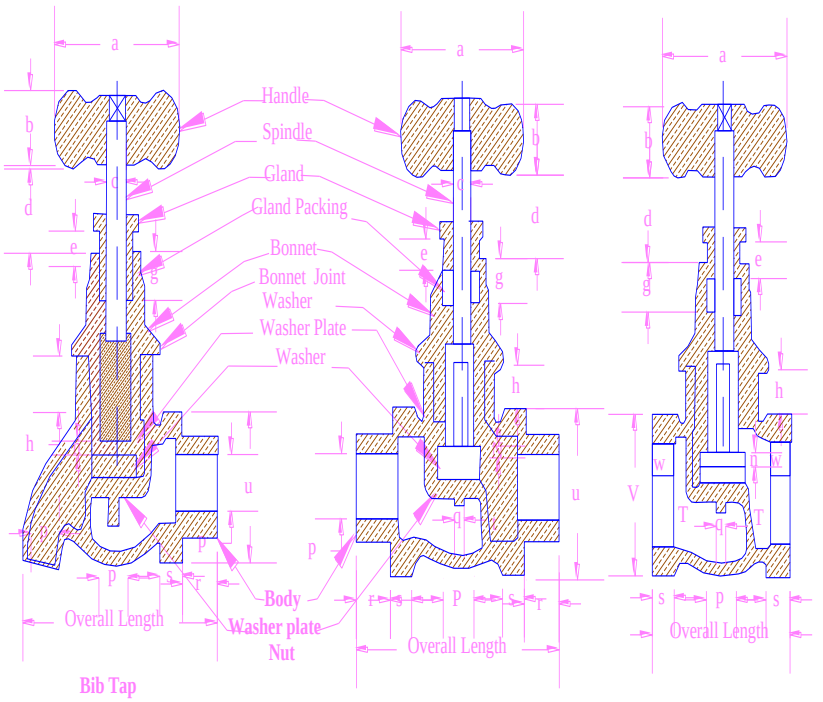
Drawing No. 4

Sluice Valve Gate, Under Ground Fire Hydrant



NO.	DESCRIPTION	MAT	MAT SPECIFICATION
a	body	c.i.	is 210-1972fg -200
b	valve seat	g.m.	is 318-1981ltb-2
c	washer	rubber	is 937-1981
d	valve	g.m.	is318- 1981 ltb - 2
e	spindle nut	g.m.	is 318 -1981 ltb -2
f	bonnet	c.i.	is 210 - 1978fg -200
g	spindle	brass	is 319 - 1989
h	gland	c.i.	is 210 - 1978 -fg 200
i	grush screw (12mm)	m.s.	is 6094 - 1981
j	splndl cap	c.i.	is 210 -1978 fg 200
k	drain bolt	m.i.	-
l	outlet	g.m.	is 318 - 1981 ltb -2
m	cap	c.i.	is 210 - 1978 fg - 200
n	chain	gat.ms	-
o	nut and bolt	m.s.	-

Drawing No. 5



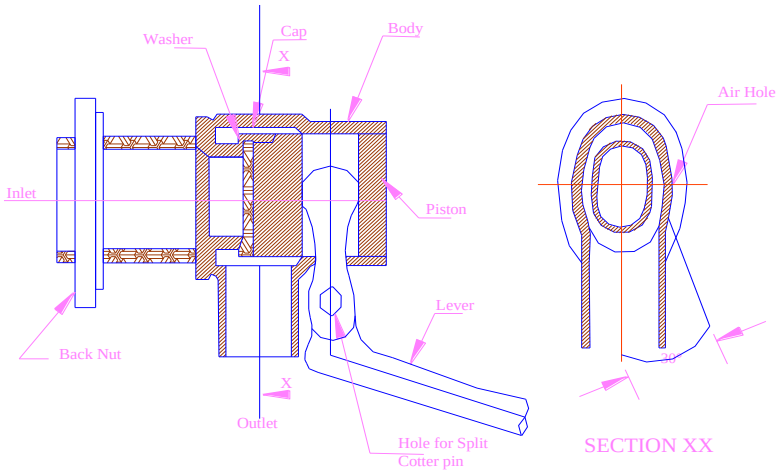
ALL DIMENSIONS IN MILLIMETRES

Nominal sizes	Dimensions																				Lift of washer plate (withWasherin position min. x
	a	b	c	d	e	f	g	h	i	k	l	m	n	p	q	r	s	t	u	v	w	
8	47.8	13.3	7.8	16.5	6.3	2.0	7.9	7.0	3.8	10.0	m20x1.5	14.3	2.8	6.5	2.4	11.0	4.7	1.6	15.2	19.5	7	3.5
10	54.0	14.0	9.4	18.7	7.5	2.0	9.5	9.5	4.7	11.5	m20x1.5	15.9	3.2	9.0	3.2	11.4	7.9	2.0	20.8	23.3	7	4
15	54.0	14.0	9.4	19.0	7.5	2.0	9.5	11.0	5.6	11.5	m24x1.5	19.0	3.2	13.0	4.1	15.0	9.5	2.0	25.6	28.3	9	4.6
20	60.4	15.7	10.9	20.1	8.9	2.5	11.1	12.5	6.4	13.5	m30x1.5	25.4	4.0	18.0	4.9	16.3	10.3	2.0	30.5	33.0	10.5	6
25	66.8	18.0	12.5	23.0	10.1	2.5	12.7	13.0	7.1	17.0	m39x1.5	33.3	4.0	23.0	4.9	19.1	11.0	2.8	37.6	42.4	11.5	7
32	74.6	20.5	14.1	30.9	11.4	2.5	14.3	16.0	7.8	19.0	m48x1.5	40.1	4.3	30	5.9	21.4	12.7	32	47.2	52.1	13.5	9.5
40	82.5	22.0	15.7	33.3	12.7	2.5	15.9	17.5	8.6	20.5	m56x1.5	47.7	5.5	36	6.6	21.4	14.3	3.2	56.4	58.5	13.5	11
50	95.0	25.3	17.3	35.9	14.0	2.5	17.4	17.5	12.5	26.0	m72x1.5	63.5	6.3	46	8.3	25.1	15.9	4.0	70.1	71.5	16.5	14.5

X means :Lift of washer plate (withWasherin position min.

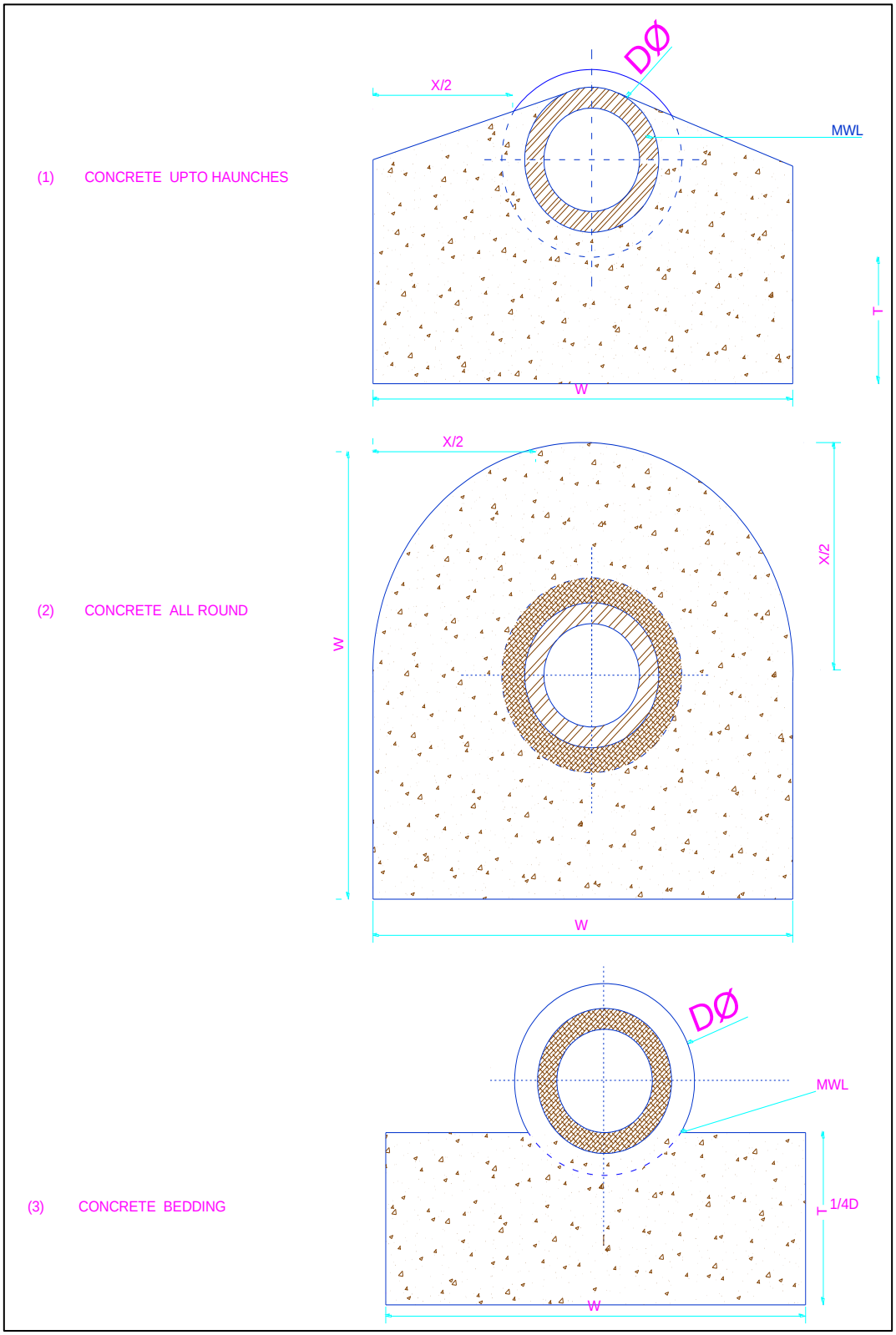
Drawing No. 6

Bal valves



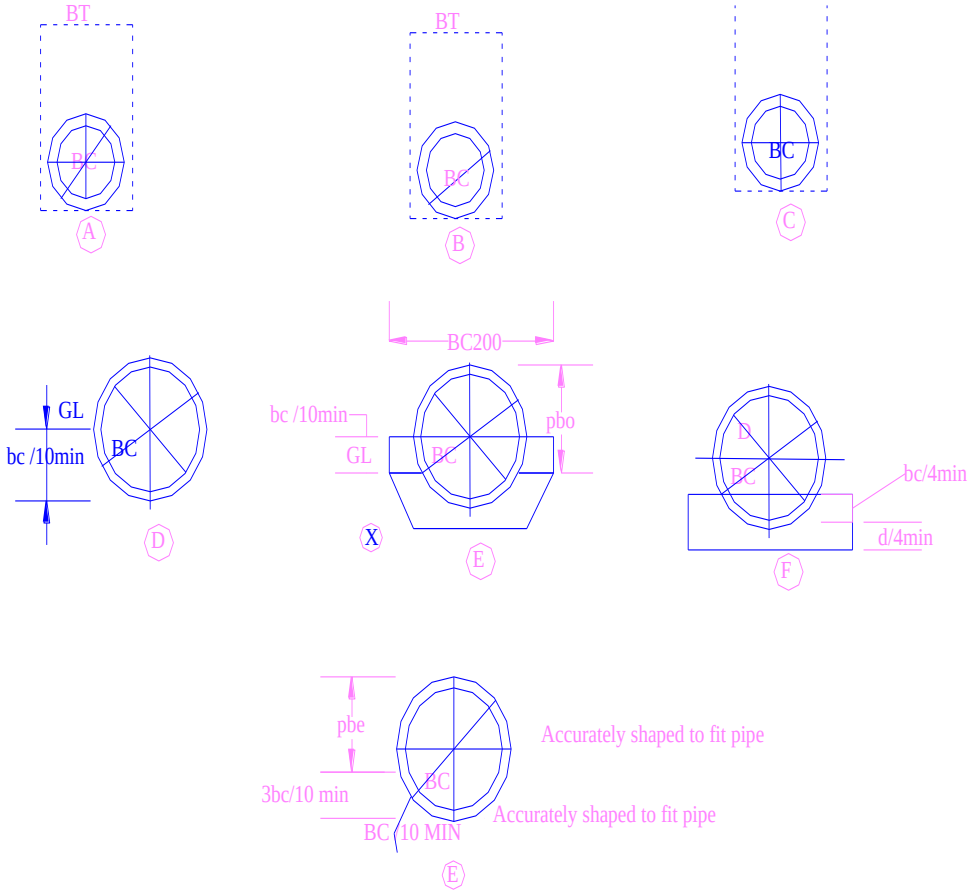
Drawing No. 7

Bedding/Encasing Stoneware Pipes



Drawing No. 8

Bedding of Pipes

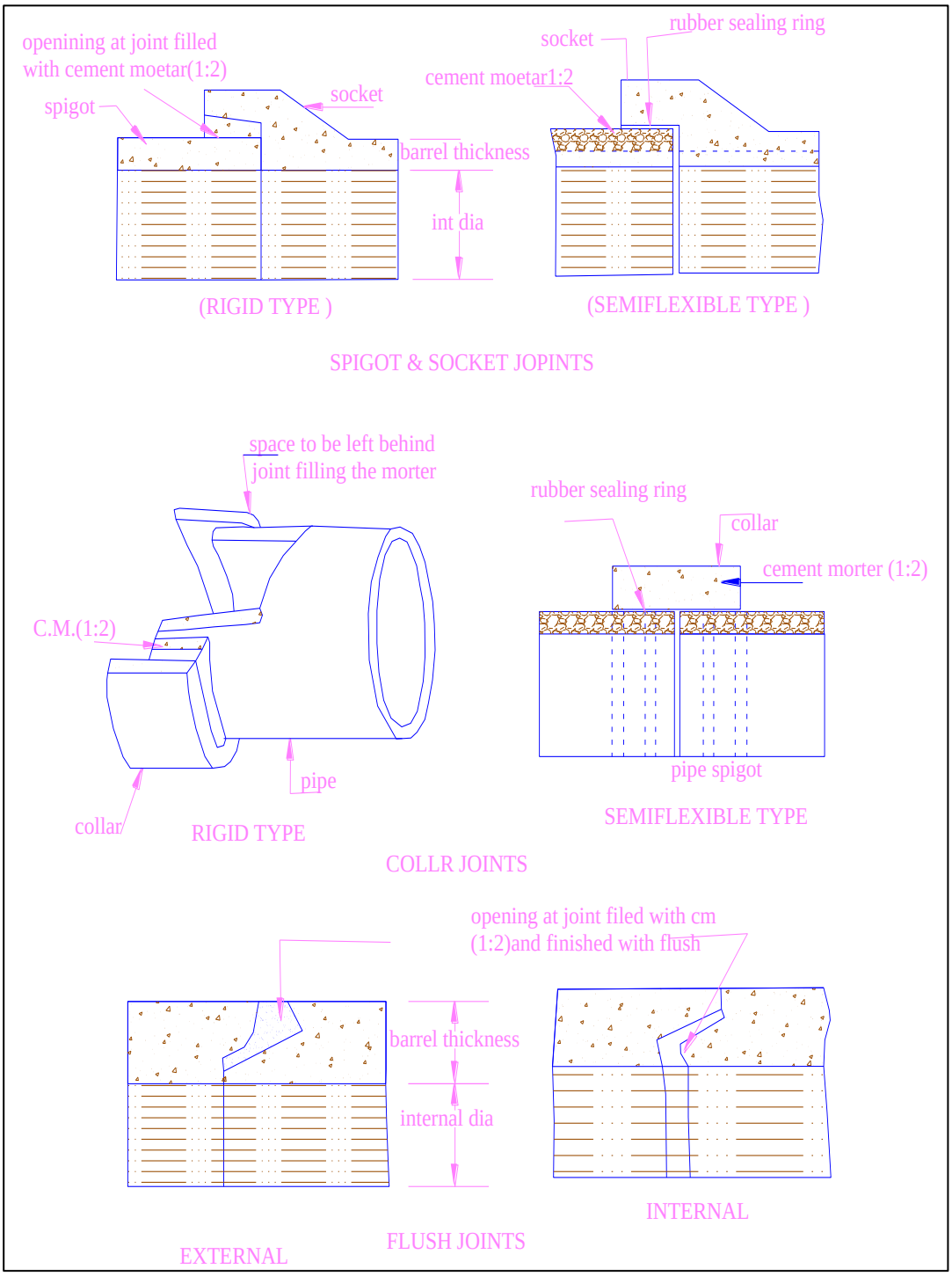


d	=	internal diametre
bc	=	horizontal breadth outside of the pipes in metres (i.e. external dimmetre in case of a circular pipe)
bt	=	horizontal width of trench immediately below the top of the pipe in metres
h	=	helgth of fill above top of pipe in metres
x	=	min 200 for 'h' <5000when 'h'>5000,10for every 250 of 'h'

FIG	BEDDING	LOAD FACTOR
A	ORDINARY	1.5
B	---DO---	---
C	FIRST CLASS	1.9
D	---DO---	----
E	---DO---	----
C	ONCRETE CRADDLE	2.25 TO 3.4
G	----DO---	----

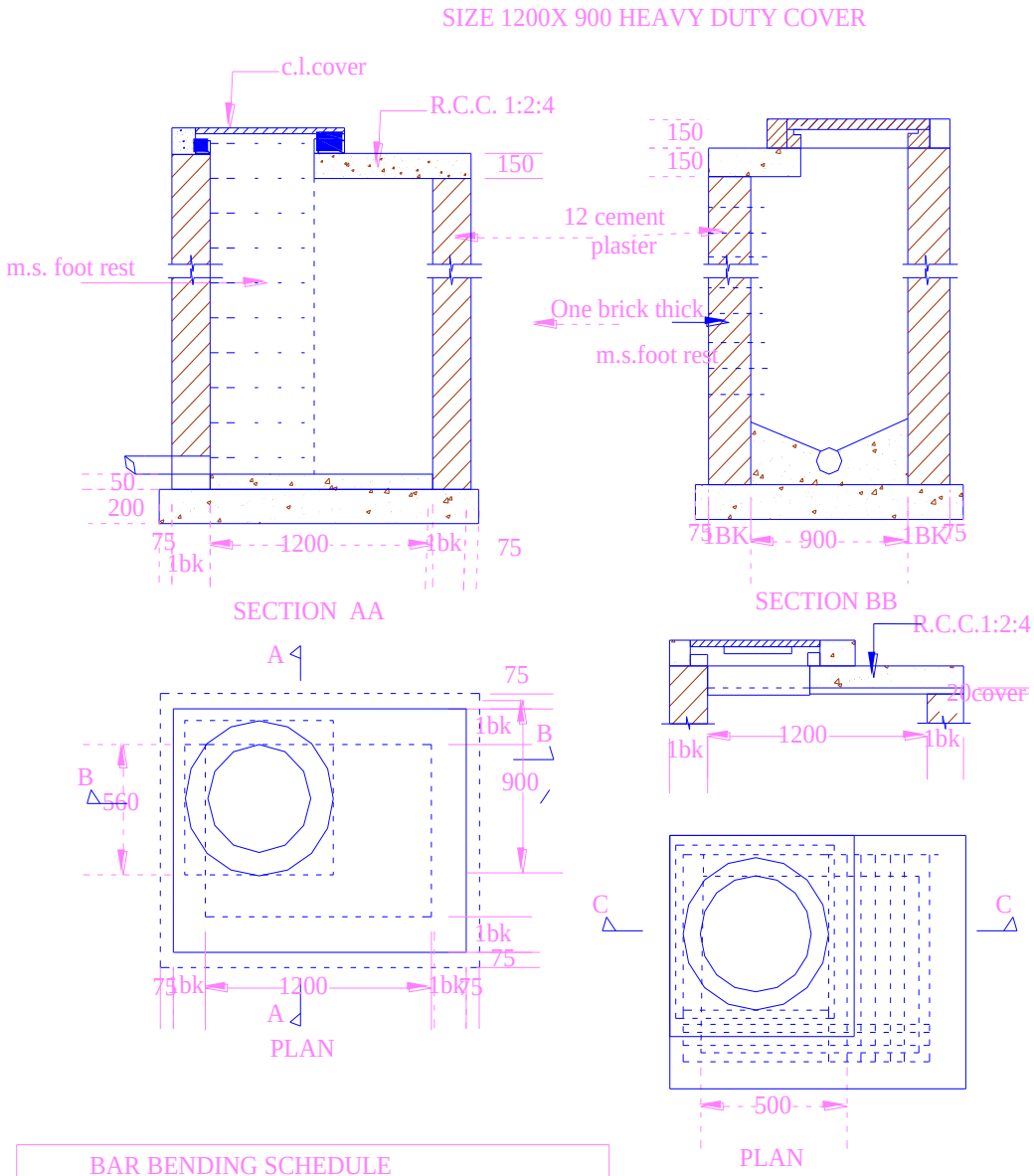
Drawing No. 9

Joints of Concrete Pipes



Drawing No. 10

Size 1200x900 mm Heavy Duty Cover

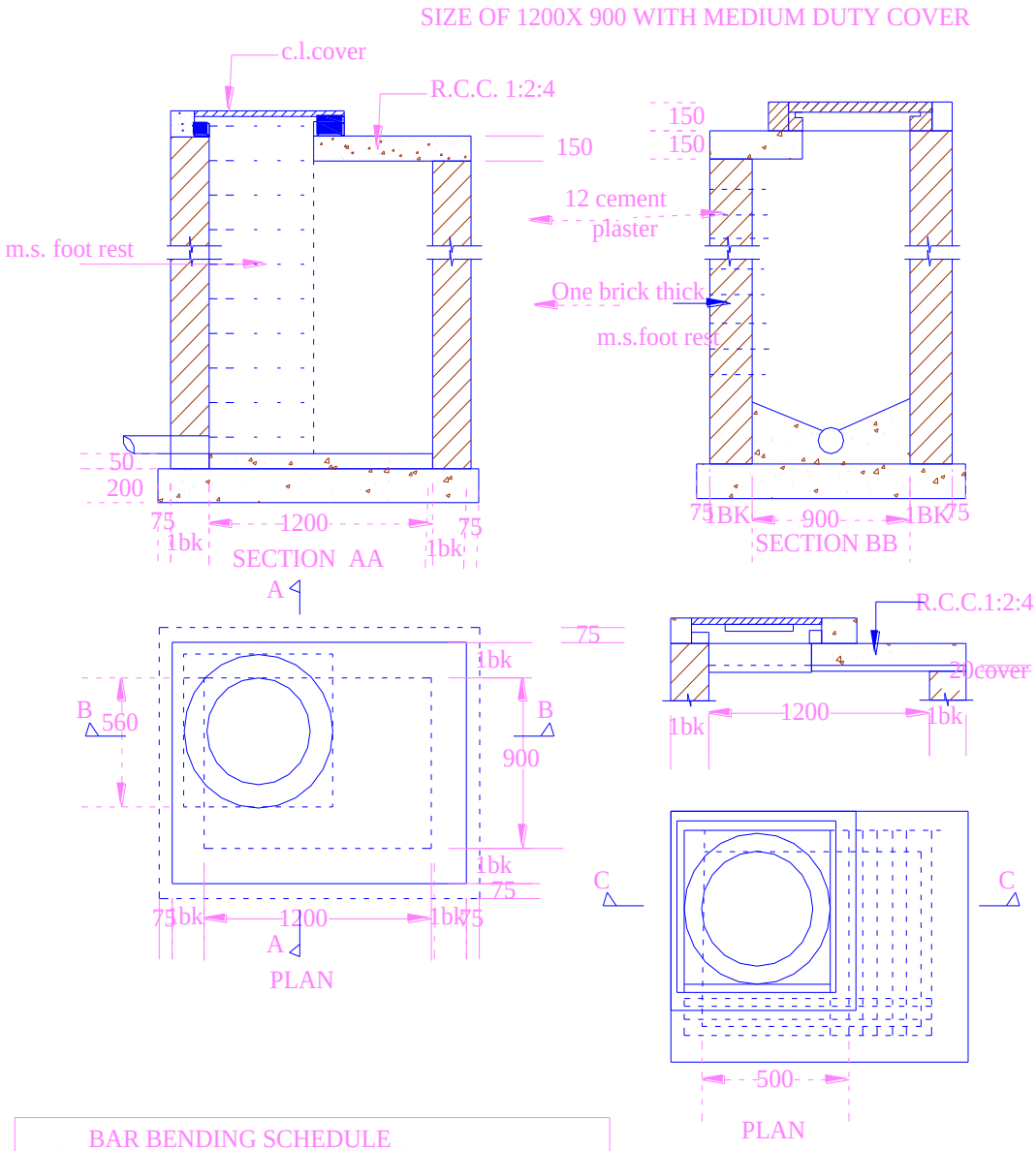


BAR BENDING SCHEDULE

Mark	diamm	no	length	Bending
a	12	4	1200	100 — 100 1000
b	12	4	1300	100 — 100 1100
c	12	1	580	100 — 100 380
d	12	1	625	100 — 100 425

Drawing No. 11

Size 1200x900 mm with Medium Duty Cover



BAR BENDING SCHEDULE

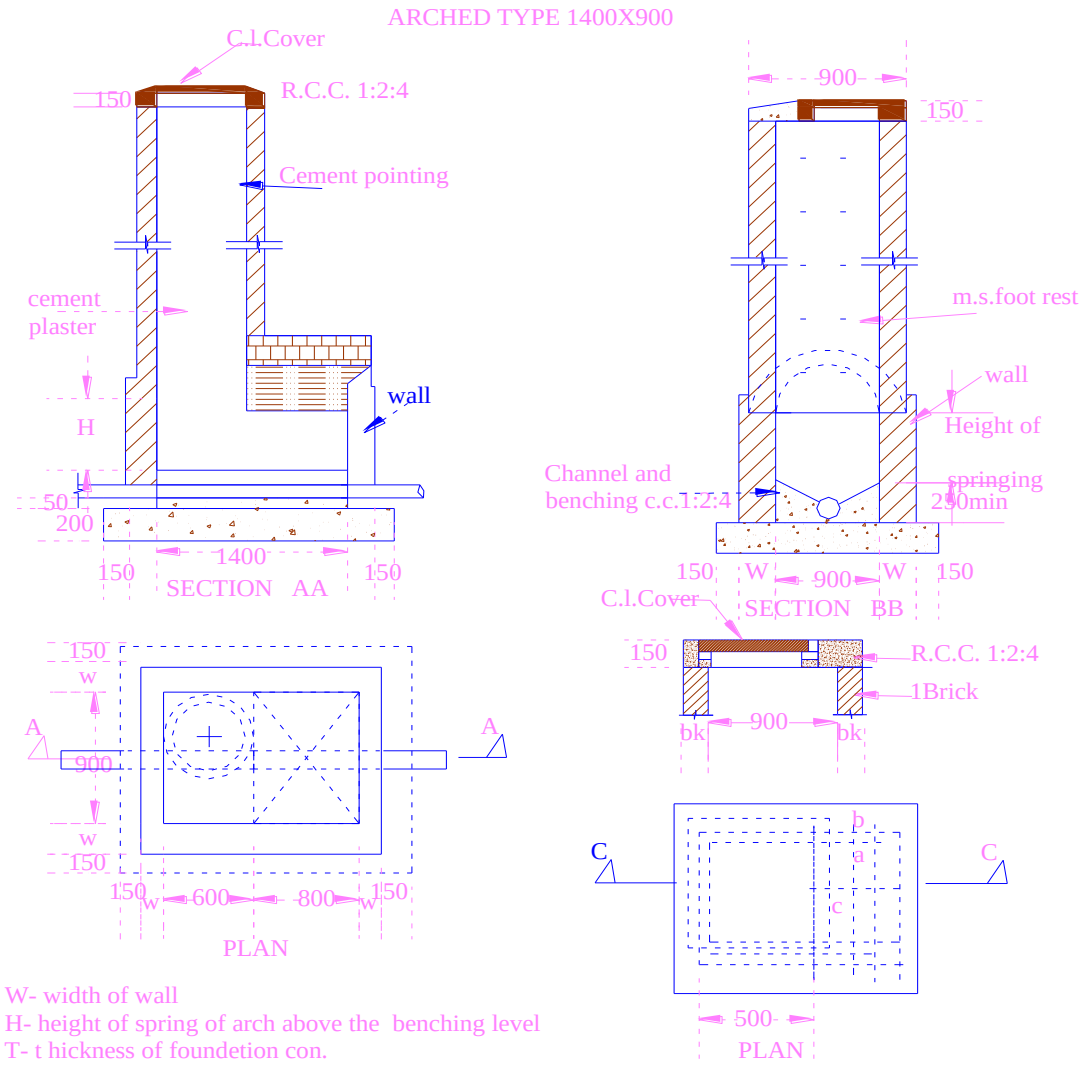
Mark	diamm	no	length	Bending
a	12	4	1200	100 — 100 1000
b	12	4	1300	100 — 100 1100
c	12	1	580	100 — 100 380
d	12	1	625	100 — 100 425

Drawing No. 12

Size 9000x800 mm Light Duty Cover

Drawing No. 13

Size 1400x900 mm Arched Type

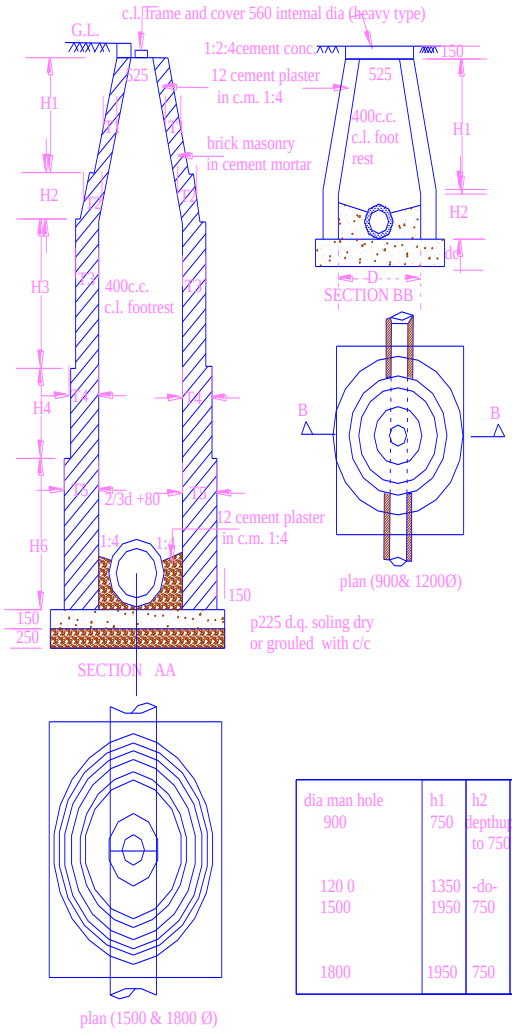


W- width of wall
H- height of spring of arch above the benching level
T- t hickness of foundetion con.

BAR BENDING SCHEDULE				
Mark	diamm	no	length	Bending
a	12	5	1000	100 — 100 800
b	12	3	1300	100 — 100 1100
c	12	1	680	100 — 100 480
a	12	5	1000	100 — 100 800
b	12	2	1300	100 — 100 1100
c	12	1	620	100 — 100 420

Drawing No. 14

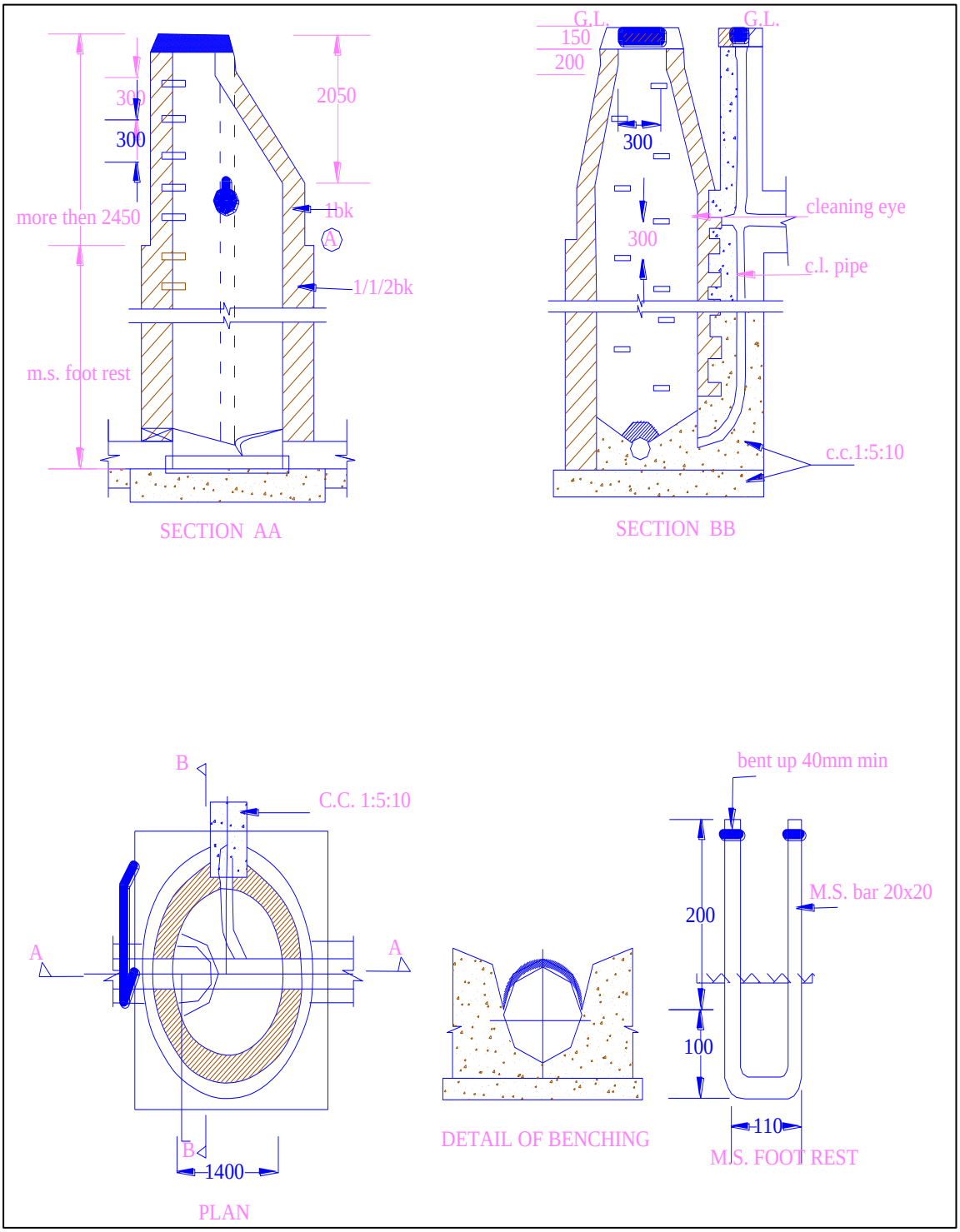
Manhole Design



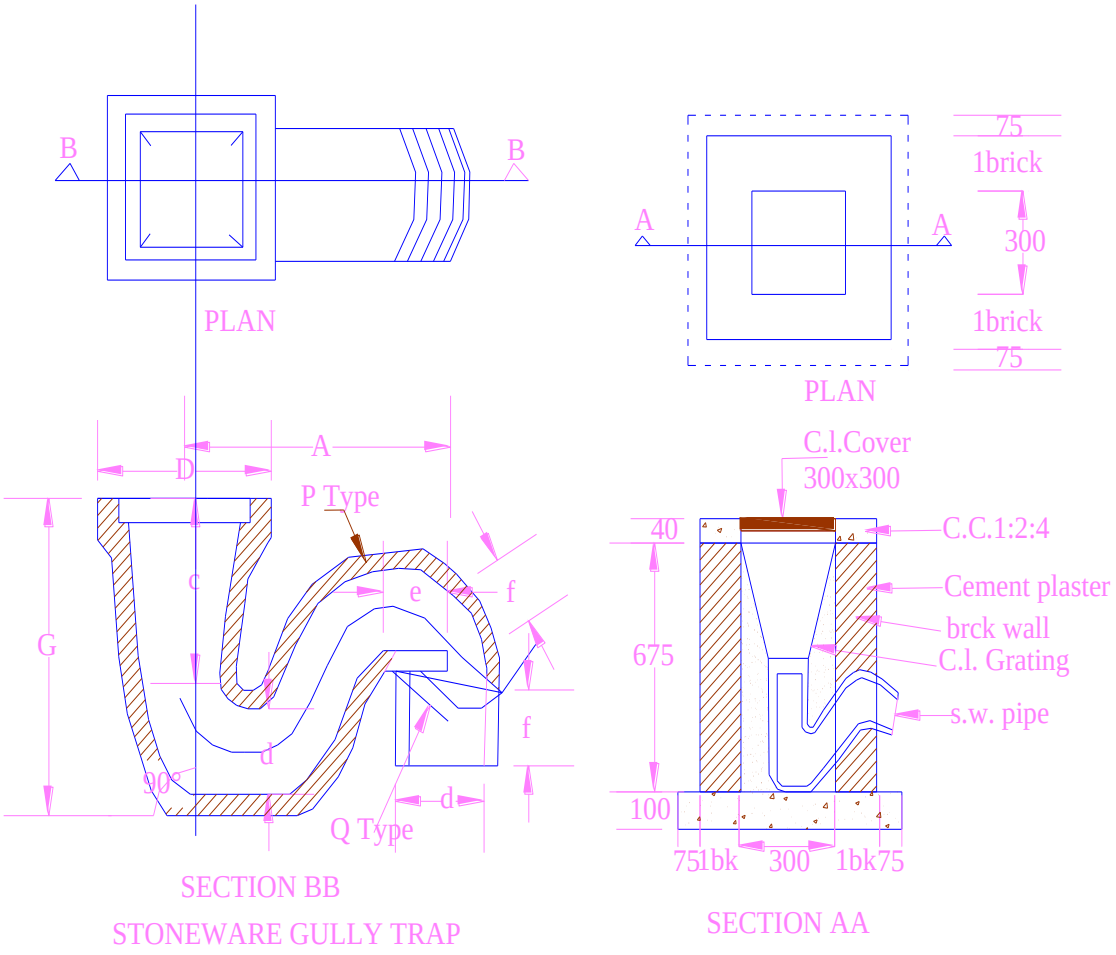
dia man hole	h1	h2	h3	h4	h5	t1	t2	t3	t4	t5	bed conc dc	remarks
900	750	depthup to 750	-	-	-	1bk	1bk	-	-	-	228	
120 0	1350	-do-	-	-	-	1bk	1bk	-	-	-	300	thesoling will
1500	1950	750	2100	4050	depth variable up to 4000	1/1/2bk	1bk	2bk	2/1/2bk	3bk	300	be provided where the site engineer will feel neoessary
1800	1950	750	2250	4050	-do-	1/1/2bk	1bk	2bk	2/1/2bk	3bk	300	

Drawing No. 15

Drop Manhole with Benching



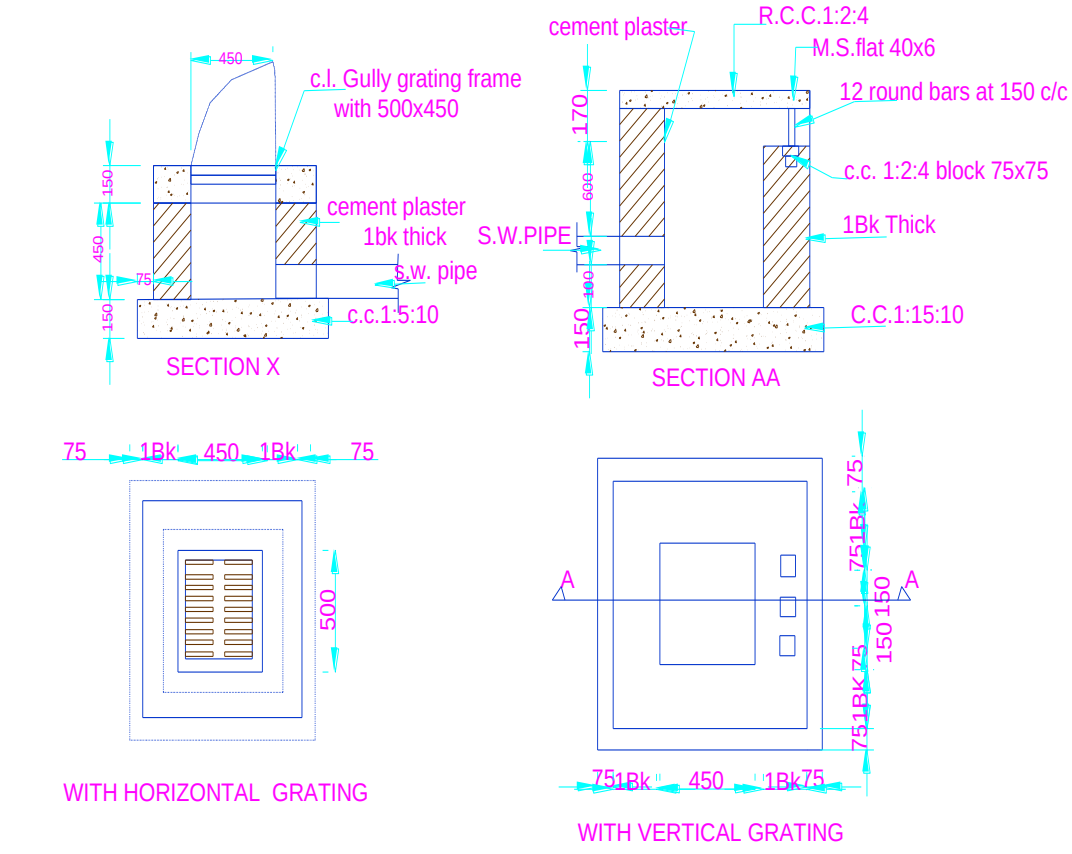
Drawing No. 16

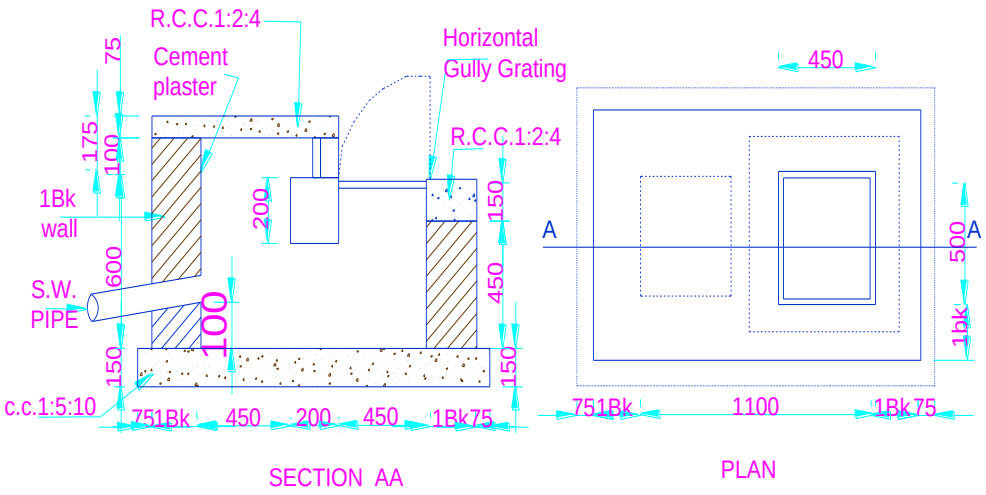


TYPE	SIZE	A	C	d	D	D	E	F	F	G
	100X100	305	175	100	100	100	65	-	-	330
P	125X100	265	165	100	125	100	60	-	-	345
	150X100	330	165	100	150	100	75	-	-	346
	180X100	320	200	100	100	100	65	-	-	380
Q	180X150	405	270	150	180	150	75	-	-	520
	125X100	330	165	100	125	100	-	80	-	345
S	125X100	290	185	100	125	100	-	-	115	346
	180X150	445	275	150	180	150	-	-	125	520

Drawing No. 17

Road Gully Chamber

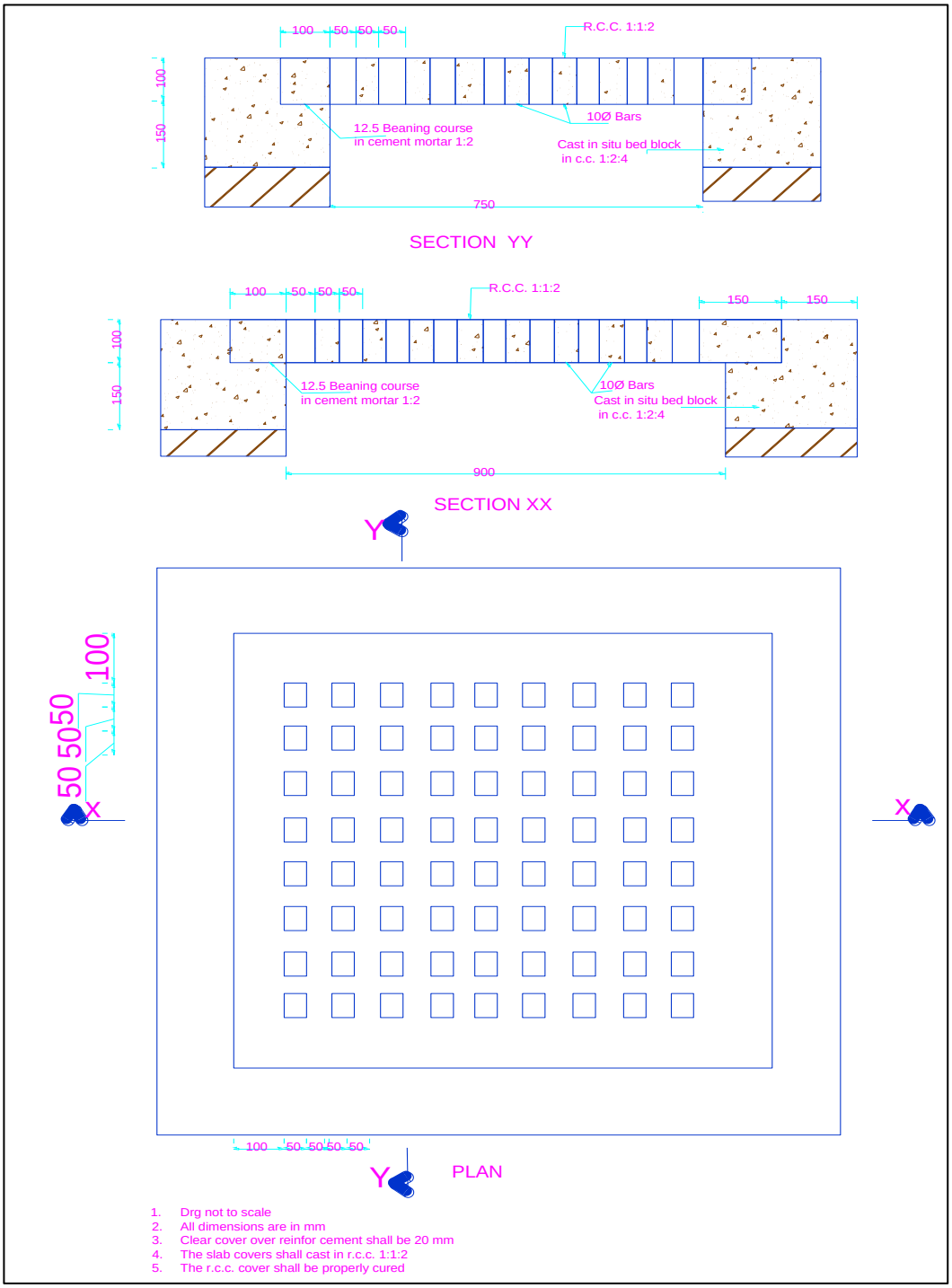




WITH HORIZONTAL AND VERTICAL GRATING

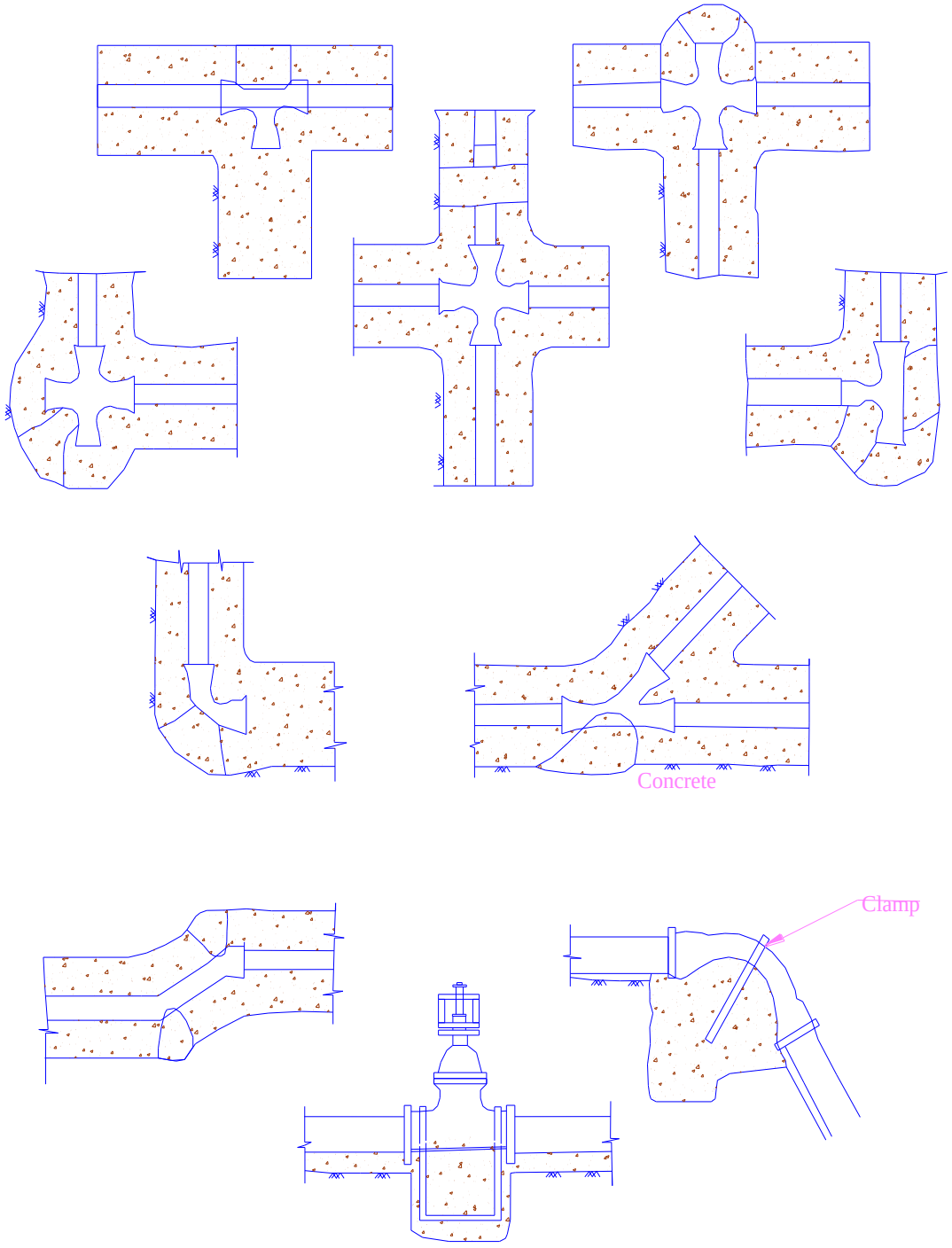
Drawing No. 18

Road Gully Grating



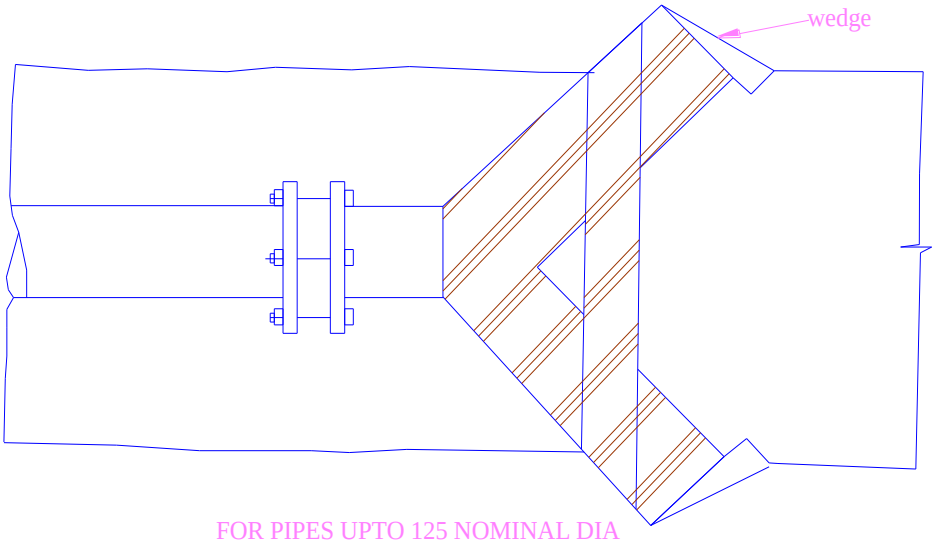
Drawing No. 19

Thrust Blocks

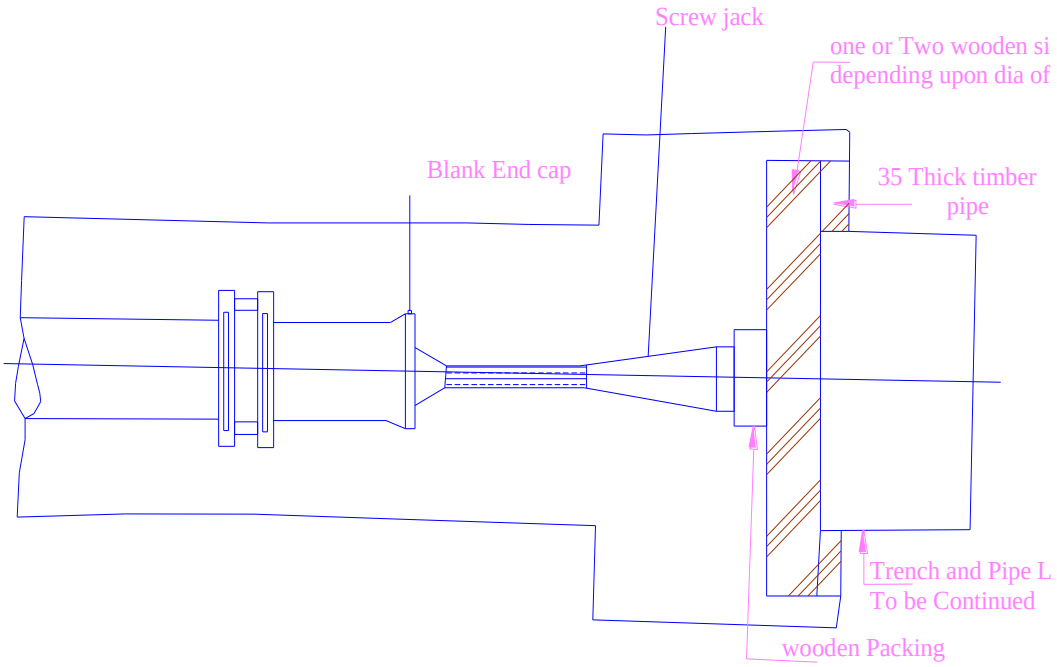


Drawing No. 20

Closure of Pipes for Hydrostatic Test

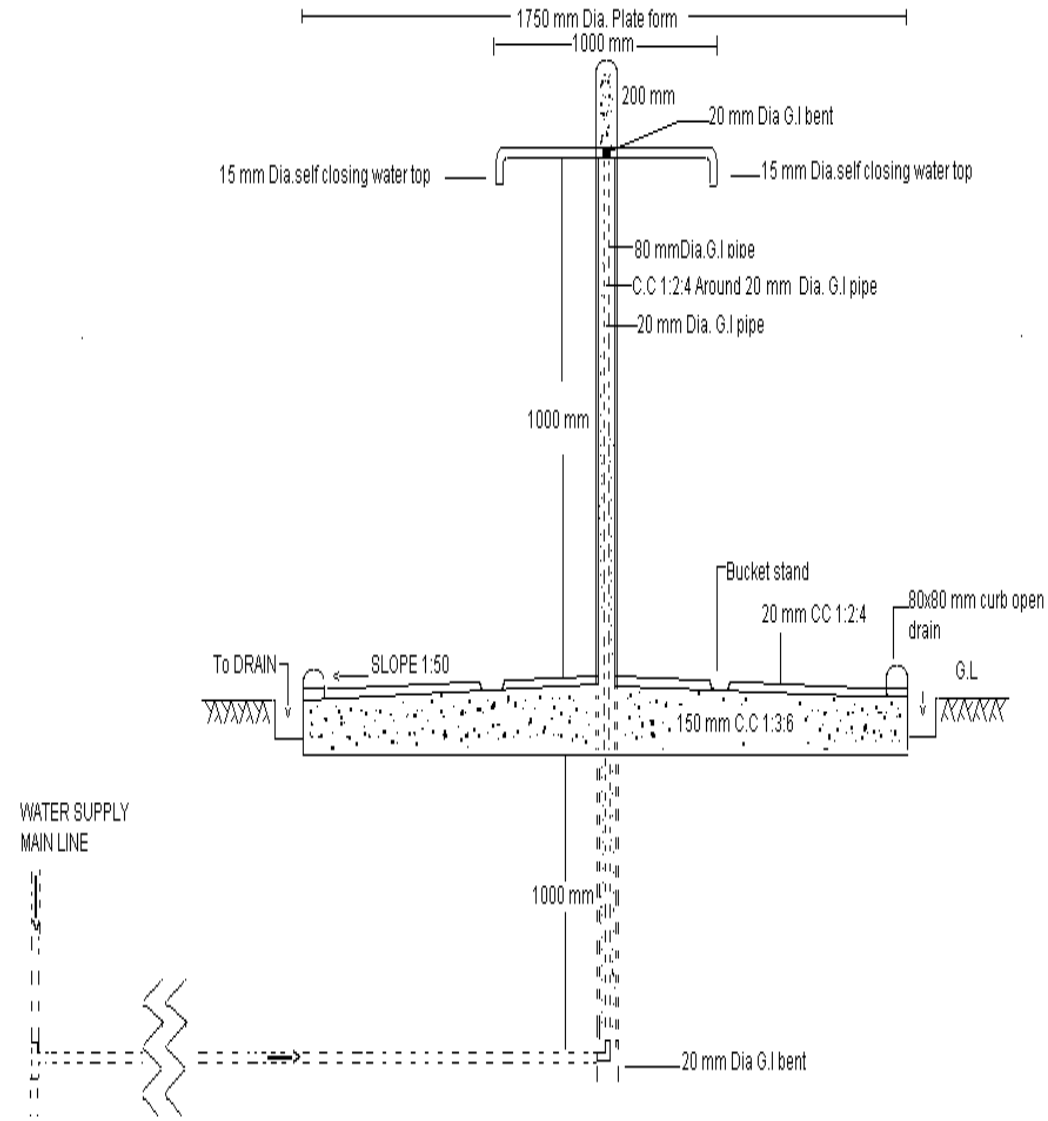


FOR PIPES UPTO 125 NOMINAL DIA



Drawing No. 21

Two taps Stand Post in Hard Strata

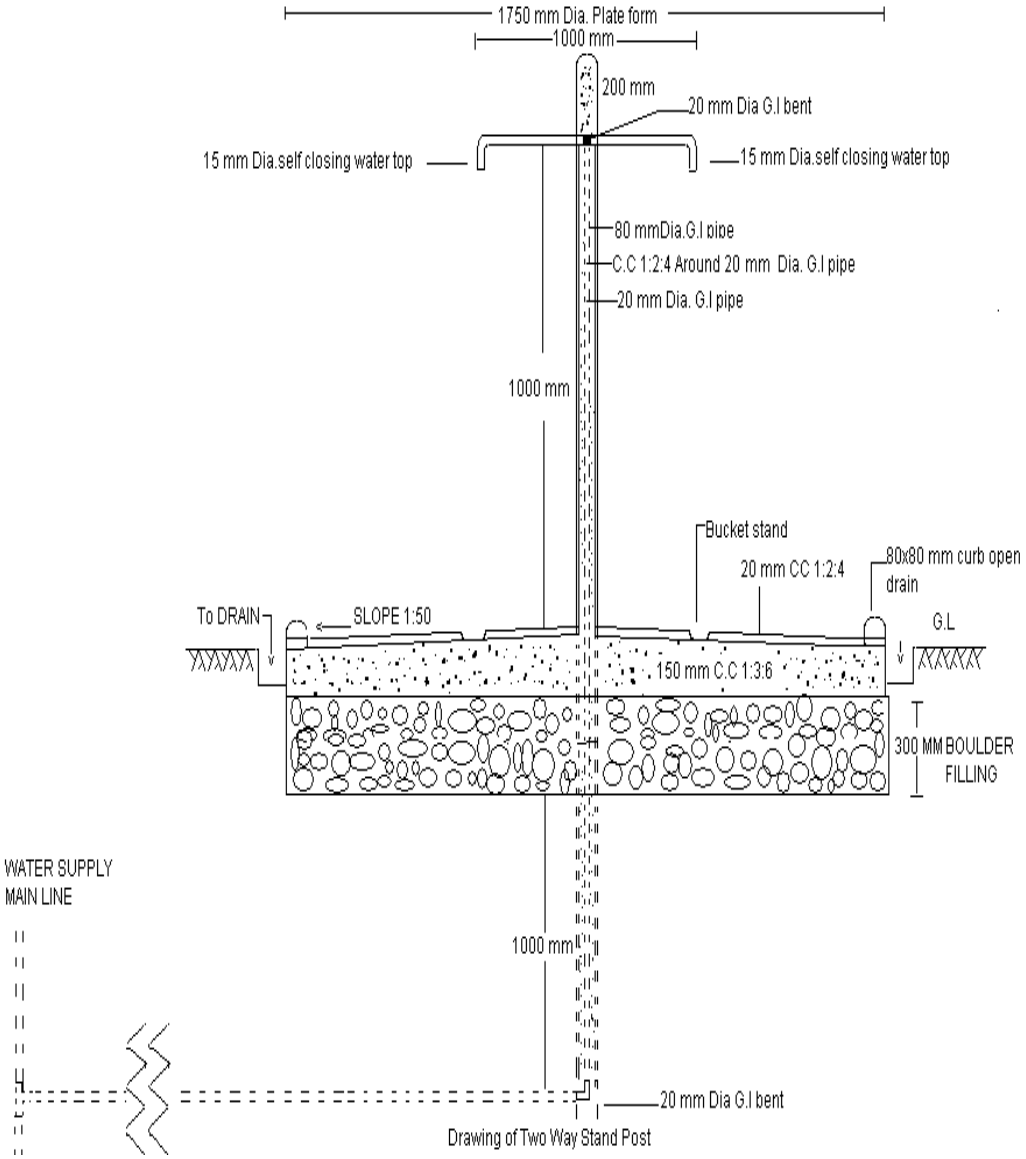


Drawing of Two Way Stand Post

All dimensions are in milimeter

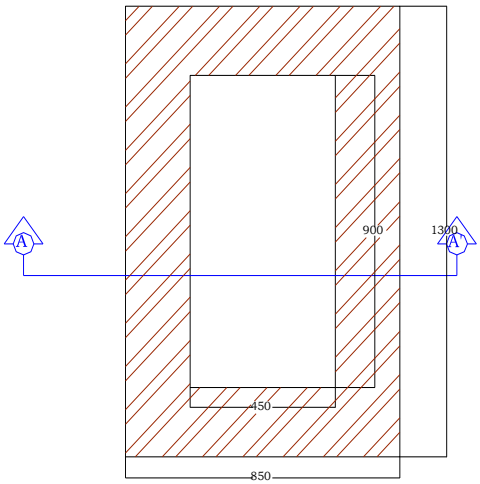
Drawing No. 22

Two taps Stand Post in Black Cotton soil

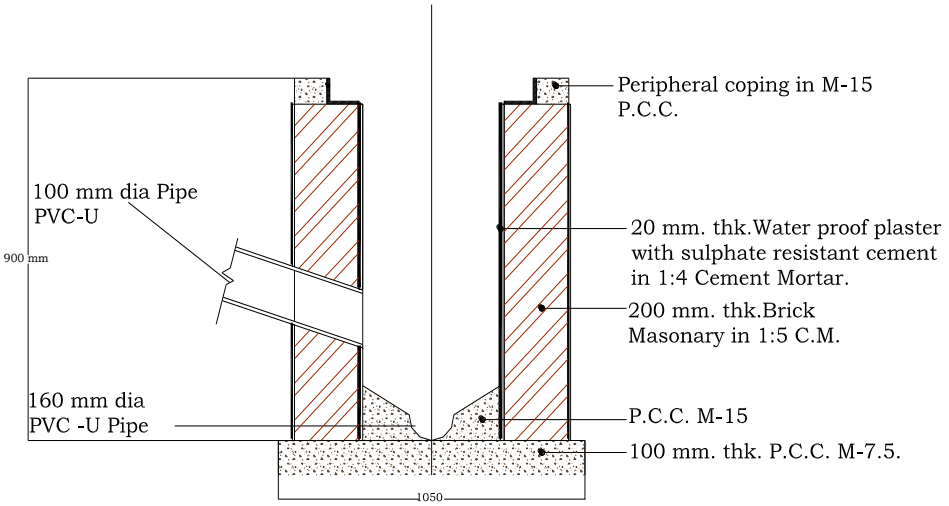


Drawing No. 23

MANHOLE CHAMBER 900MM X 450 MM



PLAN MAIN SEWER CHAMBER

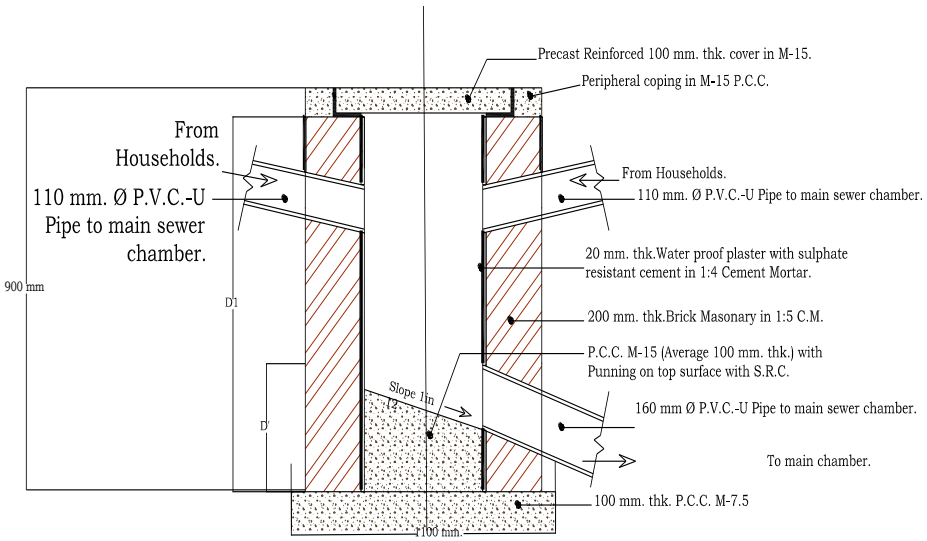


SECTION AT AA OF MAIN SEWER CHAMBER

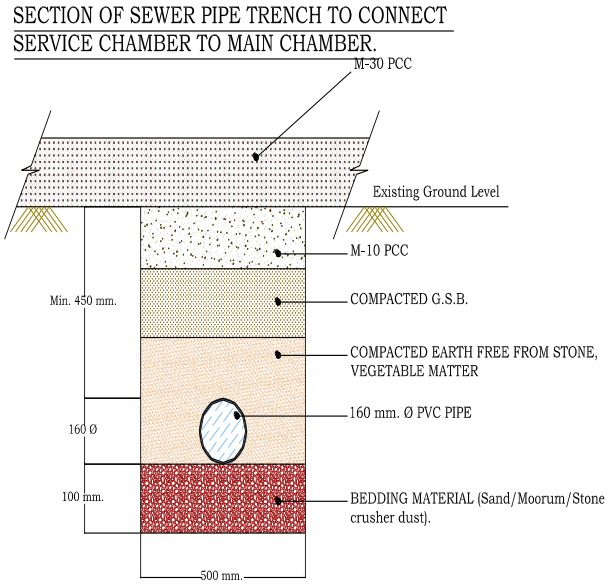
* Note :- 1. D' depends as per site conditions.
2. D varies from 0.60 m. to 3.00 m.

Drawing No. 24

HOUSE CHAMBER 450MM X 600 MM



SERVICE CHAMBER



Drawing No. 25