

CONTRACT NO.

GUJARAT WATER SUPPLY & SEWERAGE BOARD GANDHINAGAR

(GOVERNMENT OF GUJARAT UNDERTAKING)



Bid documents for “The Lowering, Laying & Jointing of 160 mm PVC Pipeline for Bhesana Village Under Dediyan Group RWSS M&R Programme”

Estimated Cost: Rs. 216924.60

VOLUME- III

PRICE-BID

Executive Engineer
Gujarat Water Supply & Sewerage Board
P.H. Works Division, MEHSANA

PREAMBLE TO PRICE SCHEDULE

- (1) **Name of Work:-** “The Lowering, Laying & Jointing of 160 mm PVC Pipeline for Bhesana Village Under Dediyan Group RWSS M&R Programme”
- (2) The bidder shall quote his firm and fixed price for the entire work under this Contract, defined in more details in various sections of this bid document.
- (3) The rates and prices shall be submitted in the electronic formats given by n-procure which is called Schedule-B. Rates and prices received in any other formats will be rejected and the Bids will be disqualified.
- (4) It will be entirely at the discretion of the Employer to accept or reject the bidder’s proposal, without giving any reasons whatsoever and the bidder shall not be permitted to withdraw his bid on this account.
- (5) Price **Schedule-A** gives the Schedule showing approximately the materials to be free supplied from the by client.
- (6) In **Schedule-B** the Bidder shall quote prices for the items on lump sum / unit rate as called for against the BOQ item.
- (7) In Price Schedule-B, bidder shall quote his price for entire work. Prices quoted in Schedule-B only will be considered for price evaluation & shall form a part of the Contract Agreement.
- (8) In the Price Schedule B, bidder shall furnish breakup of his prices quoted in Price Schedule-B and shall be carried forward to Schedule-B for comparison and evaluation.
- ~~(9) The Bidder shall quote his prices for Operation & Maintenance in Schedule-C. Bidder shall give year wise break up of cost for 5 years O&M in Schedule-C/4 to Schedule-C/5 separately for Schedule-C. The total shall be inline to the price quoted in Schedule-C. The total shall be carried forward to Schedule-B for comparison and evaluation.~~
- (10) Wherever for a particular item the quantities have been specified payment shall be on unit rate basis and unit variation in quantity will be paid with pro rata basis.
- (11) Each item is to be individually priced online and the amounts shall be added up to arrive at the “Total of each Price Schedule”. No column in the Schedules of prices shall be left blank except where the item description requires the item to be priced on “as applicable” basis. The item shall not be priced if it is “not applicable” to the bidder’s design, in which case the bidder shall add the words “NOT APPLICABLE”. The wording in the item description is for subject matter guidance only; clause references are indicative only and all other relevant clauses shall also be referred to. The prices shall allow for all the works covered under the bid and all liabilities and contractual obligations whether separately specified or not. Items against which no prices are quoted shall not be separately paid for and the bidder shall be deemed to have covered the cost of execution of such items

- (according to the requirements of the bid document) in the prices quoted for other items.
- (12) Items not specifically listed in his Price Schedules, but required to be executed for satisfactory working/safety of the system as specified, will not be separately paid for by the Employer when executed and shall be deemed to be already covered by other items and rates listed in the price sheets. No extra payment shall be given for any item which is required to complete and perform the project.
- (13) The total of the item prices in Price Schedule B shall be equal to the price quoted by the bidder in Price Schedule B and shall be firm and fixed, during the pendency of the Contract. In case of any discrepancy noted in the various price schedules, those in Schedule B will be considered and binding on the Contractor. The prices in Price Schedule B of the successful bidder shall be corrected accordingly. Only Price Schedule-B after carried over and arithmetic corrections if any will be considered for financial evaluation of the bid.
- (14) Schedule 'D' gives the basis of interim payment for construction of civil works.
- (15) The bidder shall be deemed to have allowed in his price for provision, maintenance and final removal of all temporary works of whatsoever nature required for construction including temporary bunds, diverting water, pumping, de-watering etc. for the proper execution of works. The rates shall also be deemed to include any works and setting out that may be required to be carried out for laying out of all the works involved.
- (16) Prices shall be filled online only.
- (17) The Price Schedules are to be read in conjunction with the Conditions of Contract, the Specifications and other sections of these bid documents and these documents are to be taken as mutually explanatory of one another.
- (18) The bidder shall interpret the data furnished and carry out any additional survey work, or investigation work required at his own cost.
- (19) The prices quoted shall also include the cost of materials utilized for testing.
- (20) The bidder should acquaint himself with the site conditions including the access to Work site. The successful bidder shall have to make suitable access to work sites at his own cost. These accesses will be used by the other contractors working for GWSSB.
- (21) The item descriptions in price schedule are for subject matter guidance only and the prices shall include all the equipments / materials / accessories and services required as per the specifications. The bidder shall fill in the price schedule furnished.
- ~~(22) The amount to be quoted for O & M / year shall be as per Volume-II, General Conditions of Contract, Clause No. 1, and Security Deposit.~~
- (23) 1% of the value of work will be deducted from the Running bill against labour cess which is non refundable.
- (24) Third Party Inspection / CSC agency will be deployed by GWSSB and charges of the same will be borne by GWSSB.
- (25) Any expenditure incurred by inspection/ CSC agency for the work misinformed by the contractor and charges of inspection/ CSC agency

- without any work due to misinformation shall be recovered from the contractor.
- (26) The rates quoted shall be exclusive of GST, but inclusive of all other taxes, duties which shall not be paid extra. While GST will be paid for admissible part of actual work done at the approved tender rates and tender conditions of price variations. GST shall be paid as per prevailing rates at the time of payment. The TDS shall be deducted at source as per provision of IT rules and GWSSB Policy.
- (27) The rates should be quoted exclusive of GST but inclusive of all other taxes as per Volume-1 (B), General Conditions of Contract, Clause No. 47.
- (28) The process requires that the bidder shall quote his price for the work components contained in the price schedules for the entire work. Such prices shall remain firm and fix during the entire period of performance of the contract except price variation allowed for supply of MS/DI/PVC/GI pipe as per Volume-II Clause No. 59, General Conditions of Contract.
- (29) Payment shall be made for the components for which lump sum prices are quoted, as per the schedule of payment. Total cost will be worked out on the basis of work done of individual items and rates quoted against those particular items only.
- (30) Royalties: The contractor shall be liable to pay the royalty of the quarried materials/ minerals used in the construction of works at the rates specified in the Narmada Water Resources, Water Supply & Kalpsar Dept. Resolution No. GEN-2010-595- (6)- M.I.Cell (K-1) Dt. 29-4-2011 (Gujarati Version Copy enclosed) and shall be recovered from the running bills of the work from time to time and remaining amount if any shall be recovered from the final bill before releasing the security deposit of the work. The contractor shall furnish the statement showing the quantity of quarried materials / minerals from whom purchased (with full address of the seller) and copies of the bills for purchase to the Executive Engineer of the in charge of the work. The contractor shall also furnish such additional information as regards royalty payment to the competent authority.
- (31) Agency shall have to take Insurance policy and intimate to GWSSB along with the evidence within time limit. In case of non compliance entire responsibility shall be rest with the agency and required amount shall be recovered from any due amount of the agency.
- (32) GWSSB can recover penalty amount from the agency for not taking the insurance. Though the penalty amount is recovered, responsibility of the agency for taking insurance shall be continued and will not be escaped from the responsibility.
- (33) The contractor shall apply fair means of stock maintenance and shall adopt accounting standard as may be prescribed under GST Act as applicable in the state of Gujarat. For arriving at the difference in procurement prices due to introduction of GST it will be open for the Board to ask for original invoices, lorry receipt, weigh bridge slips, payment details and such other documents as may be required for the purpose.
- (34) The claim of contractor regarding GST shall have to be backed by documentary evidence substantiating the actual payment of tax duly certified by the competent tax authority. The final decision regarding the

quantum of claim amount to be recovered or reimbursed shall be of the competent authority of the GWSSB and shall be binding on the contractor.

Signature of contractor

**Executive Engineer
Public Health Works Division
Mehsana**

BID FORM

Bidders are required to fill up all the blank spaces in this Bid Form.

TO:

**THE EXECUTIVE ENGINEER,
PUBLIC HEALTH WORKS DIVISION,
MEHSANA
Dear Sir,**

SUB: "The Shifting of Balol-Nadasa Village Distribution Line Under Dediyan Group RWSS M&R Programme 2025-26 in Upgradation to Four Lane Carriageway from Balol to Kalari SH-19 work" The bidder shall quote his firm and fixed price for the entire work under this Contract, defined in more details in various sections of this bid document.

1. Having visited the site and examined the Bid Documents, Drawings, Conditions of Contract, Specifications, Schedules, Annexure, Preamble to Price Schedules, Price Schedules etc. including Addenda/Amendments to the above, for the execution of the above Contract, we the undersigned offer to design, Engineer, procure, construct, complete, commission, operate and maintain the whole of the said works for 2 years from the date of commissioning including defects liability period as given in Conditions of Contract and in conformity with the drawings, conditions of Contract, specifications, Preamble to Price Schedules, Annexure, Bidding Documents, including Addenda Nos. _____ (insert numbers) for Lump sum fixed price _____ of _____ Rs. _____. Rupees _____) for Construction including free trial run for three months or such other sum as may be ascertained in accordance with the conditions.
2. I/We agree that
 - a) if we fail to provide required facilities to the Employer's representative or any other person/Agency by the Employer to perform on his behalf for carrying out the inspection and testing of materials and workmanship.
Or
 - b) if we incorporate into the Works, materials before they are tested and approved by the Engineer's representative.
Or
 - c) if we fail to deliver pure water of required quantity according to the conditions/stipulations of the Contract, the Engineer will be at liberty to take any action including termination of Contract and impose at his absolute discretion any penalties, and/or reject the work.
3. We undertake, if our Bid is accepted, to complete and deliver the works in accordance with the Contract within 15 months, inclusive of monsoons, from the date or receipt of Letter of Acceptance issued to us by you.

4. We agree to abide by this Bid for a period of 180 days from the Last date of submission of the bill and it shall remain binding upon us and may be accepted at any time before the expiry of that period.
5. In the event of our Bid being accepted, we agree to enter into a formal Contract Agreement with you incorporating the conditions of Contract there to annex but until such agreement is prepared this Bid together with your written acceptance thereof shall constitute a binding Contract between us.
6. We agree, if our Bid is accepted, to furnish performance /Security in the forms and of value specified in the Clause 1 of Volume-II, "General Conditions of Contract".
7. We have independently considered the amounts of liquidated damages shown in Appendix to Bid and agree that they represent a fair estimate of the damages likely to be suffered by you in the event of the work not being completed by us in time.
8. We understand that you are not bound to accept the lowest or any Bid you may receive.

Dated this _____ day of _____ 2020

(Signature)

(Name of the Person)

Company Seal _____
(Name of Firm)

Duly authorized to sign Bid for and on behalf of (fill in block capitals)

Witness Signature _____

Name _____

Address _____

NAME OF SCHEME - Dediyaan Group Regional Water Supply Scheme Based on Narmada Main Canal. Ta:-Mehsana/Jotana Dist:-Mehsana

Name of Work:- “The Lowering, Laying & Jointing of 160 mm PVC Pipeline for Bhesana Village Under Dediyaan Group RWSS M&R Programme”

The bidder shall quote his firm and fixed price for the entire work under this Contract, defined in more details in various sections of this bid document.

SCHEDULE-A

Schedule showing the approximately the materials to be supplied to the contractor from government stores for the work to be executed and the rate at which they are to be charged.

Sr. No.	Particular	Qty.	Rate at which the material will be charged to the contractor		Place of Delivery
			Rate	Unit	
1	2	3	4	5	6
1	160 mm dia 6kg/cm ² PVC pipe	1700.00 Rmt	Free of Cost		
2	100 mm dia Sluice Valve	1.00 No.			
3	150 mm dia Sluice Valve	1.00 No.			
4	50 mm dia Temper proof Air Valve	5.00 No.			

Note:-

1. The contractor submitting the Tender shall see that the rate in Schedule-A are filled in by the Engineer in Charge at the time of issue tender.
2. Binding wire of 15 gauge or thinner gauge required for placing the reinforcement in position shall be provided at his own cost.
3. All the materials required for the items other than labour in Schedule-A but available with the dept. will be issued on request to the contractor. (for use in this contract only) at prevailing market rates or departmental issue rates whichever is higher.
4. All the surplus materials supplied by the deptt. As mentioned in schedule-A should be handed over to the Department by the contractor at the Govt. stores as directed.
5. The materials mentioned in schedule-A shall have to be checked for their correctness and soundness by the contractor before taking the delivery of the materials from the Government.
6. Necessary cement will be purchased by the agency at their own cost from open market as per specification.

7. The persons of firm submitting the Tender should see that rates in the above schedule are filled up by the Executive Engineer, on the issue of form prior to the submission of the Tender.
8. Contractor should return the balance materials in good and acceptable condition, otherwise recovery at the double rates will be affected in view of Clause 12.4.

Date:

Signature of contractor

**Executive Engineer
Public Health Works Division
Mehsana**

SUMMARY (SCHEDULE-B)

Name of Work:- “The Lowering, Laying & Jointing of 160 mm PVC Pipeline for Bhesana Village Under Dediyaan Group RWSS M&R Programme”

Sr. No.	Name of Work	Amount Rs.
1	SCHEDULE - B	2,16,924.60

I / We am / are willing to carry out the work at _____ % above / Below percent (should be written in figure and words) of the estimated rates mentioned above amount of my / our tender works out as under.

Estimated amount put to tender :

Rs _____

Deduct _____ % above

Rs _____

Estimated amount put to Tender

RS _____

Add _____ % above

Rs _____

Signature of contractor

**Executive Engineer
Public Health Works Division
Mehsana**

SCHEDULE - B

It. No.	ITEM DESCRIPTION	Qty.	Unit	Rate	Amount
1	Excavation for pipe line trenches for water supply, sewerage line, manhole etc. all with shoring and strutting if required as per required gradient and line including safety provisions using site rails and stacking excavated stuff including up to all required lead cleaning the site etc. complete for lifts and strata as specified. Upto 1.50 mt depth (A) In all sorts of soil and soft murrum	1071.00	Cum	89.00	95319.00
1.1	(D) In hard rock and or in C.C. 1:2:4 or RCC with blasting and chiseling or by chiseling only	2.34	Cum	372.00	870.48
2	Lowering, laying, fixing and Jointing PVC/uPVC/cPVC pipes and specials of following class and diameter including cost of conveyance from stores to site of works including cost of labour, material, cement solvent, giving satisfactory hydraulic testing as per ISI code. 160 mm dia PVC	1700.00	Rmt.	28.00	47600.00
3	PVC Specials: Providing and supplying at store or site of work incl. freight, loading, unloading, stacking insu. & all taxes etc. comp. P.V.C. TAIL PIECE WITH PVC FLANGE 160 mm Dia.	2.00	No.	811.00	1622.00
3.1	P.V.C. TAIL PIECE WITH PVC FLANGE 110 mm Dia.	2.00	No.	320.00	640.00
3.2	P.V.C. Reducder 200 x 160 mm	1.00	No.	901.00	901.00
3.3	P.V.C. Reducder 160 x 90 mm	1.00	No.	304.00	304.00
3.4	P.V.C. Reducder 160 x 110 mm	1.00	No.	375.00	375.00
3.5	P.V.C. Elbow (Moulded) 110 mm	2.00	No.	358.00	716.00
3.6	P.V.C. Bend 90 degree moulded (Heavy) 160 mm	2.00	No.	972.00	1944.00
4	Lowering, laying and jointing in position following CI D/F Reflux Valves, Butterfly Valves, Sluice Valves and Air valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic Testing, etc complete. 150 mm dia Sluice Valve	1.00	No.	585.00	585.00
4.1	100 mm dia Sluice Valve	1.00	No.	439.00	439.00
5	Refilling the pipeline trenches incl. ramming, watering, consolidating desposal of surplus stuff as directed within a radius of 3 km.	1039.18	Cum	22.00	22861.96
6	Lowering, laying and jointing in position following CI D/F Reflux Valves, Butterfly Valves, Sluice Valves and Temper Proof Air valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic Testing, etc complete. 50 mm Dia Air Valve double ball Flanged	5.00	No.	379.00	1895.00
7	Erection of Air Valve Riser by Installing new M.S. Pipe of 6 mm thick and 3.2 mt. length with	5.00	No.	3112.00	15560.00

	necessary fittings such as flange of appropriate size, nut, bolts ane embedded the pipe in RCC M:15 with offset of 10 cm around pipe with necessary steel etc. complete. Dia of Air Valve 50 mm & MS pipe				
8	Labour charges for repairing of leakage in PVC pipeline of folling dia meter at different places including necessary excavation manually or by mechanise excavation. dewatering -removing of mud, cleaning of pipe and leakage portion, cutting the pipeline & removing piece of pipe from trench with inclusive of mechanical devices JCB, Hycra/Crain if necessary & labours required with providing material such couplers, solution etc. comp. (incl. all material but Excl.cost of pipe) 200 mm dia	1.00	No.	2652.00	2652.00
9	Providing and casting in situ C.C. in grade M-15 (approx. corresp. to prop. 1:2:4)proportions as per mix design or as per Table 9 of S456 2000 in masses by weigh batching) using granite, quartzite trap metal of size 6 mm to 20 mm for RCC work, including scaffolding centering. form work, needle vibrated consolidation, curing comp. up to 6 meter depth or height (excluding cost of reinforcement and neat finishing) with centering and shuttering /deshuttering etc. comp. for structure for other than water retaining. Footing (without form work)	2.88	Cum	4732.00	13628.16
10	Drilling of 300mm dia Horizontal borehole for watermain pipeline crossing under the road inci in all strata with required length incl fixing of 250mm dia M.S/RCC casing pipe with pushing etc complete various size of pipe for 168mm dia watermain (For 45 mt Length) Without Water main & with RCC Casing Pipe	4.00	Rmt.	2253.00	9012.00
		Total Rs. :-			2,16,924.60
	Two Lakh Sixteen Thousand Nine Hundred Twenty Four and Sixty Paise Only				
	I / We am / are willing to carry out the work at _____% above / Below percent (should be written in figure and words) of the estimated rates mentioned above amount of my / our tender works out as under.				
	Estimated amount put to tender: Rs_____	Estimated amount put to Tender :Rs._____			
	Deduct_____% above Rs	Add_____% above Rs			

SIGNATURE OF CONTRACTOR

**Deputy Executive Engineer
Public Health San. Sub Division
Mehsana**

SPECIFICATION

Item No. 1 & 1.1 Excavation for pipe line trenches for water supply, sewerage line, manhole etc. all with shoring and strutting if required as per required gradient and line including safety provisions using site rails and stacking excavated stuff including up to all required lead cleaning the site etc. complete for lifts and strata as specified.

Upto 1.50 mt depth

(A) In all sorts of soil and soft murrum

(D) In hard rock and or in C.C. 1:2:4 or RCC with blasting and chiseling or by chiseling only

1.0 GENERAL

1.1 The excavation for trenches will generally, refer to open excavation for trenches in wet / dry conditions for pipe laying work.

2.0 CLEARING OF SITES:

2.1 The site on which the pipelines are to be laid and shown on plan and the area required for setting out and other operations shall be cleared and all obstruction loose stones and materials, rubbish of all kinds, stumps, brushwood as trees shall be removed as directed the roots shall be entirely grubbed up.

2.2 The products of the clearing to restocked in such a place and in such a manner, as directed by the engineer in charge.

2.3 In jungle clearings, all trees not specially marked for preservation, bamboo's jungle wood and brushwood shall be cut down their roots grubbed up. All wood and materials from the clearing shall be the property of the Board shall be arranged as directed by the Board Engineer or his authorized agent, the material pronounced as useful by the Engineer will be conveyed and properly stacked as directed within the specified limit. Unless materials will be burnt or otherwise disposed of as directed.

2.4 All holes or hollows whether originally existing or produced by digging up roots, shall be carefully filled up with earth, well earth, well rammed levelled off, as may be directed.

3.0 SETTING OUT:

The center lines of all pipe trenches etc. shall be given by the Engineer-in-charge and it will be the responsibility of the contractor to install substantial reference marks, bench marks, etc. and maintain them as long as required true to line, level curve and slopes. The contractor shall assure full responsibility for alignment, and dimension of trench.

The labour materials etc. required for setting out and establishing benchmarks and other reference marks shall be arranged by the contractor at his own cost.

4.0 EXCAVATION:

- 4.1 The excavation incl. Bailing out of water for the pipe trenches shall also incl. Removal of all materials of whatever nature and whether wet or dry condition necessary for laying of pipelines exactly in accordance with alignment, levels grades and curves shown on the plans or as directed by the Engineer-in-charge. Trenches shall be excavated to the exact width and depth according to the size of pipe and the sides shall be left vertical as far as possible or according to the angle of repose various soils. Unless there is a specific extra provision in the contract for shoring and strutting or for cutting side slopes the contractor shall at his own cost do the necessary shoring and strutting or cutting of slopes to a safe of repose or both approved by the Engineer-in-charge. The contractor shall notify the Engineer before starting excavation to enable him to take cross sectional levels for purpose of measurements before the ground is disturbed. The bottom of the trenches shall be levelled both longitudinally and transversely or slopped as directed by the Engineer. The contractor shall at his own cost to remove such portions of boulders or rocks, as are rectified to make the bottom of the trench level. No filling shall be allowed to bring the trench to level. If by contractor's mistake excavation is made deeper than shown on the plans and if ordered by the Engineer the extra depth shall have to be made with selected excavated stuff only with watering, remedying etc. as directed, by the Engineer and at the cost of the contractor. Other hard excavation shall be cleared of all sorts and loose materials and cut to firm surface, either level, stepped as directed by the Engineer. The Engineer may order such changes in the dimensions and alignment of pipe trench as may be deemed necessary to secure satisfactory cover over pipeline. The contractor shall, at his own expense,

make provision for bailing out of draining water and the trenches shall be kept free of water, during laying work.

After each excavation is completed, the contractor shall notify the Engineer to that effect and no laying of pipeline will be allowed to laid until Engineer has approved the depth and dimensions of trenches level and measurements.

5.0 SHORING AND STRUTTING:

5.1 Shoring & strutting and dewatering if required shall have to be carried out by the contractor, for which any extra charge will not be paid

5.2 During excavation if water connections, sewage connections, telephone lines khalkuwa (soak pits) etc. are damaged by the contractor, the same shall have to be restored by the contractor without any extra payment.

6.0 PROTECTION

6.1 The trenches shall be strongly fenced and red light signal shall be kept at night and arrangement of watchman to prevent accidents should be done, sufficient care protective measure shall be taken to see that the excavation shall not affect or damage the adjoining structure. The contractor shall be entirely responsible for any injury to life and damage to the properties etc. Necessary protection work such as guide ropes, crossing places, barricades, caution boards etc. shall be provided by the contractor.

7.0 The excavation in all sorts of soil, hard murrum, soft rock or hard rock or any type of soil shall have to be carried out up to the required depth by the agency

8.0 DISPOSAL OF EXCAVATED STUFF

8.1 No excavated stuff from trench are to be placed even temporarily nearer than 1.5 meter or greater distance up to 90 meter or as prescribed by the Engineer from the outer edge of trench. All excavated material will be the property of the board. The rate of excavated includes sorting out of useful materials and stacking then separately as directed within specified lead. The excavated stuff suitable and useful for refilling or for other use shall be stacked at convenient places. The materials not useful in any wet shall be disposal off as directed by the Engineer from the outer edge of trench.

8.2 The site should be cleared off on completion of work.

9.0 ADDITIONAL REQUIREMENTS

9.1.1 At the joints of pipes, the trench shall be excavated to an additional depth of 15 cm. and width of 30 cm. And length of 15 cm. beyond the edge of collar on both the sides or as directed. The rate includes for such extra excavation made at the joints. The trenches shall be excavated perfectly in straight line. The bottom of the trench shall be kept as per invert level or as directed. To maintain the proper slope the usual method of site rails and boning rods shall be adopted. The contractor shall have to provide and fix and maintain sight rails and boning rod without any extra cost.

If the contractor fails or makes delay to give hydraulic test of the pipe line laid in any of the section, without any genuine reason, he shall be responsible to get any part of the length trenches refill in such case i.e. before tasting for safety of pedestrian and/or vehicular traffic as found necessary by the engineer-in-charge without any extra cost. If found necessary any directed by the Engineer-in-charge. The contractor shall have to excavate the refilled trenches, during hydraulic test without any extra cost.

At all road crossings, trenches shall be excavated only for half width of the road and pipe shall be laid. The other half shall be excavated only after back filling over the laid pipeline is done so as to make it suitable for the traffic. The contractor shall provide direction when the pipeline is to be laid along the road as required and shall maintain the diversion or any part of it, without any extra cost. At all road crossings, the pipe shall be laid below the crest of read.

9.2 The contractor shall break the road surface by excavation chiselling to the exact width and length as shown on the drawing or as directed by the Engineer-in-charge.

The excavated stuff shall be deposited in uniform layers to avoid mixing with other kind of materials at non-objectionable place or as directed by the Engineer-in-charge.

10.1 Excavation in excess of the sanctioned dimensions shall not be measured not paid for and if an ordered by the Engineer the contractor shall have to fill up the excess depth with excavated stuff with watering ramming etc. (Completed as specified) for trench without any extra payment to the contractor.

10.2 The item of excavation shall include unless and otherwise mentioned.

(a) Clearing of site

- (b) Setting out work including all materials and labour.
- (c) Providing and subsequently removing, shoring and strutting outing slopes etc.
- (d) Excavation and removal and staking of all excavated stuff as directed.
- (e) Necessary protection including labour materials equipment etc. to ensure safety and protection against risk or accident.
- (f) Providing facilities for inspection and damage to property if caused during progress of work.
- (g) Compensation for injury to life and damage to property if caused during progress of work.
- (h) Restoring of water supply connections, sewer connections, telephone lines, khalkuwa soapiest etc. if damaged by contractor without extra payment.
- (i) Dewatering of excavated pit trench during the progress of work.
- (j) Clearing the site on completion of works directed by the Engineer.

UNIT OF RATE: The unit of rate shall be per Cum.

Item No:-2 Lowering, laying , fixing and Jointing PVC/uPVC/cPVC pipes and specials of following class and diameter including cost of conveyance from stores to site of works including cost of labour, material, cement solvent, giving satisfactory hydraulic testing as per ISI code.

160 mm dia PVC

Pipe and fittings shall be lifted from manufacturing site to site of work at his own cost. During transportation any damage shall be occure to pipes for fittings the replacement of pipes or fittings given by the contractor at-least own cost.

1. Before laying the pipes it shall be brushed throughout the length so that dust or soil can be removed. The fittings should also be brushed. The pipes shall be laid in trenches in straight line.

2. The jointing material such as coupling & Solution etc. to be supplied by the contractor.
3. All the specials such as bends, tees, reducers etc. shall be fixed as per instruction of engineer-in-charge in the pipeline. The pipe shall be hydraulically tested during the testing no leakage shall be observed. If leakage observed, it shall be set right by the contractor at its own cost as per the instruction of Engineer-in-charge. 30% payment shall be made after hydraulic testing of pipe line.
4. Payment shall be made on running metre basis.

Item No- 3 to 3.6 Providing & Fixing Supplying at store or site of work incl. Freight, loading, unloading, stacking insu. & all taxes etc. Complete.

- 1) All Special should be of ISI mark.
- 2) It should be properly Fitted with PVC/GI pipe with necessary fitting, Vicel, rubber packing etc complete.
- 3) The Payment Should be in No basis.

Item No- 4 & 4.1 Lowering, laying and jointing in position following CI D/F Reflux Valves, Butterfly Valves, Sluice Valves and Air valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic Testing, etc complete.

150 mm dia & 100 mm dia Sluice Valve

The work shall be carryout as per the description of the item and as per specification laid down in PWD Hand book vol. I & II and instruction of Engineer in charge.

1. The sluice valve shall be of approved quality and as per ISS 780 OR latest revision with ISI mark with hand wheel. Rate including necessary freight loading unloading, carting, insurance & all taxes etc. complete.

2. Sluice valve and should be procured from the approved and ISI marked.
3. For sluice valve necessary jointing materials such as nuts bolts rubber packing shall have to be supplied by the contractor without extra cost. It shall be fixed as per the instruction of Engineer in charge.
4. No leakage shall be observed if observed shall be rectified by the contractor without any extra cost.
5. The payment shall be made on number basis.

Item No- 5 Refilling the pipeline trenches incl. ramming, watering, consolidating disposal of surplus stuff as directed within a radius of 3 km.

- The work shall be carried out as per the description of the item in Schedule-B & as per the specification laid down in P.W.D. handbook vol. I & II.
- The excavated earth shall be used after getting approval of the Engineer in charge proper consolidation and watering shall be done.
- The payment shall be made on Cum basis.

Item No: 6 Lowering, laying and jointing in position following CI D/F Reflux Valves, Butterfly Valves, Sluice Valves and Air valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic Testing, etc complete.

SUPPLY OF MATERIAL

- The single acting air valve shall be supplied and carted by the contractor as per latest IS. The rate shall include loading, unloading and stacking at site.
- 1.2 The materials shall be carted to store or site of work including all freight, loading, unloading including all taxes, insurance, including necessary jointing materials such as G.I Nipple saddle pieces shall be brought by the contractor for fixing of air valve.
- 1.3 A suitable hole shall be drilled on the pipeline. The pipeline shall be of any type such as AC, PVC or CI pipes. A clamp shall be got prepared with a nipple welded on it. The clamp shall be fixed on pipe with bolts and nuts in such a way that the part of nipple fixed in the clamp shall remain in the hole drilled in pipe. The rubber packing shall be provided between the clamps and the pipe. White zinc spun yarn shall be used for fixing the nipple of air valve.

- 1.4 Bolt holes shall be drilled according to center- lines. Bolt heads and nuts shall be hexagonal and shall conform to IS: 1363 (specification for black hexagonal bolts, nuts and lock nuts and black hexagonal screws).
- 1.5 The neoprene seat ring shall be held security in place under the low pressure cover by jointing support ring to prevent it from sagging when the ball is not soaking the orifice.
- 2.0 JOINTING MATERIAL
- 2.1 Jointing material shall be brought by contractor with all necessary joint rings, nuts, bolts and washers for completing the joints on all the flanges of valve supplied under this contract including these flanges which will be jointed to pipe system. The lengths of bolts shall be assumed to be suitable for jointing material supported under the contract shall be inclusive of rates.
- 2.2 Joint rings shall be of flat section at least 3 mm thick. They shall be of rubber in accordance with IS: 638-1965 or its latest edition (specifications for rubber and insertion jointing) of hardness proven in practice so as form a water tight joint and use of jointing paste shall not be allowed.

MODE OF MEASUREMENT AND PAYMENT

- Measurement shall be paid on No. basis as per relevant dia of the item as per payment schedule.

Item No :7 Erection of Air Valve Riser by Installing new M.S. Pipe of 6 mm thick and 3.2 mt. length with necessary fittings such as flange of appropriate size, nut, bolts and embedded the pipe in RCC M:15 with offset of 10 cm around pipe with necessary steel etc. complete.

- Column/ Footings for Air riser pipe shall be carried out in cement concrete M-150 using trap metal as per instructions and workmanship of the engineering in charge. Materials and workmanship shall be given in concrete section.” The reinforcement as per IS Standard and specifications.
- The item Air Valve raising includes the cost of providing and laying cement concrete M-150 base MS clamp, G.I. medium duty 2.50 mts. From G.L. pipe, M.S. flange, nut, bolts, rubber packing and reinforced cement concrete column in M-150 etc. including necessary reinforcement as per contractor’s design complete.

MODE OF MEASUREMENT AND PAYMENT

- Measurement shall be paid on No. basis as per relevant dia of the item as per payment schedule.

Item No- 8 Labour charges for repairing of leakage in PVC pipeline of folling dia meter at different places including necessary excavation manually or by

mechanise excavation, dewatering removing of mud, cleaning of pipe and leakage portion, cutting the pipeline & removing piece of pipe from trench with inclusive of mechanical devices JCB, Hydra/Crain if necessary & labours required with providing material such couplers, solution etc. comp. (incl. all material but Exclu. cost of pipe)

- 1) The jointing material such as coupling, bends, tees, solution etc. to be supplied by the contractor.
- 2) Jointing shall be carried out by contractor at his own cost including, labour, excavation, Dewatering, removing of mud, cleaning of pipe and leakage portion, cutting, removing, fitting, testing, refilling etc.
- 3) Jointing in PVC pipe line, then mobilize pipe cutting equipment, piece of pipes, solvent, suitable clamps, specials nut bolts etc. to be supplied by the contractor.
- 4) After completion of the Jointing of Pipe, excavated trench shall be refilled to the level of the surrounding ground.

MODE OF MEASUREMENT AND PAYMENT

- The payment shall be made on No. basis as per Price bid or Payment schedule

Item No:9 Providing and casting in situ C.C. in grade M-15 (approx. corresp. to prop. 1:2:4) proportions as per mix design or as per Table 9 of IS 456 2000 in masses by weigh batching) using granite, quartzite trap metal of size 6 mm to 20 mm for RCC work, including scaffolding centering. form work, needle vibrated consolidation, curing comp. up to 6 meter depth or height (excluding cost of reinforcement and neat finishing) with centering and shuttering /deshuttering etc. comp. for structure for other than water retaining.

Footing (without form work)

C.C. in grade M-15

- Materials: Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform to M-8. Graded stone aggregate 20 mm. nominal size shall conform to M-12.
- 2.0. General:
 - 2.1. The concrete mix is not required to be designed by preliminary tests. The proportion of the concrete mix shall be 1: 1 1/2 : 3 (1 cement: 1 1/2 coarse sand : 3 graded stone aggregate 10 mm. nominal size) by volume. Concrete work shall have exposed concrete surface or as specified in the item.

- 2.2. The designation ordinary M-100, M-150, M-200, M-250 specified as per. I.S. Corresponding approximately to 1 : 3 : 6, 1 : 2 : 4, 1 : 1 1/2 : 3 and 1:1:2 nominal mix of ordinary concrete by volume respectively.
- 2.3. The ingredients required for ordinary concrete containing one beg of cement of 50 Kg. by weight 0.0342 Cu. M.) for different proportions of mix shall be as under:

• Grade of concrete	• Total quantity of dry aggregate by volume per 50 Kgs. of cement to be taken as the sum of individual volume of fine and coarse aggregates, maximum	• Proportion of fine aggregate to coarse aggregate	• Quantity of water per 50 Kgs. of cement maximum
• M-100 (1 : 3 : 6)	• 300 Liters	• Generally 1 : 2 for fine aggregate to coarse aggregate by volume but subject to and upper limit of 1 : 1 1/2 and lower limit 1 : 3	• 34 Liters
• M-150 (1 : 2 : 4)	• 2.20 Liters		• 32 Liters
• M-200 (1 : 1 1/2 : 3)	• 160 Liters		• 30 Liters
• M-250 (1:1:2)	• 100 Liters		• 27 Liters

2.4. The water cement ratios shall not more than those specified in the above table. The cement content of the mix specified in the Table shall be increased if the quantity of water in a mix has to be increased to overcome the difficulties of placement and compaction so that the water-cement-ratio specified in the Table is not exceeded.

- 2.5. Workability of the concrete shall be controlled by maintaining a water-cement-ratio that is bound to give a concrete mix which is just sufficiently wet to be placed and compacted without difficulty with the means available.
- 2.6. The maximum size of coarse aggregate shall be as large as possible within the limits specified but in no case greater than one fourth of the minimum thickness of the member, provided that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and to fill the corners of the form.
- 2.7. For reinforced concrete work, coarse aggregates having a nominal size of 20 mm. are generally considered satisfactory.
- 2.8. For heavily reinforced concrete members as in the case of ribs of main beams, the nominal maximum size of coarse aggregate should usually be restricted to 5 mm. less than the minimum, clear distance between the main bars, or 5 mm. less than the minimum cover to the reinforcement whichever is smaller.
- 2.9. Where the reinforcement is widely spaced as in solid slabs, limitations of size of the aggregate may not be important and the nominal maximum size may sometimes be as great as OF greater than the minimum cover.
- 2.10. Admixture may be used in concrete only with approval of Engineer-in-charge based upon the evidence that with the passage of time, neither the compressive strength of concrete is reduced nor are other requisite qualities of concrete and steel impaired by the use of such admixtures.
- 3.0. Workmanship:
- 3.1. Proportioning : Proportioning shall be done by volume, except cement which shall be measured in terms of bags of 50 Kg. weight. The volume of one such bag being taken as 0.0342 Cu. metre. Boxes of suitable sizes shall be used for measuring sand aggregate. The size of the boxes (internal) shall be 35 cms. x 25 cms. and 40 Cms. deep. While measuring the aggregate and sand, the box shall be filled without shaking ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of damp sand, allowances for bulkage shall be made.
- 3.2 Mixing:
- 3.2.1. For all work, concrete shall "be mixed in a mechanical mixer which alongwith other accessories shall be kept in first class working condition and so maintained throughout the construction. Measured quantity of aggregate, sand, cement required for each batch shall be poured into the drum of the mechanical mixer while it is continuously running. After about half a minute of dry mixing, measured quantity of water required for each batch of concrete mix shall be added gradually and mixing continued for another one and a half minute. Mixing shall be continued till materials are uniformly distributed and uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after all ingredients have been put into the mixer.
- 3.2.2. When hand mixing is permitted by the Engineer-in-charge for small jobs or for certain other reasons, it shall be done on the smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platform shall be so arranged that no foreign material gets mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall be placed in a uniform layer on top of the measured quantity

of fine and coarse aggregate, which shall also be spread in a layer of uniform thickness on the mixing platform. Dry coarse and fine aggregate and cement shall then be mixed thoroughly by turning over to get a mixture to uniform colour. Specified quantity of water shall then be added gradually through a rose-can and the mass turned over till a mix of required consistency is obtained. In hand mixing, quantity of cement shall be increased by 10 percent above that specified.

- 3.2.3. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to by the Engineer-in-charge the first batch of concrete from the mixture shall contain only two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.
- 3.3. Consistency: 3.3.1. The degree of consistency which shall depend upon the nature of the work and methods of vibration of concrete, shall be determined by regular slump tests in accordance with I.S. 1199-1959. The slump of 10 mm. to 25 mm. shall be adopted when vibrators are used and 80 mm. when vibrators are not used.
- 4.4. Inspection:
 - 3.4.1. Contractor shall give the Engineer-in-charge due notice before placing any concrete in the forms to permit him to inspect and accept the false work and forms as to their strength, alignment, and general fitness but such inspection shall not relieve the contractor of his responsibility for the safety of men, machinery, materials and for results obtained. Immediately before concreting, all forms shall be thoroughly cleaned.
 - 3.4.2. Centering design and its erection shall be got approved from the Engineer-in-charge. One carpenter with helper shall invariably be kept present throughout the period of concreting. Movement of labour and other persons shall be totally prohibited for reinforcement laid in position. For access to different parts, suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed. For ensuring proper cover, mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber, kapachi or metal pieces shall not be used for this purpose.
- 3.5. Transporting and laying:
 - 3.5.1. The method of transporting and placing concrete shall be as approved. Concrete shall be so transported and placed that no contamination segregation or loss of its constituent material takes place. All form work shall be cleaned and made free from standing water, dust, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Engineer-in-charge has been obtained.
 - 3.5.2. Concreting shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer. Except where otherwise agreed to by the Engineer-in-charge concrete shall be deposited in horizontal layers to a compacted depth of not more than 0.45 metre when internal vibrators are used and not exceeding 0.30 metre in all other cases.
 - 3.5.3. Unless otherwise agreed to by the Engineer-in-charge, concrete shall not be dropped into place from a height exceeding 2 metres. When trucks or chutes are used they shall be kept close and used in such a way as to avoid segregation. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept clean, thoroughly wetted and covered with a 13 mm. thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13 mm. layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of any particles of coarse aggregate.

The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150 mm. in thickness and shall be well rammed against old work, particular attention being given to corners and close spots.

- 3.5.4. All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrators unless, otherwise permitted by the Engineer-in-charge for exceptional cases, such as concreting under water, where vibrators cannot be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of breakdowns. Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream up to form an even surface. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of wafer to dry mixture. During compaction, it shall be observed that needle vibrators are not applied on reinforcement which is likely to destroy the bond between concrete and reinforcement.
- 3.6. Curing: Immediately after compaction, concrete shall be protected from weather, including rain, running water, shocks, vibration, traffic, rapid temperature changes, frost and drying out process. It shall be covered with wet sacking, hassain or other similar absorbant material approved, soon after the initial set and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonary work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14 days.
- 3.7. Sampling and Testing of concrete :
- 3.7.1. Samples from fresh concrete shall be taken as per I.S. 1199-1959 and cubes shall be made, cured and tested at 7 days or 28 days as per requirements in accordance with I.S. 516-1959. A random sampling procedure shall be adopted to ensure that each concrete batch shall have a resonable chance of being tested i.e. the sampling should be spread over the entire period of concreting and cover all mixing units. The minimum frequency of sampling of concrete of each grade shall be in accordance with following :

• Quantity of concrete in the work	• No. of samples	• Quantity of concrete in the works	• No. of samples
• 1-5 Cmt.	• 1	• 16-30 Cmt.	• 3
• 6-15 Cmt.	• 2	• 31-50 Cmt.	• 4
• 51 and above 4 + one additional for each additional 50 M. or part thereof.			

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- NOTE: At least one sample shall be taken from each shift. Ten test specimens shall be made from each sample, five for testing at 7 days and the remaining five at 28 days. The samples of concrete shall be taken on each day of the concreting as per above frequency. The number of specimens may be suitably increased as deemed necessary by the Engineer-in-charge when procedure of tests given above reveals a poor quality of concrete and in other special cases.
- 3.7.2. Tire average strength of the group of cubes cast for each day shall not be less than the specified cube strength of 150 Kg/Cm at 28 days. 20% of the cubes cast for each day may have value less than the specified strength provided the lowest value is not less than 85% of the specified strength. If the concrete made in accordance with the proportions given for a particular grade docs not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower, grade concrete made in accordance with the proportions given for a particular grade shall not, however, be placed in a higher grade on the ground that the test strength are higher than the minimum specified.
- 3.8. Stripping:

- 3.8.1. The Engineer-in charge shall be informed in advance by the contractor of his intention to strike the form work. While fixing the time for removal of form work, due consideration shall be given to local conditions, character of the structure, the weather and other condition that influence the setting of concrete and of the materials used in the mix. In normal circumstances (generally where temperatures are above 20 ° C) and where ordinary concrete is used, forms may be struck after expiry of periods specified item of form work.
- 3.8.2. All form work shall be removed without causing any shock or vibration as would damage the concrete. Before the soffit and struts are removed, the concrete surface shall be exposed, where necessary in order to ascertain that the concrete has sufficiently hardened. Centring shall be gradually and uniformly lowered in such manner as to permit the concrete to take stresses due to its own weight uniformly and gradually. Where internal metal ties are permitted, they or their removable parts shall be extracted without causing any damage to the concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm. cover to the finished concrete surface. Where it is intended to re-use the form work, it shall be cleaned and made good to the satisfaction of the Engineer-in-charge. After removal of form work and shuttering, the Executive Engineer shall inspect the work and satisfy by random checks that concrete produced is of good quality.
- 3.8.3. Immediately after the removal of forms, all exposed bolts etc., passing through the cement concrete member and used for shuttering or any other purpose shall be cut inside the cement concrete member to a depth of at least 25 mm. below the surface of the concrete and the resulting holes be filled by cement mortar. All fine caused by form joints, all cavities produced by the removal of form ties and all other holes and depressions honeycomb spots, broken edges or corners and other defects shall be thoroughly cleaned, saturated with water and carefully pointed and rendered true with mortar of cement and fine aggregate mixed in the proportions used in the grade of concrete that is being finished and of as dry consistency as is possible to use. Considerable pressure shall be applied in filling and pointing to ensure thorough filling in all voids. Surfaces which are pointed shall be kept moist for a period of 24 hours. If rock pockets/honeycombs in the opinion of the Engineer in-charge are of such an extent or character to effect the strength of the structure materially or to endanger the life of the steel reinforcement, he may declare the concrete defective and require the removal and replacement of the portions of the structure affected.
- FormWork:
- 1.0. Materials :
- 1.1. The shuttering to be provided shall be of ordinary timber planks and shall conform to M-26.
- 1.2. The dimensions of scantlings and battens shall conform to the design. The strength of the wood shall not be less than that assumed in the design.
- 2.0. Workmanship :
- 2.1. The form work shall conform to the shapee lines and dimension as shown on the plans and be so constructed as to remain sufficiently rigid during the placing and compacting of the concrete. Adequate arrangements shall be made by the contractor to safe-guard against any settlement of the form work during the course of concreting and after concreting. The form work of shuttering, centering, scaffolding bracing etc. shall be as per design.
- 2.2. Cleaning & Treatment of forms: 2.2.1. All rubbish, particularly chippings shaving and saw dust shall be removed from the interior of the form before the concrete is placed and the form work in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap solution for the purpose

shall be prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil or form oil of approved manufacture may be applied in case steel shuttering is used. Soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Care shall be taken that the coating does not gel on construction joint surface and reinforcement bars.

- 2.3. Stripping time :
- 2.3.1. In normal circumstances and where ordinary cement is used forms may be struck after expiry of following periods.:
 - (a) Sides of walls columns and vertical faces of beam - 24 to 48 hours.
 - (b) Beam soffits. (Props left under) - 7 days.
 - (c) Removal of props slabs (i) Slabs spanning upto 4.5 m. - 7 days (ii) Spanning over 4.5 m. -14 days.
 - (d) Removal of props to beams and Arches (i) Spanning upto 6m.-14 days. (ii) Spanning over 6 m. - 2 days.
- 2.4. Procedure when removing the form work :
- 2.4.1. All form work shall be removed without such shock or vibrations as would damage the reinforced concrete surface. Before the soffit form work and struts are removed, the soffits and the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened.
- 2.5. Centering :
- 2.5.1. The centering to be provided shall be got approved. It shall be sufficiently strong to ensure absolute safety of the form work and concrete work before, during and after pouring concrete. Watch should be kept to see that behaviour of centering and form work is satisfactory during concreting. Erection should also be such that it would allow removal of forms in proper sequence without damaging either the concrete or the forms to be removed.
- 2.5.2. The props of centering shall be provided on firm foundation or base of sufficient strength to carry the loads without any settlement.
- 2.5.3. The centering and form work shall be inspected and approved by the Engineer- in-charge before concreting. But this will not relieve the contractor of his responsibility for strength, adequacy and safety of form work and centering. If there is a failure of form work or centering, contractor shall be responsible for the damages to the work, injury to life and damage to property.
- 2.6. Scaffolding:
- 2.6.1. All scaffolding, hoisting arrangements and ladders etc. required for the facilitating of concreting shall be provided and removed on completion work by contractor at his own expense. The scaffolding, hoisting arrangements and ladders etc. shall be strong enough to withstand all live, dead and impact loads expected to act and shall be subject to the approval of the Engineer-in-charge. However, contractor shall be solely responsible for the safety of the scaffolding, hoisting arrangement, ladders, work and workman etc.
- 2.6.2. The scaffolding, hoisting arrangements and ladders shall allow easy approach to the work spot and afford easy inspection.
- 2.6.3. The rate is applicable to all conditions of working and height upto 4 mts. The rate shall include the cost of materials and labour for various operations involved such as :
 - (a) Splayed edges, notching, allowance for overlaps and passing at angles, battens centering, shuttering, strutting, propping bolting, nailing, wedging, easing, striking and removal.
 - (b) Filleting to form stop chamfered edges or splayed external angles not exceeding 20 mm. width to beams, columns and the like.
 - (c) Temporary openings in the forms for pouring concrete, if required, removing rubbish etc.

- (d) Dressing with oil to prevent adhesion of concrete with shuttering and
- (e) Raking or circular culling.
- 2.7. Re-Use :
- 2.7.1. Before-re-use, all forms shall be inspected by Engineer-in-charge and their suitability ascertained. The forms shall be scarred, cleaned, and joints gone over, repaired where required. Inside surface shall be retreated to prevent adhesion of concrete.

Mode of measurement and payments:

- The payment shall be made on Cum basis as per Price bid or Payment schedule.

Item No- 10 Drilling of 300mm dia Horizontal borehole for watermain pipeline crossing under the road inci in all strata with requiried length incl fixing of 250mm dia M.S/RCC casing pipe with pushing etc complete various size of pipe for 168mm dia watermain (For 45 mt Length)

Without Water main & with RCC Casing Pipe

The Properly Installations of the Road/Railway Crossing, to the extent feasible and Practical are to be Perpendicullar to the Road Alignment and preferably at not less than 45 degrees to the track.

- Crossing shall not be Placed within Culverts or Under Road bridges, Buildings or Other important Structures.
- The Crossing under ditches and Road Track should have minimum depth of cover of three feet below.
- Crossing Boring & Jacking Installations with Geotechnical study will need.
- The use of Carrier pipe for water main acceptable under specific circumstances.
- The use of Pipe is satisfactory & the pipe is designed to meet all applicable code.
- The casing must extended the full width of the right way.
- The work shall be carried out as per IS Specification & the instruction of Engineer in charge.
- No damage shall be occurred to existing any Water, Drainage, Telephone Cable,Oil/Gas line & any structure.
- If any damage occurred, it should be rectified/Penlty by the contractor at his own cost.

MODE OF MEASUREMENT AND PAYMENT

- The payment shall be made on Rmt basis as per Price bid or Payment schedule

Sign of Contractor

Deputy Executive Engineer
P. H. San Sub Division
MEHSANA