

# **MAHARASHTRA JEEVAN PRADHIKARAN**



## **SCHEDULE OF RATES**

**FOR THE YEAR :- 2019- 2020**  
**(Effective from 1 st June - 2019)**

## **KONKAN REGION**

**MAHARASHTRA JEEVAN PRADHIKARAN**  
**KONKAN REGION**  
**SCHEDULE OF RATES**  
**FOR THE YEAR - 2019- 2020**  
**I N D E X**

Section No.	Name of Section	Page	Nos.
		From	To
	Government Resolution	i	viii
	General Notes	01	08
A	Materials	09	10
B	Labour and Machinery	11	13
C	Transportation	14	23
D	Cement Consumption & Weight of Pipes	24	30
E	Excavation	31	35
F	Iron and Structural Steel Work	36	36
G	Plain Cement Concrete, Reinforced Cement Concrete, & Ready Mix Concrete.	37	44
H	Miscellaneous	45	57
I	Pipes		
I	I C.I./D.I. Pipes	58	65
II	II P.V.C. Pipes	66	71
III	III G.I. Pipes	72	74
IV	IV D.I. Specials & D.I. Mechanical Joints	75	84
V	V R.C.C. Pipes	85	88
VI	VI P.S.C. Pipes	89	94
VII	VII Bar Wrapped Steel Cylinder Pipes (BWSC)	95	99
VIII	VIII Glass Reinforced Plastic Pipes (GRP)	100	105
IX	IX High Density Polyethelene Pipes (HDPE)	106	111
X	X Medium Density Polyethylene Pipes (MDPE)	112	118
XI	XI Prestressed Concrete Cylinder Pipes (PCCP)	119	124
XII	XII Pipe Appurtenances	125	138
XIII	XIII Mechanical Joints/Fittings	139	144
XIV	XIV M.S. Pipes	145	158
XV	XV Fabrication of M.S. Pipes and Specials	159	160
XVI	XVI M.S. Pipes Laying	161	171
J	J Treatment Plant ( WTP & STP )	172	193
K	K R. C. C., G. S. R.s and Sumps	194	196
L	L R. C. C., E. S. R.	197	200
M	M Chambers, Manholes and Drainage Drops	201	206
N	N Well Sinking and River Infiltration Works	207	210
O	O Ancillary Items for Reservoirs	211	213
P	P Trial Run	214	214
Q	Q Specifications	215	233
R	R Map of Seismic Zones of India	234	236
S	S Annexures	237	256
T	T Type Designs	257	279

**वाचा :** १) शासन निर्णय, नियोजन विभाग, दि. २३ नोव्हेंबर, १९९०.

२) शासन निर्णय, ग्राम विकास विभाग क्र. ग्रापापु-१०९०/सीआर-१६३/३९-अ  
दि. ७ डिसेंबर, १९९० चे सहपत्र

३) शासन निर्णय, नियोजन विभाग, दि. २७ सप्टेंबर, १९९४.

४) शासन निर्णय, नियोजन विभाग, दि. २४ जुलै, २०००.

५) शासन निर्णय, नियोजन विभाग, दि. १३ जून, २००३.

## परिशिष्ट - १

राज्यातील डोंगरी विभागाचे क्षेत्र दर्शविणारे विवरणपत्र

जिल्हा	तालुका	ज्या डोंगरी भागात आहे त्या डोंगराचे नांव	पूर्ण गट ज्या तालुक्यात ५० टक्के पेक्षा जास्त क्षेत्र आहे तो पूर्ण गट	उपगट ज्या तालुक्यात २० टक्केपेक्षा जास्त व ५० टक्के पेक्षा कमी क्षेत्र आहे तो उपगट	शेरा
१	२	३	४	५	६
१. ठाणे	१. मोखाडा	सहयाद्री पर्वत रांगा.	पूर्ण गट (१)		
	२. वाडा	पश्चिम घाट	पूर्ण गट (२) पूर्ण गट (३) पूर्ण गट (४) पूर्ण गट (५)		
	३. शहापूर	“-			
	४. मुरबाड	“-			
	५. जव्हार	“-	-	उपगट (१) उपगट (२)	पूर्व भाग उत्तर पश्चिम भाग
	६. वसई	“-	-		
	७. भिवंडी	“-			
२. रायगड	८. कर्जत	“-	पूर्ण गट (६)		
	९. खालापूर	“-	पूर्ण गट ७)		
	१०. सुधागड	“-	पूर्ण गट (८)		
	११. रोहा	“-	पूर्ण गट (९)		
	१२. माणगांव	“-	पूर्ण गट (१०)		
	१३. महाड	“-	पूर्ण गट (११)		
	१४. पोलादपूर	“-	पूर्ण गट (१२)		
	१५. पेण	“-	पूर्ण गट (१३)		
	१६. मुरुड	“-	पूर्ण गट (१४)		
	१७. म्हसळा	“-	पूर्ण गट (१५)		
	१८. पनवेल			उपगट (३)	पूर्व भाग
	१८ अ. तळा		पूर्ण गट		

जिल्हा	तालुका	ज्या डोंगरी भागात आहे त्या डोंगराचे नांव	पूर्ण गट ज्या तालुक्यात ५० टक्के पेक्षा जास्त क्षेत्र आहे तो पूर्ण गट	उपगट ज्या तालुक्यात २० टक्केपेक्षा जास्त व ५० टक्के पेक्षा कमी क्षेत्र आहे तो उपगट	शेरा
१	२	३	४	५	६
३. रत्नागिरी	१९. खेड २०. चिपळूण २१. संगमेश्वर २२. लांजा २३. राजापूर २४. मंडणगड	- - - - - -	पूर्ण गट (१६) पूर्ण गट (१७) पूर्ण गट (१८) पूर्ण गट (१९) पूर्ण गट (२०) -	उपगट (४)	उत्तरेकडील भाग
४. सिंधुदुर्ग	२५. कणकवली २६. सावंतवाडी २७. देवगड २८. कुडाळ २९. वैभववाडी ३०. मालवण	- - - - - -	पूर्ण गट (२१) पूर्ण गट (२२) पूर्ण गट (२३) पूर्ण गट (२४) पूर्ण गट (२५) -	उपगट (५)	पूर्वभाग
५. नाशिक	३१. इगतपूरी ३२. नाशिक ३३. दिंडोरी ३४. पेठ ३५. सुरगण ३६. कळवण ३७. बागलण (सटाणा) ३८. सिन्नर	- - - - - - - -	पूर्ण गट (२६) पूर्ण गट (२७) पूर्ण गट (२८) पूर्ण गट (२९) पूर्ण गट (३०) पूर्ण गट (३१) पूर्ण गट (३२) पूर्ण गट (३३)		
६. अहमदनगर	३९. अकोले ४०. संगमनेर	- - -	पूर्ण गट (३४) पूर्ण गट (३५)		
७. पुणे	४१. जुन्नर ४२. आंबेगांव ४३. खेड (राजगुरुनगर) ४४. मावळ ४५. हवेली ४६. मुळशी ४७. वेल्हे	- - - - - - -	पूर्ण गट (३६) पूर्ण गट (३७) पूर्ण गट (३८) पूर्ण गट (३९) पूर्ण गट (४०) पूर्ण गट (४१) पूर्ण गट (४२)		

जिल्हा	तालुका	ज्या डोंगरी भागात आहे त्या डोंगराचे नांव	पूर्ण गट ज्या तालुक्यात ५० टक्के पेक्षा जास्त क्षेत्र आहे तो पूर्ण गट	उपगट ज्या तालुक्यात २० टक्केपेक्षा जास्त व ५० टक्के पेक्षा कमी क्षेत्र आहे तो उपगट	शेरा
१	२	३	४	५	६
८. सातारा	४८. भोर	--	पूर्ण गट (४३)	उपगट (६)  उपगट (७)         उपगट (८)	पूर्वेकडील पश्चिम भाग पूर्वेकडील काही भाग दक्षिणेकडील काही भाग उत्तरेकडील काही भाग पश्चिमेकडील काही भाग दक्षिणेकडील व पूर्वेकडील भाग
	४९. पुरंदर		पूर्ण गट (४४)		
	५०. सातारा		पूर्ण गट (४५)		
	५१. वाई		पूर्ण गट (४६)		
	५२. पाटणा		पूर्ण गट (४७)		
	५३. जावळी	--	पूर्ण गट (४८)		
	५४. महाबळेश्वर	--	पूर्ण गट (४९)		
	५५. खटाव	--	पूर्ण गट (५०)		
	५६. खांडळा	--	पूर्ण गट (५१)		
	५७. कोरेगांव	--	पूर्ण गट (५२)		
९. सांगली १०. कोल्हापूर	५८. कराड	--	पूर्ण गट		
	६०. फलटण	--	पूर्ण गट		
	६१. शिराळा	--	पूर्ण गट (५३)		
	६२. शाहूवाडी	--	पूर्ण गट (५४)		
	६३. पन्हाळा	--	पूर्ण गट (५५)		
	६४. करवीर	--	पूर्ण गट (५६)		
	६५. गगनबावडा	--	पूर्ण गट (५७)		
	६६. राधानगरी	--	पूर्ण गट (५८)		
	६७. कागल	--	पूर्ण गट (५९)		
	६८. भुदरगड	--	पूर्ण गट (६०)		
	६९. आजरा	--	पूर्ण गट (६१)		
	७०. चंदगड	--	पूर्ण गट (६२)		
	७१. गडहिंग्लज	--	पूर्ण गट (६३)		

जिल्हा	तालुका	ज्या डोंगरी भागात आहे त्या डोंगराचे नांव	पूर्ण गट ज्या तालुक्यात ५० टक्के पेक्षा जास्त क्षेत्र आहे तो पूर्ण गट	उपगट ज्या तालुक्यात २० टक्केपेक्षा जास्त व ५० टक्के पेक्षा कमी क्षेत्र आहे तो उपगट	शेरा
१	२	३	४	५	६
११. धुळे	७२. साक्री ७३. नवापूर ७४. अक्कलकुवा	- - सातपुडा डोंगर - - -	पूर्ण गट (६४) पूर्ण गट (६५) पूर्ण गट (६६)  पूर्ण गट (६७) पूर्ण गट (६८)	उपगट (९)	पूर्वेकडील व थोडा उत्तरेकडील भाग
१२. जळगांव	७८. तळोदा ७९. चोपडा ८०. यावल ८१. रावेर ८२. एदलाबाद	- - - - -		उपगट (१०) उपगट (११) उपगट (१२) उपगट (१३) उपगट (१४)	उत्तरेकडील भाग उत्तरेकडील भाग काही भाग पूर्वेकडील व काही भाग उत्तरेकडील
१३. अमरावती	८३. धारणी ८४. चिखलदरा	- -	पूर्ण गट (६९) पूर्ण गट (७०)		
१४. यवतमाळ	८५. पुसद  ८६. उमरखेड	सातमाळा रांगा  सातमाळा रांगा		उपगट (१५)  उपगट (१६)	उत्तर पश्चिमेकडील भाग, थोडा मध्यम भाग उत्तरेकडील व पूर्वेकडील भाग
१५. नांदेड	८७. किनवट	-	पूर्ण गट (७१)		
१६. अकोला	८८. पातूर	अजिठयाचे		उपगट (१७)	दक्षिण व पूर्व

जिल्हा	तालुका	ज्या डोंगरी भागात आहे त्या डोंगराचे नांव	पूर्ण गट ज्या तालुक्यात ५० टक्के पेक्षा जास्त क्षेत्र आहे तो पूर्ण गट	उपगट ज्या तालुक्यात २० टक्केपेक्षा जास्त व ५० टक्के पेक्षा कमी क्षेत्र आहे तो उपगट	शेरा
१	२	३	४	५	६
१७. बुलडाणा	८९. खामगांव	डोंगर --	पूर्ण गट (७१)	उपगट (१८)	उत्तर व पूर्वेकडील भाग
१८. औरंगाबाद	९०. कन्नड	--		उपगट (१९)	उत्तर व पूर्वेकडील भाग
	९१. खुलताबाद	--		उपगट (२०)	मधला व दक्षिणेकडील भाग
	९२. सोयगांव	--		उपगट (२१)	उत्तरेकडील व थोडा दक्षिण पश्चिमेकडील भाग
	९३. सिल्लोड	--			दक्षिणेकडील भाग
१९. परभणी	९४. हिंगोली	--		उपगट (२२)	दक्षिणेकडील भाग
	९५. कळमनुरी	--		उपगट (२३)	दक्षिणेकडील भाग

**शासन निर्णय ग्राम विकास विभाग क्र. ग्रापापु-1090/सीआर-163/39-अ**  
**दि. 7 डिसेंबर 1990 चे सहपत्र.**

**परिशिष्ट - 2**

**तालुकावार यादीतील उपगट म्हणून घोषित केलेल्या तालुक्यातील गावांची यादी दर्शविणारे  
विवरणपत्र**

जिल्हा म्हणून घोषित केलेला तालुका	उपगट तालुक्यातील गावांची नावे
<b>1) ठाणे वसई</b>	1) चांदज 2) तिपलिया 3) शिवनासा 4) पानसा 5) उसगांव 6) पारोळ 7) शिरवली 8) जळकीया 1) वसई 9) सारवण 10) वसई घाटेघर 11) षवखल 12) पेलाट 13) साजिवली 14) दापेवली 15) कार्जुरा 16) खाडेकर 17) भिडा 18) खोलसट 19) खैरे 20) संदा 21) चुडाल 22) तिल्हेस 23) सावट 24) मरतारी 25) बिलवूडा 26) गया 27) दडविरा 28) सातिवली 29) खाडी 30) दैडा 31) दडीप 32) वामन 33) काजू 34) कोल्ही 35) कोळा 36) चिंचाटी 37) होवारून
<b>2) भिवंडी</b>	1) गणेशपूरी 2) वडवली 3) उसगांव 4) धाडगांव 5) आंदीपाडा 6) गोबाटा 7) मोहिली 8) बावची 9) मालवियोर, 10) बेलोली, 11) उसपाडी पाडा 12) आंबराई पाडा 13) घ्यार 14) खडकी खुर्द 15) पिंपळशेत 16) खडकी बुद्रुक 17) षऊपोळ 18) कुहापाडा 19) कुहा 20) आंबापाडा 21) देवपाडा कुलईपाडा 29) पायगांव 30) पाया 31) पेरूनपाडा 32) षवडीपाडा 33) खारष्भाव 35) गाना 36) लाकेवली 37) चिंचपाडा 38) गौरीपाडा 39) डोकरनापाडा 40) अलकौअरी
<b>रायगड 1) पनवेल</b>	1) माणिकघर 2) घोडसावना 3) सावना 4) बामणोरी 5) नामदेवी 6) देवलोळी 7) छावना 8) कालेवली 9) सारसाई 10) आपटा 11) कासव 12) कारडा 13) देवटी 14) बुलसुडा 15) अकूवडी 16) घुराडाव 17) वावेघर 18) कोष्टी 19) दापोवली 20) देवतुला 21) सावला 22) करनाहा 23) कला 24) वंडाना 25) कारल 26) दुलघट 27) कासभाट 28) दिघारी 29) हातवंडी
<b>रत्नागिरी 4) मंडणगड</b>	1) अंबावना बुद्रुक 2) केंजालघर 3) लोरी 4) हेल्टी 5) गारीपाडा 6) पेवा 7) पांडेरी 8) पाडवा 9) अंबरसेंट 10) टी व्हेसाई 11) टेरी 12) लोकरवन 13) महाप्रत 14) हडघर 15) तांभी 16) लोहरा 17) गौरज 18) कुंभार 19) गोवेळे 20) पन्हाली 21) धुरी 22) तारवली 23) आंबेगण 24) धनगर 25) सारळ 26) अडखळ 27) व्हेसाई 28) पाट 29) अंजला 30) सोडली तर्फे व्हेसाई 31) बुद्रुक 32) खुर्द 33) शिंगांव 34) साडा 35) तळघर 36) टाकेडी 37) पाचरोल 38) धामणी 39) वोरखट 40) गोवा 41) धमणघर 42) सामोटी 43) निगडी
<b>सिंधूदूर्ग 5) मालवण</b>	1) कुसीस 2) असरुडी 3) प्धानी 4) वंजकार 5) टाटारभाव 6) भाटपावणी 7) शिरावडे 8) राटीवडे 9) आजगणी 10) ब्राम्हण 11) हिवाळे 12) ओवलीये 13) खाटले 14) जुंडुल 15) वायनंगावडे 16) वायरन 17) पोईप 18) नेसूरे 19) वाडेच्या पाट 20) नवापाट 21) गोलवणे 22) डीकवळ 23) चापेखोल 24) कुमामे 25) नांदोसा 26) तिरावडे 27) पारस 28) डेहूल



<p><b>सातारा</b> <b>6) कराड</b></p>	<p>1) मरळी 2) चोरजवाडी 3) कोरीवळे 4) बेलदारे 5) म्होप्रे 6) भोळेवाडी 7) साकुडी 8) येणके 9) कोळे 10) कुसूर 11) तुळवण 12) सवादे 13) लाटकेवाडी 14) हवेलवाडी 15) म्हासोळी 16) शेळकेवाडी 17) मनु 18) येवती 19) घराळवाडी 20) हणमंतवाडी 21) टाळगांव 22) येळगांव 23) गौरेवाडी 24) गणेशवाडी 25) भरेवाडी 26) सोळशिरभे 27) महारगडेवाडी 28) जिती 29) अक्काईवाडी 30) कासारशिरमे 31) निगडी 32) धोलपावाडी 33) किवळ 34) खोडताईवाडी 35) मसूर 36) हणबरवाडी 37) वाण्याची वाडी 38) मालवाडी 39) कांबीखाडी 40) शिरगांव 41) तुळी 42) पाल 43) हरपळवाडी 44) रिसवड 45) वस्ती साकडी 46) सांजूर 47) तांबवे 48) आरेवाडी 49) गमेवाडी 50) मोळवाडी 51) डोळेवाडी 52) पांढरीवाडी 53) आणे 54) अंबवडे 55) तारुख 56) भवानपाडा 57) शितलवाडी 58) चिरवली 59) घरचुंद 60) कामथी 61) वाघेरी 62) करवडी 63) हजरार माची 64) वानरमाची 65) वनवासमाची 66) राजमाची 67) टेंभू 68) भयापूर 69) कोरेंगाव 70) कार्वे 71) वडगांव हवलेली 72) शेपोली कालवडे</p>
<p><b>सातारा</b> <b>7) फलटण</b></p>	<p>1) सालपे 2) आदकीखुर्द 3) आळजापूर 4) कोराळे 5) वाघोशी 6) लाथवडा 7) मानेवाडी 8) झाडकबाईवाडी 9) वेलोशी 10) उजलवे 11) दाववाडी 12) भीरेवाडी 13) गिरवी 14) धुमाळवाडी 15) बेडकेवाडी 16) साकळ 17) भाडळी खुर्द 18) दुधेभावी 19) जावली 20) आंदुड 21) कुरवाली बु.</p>
<p><b>सातारा</b> <b>8) मान</b></p>	<p>1) कळसकर वाडी 2) गाडेवाडी 3) भिंडी बुद्रुक 4) पाळवण 5) तोंडल 6) उगळेवाडी 7) शिंदी बुद्रुक 8) शिगणापूर 9) भांडळी 10) इंजतात 11) कळचांडी 12) विरळी 13) वळई 14) कुक्कडवाड 15) मखणे 16) काळेवाडी 17) बोरगेवाडी 18) किरकसाड 19) हिमानगड 20) दिवडी 21) पांढरीवाडी 22) स्वरपवानवाडी 23) शिंदी बुद्रुक 24) बोथे</p>
<p><b>धुळे</b> <b>9) शाहदा</b></p>	<p>1) काकरेदे खुर्द 2) काकरेदे बुद्रुक 3) कोंढावळ 4) चांदसेली 5) चिंरडे 6) वरुड बुद्रुक 7) मळगांव 8) भुलाना 9) दरा 10) राणीपूरी 11) आकसपूर 12) मानमोडया 13) नागझरी 14) लंगडी भवसनी 15) कुक्कडवाड 16) मखणे 17) आभाडपूर खुर्द 18) टरबा 19) नायगांव 20) सिसुरा 21) पेटा 22) फोफाराळे 23) चांदपूर 24) गुदा 25) इकरास 26) काटघर 27) पिरपूर</p>
<p><b>धुळे</b> <b>10) तळोदा</b></p>	<p>1) सोजूरवाडा 2) माळखुर्द 3) चौगांव खुर्द 4) लाकुड शेट 5) खर्डी खुर्द 6) काठोर 7) बंधारा 8) खडी बुद्रुक 9) जुवाणी 10) लाखापूर 11) माळ 12) मोरामाळ 13) आंबा गव्हाण 14) सीत पावळी 15) बामनी 16) मलुवा 17) राजापूर</p>
<p><b>जळगांव</b> <b>11) चोपडा</b></p>	<p>1) मराठा 2) सत्रासेन 3) खांडरा 4) षेरचिडा 5) उमरटी 6) गोवापाडा 7) कृष्णापूर 8) खान्यापाडा 9) विजापूर 10) मुख्यावतार 11) शेतपाणी 12) बोअरअनंती 13) मालापूर 14) विषणापूर 15) बोरमळी 16) कर्जाणा 17) मेलाना 18) देव्हारी</p>

<b>जळगांव</b> <b>12) येवला</b>	1) मनुबाई देवस्थान 2) लंगडया आंबा 3) गढूच्या 4) जामन्या 5) उसमळी 6) हरीपूरी 7) नागदेवी 8) वाघझीर 9) आसरा वारी
<b>जळगांव</b> <b>13) रावेर</b>	1) तिडया 2) अंधारमाळी 3) मोहमोडी 4) चिचाडी 5) चिमडया 6) गारखेडा 7) मोहमांडली सून 8) पिंपट कुंड 9) पाल 10) मोरव्हाल 11) जिन्सी 12) गारखेड 13) सहस्नलिंग 14) लालमाती
<b>जळगांव</b> <b>14) ऐदलाबाद</b>	1) दुई 2) सुकली 3) सोमणगांव 4) डोलरखेड 5) नोंदवेल 6) वायल 7) चारठाणे 8) देवी मंदिर 9) मोरझिरा 10) जोनधखेड 11) लालगोडा 12) हलखेंडा
<b>बुलढाणा</b> <b>15) खामगांव</b>	1) गिरोळी 2) इसालवाडी 3) चिंचखेडनाथ 4) कठडेगांव 5) चिंचखेडबंड 6) शेंद्री 7) मांडणी 8) बोथा 9) खेडी 10) वाकी 11) गारखेड 12) गारोडी 13) धार 14) माटरगांव 15) चिंचखेड 16) कांन्टी 17) कझर 16) पिंपरी 17) धनगर 18) लाखनवाडी खुर्द 19) पत्तेपूर 20) निमखेडा 21) हिवरखेडा 22) निरोडा
<b>अकोला</b> <b>16) पातूर</b>	1) अंबारी 2) षनोसा 3) बेलवळ 4) बलकापूर 5) षेकद कंदोली 6) बडीआमराई 7) बोडसा 8) खानापूर 9) काकडदारी 10) कोठारी बुद्रुक 11) पासटल 12) कोसगांव 13) माळराजूर 14) सावरखेड 15) चिंचखेड पातूर 16) शेकापूर 17) कार्ला 18) चारमुळी 19) धरम 20) पांदुर्णा 21) सोनुना 22) चिखलपाव्हळ 23) चोंडी 24) जांब 25) चिंचखेड 26) गोळेगांव 27) आधार सावंगी 28) गावडगांव 29) सावरगांव
<b>यवतमाळ</b> <b>17) पुसद</b>	1) पिंपळगांव 2) हौसापूर 3) बामनवाडी 4) कोल्हळ 5) गहूळी 6) चोडी 7) चिंचघाट 8) देवगव्हाण 9) बेलगव्हाण 10) जामनी धुद 11) मोरगड 12) उडाणी 13) पारवा 14) पांदूणी खुर्द 15) खटकोला 16) पन्हाळा 17) मांजरजवळा खुर्दा 18) मांजरजवळा 19) सावतमाळ 20) हनवंतखेड 21) मारवाडी 22) अमृतनगर 23) धनतळ 24) अनजळ 25) उपवनवाडी 26) रामपूरनगर 27) दुधंगिरी 28) अनसिंग 29) जांबनाइकर 30) शिलोना
<b>यवतमाळ</b> <b>18) उमरखेड</b>	1) दिडाळा 2) पाडी 3) पिरंजी 4) गोविंदपूर 5) कुरळी 6) जाम 7) अकोली 8) सातारा 9) मसळग 10) पाडी 11) जेवळी 12) पिंपळगांव 13) बोडखा 14) पेधा 15) उदापूर 16) सावरगांव 17) परोटी 18) नानी 19) बोरी 20) धेरडी 21) पवनाळा 22) सोनदामी 23) येकंबा 24) मोरचंडी 25) कोसंबी 26) चिखली 27) रामपूर 28) बोरगांव 29) डोंगरगांव 30) धडोली 31) षेईर 32) नवेलालपूर 33) दिग्रस 34) काटी 35) कवठा 36) वहेली 37) वानोरा 38) शिवाजीनगर 39) जवराळा 40) उमरी 41) असोली 42) सेवालालनगर 43) वडगांव 44) दामसरी 45) थार बु. 46) सेरंडी 47) दरारी 48) मधुरानगर

<p><b>औरंगाबाद</b> <b>19) सिल्लोड</b></p>	<p>1) धनशिगवाडी 2) बाभुळगांव 3) पोखरी 4) बावरा 5) मोमोनाबाद 6) लेहा 7) बाधेगांव बु. 8) अंधारी 9) जातवा 10) अमरावती 11) घाटनांदा 12) परदेशीवाडी 13) चारनेर 14) धावडा 15) अंधारवाडी 16) कडेगांव 17) सिरसाम 18) नातेगांव 19) घाटमखेळ 20) हालदा 21) पिंपळदरी 22) मुखबार 23) वाघरा 24) रांजणी 25) अजिंठा 26) अनाड 27) आमसरी 28) नारवी 29) वडाळी</p>
<p><b>परभणी</b> <b>20) हिंगोली</b></p>	<p>1) नरसी 2) लोहगांव 3) सेवली 4) पिंपळी 5) बोरळा 6) जळगांव 7) शेलेगांव 8) सोनेगांव 9) पिंपरखेड 10) देवळा 11) अनपनवाडी 12) ससुळापूर 13) माथा 14) मूर्तिजापूर 15) केहरपिंपरी 16) सिद्धेश्वर 17) दिघुळ 18) टुडचना 19) बडचुना 20) ओढा 21) हनुमानदरी 22) शिवकार 23) जामला 24) जामदन 25) बैजापूर 26) खंबाळा 27) फासेले 28) तबलीगव्हाण 29) मांडेगांव 30) राख 31) जामरी खुर्द 32) पांगरी 33) बोरळा 34) नांदूरा 35) कडवी 36) आमनखेड 37) ब्रम्हपूरी 38) खळगांव 39) जामसन 40) पारडी 41) खळगांव 42) रिधोस 43) तेजगांव 44) कोळंब 45) सूकली बु. 46) सुकली 47) शिंदेपळ 48) धनगरवाडी 49) सबळखेड 50) बाभुळगांव 51) गोरेगांव 52) पोंडीखुर्द 53) ब्रम्हणवाडी 54) पिंपरी पाथबळ 55) बोरखेड 56) एकंवा 57) खंडाळा 58) चिंचोळी 59) बेलरा 60) आडगांव 61) देवठाण 62) काळेगांव 63) कलोखेड 64) कपकुली 65) चाटोना 66) देवठाण</p>
<p><b>औरंगाबाद</b> <b>21) कन्नड</b></p>	<p>1) तांदूळवाडी 2) पेवली 3) मुमसापूर 4) पेकडवाडी 5) कोंडवाडी 6) कल्याणी 7) वडनेर 8) अंबाला 9) आंबा 10) जामडी 11) रेल 12) कुंजखेड 13) नांदगिरवाडी 14) हिवरखेड 15) वडाळी 16) जेतखेड 17) मालेगांव ढोंकळ 18) षरवा 19) मालेगांव लाखोंडे 20) मोहाडी 21) हस्ता 22) माहेगांव 23) चेडसर 24) पळसी खुर्द 25) कांबळी 26) भिलदरी 27) गोर पिंपरी 28) सवखेड बु. 29) पिंपरखोडा 30) सफीयाबाद 31) खडकी 32) पिशीर 33) षतवाडी 34) वासडी 35) निंभोरा 36) उमरखेड 37) सावरगांव 38) धामणी 39) आंबेवाडी बु. 40) मेहुण 41) हारेवाडी 42) वडगांव 43) लोझा 44) पांगरी 45) षपेवाडी 46) सोनवाडी 47) शिवघाट 48) चिमणापूर 49) नागापूर 50) करंजखेड 51) रेडळगांव 52) नेवूपूर 53) घाटशेंटा 54) टाकळी 55) अंतूर 56) लोहगांव</p>
<p><b>औरंगाबाद</b> <b>22)खुलाताबाद</b></p>	<p>1) वडगांव 2) पाडळी 3) शिरोळ बु. 4) सावरखेडा 5) लोधी 6) बोडक 7) खुलताबाद 8) धामणगांव 9) अब्दुलापूर 10) निरगुडी बु. 11) पिंपरी 12) जमालवाडी 13) म्हैसमाळ 14) शिरसमाळ 15) टाकळी खुर्द 16) आखतवाड 17) वेरूळ 18) मंत्रापूर 19) खुलताबाद 20) सराई 21) बदलाबाई 22) नंदुबाद 23) मापसाळा 24) रसुलपूर 25) शंकरपूरवाडी 26) साबुखेडा 27) खिर्डी 28) सोनखेडा 29) ष्टजी 30) लामनगांव 31) खोतेनापूर 32) विरमगांव</p>
<p><b>परभणी</b> <b>23) कळमनुरी</b></p>	<p>1) खेड 2) धानापुर 3) धोतरा 4) अमरखोजा 5) शिरसखुर्द 6) शिरस बुद्रुक 7) डिग्रस वापी 8) पिंपळी 9) सांडस 10) रेटकर 11) वराडी 12) खडकत बुद्रुक 13) खडकस खुर्द 14) मंदारी 15) गारखेड 16) महरी खुर्द 17) खडकेत 18) बैज 19) दुधेरी 20) चिंचोळी 21) खोडतला 22) पेडगांव 23) डोंगी 24) नांदुरा 25) बोलापूरी 26) तळेगांव 27) जावा 28) मिसे बुद्रुक 29) कापस 30) शिपगी 31) माळवाडी 32) दाडेगांव 33) मोतीचोर 34) विडलवाडी 35) पिंपरी खुर्द 36) कानेगांव 37) फाटणा 38) दाभाडी 39) पुंचा 40) मोरगांव</p>

# **MAHARASHTRA JEEVAN PRADHIKARAN**

## **KONKAN REGION**

### **SCHEDULE OF RATES FOR THE YEAR 2019-20**

#### **GENERAL NOTES**

1. These rates are applicable to all MJP works in the **KONKAN REGION** with **effective from 01-06-2019**.
2. Rates given in this CSR are for estimation purpose only.
3. Item of excavation is inclusive of normal manual dewatering, however separate item for dewatering shall be proposed in the estimate where underground water is anticipated in significant magnitude.
4. The rates of excavation for O & M works where limited working space is available and work is required to be carried out on emergency basis, the rate should be adopted as per actual rate analysis which shall be approved by the concerned S. E. for that particular work only.
5. Rates for all items are exclusive of GST (Goods & Service Tax). Rates for completed items are also exclusive of GST. While preparation of estimates, prevailing GST percentage provision should be made separately in recapitulation sheet. For Departmental DI Pipe Supply GST rates, circular issued by S.E. (H.Q.) from time to time shall be considered.
6. For all completed items, initial lead of 5 km is considered for collection of materials like sand, bricks, metal, stone etc. Appropriate addition for lead charges excluding loading, unloading for these materials shall be done while estimation.

Following quantities shall be considered for additional lead charges beyond 5 Km for material required for concrete and reinforcement for structures.

ESR specifications			
Capacity (Lit)	Staging (M)	Concrete Qty (Cum)	Reinforcement Qty (MT)
20000	12	27.4	2.14
30000	12	32.7	2.55
40000	12	37.8	2.95
50000	12	41.9	3.27
60000	12	46.4	3.62
70000	12	51.2	3.99
75000	12	53.0	4.13
80000	12	56.0	4.37
90000	12	62.4	4.87
125000	25	107.4	8.38
150000	12	89.8	7.00
160000	12	94.3	7.36
175000	16	117.6	9.17
200000	20	143.6	11.2
200000	25	157.0	12.25
250000	25	177.0	13.81
300000	25	206.0	16.07
400000	15	189.0	13.7
500000	15	215.3	18.4
600000	15	283.5	24.2
700000	15	299.3	25.7
800000	15	304.5	26.3
1000000	15	304.5	26.3
1200000	20	462.0	38.9
1500000	20	546.0	46.2
1750000	20	640.5	54.6
2000000	20	656.3	57.8
2250000	20	777.0	65.1
2500000	20	798.0	68.3
<b>Note:-</b> Spiral staircase not considered. SBC - 5 MT / Sqm. Seismic Zone - III is Considered.			

### GSR specifications

<b>GSR Capacity (Ltr)</b>	<b>Concrete Qty. (Cum)</b>	<b>Reinforcement Qty.(MT)</b>
25000	13.58	0.9448
50000	18.45	1.5856
75000	30.45	2.0952
100000	39.31	2.7072
150000	54.699	3.778
200000	73.313	11.9
300000	95.092	6.577
500000	143.277	9.874
1000000	222.441	15.418

(For WTP/STP works, quantities of completed / ongoing works shall be considered)

For capacities beyond mentioned capacities of ESR and GSR as well as for all capacities of WTP & STPs, the quantities shall be considered with respect to the already completed / ongoing work in the region. All the RCC items for water retaining structures are taken as M-300 grade. Hence aggregate quantity shall be 0.90 cum/cum of concrete and sand quantity shall be 0.45 cum/cum of concrete for RCC ESR, GSR, and all Treatment Plants.

7. These rates are applicable to water supply and sewerage schemes and its allied works only. Rates for items required for general construction, buildings, roads, irrigation works etc. shall be adopted from the current schedule of rate of PWD or Irrigation Dep't., in respective areas. For bore wells, CSR of GSDA shall be followed. Increase in percentage over normal schedule of rates will also be as per norms of respective CSR.

8. For works in Brihanmumbai Municipal Corporation Limit, the CSR of B.M. C. shall be used.
9. For mechanical and electrical items related to water supply and sewerage schemes, CSR for 2019-2020 prepared by the Superintending Engineer (Mechanical), Thane, Maharashtra Jeevan Pradhikaran shall be adopted.
10. Following increase in % over normal schedule of rates of M.J.P. for 2019-2020 will be applicable. (Ref.PWD GR.No.DSR/1091/CR-6577/Planning-3, dated 08/07/2003)

	Areas	Percentage Increase
a	Works in Corporation area	5%
b	Works in Municipal areas	2%
c	Works in tribal area / hilly and inaccessible areas / MMRDA	10%
d	Sugar cane area (Within 10 km radius)	5%
e	Prison / Jail area.	15%
f	Defense area.	20%
g	Excavation for pipeline work along National Highway.	10%
h	Excavation for distribution system pipe lines, sewerage system in towns	10%

Note : The Superintending Engineer Should specify sugar factory areas

11. In case more than one percentage increase on basic rates becomes admissible, instead of adding both, the higher percentage only be taken. (e.g. if any municipal council falls in hilly area, then additional percentage in rates will be only 10% and not with 2% + 10% ).This additional percentage is only on completed item of work and not applicable to items of providing of materials like pipes, valves, specials, etc.

12. For hilly and inaccessible areas / Tribal areas approved by GoM Planning Department's Circular Nos.(1)1089/CR-66/Plan-19,dated 23/11/90 and (2) 1094/P-36/K-1455 dt.02/ 09/1994 shall be followed. (Refer pages onwards) In addition to amendment notification by the Planning department time to time.
13. For action plan notified area, Government's Circular in force from time to time shall be followed.
14. Wherever basic rates of completed items are increased by percentage given at Sr.No.10, the issue rates of materials to be supplied by the Department (if any) shall be increased by same percentage.
15. This schedule of rates is based on following basic rates for important materials.

	<b>Material</b>	<b>Rate in Rs. Per MT.</b>
a	Cement	4,960/-
b	Mild Steel	38,590/-
c	Tor Steel/ CTD bars	41,708/-
d	Structural Steel	43,543/-
e	Corrosion Resistant (Fe 500)	44,072/-

16. Details of standard cement consumption are incorporated in this CSR.
17. Rates for supply of various types of pipes, specials and valves are exclusive of GST, but inclusive of third party inspection charges, storage charges, overhead charges and transportation of materials up to divisional stores and stacking.



18. Cost of carting of pipes and valves from departmental stores to site of work is not considered in rate analysis; hence this item must be incorporated in each scheme. While inviting tenders if supply is from departmental store, then this item shall appear in the tender, and if the supply is by contractor then this item shall not appear in the tender, even though same is provided in sanctioned scheme, because the contractor is supposed to bring the pipes and valves directly at site.
19. Though the contractor is required to do refilling before hydraulic testing to avoid traffic hurdle, no payment for refilling of the trenches of pipeline shall be payable till satisfactory hydraulic testing is given. Re-excavation required if any, during testing, shall be done by the contractor at his own cost.
20. 10 % of cost of items of water retaining structures such as GSR/ESR/ MBR shall be retained till satisfactory hydraulic testing is given as per IS code.
21. 10% of cost of total sub-work of pipeline work shall be retained, till satisfactory hydraulic testing is given, as per IS code or as per tender conditions.
22. In case of supply of pipes/valves etc. by contractor, only 85% payment shall be released after supply and 15% after satisfactory hydraulic testing, or as per tender conditions.
23. AC/PVC pipes shall not be used in urban areas, with respect to the circular no. 130 dt. 09/03/2009 of M. S., MJP. HDPE Pipes may be used in distribution system of urban areas with diameter restricted up to 300 mm only, provided that area where these pipes are to be laid shall not be rocky area. HDPE Pipes shall be as per latest IS specifications. Also HDPE pipes up to 110 mm dia. shall be in coil form.
24. For use of ready mix cement concrete, prior permission of the Chief Engineer must be obtained.

25. For Dams, Balancing tanks, Aerated Lagoons and similar structures, the rates for Film membranes as per prevailing rates for Irrigation Department will be followed.
26. Capacity of ESR / GSR to be constructed shall be rounded to nearest 1000 litre always on higher site i.e. if required capacity is 1,23,570 litre, it shall be rounded to 1,24,000 litre. Similarly, if required capacity is 8,26,070 litre, it shall be rounded to 8,27,000 litre.
27. Capacity of Unconventional / Conventional Treatment Plants shall be rounded to nearest 0.5 Mld. always on higher site i.e. if WTP of 2.37 Mld is required; it shall be rounded to 2.5 Mld. For WTP having capacity less than 0.5 Mld, package type WTP should be considered.
28. Provision for insurance at 1% is considered in Rate analysis of CSR 2019-2020. These rates are applicable only for tendered works; these rates shall be reduced by 1% of total rate when works are to be carried out on piecemeal works and other small works without tendering.
29. The makers of Sluice valve / Butterfly etc. to be used for inlet/outlet of ESR / GSR/ MBR/ pumping main/ rising main and WTP should be approved makes of M.J.P.
30. Mechanical CSR rates for respective items shall be followed while estimation and the list of approved makes shall be given in the item.
31.
  - i) As per Govt. Circular No. DSR-1090/CR-6453/PLN-3 dated 14.7.1993 1% for labour amenities is considered in the Rate Abstract.
  - ii) As per Govt. in industries & power G.R.No.BCA-2009/CR-108/Labour 7-A dated 17.6.10.1% cess on labour welfare is considered in the Rate Abstract.

32. **Hydraulic testing:**

i) Item of hydraulic testing should be measured separately, as per detail item in respective sub work.

ii) In case of water Supplied by the MJP, amount of Water Supplied should be deducted from the Item of the hydraulic testing, with prevailing rates of Non Domestic of the WSS, as per Govt. notification.

33. In case of Geo-membrane sheet to be provided by the agency 50% payment against supply 30% payment against lowering and 20% against hydraulic testing will be given.

34. The royalty charges are considered in rate analysis of CSR 2019-20 as per Revenue and Forest Department, Govt. of Maharashtra notification dated 11.05.2015.

35. The detailed actual rate analysis shall be prepared for the work to be carried out at Matheran Hill station, Raigad Fort and Gharapuri Island. The same shall be got approved from concerned Superintending Engineer.

**SECTION-A: MATERIALS**

<b>Sr. No.</b>	<b>Material Description</b>	<b>Unit</b>	<b>Rate in Rs 2019-20</b>
1	Acetylene Gas	Cylinder	715.00
2	Alum Grade IV Ex Factory	MT	7385.00
3	Binding Wire	Kg.	67.00
4	Black enamel paint Anti corrosive	Ltr.	169.00
5	Bricks	No.	6.00
6	Bullies, Struts (125 mm dia 1.5 M long)	Rmt.	171.00
7	C.C.Teak wood planks(3" X 6")	Cum.	68507.00
8	Cement (Bags)	Bag	248.00
9	Cement (M.T.)	MT	4960.00
10	Cement Sulphar Resistant	MT	6492.00
11	Charcoal	Kg.	32.00
12	Corrosion Resistant steel	MT	44072.00
13	Diesel	Ltr.	58.00
14	Epoxy paint	Kg.	381.00
15	Fuse	No.	19.00
16	Gun Powder	Kg.	65.00
17	Liquid chlorine 100 kg Deptt Container .	No.	2080.00
18	Liquid chlorine 100 kg supplier Container	No.	2230.00
19	Liquid chlorine 900 kg Deptt Containor AT SITE including loading	No.	14220.00
20	Lubricant Oil	Ltr.	223.00
21	M.S.angle(50x50x6mm)	Kg.	45.00
22	M.S.Bars (Delivery at site)	MT	38590.00
23	M.S.Bars (in kgs)	Kg.	39.00
24	M.S.Flats (40 mm x 3 mm)	Kg.	43.00
25	M.S.plate	Kg.	47.00
27	Mild steel Grill ready	Kg.	62.00
28	Mildsteel grill railing	kg	62.00
29	Mobile oil	Ltr.	240.00
30	Murum	Cum.	240.00
31	Nails	Kg.	73.00

<b>Sr. No.</b>	<b>Material Description</b>	<b>Unit</b>	<b>Rate in Rs 2019-20</b>
32	Nut bolts	Kg.	79.00
33	Oxygen Gas (Refill)	No.	325.00
34	Polling board	Cum.	16260.00
35	R.S.Joist channel etc	MT	44954.00
36	Rapid sand Gravity filter sand At Source (Godhara, Gokak, Kanhan, Yesagi sand)	Cum.	1604.00
37	Rapid sand Gravity filter Gravel filter media At Source	Cum.	1604.00
38	Ready mixed Alluminium paint	Ltr.	220.00
39	Ready mixed lead/zinc paint	Ltr.	202.00
40	Ready mix oil paint	Ltr.	205.00
42	Ready mix primer for steel	Ltr.	135.00
43	Rubber Gasket (8 mm thick)	Kg.	85.00
44	Sand @ SOURCE	Cum.	1700.00
45	Kasarde sand (for mortar lining work) @ source	Cum.	1744.00
46	Spun Yarn	Kg.	98.00
47	Stone Aggregate 10 mm	Cum.	809.00
48	Stone Aggregate 20 mm	Cum.	809.00
49	Stone Aggregate 40 mm	Cum.	809.00
50	Structural Steel	MT	43543.00
51	T.C.L.(bleaching powder Gr.I) (25kg pack)	Kg.	21.00
52	Teak wood	Cum.	68918.00
53	Tor Steel (TMT Fe-500)	MT	41708.00
54	Walling ( 100x100mm)	Cum.	18047.00
55	Welding Rod Having weight 5.25 kg	Box	1105.00
56	White cement	Kg.	24.00
57	White lead	Kg.	144.00
58	Wire	Kg.	74.00
59	Plywood Commercial 12 mm thick Waterproof for centering (Taken in analysis for RCC items only)	Sqm.	441.00
60	Coarse sand	Cum.	1234.00
61	Rubble	Cum.	444.00
62	Ready mix synthetic enamel paint	Ltr.	150.00
63	PAC Powder for medium basecity	MT	28100.00
64	PAC liquid	MT	9596.00

**MAHARASHTRA JEEVAN PRADHIKARAN,  
KONKAN REGION  
SECTION-B- LABOUR AND MACHINERY**

Sr. No.	Material Description	Unit	Rate (in Rs.) 2019-20
1	Asst Fitter	No.	512.00
2	Bhandhani	No.	512.00
3	Bhisti with pakahal	No.	512.00
4	Blacksmith IInd class	No.	512.00
5	Breaker	No.	512.00
6	Carpainter 1st class	No.	539.00
7	Carpainter 2nd class	No.	539.00
8	Chiseller	No.	512.00
9	Data Entry Operator	No.	539.00
10	Excavator	No.	493.00
11	Filter Operator	No.	539.00
12	Fitter 1st class	No.	539.00
13	Glazier	No.	539.00
14	Helper	No.	493.00
15	Hole Driller	No.	512.00
16	Mason 1st class	No.	539.00
17	Mason 2nd class	No.	539.00
18	Mazdoor (Female)	No.	493.00
19	Mazdoor(Heavy)	No.	493.00

Sr. No.	Material Description	Unit	Rate (in Rs.) 2019-20
20	Mazdoor (Light)	No.	493.00
21	Mazdoor (Male)	No.	493.00
22	Maistry	No.	539.00
23	Meter Reader	No.	539.00
24	Mukadam	No.	539.00
25	Painter (for colouring)	No.	539.00
26	Painter	No.	539.00
27	Painter (for epoxy paint)	No.	539.00
28	Plumber	No.	512.00
29	Polisher	No.	539.00
30	Pump Driver	No.	512.00
31	StoneCutter or dresser	No.	539.00
32	Tile layer	No.	539.00
33	Welder	No.	539.00
34	Welder for pipe line	No.	539.00
35	WhiteWasher	No.	512.00
36	TileTurner	No.	539.00
37	L.M.V. Driver	No.	539.00
38	Electrician	No.	539.00

### MACHINERY

Sr. No.	Material Description	Unit	Rate (in Rs.) 2019-20
1	Rent for polishing machine with crew	Day	1100.00
2	Rent for chain pully block with tripod	Day	551.00
3	Rent for pump excluding operator & excluding fuel	BHP- Day	206.00
4	Rent for Mech.Mixer with fuel & crew	Day	3124.00
5	Rent for vibrator with fuel and crew	Day	1136.00
6	Plate Bender	Day	1082.00
7	Rent for welding set with Electric set	Day	1190.00
8	Rent for welding set with Generator	Day	2596.00
9	Rent for Compressor with fuel	Day	2983.00
10	Rent for Concrete breaker & Compressor	Day	3064.00
11	Rent for poclain	Hour	2924.00
12	Rent for Crane	Hour	1931.00
13	Rent for JCB	Hour	1287.00
14	Truck hire charges upto 20 km	Day	3006.00
15	Truck hire charges for 20 to 50 km	Day	2732.00
16	Truck hire charges for 50 km & above	Day	2349.00
17	Jeep hire charges with driver (upto 300km)	Day	3615.00
18	Pipe cutter with operator	Day	1420.00
19	De sludging/De silting pump	Day	2726.00



## SECTION-C-TRANSPORTATION

### TRANSPORTATION-I

Sr. No.	Item of Work	Unit	Collecting the railway receipt etc. & unloading the consignment from railway wagon & keeping on railway platform consignment booked in	Lifting the material from railway platform loading unloading into truck	Loading the material into truck from departmental store or site of work	Unloading the material from truck including stacking in departmental stores or site of work
1	2	3	4	5	6	7
(A)	MANUAL HANDLING (Weight upto & including 300 kg.					
1	C.I./D.I.M.S./H.D.P.E. pipes of all classes upto & including 200 mm dia.	M.T.	259.00	313.00	81.00	81.00
2	R.C.C. pipes of all classes upto & including 350 mm dia.	M.T.	260.00	338.00	81.00	81.00
3	A.C.Pipes of all classes & dia.	M.T.	134.00	187.00	48.00	48.00
4	P.V.C. pipes of all classes & dia.	M.T.	134.00	187.00	48.00	48.00
5	All other material such as C.I. Specials of individual weight upto 300 kg.	M.T.	260.00	337.00	80.00	80.00
6	Mild steel / tor steel / R.S.J.	M.T.	168.00	217.00	123.00	123.00
7	Cement / bleaching powder / Alum.	M.T.	78.00	122.00	65.00	65.00
(B)	CRANE HANDLING (Materials having individual weight above 300 kg. )					
1	C.I./D.I./B.W.S.C./M.S./R.C.C. Pipes of all classes having individual weight more than 300 kg. & also other heavy materials, valves, machinery having individual weight more than 300 kg	M.T.	180.00	257.00	188.00	188.00

- 1) The above rates in col. 1 to 5 are applicable only for railway clearance purpose and not for other carting.
- 2) The rates given in col. 6 to 7 shall be adopted for estimate purpose only, however actual quotations/D-tender will prevail.
- 3) Irrespective of supply of C.I./D.I. Pipes as per rate contract when pipes are directly supplied by the firms by road railway freight up to destination station and carting as per schedule from Railway Station to work site is allowed. In such cases rate of mathadi kamgar shall not be applicable for carting and normal loading, unloading carting shall be allowed.

## SECTION - C TRANSPORTATION

STATEMENT II													
Including loading, unloading and stacking													
Lead in Km	Av. Speed	No. of Trips(N) = 8/ ((2L/S) +1)	Km. Done (2NL+6)	Litres of diesel consumed	Cost of diesel @ Rs. 57.85 / lit	Mobile oil consumed	Cost of Mobile Oil @ Rs.239.94-lit.	Cost of 6 mazdoor '@ Rs414 PER DAY	Hire charges of truck Rs. Per day	Total cost (6+8+9+10)	Add 10% overhead charges	Total (11+12)	Cost per trip (13/3)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
0.5	15	7.5	13.50	4.50	261	0.096	23.04	3327.75	3006.00	6617.79	661.78	7279.57	970.61
1	16	7.11	20.22	6.74	390.92	0.144	34.56	3327.75	3006.00	6759.23	675.92	7435.15	1045.73
1.5	16.5	6.77	26.31	8.77	508.66	0.188	45.12	3327.75	3006.00	6887.53	688.75	7576.28	1119.1
2	17	6.48	31.92	10.64	617.12	0.228	54.72	3327.75	3006.00	7005.59	700.56	7706.15	1189.22
2.5	17.25	6.2	37.00	12.33	715.14	0.264	63.36	3327.75	3006.00	7112.25	711.23	7823.48	1261.85
3	17.5	5.96	41.76	13.92	807.36	0.298	71.52	3327.75	3006.00	7212.63	721.26	7933.89	1331.19
3.5	17.75	5.74	46.18	15.39	892.62	0.330	79.20	3327.75	3006.00	7305.57	730.56	8036.13	1400.02
4	18	5.54	50.32	16.77	972.66	0.359	86.16	3327.75	3006.00	7392.57	739.26	8131.83	1467.84
4.5	18.25	5.36	54.24	18.08	1048.64	0.387	92.88	3327.75	3006.00	7475.27	747.53	8222.80	1534.1
5	18.5	5.19	57.90	19.30	1119.4	0.414	99.36	3327.75	3006.00	7552.51	755.25	8307.76	1600.72
6	18.75	4.88	64.56	21.52	1248.16	0.461	110.64	3327.75	3006.00	7692.55	769.26	8461.81	1733.98
7	19	4.61	70.54	23.51	1363.58	0.504	120.96	3327.75	3006.00	7818.29	781.83	8600.12	1865.54
8	19.183	4.36	75.76	25.25	1464.5	0.541	129.84	3327.75	3006.00	7928.09	792.81	8720.90	2000.21
9	19.6	4.17	81.06	27.02	1567.16	0.579	138.96	3327.75	3006.00	8039.87	803.99	8843.86	2120.83
10	20	4	86.00	28.67	1662.86	0.614	147.36	3327.75	3006.00	8143.97	814.4	8958.37	2239.59
15	25	3.64	115.20	38.40	2227.2	0.823	197.52	3327.75	3006.00	8758.47	875.85	9634.32	2646.79
20	25	3.08	129.20	43.07	2498.06	0.923	221.52	3327.75	3006.00	9053.33	905.33	9958.66	3233.33
25	25	2.67	139.50	46.50	2697	0.996	239.04	3327.75	2732.00	8995.79	899.58	9895.37	3706.13
30	25	2.35	147.00	49.00	2842	1.050	252.00	3327.75	2732.00	9153.75	915.38	10069.13	4284.74
35	30	2.4	174.00	58.00	3364	1.243	298.32	3327.75	2732.00	9722.07	972.21	10694.28	4455.95
40	30	2.18	180.40	60.13	3487.54	1.289	309.36	3327.75	2732.00	9856.65	985.67	10842.32	4973.54
45	30	2	186.00	62.00	3596	1.329	318.96	3327.75	2732.00	9974.71	997.47	10972.18	5486.09
50	30	1.85	191.00	63.67	3692.86	1.364	327.36	3327.75	2732.00	10079.97	1008	11087.97	5993.5
60	30	1.6	198.00	66.00	3828	1.414	339.36	3327.75	2349.00	9844.11	984.41	10828.52	6767.83
70	30	1.41	203.40	67.80	3932.4	1.453	348.72	3327.75	2349.00	9957.87	995.79	10953.66	7768.55
80	30	1.26	207.60	69.20	4013.6	1.483	355.92	3327.75	2349.00	10046.27	1004.63	11050.90	8770.56
90	30	1.14	211.20	70.40	4083.2	1.509	362.16	3327.75	2349.00	10122.11	1012.21	11134.32	9766.95
100	30	1.04	214.00	71.33	4137.14	1.529	366.96	3327.75	2349.00	10180.85	1018.09	11198.94	10768.21
125	40	1.1	281.00	93.67	5432.86	2.007	481.68	3327.75	2349.00	11591.29	1159.13	12750.42	11591.29
150	40	0.94	288.00	96.00	5568	2.057	493.68	3327.75	2349.00	11738.43	1173.84	12912.27	13736.46
175	40	0.82	293.00	97.67	5664.86	2.093	502.32	3327.75	2349.00	11843.93	1184.39	13028.32	15888.2
200	40	0.73	298.00	99.33	5761.14	2.129	510.96	3327.75	2349.00	11948.85	1194.89	13143.74	18005.12
250	40	0.59	301.00	100.33	5819.14	2.150	516.00	3327.75	2349.00	12011.89	1201.19	13213.08	22395.05
300	45	0.56	342.00	114.00	6612	2.443	586.32	3327.75	2349.00	12875.07	1287.51	14162.58	25290.32
420	45	0.41	350.40	116.80	6774.4	2.503	600.72	3327.75	2349.00	13051.87	1305.19	14357.06	35017.22
540	45	0.32	351.60	117.20	6797.6	2.511	602.64	3327.75	2349.00	13076.99	1307.7	14384.69	44952.16
660	45	0.26	349.20	116.40	6751.2	2.494	598.56	3327.75	2349.00	13026.51	1302.65	14329.16	55112.15
780	45	0.22	349.20	116.40	6751.2	2.494	598.56	3327.75	2349.00	13026.51	1302.65	14329.16	65132.55
900	45	0.2	366.00	122.00	7076	2.614	627.36	3327.75	2349.00	13380.11	1338.01	14718.12	73590.60
1020	45	0.17	352.80	117.60	6820.8	2.520	604.80	3327.75	2349.00	13102.35	1310.24	14412.59	84779.94
1140	45	0.15	348.00	116.00	6728	2.486	596.64	3327.75	2349.00	13001.39	1300.14	14301.53	95343.53



<b>STATEMENT III</b>													
<b>Excluding loading, unloading and stacking</b>													
Lead in Km	Av. Speed	No. of Trips(N) = 8/ ((2L/S) +1)	Km. Done (2NL+6)	Litres of diesel consumed	Cost of diesel @ Rs. 57.85 / lit	Mobile oil consumed	Cost of Mobile Oil @ Rs.239.94- lit.	Cost of 6 mazdoor '@ Rs414 PER DAY	Hire charges of truck Rs. Per day	Total cost (6+8+9+10)	Add 10% overhead charges	Total (11+12)	Cost per trip (13/3)
2	17	6.48	31.92	10.64	617.12	0.23	54.72	0.00	3006.00	3677.84	367.78	4045.62	624.32
2.5	17.25	6.2	37.00	12.33	715.14	0.26	63.36	0.00	3006.00	3784.50	378.45	4162.95	671.44
3	17.5	5.96	41.76	13.92	807.36	0.30	71.52	0.00	3006.00	3884.88	388.49	4273.37	717.01
3.5	17.75	5.74	46.18	15.39	892.62	0.33	79.20	0.00	3006.00	3977.82	397.78	4375.60	762.30
4	18	5.54	50.32	16.77	972.66	0.36	86.16	0.00	3006.00	4064.82	406.48	4471.30	807.09
4.5	18.25	5.36	54.24	18.08	1048.64	0.39	92.88	0.00	3006.00	4147.52	414.75	4562.27	851.17
5	18.5	5.19	57.90	19.30	1119.40	0.41	99.36	0.00	3006.00	4224.76	422.48	4647.24	895.42
6	18.75	4.88	64.56	21.52	1248.16	0.46	110.64	0.00	3006.00	4364.80	436.48	4801.28	983.87
7	19	4.61	70.54	23.51	1363.58	0.50	120.96	0.00	3006.00	4490.54	449.05	4939.59	1071.49
8	19.183	4.36	75.76	25.25	1464.50	0.54	129.84	0.00	3006.00	4600.34	460.03	5060.37	1160.64
9	19.6	4.17	81.06	27.02	1567.16	0.58	138.96	0.00	3006.00	4712.12	471.21	5183.33	1243.00
10	20	4	86.00	28.67	1662.86	0.61	147.36	0.00	3006.00	4816.22	481.62	5297.84	1324.46
15	25	3.64	115.20	38.40	2227.20	0.82	197.52	0.00	3006.00	5430.72	543.07	5973.79	1641.15
20	25	3.08	129.20	43.07	2498.06	0.92	221.52	0.00	3006.00	5725.58	572.56	6298.14	2044.85
25	25	2.67	139.50	46.50	2697.00	1.00	239.04	0.00	2732.00	5668.04	566.80	6234.84	2335.15
30	25	2.35	147.00	49.00	2842.00	1.05	252.00	0.00	2732.00	5826.00	582.60	6408.60	2727.06
35	30	2.4	174.00	58.00	3364.00	1.24	298.32	0.00	2732.00	6394.32	639.43	7033.75	2930.73
40	30	2.18	180.40	60.13	3487.54	1.29	309.36	0.00	2732.00	6528.90	652.89	7181.79	3294.40
45	30	2	186.00	62.00	3596.00	1.33	318.96	0.00	2732.00	6646.96	664.70	7311.66	3655.83
50	30	1.85	191.00	63.67	3692.86	1.36	327.36	0.00	2732.00	6752.22	675.22	7427.44	4014.83
55	30	1.71	194.10	64.70	3752.60	1.39	332.64	0.00	2349.00	6434.24	643.42	7077.66	4138.98
65	30	1.5	201.00	67.00	3886.00	1.44	344.64	0.00	2349.00	6579.64	657.96	7237.60	4825.07
75	30	1.33	205.50	68.50	3973.00	1.47	352.32	0.00	2349.00	6674.32	667.43	7341.75	5520.11
85	30	1.2	210.00	70.00	4060.00	1.50	360.00	0.00	2349.00	6769.00	676.90	7445.90	6204.92
95	40	1.39	270.10	90.03	5221.74	1.93	462.96	0.00	2349.00	8033.70	803.37	8837.07	6357.60
105	40	1.28	274.80	91.60	5312.80	1.96	471.12	0.00	2349.00	8132.92	813.29	8946.21	6989.23
130	40	1.07	284.20	94.73	5494.34	2.03	487.20	0.00	2349.00	8330.54	833.05	9163.59	8564.10
155	40	0.91	288.10	96.03	5569.74	2.06	493.92	0.00	2349.00	8412.66	841.27	9253.93	10169.15
180	40	0.8	294.00	98.00	5684.00	2.10	504.00	0.00	2349.00	8537.00	853.70	9390.70	11738.38
230	40	0.64	300.40	100.13	5807.54	2.15	515.04	0.00	2349.00	8671.58	867.16	9538.74	14904.28
280	45	0.6	342.00	114.00	6612.00	2.44	586.32	0.00	2349.00	9547.32	954.73	10502.05	17503.42
400	45	0.43	350.00	116.67	6766.86	2.50	600.00	0.00	2349.00	9715.86	971.59	10687.45	24854.53
520	45	0.33	349.20	116.40	6751.20	2.49	598.56	0.00	2349.00	9698.76	969.88	10668.64	32329.21
640	45	0.27	351.60	117.20	6797.60	2.51	602.64	0.00	2349.00	9749.24	974.92	10724.16	39719.11
760	45	0.23	355.60	118.53	6874.74	2.54	609.60	0.00	2349.00	9833.34	983.33	10816.67	47029.00
880	45	0.2	358.00	119.33	6921.14	2.56	613.68	0.00	2349.00	9883.82	988.38	10872.20	54361.00
1000	45	0.18	366.00	122.00	7076.00	2.61	627.36	0.00	2349.00	10052.36	1005.24	11057.60	61431.11
1120	45	0.16	364.40	121.47	7045.26	2.60	624.72	0.00	2349.00	10018.98	1001.90	11020.88	68880.50

## STATEMENT IV

### Including loading, unloading and stacking

Lead in km	Cost per trip	Cement pay load 9.00 MT	Steel pay load 9.00 MT	Bulk Asphalt in Bouzer pay load 4.50 MT	M.S.Bar 9.00 MT	Sand 5.75 cum
1	2	3	4	5	6	7
0.5	970.61	107.85	107.85	215.69	107.85	168.80
1	1045.73	116.19	116.19	232.38	116.19	181.87
1.5	1119.1	124.34	124.34	248.69	124.34	194.63
2	1189.22	132.14	132.14	264.27	132.14	206.82
2.5	1261.85	140.21	140.21	280.41	140.21	219.45
3	1331.19	147.91	147.91	295.82	147.91	231.51
3.5	1400.02	155.56	155.56	311.12	155.56	243.48
4	1467.84	163.09	163.09	326.19	163.09	255.28
4.5	1534.1	170.46	170.46	340.91	170.46	266.80
5	1600.72	177.86	177.86	355.72	177.86	278.39
6	1733.98	192.66	192.66	385.33	192.66	301.56
7	1865.54	207.28	207.28	414.56	207.28	324.44
8	2000.21	222.25	222.25	444.49	222.25	347.86
9	2120.83	235.65	235.65	471.30	235.65	368.84
10	2239.59	248.84	248.84	497.69	248.84	389.49
15	2646.79	294.09	294.09	588.18	294.09	460.31
20	3233.33	359.26	359.26	718.52	359.26	562.32
25	3706.13	411.79	411.79	823.58	411.79	644.54
30	4284.74	476.08	476.08	952.16	476.08	745.17
35	4455.95	495.11	495.11	990.21	495.11	774.95
40	4973.54	552.62	552.62	1105.23	552.62	864.96
45	5486.09	609.57	609.57	1219.13	609.57	954.10
50	5993.5	665.94	665.94	1331.89	665.94	1042.35
60	6767.83	751.98	751.98	1503.96	751.98	1177.01
70	7768.55	863.17	863.17	1726.34	863.17	1351.05
80	8770.56	974.51	974.51	1949.01	974.51	1525.31
90	9766.95	1085.22	1085.22	2170.43	1085.22	1698.60
100	10768.21	1196.47	1196.47	2392.94	1196.47	1872.73
125	11591.29	1287.92	1287.92	2575.84	1287.92	2015.88
150	13736.46	1526.27	1526.27	3052.55	1526.27	2388.95
175	15888.2	1765.36	1765.36	3530.71	1765.36	2763.17
200	18005.12	2000.57	2000.57	4001.14	2000.57	3131.33
250	22395.05	2488.34	2488.34	4976.68	2488.34	3894.79
300	25290.32	2810.04	2810.04	5620.07	2810.04	4398.32
420	35017.22	3890.80	3890.80	7781.60	3890.80	6089.95
540	44952.16	4994.68	4994.68	9989.37	4994.68	7817.77
660	55112.15	6123.57	6123.57	12247.14	6123.57	9584.72
780	65132.55	7236.95	7236.95	14473.90	7236.95	11327.40
900	73590.6	8176.73	8176.73	16353.47	8176.73	12798.37
1020	84779.94	9419.99	9419.99	18839.99	9419.99	14744.34
1140	95343.53	10593.73	10593.73	21187.45	10593.73	16581.48

## STATEMENT V

### Excluding loading, unloading and stacking

Lead in km	Cost per trip	Cement pay load 9.00 MT	Steel pay load 9.00 MT	Bulk Asphalt in Bouzer pay load 4.50 MT
1	2	3	4	5
0.5	482.54	53.62	53.62	107.23
1	530.89	58.99	58.99	117.98
1.5	578.40	64.27	64.27	128.53
2	624.32	69.37	69.37	138.74
2.5	671.44	74.60	74.60	149.21
3	717.01	79.67	79.67	159.34
3.5	762.30	84.70	84.70	169.40
4	807.09	89.68	89.68	179.35
4.5	851.17	94.57	94.57	189.15
5	895.42	99.49	99.49	198.98
6	983.87	109.32	109.32	218.64
7	1071.49	119.05	119.05	238.11
8	1160.64	128.96	128.96	257.92
9	1243.00	138.11	138.11	276.22
10	1324.46	147.16	147.16	294.32
15	1641.15	182.35	182.35	364.70
20	2044.85	227.21	227.21	454.41
25	2335.15	259.46	259.46	518.92
30	2727.06	303.01	303.01	606.01
35	2930.73	325.64	325.64	651.27
40	3294.40	366.04	366.04	732.09
45	3655.83	406.20	406.20	812.41
50	4014.83	446.09	446.09	892.18
55	4138.98	459.89	459.89	919.77
65	4825.07	536.12	536.12	1072.24
75	5520.11	613.35	613.35	1226.69
85	6204.92	689.44	689.44	1378.87
95	6357.60	706.40	706.40	1412.80
105	6989.23	776.58	776.58	1553.16
130	8564.10	951.57	951.57	1903.13
155	10169.15	1129.91	1129.91	2259.81
180	11738.38	1304.26	1304.26	2608.53
230	14904.28	1656.03	1656.03	3312.06
280	17503.42	1944.82	1944.82	3889.65
400	24854.53	2761.61	2761.61	5523.23
520	32329.21	3592.13	3592.13	7184.27
640	39719.11	4413.23	4413.23	8826.47
760	47029.00	5225.44	5225.44	10450.89
880	54361.00	6040.11	6040.11	12080.22
1000	61431.11	6825.68	6825.68	13651.36
1120	68880.50	7653.39	7653.39	15306.78

**Including loading, unloading and stacking**

20

STATEMENT VII													
Including loading, unloading and stacking													
Lead in km	Cost / trip	Cement stone block, GI, CI, RCC, AC Pipes below 120 mm dia	Tar, bitumen, Asphalt, roofing, felt & Flooring Asphalt etc.	Steam coal	Matting thatching bambu ceiling board rubber PVC pipes fittings	Sheet & plate glass in packs Paints & Distem-pers AC Sheets & fittings iron fittings and iron sheets	Bricks modular bricks & Traditional bricks	Tiles half round tiles & Roofing tiles cement flooring tiles	Glass blocks (hollow) 200x200 x120 mm	Empty cement bags			
1	2	3	4	5	6	7	8	9	10	11			
	Pay load	7.0 Mt per 1 M.T.	4.5 MT per 1 M.T.	5.5 MT per 1 M.T.	3.0 MT per 1 M.T.	7.0 MT per 1 M.T.	3500 No. per 1000 Nos.	3200 No. per 1000 Nos.	1000 No. per 100Nos.	2000 No. per 1000 Nos.			
0.5	970.61	138.66	215.69	176.47	323.54	138.66	277.32	303.32	97.06	485.31			
1	1045.73	149.39	232.38	190.13	348.58	149.39	298.78	326.79	104.57	522.87			
1.5	1119.10	159.87	248.69	203.47	373.03	159.87	319.74	349.72	111.91	559.55			
2	1189.22	169.89	264.27	216.22	396.41	169.89	339.78	371.63	118.92	594.61			
2.5	1261.85	180.26	280.41	229.43	420.62	180.26	360.53	394.33	126.19	630.93			
3	1331.19	190.17	295.82	242.03	443.73	190.17	380.34	416.00	133.12	665.60			
3.5	1400.02	200.00	311.12	254.55	466.67	200.00	400.01	437.51	140.00	700.01			
4	1467.84	209.69	326.19	266.88	489.28	209.69	419.38	458.70	146.78	733.92			
4.5	1534.10	219.16	340.91	278.93	511.37	219.16	438.31	479.41	153.41	767.05			
5	1600.72	228.67	355.72	291.04	533.57	228.67	457.35	500.23	160.07	800.36			
6	1733.98	247.71	385.33	315.27	577.99	247.71	495.42	541.87	173.40	866.99			
7	1865.54	266.51	414.56	339.19	621.85	266.51	533.01	582.98	186.55	932.77			
8	2000.21	285.74	444.49	363.67	666.74	285.74	571.49	625.07	200.02	1000.11			
9	2120.83	302.98	471.30	385.61	706.94	302.98	605.95	662.76	212.08	1060.42			
10	2239.59	319.94	497.69	407.20	746.53	319.94	639.88	699.87	223.96	1119.80			
15	2646.79	378.11	588.18	481.23	882.26	378.11	756.23	827.12	264.68	1323.40			
20	3233.33	461.90	718.52	587.88	1077.78	461.90	923.81	1010.42	323.33	1616.67			
25	3706.13	529.45	823.58	673.84	1235.38	529.45	1058.89	1158.17	370.61	1853.07			
30	4284.74	612.11	952.16	779.04	1428.25	612.11	1224.21	1338.98	428.47	2142.37			
35	4455.95	636.56	990.21	810.17	1485.32	636.56	1273.13	1392.48	445.60	2227.98			
40	4973.54	710.51	1105.23	904.28	1657.85	710.51	1421.01	1554.23	497.35	2486.77			
45	5486.09	783.73	1219.13	997.47	1828.70	783.73	1567.45	1714.40	548.61	2743.05			
50	5993.50	856.21	1331.89	1089.73	1997.83	856.21	1712.43	1872.97	599.35	2996.75			
60	6767.83	966.83	1503.96	1230.51	2255.94	966.83	1933.67	2114.95	676.78	3383.92			
70	7768.55	1109.79	1726.34	1412.46	2589.52	1109.79	2219.59	2427.67	776.86	3884.28			
80	8770.56	1252.94	1949.01	1594.65	2923.52	1252.94	2505.87	2740.80	877.06	4385.28			
90	9766.95	1395.28	2170.43	1775.81	3255.65	1395.28	2790.56	3052.17	976.70	4883.48			
100	10768.21	1538.32	2392.94	1957.86	3589.40	1538.32	3076.63	3365.07	1076.82	5384.11			
125	11591.29	1655.90	2575.84	2107.51	3863.76	1655.90	3311.80	3622.28	1159.13	5795.65			
150	13736.46	1962.35	3052.55	2497.54	4578.82	1962.35	3924.70	4292.64	1373.65	6868.23			
175	15888.20	2269.74	3530.71	2888.76	5296.07	2269.74	4539.49	4965.06	1588.82	7944.10			
200	18005.12	2572.16	4001.14	3273.66	6001.71	2572.16	5144.32	5626.60	1800.51	9002.56			
250	22395.05	3199.29	4976.68	4071.83	7465.02	3199.29	6398.59	6998.45	2239.51	11197.53			
300	25290.32	3612.90	5620.07	4598.24	8430.11	3612.90	7225.81	7903.23	2529.03	12645.16			
420	35017.22	5002.46	7781.60	6366.77	11672.41	5002.46	10004.92	10942.88	3501.72	17508.61			
540	44952.16	6421.74	9989.37	8173.12	14984.05	6421.74	12843.47	14047.55	4495.22	22476.08			
660	55112.15	7873.16	12247.14	10020.39	18370.72	7873.16	15746.33	17222.55	5511.22	27556.08			
780	65132.55	9304.65	14473.90	11842.28	21710.85	9304.65	18609.30	20353.92	6513.26	32566.28			
900	73590.60	10512.94	16353.47	13380.11	24530.20	10512.94	21025.89	22997.06	7359.06	36795.30			
1020	84779.94	12111.42	18839.99	15414.53	28259.98	12111.42	24222.84	26493.73	8477.99	42389.97			
1140	95343.53	13620.50	21187.45	17335.19	31781.18	13620.50	27241.01	29794.85	9534.35	47671.77			



STATEMENT VIII												
Including loading, unloading and stacking												
Lead in km	Cost / trip	R.C.C. STEEL CYLINDER, R.C PIPES, C.I. PIPES,, UNREINFORCED CEMENT PIPES, PRECAST COCRETE PIPES										
	Pay load in Rmt	100 mm	125 mm	150 mm	200 mm	250 mm	300 mm	300 & 400 mm	450 & 500 mm	600, 700 & 750 mm	800, 900 & 1000 mm	1200 & 1800 MM
1	2	3	4	5	6	7	8	9	10	11	12	13
UNIT PER 100 RMT												
0.5	970.61	331.49	441.99	530.39	883.98	1205.43	1559.96	1767.96	3314.92	5303.88	6470.73	19412.20
1	1045.73	357.15	476.20	571.44	952.40	1298.72	1680.70	1904.79	3571.48	5714.37	6971.53	20914.60
1.5	1119.10	382.21	509.61	611.53	1019.22	1389.84	1798.62	2038.43	3822.06	6115.30	7460.67	22382.00
2	1189.22	406.15	541.54	649.85	1083.08	1476.92	1911.31	2166.16	4061.54	6498.47	7928.13	23784.40
2.5	1261.85	430.96	574.61	689.54	1149.23	1567.13	2028.05	2298.45	4309.60	6895.36	8412.33	25237.00
3	1331.19	454.64	606.19	727.43	1212.38	1653.24	2139.49	2424.75	4546.41	7274.26	8874.60	26623.80
3.5	1400.02	478.15	637.53	765.04	1275.06	1738.72	2250.11	2550.13	4781.49	7650.38	9333.47	28000.40
4	1467.84	501.31	668.42	802.10	1336.83	1822.95	2359.11	2673.66	5013.11	8020.98	9785.60	29356.80
4.5	1534.10	523.94	698.59	838.31	1397.18	1905.24	2465.61	2794.35	5239.41	8383.06	10227.33	30682.00
5	1600.72	546.69	728.93	874.71	1457.85	1987.98	2572.68	2915.70	5466.94	8747.10	10671.47	32014.40
6	1733.98	592.21	789.61	947.53	1579.22	2153.48	2786.85	3158.43	5922.06	9475.30	11559.87	34679.60
7	1865.54	637.14	849.52	1019.42	1699.03	2316.87	2998.30	3398.07	6371.38	10194.21	12436.93	37310.80
8	2000.21	683.13	910.84	1093.01	1821.68	2484.12	3214.74	3643.37	6831.32	10930.11	13334.73	40004.20
9	2120.83	724.33	965.77	1158.92	1931.54	2633.92	3408.60	3863.08	7243.27	11589.23	14138.87	42416.60
10	2239.59	764.89	1019.85	1223.82	2039.70	2781.41	3599.47	4079.40	7648.87	12238.20	14930.60	44791.80
15	2646.79	903.96	1205.28	1446.33	2410.56	3287.12	4253.92	4821.11	9039.58	14463.33	17645.27	52935.80
20	3233.33	1104.28	1472.37	1766.85	2944.74	4015.56	5196.61	5889.49	11042.79	17668.47	21555.53	64666.60
25	3706.13	1265.75	1687.67	2025.21	3375.35	4602.74	5956.49	6750.69	12657.55	20252.08	24707.53	74122.60
30	4284.74	1463.37	1951.16	2341.39	3902.31	5321.34	6886.44	7804.63	14633.67	23413.88	28564.93	85694.80
35	4455.95	1521.84	2029.12	2434.95	4058.24	5533.97	7161.60	8116.48	15218.41	24349.45	29706.33	89119.00
40	4973.54	1698.61	2264.82	2717.78	4529.64	6176.78	7993.47	9059.27	16986.13	27177.81	33156.93	99470.80
45	5486.09	1873.66	2498.22	2997.86	4996.44	6813.33	8817.25	9992.88	18736.65	29978.63	36573.93	109721.80
50	5993.50	2046.96	2729.28	3275.14	5458.56	7443.49	9632.75	10917.12	20469.60	32751.37	39956.67	119870.00
60	6767.83	2311.42	3081.89	3698.27	6163.78	8405.15	10877.26	12327.56	23114.17	36982.68	45118.87	135356.60
70	7768.55	2653.19	3537.59	4245.11	7075.18	9647.98	12485.62	14150.36	26531.93	42451.09	51790.33	155371.00
80	8770.56	2995.41	3993.88	4792.66	7987.76	10892.40	14096.05	15975.52	29954.10	47926.56	58470.40	175411.20
90	9766.95	3335.71	4447.61	5337.13	8895.22	12129.84	15697.44	17790.44	33357.07	53371.31	65113.00	195339.00
100	10768.21	3677.67	4903.56	5884.27	9807.11	13373.34	17306.67	19614.23	36776.67	58842.68	71788.07	215364.20
125	11591.29	3958.77	5278.37	6334.04	10556.73	14395.54	18629.52	21113.46	39587.74	63340.38	77275.27	231825.80
150	13736.46	4691.41	6255.22	7506.26	12510.44	17059.69	22077.24	25020.87	46914.14	75062.62	91576.40	274729.20
175	15888.20	5426.30	7235.06	8682.08	14470.13	19731.99	25535.52	28940.26	54262.98	86820.77	105921.33	317764.00
200	18005.12	6149.29	8199.05	9838.86	16398.11	22361.05	28937.83	32796.21	61492.90	98388.63	120034.13	360102.40
250	22395.05	7648.58	10198.11	12237.73	20396.22	27813.03	35993.33	40792.44	76485.83	122377.32	149300.33	447901.00
300	25290.32	8637.40	11516.54	13819.85	23033.08	31408.74	40646.61	46066.16	86374.04	138198.47	168602.13	505806.40
420	35017.22	11959.43	15945.91	19135.09	31891.82	43488.85	56279.68	63783.64	119594.33	191350.93	233448.13	700344.40
540	44952.16	15352.51	20470.02	24564.02	40940.04	55827.32	72247.12	81880.07	153525.14	245640.22	299681.07	899043.20
660	55112.15	18822.46	25096.61	30115.93	50193.21	68445.29	88576.26	100386.43	188224.56	301159.29	367414.33	1102243.00
780	65132.55	22244.72	29659.63	35591.56	59319.26	80889.90	104681.05	118638.52	222447.23	355915.57	434217.00	1302651.00
900	73590.60	25133.40	33511.20	40213.44	67022.40	91394.19	118274.83	134044.81	251334.02	402134.43	490604.00	1471812.00
1020	84779.94	28954.90	38606.53	46327.84	77213.06	105290.54	136258.34	154426.12	289548.98	463278.36	565199.60	1695598.80
1140	95343.53	32562.68	43416.91	52100.29	86833.82	118409.75	153236.15	173667.63	325626.81	521002.90	635623.53	1906870.60

STATEMENT IX													
Including loading, unloading and stacking													
STONEWARE PIPES													
Lead	Cost/trip	100 mm	150 mm	200 mm	230 mm	250 mm	300 mm	350 mm	400 mm				
in km	Pay Load	480 m	240 m	135 m	105 m	84 m	66 m	43 m	27 m				
1	2	3	4	5	6	7	8	9	10				
Unit Per 100 Rmt													
0.5	970.61	202.21	404.42	718.97	924.39	1155.49	1470.62	2257.23	3594.85				
1	1045.73	217.86	435.72	774.61	995.93	1244.92	1584.44	2431.93	3873.07				
1.5	1119.10	233.15	466.29	828.96	1065.81	1332.26	1695.61	2602.56	4144.81				
2	1189.22	247.75	495.51	880.90	1132.59	1415.74	1801.85	2765.63	4404.52				
2.5	1261.85	262.89	525.77	934.70	1201.76	1502.20	1911.89	2934.53	4673.52				
3	1331.19	277.33	554.66	986.07	1267.80	1584.75	2016.95	3095.79	4930.33				
3.5	1400.02	291.67	583.34	1037.05	1333.35	1666.69	2121.24	3255.86	5185.26				
4	1467.84	305.80	611.60	1087.29	1397.94	1747.43	2224.00	3413.58	5436.44				
4.5	1534.10	319.60	639.21	1136.37	1461.05	1826.31	2324.39	3567.67	5681.85				
5	1600.72	333.48	666.97	1185.72	1524.50	1905.62	2425.33	3722.60	5928.59				
6	1733.98	361.25	722.49	1284.43	1651.41	2064.26	2627.24	4032.51	6422.15				
7	1865.54	388.65	777.31	1381.88	1776.70	2220.88	2826.58	4338.47	6909.41				
8	2000.21	416.71	833.42	1481.64	1904.96	2381.20	3030.62	4651.65	7408.19				
9	2120.83	441.84	883.68	1570.99	2019.84	2524.80	3213.38	4932.16	7854.93				
10	2239.59	466.58	933.16	1658.96	2132.94	2666.18	3393.32	5208.35	8294.78				
15	2646.79	551.41	1102.83	1960.59	2520.75	3150.94	4010.29	6155.33	9802.93				
20	3233.33	673.61	1347.22	2395.06	3079.36	3849.20	4898.98	7519.37	11975.30				
25	3706.13	772.11	1544.22	2745.28	3529.65	4412.06	5615.35	8618.91	13726.41				
30	4284.74	892.65	1785.31	3173.88	4080.70	5100.88	6492.03	9964.51	15869.41				
35	4455.95	928.32	1856.65	3300.70	4243.76	5304.70	6751.44	10362.67	16503.52				
40	4973.54	1036.15	2072.31	3684.10	4736.70	5920.88	7535.67	11566.37	18420.52				
45	5486.09	1142.94	2285.87	4063.77	5224.85	6531.06	8312.26	12758.35	20318.85				
50	5993.50	1248.65	2497.29	4439.63	5708.10	7135.12	9081.06	13938.37	22198.15				
60	6767.83	1409.96	2819.93	5013.21	6445.55	8056.94	10254.29	15739.14	25066.04				
70	7768.55	1618.45	3236.90	5754.48	7398.62	9248.27	11770.53	18066.40	28772.41				
80	8770.56	1827.20	3654.40	6496.71	8352.91	10441.14	13288.73	20396.65	32483.56				
90	9766.95	2034.78	4069.56	7234.78	9301.86	11627.32	14798.41	22713.84	36173.89				
100	10768.21	2243.38	4486.75	7976.45	10255.44	12819.30	16315.47	25042.35	39882.26				
125	11591.29	2414.85	4829.70	8586.14	11039.32	13799.15	17562.56	26956.49	42930.70				
150	13736.46	2861.76	5723.53	10175.16	13082.34	16352.93	20812.82	31945.26	50875.78				
175	15888.20	3310.04	6620.08	11769.04	15131.62	18914.52	24073.03	36949.30	58845.19				
200	18005.12	3751.07	7502.13	13337.13	17147.73	21434.67	27280.48	41872.37	66685.63				
250	22395.05	4665.64	9331.27	16588.93	21328.62	26660.77	33931.89	52081.51	82944.63				
300	25290.32	5268.82	10537.63	18733.57	24086.02	30107.52	38318.67	58814.70	93667.85				
420	35017.22	7295.25	14590.51	25938.68	33349.73	41687.17	53056.39	81435.40	129693.41				
540	44952.16	9365.03	18730.07	33297.90	42811.58	53514.48	68109.33	104539.91	166489.48				
660	55112.15	11481.70	22963.40	40823.81	52487.76	65609.70	83503.26	128167.79	204119.07				
780	65132.55	13569.28	27138.56	48246.33	62031.00	77538.75	98685.68	151471.05	241231.67				
900	73590.60	15331.38	30662.75	54511.56	70086.29	87607.86	111500.91	171140.93	272557.78				
1020	84779.94	17662.49	35324.98	62799.96	80742.80	100928.50	128454.45	197162.65	313999.78				
1140	95343.53	19863.24	39726.47	70624.84	90803.36	113504.20	144459.89	221729.14	353124.19				

**SECTION D - CEMENT CONSUMPTION**  
**STANDARD CEMENT CONSUMPTION TO BE FOLLOWED FOR VARIOUS ITEMS**  
**OF WORKS**

<b>Sr. No.</b>	<b>Item of Works</b>	<b>Unit</b>	<b>Standard Cement Consumption</b>
<b>A.</b>	<b>P.C.C./R.C.C. Works</b>		
1.	1 : 1/2 : 1 (M-300) with finishing in CM 1:3 proportion	Cum	9.20 bags
2.	1:1:2 (M-250) with finishing in CM 1:3 proportion	Cum	8.50 bags
3.	1:1 1/2:3 (M-200) with finishing in CM 1:3 proportion	Cum	6.90 bags
4.	1:1 1/2:3 (M-200) without finishing	Cum	6.80 bags
5.	1:2:4 (M-150) with finishing in CM 1:3 proportion	Cum	5.90 bags
6.	1:2:4 (M-150) without finishing	Cum	5.80 bags
<b>B.</b>	<b>Brick Masonry Works</b>		
1.	B.B. Masonry - IInd sort in CM 1:6 proportion	Cum	1.44 bags
2.	B.B. Masonry - IInd sort in CM 1:5 proportion	Cum	1.62 bags
3.	B.B. Masonry - IInd sort in CM 1:4 proportion	Cum	2.30 bags
4.	Half brick walls in CM 1:4 proportion	Cum	0.22 bags
<b>C.</b>	<b>Stone Masonry Works</b>		
1.	U. C. R. Masonry - IInd sort in CM 1:6 proportion	Cum	1.77 bags
2.	U. C. R. Masonry - IInd sort in CM 1:4 proportion	Cum	2.65 bags
3.	Random Rubble Masonry - IInd sort in CM 1:6 proportion	Cum	1.77 bags
4.	Random Rubble Masonry - IInd sort in CM 1:4 proportion	Cum	2.65 bags
5.	C. R. Masonry - IInd sort in CM 1:4 proportion	Cum	2.65 bags
6.	C. R. Masonry - IInd sort in CM 1:6 proportion	Cum	1.50 bags

Sr. No.	Item of Works	Unit	Standard Cement
<b>D.</b>	<b>Water proofing Works</b>		
1.	Damp-proof course 50mm thick in 1:2:4 proportion with bitumen layer W.P. compound.	Sqm	0.35 bags
2.	Integral finishing to newly laid slab in CM 1:3 proportion with W.P. compound.	Sqm	0.06 bags
3.	Water proofing treatment over old slab with W.P. cement slurry as tack coat 12 mm thick, W. P. plaster in CM 1:3 proportion, brick bat coba average 9.50 cm thick in CM 1:6 proportion and 20 mm thick W.P. cement plaster over it in CM 1:3 proportion and finishing with cement slurry <b>with novelling</b> .	Sqm	0.37 bags
<b>E.</b>	<b>Plastering and Pointing Works</b>		
	<b>i) 12mm thick plaster</b>		
	a) CM 1:2 proportion	Sqm	0.16 bags
	b) CM 1:3 proportion	Sqm	0.12 bags
	c) CM 1:4 proportion	Sqm	0.10 bags
	<b>ii) 20 mm thick plaster</b>		
	a) CM 1:2 proportion	Sqm	0.27 bags
	b) CM 1:3 proportion	Sqm	0.19 bags
	c) CM 1:4 proportion	Sqm	0.15 bags
	<b>iii) 25 mm thick plaster</b>		
	a) CM 1:2 proportion	Sqm	0.34 bags
	b) CM 1:3 proportion	Sqm	0.25 bags
	c) CM 1:4 proportion	Sqm	0.19 bags
	<b>iv) Cement pointing in CM 1:3 proportion</b>	Sqm	0.03 bags
	<b>v) Tuck cement pointing in CM 1:3 proportion</b>	Sqm	0.05 bags
	<b>vi) Sand faced plaster in CM 1:4 proportion including base coat 15 mm thick in CM 1:4 proportion with W.P. compound.</b>	Sqm	0.22 bags
	<b>vii) Rough cast cement plaster in CM 1:4 proportion in two coats.</b>	Sqm	0.22 bags
<b>F.</b>	<b>Flooring Works</b>		
	<b>i) I.P.S. flooring - 40 mm thick</b>	Sqm	0.30 bags
	<b>ii) I.P.S. flooring - 50 mm thick</b>	Sqm	0.37 bags
	<b>iii) Rough Shahabad - any other similar flooring in CM 1:4 proportion bedding.</b>	Sqm	0.15 bags
	<b>iv) All types of cement / kadappa / polished / mosaic tiles flooring or skirting / dado set on CM 1:4 proportion bedding.</b>	Sqm	0.18 bags
	<b>v) Glazed / ceramic tiles flooring or skirting / dado fixed with plain cement slurry.</b>	Sqm	0.22 bags

**STATEMENT SHOWING STANDARD WEIGHTS OF PIPES TO BE FOLLOWED FOR  
CARTING OF VARIOUS DIAMETERS AND TYPES OF PIPES**

**(I) C. I. Pipes (IS : 1536-1989)**

<b>Diameter of Pipe in mm</b>	<b>Class of pipes and its weight in Kg. per meter length</b>		
	<b>LA</b>	<b>A</b>	<b>B</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
80	16.00	17.38	18.46
100	19.82	21.82	23.27
125	25.82	28.18	30.36
150	32.10	35.27	38.00
200	47.09	51.09	55.27
250	63.45	69.09	74.73
300	81.82	89.45	96.91
350	103.09	111.82	121.27
400	125.45	137.09	140.00
450	151.27	166.10	179.27
500	177.09	192.91	208.73
600	236.00	257.64	275.00
700	304.55	335.73	359.45
750	341.09	372.91	404.55
800	381.00	416.00	450.00
900	465.09	507.45	549.80
1000	558.73	610.36	659.64

**STATEMENT SHOWING THE TOTAL WEIGHTS OF VARIOUS DIA D. I. K-9 PIPES INCLUDING WEIGHT OF MORTAR LINING PER M LENGTH.**

**II) D. I. PIPES**

- 1) Barrel Mass as per IS : 8329 - 1994
- 2) Socket Mass as per IS : 8329 - 1994
- 3) Cement Mortar Lining Weight as per ISO : 4179 -1985.

Nominal dia meter	WEIGHT / M LENGTH OF D. I. K-9 PIPES OF (IN KG)			
	4M	5M	5.50 M	6 M
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
80 mm wt. of DI Pipe / M	13.00	13.00	12.91	12.67
weight mortar/m	1.56	1.56	1.56	1.56
Total wt./M.	14.56	14.56	14.47	14.23
100 mm wt. of DI Pipe / M	16.25	16.00	16.00	15.86
weight of mortar/m	1.93	1.93	1.93	1.93
Total wt./M.	18.18	17.93	17.93	17.79
125 mm wt. of DI Pipe / M	20.50	20.00	20.00	19.83
weight mortar/m	2.42	2.42	2.42	2.42
Total wt./M.	22.92	22.42	22.42	22.25
150 mm wt. of DI Pipe / M weight	24.75	24.20	24.18	24.00
mortar/m	2.90	2.90	2.90	2.90
Total wt./M.	27.65	27.10	27.08	26.90
200 mm wt. of DI Pipe / M	33.25	32.60	32.54	32.33
weight mortar/m	3.88	3.88	3.88	3.88
Total wt./M.	37.13	36.48	36.42	36.21
250 mm wt. of DI Pipe / M	43.75	43.00	42.73	42.50
weight mortar/m	4.84	4.84	4.84	4.84
Total wt./M.	88.59	47.84	47.57	47.34
300 mm wt. of DI Pipe / M	55.50	54.60	54.18	53.83
weight mortar/m	5.80	5.80	5.80	5.80
Total wt./M.	61.30	60.40	59.98	59.63
350 mm wt. of DI Pipe / M weight	69.25	68.00	67.45	67.17
mortar/m	12.12	12.12	12.12	12.12
Total wt./M.	81.37	80.12	79.57	79.29
400 mm wt. of DI Pipe / M weight	82.75	81.40	80.91	80.33
mortar/m	13.82	13.82	13.82	13.82
Total wt./M.	96.57	95.22	94.73	94.15
450 mm wt. of DI Pipe / M	98.75	97.00	96.36	95.83
weight mortar/m	15.53	15.53	15.53	15.53
Total wt./M.	114.28	112.53	111.89	111.36
500 mm wt. of DI Pipe / M weight	115.00	112.80	112.00	111.50
mortar/m	17.26	17.26	17.26	17.26
Total wt./M.	132.26	130.06	129.26	128.76
600 mm wt. of DI Pipe / M weight	152.00	149.00	147.82	147.00
mortar/m	20.75	20.75	20.75	20.75
Total wt./M.	172.75	169.75	168.57	167.75
700 mm wt. of DI Pipe / M weight	193.75	189.80	188.36	181.70
mortar/m	29.45	29.45	29.45	29.45
Total wt./M.	223.20	219.25	217.81	211.15
750 mm wt. of DI Pipe / M	217.50	213.00	211.45	210.00
weight mortar/m	31.56	31.56	31.56	31.56
Total wt./M.	249.06	244.56	243.01	241.56
800 mm wt. of DI Pipe / M	240.75	235.80	233.82	232.33
weight mortar/m	33.69	33.69	33.69	33.69
Total wt./M.	274.44	269.49	267.51	266.02
900 mm wt. of DI Pipe / M	292.75	286.20	283.82	281.83
weight mortar/m	37.89	37.89	37.89	37.89
Total wt./M.	330.64	324.09	321.71	319.72
1000 mm wt. of DI Pipe / M weight	349.75	341.60	338.55	336.17
mortar/m	42.08	42.08	42.08	42.08
Total wt./M.	391.83	383.68	380.63	378.25

**Note :** These weights are as per the Circular issued by Superintending Engineer (HQ) vide Lt.No. MJP/10-2000 / SE (H/Q) / DI/

**STATEMENT SHOWING STANDARD WEIGHTS TO BE FOLLOWED FOR CARTING  
OF VARIOUS DIAMETERS AND TYPES OF PIPES**

**(III) M. S. Pipes**

**Note :** Weight of M. S. Pipes is to be computed by considering density of steel as 7850 Kg./Cum considering the diameter and thickness of plate used for manufacturing of M. S. Pipes.

**(IV) A. C. Pressure Pipes (ISO-160)**

Diameter of Pipe in mm	Class of pipes and its weight in Kg. per meter length			
	Class 5	Class - 10	Class - 15	Class - 20
1	2	3	4	5
80	6.00	6.20	6.40	6.80
100	7.60	7.70	8.20	10.30
125	9.57	9.80	11.00	13.30
150	11.87	12.20	15.30	19.00
200	15.57	19.30	25.60	32.70
250	19.25	25.20	32.70	41.50
300	24.97	32.30	45.10	58.10
350	39.77	47.52	55.27	71.42
400	49.20	60.20	71.36	93.10
450	56.92	70.27	83.63	111.37.
500	72.84	89.54	104.25	136.52
600	102.50	137.32	148.35	193.16

**(V) P.V.C. Pipes (IS :4985-1988)**

Diameter of Pipe in mm	Class of pipes and its weight in Kg. per meter length		
	4.00 Kg/Sq.cm	6.00 Kg/Sq.cm	10.00 Kg/Sq.cm
1	2	3	4
63	0.47	0.67	1.01
75	0.67	0.93	1.44
90	0.92	1.33	2.05
110	1.32	1.89	3.08
140	2.13	3.10	4.99
160	2.78	3.92	6.56
180	3.56	5.07	8.10
200	4.26	7.00	10.20
225	5.48	7.84	12.56
250	6.63	10.19	15.31
280	8.34	12.16	19.80
315	10.55	15.37	25.00

**(VI) R. C. C. Pipes**

Diameter of Pipe in mm	Class of pipes and its weight in Kg. per meter length					
	P-1	P-2	P-3	NP-2	NP-3	NP-4
1	2	3	4	5	6	7
100	23.56	23.56	23.56	21.20	21.20	21.20
150	33.00	33.00	33.00	29.40	29.40	29.40
200	42.10	42.10	42.10	37.90	37.90	37.90
250	51.84	63.40	75.18	57.10	67.60	77.20
300	74..64	102.50	117.10	92.25	105.40	119.10
350	92.28	134.30	168.10	120.80	151.30	170.20
400	104.16	169.60	208.10	152.60	187.30	212.40
450	127.92	188.70	235.23	169.90	211.70	240.80
500	141.36	229.90	261.37	206.90	235.23	270.50
600	192.96	305.70	313.64	275.10	282.27	320.20
700	225.59	325.80	365.92	293.20	329.32	370.90
800	257.82	345.19	418.19	310.60	376.30	425.40
900	290.00	389.58	470.47	350.60	423.00	482.30
1000	322.28	443.98	510.00	399.80	459.00	531.40



**(VII) P.S.C. Pipes of all classes and B. W. S. C. pipes of all classes**

Diameter of Pipes in mm	Weight of pipe per meter length for all classes.
350	197.50 Kg/m
400	240.00 Kg/m
450	257.50 Kg/m
500	292.50 Kg/m
600	375.00 Kg/m
700	432.50 Kg/m
800	582.50 Kg/m
900	705.00 Kg/m
1000	825.00 Kg/m
1100	947.50 Kg/m
1200	1115.00 Kg/m
1300	1190.00Kg/m
1400	1370.00 Kg/m
1500	1560.00Kg/m
1600	1767.50 Kg/m
1700	1987.50 Kg/m
1800	2205.50 Kg/m

**(VIII) Stoneware Pipes**

Diameter of Pipes in mm	Weight of 0.60 M long pipe in Kg per pipe
100	8.70 Kg/Each
150	15.00 Kg/Each
200	20.85 Kg/Each
225	23.70 Kg/Each
250	27.57 Kg/Each
300	43.60 Kg/Each

**(IX) G. I. Pipes**

Diameter of Pipes in mm	Class of Pipes and its weight in Kg. per meter length		
	Light (Blue)	Medium (Yellow)	Heavy (Red)
15	0.96	1.23	1.46
20	1.42	1.59	1.91
25	2.03	2.40	2.99
32	2.61	3.17	3.97
40	3.29	3.65	4.47
50	4.18	5.16	6.24
65	5.92	6.63	8.02
80	6.98	8.64	10.30
100	10.20	12.40	14.70
125	---	16.70	18.30
150	----	19.70	21.80

**SECTION - E : EXCAVATION**

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1	Excavation for foundation / pipe trenches in <b>earth, soils of all types, sand, gravel and soft murum</b> , including removing the excavated material upto a distance of 50 metres and lifts as below, stacking and spreading as directed, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.		
	Lift 0 to 1.5 M <b>(Bd-A-1/259)</b>	Cum	146.00
2	Excavation for foundation / pipe trenches by all means in <b>hard murum</b> including removing the excavated material upto a distance of 50 M and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.		
	Lift 0 to 1.5 M <b>(Bd-A-2/259)</b>	Cum	170.00
3	Excavation for foundation / pipe trenches in <b>hard murum and boulders, W.B.M. road</b> including removing the excavated material upto a distance of 50 M beyond the area and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.		
	Lift 0 to 1.5 M <b>(Bd-A-3/259)</b>	Cum	192.00
4	Add for every additional lift of 1.5 M beyond initial lift of 1.50 M for Item Nos. 1 to 3	Cum	14.00
5	<b>Excavation for foundation / pipe trenches</b> by all means excluding blasting in <b>soft rock and old cement and lime masonry</b> foundation asphalt road including removing the excavated material upto a distance of 50 M beyond area and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.		
	Lift 0 to 1.5 M <b>(Bd-A-4/259)</b>	Cum	504.00
6	Excavation for foundation / pipe trenches in by blasting in <b>soft rock and old masonry</b> including removing the excavated material upto a distance of 50 M beyond area and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.		
	Lift 0 to 1.5 M	Cum	665.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
7.	Excavation for foundation / pipe trenches in <b>hard rock by controlled blasting</b> , including trimming and levelling the bed by chiselling where necessary and removing the excavated material and stacking it in measurable heaps within a distance of 50 metres from the area and lifts as below, normal dewatering, <b>excluding backfilling</b> , etc. complete.		
	Lift 0 to 1.5 M <i>(Bd-A-5/259)</i>	Cum	681.00
8	Excavation for foundation / pipe trenches in <b>hard rock and concrete road by chiselling, wedging, line drilling</b> , by mechanical means or by all means other than blasting including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the area and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, <b>excluding backfilling</b> , etc. complete by all means.		
	Lift 0 to 1.5 M <i>(Bd-A-6/259)</i>	Cum	927.00
9	Excavation in <b>laterite rock masses mechanically</b> including lift upto 1.5 M including trimming and levelling the bed, removing the excavated material upto a distance of 50 M beyond the area and lift as below, stacking as directed by Engineer-in charge, normal dewatering, <b>excluding backfilling</b> , etc. complete.		
	Lift 0 to 1.5 M.	Cum	1044.00
10	Excavation for foundation / pipe trenches in <b>slush Muddy/ Marshy / Slushy /Soil including use of poclain</b> , labour for dewatering during execution including removing the excavated material upto a distance of 50 metres and lifts as below, stacking and spreading as directed, preparing the bed by cleaning the mud, labour required for execution for shuttering item but <b>excluding backfilling</b> etc. complete. Providing and fixing shuttering shall be paid separately.		
	Lift 0 to 1.5 M	Cum	323.00
11.	Add for every <b>additional lift beyond initial lift</b> of 1.5 M for item No. 5 to 10	Cum	23.00
12	Excavation for foundation / pipe trenches in soft strata by mechanical means, including trimming and levelling the bed where necessary and removing the excavated material and stacking it in measurable heaps within a distance of 50 metres from the area and lifts as below, normal dewatering, <b>excluding backfilling</b> , etc. complete.	Cum	152.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
13	Excavation for foundation / pipe trenches in hard Murum by mechanical means, including trimming and levelling the bed where necessary and removing the excavated material and stacking it in measurable heaps within a distance of 50 metres from the area and lifts as below, normal dewatering, excluding backfilling, etc. complete.	Cum	346.00
	Add for every <b>additional lift beyond initial lift</b> of 1.5 M	Cum	30.00
14.	<b>HEAD WORKS</b>		
	Excavation in general in soft material comprising of <b>soft soil, soft murum, sand, hard murum with boulders in wet or dry condition for Head Works</b> i.e. Intake Well, Connecting Pipe, JackWell, Pump House, Supply Well, etc. for lift 0 to 1.5 M and lead of 150 M including baricading, guarding, disposing off surplus excavated stuff within a radius of 0.5 km. as directed by Engineer-in- charge, etc.complete excluding refilling.		
	a) For Head Works <b>on river or dam submergence</b> for initial lift of 0 to 1.5 M	Cum	464.00
	b) For Head Works <b>on nalla or any other site of GSDA</b> for initial lift of 0 to 1.5 M	Cum	259.00
	c) Add for each <b>additional lift of 1.5 M beyond initial lift</b> of 1.5 M	Cum	24.00
15.	Excavation in general in hard material comprising of soft rock, hard rock, Manjara rock, etc, by blasting / controlled blasting / chiselling as required in wet or dry condition for Head Works i.e. Intake Well, Connecting Pipe, Jack Well, Pump House, Supply Well, etc. for lift 0 to 1.5 M and lead of 150 M including baricading, guarding, disposing off surplus excavated stuff within a radius of 0.5 km. as directed by Engineer-in-charge, excluding refilling.		
	a) For Head Works on river or dam submergence for initial lift of 0 to 1.5 M	Cum	915.00
	b)For Head Works <b>on nalla or any other site of GSDA</b> for initial lift of 0 to 1.5 M	Cum	631.00
	c) Add for each <b>additional lift of 1.5 M beyond initial lift</b> of 1.5 M	Cum	24.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
16	Excavation in general in <b>soft material comprising of soft soil, soft murum, sand, hard murum with boulders in wet or dry condition for Head Works and allied works by well sinking</b> process for average depth of 12 M and lead of 150 M including shoring, baricading, guarding, refilling, disposing of surplus excavated stuff as directed by Engineer-in-charge, etc. complete.		
	a) Diameter <b>upto and including 3 M</b>	Cum	859.00
	b) Diameter <b>more than 3 M</b>	Cum	697.00
17	<b>Desilting</b> the Supply Well, Intake Well / Head Works, sump of water supply/ sewerage works etc. in wet or dry condition including lifts upto 9 M and lead upto 150 M as required beyond the work site, stacking, spreading, including necessary guarding, etc. complete, as directed by	Cum	667.00
	Add for every <b>additional lift of 1.5 M. beyond initial lift</b> of 9.0 M	Cum	24.00
18	<b>Dewatering</b> the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by Engineer-in-charge (including cost of machinery, labour, fuel), etc. complete.		
	<b>(Bd-A-9/261)</b>	BHP/Hr	70.00
	(i) The Contractor at his request may allowed to start construction of masonry steining so as not to allow silting of well in oncoming monsoon and while paying masonry, 25% amount shall be withheld and released only when excavation to the full depth is completed.		
	(ii) <b>Dewatering</b> : Total dewatering charges are to be proposed in tender as lumpsum amount and 75% is payable for excavation and 25 % is payable for construction of well / gallery. Out of 75% excavation, break-up shall be as under :		
	<b>25% for last 1M depth.</b>		
	<b>20% for 2 M depth which just above last 1 M depth.</b>		
	<b>15% for 2 M depth which just above last 3 M depth.</b>		
	<b>15% for the rest of depth from water table level.</b>		
	The above conditions will restrict the tendencies of agencies to avoid deepening of wells, etc. to the required depth.		
19	<b>Refilling the trenches with available excavated stuff</b> with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging, etc. complete.	Cum	73.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
20	Filling in plinth and floors <b>murum bedding</b> in trenches with <b>approved murum from excavated materials from foundation 15cm to 20cm layers including watering and compaction etc.complete.(Bd-A-10/263)</b>	Cum	73.00
21	<b>Filling in plinth</b> and floors / trenches with <b>contractor's murum for bedding in 15cm to 20cm layers including watering and compaction royalty charges etc.complete. (Bd-A-10/263)</b>	Cum	778.00
22	Providing dry trap/granite/quartzite/gneiss, <b>rubble stone soling in 15cm to 20 cm thick layers including hand packing and compacting, royalty charges etc. complete.(Bd-A-11/263)</b>	Cum	1143.00
23	Providing and filling in <b>sand boxing</b> in pipeline or for foundation with sand of approved quality including watering compaction, initial lead upto 5.0 km. etc. complete.(Bd-A-13/264)	Cum	1097.00
24	<b>Open timbering in trenches</b> of depth more than 1.5 m for shoring and strutting including use of and waste of all necessary timber works including walling, struts, open polling boards/ horizontal sheeting, runners, etc. as may be necessary and fixing and removal complete. (Measurements to be taken of the face/area timbered) (N.B.O. Item No. 4.15, P. No. 59)		
	A) Lift 0 to 1.5 M [for non-water logged area]	Sqm	196.00
	Additional per Sqm. for further lifts of 1.5M each.	Sqm	24.00
	B) Lift 0 to 1.5 M for water logged area.	Sqm	196.00
	Additional per Sqm. for further lifts of 1.5M each.	Sqm	24.00
	Note: For the Trenches with more than 1.5M depth shoring if required from GL is to be done and is payable from G.L.		

## SECTION -F : IRON AND STRUCTURAL STEEL WORK

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1.	Providing and fixing <b>mild steel grill work</b> for windows/venti- lators of 20 Kg./Sqm. as per drawings including necessary welding and painting with one coat of anticorrosive paint and two coats of oil painting, etc. complete. ( <i>Bd-U-1/537</i> )	Sqm	1654.00
2.	Providing and fixing <b>mild steel grill railing</b> of 20 Kg./Sqm. with teak wood hand railing, still and newel posts for staircase and including fabricating, fixtures, erecting, painting the grill work with approved oil paint and polishing the hand rail and newel posts with French polish two coats, etc. complete. ( <i>Bd-U-2/537</i> )	Sqm	2547.00
3.	Providing <b>structural steel work in rolled stanchions fixed with connecting plates or angle cleats</b> as in main and cross beams, hip and jack rafters, purlins connecting to truss members and like as per detailed <b>designs and drawings or as directed</b> by Engineer-in-charge including cutting, fabricating, hoisting, erecting, fixing in position, making riveted / bolted / welded connections and one coat of anticorrosive paints and over it two coats of oil painting, etc. complete. ( <i>Bd-C-3/275</i> )	MT	65337.00
4.	Providing <b>stuctural steel work in single stanchions composed of RSJ, channel</b> , etc. with caps, bases, mild steel plates, angles, brackets, cleats, gusset plates, anchor bolts, etc. as per detailed design and drawing or as directed by Engineer-in-charge including cutting, fabrication, hoisting, erecting, fixing in position, making riveted/ bolted / welded connections and one coats of anticorrosive paint and over it two coats of oil painting, etc. complete. ( <i>Bd-C-6/277</i> )	MT	64314.00
5.	Providing <b>structural steel work in rolled sections like joists, channels, angles, tees</b> , etc. as per detailed designs and drawings including fixing in position without connecting plates, braces, etc. and one coat of anticorrosive paint and over it two coats of oil painting, of approved quality and shade, etc. complete. ( <i>Bd-C-2/275</i> )	MT	68560.00
6.	Providing <b>structural steel work in trusses, other similar trussed purlins and members with all bracing, gusset plates</b> , etc. as per detailed design and drawing or as directed by Engineer-in- charge including cutting, fabricating, hoisting, erecting and fixing in position, making riveted / bolted / welded connections and one coat of anticorrosive paint and over it two coat of oil painting, etc. complete. ( <i>Bd-C-8/278</i> )	MT	86242.00

**SECTION G-PLAIN CEMENT CONCRETE, REINFORCED CEMENT CONCRETE & READY MIX CONCRETE.**

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1.	Providing and laying in situ, following grades of C.C. of trap /granite / quartzite / gneiss metal for foundation and bedding including dewatering, formwork, compacting and curing, finishing, etc. complete.		
	a) <b>M-100</b>	Cum	4691.00
	b) <b>M-150</b>	Cum	5055.00
2.	<b>Providing and laying in situ Cement concrete</b> of trap/granite/quartzite/ gneiss metal for RCC work in foundation like raft, grillage, strip foundation and footing of RCC columns and steel stanchions including normal dewatering, 'plywood form work, bully/ steel propups, compaction, finishing and curing, etc, complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L & T, A.C.C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted.) <b>(excluding M.S. or Tor reinforcement)</b>		
	a) In RCC M-150	Cum	5959.00
	b) In RCC M-200	Cum	5972.00
	c) In RCC M- 250	Cum	6445.00
	d) In RCC M- 300	Cum	6652.00
3	Providing and casting in situ Cement Concrete of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer- in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C. C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) <b>(excluding M.S, or Tor reinforcement)</b>		
	a) For RCC M-200 grade - all types of columns	Cum	7725.00
	b) For RCC M-250 grade - all types of columns	Cum	7798.00
	c)For RCC M-300 grade - all types of columns	Cum	7906.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
4.	<b>Providing and casting in situ C. C. of trap / granite / quartzite/ gneiss metal of approved quality for RCC works as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel propups, compaction, finishing the formed surfaces with C.M. 1:3 of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&amp;T, A.C.C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted.) (excluding M.S. or Tor reinforcement)</b>		
	a)For RCC M-200 grade	Cum	7106.00
	Beams /Braces / Lintels		
	b)For RCC M-250grade	Cum	7552.00
	Beams /Braces / Lintels		
	c) For RCC M-300 grade	Cum	7759.00
	Beams /Braces / Lintels		
5.	<b>Providing and casting in situ C. C. of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M- 250 and M- 300 only. Use of L&amp;T, A.C. C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S, or Tor reinforcement)</b>		
	a)For RCC M-200 grade	Cum	7646.00
	Slabs / Landings / Vertical Walls / Waist Slabs / Steps for Staircase		
	b)For RCC M-250 grade	Cum	8119.00
	Slabs / Landings / Vertical Walls / Waist Slabs / Steps for Staircase		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	c)For RCC M-300 grade	Cum	8326.00
	<b>Slabs / Landings / Vertical Walls / Waist Slabs / Steps for Staircase</b>		
6.	<b>Providing and casting in situ C. C. of trap/granite/quartzite/gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel propups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&amp;T, A.C. C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S, or Tor reinforcement)</b>		
	<b>a) For RCC M-200 grade</b>		
	Chajjas / Parapets / Curtain Walls / Partition Walls/ Pardies	Cum	7608.00
	<b>b) For RCC M-250 grade</b>		
	Chajjas/Parapets/Curtain walls/ Partition walls/Pardies.	Cum	8081.00
	<b>c) For RCC M-300 grade</b>		
	Chajjas/Parapets/Curtain walls/ Partition walls/ Pardies.	Cum	8288.00
7.	<b>Providing and laying in situ R. C. C. of trap/granite/quartzite / gneiss metal of approved quality for RCC works of domes as per detailed drawings and designs approved by Engineer-in-charge including centering finishing, roughening the surfaces with special finish or plaster to be provided separately, curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&amp;T, A.C. C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S. or Tor reinforcement)</b>		
	<b>a) For RCC M-200 grade - Domes</b>	Cum	7919.00
	<b>b) For RCC M-250 grade - Bottom Domes only</b>	Cum	8392.00
	<b>c) For RCC M-300 grade - Bottom Domes only</b>	Cum	8599.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
8.	<b>Providing and fixing in position steel bar reinforcement</b> of various diameters for RCC piles, caps, footings, foundations, slabs, beams, columns, canopies, staircases, newels, chajjas, lintels, parades, copings, fins, arches, etc. as per detailed designs, drawings and schedules; including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required, etc. complete. <b>(including cost of binding wire) IS 1786, (Bd-F-17/306)</b>		
	a) Mild Steel	M. T.	55953.00
	b) Tor Steel	M. T.	55953.00
	c) Corrosion resistant steel (Fe 500)	M. T.	63211.00
9	Providing fusion bonded epoxy coating to reinforcement bars as per <b>IS-13620-1993</b> specification for a thickness of 175 ( <b>±50</b> ) microns including extra cost on account of careful handling, extra cost on account of using PVC coated binding wire instead of G. I. wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of trans- portation, loading, unloading, excluding GST levied by GOI & GOM in all respect, etc. complete.		
	a) For Reinforcement Diameterwise Rates		
	1) 8 mm dia.	M. T.	17978.00
	2) 10 mm dia.	M. T.	16322.00
	3) 12 mm dia.	M. T.	15217.00
	4) 16 mm dia.	M. T.	14776.00
	5) 20 mm dia.	M. T.	13783.00
	6) 25 mm dia.	M. T.	12758.00
	7) 28 mm dia.	M. T.	12177.00
	8) 32 mm dia.	M. T.	11213.00
	b) Average Rates (FOR ESTIMATION ONLY)		
	1) For 8 mm to 20 mm dia.	M. T.	15615.00
	2) For above 20 mm dia.	M. T.	12049.00
	<b>Notes for Estimation :</b>		
	1) All the rates of Reinforced Cement Concrete Items From 1 to 6 shall be increased by 10% for each brace height above 1st brace for R.C.C. E. S. R.s.e.g. For a R.C.C.E.S. R. with 7 M staging and first brace at 3.50 M above ground, the concrete in columns above first brace, concrete of ring beam and bottom slab is entitled for 10% increase, concrete of vertical wall, roof slab and roof beams, columns in container are entitled for 20% increase.		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	2) All the rates of Reinforced Cement Concete Items from 1 to 6 shall be increased by 2% for every floor height above ground floor for building works.		
	3) These rates are applicable for R. C. C. well works also. These rates shall be increased by 10% for every 5 M depth below initial 5 M depth.		
	4) Rates for Item Nos. 7 and 8 shall be increased by 5% for each brace height above first brace for R.C.C. E.S.R s. By 5% for every ring beam below first ring beam for R. C. C. wells. By 1% building works for every floor height.		
	5) Volumetric mix as per 1: 1 <sup>1</sup> / <sub>2</sub> :3 shall be adopted with 56.5 kg. of cement for RCC-250 and 59.5 kg. of cement for RCC-300, per load of mixer of 1bag capacity.		
	6) Fusion bonded epoxy coating to be proposed only in Coastal Area with prior approval of the Chief Engineer.		
	7) For estimation purpose, average rates as per Item No.9b shall be considered wherever necessary.		
	<b>READY MIX CONCRETE</b>		
10.	Providing and laying in situ <b>Ready Mix Cement Concrete</b> grade of trap/granite/quartzite/ gneiss metal for <b>RCC work in foundation like raft, grillage, strip foundation and footing of RCC column and steel stanchions including normal dewatering, form work, compaction, finishing and curing including transporting from mixing plant upto distance of 25 km., pouring the concrete at work site for 1.5 M lift above G. L. and 5.0 M lift below G. L., etc. complete. (Excluding reinforcement and structural steel)</b>		
	a) In RCC M-200	Cum	6371.00
	b) In RCC M-250	Cum	6704.00
	c) In RCC M-300	Cum	7046.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
11.	Providing and casting in situ <b>Ready Mix Cement Concrete</b> grade of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering centering, form work, compaction, finishing the formed surfaces with CM 1:3 work, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing including transporting from mixing plant upto distance of 25 km., pouring the concrete at work site for 1.5 M lift above G. L. and 5.0 M lift below G. L., etc. complete. <b>(Excluding reinforcement and structural steel)</b>		
	a) In RCC M-200 - all types of columns	Cum	7597.00
	b) In RCC M-250 - all types of columns	Cum	7930.00
	c) In RCC M-300 - all types of columns	Cum	8127.00
12.	Providing and casting in situ <b>Ready Mix Cement Concrete</b> grade of trap/granite/quartzite/ gneiss metal of approved quality for <b>RCC work</b> as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, form work compaction, <b>finishing the formed surfaces with CM 1:3</b> of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing including transporting from mixing plant upto distance of 25 km., pouring the concrete at work site for 1.5 M lift above G. L. and 5.0 M lift below G. L., etc. complete. <b>(Excluding reinforcement and structural steel)</b>		
	a) In RCC M-200 - Beams / Braces / Lintels	Cum	7478.00
	b) In RCC M-250 - Beams / Braces / Lintels	Cum	7811.00
	c) In RCC M-300 - Beams / Braces / Lintels	Cum	8008.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
13.	Providing and casting in situ Ready Mix Cement Concrete grade of trap/granite/quartzite/ gneiss metal of approved quality for <b>RCC work</b> as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering centering, form work, compaction, <b>finishing the formed surfaces with CM 1:3</b> of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing including transporting from mixing plant upto distance of 30 km., pouring the concrete at work site for 1.5 M lift above G. L. and 5.0 M lift below G. L., etc. complete. <b>(Excluding reinforcement and structural steel)</b>		
	a) In RCC M-200	Cum	8240.00
	Slabs / Landings / Vertical Walls / Waist Slabs / Steps for Staircase		
	b) In RCC M-250		
	Slabs / Landings / Vertical Walls / Waist Slabs / Steps for Staircase	Cum	8573.00
	c) In RCC M-300		
	Slabs / Landings / Vertical Walls / Waist Slabs / Steps for Staircase	Cum	8770.00
14.	Providing and casting in situ <b>Ready Mix Cement Concrete grade</b> of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, form work compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing including transporting from mixing plant upto distance of 25 km., pouring the concrete at work site for 1.5 M lift above G. L. and 5.0 M lift below G. L., etc. complete. <b>(Excluding reinforcement and structural steel)</b>		
	a) For RCC M-200 Chajjas / Parapets / Curtain Walls /	Cum	8007.00
	Partition Walls / Pardies		
	b) For RCC M-250 Chajjas / Parapets / Curtain Walls /	Cum	8340.00
	Partition Walls / Pardies		
	c) For RCC M-300 Chajjas / Parapets / Curtain Walls /	Cum	8682.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	Partition Walls / Pardies		
15.	Providing and casting in situ <b>Ready Mix Cement Concrete</b> grade of trap/granite/quartzite/ gneiss metal of approved quality for <b>RCC work</b> as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewater- ing, centering, form work compaction, <b>finishing the formed surfaces with CM 1:3</b> of sufficient minimum thickness to give a smooth and even surface wherever neccessary or roughen- ing if special finish is to be provided and curing including transporting from mixing plant upto distance of 25 km., pouring the concrete at work site for 1.5 M lift above G. L. and 5.0 M lift below G. L., etc. complete. <b>(Excluding reinforcement and structural steel)</b>		
	a) For RCC M-200 - Domes	Cum	8318.00
	b) For RCC M-250 - Domes	Cum	8651.00
	c) For RCC M-300 - Domes	Cum	8848.00
	<b>Note :</b> 1) Add Rs.10/- per Cum for transportation beyond 25 km. for every additional lead of 1 km.		
	2) Beyond 1.5 M above G.L. and 5.0 M below G. L., concreting is to be done by pumping by the Company.		
	3) Additional rate of pumping		
	a) Static pump		
	Rs. 175/- per Cum		
	b) Mobile pump		
	Rs. 250/- per Cum		
	4) <b>For Ready Mix Concrete, prior permission from Chief Engineer shall be obtained.</b>		

**SECTION - H : MISCELLANEOUS**

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
1	Providing and fixing <b>G.I. pipe railing having 1.0 M height</b> consisting 50 x 50 x 6 mm thick M. S. angles as verticals at 1.5 M c/c, distance and additional posts at every corner bends to curved shape with <b>3 rows</b> of 25 mm dia G.I. pipes of medium class variety as horizontal and painting 3 coats of oil paint over 1 coat of anticorrosive paint of approved colour and shade including cost of all labour, transporting bends to curved shape,etc. complete.	Rmt	889.00	
	<b>A) As above but with only 2 rows.</b>	Rmt	674.00	
2	<b>Dismantling of ESRs</b> of various capacities and heights using crane (10 MT capacity) and handling over M.S./ C.I./ G.I. pipes, valves, bends, etc. to the Department. However taking steel reinforcement by the dismantling agency including removing dismantled materials from site and disposing them at suitable place as directed, etc.complete.			
	A) Capacity of E.S.R. upto 2 lakh litres and staging upto 12.00 M height.			
	<b>i) Conjusted Area</b>	Litre	2.10	
	<b>ii) Open Area</b>	Litre	1.05	
	A) Capacity of E.S.R. above 2 lakh litres and staging upto 12.00 M height.			
	<b>i) Conjusted Area</b>	Litre	2.10	
	<b>ii) Open Area</b>	Litre	1.05	
	Note :- Above 12 M staging height add 5% per Metres staging of E.S. R. of any capacity.			
3	<b>Providing and fixing M.S. gate 2.5 M</b> wide for compound with 40 mm dia G.I. pipe, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, with foundation, finishing, painting etc. complete.	No	27497.00	
4	<b>Proividing and fixing Wicket gate 1.0 M</b> wide for compound with 40 mm dia G. I. pipe, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finish- ing painting, etc. complete.	No	15548.00	



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
5	<b>Taking Trial Bore (Core Bore Sampling)</b> by Callyx machine with TCT/NX bits to gader undisturbed strata samples for in- vestigation in all types of strata soft soil, murum, hard murum with boulders, soft rock hard rock & quartzite etc. The item includes all Hire & running cost of Callyx Machine conveying all materials to site of work excluding conveyance of callyx, machine and back sampling all over burden strata in glass jar and core samples serially num- bered at site in a wooden Core Box, Samples to be taken at 1.0 M interval and conveying to the place as directed by Engineer - in - charge, The diameter of bore in overburden shall be 100 mm and of NX size (50mm) in other strata. The item shall also include M. S. casing pipe of 2.5 mm thick plate in overburden only and shall be 1.0 m above GL with cap over it.			
	a) In Overburden (Soft soil, murum)	Rmt	1386.00	
	b) In Weathered rock with boulders	Rmt	5447.00	
	c) In Weathered rock/soft rock	Rmt	2786.00	
	d) In Hard rock other than quartzite	Rmt	4314.00	
	e) In hard rock quartzite	Rmt	8208.00	
6	Providing <b>pressure grouting</b> at a pressure of 0.56 kg./sqcm in required row/zigzag fashion as specified at 1.5 M interval as per site conditions to stop leakages through water retaining structures to the entire satisfaction of the Engineer-in-charge including material compound, hardening materials, compressor equipment in- cluding scaffolding smooth finishing, etc. complete.			
	i) For masonry structure	Bag	861.00	
	ii) For concrete structure	Bag	857.00	
7	<b>Drilling 40 mm dia holes</b> in masonry or concrete structure with providing and fixing 0.5 M long G. I. pipe line for pressure grouting including all Material, labour cost and machinery charges, etc. complete.	Rmt	846.00	
8	Providing and <b>casting ferrocrete water tank</b> at site including all cost of labour and material, etc, complete. upto 25,000 literes including fixing of inlet / outlet / overflow pipe of suiteble dia. with cripling joint and outlet valve of approved quality. (for foundation and providing and fixing taps, etc. shall be consid- ered spearately).	Litre	4.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
9	Providing and applying <b>one coat of Gamma coating</b> or equivalent such as Dr.Bake, Krishna conchem ,Asian Paint, Atul Limited, Burger Paint,epoxy primer 50 to 60 microns thick and covering two Coats of Gamma Coatings or equivalent such as Dr.Bake,Krishna Conchem, Asian Paint, Atul Limited, Burger Paints 30 microns thick each to new M.S.pipes and structural steel or concrete surface including repainting the surface by finishing by Solvent degreasing and de-rusting by applying chemical method and scaffolding is necessary required etc.complete as per manufacturers specifications.	Sqm.	415.00	
10	Making <b>cross connection</b> to existing distribution main of any type including excavation, breaking and removing existing pipes, low-ering, laying of specials and pipes in their position, refilling, closing the water supply in that area, dewatering and restarting the water supply, etc. complete as directed by Engineer-in-charge for following diameters of existing pipeline, irrespective of diameter of branch line (the number of joints involved will be paid separately depending upon the nature of joints and required pipes, valves and specials will be supplied free of cost at stores).			
	i) 80 mm.	No.	2292.00	
	ii) 100 mm.	No.	2646.00	
	iii) 125 mm.	No.	2933.00	
	iv) 150 mm.	No.	3098.00	
	v) 200 mm.	No.	3172.00	
	vi) 250 mm.	No.	3750.00	
	vii) 300 mm.	No.	4356.00	
	viii) 350 mm.	No.	4921.00	
	ix) 400 mm.	No.	6205.00	
	x) 450 mm.	No.	6673.00	
	xi) 500 mm.	No.	8578.00	
	xii) 600 mm.	No.	15938.00	
	xiii) 700 mm.	No.	19650.00	
	xiv) 750 mm.	No.	24924.00	
	xv) 800 mm.	No.	32510.00	
	xvi) 900 mm	No.	42971.00	
	xvii) 1000 mm	No.	60520.00	
	Note : Only 85 % rate shall be payable till satisfactory hydraulic testing is given.			

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
11.	Dismantling dead pipeline of <b>M.S./R.C.C./ C.I./ P.S.C. and G.I./ A. C. / P. V. C. / S. W. / H. D. P. E. pipe</b> including cost of necessary excavation and refilling of trenches, breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete.			
	<b>A) For M.S./R. C. C./ C.I./ P. S. C.</b>			
	i) 80 mm.	Rmt	175.00	
	ii) 100 mm.	Rmt	191.00	
	iii) 125 mm.	Rmt	196.00	
	iv) 150 mm.	Rmt	201.00	
	v) 200 mm.	Rmt	222.00	
	vi) 250 mm.	Rmt	244.00	
	vii) 300 mm.	Rmt	266.00	
	viii) 350 mm.	Rmt	300.00	
	ix) 400 mm.	Rmt	327.00	
	x) 450 mm.	Rmt	369.00	
	xi) 500 mm.	Rmt	388.00	
	xii) 600 mm.	Rmt	475.00	
	xiii) 700 mm.	Rmt	557.00	
	xiv) 750 mm.	Rmt	625.00	
	<b>B) For G.I./AC/PVC/S. W. / H.D.P.E.</b>			
	i) 80 mm.	Rmt	103.00	
	ii) 100 mm.	Rmt	116.00	
	iii) 125 mm.	Rmt	119.00	
	iv) 150 mm.	Rmt	121.00	
	v) 200 mm.	Rmt	132.00	
	vi) 250 mm.	Rmt	147.00	
	vii) 300 mm.	Rmt	160.00	
	viii) 350 mm.	Rmt	179.00	
	ix) 400 mm.	Rmt	196.00	
	x) 450 mm.	Rmt	222.00	
	xi) 500 mm.	Rmt	232.00	
	xii) 600 mm.	Rmt	285.00	
	xiii) 700 mm.	Rmt	333.00	
	xiv) 750 mm.	Rmt	375.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
12	Providing and constructing <b>two taps standpost</b> as per type de- sign with excavation 15 cm thick PCC 1:3:6 bedding 20 mm thick PCC 1:2:4 concrete 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, 5 M long, 20 mm dia. medium G.I. pipe from point of tapping to standpost additional 20 mm dia G.I. pipe fixed vertically upto 15 mm dia self closing water taps, one brass ferrule etc. complete together with all labour and material charges as per drawing and as directed by Engi- neer-in-charge when good foundation is available. Rate in- cludes draining arrangement by excavating open gutters.	No.	9632.00	
	a) As above but when precast RCC platform or pre- cast standpost is issued free of cost at departmental stores including cost of transportation and fixing etc. complete.	No.	5489.00	
13.	<b>Providing and constructing two taps standpost</b> as per type de- sign wih excavation 30 cm thick boulder filling 15 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, 5 M long, 20 mm dia. medium G.I. pipe from point of tapping to stand post additional 20 mm dia G.I. pipe fixed horizontally and providing and fixing two 15 mm dia self closing water taps, one brass ferrule etc. complete together with all labour and material charges as per drawing and as directed by Engineer-in-charge, when B.C.Soil is available. Rate includes draining arrangement by excavating open gutters.	No.	9919.00	
	a) As above but when precast RCC platform or precast standpost is issued free of cost at departmental stores including cost of transportation and fixing etc. complete.	No.	5894.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
14	<b>Pushing of M. S. Pipe of following dia. for road crossing and Railway Crossing</b> by push through method in all types of strata by using hydraulic jack and drilling machine of required diameter below M. S. Casing pipe lowering, laying, jointing of material, required welding machinery, tripod, chain pulley block, crane blower compressor, loading and unloading of machinery into the trench etc. transporation and dewatering etc. complete as directed by Engineer-in-charge but excluding cost of M.S. pipes.			
	a) 200 mm dia. to 499 mm dia. M.S. pipe	Rmt.	25523.00	
	b) 500 mm dia. to 1000 mm dia. M. S. pipe	Rmt.	31904.00	
15	Providing and <b>erecting slip form shuttering</b> including dismantling after completion for constructing vertical structures such as jackwell, Balancing Tank, Bridge Column and for horizontal structures in RCC. The item includes lifting arrangement, centering, formwork, normal dewatering, electrical arrangement with generator set with all equipments for slip form shuttering works with labour, mate- rials and machinery, all rents, fuels, insurance charges. The rates is for various dia., depth and various sizes of structures, etc. complete.	Sqm.	3315.00	
	Note:-			
	A) All risks and costs lies with the Contractor itself.			
	B) The arrangement for lighting with cables till top height to be provided by the Contractor.			
	C) Any accident arising out of the work will be responsibility of the Contractor.			
	D) No idle charges for Machinery and Labour will be paid.			
	E) Insurance for all types of machinery and workers will be borne by the Contractor.			

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
16	Comprehensive cleaning of the <b>ESR/ GSR/ Sump/ Clariflocculator</b> or any storage unit of water supply, sewerage work in wet or dry condition during planned shutdown of the water supply with the help of water jet cleaning system including all lifts and leads upto 150 meters as required beyond the work site, stacking and spreading etc complete as directed by Engineer in charge. The rate is excluding GST levied by GOI & GOM in all respect including materials, equipment, electrical installation all labour consumables and transportation charges, energy charges for entire job.	Litre	0.07	
	1) the item to include record submission of photographs taken during the cleaning process.			
	2) Electric supply will have to be arranged by the firm.			
	3) In case of any dishappening at the site to any structure/equip- ments or human being, the same shall be sole responsibilty of the firm. The firm must ensure the guidelines of NHRC and fac- tories Act. in this regard in case any compensation is to be paid, the same shall be borne by the firm.			
	4) The person who executes the work at site must have Electri- cal qualification or Electrical license.			
	5) The firm must get checked the water samples before start of work and after completion of work from the laboratory, the test- ing cost will be borne by the firm.			
	6) care should be taken such that column assembly of pumping machinery is not disturbed or damaged otherwise necessary compensation would be recovered from firm.			
	7) The water in the reservoir is highly clorinated having dose of 2 PPM or more. The firm must take all safety precaution before start of work and during execution period.			
	8) 10% of payable amount will be withheld and will be re- leased after 3 months from completion of work.			
	<b>Note :</b> Conditions from Sr.No 1 to 8 shall form a part and parcel of the tender and must be included in draft tender papers			

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
17.	Providing and laying <b>HDPE Geo membrane sheet</b> of following thickness 100 acid, alkali proof, 100 reinforced sealing quality, every joints electronically welded as per relevant IS specification and placing in proper position on prepared bed on foundation/embankment with welding the joints of sheet using hot sedge and extrusion welding techniques according to the liner manufactures specifications at ambient temperatures of 5 degree C to 45 degree C excluding GST levied by GOI & GOM in all respect and labour for jointing and placing etc. complete.			
	500 micron	Sqm.	276.00	
	250 micron	Sqm.	191.00	
18.	Providing supplying <b>POLYALUMINIUM CHLORIDE (PAC) of medium basisity</b> , conforming to IS:15573:2005 & ISI mark and manufacture from with PH of 5 ,having specific gravity 1.204 for use in water treatment plant for treatment of low to high turbidity water for drinking purpose excluding GST levied by GOI & GOM in all respect including insurance charges, transportation and freight charges, third party charges, with material testing charges (from VJTI/IIT/DPH lab), loading & conveyance to water works & R.R. scheme sites in Maharashtra etc. complete as per MJP approved.			
	PAC medium basisity in powder form	MT	28100.00	
	PAC medium basisity in liquid form	MT	9596.00	
19.	Providing and making <b>MDPE pipe consumer service connection on C.I./D I/H.D.P.E. pipe</b> With the help of electrofusion machine or Ratchet and dye drill including all labour, MDPE machine or Ratchet and dye drill including all labour, MDPE pipe 10 m length, MDPE specials like electrofusion tee, double compression elbow, female threaded adopter with metal insert, UPVC compression end ball valve, G.I. casing pipe of 40/50 mm for road crossing. The rate to include labour required, excavation fitting, refilling, Closing the water supply in that area, dewatering and restarting the water supply, transportation etc. complete as directed by Engineer in charge.			
	<b>A) For connection on HDPE Pipes (With Road Crossing )</b>			

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	i) 15 mm	No.	4288.00	
	ii) 20 mm	No.	5016.00	
	iii) 25 mm	No.	5790.00	
	B) For connection on HDPE Pipes (Without Road Crossing )			
	i) 15 mm	No.	3570.00	
	ii) 20 mm	No.	3792.00	
	iii) 25 mm	No.	4202.00	
	C)For connection on C.I/D.I./G.I.Pipes (With Road Crossing )			
	i) 15 mm	No.	3004.00	
	ii) 20 mm	No.	3731.00	
	iii) 25 mm	No.	4408.00	
	D)For connection on C.I/D.I./G.I.Pipes (Without Road Crossing )			
	i) 15 mm	No.	2255.00	
	ii) 20 mm	No.	2653.00	
	iii) 25 mm	No.	2918.00	
20	Providing and applying <b>3 LPE (3 layer polyethylene) coating of min. 3000 microns composite coating and internal Fusion Bonded Epoxy Lining</b> as per IS 3589 Annex. C of 400 micron thickness for underground laying of MS pipe, similarly due layer polyester coating of 400 micron externally and internal fusion bonded lining as per IS 3531 for above ground laying of MS pipe. Rate shall include cost of material coating and wrapping over the pipes, handling charges, preperation of pipe surface, all labour, material, including transportation of pipes from site of works to factory and back to site of works after coating excluding GST levied by GoI and GoM in all respect etc. complete. <b>(The rate is for inside plus outside area both included)</b>	Sqm.	1390.00	
	Note : Pipe coating shall be done at factory.			



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
21	Supply and installation of <b>pre fabricated ground water storage bolted tanks</b> , a complete package in knockdown ready to as- semble construction consisting of outer wall surface made out of special grade hot dip aluminum - Zinc alloy, metallic factory coated steel conforming to IS-15961-2012, minimum thickness of 0.6 mm. The inner surface should be provided with liners of minimum 0.6 mm thickness of reinforce polyethylene or polypropylene or metallocene material suitable for drinking water purpose. Top cover shall be of polyethene tape monophylament yarn or woven polypropylene or corrugated G.I. sheets. Rate includes cost of the inlet, outlet, overflow. Pipes upto 5 m from periphery of the tank including ball valves of standard quality, aluminum ladder, level indicator, water tightness test, trasportation upto site of work excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>Notes :-</b> 1) Above tanks can be installed on elevated platform. (ESR) The rate of tank dose not include the cost of elevated platform. 2% extra to be considered for installation of tank on elevated platform. The elevated platform needs to be designed as per requirements & which will be paid separately. The elevated platform must be of steel framed structure. 2) For the dome type corrugated roof structure with hot dip galvanized trusses with GI manhole for access for cleaning and maintenance. 10% extra shall be added. 3) For heavy duty five layer polypropylene reinforced liner with metallocene contact layer having a minimum thickness of 1 mm. 10% extra shall be added. 4) In case rain water harvesting filters & system to catch the rain from the GI tank roof is mounted on the tank roof and sup- plied with the tank then 10% extra shall be added.			
Sr. No.	Capacity in Litres	Unit	<b>Rate for 2019 -20</b>	
			With RCC Foundation	W/o RCC Foundation
1	25000	Per Lit.	11.75	11.14
2	30000	Per Lit.	10.66	10.06
3	50000	Per Lit.	9.74	9.13

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
4	75000	Per Lit.	8.29	7.69
5	100000	Per Lit.	7.15	6.55
6	150000	Per Lit.	6.41	5.88
7	200000	Per Lit.	5.96	5.35
8	250000	Per Lit.	5.40	4.8
9	300000	Per Lit.	5.23	4.62
10	375000	Per Lit.	4.58	3.98
11	500000	Per Lit.	4.20	3.6
12	750000	Per Lit.	3.93	3.32
13	1000000	Per Lit.	3.78	3.18
14	1500000	Per Lit.	3.50	2.89
22	Designing, analyzing and hydraulic modelling of water supply/sewerage network using the window based software including collection of D. P. Plans, census record data for at least 5 decades, area calculations using D. P. Plan population projection by different methods, population forecasting, demand, projections, forecasting flows, Zonal and nodal flow calculations, formulation of mass curves using actual site data of consumption, assigning properties to all elements, skeletonization of network including zone creation, formation of different zones considering various constraints, solving network , creating various scenarios, simulating designing and redesigning the network. The item also includes printing results, final output drawings, compliance of remarks, redesigning and drawing. The item also includes overhead expenses, which includes infrastructure cost such as stationary, rent of high configuration computer hardware and software, printers and other peripherals, electricity, phone, office establishment, travelling and other miscellaneous charges. The item also includes contractors profit excluding GST levied by GOI & GOM in all respect.			
	Rate per Node upto 2000 nodes	Node	81.28	
	Rate per Node between 2000 to 5000 nodes	Node	73.19	
	Rate per Node between 5000 to 10000 nodes	Node	64.99	
	Rate per Node beyond 10000 nodes	Node	56.89	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	<b>Note</b> - Node shall be taken at every change in pipe diameter, pipe material, road junctions, Sluice valves and pipe c values and major change in elevation, at the start and end of the pipeline. No extra node will be payable.			
23	<b>External Coating</b> Providing and applying Rigid, Direct to Metal, 100% Solids Polyurethane Coating meeting IS/AWWA C-222 of minimum 1000 micron thickness on the external surface of MS Pipe after blast cleaning to SA 2 & 1/2 with anchor profile of > 75 Microns using angular Steel Grit .Pipe blast cleaning and coating shall only be permitted in the pipe manufacturer's facility, preferably on rolling conveyor using fast set materials. The rates are including loading, unloading, handling and transportation of Pipe etc complete. Product shall be supplied and applied as per detailed specification provided by the department.	Sqm.	662.00	
24	<b>Internal Lining</b> Providing and applying 100% Solids Polyurethane Coating meeting BIS 16719 or Rigid, Direct to Metal, 100% Solids Polyurethane Coating meeting AWWA C-222 and satisfying the criterion for drinking water as per WRAS-BS 6920 to a thickness of 500 microns (SSPC PA2) on the internal surface of MS Pipe after blast cleaning to SA 2 & 1/2 with anchor profile of > 75 Microns using angular Steel Grit. The coating should meet Total Organic Carbon (TOC) as per APHA-AWWA WEF5310C < 2.00 mg/L. Pipe lining shall only be permitted in the pipe manufacturer's facility. Site application shall not be permitted. The rates are including loading, unloading, handling and transportation of Pipe etc complete. Product shall be supplied and applied as per detailed specification provided by the department.	Sqm.	470.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
25	<p><b>Internal Lining (food grade Epoxy)</b>  Providing and applying two part food grade polyamide cured solvent less epoxy lining,meeting BIS 16676 on the internal surface of MS pipe after blast cleaning to SA 2 &amp; 1/2 with Anchor Profile of &gt; 75 Microns Using angular Steel Grit .The minimum dry film thickness (DFT) of internal lining shall be 400 micron (SSPC PA2).The epoxy coating should offer highest resistance to cathodic disbondment and provide excellent adhesion to steel.The manufacturer shall have the certificate issued in support of portable water service for tests of pH ,turbidity ,total hardness ,Chloride nitrate ,Iron ,Arsenic &amp; fluoride as per IS 10500 : 2003 and IS 16676 : 2017 .  Site application shall not be permitted .The rates are including loading, Unloading, Handling and transportation of pipe etc complete.  Product shall be supplied and applied as per detailed specification provided by the department.</p>	Sqm.	415.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	<b>1. C.I. PIPES</b>			
1	Providing and supplying ISI mark C.I. S&S pipes (push on joints pressure pipes of C.I of following class and diameters confirming to the I.S.specification inclusive cost of jointing materials(Rubber gasket of EPDM Quality) excluding GST levied by GoI and GoM in all respect, Third party inspection charges of TPI Agency approved by MJP including Transit insurance, Railway Freight, Unloading from railway wagon, Loading into Truck, Transportation to departmental store/site of work,unloading, stacking etc. completed as directed by Engineer –in-charge (IS 1536/2001 for pipes and IS 158/1969 and IS 12820/1989 or latest edition / revision with amendments for Rubber Gaskets.			
	<b>(Suitable for Tyton / Pig lead joints)</b>			
	<b>a) Class 'LA'</b>			
	80 mm	Rmt	797.00	
	100 mm	Rmt	999.00	
	150 mm	Rmt	1622.00	
	200 mm	Rmt	2335.00	
	250 mm	Rmt	3147.00	
	300 mm	Rmt	4058.00	
	<b>b) Class 'A'</b>			
	80 mm	Rmt	823.00	
	100 mm	Rmt	1028.00	
	125 mm	Rmt	1338.00	
	150 mm	Rmt	1647.00	
	200 mm	Rmt	2380.00	
	250 mm	Rmt	3216.00	
	300 mm	Rmt	4163.00	
	350 mm	Rmt	5204.00	
	400 mm	Rmt	6383.00	
	450 mm	Rmt	7732.00	
	500 mm	Rmt	8865.00	
	600 mm	Rmt	11837.00	
	700 mm	Rmt	15427.00	
	750 mm	Rmt	17135.00	
	800 mm	Rmt	19156.00	
	900 mm	Rmt	23316.00	
	1000 mm	Rmt	28046.00	
	<b>c) Class 'B'</b>			
	80 mm	Rmt	875.00	
	100 mm	Rmt	1096.00	
	125 mm	Rmt	1440.00	
	150 mm	Rmt	1773.00	
	200 mm	Rmt	2572.00	
	250 mm	Rmt	3478.00	
	300 mm	Rmt	4510.00	
	350 mm	Rmt	5645.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	400 mm	Rmt	6518.00	
	450 mm	Rmt	8343.00	
	500 mm	Rmt	9590.00	
	600 mm	Rmt	12636.00	
	700 mm	Rmt	16517.00	
	750 mm	Rmt	18590.00	
	800 mm	Rmt	20722.00	
	900 mm	Rmt	25262.00	
	1000 mm	Rmt	30308.00	
2	<b>Lowering laying and jointing with SBR ruber gaskets C.I. S/S pipes</b> of various classes with CI / MS specials of following diameter in proper position, grade and alignment as directed by Engineer-in-charge including conveyance of material from stores to site of work, <b>including cost of jointing materials and rubber rings labour</b> etc. complete.			
	<b>Note : Only SBR Rubber gaskets to be used as per IS-5382 and IS-12820.</b>		<b>Without Rubber Rings</b>	<b>With Rubber Rings</b>
	<b>a) C.I. 'L.A.' Class / Mortar inlined DI K-9/K-7</b>			
	80 mm	Rmt	48.00	55.00
	100 mm	Rmt	58.00	64.00
	150 mm	Rmt	78.00	87.00
	200 mm	Rmt	103.00	114.00
	250 mm	Rmt	135.00	149.00
	300 mm	Rmt	146.00	167.00
	350 mm	Rmt	182.00	205.00
	400 mm	Rmt	219.00	253.00
	450 mm	Rmt	219.00	266.00
	500 mm	Rmt	253.00	308.00
	600 mm	Rmt	332.00	409.00
	700 mm	Rmt	429.00	576.00
	750 mm	Rmt	480.00	630.00
	800 mm	Rmt	587.00	739.00
	900 mm	Rmt	702.00	928.00
	1000 mm	Rmt	829.00	1125.00
	<b>b) C.I. 'A' Class</b>			
	80 mm	Rmt	50.00	62.00
	100 mm	Rmt	62.00	73.00
	125 mm	Rmt	79.00	87.00
	150 mm	Rmt	86.00	94.00
	200 mm	Rmt	111.00	122.00
	250 mm	Rmt	146.00	161.00
	300 mm	Rmt	160.00	179.00
	350 mm	Rmt	196.00	220.00
	400 mm	Rmt	221.00	254.00
	450 mm	Rmt	232.00	268.00
	500 mm	Rmt	273.00	327.00
	600 mm	Rmt	361.00	437.00
	700 mm	Rmt	464.00	611.00
	750 mm	Rmt	523.00	670.00
	800 mm	Rmt	616.00	766.00
	900 mm	Rmt	741.00	967.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	1000 mm	Rmt	866.00	1162.00
	<b>c) C.I. 'B' Class</b>			
	80 mm	Rmt	55.00	64.00
	100 mm	Rmt	65.00	79.00
	125 mm	Rmt	85.00	94.00
	150 mm	Rmt	95.00	106.00
	200 mm	Rmt	122.00	136.00
	250 mm	Rmt	158.00	179.00
	300 mm	Rmt	173.00	193.00
	350 mm	Rmt	212.00	246.00
	400 mm	Rmt	246.00	279.00
	450 mm	Rmt	251.00	287.00
	500 mm	Rmt	294.00	348.00
	600 mm	Rmt	391.00	464.00
	700 mm	Rmt	502.00	645.00
	750 mm	Rmt	567.00	714.00
	800 mm	Rmt	661.00	809.00
	900 mm	Rmt	783.00	1008.00
	1000 mm	Rmt	894.00	1187.00
	<b>Note : Only 85% rate shall be payable till satisfactory hydraulic testing is given.</b>			
3	<b>Providing D.I. pipes</b> (push on joints pressure pipes of D. I. of following class and diameters confirming to the I. S. specification inclusive cost of jointing materials (Rubber gasket of EPDM Quality ) excluding GST levied by GOI & GOM in all respect including Third party inspection charges of TPI Agency approved by MJP including Transit insurance, Railway Freight, Unloading from railway wagon, Loading into Truck, Transportation to departmental store, unloading, stacking etc. completed as directed by Engineer in charges (IS 8329/2000 for pipes and IS 158/1969 and IS 12820/1989 or latest edition/ revision with amendments for Rubber Gaskets.			
	<b>(IS:8329-2000 Latest Version)</b>		<b>D. I. K-7</b>	<b>D. I. K-9</b>
	100mm	Rmt	808.00	952.00
	150mm	Rmt	1192.00	1383.00
	200mm	Rmt	1469.00	1870.00
	250mm	Rmt	2044.00	2485.00
	300mm	Rmt	2505.00	3106.00
	350 mm	Rmt	3371.00	3919.00
	400 mm	Rmt	3774.00	4558.00
	450 mm	Rmt	4696.00	5560.00
	500 mm	Rmt	5349.60	6405.00
	600 mm	Rmt	6817.50	8175.00
	700 mm	Rmt	9245.00	10370.00
	750 mm	Rmt	10759.00	12130.00
	800 mm	Rmt	12215.00	13188.00
	900 mm	Rmt	14852.00	16283.00
	1000 mm	Rmt	17900.00	19580.00
	1100 mm	Rmt	24375.00	24397.00
	1200 mm	Rmt	26964.00	27874.00
	Note: For DI pipe supply from MJP 18% GST would be applicable			

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
4	<b>Providing and making lead caulked joint with molten lead to Cast Iron pipes</b> and / or specials of all classes and fitting of following dia including cost of lead and all jointing material, labour, hydraulic testing etc. complete.			
	80 mm	Joint	792.00	
	100 mm	Joint	980.00	
	125mm	Joint	1166.00	
	150mm	Joint	1448.00	
	200mm	Joint	2111.00	
	250mm	Joint	2563.00	
	300mm	Joint	3091.00	
	350 mm	Joint	3504.00	
	400 mm	Joint	4087.00	
	450 mm	Joint	5675.00	
	500 mm	Joint	6101.00	
	600 mm	Joint	7839.00	
	700 mm	Joint	9209.00	
	750 mm	Joint	10459.00	
	800 mm	Joint	11232.00	
	900 mm	Joint	11980.00	
	1000 mm	Joint	12774.00	
	<b>Note :Only 85 % rate shall be payable till satisfactory Hydraulic testing is given.</b>			
5	<b>Providing and supplying ISI standard CI double flanged pipes</b> excluding all statutory duties & taxes such as GST levied by GOI & GOM in all respect, railway freight, insurance, unloading from railway wagon, loading into truck transport to stores / site, unloading etc. complete as directed by Engineer-in-charge			
	80 mm	Rmt.	1333.00	
	100 mm	Rmt.	1648.00	
	125 mm	Rmt.	2145.00	
	150 mm	Rmt.	2677.00	
	200 mm	Rmt.	4108.00	
	250 mm	Rmt.	5535.00	
	300 mm	Rmt.	7117.00	
	350 mm	Rmt.	9289.00	
	400 mm	Rmt.	11326.00	
	450 mm	Rmt.	13600.00	
	500 mm	Rmt.	15961.00	
	600 mm	Rmt.	22705.00	
	700 mm	Rmt.	30419.00	
	750 mm	Rmt.	33097.00	
6	<b>Providing and supplying ISI standard CI flanged / S &amp; S specials</b> including all statutory duties & taxes such as GST levied by GOI & GOM in all respect, railway freight, insurance, unloading from railway wagon, loading into truck transport to departmental store /site, unloading stacking etc. complete.			
	<b>D/F Specials</b>			
	80 to 300 mm dia.	Kg.	66.00	
	350 to 600 mm dia	Kg.	71.00	
	above 600 mm dia	Kg.	76.00	
	<b>S/S Specials / Socketed Branch Flanged Specials</b>			



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	80 to 300 mm dia.	Kg.	64.00	
	350 to 600 mm dia	Kg.	68.00	
	above 600 mm dia	Kg.	73.00	
	<b>Plain ended /plain ended branch flanged specials</b>			
	80 to 300 mm dia.	Kg.	62.00	
	350 to 600 mm dia	Kg.	68.00	
	above 600 mm dia	Kg.	73.00	
7	Providing and supplying ISI standard <b>MS specials</b> of required thickness with 3 coats of approved make epoxy paint (Shalimar, Ciba or Mahindra & Mahindra make) from inside and outside excluding all statutory duties & taxes such as GST levied by GOI & GOM in all respect, inspection charges, transportation to stores / site, and stacking, etc. complete.			
	a) Machine ends suitable for PSC pipes of all diameters as per detailed drawing with 10mm thick x 0.7 M long barrel welded to it.	Kg.	84.00	
	b) Only flanges with machining and drilling holes, etc. complete more than 40 mm thick	Kg.	82.00	
	c) Double flanged specials of all diameters	Kg.	79.00	
	d) All socketted specials or socketed branch flanged specials of all diameters	Kg.	79.00	
	e) Plain ended specials or plain ended branch flanged specials of all diameters	Kg.	79.00	
	f) MS barrels (pipepieces) locally manufactured (for small quantities)	Kg.	77.00	
8	<b>Providing and making flanged joints to flanged C.I./M.S. pipes</b> of all classes/specials etc. including cost of all jointing materials (rubber packing, nut bolts, etc.), labour, hydraulic testing etc. complete.			
	80 mm	Joint	239.00	
	100 mm	Joint	412.00	
	125 mm	Joint	431.00	
	150 mm	Joint	827.00	
	200 mm	Joint	857.00	
	250 mm	Joint	1229.00	
	300 mm	Joint	1276.00	
	350 mm	Joint	1662.00	
	400 mm	Joint	2071.00	
	450 mm	Joint	2531.00	
	500 mm	Joint	2620.00	
	600 mm	Joint	2813.00	
	700 mm	Joint	4237.00	
	750 mm	Joint	4356.00	
	800 mm	Joint	6028.00	
	900 mm	Joint	6248.00	
	1000mm	Joint	6468.00	
	<b>Note : Only 85 % rate shall be payable till satisfactory Hydraulic testing is given.</b>			

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
9	<b>Erecting and hoisting in position and jointing, testing M.S./ C.I. D/F pipes and specials</b> in vertical position including cost of all jointing materials (rubber packing, nut bolts, etc.) labour, scaffolding, hydraulic testing etc. complete.			
	80 mm	Joint	242.00	
	100 mm	Joint	409.00	
	125 mm	Joint	432.00	
	150 mm	Joint	804.00	
	200 mm	Joint	854.00	
	250 mm	Joint	1220.00	
	300 mm	Joint	1287.00	
	350 mm	Joint	1672.00	
	400 mm	Joint	2079.00	
	450 mm	Joint	2540.00	
	500 mm	Joint	2658.00	
	600 mm	Joint	2917.00	
	700 mm	Joint	4327.00	
	750 mm	Joint	4492.00	
	800 mm	Joint	6083.00	
	900 mm	Joint	6403.00	
	1000mm	Joint	6749.00	
	<b>Note : Only 85 % rate shall be payable till satisfactory hydraulic testing is given.</b>			
10	Providing and supplying ISI standard D. I. specials & fitting with sealing rubber gasket of S.B.R, complete with cast iron follower gland and M. S. nut bolts coated or otherwise protected from rusting and suitable for D.I.pipes including cost of labour ,materials, and transportation to stores / site, loading and unloading excluding GST levied by GOI & GOM in all respect, complete as per IS-9523. <b>For all types of specials, bends tees etc.</b>			
	80 to 300 mm dia	Kg.	103.00	
	350 mm and above dia	Kg.	125.00	
11	Providing and supplying ISI standard welded <b>DI double flanged pipe</b> excluding GST levied by GOI & GOM in all respect, railway freight, insurance, unloading from railway wagon, loading into truck transport to store / site, unloading, stacking etc. complete as directed by Engineer - in- charge. (for 2.75 m bare pipe)			
	100 mm	Rmt.	1725.00	
	150 mm	Rmt.	2343.00	
	200 mm	Rmt.	2997.00	
	250 mm	Rmt.	4069.00	
	300 mm	Rmt.	5120.00	
	350 mm	Rmt.	6669.00	
	400 mm	Rmt.	8072.00	
	450 mm	Rmt.	9646.00	
	500 mm	Rmt.	11212.00	
	600 mm	Rmt.	14762.00	
	700 mm	Rmt.	19864.00	
	800 mm	Rmt.	24281.00	
	900 mm	Rmt.	30139.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	1000 mm	Rmt.	35388.00	
12	<b>Hydraulic testing of C.I./D.I. pipe line</b> to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position using water supplied by the contractor.			
	<b>A) C.I. L.A. Class / Mortar lined D.I.K-9/ K-7</b>			
	80 mm	Km	6155.00	
	100 mm	Km	7201.00	
	125 mm	Km	8942.00	
	150 mm	Km	9639.00	
	200 mm	Km	12659.00	
	250 mm	Km	16491.00	
	300 mm	Km	18581.00	
	350 mm	Km	22646.00	
	400 mm	Km	28104.00	
	450 mm	Km	29614.00	
	500 mm	Km	34143.00	
	600 mm	Km	45524.00	
	700 mm	Km	63986.00	
	750 mm	Km	70028.00	
	800 mm	Km	82222.00	
	900 mm	Km	103126.00	
	1000 mm	Km	125074.00	
	<b>B) C.I. "A" Class</b>			
	80 mm	Km	6852	
	100 mm	Km	8014	
	125 mm	Km	9639	
	150 mm	Km	10452	
	200 mm	Km	13472	
	250 mm	Km	17768	
	300 mm	Km	19858	
	350 mm	Km	24388	
	400 mm	Km	28221	
	450 mm	Km	29846	
	500 mm	Km	36350	
	600 mm	Km	48543	
	700 mm	Km	67822	
	750 mm	Km	74441	
	800 mm	Km	85125	
	900 mm	Km	107538	
	1000 mm	Km	129023	
	<b>C) C.I. "B" Class</b>			
	80 mm	Km	7201.00	
	100 mm	Km	8710.00	
	125 mm	Km	10452.00	
	150 mm	Km	11729.00	
	200 mm	Km	15098.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	250 mm	Km	19975.00	
	300 mm	Km	21369.00	
	350 mm	Km	27408.00	
	400 mm	Km	31123.00	
	450 mm	Km	31936.00	
	500 mm	Km	38556.00	
	600 mm	Km	51563.00	
	700 mm	Km	71654.00	
	750 mm	Km	79319.00	
	800 mm	Km	89887.00	
	900 mm	Km	111951.00	
	1000 mm	Km	131926.00	
13	<b>Providing and supplying C.I. detachable joints</b> suitable for A. C. pressure pipes manufactured as per IS-1538-1993 standards of following calass and diameter including cost of insurance, railway freight, inspection charges, unloding from railway wagon, loding into truck, transporting to departmental store, unloading, stacking and cost of rubber rings, nut bolts. excluding GST levied by GOI & GOM in all respect etc. complete (IS-1538-1993)			
	<b>Class 10/15</b>			
	80 mm	Rmt	254.00	
	100 mm	Rmt	321.00	
	125 mm	Rmt	432.00	
	150 mm	Rmt	538.00	
	200 mm	Rmt	812.00	
	250 mm	Rmt	1017.00	
	300 mm	Rmt	1395.00	
	<b>Class 20</b>			
	80 mm	Rmt	392.00	
	100 mm	Rmt	408.00	
	125 mm	Rmt	507.00	
	150 mm	Rmt	608.00	
	200 mm	Rmt	817.00	
	250 mm	Rmt	1153.00	
	300 mm	Rmt	1651.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>II. P. V. C. PIPES</b>		
1	Providing and supplying in <b>standard lengths ISI mark rigid unplasticised PVC pipes</b> suitable for potable water with solvent cement joints including cost of couplers, as per IS specification no. 4985 / 1988 excluding GST levied by GOI and GOM in all respect, including transportation, freight charges, inspection charges, loading, unloading, conveyance to the departmental stores and stacking the same in closed shed duly protected from sun rays and rains including cost of jointing material i.e. solvent cement, etc. complete (selffit type to be jointed with cement solvent).		
	<b>Note : 1) 10% of cost of pipes shall be considered for cost of PVC specials for estimate purpose only.</b>		
	<b>2) One coupler and required cement solvent shall be provided with each full length pipe cost of which is included in rates below.</b>		
	<b>a) Working Pressure 4 Kg./Sq.cm.</b>		
	63 mm	Rmt	50.00
	75 mm	Rmt	71.00
	90 mm	Rmt	99.00
	110 mm	Rmt	135.00
	140 mm	Rmt	226.00
	160 mm	Rmt	297.00
	180 mm	Rmt	406.00
	200 mm	Rmt	501.00
	225 mm	Rmt	641.00
	250 mm	Rmt	783.00
	280 mm	Rmt	1041.00
	315 mm	Rmt	1324.00
	<b>b) Working Pressure 6 Kg./Sq.cm.</b>		
	63 mm	Rmt	71.00
	75 mm	Rmt	101.00
	90 mm	Rmt	147.00
	110 mm	Rmt	201.00
	140 mm	Rmt	335.00
	160 mm	Rmt	433.00
	180 mm	Rmt	575.00
	200 mm	Rmt	736.00
	225 mm	Rmt	928.00
	250 mm	Rmt	1158.00
	280 mm	Rmt	1527.00
	315 mm	Rmt	1949.00
	<b>c) Working Pressure 8 Kg./Sq.cm.</b>		
	63 mm	Rmt	98.00
	75 mm	Rmt	140.00
	90 mm	Rmt	198.00
	110 mm	Rmt	281.00
	140 mm	Rmt	465.00
	160 mm	Rmt	610.00
	180 mm	Rmt	807.00
	200 mm	Rmt	1015.00
	225 mm	Rmt	1289.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	250 mm	Rmt	1612.00
	280 mm	Rmt	2123.00
	315 mm	Rmt	2689.00
	<b>d) Working Pressure 10 Kg./Sq.cm.</b>		
	63 mm	Rmt	119.00
	75 mm	Rmt	169.00
	90 mm	Rmt	242.00
	110 mm	Rmt	342.00
	140 mm	Rmt	554.00
	160 mm	Rmt	725.00
	180 mm	Rmt	999.00
	200 mm	Rmt	1235.00
	225 mm	Rmt	1575.00
	250 mm	Rmt	1990.00
	280 mm	Rmt	2503.00
	315 mm	Rmt	3179.00
	<b>e) Working Pressure 12.5 Kg./Sq.cm.</b>		
	63 mm	Rmt	151.00
	75 mm	Rmt	212.00
	90 mm	Rmt	307.00
	110 mm	Rmt	434.00
	140 mm	Rmt	707.00
	160 mm	Rmt	930.00
	180 mm	Rmt	1271.00
	200 mm	Rmt	1576.00
	225 mm	Rmt	2003.00
	250 mm	Rmt	2533.00
	280 mm	Rmt	3188.00
	315 mm	Rmt	4064.00
2	<b>Providing and supplying in standard lengths ISI mark rigid unplastised PVC for potable water with rubber ring joints including cost of rubber ring as per IS-4985-1998, excluding GST levied by GOI and GOM in all respect, including transportation, freight charges, transit insurance, inspection charges, loading, unloading, conveyance to store and stacking the same in closed shed duly protected from sun rays and rains, etc. complete (with third party inspection) (socketed)</b>		
	<b>a) Working Pressure 4 Kg./Sq.cm.</b>		
	63 mm	Rmt	55.00
	75 mm	Rmt	77.00
	90 mm	Rmt	110.00
	110 mm	Rmt	151.00
	125 mm	Rmt	207.00
	140 mm	Rmt	251.00
	160 mm	Rmt	331.00
	180 mm	Rmt	450.00
	200 mm	Rmt	554.00
	225 mm	Rmt	712.00
	250 mm	Rmt	872.00
	280 mm	Rmt	1156.00
	315 mm	Rmt	1469.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>b) Working Pressure 6 Kg./Sq.cm.</b>		
	63 mm	Rmt	78.00
	75 mm	Rmt	113.00
	90 mm	Rmt	163.00
	110 mm	Rmt	222.00
	125 mm	Rmt	307.00
	140 mm	Rmt	373.00
	160 mm	Rmt	480.00
	180 mm	Rmt	641.00
	200 mm	Rmt	815.00
	225 mm	Rmt	1030.00
	250 mm	Rmt	1287.00
	280 mm	Rmt	1696.00
	315 mm	Rmt	2163.00
	<b>c) Working Pressure 8 Kg./Sq.cm.</b>		
	63 mm	Rmt	107.00
	75 mm	Rmt	157.00
	90 mm	Rmt	220.00
	110 mm	Rmt	311.00
	125 mm	Rmt	429.00
	140 mm	Rmt	516.00
	160 mm	Rmt	677.00
	180 mm	Rmt	898.00
	200 mm	Rmt	1128.00
	225 mm	Rmt	1431.00
	250 mm	Rmt	1789.00
	280 mm	Rmt	2358.00
	315 mm	Rmt	2988.00
	<b>d) Working Pressure 10 Kg./Sq.cm.</b>		
	63 mm	Rmt	132.00
	75 mm	Rmt	188.00
	90 mm	Rmt	268.00
	110 mm	Rmt	381.00
	125 mm	Rmt	523.00
	140 mm	Rmt	615.00
	160 mm	Rmt	805.00
	180 mm	Rmt	1109.00
	200 mm	Rmt	1371.00
	225 mm	Rmt	1749.00
	250 mm	Rmt	2212.00
	280 mm	Rmt	2780.00
	315 mm	Rmt	3532.00
	<b>e) Working Pressure 12.5 Kg./Sq.cm.</b>		
	63 mm	Rmt	166.00
	75 mm	Rmt	235.00
	90 mm	Rmt	341.00
	110 mm	Rmt	484.00
	125 mm	Rmt	667.00
	140 mm	Rmt	785.00
	160 mm	Rmt	1031.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	180 mm	Rmt	1411.00
	200 mm	Rmt	1750.00
	225 mm	Rmt	2225.00
	250 mm	Rmt	2812.00
	280 mm	Rmt	3539.00
	315 mm	Rmt	4510.00
3	Providing and supplying in <b>ISI mark rigid PVC-O class-500</b> s/s pipe (push on joints) pressure pipes confirming to IS specifications no 16647-2017 inclusive cost of EPDM gasket seals on joints including all statutory duties excluding GST levied by Government of India and Government of Maharashtra in all respect including third party inspection charges of agency approved by MJP, transit insurance loading, unloading charges conveyance to the departmental store / site and stacking the same in closed shade duly protected from sunrays etc complete.		
	<b>Note :-</b> a) 10% cost of pipe shall be considered for the cost of O-PVC/DI compatable specials for estimate purpose b) Diameter wise overlapping lengths are respectively, 110mm 2.92%, 160mm- 3.33%, 200mm 3.75%, 250mm 4.5%, 315mm 5.42%, 400mm 6.25%		
	<b>a) PVC -O-Class 500 - PN 12.5</b>		
	110 mm	Rmt	519.00
	160 mm	Rmt	895.00
	200 mm	Rmt	1226.00
	250 mm	Rmt	1681.00
	315 mm	Rmt	2180.00
	400 mm	Rmt	3360.00
	450 mm	Rmt	4045.00
	500 mm	Rmt	4687.00
	560 mm	Rmt	6248.00
	630 mm	Rmt	7947.00
	<b>b) PVC -O-Class 500 - PN 16</b>		
	110 mm	Rmt	622.00
	160 mm	Rmt	1042.00
	200 mm	Rmt	1292.00
	250 mm	Rmt	1818.00
	315 mm	Rmt	2291.00
	400 mm	Rmt	3495.00
	450 mm	Rmt	4609.00
	500 mm	Rmt	5751.00
	560 mm	Rmt	7161.00
	630 mm	Rmt	9071.00
	<b>c) PVC -O-Class 500 - PN 25</b>		
	110 mm	Rmt	775.00
	160 mm	Rmt	1126.00
	200 mm	Rmt	1532.00
	250 mm	Rmt	2144.00
	315 mm	Rmt	3344.00
	400 mm	Rmt	5072.00
	450 mm	Rmt	6496.00
	500 mm	Rmt	8040.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	560 mm	Rmt	10067.00
	630 mm	Rmt	12730.00
4	<b>Lowering, laying and jointing with P.V.C. pipes and specials</b> of following class and diameter including cost of conveyance from stores to site of works including cost of all labour, material, except cement solvent, rubber ring, as per IS code, etc. complete (with cement solvent joint / ring fit joint)		
	<b>Note: For PVC O pipes of all pressure 4 (b) rates applied.</b>		
	<b>a) Working Pressure 4 Kg./Sq.cm.</b>		
	63 mm	Rmt	18.00
	75 mm	Rmt	23.00
	90 mm	Rmt	28.00
	110 mm	Rmt	32.00
	125 mm	Rmt	34.00
	140 mm	Rmt	37.00
	160 mm	Rmt	42.00
	180 mm	Rmt	46.00
	200 mm	Rmt	50.00
	225 mm	Rmt	58.00
	250 mm	Rmt	63.00
	280 mm	Rmt	69.00
	315 mm	Rmt	78.00
	<b>b) Working Pressure 6 to 12.5 Kg./Sq.cm.</b>		
	63 mm	Rmt	24.00
	75 mm	Rmt	32.00
	90 mm	Rmt	36.00
	110 mm	Rmt	41.00
	125 mm	Rmt	44.00
	140 mm	Rmt	48.00
	160 mm	Rmt	51.00
	180 mm	Rmt	58.00
	200 mm	Rmt	64.00
	225 mm	Rmt	69.00
	250 mm	Rmt	76.00
	280 mm	Rmt	86.00
	315 mm	Rmt	95.00
	400 mm	Rmt	105.00
	450 mm	Rmt	114.00
	500 mm	Rmt	125.00
	560 mm	Rmt	136.00
	630 mm	Rmt	149.00
5	<b>Hydraulic testing of PVC pipe line</b> to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position.		
	<b>a) Working Pressure 4 Kg./Sq.cm.</b>		
	63 mm	Km	2255.00
	75 mm	Km	2255.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	90 mm	Km	3383.00
	110 mm	Km	3383.00
	125 mm	Km	3947.00
	140 mm	Km	4510.00
	160 mm	Km	4510.00
	180 mm	Km	5638.00
	200 mm	Km	5638.00
	225 mm	Km	6765.00
	250 mm	Km	6765.00
	280 mm	Km	7893.00
	315 mm	Km	9020.00
	<b>b) Working Pressure 6 to 12.5 Kg./Sq.cm.</b>		
	63 mm	Km	2255.00
	75 mm	Km	3383.00
	90 mm	Km	4510.00
	110 mm	Km	4510.00
	125 mm	Km	5074.00
	140 mm	Km	5638.00
	160 mm	Km	5638.00
	180 mm	Km	6765.00
	200 mm	Km	6765.00
	225 mm	Km	7893.00
	250 mm	Km	7893.00
	280 mm	Km	9020.00
	315 mm	Km	10148.00
	400 mm	Km	10148.00
	450 mm	Km	11275.00
	500 mm	Km	11275.00
	560 mm	Km	12403.00
	630 mm	Km	13530.00

**Note:**

**1)**

**Only 85% rate shall be payable till satisfactory hydraulic testing is given.**

**2) Third party inspecting agency shall invariably carry out.**

**I) Specific Gravity Test.**

**II) Weight / Rmt.**

**III) Ash Content Test and confirm in writing that those are within prescribed limits. This condition shall appear in tender conditions.**

**3) After receipt of pipes at site, concerned Deputy Engineer shall confirm that weight of pipe for every class and diameter is not less than the pre-scribed standard weight as per IS-4985/1998 (Which is given in CSR), Under weight pipes shall be rejected. This condition shall appear in the tender conditions.**

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>III. GI PIPES</b>		
1	Providing <b>ISI mark G.I. pipe</b> of following class and dia. excluding GST levied by GOI & GOM in all respect, inspection charges, transportation to stores, etc. complete as per IS-1239/2004. <b>Note :</b> One coupler shall be provided with each full length of pipe cost of which is included in rates below.		
<b>a)</b>	<b>LIGHT</b>		
	15 mm. ( 0.96 kg./m )	Rmt	64.00
	20 mm. ( 1.42 kg./m )	Rmt	95.00
	25 mm. ( 2.03 kg./m )	Rmt	130.00
	32 mm. ( 2.61 kg./m )	Rmt	165.00
	40 mm. ( 3.29 kg./m )	Rmt	207.00
	50 mm. ( 4.18 kg./m )	Rmt	253.00
	65 mm. ( 5.92 kg./m )	Rmt	348.00
	80 mm. ( 6.98 kg./m )	Rmt	418.00
	100 mm. ( 10.20 kg./m )	Rmt	593.00
<b>b)</b>	<b>MEDIUM</b>		
	15 mm. ( 1.23 kg./m )	Rmt	76.00
	20 mm. ( 1.59 kg./m )	Rmt	98.00
	25 mm. ( 2.40 kg./m )	Rmt	150.00
	32 mm. ( 3.17 kg./m )	Rmt	188.00
	40 mm. ( 3.65 kg./m )	Rmt	217.00
	50 mm. ( 5.16 kg./m )	Rmt	300.00
	65 mm. ( 6.63 kg./m )	Rmt	381.00
	80 mm. ( 8.64 kg./m )	Rmt	501.00
	100 mm. ( 12.40 kg./m )	Rmt	714.00
	125 mm ( 16.70 kg/m )	Rmt	972.00
	150 mm.( 19.70 kg./m )	Rmt	1143.00
<b>c)</b>	<b>HEAVY</b>		
	15 mm.	Rmt	87.00
	20 mm.	Rmt	112.00
	25 mm.	Rmt	175.00
	32 mm.	Rmt	222.00
	40 mm.	Rmt	257.00
	50 mm.	Rmt	356.00
	65 mm.	Rmt	458.00
	80 mm.	Rmt	585.00
	100 mm ( 14.70 kg./m )	Rmt	845.00
	125 mm ( 18.30 kg/m )	Rmt	1046.00
	150 mm ( 21.80 kg./m )	Rmt	1257.00
2	<b>Lowering, laying and jointing G. I. pipes and specials</b> of following class and diameter including conveyance from stores to site of works, all labour, etc. complete either underground or in vertical position, as directed by Engineer-in-charge.		
<b>a)</b>	<b>LIGHT</b>		
	15 mm. ( 0.96 kg./m )	Rmt	26.00
	20 mm. ( 1.42 kg./m )	Rmt	29.00
	25 mm. ( 2.03 kg./m )	Rmt	36.00
	32 mm. ( 2.61 kg./m )	Rmt	41.00
	40 mm. ( 3.29 kg./m )	Rmt	50.00
	50 mm. ( 4.18 kg./m )	Rmt	61.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	65 mm. ( 5.92 kg./m )	Rmt	88.00
	80 mm. ( 6.98 kg./m )	Rmt	97.00
	100 mm. ( 10.20 kg./m )	Rmt	117.00
<b>b)</b>	<b>MEDIUM</b>		
	15 mm. ( 1.23 kg./m )	Rmt	28.00
	20 mm. ( 1.59 kg./m )	Rmt	31.00
	25 mm. ( 2.40 kg./m )	Rmt	37.00
	32 mm. ( 3.17 kg./m )	Rmt	43.00
	40 mm. ( 3.65 kg./m )	Rmt	56.00
	50 mm. ( 5.16 kg./m )	Rmt	65.00
	65 mm. ( 6.63 kg./m )	Rmt	95.00
	80 mm. ( 8.64 kg./m )	Rmt	107.00
	100 mm. ( 12.40 kg./m )	Rmt	117.00
	125 mm ( 16.70 kg/m )	Rmt	125.00
	150 mm.( 19.70 kg./m )	Rmt	131.00
<b>c)</b>	<b>HEAVY</b>		
	15 mm.	Rmt	30.00
	20 mm.	Rmt	34.00
	25 mm.	Rmt	40.00
	32 mm.	Rmt	46.00
	40 mm.	Rmt	59.00
	50 mm.	Rmt	74.00
	65 mm.	Rmt	103.00
	80 mm.	Rmt	125.00
	100 mm ( 14.70 kg./m )	Rmt	117.00
	125 mm ( 18.30 kg/m )	Rmt	130.00
	150 mm ( 21.80 kg./m )	Rmt	140.00
	<b>Note : Only 85% rate shall be payable till satisfactory hydraulic testing is given.</b>		
<b>3</b>	<b>Hydraulic testing of G. I. pipe line</b> to specified pressure including cost of all materials and labour and water for testing for the length upto 1km using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour operation charges etc. required for testing, The rates under this item shall also include cost of retesting if necessary and reinstating to original postion.		
<b>a)</b>	<b>LIGHT</b>		
	15 mm. ( 0.96 kg./m )	Km	2255.00
	20 mm. ( 1.42 kg./m )	Km	3383.00
	25 mm. ( 2.03 kg./m )	Km	3383.00
	32 mm. ( 2.61 kg./m )	Km	4510.00
	40 mm. ( 3.29 kg./m )	Km	5638.00
	50 mm. ( 4.18 kg./m )	Km	6765.00
	65 mm. ( 5.92 kg./m )	Km	10148.00
	80 mm. ( 6.98 kg./m )	Km	11275.00
	100 mm. ( 10.20 kg./m )	Km	12403.00
<b>b)</b>	<b>MEDIUM</b>		
	15 mm. ( 1.23 kg./m )	Km	3383.00
	20 mm. ( 1.59 kg./m )	Km	3383.00
	25 mm. ( 2.40 kg./m )	Km	4510.00
	32 mm. ( 3.17 kg./m )	Km	4510.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	40 mm. ( 3.65 kg./m )	Km	5638.00
	50 mm. ( 5.16 kg./m )	Km	6765.00
	65 mm. ( 6.63 kg./m )	Km	10148.00
	80 mm. ( 8.64 kg./m )	Km	11275.00
	100 mm. ( 12.40 kg./m )	Km	12403.00
	125 mm ( 16.70 kg/m )	Km	13530.00
	150 mm.( 19.70 kg./m )	Km	14658.00
c)	<b>HEAVY</b>		
	15 mm.	Km	3383.00
	20 mm.	Km	3383.00
	25 mm.	Km	4510.00
	32 mm.	Km	5638.00
	40 mm.	Km	6765.00
	50 mm.	Km	7893.00
	65 mm.	Km	11275.00
	80 mm.	Km	13530.00
	100 mm ( 14.70 kg./m )	Km	12403.00
	125 mm ( 18.30 kg/m )	Km	14658.00
	150 mm ( 21.80 kg./m )	Km	15785.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>(IV) D.I. SPECIALS AND MECHANICAL FITTINGS</b>		
	<b>D.I. Socket and flanged fittings :-</b>		
1	Providing and supplying <b>D.I. fitting with ISI mark</b> socket pushon joints or flanged joints confirming to table 12 to 31 of IS 9523/2000 upto latest amendments including cost of SBR/ EDPM tyton rings. Fittings should be with internally ordinary portland cement mortor lined and externally metallic zinc coating/zinc rich paint with finishing layer of black bitumen coating including transportation & excluding all statutory duties and taxes such as GST levied by Gol and GoM in all respect etc. complete.		
	<b>Diameter in mm</b>		
I	<b>Double socket bend 90 degree</b>		
	80 mm dia	Nos	1091.00
	100 mm dia	Nos	1360.00
	150 mm dia	Nos	2450.00
	200 mm dia	Nos	3116.00
	250 mm dia	Nos	5958.00
	300 mm dia	Nos	8269.00
	350 mm dia	Nos	11679.00
	400 mm dia	Nos	15438.00
	450 mm dia	Nos	20136.00
	500 mm dia	Nos	25387.00
	600 mm dia	Nos	41220.00
	700 mm dia	Nos	64057.00
II	<b>Double socket bend 45 degree</b>		
	80 mm dia	Nos	1010.00
	100 mm dia	Nos	1225.00
	150 mm dia	Nos	1895.00
	200 mm dia	Nos	3221.00
	250 mm dia	Nos	4533.00
	300 mm dia	Nos	6347.00
	350 mm dia	Nos	8726.00
	400 mm dia	Nos	11410.00
	450 mm dia	Nos	14497.00
	500 mm dia	Nos	17840.00
	600 mm dia	Nos	27171.00
	700 mm dia	Nos	41503.00
III	<b>Double socket bend 22.50 degree</b>		
	80 mm dia	Nos	884.00
	100 mm dia	Nos	1136.00
	150 mm dia	Nos	1761.00
	200 mm dia	Nos	2718.00
	250 mm dia	Nos	3691.00
	300 mm dia	Nos	5440.00
	350 mm dia	Nos	7174.00
	400 mm dia	Nos	8898.00
	450 mm dia	Nos	11410.00
	500 mm dia	Nos	13997.00
	600 mm dia	Nos	21681.00
	700 mm dia	Nos	32549.00
IV	<b>Double socket bend 11.25 degree</b>		
	80 mm dia	Nos	884.00
	100 mm dia	Nos	1091.00
	150 mm dia	Nos	1628.00
	200 mm dia	Nos	2584.00
	250 mm dia	Nos	3581.00
	300 mm dia	Nos	4823.00
	350 mm dia	Nos	5720.00
	400 mm dia	Nos	7718.00
	450 mm dia	Nos	10202.00
	500 mm dia	Nos	12350.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	600 mm dia	Nos	18114.00
	700 mm dia	Nos	26156.00
<b>V</b>	<b>Double socket concentric reducer</b>		
	100 x 80 mm dia	Nos	1010.00
	150 x 80 mm dia	Nos	1628.00
	150 x 100 mm dia	Nos	1761.00
	200 x 80 mm dia	Nos	2526.00
	200 x 100 mm dia	Nos	2526.00
	200 x 150 mm dia	Nos	2680.00
	250 x 80 mm dia	Nos	3497.00
	250 x 100 mm dia	Nos	3366.00
	250 x 150 mm dia	Nos	3713.00
	250 x 200 mm dia	Nos	3581.00
	300 x 100 mm dia	Nos	4921.00
	300 x 150 mm dia	Nos	5052.00
	300 x 200 mm dia	Nos	4957.00
	300 x 250 mm dia	Nos	4662.00
	350 x 200 mm dia	Nos	6900.00
	350 x 250 mm dia	Nos	6719.00
	350 x 300 mm dia	Nos	6628.00
	400 x 200 mm dia	Nos	9129.00
	400 x 250 mm dia	Nos	8322.00
	400 x 300 mm dia	Nos	8055.00
	400 x 350 mm dia	Nos	7174.00
	450 x 350 mm dia	Nos	9665.00
	450 x 400 mm dia	Nos	8898.00
	500 x 350 mm dia	Nos	13052.00
	500 x 400 mm dia	Nos	12350.00
	500 x 450 mm dia	Nos	11663.00
	600 x 300 mm dia	Nos	19760.00
	600 x 350 mm dia	Nos	20337.00
	600 x 400 mm dia	Nos	19211.00
	600 x 450 mm dia	Nos	18663.00
	600 x 500 mm dia	Nos	17015.00
	700 x 450 mm dia	Nos	32388.00
	700 x 500 mm dia	Nos	28818.00
	700 x 600 mm dia	Nos	30697.00
	800 x 600 mm dia	Nos	40198.00
	800 x 700 mm dia	Nos	30141.00
<b>VI</b>	<b>All Socket Tee</b>		
	80 x 80 mm dia	Nos	1493.00
	100 x 80 mm dia	Nos	1761.00
	100 x 100 mm dia	Nos	1895.00
	150 x 80 mm dia	Nos	2526.00
	150 x 100 mm dia	Nos	2718.00
	150 x 150 mm dia	Nos	3121.00
	200 x 80 mm dia	Nos	3542.00
	200 x 100 mm dia	Nos	3809.00
	200 x 150 mm dia	Nos	4346.00
	200 x 200 mm dia	Nos	5055.00
	250 x 80 mm dia	Nos	4792.00
	250 x 100 mm dia	Nos	5091.00
	250 x 150 mm dia	Nos	5513.00
	250 x 200 mm dia	Nos	6476.00
	250 x 250 mm dia	Nos	7383.00
	300 x 80 mm dia	Nos	6068.00
	300 x 100 mm dia	Nos	6201.00
	300 x 150 mm dia	Nos	7447.00
	300 x 200 mm dia	Nos	8269.00
	300 x 250 mm dia	Nos	9067.00
	300 x 300 mm dia	Nos	10102.00
	350 x 80 mm dia	Nos	7785.00
	350 x 100 mm dia	Nos	7920.00
	350 x 150 mm dia	Nos	9129.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	350 x 200 mm dia	Nos	10067.00
	350 x 250 mm dia	Nos	12082.00
	350 x 300 mm dia	Nos	13424.00
	350 x 350 mm dia	Nos	13692.00
	400 x 80 mm dia	Nos	9800.00
	400 x 100 mm dia	Nos	9665.00
	400 x 150 mm dia	Nos	12082.00
	400 x 200 mm dia	Nos	12350.00
	400 x 250 mm dia	Nos	14095.00
	400 x 300 mm dia	Nos	15797.00
	400 x 400 mm dia	Nos	17452.00
	450 x 100 mm dia	Nos	12082.00
	450 x 150 mm dia	Nos	14095.00
	450 x 200 mm dia	Nos	15438.00
	450 x 250 mm dia	Nos	16070.00
	450 x 300 mm dia	Nos	17977.00
	450 x 350 mm dia	Nos	20136.00
	450 x 400 mm dia	Nos	22151.00
	450 x 450 mm dia	Nos	22553.00
	500 x 100 mm dia	Nos	14743.00
	500 x 150 mm dia	Nos	17153.00
	500 x 200 mm dia	Nos	17840.00
	500 x 250 mm dia	Nos	20583.00
	500 x 300 mm dia	Nos	21957.00
	500 x 400 mm dia	Nos	25387.00
VII	<b>Double Socket Tee with Flange branch-PN-10</b>		
	80 x 80 mm dia	Nos	1854.00
	100 x 80 mm dia	Nos	1986.00
	100 x 100 mm dia	Nos	2118.00
	150 x 80 mm dia	Nos	2780.00
	150 x 100 mm dia	Nos	2846.00
	150 x 150 mm dia	Nos	3574.00
	200 x 80 mm dia	Nos	3838.00
	200 x 100 mm dia	Nos	4102.00
	200 x 150 mm dia	Nos	4765.00
	200 x 200 mm dia	Nos	5493.00
	250 x 80 mm dia	Nos	5020.00
	250 x 100 mm dia	Nos	5089.00
	250 x 150 mm dia	Nos	6241.00
	250 x 200 mm dia	Nos	7055.00
	250 x 250 mm dia	Nos	8141.00
	300 x 80 mm dia	Nos	6513.00
	300 x 100 mm dia	Nos	6785.00
	300 x 150 mm dia	Nos	7734.00
	300 x 200 mm dia	Nos	8820.00
	300 x 250 mm dia	Nos	10042.00
	300 x 300 mm dia	Nos	10855.00
	350 x 80 mm dia	Nos	8155.00
	350 x 100 mm dia	Nos	8297.00
	350 x 150 mm dia	Nos	9843.00
	350 x 200 mm dia	Nos	10688.00
	350 x 250 mm dia	Nos	12658.00
	350 x 300 mm dia	Nos	15469.00
	350 x 350 mm dia	Nos	16031.00
	400 x 80 mm dia	Nos	9843.00
	400 x 100 mm dia	Nos	10266.00
	400 x 150 mm dia	Nos	11251.00
	400 x 200 mm dia	Nos	12938.00
	400 x 250 mm dia	Nos	15469.00
	400 x 300 mm dia	Nos	16031.00
	400 x 400 mm dia	Nos	20392.00
	450 x 80 mm dia	Nos	12235.00
	450 x 100 mm dia	Nos	12375.00
	450 x 150 mm dia	Nos	13782.00
	450 x 200 mm dia	Nos	15188.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	450 x 250 mm dia	Nos	16876.00
	450 x 300 mm dia	Nos	18845.00
	450 x 350 mm dia	Nos	23907.00
	450 x 400 mm dia	Nos	24049.00
	450 x 450 mm dia	Nos	24486.00
	500 x 80 mm dia	Nos	14663.00
	500 x 100 mm dia	Nos	14807.00
	500 x 150 mm dia	Nos	17683.00
	500 x 200 mm dia	Nos	18114.00
	500 x 250 mm dia	Nos	21563.00
	500 x 300 mm dia	Nos	22139.00
	500 x 400 mm dia	Nos	26021.00
VIII	<b>Flange Socket-PN-10</b>		
	80 mm dia	Nos	953.00
	100 mm dia	Nos	1071.00
	150 mm dia	Nos	1668.00
	200 mm dia	Nos	2499.00
	250 mm dia	Nos	3287.00
	300 mm dia	Nos	4314.00
	350 mm dia	Nos	5568.00
	400 mm dia	Nos	6834.00
	450 mm dia	Nos	7657.00
	500 mm dia	Nos	9316.00
	600 mm dia	Nos	13586.00
	700 mm dia	Nos	23478.00
IX	<b>Flange Spigot-PN-10</b>		
	80 mm dia	Nos	939.00
	100 mm dia	Nos	1183.00
	150 mm dia	Nos	1895.00
	200 mm dia	Nos	2720.00
	250 mm dia	Nos	3839.00
	300 mm dia	Nos	4908.00
	350 mm dia	Nos	7214.00
	400 mm dia	Nos	8227.00
	450 mm dia	Nos	10504.00
	500 mm dia	Nos	9636.00
	600 mm dia	Nos	20184.00
	700 mm dia	Nos	30419.00
X	<b>Blank Flange -PN-10</b>		
	80 mm dia	Nos	488.00
	100 mm dia	Nos	590.00
	150 mm dia	Nos	976.00
	200 mm dia	Nos	1342.00
	250 mm dia	Nos	2126.00
	300 mm dia	Nos	3053.00
	350 mm dia	Nos	4363.00
	400 mm dia	Nos	5420.00
	450 mm dia	Nos	7403.00
	500 mm dia	Nos	8775.00
	600 mm dia	Nos	12691.00
	700 mm dia	Nos	26399.00
XI	<b>Double Flange Bend 90 Deg -PN-10</b>		
	80 mm dia	Nos	1166.00
	100 mm dia	Nos	1399.00
	150 mm dia	Nos	2518.00
	200 mm dia	Nos	3670.00
	250 mm dia	Nos	6524.00
	300 mm dia	Nos	8827.00
	350 mm dia	Nos	11610.00
	400 mm dia	Nos	14890.00
	450 mm dia	Nos	21453.00
	500 mm dia	Nos	23713.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	600 mm dia	Nos	38148.00
	700 mm dia	Nos	73097.00
XII	<b>Double Flange Bend 45 Deg -PN-10</b>		
	80 mm dia	Nos	1107.00
	100 mm dia	Nos	1399.00
	150 mm dia	Nos	2214.00
	200 mm dia	Nos	3206.00
	250 mm dia	Nos	4879.00
	300 mm dia	Nos	9171.00
	350 mm dia	Nos	9717.00
	400 mm dia	Nos	12367.00
	450 mm dia	Nos	15142.00
	500 mm dia	Nos	23807.00
	600 mm dia	Nos	35402.00
	700 mm dia	Nos	50503.00
		Nos	
XIII	<b>Double Flange Duck Foot Bend -PN-10</b>		
	80 mm dia	Nos	1790.00
	100 mm dia	Nos	2237.00
	150 mm dia	Nos	3858.00
	200 mm dia	Nos	6054.00
	250 mm dia	Nos	9674.00
	300 mm dia	Nos	13458.00
	350 mm dia	Nos	19622.00
	400 mm dia	Nos	24229.00
	450 mm dia	Nos	34322.00
	500 mm dia	Nos	43712.00
	600 mm dia	Nos	61216.00
	700 mm dia	Nos	106913.00
XIV	<b>All Flange Tee -PN-10</b>		
	80 x 80 mm dia	Nos	1865.00
	100 x 80 mm dia	Nos	2098.00
	100 x 100 mm dia	Nos	2214.00
	150 x 80 mm dia	Nos	3263.00
	150 x 100 mm dia	Nos	3380.00
	150 x 150 mm dia	Nos	3730.00
	200 x 80 mm dia	Nos	4779.00
	200 x 100 mm dia	Nos	5036.00
	200 x 150 mm dia	Nos	5246.00
	200 x 200 mm dia	Nos	5712.00
	250 x 80 mm dia	Nos	6486.00
	250 x 100 mm dia	Nos	7762.00
	250 x 150 mm dia	Nos	7362.00
	250 x 200 mm dia	Nos	9075.00
	250 x 250 mm dia	Nos	9195.00
	300 x 80 mm dia	Nos	7777.00
	300 x 100 mm dia	Nos	10340.00
	300 x 150 mm dia	Nos	9080.00
	300 x 200 mm dia	Nos	11343.00
	300 x 250 mm dia	Nos	11109.00
	300 x 300 mm dia	Nos	13494.00
	350 x 80 mm dia	Nos	11505.00
	350 x 100 mm dia	Nos	14133.00
	350 x 150 mm dia	Nos	13190.00
	350 x 200 mm dia	Nos	14839.00
	350 x 250 mm dia	Nos	15960.00
	350 x 300 mm dia	Nos	17285.00
	350 x 350 mm dia	Nos	19306.00
	400 x 80 mm dia	Nos	13837.00
	400 x 100 mm dia	Nos	17585.00
	400 x 150 mm dia	Nos	15797.00
	400 x 200 mm dia	Nos	18297.00
	400 x 250 mm dia	Nos	19064.00
	400 x 300 mm dia	Nos	19937.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	400 x 400 mm dia	Nos	21453.00
	450 x 100 mm dia	Nos	22343.00
	450 x 150 mm dia	Nos	17883.00
	450 x 200 mm dia	Nos	23471.00
	450 x 250 mm dia	Nos	21179.00
	450 x 300 mm dia	Nos	22012.00
	450 x 350 mm dia	Nos	25237.00
	450 x 400 mm dia	Nos	25170.00
	450 x 450 mm dia	Nos	28393.00
	500 x 100 mm dia	Nos	27064.00
	500 x 150 mm dia	Nos	27450.00
	500 x 200 mm dia	Nos	27708.00
	500 x 250 mm dia	Nos	28352.00
	500 x 300 mm dia	Nos	34018.00
	500 x 400 mm dia	Nos	34520.00
	500 x 500 mm dia	Nos	37614.00
	600 x 100 mm dia	Nos	44678.00
	600 x 150 mm dia	Nos	45141.00
	600 x 200 mm dia	Nos	44779.00
	600 x 250 mm dia	Nos	47941.00
	600 x 300 mm dia	Nos	46467.00
	600 x 400 mm dia	Nos	48275.00
	600 x 500 mm dia	Nos	48312.00
	600 x 600 mm dia	Nos	53406.00
XV	<b>Double Socket Level Invert Flange Branch Tee PN10</b>		
	200 x 80 mm dia	Nos	3334.00
	250 x 80 mm dia	Nos	4347.00
	300 x 80 mm dia	Nos	5802.00
	350 x 80 mm dia	Nos	7249.00
	350 x 100 mm dia	Nos	7926.00
	400 x 100 mm dia	Nos	9478.00
	450 x 80 mm dia	Nos	11522.00
	450 x 100 mm dia	Nos	11766.00
	500 x 80 mm dia	Nos	13214.00
	500 x 100 mm dia	Nos	14464.00
XVI	<b>Cap</b>		
	80 mm dia	Nos	445.00
	100 mm dia	Nos	573.00
	150 mm dia	Nos	1017.00
	200 mm dia	Nos	1812.00
	250 mm dia	Nos	2179.00
	300 mm dia	Nos	3435.00
	350 mm dia	Nos	5557.00
	400 mm dia	Nos	7249.00
	450 mm dia	Nos	9181.00
	500 mm dia	Nos	11238.00
	600 mm dia	Nos	15684.00
	700 mm dia	Nos	27827.00
XVII	<b>Plug</b>		
	80 mm dia	Nos	326.00
	100 mm dia	Nos	557.00
	150 mm dia	Nos	989.00
	200 mm dia	Nos	1531.00
	250 mm dia	Nos	2118.00
	300 mm dia	Nos	3339.00
	350 mm dia	Nos	5315.00
	400 mm dia	Nos	6282.00
	450 mm dia	Nos	8318.00
	500 mm dia	Nos	10127.00
	600 mm dia	Nos	14995.00
	<b>D.I. FITTINGS (Mechanical Joints)</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1	Providing and supplying D.I. fittings with <b>ISI mark Mechanical joint</b> confirming to tables 12 to table 31 of IS 9523/2000 upto latest amendments including cost of SBR/ EDPM gaskets, Nuts, Bolts, Washers and Ductile iron follower glands. Fittings should be with internally Ordinary portland cement mortar lined and externally metallic zinc coating/zinc rich paint with finishing layer of black bitumen coating including transportation and excluding all statutory duties and taxes such as GST levied by Gol and GoM in all respect etc. complete.		
I	<b>MJ Collar/Coupling</b>		
	80 mm dia	Nos	2098.00
	100 mm dia	Nos	2292.00
	150 mm dia	Nos	2805.00
	200 mm dia	Nos	5015.00
	250 mm dia	Nos	6635.00
	300 mm dia	Nos	8600.00
	350 mm dia	Nos	12167.00
	400 mm dia	Nos	15223.00
	450 mm dia	Nos	17619.00
	500 mm dia	Nos	22771.00
	600 mm dia	Nos	28761.00
	700 mm dia	Nos	39467.00
II	<b>Double Socket Bend 90 degree</b>		
	80 mm dia	Nos	1126.00
	100 mm dia	Nos	1418.00
	150 mm dia	Nos	2445.00
	200 mm dia	Nos	3669.00
	250 mm dia	Nos	5200.00
	300 mm dia	Nos	6949.00
	350 mm dia	Nos	10114.00
	400 mm dia	Nos	13023.00
	450 mm dia	Nos	16844.00
	500 mm dia	Nos	19211.00
	600 mm dia	Nos	28060.00
III	<b>Double Socket Bend 45 degree</b>		
	80 mm dia	Nos	1126.00
	100 mm dia	Nos	1320.00
	150 mm dia	Nos	2066.00
	200 mm dia	Nos	3154.00
	250 mm dia	Nos	4242.00
	300 mm dia	Nos	5930.00
	350 mm dia	Nos	8819.00
	400 mm dia	Nos	11254.00
	450 mm dia	Nos	12867.00
	500 mm dia	Nos	14987.00
	600 mm dia	Nos	21524.00
IV	<b>Double Socket Bend 22.5 degree</b>		
	80 mm dia	Nos	1040.00
	100 mm dia	Nos	1320.00
	150 mm dia	Nos	1980.00
	200 mm dia	Nos	2825.00
	250 mm dia	Nos	3766.00
	300 mm dia	Nos	5270.00
	350 mm dia	Nos	7629.00
	400 mm dia	Nos	9306.00
	450 mm dia	Nos	11687.00
	500 mm dia	Nos	13950.00
	600 mm dia	Nos	18015.00
V	<b>Double Socket Bend 11.25 degree</b>		
	80 mm dia	Nos	1040.00
	100 mm dia	Nos	1365.00
	150 mm dia	Nos	1883.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	200 mm dia	Nos	2727.00
	250 mm dia	Nos	3582.00
	300 mm dia	Nos	4805.00
	350 mm dia	Nos	6601.00
	400 mm dia	Nos	8495.00
	450 mm dia	Nos	11002.00
	500 mm dia	Nos	13148.00
	600 mm dia	Nos	16341.00
<b>VI</b>	<b>Double socket concentric reducer</b>		
	100 x 80 mm dia	Nos	1853.00
	150 x 80 mm dia	Nos	2670.00
	150 x 100 mm dia	Nos	2910.00
	200 x 80 mm dia	Nos	3757.00
	200 x 100 mm dia	Nos	3770.00
	200 x 150 mm dia	Nos	4194.00
	250 x 80 mm dia	Nos	4913.00
	250 x 100 mm dia	Nos	5136.00
	250 x 150 mm dia	Nos	5475.00
	250 x 200 mm dia	Nos	5475.00
	300 x 100 mm dia	Nos	6810.00
	300 x 150 mm dia	Nos	7145.00
	300 x 200 mm dia	Nos	6867.00
	300 x 250 mm dia	Nos	7369.00
	350 x 200 mm dia	Nos	10379.00
	350 x 300 mm dia	Nos	10798.00
	400 x 200 mm dia	Nos	12868.00
	400 x 300 mm dia	Nos	13111.00
	400 x 350 mm dia	Nos	12328.00
	450 x 400 mm dia	Nos	14965.00
	500 x 300 mm dia	Nos	19980.00
	500 x 350 mm dia	Nos	18540.00
	500 x 400 mm dia	Nos	18290.00
	600 x 350 mm dia	Nos	25707.00
	600 x 400 mm dia	Nos	25430.00
	600 x 500 mm dia	Nos	23674.00
<b>VII</b>	<b>All Socket Tee</b>		
	80 x 80 mm dia	Nos	2518.00
	100 x 80 mm dia	Nos	2959.00
	100 x 100 mm dia	Nos	3180.00
	150 x 80 mm dia	Nos	4285.00
	150 x 100 mm dia	Nos	4507.00
	150 x 150 mm dia	Nos	5186.00
	200 x 80 mm dia	Nos	5577.00
	200 x 100 mm dia	Nos	5986.00
	200 x 150 mm dia	Nos	6802.00
	200 x 200 mm dia	Nos	7952.00
	250 x 80 mm dia	Nos	7244.00
	250 x 100 mm dia	Nos	7619.00
	250 x 150 mm dia	Nos	8281.00
	250 x 200 mm dia	Nos	9625.00
	250 x 250 mm dia	Nos	10645.00
	300 x 80 mm dia	Nos	9167.00
	300 x 100 mm dia	Nos	9387.00
	300 x 150 mm dia	Nos	10952.00
	300 x 200 mm dia	Nos	11989.00
	300 x 250 mm dia	Nos	13314.00
	300 x 300 mm dia	Nos	14505.00
	350 x 80 mm dia	Nos	13179.00
	350 x 100 mm dia	Nos	13434.00
	350 x 150 mm dia	Nos	14965.00
	350 x 200 mm dia	Nos	16154.00
	350 x 250 mm dia	Nos	18791.00
	350 x 300 mm dia	Nos	20831.00
	350 x 350 mm dia	Nos	22192.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	400 x 80 mm dia	Nos	16835.00
	400 x 100 mm dia	Nos	16750.00
	400 x 150 mm dia	Nos	19705.00
	400 x 200 mm dia	Nos	20319.00
	400 x 250 mm dia	Nos	22021.00
	400 x 300 mm dia	Nos	23978.00
	400 x 400 mm dia	Nos	28143.00
	450 x 100 mm dia	Nos	20342.00
	450 x 150 mm dia	Nos	23038.00
	450 x 200 mm dia	Nos	23528.00
	450 x 250 mm dia	Nos	24658.00
	450 x 300 mm dia	Nos	27123.00
	450 x 350 mm dia	Nos	32352.00
	450 x 400 mm dia	Nos	32995.00
	450 x 450 mm dia	Nos	34181.00
	500 x 100 mm dia	Nos	21295.00
	500 x 150 mm dia	Nos	24426.00
	500 x 200 mm dia	Nos	24928.00
	500 x 250 mm dia	Nos	29993.00
	500 x 300 mm dia	Nos	30940.00
	500 x 400 mm dia	Nos	34573.00
VIII	<b>Double Socket Tee with Flange branch-PN-10</b>		
	80 x 80 mm dia	Nos	2746.00
	100 x 80 mm dia	Nos	3228.00
	100 x 100 mm dia	Nos	3469.00
	150 x 80 mm dia	Nos	4675.00
	150 x 100 mm dia	Nos	4916.00
	150 x 150 mm dia	Nos	5657.00
	200 x 80 mm dia	Nos	6084.00
	200 x 100 mm dia	Nos	6530.00
	200 x 150 mm dia	Nos	7420.00
	200 x 200 mm dia	Nos	8675.00
	250 x 80 mm dia	Nos	7903.00
	250 x 100 mm dia	Nos	8311.00
	250 x 150 mm dia	Nos	9034.00
	250 x 200 mm dia	Nos	10500.00
	250 x 250 mm dia	Nos	11613.00
	300 x 80 mm dia	Nos	9999.00
	300 x 100 mm dia	Nos	10240.00
	300 x 150 mm dia	Nos	11947.00
	300 x 200 mm dia	Nos	13078.00
	300 x 250 mm dia	Nos	14525.00
	300 x 300 mm dia	Nos	15824.00
	350 x 80 mm dia	Nos	14377.00
	350 x 100 mm dia	Nos	14655.00
	350 x 150 mm dia	Nos	16324.00
	350 x 200 mm dia	Nos	17623.00
	350 x 250 mm dia	Nos	20499.00
	350 x 300 mm dia	Nos	22724.00
	350 x 350 mm dia	Nos	24209.00
	400 x 80 mm dia	Nos	18334.00
	400 x 100 mm dia	Nos	18272.00
	400 x 150 mm dia	Nos	21497.00
	400 x 200 mm dia	Nos	22166.00
	400 x 250 mm dia	Nos	24023.00
	400 x 300 mm dia	Nos	26158.00
	400 x 400 mm dia	Nos	30702.00
	450 x 80 mm dia	Nos	22191.00
	450 x 100 mm dia	Nos	25133.00
	450 x 150 mm dia	Nos	25668.00
	450 x 200 mm dia	Nos	26899.00
	450 x 250 mm dia	Nos	29589.00
	450 x 300 mm dia	Nos	35293.00
	450 x 350 mm dia	Nos	35995.00
	450 x 400 mm dia	Nos	37289.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	450 x 450 mm dia	Nos	23231.00
	500 x 80 mm dia	Nos	26647.00
	500 x 100 mm dia	Nos	27194.00
	500 x 150 mm dia	Nos	32719.00
	500 x 200 mm dia	Nos	33753.00
	500 x 250 mm dia	Nos	37716.00
	500 x 300 mm dia	Nos	32124.00
	500 x 400 mm dia	Nos	36213.00
	500 x 500 mm dia	Nos	42500.00
IX	<b>Flange Socket-PN-10</b>		
	80 mm dia	Nos	1452.00
	100 mm dia	Nos	1594.00
	150 mm dia	Nos	2417.00
	200 mm dia	Nos	3369.00
	250 mm dia	Nos	4642.00
	300 mm dia	Nos	6073.00
	350 mm dia	Nos	9016.00
	400 mm dia	Nos	10936.00
	450 mm dia	Nos	12270.00
	500 mm dia	Nos	14692.00
	600 mm dia	Nos	20452.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	<b>RCC PIPES</b>			
1	Providing <b>ISI standard R.C.C. pipes</b> in standard lengths of following class and diameter suitable for either collar joints or rubber ring joints, excluding all statutory duties and taxes such as GST levied by Gol and GoM in all respect, inspection charges, transport to departmental stores/site, unloading and stacking etc. complete as per IS-458/1988 <b>Note : One collar should be supplied with each full length plain ended RCC pipe, cost including in rates below. One rubber ring should be supplied with each full length of socketed pipe, cost included in rates below.</b>			
	<b>a) Class 'P-I'</b>		<b>Collar Joint</b>	<b>R/R Joint</b>
	80 mm	Rmt	272.00	240.00
	100 mm	Rmt	284.00	258.00
	150 mm.	Rmt	300.00	266.00
	200 mm.	Rmt	348.00	312.00
	225 mm.	Rmt	397.00	357.00
	250 mm.	Rmt	435.00	390.00
	300 mm.	Rmt	556.00	497.00
	350 mm.	Rmt	599.00	538.00
	400 mm.	Rmt	760.00	687.00
	450 mm.	Rmt	935.00	844.00
	500 mm.	Rmt	1126.00	1013.00
	600 mm.	Rmt	1419.00	1280.00
	700 mm.	Rmt	1849.00	1663.00
	800 mm.	Rmt	2134.00	1919.00
	900 mm.	Rmt	2685.00	2417.00
	1000 mm.	Rmt	3147.00	2834.00
	1100 mm.	Rmt	3574.00	3218.00
	1200 mm.	Rmt	4294.00	3869.00
	<b>Class, 'P-II'</b>			
	80 mm	Rmt	290.00	256.00
	100 mm	Rmt	308.00	277.00
	150 mm	Rmt	369.00	333.00
	200 mm	Rmt	496.00	450.00
	225 mm	Rmt	588.00	530.00
	250 mm.	Rmt	637.00	579.00
	300 mm.	Rmt	841.00	802.00
	350 mm.	Rmt	1050.00	950.00
	400 mm.	Rmt	1171.00	1066.00
	450 mm	Rmt	1420.00	1274.00
	500 mm	Rmt	1983.00	1807.00
	600 mm	Rmt	2459.00	2217.00
	700 mm.	Rmt	3350.00	3047.00
	800 mm.	Rmt	4028.00	3671.00
	900 mm.	Rmt	4538.00	4572.00
	1000 mm.	Rmt	5491.00	4944.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	<b>Class 'P-III'</b>			
	80mm.	Rmt	312.00	307.00
	100 mm.	Rmt	338.00	332.00
	150 mm.	Rmt	384.00	384.00
	200 mm	Rmt	522.00	522.00
	225 mm	Rmt	622.00	622.00
	250 mm	Rmt	728.00	727.00
	300 mm	Rmt	1013.00	1012.00
	350 mm	Rmt	1320.00	1320.00
	400 mm	Rmt	1817.00	1817.00
	450 mm	Rmt	2112.00	2086.00
	500 mm	Rmt	2545.00	2544.00
	600 mm	Rmt	3268.00	3268.00
	700 mm.	Rmt	4663.00	4662.00
	800 mm.	Rmt	5921.00	5921.00
	<b>Class 'NP-II'</b>			
	<b>( For 2.00 m. length )</b>			
	80 mm.	Rmt	234.00	236.00
	100 mm.	Rmt	240.00	245.00
	150 mm.	Rmt	262.00	262.00
	200 mm.	Rmt	327.00	327.00
	225 mm	Rmt	366.00	373.00
	250 mm	Rmt	394.00	402.00
	300 mm	Rmt	510.00	510.00
	<b>( For 2.50 m. length )</b>			
	350 mm.	Rmt	644.00	657.00
	400 mm.	Rmt	743.00	743.00
	450 mm.	Rmt	878.00	891.00
	500 mm	Rmt	941.00	941.00
	600 mm	Rmt	1188.00	1188.00
	700 mm	Rmt	1584.00	1584.00
	800 mm.	Rmt	1782.00	1782.00
	900 mm.	Rmt	2277.00	2277.00
	1000 mm	Rmt	2772.00	2772.00
	1100 mm	Rmt	3780.00	3780.00
	1200 mm.	Rmt	4512.00	4512.00
	1400 mm.	Rmt	5465.00	5574.00
	1600 mm.	Rmt	6275.00	6400.00
	1800 mm.	Rmt	8789.00	8965.00
	<b>Class NP-III</b>			
	<b>(For 2.50 M. length)</b>			
	80mm	Rmt	265.00	269.00
	100 mm	Rmt	291.00	306.00
	150 mm	Rmt	331.00	337.00
	200mm	Rmt	455.00	372.00
	225 mm	Rmt	510.00	434.00
	250 mm	Rmt	540.00	510.00
	300 mm	Rmt	701.00	714.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	5
	350 mm.	Rmt	1239.00	1188.00
	400 mm.	Rmt	1388.00	1267.00
	450 mm.	Rmt	1651.00	1366.00
	500 mm	Rmt	1833.00	1683.00
	600 mm	Rmt	2415.00	1980.00
	700 mm.	Rmt	3218.00	2772.00
	800 mm.	Rmt	3911.00	2970.00
	900 mm	Rmt	4518.00	3466.00
	1000 mm	Rmt	5148.00	3862.00
	1100 mm	Rmt	6394.00	6522.00
	1200 mm.	Rmt	7435.00	7435.00
	1400 mm	Rmt	8742.00	8742.00
	1600 mm	Rmt	13135.00	13263.00
	1800 mm	Rmt	16233.00	16233.00
	<b>Class 'NP-IV'</b>			
	80 mm.	Rmt	285.00	290.00
	100 mm.	Rmt	334.00	340.00
	150 mm.	Rmt	378.00	386.00
	200 mm.	Rmt	528.00	421.00
	225 mm.	Rmt	582.00	495.00
	250 mm.	Rmt	639.00	582.00
	300 mm.	Rmt	896.00	891.00
	350 mm.	Rmt	1361.00	1267.00
	400 mm.	Rmt	1457.00	1386.00
	450 mm.	Rmt	1718.00	1485.00
	500 mm.	Rmt	2100.00	1832.00
	600 mm.	Rmt	2568.00	2376.00
	700 mm.	Rmt	3844.00	2970.00
	800 mm.	Rmt	4390.00	3218.00
	900 mm.	Rmt	5140.00	3763.00
	1000 mm.	Rmt	7278.00	4159.00
	1100 mm.	Rmt	7895.00	7981.00
	1200 mm.	Rmt	7931.00	8089.00
	1400 mm.	Rmt	12383.00	11522.00
	1600 mm.	Rmt	15439.00	15481.00
	1800 mm.	Rmt	21164.00	19980.00
	<b>Note : Only 85% rate is payable till satisfactory hydraulic testing is given.</b>			
2	<b>Lowering, laying and jointing</b> in proper grade and alignment R.C.C. pipes with collar joints in C.M.1:1 proportion or socketed R.C.C. pipes with rubber joints (excluding cost of rubber ring or R.C.C. collar,) including cost of conveyance from stores to site of work, cost of jointing material, labour, etc. complete as directed by Engineerin- charge <b>(For all class of pipes.) as per IS- 783-1985.</b>		<b>Collar Joint</b>	<b>R/R Joint</b>
	80 mm.	Rmt	48.00	35.00
	100 mm.	Rmt	57.00	41.00
	150 mm.	Rmt	88.00	62.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
			4	5
1	2	3		
	200 mm.	Rmt	117.00	83.00
	225 mm.	Rmt	136.00	96.00
	250 mm.	Rmt	153.00	107.00
	300 mm.	Rmt	185.00	130.00
	350 mm.	Rmt	189.00	133.00
	400 mm.	Rmt	241.00	171.00
	450 mm.	Rmt	294.00	204.00
	500 mm.	Rmt	319.00	222.00
	600 mm.	Rmt	404.00	279.00
	700 mm.	Rmt	457.00	317.00
	800 mm.	Rmt	529.00	366.00
	900 mm.	Rmt	582.00	405.00
	1000 mm.	Rmt	637.00	443.00
	1100 mm.	Rmt	886.00	600.00
	1200 mm.	Rmt	939.00	638.00
	1400 mm.	Rmt	1046.00	716.00
	1600 mm.	Rmt	1154.00	793.00
	1800 mm.	Rmt	1262.00	869.00
3	<b>Hydraulic testing of RCC pipe line</b> to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position.		<b>Collar Joint</b>	<b>R/R Joint</b>
	80 mm.	Km	5638.00	3383.00
	100 mm.	Km	6765.00	4510.00
	150 mm.	Km	10148.00	6765.00
	200 mm.	Km	12403.00	9020.00
	225 mm.	Km	14658.00	10148.00
	250 mm.	Km	16913.00	12403.00
	300 mm.	Km	20295.00	14658.00
	350 mm.	Km	21423.00	14658.00
	400 mm.	Km	27060.00	19168.00
	450 mm.	Km	32698.00	22550.00
	500 mm.	Km	34953.00	24805.00
	600 mm.	Km	45100.00	31570.00
	700 mm.	Km	50738.00	34953.00
	800 mm.	Km	58630.00	40590.00
	900 mm.	Km	64268.00	45100.00
	1000 mm.	Km	71033.00	49610.00
	1100 mm.	Km	98093.00	66523.00
	1200 mm.	Km	104858.00	71033.00
	1400 mm.	Km	116133.00	80053.00
	1600 mm.	Km	128535.00	87945.00
	1800 mm.	Km	139810.00	96965.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>VI. P. S. C. PIPES</b>		
1	Providing <b>ISI standard Pre - stressed Cement concrete</b> pipes of following class and diameter including cost of all material and labour required, cost, inspection charges, transportaion to stores, unloading and stacking excluding GST levied by GI & GOM in all respect etc. complete as per IS- 784-2001.		
	<b>i) Factory test pressure</b> a) Site test pressure + 01N/mm2, For working pressure upto 1 N/mm2 b) Site test pressure + 02N/mm2, For working pressure upto 1 N/mm2 <b>ii) Site test pressure</b> - 1.5 times working pressure pertaining to the section or 1.1 times static pressure, which ever is more (such pressure is to be control within 25% of pumphead incase of pumping main) <b>iii) Working pessure</b> - The maximum sustained internal pressure excluding surge to which each portion of pipeline my be subjected when installed.		
	<b>Note : One rubber ring should be supplied with each pipe, cost included in rates below.</b>		
	<b>a) Factory test Pressure 2 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3131.00
	400	Rmt	3369.00
	450	Rmt	3534.00
	500	Rmt	3890.00
	600	Rmt	4677.00
	700	Rmt	5207.00
	800	Rmt	6431.00
	900	Rmt	7997.00
	1000	Rmt	9323.00
	1100	Rmt	10647.00
	1200	Rmt	12302.00
	1300	Rmt	14225.00
	1400	Rmt	15652.00
	1500	Rmt	17914.00
	1600	Rmt	19869.00
	1700	Rmt	21825.00
	1800	Rmt	23781.00
	<b>b) Factory test Pressure 4 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3131.00
	400	Rmt	3370.00
	450	Rmt	3534.00
	500	Rmt	3890.00
	600	Rmt	4678.00
	700	Rmt	5209.00
	800	Rmt	6431.00
	900	Rmt	7998.00
	1000	Rmt	9326.00
	1100	Rmt	10649.00
	1200	Rmt	12303.00
	1300	Rmt	14229.00
	1400	Rmt	15653.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	1500	Rmt	17918.00
	1600	Rmt	19872.00
	1700	Rmt	21829.00
	1800	Rmt	23784.00
	<b>c) Factory test Pressure 6 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3137.00
	400	Rmt	3388.00
	450	Rmt	3544.00
	500	Rmt	3919.00
	600	Rmt	4740.00
	700	Rmt	5390.00
	800	Rmt	6668.00
	900	Rmt	8314.00
	1000	Rmt	9697.00
	1100	Rmt	11041.00
	1200	Rmt	12789.00
	1300	Rmt	14775.00
	1400	Rmt	16256.00
	1500	Rmt	18621.00
	1600	Rmt	20681.00
	1700	Rmt	22741.00
	1800	Rmt	24800.00
	<b>d) Factory test Pressure 8 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3140.00
	400	Rmt	3413.00
	450	Rmt	3566.00
	500	Rmt	3974.00
	600	Rmt	4900.00
	700	Rmt	5662.00
	800	Rmt	6951.00
	900	Rmt	8667.00
	1000	Rmt	10133.00
	1100	Rmt	11595.00
	1200	Rmt	13426.00
	1300	Rmt	15529.00
	1400	Rmt	17163.00
	1500	Rmt	19667.00
	1600	Rmt	22190.00
	1700	Rmt	24714.00
	1800	Rmt	27241.00
	<b>e) Factory test Pressure 10 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3157.00
	400	Rmt	3458.00
	450	Rmt	3690.00
	500	Rmt	4133.00
	600	Rmt	5111.00
	700	Rmt	5889.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	800	Rmt	7306.00
	900	Rmt	9104.00
	1000	Rmt	10663.00
	1100	Rmt	12236.00
	1200	Rmt	14175.00
	1300	Rmt	16412.00
	1400	Rmt	18551.00
	1500	Rmt	21268.00
	1600	Rmt	23698.00
	1700	Rmt	26131.00
	1800	Rmt	28563.00
	<b>f) Factory test Pressure 12 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3158.00
	400	Rmt	3468.00
	450	Rmt	3719.00
	500	Rmt	4175.00
	600	Rmt	5190.00
	700	Rmt	6012.00
	800	Rmt	7476.00
	900	Rmt	9295.00
	1000	Rmt	10892.00
	1100	Rmt	12485.00
	1200	Rmt	14715.00
	1300	Rmt	16945.00
	1400	Rmt	18856.00
	1500	Rmt	21591.00
	1600	Rmt	24060.00
	1700	Rmt	26526.00
	1800	Rmt	28994.00
	<b>g) Factory test Pressure 14 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3236.00
	400	Rmt	3561.00
	450	Rmt	3833.00
	500	Rmt	4310.00
	600	Rmt	5391.00
	700	Rmt	6272.00
	800	Rmt	7814.00
	900	Rmt	9739.00
	1000	Rmt	11617.00
	1100	Rmt	13350.00
	1200	Rmt	15476.00
	1300	Rmt	17866.00
	1400	Rmt	20360.00
	1500	Rmt	23330.00
	1600	Rmt	26090.00
	1700	Rmt	28851.00
	1800	Rmt	31610.00
	<b>h) Factory test Pressure 16 Kg/Sqcm</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>Dia. in mm</b>		
	350	Rmt	3308.00
	400	Rmt	3656.00
	450	Rmt	3952.00
	500	Rmt	4454.00
	600	Rmt	5588.00
	700	Rmt	6536.00
	800	Rmt	8152.00
	900	Rmt	10821.00
	1000	Rmt	12178.00
	1100	Rmt	14615.00
	1200	Rmt	16870.00
	1300	Rmt	19418.00
	1400	Rmt	21433.00
	1500	Rmt	25457.00
	1600	Rmt	28555.00
	1700	Rmt	31651.00
	1800	Rmt	34746.00
	<b>i) Factory test Pressure 18 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3383.00
	400	Rmt	3757.00
	450	Rmt	4065.00
	500	Rmt	4592.00
	600	Rmt	5788.00
	700	Rmt	7148.00
	800	Rmt	8920.00
	900	Rmt	11281.00
	1000	Rmt	13257.00
	1100	Rmt	15299.00
	1200	Rmt	17683.00
	1300	Rmt	20367.00
	1400	Rmt	26876.00
	1500	Rmt	30304.00
	1600	Rmt	34158.00
	1700	Rmt	38008.00
	1800	Rmt	41859.00
	<b>j) Factory test Pressure 20 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	350	Rmt	3462.00
	400	Rmt	3847.00
	450	Rmt	4183.00
	500	Rmt	4734.00
	600	Rmt	5992.00
	700	Rmt	7918.00
	800	Rmt	10535.00
	900	Rmt	12452.00
	1000	Rmt	14980.00
	1100	Rmt	17808.00
	1200	Rmt	22395.00
	1300	Rmt	24641.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	1400	Rmt	28787.00
	1500	Rmt	32634.00
	1600	Rmt	36498.00
	1700	Rmt	40361.00
	1800	Rmt	44225.00
	Note : 1) Only 85% rates of providing item shall be payable till satisfactory hydraulic testing is given.		
2	<b>Lowering, laying and jointing</b> in proper grade and alignment Pre-Stressed Cement Concrete Pipes with rubber ring joints including cost of conveyance from stores to site of works, all labour involved, etc. complete but excluding cost of rubber rings (for all class of pipes)		
	350	Rmt	116.00
	400	Rmt	163.00
	450	Rmt	197.00
	500	Rmt	222.00
	600	Rmt	298.00
	700	Rmt	326.00
	800	Rmt	367.00
	900	Rmt	378.00
	1000	Rmt	488.00
	1100	Rmt	641.00
	1200	Rmt	686.00
	1300	Rmt	815.00
	1400	Rmt	860.00
	1500	Rmt	1085.00
	1600	Rmt	1221.00
	1700	Rmt	1360.00
	1800	Rmt	1322.00
3	<b>Hydraulic testing of Pre-Stressed Cement Concrete Pipes</b> with rubber ring joints to specified pressure including cost of all materials and labour and water for testing for the length upto 1 km., using reciprocating type pumps which should be able to provide specified test pressure guages and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary.		
	350	Km	12403.00
	400	Km	18040.00
	450	Km	21423.00
	500	Km	24805.00
	600	Km	32698.00
	700	Km	36080.00
	800	Km	40590.00
	900	Km	41718.00
	1000	Km	54120.00
	1100	Km	71033.00
	1200	Km	76670.00
	1300	Km	90200.00
	1400	Km	95838.00
	1500	Km	120643.00
	1600	Km	135300.00



<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	1700	Km	151085.00
	1800	Km	160105.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>VII. BAR WRAPPED STEEL CYLINDER PIPES (BWSC)</b>		
1	Providing and supplying European Standard EN 639/1994 and EN 641/1994 or AWWA C-303 standard and reinforced concrete pressure pipes cylinder type or IS-15155-2002 (Bar wrapped steel cylinder pipes suitable for overlapping steel welded joint or butt welded steel joints) of following class and diameter including cost of all material and labour required, inspection charges, transportation to stores, transit insurance, loading, unloading and stacking excluding GST levied by GOI & GOM in all respect,etc. complete.		
	<b>i) Factory test pressure</b> a) Site test pressure + 01N/mm <sup>2</sup> , For working pressure upto 1 N/mm <sup>2</sup> b) Site test pressure + 02N/mm <sup>2</sup> , For working pressure upto 1 N/mm <sup>2</sup> <b>ii) Site test pressure</b> - 1.5 times working pressure pertaining to the section or 1.1 times static pressure, which ever is more (such pressure is to be control within 25% of pumphead incase of pumping main) <b>iii) Working pressure</b> - The maximum sustained internal pressure excluding surge to which each portion of pipeline may be subjected when installed.		
	<b>Note : 1) Class mentioned below represents the working pressure of pipe.</b> 2) For external coating at site to the joints, necessary polythene wrapping for pouring cement slurry shall also be given free with each pipe.		
	<b>A) Factory test Pressure 4 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	300	Rmt	3154.00
	350	Rmt	3548.00
	400	Rmt	3892.00
	450	Rmt	4309.00
	500	Rmt	4793.00
	600	Rmt	6232.00
	700	Rmt	7202.00
	800	Rmt	7822.00
	900	Rmt	10930.00
	1000	Rmt	12596.00
	1100	Rmt	18103.00
	1200	Rmt	20189.00
	1300	Rmt	23577.00
	1400	Rmt	25288.00
	1500	Rmt	26988.00
	1600	Rmt	29074.00
	1700	Rmt	30845.00
	1800	Rmt	32934.00
	<b>B) Factory test Pressure 6 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	300	Rmt	3158.00
	350	Rmt	3551.00
	400	Rmt	3896.00
	450	Rmt	4311.00
	500	Rmt	4802.00
	600	Rmt	6241.00
	700	Rmt	7209.00
	800	Rmt	7828.00
	900	Rmt	10936.00
	1000	Rmt	12602.00
	1100	Rmt	18112.00
	1200	Rmt	20197.00
	1300	Rmt	23582.00
	1400	Rmt	25296.00
	1500	Rmt	26995.00
	1600	Rmt	29083.00
	1700	Rmt	30851.00
	1800	Rmt	32939.00
	<b>C) Factory test Pressure 8 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	300	Rmt	3161.00
	350	Rmt	3557.00
	400	Rmt	3899.00
	450	Rmt	4314.00
	500	Rmt	4812.00
	600	Rmt	6250.00
	700	Rmt	7218.00
	800	Rmt	7838.00
	900	Rmt	10947.00
	1000	Rmt	12613.00
	1100	Rmt	18122.00
	1200	Rmt	20206.00
	1300	Rmt	23592.00
	1400	Rmt	25304.00
	1500	Rmt	27005.00
	1600	Rmt	29093.00
	1700	Rmt	30861.00
	1800	Rmt	32951.00
	<b>D) Factory test Pressure 10 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	300	Rmt	3162.00
	350	Rmt	3558.00
	400	Rmt	3903.00
	450	Rmt	4316.00
	500	Rmt	4826.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	600	Rmt	6266.00
	700	Rmt	7234.00
	800	Rmt	7854.00
	900	Rmt	10962.00
	1000	Rmt	12627.00
	1100	Rmt	18135.00
	1200	Rmt	20222.00
	1300	Rmt	23608.00
	1400	Rmt	25318.00
	1500	Rmt	27020.00
	1600	Rmt	29106.00
	1700	Rmt	30877.00
	1800	Rmt	32966.00
	<b>E) Factory test Pressure 12 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	300	Rmt	3106.00
	350	Rmt	3495.00
	400	Rmt	3833.00
	450	Rmt	4241.00
	500	Rmt	4757.00
	600	Rmt	6167.00
	700	Rmt	7117.00
	800	Rmt	8801.00
	900	Rmt	10757.00
	1000	Rmt	13373.00
	1100	Rmt	17816.00
	1200	Rmt	19863.00
	1300	Rmt	23186.00
	1400	Rmt	24867.00
	1500	Rmt	26818.00
	1600	Rmt	29666.00
	1700	Rmt	32109.00
	1800	Rmt	35709.00
	<b>F) Factory test Pressure 14 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	300	Rmt	3111.00
	350	Rmt	3501.00
	400	Rmt	3836.00
	450	Rmt	4253.00
	500	Rmt	4841.00
	600	Rmt	6279.00
	700	Rmt	8171.00
	800	Rmt	9579.00
	900	Rmt	11816.00
	1000	Rmt	14226.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	1100	Rmt	17890.00
	1200	Rmt	19856.00
	1300	Rmt	23759.00
	1400	Rmt	26849.00
	1500	Rmt	29873.00
	1600	Rmt	33311.00
	1700	Rmt	36575.00
	1800	Rmt	40014.00
	<b>g) Factory test Pressure 16 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	300	Rmt	3113.00
	350	Rmt	3504.00
	400	Rmt	3841.00
	450	Rmt	4403.00
	500	Rmt	5192.00
	600	Rmt	6740.00
	700	Rmt	8697.00
	800	Rmt	10422.00
	900	Rmt	12889.00
	1000	Rmt	15666.00
	1100	Rmt	18870.00
	1200	Rmt	22004.00
	1300	Rmt	26213.00
	1400	Rmt	29590.00
	1500	Rmt	32999.00
	1600	Rmt	36698.00
	1700	Rmt	40733.00
	1800	Rmt	45451.00
	<b>h) Factory test Pressure 18 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	300	Rmt	3267.00
	350	Rmt	3676.00
	400	Rmt	4083.00
	450	Rmt	4758.00
	500	Rmt	5601.00
	600	Rmt	7329.00
	700	Rmt	9635.00
	800	Rmt	11371.00
	900	Rmt	14054.00
	1000	Rmt	17145.00
	1100	Rmt	20629.00
	1200	Rmt	24037.00
	1300	Rmt	28542.00
	1400	Rmt	32616.00
	1500	Rmt	36024.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	1600	Rmt	40865.00
	1700	Rmt	45322.00
	1800	Rmt	50163.00
	<b>i) Factory test Pressure 20 Kg/Sqcm</b>		
	<b>Dia. in mm</b>		
	300	Rmt	3333.00
	350	Rmt	3662.00
	400	Rmt	4312.00
	450	Rmt	4925.00
	500	Rmt	5972.00
	600	Rmt	7812.00
	700	Rmt	10157.00
	800	Rmt	12398.00
	900	Rmt	15310.00
	1000	Rmt	18731.00
	1100	Rmt	22481.00
	1200	Rmt	26136.00
	1300	Rmt	31046.00
	1400	Rmt	35780.00
	1500	Rmt	40296.00
	1600	Rmt	45008.00
	1700	Rmt	50280.00
	1800	Rmt	55658.00

Notes :

- 1) For lowering, laying & pouring of cement mortar in the field on joints ( after laying and welding ), rates as per P. S. C. pipes lowering, laying and jointing shall be adopted.
  - 2) For field welding rates applicable for similar welding in M. S. pipes given in that section shall be adopted.
  - 3) Whenever manufacturer is separate and contractor for lowering laying, jointing and testing is separate, the principal contractor shall be enter into an agreement with B. W. S. C. pipe manufacturer for satisfactory manufacturing transporting, lowering, laying, jointing and testing of
- This footnote shall appear into the tender condition.**
- 4) Only 85% providing rates shall be payable till satisfactory Hydraulic testing is given.
  - 5) No negative tolerance shall be accepted for the M. S. Shell thickness of B. W. S. C. pipes over the

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>VIII. GLASS REINFORCED PLASTIC PIPES (GRP)</b>		
	Providing and supplying Glass fibre reinforced polyester pipes confirming to BIS - 12709 / BIS 14402 with double bell REKA GRP coupling EPDM rubber gaskets for sealing of following pressure diameter and stiffness class including cost of all material and labour required, insurance, transportation to store, unloading and stacking excluding GST levied by GOI & GOM in all respect etc. complete.		
	<b>A. Class (SN) 2500</b>		
	<b>a) 3 Kg/Sq.cm.</b>		
	300 mm	Rmt	1515.00
	350 mm	Rmt	1752.00
	400 mm	Rmt	1929.00
	450 mm	Rmt	2170.00
	500 mm	Rmt	2455.00
	600 mm	Rmt	3155.00
	700 mm	Rmt	3922.00
	800 mm	Rmt	4815.00
	900 mm	Rmt	5883.00
	1000mm	Rmt	6978.00
	1100mm	Rmt	8483.00
	1200mm	Rmt	9876.00
	1300mm	Rmt	11183.00
	1400mm	Rmt	12913.00
	1500mm	Rmt	14676.00
	1600mm	Rmt	17092.00
	1700mm	Rmt	20427.00
	1800mm	Rmt	22290.00
	1900mm	Rmt	24917.00
	2000mm	Rmt	26939.00
	2100mm	Rmt	30104.00
	2200mm	Rmt	32314.00
	2300mm	Rmt	34922.00
	2400mm	Rmt	37330.00
	<b>b) 6 kg/Sq.cm.</b>		
	300 mm	Rmt	1573.00
	350 mm	Rmt	1797.00
	400 mm	Rmt	2020.00
	450 mm	Rmt	2242.00
	500 mm	Rmt	2549.00
	600 mm	Rmt	3302.00
	700 mm	Rmt	4105.00
	800 mm	Rmt	5030.00
	900 mm	Rmt	6128.00
	1000mm	Rmt	7289.00
	1100mm	Rmt	8833.00
	1200mm	Rmt	10221.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	1300mm	Rmt	11695.00
	1400mm	Rmt	13383.00
	1500mm	Rmt	15266.00
	1600mm	Rmt	17805.00
	1700mm	Rmt	21287.00
	1800mm	Rmt	23163.00
	1900mm	Rmt	25919.00
	2000mm	Rmt	27991.00
	2100mm	Rmt	31293.00
	2200mm	Rmt	33723.00
	2300mm	Rmt	36345.00
	2400mm	Rmt	38811.00
	<b>c) 9 kg/Sq.cm.</b>		
	300 mm	Rmt	1623.00
	350 mm	Rmt	1885.00
	400 mm	Rmt	2102.00
	450 mm	Rmt	2383.00
	500 mm	Rmt	2702.00
	600 mm	Rmt	3504.00
	700 mm	Rmt	4364.00
	800 mm	Rmt	5435.00
	900 mm	Rmt	6640.00
	1000mm	Rmt	7862.00
	1100mm	Rmt	9501.00
	1200mm	Rmt	11032.00
	1300mm	Rmt	12739.00
	1400mm	Rmt	14638.00
	1500mm	Rmt	16624.00
	1600mm	Rmt	19408.00
	1700mm	Rmt	23254.00
	1800mm	Rmt	25431.00
	1900mm	Rmt	28251.00
	2000mm	Rmt	30655.00
	2100mm	Rmt	34114.00
	2200mm	Rmt	36675.00
	2300mm	Rmt	39600.00
	2400mm	Rmt	42706.00
	<b>d) 12 kg/Sq.cm.</b>		
	300 mm	Rmt	1719.00
	350 mm	Rmt	1984.00
	400 mm	Rmt	2210.00
	450 mm	Rmt	2886.00
	500 mm	Rmt	2501.00
	600 mm	Rmt	3763.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	700 mm	Rmt	4668.00
	800 mm	Rmt	5784.00
	900 mm	Rmt	7092.00
	1000mm	Rmt	8454.00
	1100mm	Rmt	10362.00
	1200mm	Rmt	12086.00
	1300mm	Rmt	13677.00
	1400mm	Rmt	15742.00
	1500mm	Rmt	17999.00
	1600mm	Rmt	20877.00
	1700mm	Rmt	25062.00
	1800mm	Rmt	27477.00
	1900mm	Rmt	30415.00
	2000mm	Rmt	33075.00
	2100mm	Rmt	36873.00
	2200mm	Rmt	39790.00
	<b>e) 15 kg/Sq.cm.</b>		
	300 mm	Rmt	1790.00
	350 mm	Rmt	2067.00
	400 mm	Rmt	2300.00
	450 mm	Rmt	2650.00
	500 mm	Rmt	3046.00
	600 mm	Rmt	4025.00
	700 mm	Rmt	5019.00
	800 mm	Rmt	6263.00
	900 mm	Rmt	7721.00
	1000mm	Rmt	9163.00
	1100mm	Rmt	11242.00
	1200mm	Rmt	13044.00
	1300mm	Rmt	14972.00
	1400mm	Rmt	17233.00
	1500mm	Rmt	19550.00
	1600mm	Rmt	22684.00
	1700mm	Rmt	27612.00
	1800mm	Rmt	30176.00
	1900mm	Rmt	33695.00
	2000mm	Rmt	36671.00
	<b>B. Class (SN) 5000</b>		
	<b>a) 3 Kg/Sq.cm.</b>		
	300 mm	Rmt	1624.00
	350 mm	Rmt	1905.00
	400 mm	Rmt	2170.00
	450 mm	Rmt	2470.00
	500 mm	Rmt	2732.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	600 mm	Rmt	3561.00
	700 mm	Rmt	4457.00
	800 mm	Rmt	5523.00
	900 mm	Rmt	6802.00
	1000mm	Rmt	8089.00
	1100mm	Rmt	9807.00
	1200mm	Rmt	11494.00
	1300mm	Rmt	13088.00
	1400mm	Rmt	15041.00
	1500mm	Rmt	17166.00
	1600mm	Rmt	19954.00
	1700mm	Rmt	23911.00
	1800mm	Rmt	26225.00
	1900mm	Rmt	29189.00
	2000mm	Rmt	31747.00
	2100mm	Rmt	35346.00
	2200mm	Rmt	38152.00
	<b>b) 6 Kg/Sq.cm.</b>		
	300 mm	Rmt	1649.00
	350 mm	Rmt	1938.00
	400 mm	Rmt	2141.00
	450 mm	Rmt	2441.00
	500 mm	Rmt	2812.00
	600 mm	Rmt	3638.00
	700 mm	Rmt	4571.00
	800 mm	Rmt	5656.00
	900 mm	Rmt	6967.00
	1000mm	Rmt	8271.00
	1100mm	Rmt	10117.00
	1200mm	Rmt	11759.00
	1300mm	Rmt	13438.00
	1400mm	Rmt	15419.00
	1500mm	Rmt	17566.00
	1600mm	Rmt	20446.00
	1700mm	Rmt	24495.00
	1800mm	Rmt	26858.00
	1900mm	Rmt	29918.00
	2000mm	Rmt	32596.00
	2100mm	Rmt	36260.00
	2200mm	Rmt	39200.00
	<b>c) 9 Kg/Sq.cm.</b>		
	300 mm	Rmt	1709.00
	350 mm	Rmt	2003.00
	400 mm	Rmt	2254.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	450 mm	Rmt	2566.00
	500 mm	Rmt	2936.00
	600 mm	Rmt	4034.00
	700 mm	Rmt	4791.00
	800 mm	Rmt	6170.00
	900 mm	Rmt	7283.00
	1000mm	Rmt	8689.00
	1100mm	Rmt	14027.00
	1200mm	Rmt	15959.00
	1300mm	Rmt	17981.00
	1400mm	Rmt	20128.00
	1500mm	Rmt	23057.00
	1600mm	Rmt	26194.00
	1700mm	Rmt	31536.00
	1800mm	Rmt	34364.00
	<b>d) 12 Kg/Sq.cm.</b>		
	300 mm	Rmt	1758.00
	350 mm	Rmt	2085.00
	400 mm	Rmt	2305.00
	450 mm	Rmt	2669.00
	500 mm	Rmt	3048.00
	600 mm	Rmt	4025.00
	700 mm	Rmt	5073.00
	800 mm	Rmt	6261.00
	900 mm	Rmt	7819.00
	1000mm	Rmt	9196.00
	1100mm	Rmt	11303.00
	1200mm	Rmt	13135.00
	1300mm	Rmt	15054.00
	1400mm	Rmt	17347.00
	1500mm	Rmt	19703.00
	1600mm	Rmt	22773.00
	1700mm	Rmt	27413.00
	1800mm	Rmt	30136.00
	1900mm	Rmt	33396.00
	<b>e) 15 Kg/Sq.cm.</b>		
	300 mm	Rmt	1821.00
	350 mm	Rmt	2167.00
	400 mm	Rmt	2423.00
	450 mm	Rmt	2798.00
	500 mm	Rmt	3193.00
	600 mm	Rmt	4238.00
	700 mm	Rmt	5335.00
	800 mm	Rmt	6675.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	900 mm	Rmt	8232.00
	1000mm	Rmt	9814.00
	1100mm	Rmt	11937.00
	1200mm	Rmt	13987.00
	1300mm	Rmt	15983.00
	1400mm	Rmt	18442.00
	1500mm	Rmt	20975.00
	1600mm	Rmt	24285.00
	1700mm	Rmt	29161.00
	1800mm	Rmt	32117.00

Note :

1)

For lowering, laying & jointing rates of GRP pipes 50 % rates for lowering, laying & jointing of PSC pipes of corresponding diameter shall be adopted.

2) Where manufacturer is separate & contractor for lowering, laying jointing & testing is separate the principal contractor shall enter into an agreement with G.R.P. pipe manufacture for satisfactory manufacturing, transporting, lowering, laying, jointing & testing of pipe.

**This foot Note shall appear in tender conditions.**

3) Only 85 % Payment shall be payable till satisfactory hydraulic testing is given.

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
	<b>IX. H. D. P. E. PIPES</b>		
1	<b>Providing and supplying in standard lengths Polyethelene Pipes,</b> confirming to IS 4984 /14151 / 12786 / 13488 with nesessary jointing material like mechanical connector i. e. thread / insert joint / quick release coupler joint /compression fitting joint or flanged joint excluding coupler/ specials, including transportation and freight charges, inspection charges, loading / unloading charges, conveyance to the departmental stores & stacking the same in closed shade duly protecting from sunrays & rains, excluding GST levied by GI & GOM in all respect etc. complete. <b>As per IS:4984-2016, the pipes upto 110 mm dia.should be supplied in coil form only.</b>		
A)	<b>PE 100</b>		
	<b>a) 6 Kg/cm2,</b>		
	63mm	Rmt	87.00
	75mm	Rmt	122.00
	90mm	Rmt	173.00
	110mm	Rmt	251.00
	125mm	Rmt	344.00
	140mm	Rmt	432.00
	160mm	Rmt	559.00
	180mm	Rmt	704.00
	200mm	Rmt	825.00
	225mm	Rmt	1063.00
	250mm	Rmt	1307.00
	280mm	Rmt	1637.00
	315mm	Rmt	2074.00
	355mm	Rmt	2628.00
	400mm	Rmt	3443.00
	450 mm	Rmt	4536.00
	500 mm	Rmt	5609.00
	560 mm	Rmt	7021.00
	630 mm	Rmt	8836.00
	710 mm	Rmt	11409.00
	800 mm	Rmt	13754.00
	900 mm	Rmt	17425.00
	1000 mm	Rmt	21487.00
	<b>b) 8 Kg/cm2</b>		
	63mm	Rmt	110.00
	75mm	Rmt	147.00
	90mm	Rmt	210.00
	110mm	Rmt	307.00
	125mm	Rmt	398.00
	140mm	Rmt	545.00
	160mm	Rmt	706.00
	180mm	Rmt	891.00
	200mm	Rmt	1048.00
	225mm	Rmt	1346.00
	250mm	Rmt	1659.00
	280mm	Rmt	2080.00
	315mm	Rmt	2635.00
	355mm	Rmt	3334.00
	400mm	Rmt	4377.00
	450 mm	Rmt	5852.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
	<b>IX. H. D. P. E. PIPES</b>		
	500 mm	Rmt	7218.00
	560 mm	Rmt	9062.00
	630 mm	Rmt	11402.00
	710 mm	Rmt	14722.00
	800 mm	Rmt	17760.00
	900 mm	Rmt	21942.00
	1000 mm	Rmt	22481.00
	<b>c) 10 Kg/cm2</b>		
	63mm	Rmt	135.00
	75mm	Rmt	191.00
	90mm	Rmt	275.00
	110mm	Rmt	405.00
	125mm	Rmt	520.00
	140mm	Rmt	650.00
	160mm	Rmt	845.00
	180mm	Rmt	1070.00
	200mm	Rmt	1255.00
	225mm	Rmt	1607.00
	250mm	Rmt	2005.00
	280mm	Rmt	2477.00
	315mm	Rmt	3180.00
	355mm	Rmt	3991.00
	400mm	Rmt	5316.00
	450 mm	Rmt	7073.00
	500 mm	Rmt	8743.00
	560 mm	Rmt	10515.00
	630 mm	Rmt	13802.00
	710 mm	Rmt	17532.00
	800 mm	Rmt	21131.00
	900 mm	Rmt	21383.00
	1000 mm	Rmt	24024.00
	<b>d) 12.5 Kg/cm2</b>		
	63mm	Rmt	161.00
	75mm	Rmt	226.00
	90mm	Rmt	325.00
	110mm	Rmt	479.00
	125mm	Rmt	618.00
	140mm	Rmt	776.00
	160mm	Rmt	1009.00
	180mm	Rmt	1275.00
	200mm	Rmt	1499.00
	225mm	Rmt	1934.00
	250mm	Rmt	2378.00
	280mm	Rmt	2983.00
	315mm	Rmt	3776.00
	355mm	Rmt	4795.00
	400mm	Rmt	6302.00
	450 mm	Rmt	8422.00
	500 mm	Rmt	10380.00
	560 mm	Rmt	12634.00
	630 mm	Rmt	16595.00
	710 mm	Rmt	17114.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
	<b>IX. H. D. P. E. PIPES</b>		
	800 mm	Rmt	18747.00
	900 mm	Rmt	23751.00
	1000 mm	Rmt	28927.00
	<b>e) 16 Kg/cm<sup>2</sup></b>		
	63mm	Rmt	183.00
	75mm	Rmt	260.00
	90mm	Rmt	372.00
	110mm	Rmt	549.00
	125mm	Rmt	711.00
	140mm	Rmt	886.00
	160mm	Rmt	1163.00
	180mm	Rmt	1463.00
	200mm	Rmt	2297.00
	225mm	Rmt	2903.00
	250mm	Rmt	3581.00
	280mm	Rmt	4491.00
	315mm	Rmt	5677.00
	355mm	Rmt	7200.00
	400mm	Rmt	9329.00
	450 mm	Rmt	11824.00
	500 mm	Rmt	14581.00
	560 mm	Rmt	16041.00
	630 mm	Rmt	16842.00
	710 mm	Rmt	17980.00
	800 mm	Rmt	21663.00
	900 mm	Rmt	27418.00
	1000 mm	Rmt	33664.00
2	<b>Lowering, Laying and Jointing H. D. P. E./M. D. P. E. pipes</b> in proper position including all specials by compression fitting/electrofusion and butt fusion jointing procedure as per relevent IS Code complete with all materials for jointing procedure like Electrofusion machine, Electric heater/ butt fusion welding machine with hydraulic jack, top loading clamp etc. and all labours as directed by engineer in charge as per IS-7634 Part II		
	<b>For all classes.</b>		
	20mm	Rmt	11.00
	25mm	Rmt	17.00
	32mm	Rmt	21.00
	40mm	Rmt	28.00
	50mm	Rmt	34.00
	63mm	Rmt	41.00
	75mm	Rmt	44.00
	90mm	Rmt	61.00
	110mm	Rmt	64.00
	125mm	Rmt	73.00
	140mm	Rmt	97.00
	160mm	Rmt	105.00
	180mm	Rmt	105.00
	200mm	Rmt	117.00
	225mm	Rmt	150.00
	250mm	Rmt	154.00
	280mm	Rmt	191.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
	<b>IX. H. D. P. E. PIPES</b>		
	315mm	Rmt	210.00
	355mm	Rmt	229.00
	400mm	Rmt	232.00
	450 mm	Rmt	262.00
	500 mm	Rmt	337.00
	560 mm	Rmt	378.00
	630 mm	Rmt	425.00
3	<b>Hydraulic testing of H. D. P. E./ M. D. P. E. pipe line</b> to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position.		
	20mm	Km	1128.00
	25mm	Km	2255.00
	32mm	Km	2255.00
	40mm	Km	3383.00
	50mm	Km	3383.00
	63mm	Km	4510.00
	75mm	Km	4510.00
	90mm	Km	6765.00
	110mm	Km	6765.00
	125mm	Km	7893.00
	140mm	Km	11275.00
	160mm	Km	11275.00
	180mm	Km	11275.00
	200mm	Km	12403.00
	225mm	Km	16913.00
	250mm	Km	16913.00
	280mm	Km	21423.00
	315mm	Km	23678.00
	355mm	Km	25933.00
	400mm	Km	25933.00
	450 mm	Km	29315.00
	500 mm	Km	37208.00
	560 mm	Km	41718.00
	630 mm	Km	47355.00
4	Providing supplying in standard length (PE material) <b>HDPE Double wall corrugated pipe</b> for non pressure underground drainage and sewerage with smooth internal & corrugated external surface confirming to IS 16098:Part-2 2013 with spigot or plain end with necessary jointing material coupler excluding all statutory duties and taxes such as GST levied by Gol and GoM in all respect, transportation and frieght charges, inspection charges, loading and unloading charges conveyance to departmental store/site and stacking the same in in closed shade duly protecting from direst sun ray and rains etc. complete. Correct as above		
	<b>CL SN4</b>		
	ID 135 mm dia	Rmt	249.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
	<b>IX. H. D. P. E. PIPES</b>		
	ID 150 mm dia	Rmt	318.00
	ID 170mm dia	Rmt	370.00
	ID 200 mm dia	Rmt	506.00
	ID 250mm dia	Rmt	835.00
	ID 300 mm dia	Rmt	1289.00
	ID 400 mm dia	Rmt	1740.00
	ID 500 mm dia	Rmt	2874.00
	ID 600 mm dia	Rmt	4374.00
	ID 800 mm dia	Rmt	7093.00
	<b>CL SN8</b>		
	ID 135 mm dia	Rmt	298.00
	ID 150 mm dia	Rmt	381.00
	ID 170mm dia	Rmt	443.00
	ID 200 mm dia	Rmt	608.00
	ID 250mm dia	Rmt	1002.00
	ID 300 mm dia	Rmt	1548.00
	ID 400 mm dia	Rmt	2088.00
	ID 500 mm dia	Rmt	3449.00
	ID 600 mm dia	Rmt	5249.00
	ID 800 mm dia	Rmt	8510.00
5	<b>Lowering, Laying and Jointing (PE material) HDPE double wall corrugated pipe</b> for non pressure underground by heating to the ends of pipes with the help of tefflon coated electric heater to the required temperature and then pressing the ends together against each other, to form a monolithic & leak proof joint by thermosetting process. The pressing may be required to be done with Jacks/ Hydraulic Jacks/Butt fusion machine etc. complete with all materials labours as directed by Engineer - in - charge. including		
	<b>Rate for SN 4 and SN 8</b>		
	ID 135 mm dia	Rmt	34.00
	ID 150 mm dia	Rmt	36.00
	ID 170mm dia	Rmt	40.00
	ID 200 mm dia	Rmt	43.00
	ID 250mm dia	Rmt	53.00
	ID 300 mm dia	Rmt	65.00
	ID 400 mm dia	Rmt	79.00
	ID 500 mm dia	Rmt	94.00
	ID 600 mm dia	Rmt	108.00
	ID 800 mm dia	Rmt	125.00
6	<b>Hydraulic testing of HDPE double wall corrugated pipe</b> for non pressure underground line to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position		
	<b>Rate for SN 4 and SN 8</b>		
	ID 135 mm dia	Km	3383.00
	ID 150 mm dia	Km	3383.00

<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
	<b>IX. H. D. P. E. PIPES</b>		
	ID 170mm dia	Km	4510.00
	ID 200 mm dia	Km	4510.00
	ID 250mm dia	Km	5638.00
	ID 300 mm dia	Km	6765.00
	ID 400 mm dia	Km	7893.00
	ID 500 mm dia	Km	9020.00
	ID 600 mm dia	Km	11275.00
	ID 800 mm dia	Km	12403.00
	<b>Only 85% rates of providing item shall be payable till satisfactory hydraulic testing is given.</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>X. M. D. P. E. PIPES &amp; HDPE / MDPE Specials</b>		
1	<b>Providing and Supplying Blue MDPE pipes</b> 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, Inspection charges, transportation up to store, transit insurance, loading, as specified and directed, unloading, stacking excluding GST levied by GOI & GOM in all respect, etc. complete as specified and directed.		
	<b>a) PN 16 (SDR 9)</b>		
	20mm	Rmt	23.00
	25mm	Rmt	31.00
	32mm	Rmt	51.00
	40mm	Rmt	75.00
	50mm	Rmt	113.00
	63mm	Rmt	167.00
	75mm	Rmt	225.00
	90mm	Rmt	326.00
	110mm	Rmt	483.00
	125mm	Rmt	624.00
	140mm	Rmt	784.00
	160mm	Rmt	1039.00
	180mm	Rmt	1316.00
	200mm	Rmt	1627.00
	225mm	Rmt	2060.00
	250mm	Rmt	2534.00
	280mm	Rmt	3184.00
	315mm	Rmt	4095.00
	<b>b) PN 12.5 (SDR 11)</b>		
	25mm	Rmt	29.00
	32mm	Rmt	48.00
	40mm	Rmt	71.00
	50mm	Rmt	100.00
	63mm	Rmt	135.00
	75mm	Rmt	188.00
	90mm	Rmt	273.00
	110mm	Rmt	401.00
	125mm	Rmt	523.00
	140mm	Rmt	652.00
	160mm	Rmt	854.00
	180mm	Rmt	1108.00
	200mm	Rmt	1357.00
	225mm	Rmt	1718.00
	250mm	Rmt	2128.00
	280mm	Rmt	2652.00
	315mm	Rmt	3362.00
	<b>C) PN 10 (SDR 13.6)</b>		
	63mm	Rmt	115.00
	75mm	Rmt	162.00
	90mm	Rmt	233.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	110mm	Rmt	344.00
	125mm	Rmt	443.00
	140mm	Rmt	556.00
	160mm	Rmt	726.00
	180mm	Rmt	919.00
	200mm	Rmt	1133.00
	225mm	Rmt	1436.00
	250mm	Rmt	1767.00
	280mm	Rmt	2215.00
	315mm	Rmt	2798.00
	<b>D) PN 8 (SDR 17)</b>		
	63mm	Rmt	92.00
	75mm	Rmt	131.00
	90mm	Rmt	189.00
	110mm	Rmt	280.00
	125mm	Rmt	358.00
	140mm	Rmt	450.00
	160mm	Rmt	588.00
	180mm	Rmt	747.00
	200mm	Rmt	919.00
	225mm	Rmt	1167.00
	250mm	Rmt	1463.00
	280mm	Rmt	1832.00
	315mm	Rmt	2321.00
	<b>E) PN 6 (SDR 21)</b>		
	63mm	Rmt	71.00
	75mm	Rmt	104.00
	90mm	Rmt	146.00
	110mm	Rmt	221.00
	125mm	Rmt	279.00
	140mm	Rmt	353.00
	160mm	Rmt	461.00
	180mm	Rmt	576.00
	200mm	Rmt	717.00
	225mm	Rmt	907.00
	250mm	Rmt	1110.00
	280mm	Rmt	1403.00
	315mm	Rmt	1764.00
2	<b>Providing &amp; Supply of Electro Fusion Fittings</b> in accordance with BS EN12201: 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 rating SDR11 with min PN12.5 rated for water application and shall be inclusive of all cost such as testing, inspection charges, transportation up to store, transit insurance, loading, unloading, stacking excluding GST levied by GOI & GOM in all respect, etc. complete.		
	<b>Couplers</b>		
	Couplers 20	No.	87.00
	Couplers 25	No.	87.00
	Couplers 32	No.	87.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	Couplers 40	No.	151.00
	Couplers 50	No.	188.00
	Couplers 63	No.	224.00
	Couplers 75	No.	379.00
	Couplers 90	No.	415.00
	Couplers 110	No.	577.00
	Couplers 125	No.	588.00
	Couplers 140	No.	1257.00
	Couplers 160	No.	1366.00
	Couplers 180	No.	1960.00
	Couplers 200	No.	2202.00
	Couplers 225	No.	2775.00
	Couplers 250	No.	4325.00
	Couplers 280	No.	4871.00
	Couplers 315	No.	5321.00
	<b>Equal Tee</b>		
	Equal Tee 20	No.	183.00
	Equal Tee 25	No.	183.00
	Equal Tee 32	No.	183.00
	Equal Tee 40	No.	404.00
	Equal Tee 50	No.	412.00
	Equal Tee 63	No.	674.00
	Equal Tee 75	No.	988.00
	Equal Tee 90	No.	1409.00
	Equal Tee 110	No.	1957.00
	Equal Tee 125	No.	2700.00
	Equal Tee 160	No.	4680.00
	Equal Tee 180	No.	5878.00
	Equal Tee 200	No.	9422.00
	Equal Tee 225	No.	10626.00
	Equal Tee 250	No.	15567.00
	<b>Elbow 90 Deg.</b>		
	Elbow 90 Deg. 20	No.	97.00
	Elbow 90 Deg. 25	No.	97.00
	Elbow 90 Deg. 32	No.	98.00
	Elbow 90 Deg. 40	No.	133.00
	Elbow 90 Deg. 50	No.	158.00
	Elbow 90 Deg. 63	No.	219.00
	Elbow 90 Deg. 75	No.	343.00
	Elbow 90 Deg. 90	No.	405.00
	Elbow 90 Deg. 110	No.	557.00
	Elbow 90 Deg. 125	No.	710.00
	Elbow 90 Deg. 160	No.	1554.00
	Elbow 90 Deg. 180	No.	1801.00
	Elbow 90 Deg. 200	No.	2331.00
	Elbow 90 Deg. 225	No.	5080.00
	Elbow 90 Deg. 250	No.	9519.00
	<b>Elbow 45 Deg.</b>		
	Elbow 45 Deg. 32	No.	104.00
	Elbow 45 Deg. 40	No.	126.00
	Elbow 45 Deg. 50	No.	150.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	Elbow 45 Deg. 63	No.	209.00
	Elbow 45 Deg. 75	No.	326.00
	Elbow 45 Deg. 90	No.	385.00
	Elbow 45 Deg. 110	No.	557.00
	Elbow 45 Deg. 125	No.	710.00
	Elbow 45 Deg. 160	No.	1308.00
	Elbow 45 Deg. 180	No.	1714.00
	Elbow 45 Deg. 200	No.	1801.00
	Elbow 45 Deg. 225	No.	2331.00
	Elbow 45 Deg. 250	No.	5080.00
	<b>Reducer</b>		
	Reducer 25X20	No.	131.00
	Reducer 32X20	No.	137.00
	Reducer 32X25	No.	144.00
	Reducer 40X32	No.	156.00
	Reducer 50X32	No.	156.00
	Reducer 50X40	No.	156.00
	Reducer 63X32	No.	188.00
	Reducer 63X40	No.	188.00
	Reducer 63X50	No.	188.00
	Reducer 90X63	No.	467.00
	Reducer 110X75	No.	606.00
	Reducer 110X90	No.	606.00
	Reducer 125X90	No.	673.00
	Reducer 160X110	No.	1191.00
	Reducer 180X125	No.	1483.00
	Reducer 200X160	No.	1758.00
	Reducer 225X160	No.	2571.00
	Reducer 250X160	No.	3551.00
	Reducer 250X200	No.	3883.00
	<b>End Cap</b>		
	End Cap 20	No.	34.00
	End Cap 25	No.	34.00
	End Cap 32	No.	48.00
	End Cap 40	No.	52.00
	End Cap 50	No.	55.00
	End Cap 63	No.	73.00
	End Cap 75	No.	268.00
	End Cap 90	No.	305.00
	End Cap 110	No.	428.00
	End Cap 125	No.	543.00
	End Cap 140	No.	888.00
	End Cap 160	No.	962.00
	End Cap 180	No.	1055.00
	End Cap 200	No.	1788.00
	End Cap 225	No.	3071.00
	End Cap 250	No.	3958.00
	End Cap 315	No.	6548.00
	<b>Ferrule Tapping Tee</b>		
	Ferrule tapping tee 63 x 1/2"	No.	658.00
	Ferrule tapping tee 63 x 3/4"	No.	658.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	Ferrule tapping tee 63 x 1"	No.	658.00
	Ferrule tapping tee 75 x 1/2"	No.	658.00
	Ferrule tapping tee 75 x 3/4"	No.	658.00
	Ferrule tapping tee 75 x 1"	No.	658.00
	Ferrule tapping tee 90 x 1/2"	No.	658.00
	Ferrule tapping tee 90 x 3/4"	No.	649.00
	Ferrule tapping tee 90 x 1"	No.	649.00
	Ferrule tapping tee 90 x 1 1/4"	No.	855.00
	Ferrule tapping tee 90 x 1 1/2"	No.	855.00
	Ferrule tapping tee 90 x 2"	No.	855.00
	Ferrule tapping tee 110 x 1/2"	No.	658.00
	Ferrule tapping tee 110 x 3/4"	No.	658.00
	Ferrule tapping tee 110 x 1"	No.	658.00
	Ferrule tapping tee 110 x 1 1/4"	No.	855.00
	Ferrule tapping tee 100 x 1 1/2"	No.	855.00
	Ferrule tapping tee 110 x 2"	No.	855.00
	Ferrule tapping tee 160 x 1/2"	No.	658.00
	Ferrule tapping tee 160 x 3/4"	No.	658.00
	Ferrule tapping tee 160 x 1"	No.	658.00
	Ferrule tapping tee 160 x 1 1/4"	No.	931.00
	Ferrule tapping tee 160 x 1 1/2"	No.	931.00
	Ferrule tapping tee 160 x 2"	No.	931.00
	Ferrule tapping tee 200 x 1/2"	No.	929.00
	Ferrule tapping tee 200 x 3/4"	No.	929.00
	Ferrule tapping tee 200 x 1"	No.	929.00
	Ferrule tapping tee 200 x 1 1/4"	No.	1340.00
	Ferrule tapping tee 200 x 1 1/2"	No.	1340.00
	Ferrule tapping tee 200 x 2"	No.	1340.00
	Ferrule tapping tee 250 x 1/2"	No.	929.00
	Ferrule tapping tee 250 x 3/4"	No.	929.00
	Ferrule tapping tee 250 x 1"	No.	929.00
	Ferrule tapping tee 250 x 1 1/4"	No.	1340.00
	Ferrule tapping tee 250 x 1 1/2"	No.	1340.00
	Ferrule tapping tee 250 x 2"	No.	1340.00
	Ferrule tapping tee 315 x 1/2"	No.	1106.00
	Ferrule tapping tee 315 x 3/4"	No.	1106.00
	Ferrule tapping tee 315 x 1"	No.	1106.00
	Ferrule tapping tee 315 x 1 1/4"	No.	1502.00
	Ferrule tapping tee 315 x 1 1/2"	No.	1502.00
	Ferrule tapping tee 315 x 2"	No.	1502.00
3	<b>Providing &amp; Supply of Compression fittings</b> , 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, UK/ KIWA etc, in food grade polypropylene and shall be inclusive of all cost such as testing, inspection charges, transportation up to store, transit insurance, loading, unloading, stacking excluding GST levied by GOI & GOM in all respect, etc. complete.		
	<b>Male Adaptor</b>		
	Male Adaptor 20x1/2"	No.	54.00
	Male Adaptor 25x3/4"	No.	62.00
	Male Adaptor 32x1"	No.	80.00
	Male Adaptor 40x1 1/4"	No.	146.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	Male Adaptor 50x1 1/2"	No.	192.00
	Male Adaptor 63x2"	No.	273.00
	<b>Female Adaptor</b>		
	Female Adaptor 20x1/2"	No.	58.00
	Female Adaptor 25x3/4"	No.	68.00
	Female Adaptor 32x1"	No.	86.00
	Female Adaptor 40x1 1/4"	No.	161.00
	Female Adaptor 50x1 1/2"	No.	205.00
	Female Adaptor 63x2"	No.	290.00
	<b>Coupling</b>		
	Coupling 20x20	No.	56.00
	Coupling 25x25	No.	61.00
	Coupling 32x32	No.	78.00
	Coupling 40x40	No.	148.00
	Coupling 50x50	No.	191.00
	Coupling 63x63	No.	276.00
	<b>Reducing Coupling</b>		
	Reducing Coupling 25x20	No.	102.00
	Reducing Coupling 32x20	No.	135.00
	Reducing Coupling 32x25	No.	135.00
	Reducing Coupling 40x25	No.	230.00
	Reducing Coupling 40x32	No.	230.00
	Reducing Coupling 50x32	No.	297.00
	Reducing Coupling 50x40	No.	297.00
	Reducing Coupling 63x50	No.	422.00
	<b>90 Deg. Elbow</b>		
	90 Deg. Elbow 20	No.	104.00
	90 Deg. Elbow 25	No.	124.00
	90 Deg. Elbow 32	No.	151.00
	90 Deg. Elbow 40	No.	248.00
	90 Deg. Elbow 50	No.	352.00
	90 Deg. Elbow 63	No.	477.00
	<b>90 Deg. Elbow threaded male take off</b>		
	90 Deg. Elbow threaded male off take 20x1/2"	No.	62.00
	90 Deg. Elbow threaded male off take 25x3/4"	No.	76.00
	90 Deg. Elbow threaded male off take 32x1"	No.	98.00
	90 Deg. Elbow threaded male off take 40x1 1/4"	No.	156.00
	90 Deg. Elbow threaded male off take 50x1 1/2"	No.	214.00
	90 Deg. Elbow threaded male off take 63x2"	No.	297.00
	<b>90 Deg. Elbow threaded female off take</b>		
	90 Deg. Elbow threaded female off take 20x1/2"	No.	71.00
	90 Deg. Elbow threaded female off take 25x3/4"	No.	87.00
	90 Deg. Elbow threaded female off take 32x1"	No.	105.00
	90 Deg. Elbow threaded female off take 40x1 1/4"	No.	204.00
	90 Deg. Elbow threaded female off take 50x1 1/2"	No.	267.00
	90 Deg. Elbow threaded female off take 63x2"	No.	352.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>Equal Tee</b>		
	Equal Tee 20x20x20	No.	124.00
	Equal Tee 25x25x25	No.	162.00
	Equal Tee 32x32x32	No.	209.00
	Equal Tee 40x40x40	No.	347.00
	Equal Tee 50x50x50	No.	469.00
	Equal Tee 63x63x63	No.	667.00
	<b>End Cap</b>		
	End Cap 20	No.	31.00
	End Cap 25	No.	31.00
	End Cap 32	No.	44.00
	End Cap 40	No.	48.00
	End Cap 50	No.	50.00
	End Cap 63	No.	67.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>XI. P. C. C. PIPES</b>		
1	<b>Providing and Supplying Prestressed Concrete Cylinder Pipes</b> suitable for sliding overlap weld joint or confined rubber ring joint with necessary rubber ring of following class and diameter including cost of transportation, inspection charges to store, transit insurance, unloading and stacking excluding GST levied by GOI & GOM in all respect etc. complete.		
	<b>i) Factory test pressure</b> a) Site test pressure + 01N/mm <sup>2</sup> , For working pressure upto 1 N/mm <sup>2</sup> b) Site test pressure + 02N/mm <sup>2</sup> , For working pressure upto 1 N/mm <sup>2</sup> <b>ii) Site test pressure</b> - 1.5 times working pressure pertaining to the section or 1.1 times static pressure, which ever is more (such pressure is to be control within 25% of pumphead in case of pumping <b>main</b> ) <b>iii) Working pessure</b> - The maximum sustained internal pressure excluding surge to which each portion of pipeline my be subjected when installed. <b>As Per 784 : 2001</b>		
	<b>a) F.T.P. - 4 kg/Sq.cm.</b>		
	350 mm	Rmt	4445.00
	400 mm	Rmt	4886.00
	450 mm	Rmt	5368.00
	500 mm	Rmt	5940.00
	600 mm	Rmt	7183.00
	700 mm	Rmt	8298.00
	800 mm	Rmt	9345.00
	900 mm	Rmt	11452.00
	1000 mm	Rmt	13225.00
	1100 mm	Rmt	14807.00
	1200 mm	Rmt	16279.00
	1300 mm	Rmt	18809.00
	1400 mm	Rmt	20425.00
	1500 mm	Rmt	22853.00
	1600 mm	Rmt	24393.00
	1700mm	Rmt	25935.00
	1800mm	Rmt	27473.00
	<b>b) F.T.P. - 5.5 kg/Sq.cm.</b>		
	350 mm	Rmt	4445.00
	400 mm	Rmt	4909.00
	450 mm	Rmt	5397.00
	500 mm	Rmt	5974.00
	600 mm	Rmt	7233.00
	700 mm	Rmt	8364.00
	800 mm	Rmt	9453.00
	900 mm	Rmt	11558.00
	1000 mm	Rmt	13355.00
	1100 mm	Rmt	14978.00
	1200 mm	Rmt	17086.00
	1300 mm	Rmt	19086.00
	1400 mm	Rmt	20779.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	1500 mm	Rmt	23223.00
	1600 mm	Rmt	24764.00
	1700mm	Rmt	26304.00
	1800mm	Rmt	27845.00
	<b>c) F.T.P. - 7.0 kg/Sq.cm.</b>		
	350 mm	Rmt	4455.00
	400 mm	Rmt	4929.00
	450 mm	Rmt	5421.00
	500 mm	Rmt	6006.00
	600 mm	Rmt	7281.00
	700 mm	Rmt	8443.00
	800 mm	Rmt	9588.00
	900 mm	Rmt	11706.00
	1000 mm	Rmt	13558.00
	1100 mm	Rmt	15225.00
	1200 mm	Rmt	17382.00
	1300 mm	Rmt	19437.00
	1400 mm	Rmt	21361.00
	1500 mm	Rmt	23257.00
	1600 mm	Rmt	24798.00
	1700mm	Rmt	26341.00
	1800mm	Rmt	27880.00
	<b>d) F.T.P. - 8.5 kg/Sq.cm.</b>		
	350 mm	Rmt	4473.00
	400 mm	Rmt	4957.00
	450 mm	Rmt	5449.00
	500 mm	Rmt	6040.00
	600 mm	Rmt	7346.00
	700 mm	Rmt	8542.00
	800 mm	Rmt	9724.00
	900 mm	Rmt	11872.00
	1000 mm	Rmt	13761.00
	1100 mm	Rmt	15472.00
	1200 mm	Rmt	17829.00
	1300 mm	Rmt	19949.00
	1400 mm	Rmt	21768.00
	1500 mm	Rmt	23681.00
	1600 mm	Rmt	25221.00
	1700mm	Rmt	26762.00
	1800mm	Rmt	28302.00
	<b>e) F.T.P. - 10 kg/Sq.cm.</b>		
	350 mm	Rmt	4489.00
	400 mm	Rmt	4976.00
	450 mm	Rmt	5484.00
	500 mm	Rmt	6091.00
	600 mm	Rmt	7416.00
	700 mm	Rmt	8638.00
	800 mm	Rmt	9870.00
	900 mm	Rmt	12037.00
	1000 mm	Rmt	13963.00
	1100 mm	Rmt	15860.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	1200 mm	Rmt	18130.00
	1300 mm	Rmt	20305.00
	1400 mm	Rmt	22184.00
	1500 mm	Rmt	24115.00
	1600 mm	Rmt	25659.00
	1700mm	Rmt	27199.00
	1800mm	Rmt	28739.00
	<b>f) F.T.P. - 11.5 kg/Sq.cm.</b>		
	350 mm	Rmt	4507.00
	400 mm	Rmt	5007.00
	450 mm	Rmt	5524.00
	500 mm	Rmt	6142.00
	600 mm	Rmt	7491.00
	700 mm	Rmt	8736.00
	800 mm	Rmt	10145.00
	900 mm	Rmt	11140.00
	1000 mm	Rmt	14168.00
	1100 mm	Rmt	16113.00
	1200 mm	Rmt	18434.00
	1300 mm	Rmt	20665.00
	1400 mm	Rmt	22605.00
	1500 mm	Rmt	24554.00
	1600 mm	Rmt	26094.00
	1700mm	Rmt	27635.00
	1800mm	Rmt	29176.00
	<b>g) F.T.P. - 13.0 kg/Sq.cm.</b>		
	350 mm	Rmt	4542.00
	400 mm	Rmt	5048.00
	450 mm	Rmt	5570.00
	500 mm	Rmt	6193.00
	600 mm	Rmt	7563.00
	700 mm	Rmt	8835.00
	800 mm	Rmt	10314.00
	900 mm	Rmt	12367.00
	1000 mm	Rmt	14465.00
	1100 mm	Rmt	16369.00
	1200 mm	Rmt	18744.00
	1300 mm	Rmt	21029.00
	1400 mm	Rmt	23020.00
	1500 mm	Rmt	24988.00
	1600 mm	Rmt	26530.00
	1700mm	Rmt	28069.00
	1800mm	Rmt	29598.00
	<b>h) F.T.P. - 14.5 kg/Sq.cm.</b>		
	350 mm	Rmt	4582.00
	400 mm	Rmt	5094.00
	450 mm	Rmt	5627.00
	500 mm	Rmt	6252.00
	600 mm	Rmt	7640.00
	700 mm	Rmt	9417.00
	800 mm	Rmt	10481.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	900 mm	Rmt	12654.00
	1000 mm	Rmt	14677.00
	1100 mm	Rmt	16624.00
	1200 mm	Rmt	19048.00
	1300 mm	Rmt	21387.00
	1400 mm	Rmt	24059.00
	1500 mm	Rmt	26072.00
	1600 mm	Rmt	27614.00
	1700mm	Rmt	29154.00
	1800mm	Rmt	30694.00
	<b>i) F.T.P. - 17.0 kg/Sq.cm.</b>		
	350 mm	Rmt	4618.00
	400 mm	Rmt	5141.00
	450 mm	Rmt	5683.00
	500 mm	Rmt	6321.00
	600 mm	Rmt	7739.00
	700 mm	Rmt	9038.00
	800 mm	Rmt	10684.00
	900 mm	Rmt	12834.00
	1000 mm	Rmt	14891.00
	1100 mm	Rmt	16894.00
	1200 mm	Rmt	19359.00
	1300 mm	Rmt	21753.00
	1400 mm	Rmt	24522.00
	1500 mm	Rmt	26558.00
	1600 mm	Rmt	28098.00
	1700mm	Rmt	29640.00
	1800mm	Rmt	31180.00
	<b>j) F.T.P. - 18.5 kg/Sq.cm.</b>		
	350 mm	Rmt	4653.00
	400 mm	Rmt	5187.00
	450 mm	Rmt	5741.00
	500 mm	Rmt	6390.00
	600 mm	Rmt	7836.00
	700 mm	Rmt	9151.00
	800 mm	Rmt	11035.00
	900 mm	Rmt	13058.00
	1000 mm	Rmt	15146.00
	1100 mm	Rmt	17157.00
	1200 mm	Rmt	19669.00
	1300 mm	Rmt	22798.00
	1400 mm	Rmt	25159.00
	1500 mm	Rmt	26673.00
	1600 mm	Rmt	28215.00
	1700mm	Rmt	29756.00
	1800mm	Rmt	31296.00
	<b>k) F.T.P. - 20 kg/Sq.cm.</b>		
	350 mm	Rmt	4690.00
	400 mm	Rmt	5235.00
	450 mm	Rmt	5798.00
	500 mm	Rmt	6463.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	600 mm	Rmt	7934.00
	700 mm	Rmt	9378.00
	800 mm	Rmt	11299.00
	900 mm	Rmt	13356.00
	1000 mm	Rmt	15497.00
	1100 mm	Rmt	17564.00
	1200 mm	Rmt	20698.00
	1300 mm	Rmt	23288.00
	1400 mm	Rmt	25715.00
	1500 mm	Rmt	27253.00
	1600 mm	Rmt	28794.00
	1700mm	Rmt	30335.00
	1800mm	Rmt	31875.00
	<b>l) F.T.P. - 21.5 kg/Sq.cm.</b>		
	350 mm	Rmt	4732.00
	400 mm	Rmt	5282.00
	450 mm	Rmt	5854.00
	500 mm	Rmt	6531.00
	600 mm	Rmt	8050.00
	700 mm	Rmt	9837.00
	800 mm	Rmt	11479.00
	900 mm	Rmt	13654.00
	1000 mm	Rmt	15851.00
	1100 mm	Rmt	18448.00
	1200 mm	Rmt	21211.00
	1300 mm	Rmt	23829.00
	1400 mm	Rmt	27126.00
	1500 mm	Rmt	28725.00
	1600 mm	Rmt	30269.00
	1700mm	Rmt	31809.00
	1800mm	Rmt	33351.00
	<b>m) F.T.P. - 23 kg/Sq.cm.</b>		
	350 mm	Rmt	4767.00
	400 mm	Rmt	5327.00
	450 mm	Rmt	5914.00
	500 mm	Rmt	6600.00
	600 mm	Rmt	8219.00
	700 mm	Rmt	10148.00
	800 mm	Rmt	11831.00
	900 mm	Rmt	13949.00
	1000 mm	Rmt	16203.00
	1100 mm	Rmt	18937.00
	1200 mm	Rmt	21735.00
	1300 mm	Rmt	24505.00
	1400 mm	Rmt	27630.00
	1500 mm	Rmt	29250.00
	1600 mm	Rmt	30792.00
	1700mm	Rmt	32333.00
	1800mm	Rmt	33871.00
	<b>n) F.T.P. - 24.5 kg/Sq.cm.</b>		
	350 mm	Rmt	4804.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	400 mm	Rmt	5376.00
	450 mm	Rmt	5972.00
	500 mm	Rmt	6672.00
	600 mm	Rmt	8549.00
	700 mm	Rmt	10287.00
	800 mm	Rmt	11844.00
	900 mm	Rmt	14186.00
	1000 mm	Rmt	16963.00
	1100 mm	Rmt	19427.00
	1200 mm	Rmt	22262.00
	1300 mm	Rmt	26448.00
	1400 mm	Rmt	28157.00
	1500 mm	Rmt	29798.00
	1600 mm	Rmt	31339.00
	1700mm	Rmt	32878.00
	1800mm	Rmt	34420.00

**Note :**

- 1) For PCCP pipes lowering, laying, and pouring of cement mortar in the field on joints (after laying and welding), rates as per PSC pipes lowering, laying and jointing shall be adopted.
- 2) For field welding rates applicable for similar welding in MS pipes given in that section shall be adopted.
- 3) Whenever manufacturer is separate and contractor for lowering, laying, jointing and testing is separate the principal contractor shall enter into an agreement with PCCP pipe manufacturer for satisfactory manufacturing transporting, lowering, laying, jointing and testing of pipes.

**This foot notes shall appear in the tender conditions.**

- 4) Only 85% providing rates shall be payable til satisfactory Hydraulic testing is given.

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>XII. PIPES APPURTENANCES</b>		
1	Providing and supplying <b>ISI mark CI D/F reflux valves</b> (non-return valves ) of following dia including railway freight, inspection charges, unloading from railway wagon, loading into truck, transportation upto departmental stores, unloading, stacking excluding GST levied by GOI & GOM in all respect etc. complete. Reflux valves as per I.S.5312 Part I (1984)		
	<b>a) Without by pass arrangement -PN -1</b>		
	50 mm	No	3102.00
	65 mm	No	3631.00
	80 mm	No	3824.00
	100 mm	No	5339.00
	125 mm	No	7623.00
	150 mm	No	9230.00
	200 mm	No	16590.00
	250 mm	No	28312.00
	300 mm	No	38794.00
	350 mm	No	60343.00
	400 mm	No	71777.00
	450 mm	No	103211.00
	500 mm	No	152929.00
	600 mm	No	187271.00
	700 mm	No	439275.00
	<b>b) With by pass arrangement - PN-1</b>		
	80 mm	No	4415.00
	100 mm	No	6290.00
	125 mm	No	8565.00
	150 mm	No	10171.00
	200 mm	No	18963.00
	250 mm	No	30996.00
	300 mm	No	41606.00
	350 mm	No	68214.00
	400 mm	No	82545.00
	450 mm	No	107098.00
	500 mm	No	173812.00
	600 mm	No	215361.00
	700 mm	No	664985.00
	750 mm	No	727888.00
	800 mm	No	790792.00
	900 mm	No	862683.00
	1000 mm	No	1006464.00
	<b>c) Without by pass arrangement - PN -1.6</b>		
	50 mm	No	3025.00
	65 mm	No	3268.00
	80 mm	No	5361.00
	100 mm	No	6867.00
	125 mm	No	9567.00
	150 mm	No	13005.00
	200 mm	No	22770.00
	250 mm	No	36554.00
	300 mm	No	49420.00
	350 mm	No	75429.00
	400 mm	No	89722.00
	450 mm	No	119948.00
	500 mm	No	191160.00
	600 mm	No	234088.00
	700 mm	No	345994.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	750 mm	No	397187.00	
	800 mm	No	451912.00	
	900 mm	No	571949.00	
	1000 mm	No	706111.00	
	1100 mm	No	854392.00	
	1200 mm	No	1017173.00	
	<b>d) With by pass arrangement - PN-1.6</b>			
	50 mm	No	3105.00	
	65 mm	No	3495.00	
	80 mm	No	5143.00	
	100 mm	No	6650.00	
	125 mm	No	9293.00	
	150 mm	No	11279.00	
	200 mm	No	22782.00	
	250 mm	No	34426.00	
	300 mm	No	52012.00	
	350 mm	No	80367.00	
	400 mm	No	103181.00	
	450 mm	No	123163.00	
	500 mm	No	199917.00	
	600 mm	No	269201.00	
	700 mm	No	352410.00	
	750 mm	No	404553.00	
	800 mm	No	460292.00	
	900 mm	No	582557.00	
	1000 mm	No	719204.00	
	1100 mm	No	870238.00	
	1200 mm	No	1035654.00	
2	Providing <b>double flange sluice valve</b> confirming for IS- 14846 including worn gear arrangements as per test pressure, stainless steel spindle, caps, including inspection charges, transportation upto departmental store, unloading, stacking excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>a) Sluice valves - PN -1 without bypass arrangement</b>			
	50 mm	No	3923.00	
	65 mm	No	4641.00	
	80 mm	No	4796.00	
	100 mm	No	6388.00	
	125 mm	No	7989.00	
	150 mm	No	9580.00	
	200 mm	No	17365.00	
	250 mm	No	26848.00	
	300 mm	No	34085.00	
	350 mm	No	50141.00	
	400 mm	No	66014.00	
	450 mm	No	70972.00	
	500 mm	No	102290.00	
	600 mm	No	151547.00	
	700 mm	No	281691.00	
	750 mm	No	319114.00	
	800 mm	No	389272.00	
	900 mm	No	510436.00	
	1000 mm	No	763408.00	
	1100 mm	No	978703.00	
	1200 mm	No	1157135.00	
	<b>b) Sluice valves - PN -1.0 With bypass arrangement</b>			

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	50 mm	No	4117.00	
	65 mm	No	4651.00	
	80 mm	No	4796.00	
	100 mm	No	6388.00	
	125 mm	No	7989.00	
	150 mm	No	10089.00	
	200 mm	No	17397.00	
	250 mm	No	26879.00	
	300 mm	No	34115.00	
	350 mm	No	52005.00	
	400 mm	No	66112.00	
	450 mm	No	81511.00	
	500 mm	No	102443.00	
	600 mm	No	151771.00	
	700 mm	No	286437.00	
	750 mm	No	319431.00	
	800 mm	No	389656.00	
	900 mm	No	510941.00	
	1000 mm	No	775059.00	
	1100 mm	No	979672.00	
	1200 mm	No	1158240.00	
	<b>c) Sluice valve - PN - 1.6 without bypass arrangement</b>			
	50 mm	No	4917.00	
	65 mm	No	5800.00	
	80 mm	No	6316.00	
	100 mm	No	8416.00	
	125 mm	No	10515.00	
	150 mm	No	11152.00	
	200 mm	No	21711.00	
	250 mm	No	33569.00	
	300 mm	No	42629.00	
	350 mm	No	64910.00	
	400 mm	No	82403.00	
	450 mm	No	101829.00	
	500 mm	No	127794.00	
	600 mm	No	189388.00	
	700 mm	No	286861.00	
	750 mm	No	319904.00	
	800 mm	No	390235.00	
	900 mm	No	511699.00	
	1000 mm	No	789331.00	
	1100 mm	No	981127.00	
	1200 mm	No	1159998.00	
	<b>d) Sluice valve - PN - 1.6 with bypass arrangement</b>			
	50 mm	No	5442.00	
	65 mm	No	5811.00	
	80 mm	No	6327.00	
	100 mm	No	8432.00	
	125 mm	No	10530.00	
	150 mm	No	12610.00	
	200 mm	No	21742.00	
	250 mm	No	33601.00	
	300 mm	No	42659.00	
	350 mm	No	65006.00	
	400 mm	No	82526.00	
	450 mm	No	101980.00	
	500 mm	No	127983.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	600 mm	No	189670.00	
	700 mm	No	287216.00	
	750 mm	No	320299.00	
	800 mm	No	390718.00	
	900 mm	No	512332.00	
	1000 mm	No	790305.00	
	1100 mm	No	982337.00	
	1200 mm	No	1161432.00	
3	Providing, <b>double flanged short body pattern type manually operated Butterfly Valve</b> having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming to IS-13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing including inspection charges, transportation up to departmental store, unloading, stacking excluding GST levied by GOI & GOM in all respect etc. excluding C.C. foundation /structural steel support.			
	<b>a) Butterfly valves - PN -1 with bypass arrangement</b>			
	80 mm	No	5445.00	
	100 mm	No	6961.00	
	125 mm	No	7939.00	
	150 mm	No	10262.00	
	200 mm	No	13675.00	
	250 mm	No	17093.00	
	300 mm	No	27046.00	
	350 mm	No	44378.00	
	400 mm	No	55057.00	
	450 mm	No	64265.00	
	500 mm	No	69421.00	
	600 mm	No	81299.00	
	700 mm	No	121901.00	
	750 mm	No	144366.00	
	800 mm	No	153756.00	
	900 mm	No	197398.00	
	1000 mm	No	254482.00	
	1100 mm	No	545472.00	
	1200 mm	No	516163.00	
	1400 mm	No	787015.00	
	1500 mm	No	977904.00	
	<b>b) Butterfly valves - PN -1.6 Without bypass arrangement</b>			
	80 mm	No	6042.00	
	100 mm	No	7911.00	
	125 mm	No	8735.00	
	150 mm	No	11800.00	
	200 mm	No	15729.00	
	250 mm	No	19657.00	
	300 mm	No	31103.00	
	350 mm	No	55472.00	
	400 mm	No	67955.00	
	450 mm	No	78510.00	
	500 mm	No	86205.00	
	600 mm	No	101624.00	
	700 mm	No	152376.00	
	750 mm	No	180457.00	
	800 mm	No	192196.00	
	900 mm	No	246748.00	
	1000 mm	No	318102.00	
	1100 mm	No	645207.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	1200 mm	No	681832.00	
	1400 mm	No	983769.00	
	1500 mm	No	1214115.00	
4.a.	Lowering, laying and jointing in position following <b>C.I.D/F Reflex valves, Butterfly valves and Sluice valves</b> including cost of all labour jointing material, including nut bolts and giving satisfactory hydraulic testing etc. complete. (Rate for all class of valves.)			
	50 mm	No	757.00	
	65 mm	No	1137.00	
	80 mm	No	1580.00	
	100 mm	No	2065.00	
	125 mm	No	2571.00	
	150 mm	No	3245.00	
	200 mm	No	3376.00	
	250 mm	No	4399.00	
	300 mm	No	4563.00	
	350 mm	No	5623.00	
	400 mm	No	6784.00	
	450 mm	No	8072.00	
	500 mm	No	8358.00	
	600 mm	No	8872.00	
	700 mm	No	9565.00	
	750 mm	No	10534.00	
	800 mm	No	12552.00	
	900 mm	No	13319.00	
	1000 mm	No	15701.00	
	1100 mm	No	18130.00	
	1200 mm	No	19923.00	
4.b.	Giving satisfactory <b>hydraulic testing of following C. I. D / F Reflex valves, Butterfly valves and Sluice valves.</b>			
	50 mm	No	85.00	
	65 mm	No	127.00	
	80 mm	No	176.00	
	100 mm	No	229.00	
	125 mm	No	285.00	
	150 mm	No	361.00	
	200 mm	No	375.00	
	250 mm	No	488.00	
	300 mm	No	507.00	
	350 mm	No	625.00	
	400 mm	No	755.00	
	450 mm	No	897.00	
	500 mm	No	930.00	
	600 mm	No	986.00	
	700 mm	No	1064.00	
	750 mm	No	1170.00	
	800 mm	No	1395.00	
	900 mm	No	1481.00	
	1000 mm	No	1745.00	
	1100 mm	No	2015.00	
	1200 mm to 1500 mm	No	2213.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
5	Providing and <b>supplying Air Valves</b> as per IS- 14845-2000 and MJP's standard specifications of approved make and quality of following diameters including railway freight, inspection charges, unloading from railway wagons, loading into truck, transportation upto departmental stores, unloading and stacking excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>a) Air Valve Single Ball Flanged / Screwed Type - PN -1</b>			
	12/15 mm	No	592.00	
	20 mm	No	714.00	
	25 mm	No	985.00	
	32 mm	No	1076.00	
	40 mm	No	1184.00	
	50 mm	No	1300.00	
	<b>b) Air Valve Single Ball Flanged /Screwed Type -PN -1.6</b>			
	12/15 mm	No	693.00	
	20 mm	No	985.00	
	25 mm	No	1184.00	
	32 mm	No	1276.00	
	40 mm	No	1367.00	
	50 mm	No	1784.00	
6	Providing and <b>supplying Air Valves</b> as per IS- 14845 and MJP's standard specifications double orifice type combined with screw down isolating valve, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including insurance, third party inspection charges, loading, unloading, transportation upto departmental stores, excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>a) Double Ball Flanged Type - PN -1 With small Orifice</b>			
	50 mm	No	5467.00	
	65 mm	No	6379.00	
	80 mm	No	7286.00	
	<b>b) Double Ball Flanged Type - PN -1.6 With small Orifice</b>			
	50 mm	No	7242.00	
	65 mm	No	8201.00	
	80 mm	No	10148.00	
7	Providing and <b>supplying Air Valves</b> as per IS- 14845-2000 and MJP's standard specifications double orifice type combined with isolating sluice valve, mounted in horizontal position and operated by wheel gearing, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including insurance, third party inspection charges, loading, unloading, transportation upto departmental store, excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>a) Double Ball Flanged Type - PN -1.0</b>			
	100 mm	No	9214.00	
	150 mm	No	16792.00	
	200 mm	No	28239.00	
	<b>b) Double Ball Flanged Type - PN -1.6</b>			
	100 mm	No	14087.00	
	150 mm	No	19845.00	
	200 mm	No	33375.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
8	Providing and <b>supplying Kinetic Double Orifice type Air Valves</b> confirming to IS 14845 as per MJP's standard specifications combined with screw down isolating valve, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including insurance, third party inspection charges, loading, unloading, transportation upto departmental stores, excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>a) Kinetic Air Valve Flanged Type P-1</b>			
	40 mm	No	8471.00	
	50 mm	No	9576.00	
	80 mm	No	11233.00	
	<b>b) Kinetic Air Valve Flanged Type P-1.6</b>			
	40 mm	No	10588.00	
	50 mm	No	11969.00	
	80 mm	No	14040.00	
9	Providing and <b>supplying Kinetic Double Orifice type Air Valves</b> confirming to IS 14845 as per MJP's standard specifications having small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, with built-in Kinetic features, isolating sluice valve mounted in horizontal position and operated by wheel gearing, inlet face and drilled, including insurance, third party inspection charges, loading, unloading, transportation upto departmental stores, excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>a) Kinetic Air Valve Flanged Type P-1</b>			
	100 mm	No	12245.00	
	150 mm	No	17126.00	
	200 mm	No	26700.00	
	<b>b) Kinetic Air Valve Flanged Type P-1.6</b>			
	100 mm	No	15308.00	
	150 mm	No	21406.00	
	200 mm	No	33375.00	
10	<b>Lowering, laying and fixing</b> in proper alignment and position all types of <b>C.I. air valves</b> as directed by Engineer-in-charge including cost of conveyance from stores to site of work, cost of all material and giving satisfactory hydraulic testing, etc. complete. (for all class of valves).			
	<b>a) Air Valve Single Ball (PN-1 and PN - 1.6)</b>			
	15 mm	No	121.00	
	20 mm	No	153.00	
	25 mm	No	198.00	
	32 mm	No	219.00	
	40 mm	No	234.00	
	50 mm	No	254.00	
	65 mm	No	267.00	
	80 mm	No	279.00	
	100 mm	No	312.00	
	125 mm	No	378.00	
	150 mm	No	420.00	
	200 mm	No	462.00	
	<b>b) Air Valve Double Ball (PN-1 and PN - 1.6)</b>			
	15 mm	No	132.00	
	20 mm	No	164.00	
	25 mm	No	198.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	32 mm	No	224.00	
	40 mm	No	262.00	
	50 mm	No	303.00	
	65 mm	No	349.00	
	80 mm	No	416.00	
	100 mm	No	440.00	
	125 mm	No	484.00	
	150 mm	No	662.00	
	200 mm	No	728.00	
	<b>c) Kinetic Air Valve (PN-1 and PN - 1.6)</b>			
	40 mm	No	300.00	
	50 mm	No	347.00	
	65 mm	No	378.00	
	80 mm	No	416.00	
	100 mm	No	458.00	
	125 mm	No	499.00	
	150 mm	No	716.00	
	200 mm	No	780.00	
11	<b>Providing erecting Cast Steel/ Spheroidal Graphite (S.G) Iron D/F Sluice Valves / Butterfly Valves</b> with jointing to pipe work (including all hardware and packing) water works quality, having non-rising spindle with hand wheel and without bypass arrangement, spindle of stainless steel as per requirement, inspection charges, transportation upto departmental store, unloading, stacking, excluding GST levied by GOI & GOM in all respect etc. excluding C. C. foundation / structural steel support.			
	<b>A) For Rating Class 150 (Working Pressure 20 kg/cm2 and Test Pressure 30 kg/cm2)</b>			
	<b>a) Sluice Valves. CS-150</b>			
	80 mm	No	14124.00	
	100 mm	No	18831.00	
	150 mm	No	28247.00	
	200 mm	No	44053.00	
	250 mm	No	63396.00	
	300 mm	No	81115.00	
	350 mm	No	108154.00	
	400 mm	No	180478.00	
	450 mm	No	246243.00	
	500 mm	No	289697.00	
	600 mm	No	330736.00	
	<b>b) Butterfly Valves. CS-150</b>			
	300 mm	No	101999.00	
	350 mm	No	108736.00	
	400 mm	No	122134.00	
	450 mm	No	130109.00	
	500 mm	No	150611.00	
	600 mm	No	169496.00	
12	<b>Providing erecting Cast Steel D/F Sluice Valves / Butterfly Valves</b> with jointing to pipe work (including all hardware and packing) water works quality having non-rising spindle with hand wheel and without bypass arrangement, spindle of stainless steel as per requirement, inspection charges, transportation upto departmental store, unloading, stacking, excluding GST levied by GOI & GOM in all respect etc. excluding C. C. foundation / structural steel support.			

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	<b>For Rating Class 300 (Working Pressure 52 kg/cm2 and Test Pressure 78 kg/cm2)</b>			
	<b>a) Sluice Valves CS-300</b>			
	80 mm	No	15203.00	
	100 mm	No	24003.00	
	150 mm	No	36596.00	
	200 mm	No	57395.00	
	250 mm	No	61956.00	
	300 mm	No	104445.00	
	350 mm	No	176149.00	
	400 mm	No	256971.00	
	450 mm	No	309395.00	
	500 mm	No	482009.00	
	600 mm	No	728543.00	
	<b>b) Butterfly Valves CS-300</b>			
	300 mm	No	124438.00	
	350 mm	No	132659.00	
	400 mm	No	149003.00	
	450 mm	No	158733.00	
	500 mm	No	183747.00	
	600 mm	No	206785.00	
13	<b>Providing erecting Cast Steel /Spheroidal Graphite (S.G.) Iron D/F Reflux Valves</b> Single Door with jointing to pipe work (including all hardware and packing) water works quality with jointing to pipe without bypass arrangement, with gunmetal seats including inspection charges, transportation upto departmental store, unloading, stacking excluding GST levied by GOI & GOM in all respect etc. completed but excluding C. C. foundation / structural steel support.			
	<b>For Rating Class 150 (Working Pressure 20 kg/cm2 and Test Pressure 30 kg/cm2)</b>			
	<b>Reflux valve CS-150</b>			
	80 mm	No	9856.00	
	100 mm	No	15091.00	
	150 mm	No	25566.00	
	200 mm	No	48610.00	
	250 mm	No	84641.00	
	300 mm	No	111510.00	
14	<b>Providing erecting Cast Steel D/F Reflux Valves</b> Single door with jointing to pipe work (including all hardware and packing) water works quality with jointing to pipe without bypass arrangement, with gunmetal seat including inspection charges, transportation upto departmental store, unloading, stacking excluding GST levied by GOI & GOM in all respect etc. completed but excluding excluding C. C. foundation / structural steel support.			
	<b>For Rating Class 300 (Working Pressure 52 kg/cm2 and Test Pressure 78 kg/cm2)</b>			
	<b>Reflux valve CS-300</b>			
	80 mm	No	14684.00	
	100 mm	No	20697.00	
	150 mm	No	34419.00	
	200 mm	No	60975.00	
	250 mm	No	110393.00	
	300 mm	No	134411.00	



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
15	<b>Providing, erecting Kinetic Double Orifice Cast Steel Air Valves</b> with an isolating Sluice Valve mounted in horizontal position operated by wheel gear suitable for working pressure of Class-150 rating (20 kg/cm <sup>2</sup> )			
	<b>Air valve CS-150</b>			
	80 mm	No	28474.00	
	100 mm	No	39689.00	
	150 mm	No	76053.00	
	200 mm	No	98308.00	
16	<b>Providing, erecting Kinetic Double Orifice Cast Steel Air Valves</b> with an isolating Sluice Valve mounted in horizontal position operated by wheel gear suitable for working pressure of Class 300 rating (52 kg/cm <sup>2</sup> )			
	<b>KDB Air valve CS-300</b>			
	80 mm	No	34689.00	
	100 mm	No	39653.00	
	150 mm	No	92664.00	
	200 mm	No	111855.00	
17	<b>Providing and fixing in position air valve shaft</b> including providing and fixing GI Medium Class or 6 mm thick M.S. pipe shaft 2.70 M long over branch flange of air valve tee, providing PCC block of M-150 concrete, 150 mm thick around the air valve tee including encasing of vertical shaft in PCC M-150 as shown in type design together with providing and making flanged joints wherever required and fixing of air valve tee, etc. complete as per type design and as directed by Engineer -in- charge for following diameters of pipe lines (type design attached.)			
	<b>a) Foundation on Murum and Harder Strata.</b>			
	upto 150 mm	No	5071.00	
	200 to 400 mm	No	5941.00	
	450 to 900 mm	No	12082.00	
	1000 to 1200 mm	No	15172.00	
	<b>b) Foundation in B. C. Soil or Any Other Soil.</b>			
	upto 150 mm	No	6008.00	
	200 to 400 mm	No	7247.00	
	450 to 900 mm	No	13801.00	
	1000 to 1200 mm	No	17307.00	
18	<b>Providing and supplying C.I. D/F angle type spring loaded pressure relief valves</b> of approved make and quality including inspection charges, transportation to departmental stores excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>a) Type PN-1</b>			
	25 mm	No	3974.00	
	40 mm	No	5179.00	
	50 mm	No	6707.00	
	80 mm	No	10171.00	
	100 mm	No	14238.00	
	125 mm	No	19414.00	
	150 mm	No	22184.00	
	200 mm	No	48987.00	
	250 mm	No	68860.00	
	300 mm	No	90812.00	
	<b>b) Type PN-1.6</b>			
	25 mm	No	4968.00	
	40 mm	No	6470.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	50 mm	No	7334.00	
	80 mm	No	11772.00	
	100 mm	No	16162.00	
	125 mm	No	24261.00	
	150 mm	No	27729.00	
	200 mm	No	61230.00	
	250 mm	No	86074.00	
	300 mm	No	113780.00	
19	<b>Lowering, laying and fixing in proper alignment and position all types of C.I. D/F angle type spring loaded pressure relief valves including cost of all material, labour, cost of conveyance from stores to site of work and giving satisfactory hydraulic testing, etc. complete. (For all class of valves.)</b>			
	25 mm	No	226.00	
	40 mm	No	300.00	
	50 mm	No	348.00	
	80 mm	No	415.00	
	100 mm	No	455.00	
	125 mm	No	507.00	
	150 mm	No	716.00	
	200 mm	No	781.00	
	250 mm	No	912.00	
	300 mm	No	1041.00	
20	<b>Cutting and champhering of pipes</b> of following diameters including cost of all materials and labour involved, etc. complete as directed by Engineer-in-charge (for all class of pipes).			
	<b>a) C.I.Pipes</b>			
	80 mm	No	41.00	
	100 mm	No	47.00	
	150 mm	No	73.00	
	200 mm	No	92.00	
	250 mm	No	132.00	
	300 mm	No	156.00	
	350 mm	No	161.00	
	400 mm	No	204.00	
	450 mm	No	237.00	
	500 mm	No	283.00	
	600 mm	No	345.00	
	700 mm	No	407.00	
	750 mm	No	486.00	
	800 mm	No	531.00	
	900 mm	No	584.00	
	1000 mm	No	635.00	
21	Providing and supplying I.S.I. mark <b>rubber gasket suitable</b> for C.I. or D. I. pipe of all class for tyton joints including inspection charges, transportation upto departmental stores excluding GST levied by GOI & GOM in all respect etc. complete.			
	<b>a) S.B.R. Gaskets for C. I. / D.I. Pipes</b>			
	80 mm	No	39.00	
	100 mm	No	43.00	
	150 mm	No	60.00	
	200 mm	No	102.00	
	250 mm	No	132.00	
	300 mm	No	186.00	
	350 mm	No	213.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	400 mm	No	296.00	
	450 mm	No	323.00	
	500 mm	No	441.00	
	600 mm	No	612.00	
	700 mm	No	1089.00	
	750 mm	No	1132.00	
	800 mm	No	1173.00	
	900 mm	No	1696.00	
	1000 mm	No	2179.00	
	<b>b) Sealing 'O' Rings of SBR (for CID Joints)</b>			
	80 mm	set	44.00	
	100 mm	set	54.00	
	125 mm	set	63.00	
	150 mm	set	75.00	
	<b>c) Flat Flanged Gaskets moulded out of SBR (For Flanged Joints)</b>			
	80 mm	set	82.00	
	100 mm	No	108.00	
	125 mm	No	128.00	
	150 mm	No	176.00	
	200 mm	No	217.00	
	250 mm	No	305.00	
	300 mm	No	323.00	
	350 mm	No	392.00	
	400 mm	No	484.00	
	450 mm	No	529.00	
	500 mm	No	620.00	
	600 mm	No	834.00	
	<b>d) Providing Rubber Gasket - EPDM Gaskets for C. I. / D.I. Pipes</b>			
	80 mm.	No	45.00	
	100 mm.	No	47.00	
	150 mm.	No	70.00	
	200 mm.	No	117.00	
	250 mm.	No	160.00	
	300 mm.	No	211.00	
	350 mm.	No	246.00	
	400 mm.	No	336.00	
	450 mm.	No	376.00	
	500 mm.	No	498.00	
	600 mm.	No	699.00	
	700 mm.	No	1313.00	
	750 mm.	No	1376.00	
	800 mm.	No	1678.00	
	900 mm.	No	2166.00	
	1000 mm	No	2517.00	
22	Providing and fixing in position and jointing <b>high performance C. I. Air valves</b> for water combination type ( Kinetic air valve along with automatic air valves ) double ball, double orifice with stainless steel ball, tamper proof air vents rolling seal mechanism for air release and anti vacuum application designed for 16 Kg. Per sq. cm. working pressure and tested for 20 for kg per sq. cm. pressure. ( Rate to include cost of gaskets, bolt, nut and any other material required for jointing and its transportation etc. excluding GST levied by GOI & GOM in all respect.			
	1. C. I. ARV FLFF PN 1.6 50mm Dia.	No	8920.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	2. C. I. ARV FLFF PN 1.6 80mm Dia.	No	12377.00	
	3. C. I. ARV FLFF PN 1.6 100mm Dia.	No	19901.00	
	4. C. I. ARV FLFF PN 1.6 150mm Dia.	No	33312.00	
	5. C. I. ARV FLFF PN 1.6 200mm Dia.	No	40351.00	
23	Providing and supplying at site of <b>ductile iron /spheroidal graphite (S.G.) iron D/F double eccentric resilient seated short body butterfly valves</b> with gear box & handwheel, without bypass arrangement. Valves in accordance with BS EN 593 of PN 10/16 rated, with body & disc of ductile iron conforming to EN 1563/IS 1865 Gr.500/7 or Gr.400/15, Body seat of integral SG Iron/S.S. AISI 316, seal retaining ring of steel C45/S.S. 1.4436, Shaft of S.S. 1.4021, Periferial disc seal and "O" rings of WRAS approved EPDM rubber (suitable for drinking water), Internal fasteners of stainless steel A2. Body & disc coated inside & outside with electrostatically applied epoxy powder coated blue colour. (suitable for drinking water.) as per DIN 30677- 2 & GSK guidelines with a coating thickness of min. 250 microns. Valves should be 100% tight shutoff. Face to face is per IS 13095 short body. Flange drilling as per IS 1538 raised face & pressure testing at manufactures works shall be done as per IS 13095. including transportation charges excluding GST levied by GOI & GOM in all respect etc. complete.			
			<b>PN-10</b>	<b>PN-16</b>
	i) 200 mm.	No.	73085.00	88275.00
	ii) 250 mm.	No.	91533.00	114230.00
	iii) 300 mm.	No.	117497.00	150920.00
	iv) 350 mm.	No.	146297.00	178408.00
	v) 400 mm.	No.	174371.00	203598.00
	vi) 450 mm.	No.	225938.00	275976.00
	vii) 500 mm.	No.	246472.00	330811.00
	viii) 600 mm.	No.	358824.00	505483.00
	ix) 700 mm.	No.	596783.00	696246.00
	x) 800 mm.	No.	708679.00	851659.00
	xi) 900 mm.	No.	870307.00	1031935.00
	xii) 1000 mm	No.	1230863.00	1325360.00
24	Providing and supplying at site of <b>ductile iron / spheroidal graphite (S.G.) iron D/F non-rising spindle resil-ient seated glandless sluice valves</b> with handwheel & without bypass arrangement. Valves in accordance with BS 5163 of PN-10/ 16 rated, with body and bonnet of ductile iron confirming to IS 1865 Gr. 500/7 or Gr.400/15. Wedge fully encapsulated WRAS approved EPDM rubber (approved for drinking water), Wedge nut of brass, shaft of stainless steel 1.4021/1.4104, stem seals min. 3 nos. of NBR, internal fasteners of stainless steel A2. Body& Bonnet coated inside & outside with electrostatically applied epoxy powder coated blue colour (suitable for drinking water) as per DIN 30677-2 & GSK guidelines with a coating thickness of min. 250 microns. Valves should be full bore & tight shut-off. Flange drilling as per IS 1538 raised face & pressure testing at manufactures works shall be done as per IS 14846. including transportation charges excluding GST levied by GOI & GOM in all respect etc. complete. (For PN 10 & 16)			
	i) 50 mm dia	No.	10251.00	
	ii) 80 mm dia	No.	13017.00	
	iii) 100 mm dia	No.	16127.00	
	iv) 150 mm dia	No.	22495.00	
	v) 200 mm dia	No.	35702.00	
	vi) 250 mm dia	No.	63251.00	
	vii) 300 mm dia	No.	84787.00	
	viii) 350 mm dia	No.	194052.00	
	ix) 400 mm dia	No.	234160.00	
	x) 450 mm dia	No.	319957.00	
	xi) 500 mm dia	No.	404064.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020	
1	2	3	4	
	xii) 600 mm dia	No.	584595.00	
25	Providing and supplying at site <b>ductile iron / Spheroidal Graphite (S.G.) iron single / Double chamber tamper proof air valve</b> without isolating sluice valve. Valves in accordance with BSEN 1074-4 of PN 10/16 rated, with body and bonnet of ductile iron confirming to EN 1563/IS 1865 Gr. 500/7 or Gr.400/15 floats, float guide, seat ring of stainless steel 1.4436/1.4306, seat ring gasket of WRAS approved EPDM rubber (suitable for drinking water), internal fasteners of stainless steel A2. Body & Bonnet coated inside & outside with electrostatically applied epoxy powder coated blue colour (suitable for drinking water) as per DIN 30677-2 & GSK guidelines with a coating thickness of min. 250 microns. Flange connections as per IS 1538 raised face & pressure testing at manufactures works shall be done as per IS 14845. including transportation charges excluding GST levied by GOI & GOM in all respect etc. complete. (For PN 10 & 16)			
	i) 50 mm dia	No.	23168.00	
	ii) 80 mm dia	No.	23774.00	
	iii) 100 mm dia	No.	29245.00	
	iv) 150 mm dia	No.	40674.00	
	v) 200 mm dia	No.	42308.00	

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>XIII. MECHANICAL JOINTS / FITTING</b>		
1	<b>Supply of C. I. Mechanical Compression Flanged / Socket Tailpiece</b> (Popularly known as I TM Flanged / Socket Tailpiece) suitable for making flanged connection with the plain barrel of C. I. Spun Pipes ( as per - IS - 1536 /2001) and D. I. Pipes ( as per IS: 8329 / 2000).The Tailpiec to be supplied complete with sealing rubber gasket of S.B.R, C.I. Follower Glands and M.S. Nut Bolts.The whole assembly should be mechanically and hydraulically tested to the provisions as laid down in IS:1538 /1993. The rates are inclusive of cost of material, freight charges, loading, transportation and unloading at departemental store, excluding GST levied by Gol and GoM in all respect, etc. complete as directed.		
	80 mm dia	No.	1311.00
	100 mm dia	No.	1430.00
	125 mm dia	No.	1800.00
	150 mm dia	No.	2574.00
	200 mm dia	No.	3335.00
	250 mm dia	No.	5031.00
	300 mm dia	No.	5632.00
	350 mm dia	No.	7427.00
	400 mm dia	No.	9694.00
	450 mm dia	No.	11380.00
	500 mm dia	No.	14299.00
	600 mm dia	No.	18336.00
	700 mm dia	No.	25009.00
	750 mm dia	No.	30390.00
2	<b>Supply of C. I. Mechanical Compression Collar Coupling</b> suitable for C. I. Spun Pipes ( as per - IS - 1536 /2001) and complete with sealing rubber gasket of SBR,,C.I. follower Glands and M.S. nut Bolts.The whole assembly should be mechanically and hydraulically tested to the provisions as laid down in IS:1538 /1993.		
	80 mm dia	No.	826.00
	100 mm dia	No.	886.00
	125 mm dia	No.	1181.00
	150 mm dia	No.	1593.00
	200 mm dia	No.	1818.00
	250 mm dia	No.	2914.00
	300 mm dia	No.	3729.00
	350 mm dia	No.	4597.00
	400 mm dia	No.	7154.00
	450 mm dia	No.	8033.00
	500 mm dia	No.	10977.00
	600 mm dia	No.	13692.00
	700 mm dia	No.	17889.00
	750 mm dia	No.	20990.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
3	<b>Supply of C. I. Mechanical Joint Double Socket 900 (11/4'') Bends</b> as dimensionally described in Table-14 of IS-13382/ 1992 complete with sealing rubber gasket of SBR (dimensionally described in IS-12820/1989) with cast iron follower gland and mild steel nut bolts coated or otherwise protected from rusting and suitable for C. I. pipes.		
	80 mm dia	No.	2247.00
	100 mm dia	No.	2607.00
	125 mm dia	No.	3045.00
	150 mm dia	No.	4787.00
	200 mm dia	No.	6353.00
	250 mm dia	No.	9455.00
	300 mm dia	No.	11507.00
	350 mm dia	No.	19053.00
	400 mm dia	No.	25968.00
	450 mm dia	No.	33146.00
	500 mm dia	No.	41247.00
	600 mm dia	No.	58295.00
	700 mm dia	No.	92016.00
	750 mm dia	No.	104509.00
4	<b>Supply of CI Mechanical joint Double Socket 450 (11/8'') Bends</b> as dimensionally described in Table -15 of IS - 13382/ 1992 complete with sealing rubber gasket of S.B.R. (dimensionally described in IS-12820/1989) with cast iron follower gland mild steel nut bolts coated or otherwise protected from rusting and suitable for C. I. pipes.		
	80 mm dia	No.	2087.00
	100 mm dia	No.	2323.00
	125 mm dia	No.	2936.00
	150 mm dia	No.	4032.00
	200 mm dia	No.	5311.00
	250 mm dia	No.	7791.00
	300 mm dia	No.	9400.00
	350 mm dia	No.	15681.00
	400 mm dia	No.	19349.00
	450 mm dia	No.	26989.00
	500 mm dia	No.	30069.00
	600 mm dia	No.	41633.00
	700 mm dia	No.	59329.00
	750 mm dia	No.	78462.00
5	<b>Supply of C. I. Mechanical Joint Double Socket 22.50 (1/6'') Bends</b> as dimensionally described in Table -16 of IS-13382/ 1992 complete with sealing rubber gasket of SBR (dimensionally described in IS-12820/1989) with cast iron follower gland and mild steel nut bolts coated or otherwise protected from rusting and suitable for C. I. pipes.		
	80 mm dia	No.	2003.00
	100 mm dia	No.	2230.00
	125 mm dia	No.	2677.00
	150 mm dia	No.	3785.00
	200 mm dia	No.	4747.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
	250 mm dia	No.	7179.00
	300 mm dia	No.	8664.00
	350 mm dia	No.	13677.00
	400 mm dia	No.	17534.00
	450 mm dia	No.	22182.00
	500 mm dia	No.	25851.00
	600 mm dia	No.	34252.00
	700 mm dia	No.	51524.00
	750 mm dia	No.	56739.00
6	<b>Supply of CI Mechanical joint Double Socket 11.250 (1/32'') Bends</b> as dimensionally described in Table -17 of IS - 13382/1992 complete with sealing rubber gasket of S.B.R.( dimensionally described in IS-12820 /1989) with cast iron follower gland and mild steel nut bolts coated or otherwise protected from rusting and suitable for C. I. pipes.		
	80 mm dia	No.	1983.00
	100 mm dia	No.	2178.00
	125 mm dia	No.	2366.00
	150 mm dia	No.	3700.00
	200 mm dia	No.	4556.00
	250 mm dia	No.	6735.00
	300 mm dia	No.	7462.00
	350 mm dia	No.	11777.00
	400 mm dia	No.	15951.00
	450 mm dia	No.	20134.00
	500 mm dia	No.	21947.00
	600 mm dia	No.	30086.00
	700 mm dia	No.	40559.00
	750 mm dia	No.	45249.00
7	<b>Supply of CI Mechanical joint All Socket Tees</b> as dimensionally described in Table -18 of IS - 13382/1992 complete with sealing rubber gasket of S.B.R. (dimensionally described in IS- 12820/1989) with cast iron follower gland and mild steel nut bolts coated or otherwise protected from rusting and suitable for C. I. pipes.		
	80x80x80 mm dia	No.	3039.00
	100x100x80 mm dia	No.	3267.00
	100x100x100 mm dia	No.	3622.00
	150x150x80 mm dia	No.	5074.00
	150x150x100 mm dia	No.	5146.00
	150x150x150 mm dia	No.	6382.00
	200x200x80 mm dia	No.	6120.00
	200x200x100 mm dia	No.	6188.00
	200x200x150 mm dia	No.	7370.00
	200x200x200 mm dia	No.	8109.00
	250x250x80 mm dia	No.	8619.00
	250x250x100 mm dia	No.	8809.00
	250x250x150 mm dia	No.	10513.00
	250x250x200 mm dia	No.	11108.00
	250x250x250 mm dia	No.	12459.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
	300x300x80 mm dia	No.	9451.00
	300x300x100 mm dia	No.	9664.00
	300x300x150 mm dia	No.	12393.00
	300x300x200 mm dia	No.	12803.00
	300x300x250 mm dia	No.	13555.00
	300x300x300 mm dia	No.	14960.00
8	<b>Supply of CI Mechanical joint Double Socket with Flanged Tees</b> dimensionally described in Table -19 of IS - 13382/1992 complete with sealing rubber gasket of S.B.R.( dimensionally described in IS-12820/ 1989) with cast iron follower gland and mild steel nut bolts coated or galvanised coated or otherwise protected from rusting and suitable for C. I. pipes.		
	80x80x80 mm dia	No.	2976.00
	100x100x80 mm dia	No.	3266.00
	100x100x100 mm dia	No.	3455.00
	150x150x80 mm dia	No.	4928.00
	150x150x100 mm dia	No.	5050.00
	150x150x150 mm dia	No.	6015.00
	200x200x80 mm dia	No.	5784.00
	200x200x100 mm dia	No.	6170.00
	200x200x150 mm dia	No.	7106.00
	200x200x200 mm dia	No.	8147.00
	250x250x80 mm dia	No.	8169.00
	250x250x100 mm dia	No.	8597.00
	250x250x150 mm dia	No.	10200.00
	250x250x200 mm dia	No.	10673.00
	250x250x250 mm dia	No.	11052.00
	300x300x80 mm dia	No.	9590.00
	300x300x100 mm dia	No.	9778.00
	300x300x150 mm dia	No.	11289.00
	300x300x200 mm dia	No.	11385.00
	300x300x250 mm dia	No.	12564.00
	300x300x300 mm dia	No.	15398.00
	350x350x80 mm dia	No.	13413.00
	350x350x100 mm dia	No.	14265.00
	350x350x150 mm dia	No.	15348.00
	350x350x200 mm dia	No.	17885.00
	350x350x300 mm dia	No.	18323.00
	350x350x350 mm dia	No.	20968.00
	400x400x80 mm dia	No.	17534.00
	400x400x100 mm dia	No.	18587.00
	400x400x150 mm dia	No.	20694.00
	400x400x200 mm dia	No.	21111.00
	400x400x300 mm dia	No.	25442.00
	400x400x400 mm dia	No.	29130.00
	450x450x80 mm dia	No.	20913.00
	450x450x100 mm dia	No.	21969.00
	450x450x200 mm dia	No.	25764.00
	450x450x300 mm dia	No.	32511.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
	450x450x350 mm dia	No.	34304.00
	450x450x450 mm dia	No.	37261.00
	500x500x100 mm dia	No.	23529.00
	500x500x250 mm dia	No.	32175.00
	500x500x300 mm dia	No.	33333.00
	500x500x400 mm dia	No.	40191.00
	500x500x500 mm dia	No.	48523.00
	600x600x100 mm dia	No.	33626.00
	600x600x300 mm dia	No.	46175.00
	600x600x400 mm dia	No.	52605.00
	600x600x500 mm dia	No.	56927.00
	600x600x600 mm dia	No.	69896.00
	700x700x100 mm dia	No.	44565.00
	700x700x200 mm dia	No.	51630.00
	700x700x350 mm dia	No.	62385.00
	700x700x400 mm dia	No.	67024.00
	750x750x150 mm dia	No.	53153.00
	750x750x250 mm dia	No.	60958.00
	750x750x750 mm dia	No.	116950.00
9	<b>Supply of CI Mechaincal joint Double Socket Reducers</b> as described in Table -21 of IS - 13382/1992 complete with sealing rubber gasket of SBR( dimensionally described in IS-12820/ 1989) with cast iron follower gland and mild steel nut bolts coated or otherwise protected from rusting and suitable for C. I. pipes.		
	100x80 mm dia	No.	2108.00
	150x80 mm dia	No.	3317.00
	150x100 mm dia	No.	3511.00
	200x100 mm dia	No.	4041.00
	200x150 mm dia	No.	4420.00
	250x150 mm dia	No.	5891.00
	250x200 mm dia	No.	6038.00
	300x150 mm dia	No.	7427.00
	300x200 mm dia	No.	7439.00
	300x250 mm dia	No.	7566.00
	350x200 mm dia	No.	10692.00
	350x250 mm dia	No.	10726.00
	350x300 mm dia	No.	10600.00
	400x250 mm dia	No.	16149.00
	400x300 mm dia	No.	14307.00
	400x350 mm dia	No.	14402.00
	450x300 mm dia	No.	17884.00
	450x350 mm dia	No.	17874.00
	450x400 mm dia	No.	17650.00
	500x350 mm dia	No.	21500.00
	500x400 mm dia	No.	21172.00
	500x450 mm dia	No.	20636.00
	600x400 mm dia	No.	31217.00
	600x450 mm dia	No.	30382.00
	600x500 mm dia	No.	28526.00

<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
	700x500 mm dia	No.	42851.00
	700x600 mm dia	No.	38889.00
	750x600 mm dia	No.	46189.00
	750x700 mm dia	No.	42694.00
	800x450 mm dia	No.	63544.00
	800x700 mm dia	No.	54549.00

**M. S. pipes**

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1	<b>Manufacturing, providing and supplying spirally welded / ERW/ SAW / fabricated M. S. pipes</b> (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 railway freight, insurance, unloading from railway wagon, loading into truck, transport to stores, unloading, stacking excluding GST levied by GOI & GOM in all respect, etc, complete as per IS - 3589 and IS-5504 as applicable as per specifications (No negative tolerance in thickness is permissible).		
	219.10 ( O.D.)	4.80 Rmt	1577.00
		5.60 Rmt	1832.00
		6.40 Rmt	2087.00
		7.00 Rmt	2275.00
		7.90 Rmt	2557.00
		8.20 Rmt	2651.00
		8.70 Rmt	2806.00
		9.50 Rmt	3052.00
	273.1 ( O.D.)	4.80 Rmt	1974.00
		5.60 Rmt	2296.00
		6.40 Rmt	2616.00
		7.20 Rmt	2934.00
		7.80 Rmt	3172.00
		8.70 Rmt	3526.00
		9.30 Rmt	3760.00
	323.90 ( O.D.)	5.60 Rmt	2732.00
		6.40 Rmt	3114.00
		7.10 Rmt	3446.00
		7.90 Rmt	3826.00
		8.40 Rmt	4062.00
		8.70 Rmt	4202.00
		9.50 Rmt	4578.00
	355.7 ( O.D.)	5.60 Rmt	3004.00
		6.40 Rmt	3426.00
		7.10 Rmt	3793.00
		7.90 Rmt	4210.00
		8.70 Rmt	4625.00
		9.50 Rmt	5040.00
	406 ( O.D.)	5.60 Rmt	3436.00
		6.40 Rmt	3919.00

Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
		7.10	Rmt	4340.00
		7.90	Rmt	4820.00
		8.70	Rmt	5297.00
		9.50	Rmt	5773.00
		10.00	Rmt	6070.00
	457 ( O.D.)	5.60	Rmt	3875.00
		6.40	Rmt	4420.00
		7.10	Rmt	4896.00
		7.90	Rmt	5437.00
		8.70	Rmt	5977.00
		9.50	Rmt	6516.00
		10.00	Rmt	6851.00
	508 ( O.D.)	5.60	Rmt	4313.00
		6.40	Rmt	4920.00
		7.10	Rmt	5450.00
		7.90	Rmt	6055.00
		8.70	Rmt	6658.00
		9.50	Rmt	7259.00
		10.00	Rmt	7633.00
	559 ( O.D.)	5.60	Rmt	4750.00
		6.40	Rmt	5420.00
		7.10	Rmt	6006.00
		7.90	Rmt	6673.00
		8.70	Rmt	7338.00
		9.50	Rmt	8002.00
		10.00	Rmt	8414.00
	610 ( O.D.)	5.60	Rmt	5188.00
		6.40	Rmt	5921.00
		7.10	Rmt	6560.00
		7.90	Rmt	7290.00
		8.70	Rmt	8017.00
		9.50	Rmt	8743.00
		10.00	Rmt	9196.00
		12.00	Rmt	10998.00
	660 ( O.D.)	5.60	Rmt	5617.00
		6.40	Rmt	6410.00
		7.10	Rmt	7105.00
		7.90	Rmt	7895.00
		8.70	Rmt	8684.00
		9.50	Rmt	9472.00
		10.00	Rmt	9962.00
	711 ( O.D.)	5.60	Rmt	6054.00

Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
		6.40	Rmt	6911.00
		7.10	Rmt	7660.00
		7.90	Rmt	8513.00
		8.70	Rmt	9364.00
		9.50	Rmt	10214.00
		10.00	Rmt	10744.00
		12.00	Rmt	12856.00
	762 ( O.D.)	5.60	Rmt	6492.00
		6.40	Rmt	7412.00
		7.10	Rmt	8215.00
		7.90	Rmt	9130.00
		8.70	Rmt	10044.00
		9.50	Rmt	10957.00
		10.00	Rmt	11526.00
	813 ( O.D.)	5.60	Rmt	6930.00
		6.40	Rmt	7912.00
		7.10	Rmt	8770.00
		7.90	Rmt	9748.00
		8.70	Rmt	10724.00
		9.50	Rmt	11699.00
		10.00	Rmt	12307.00
		12.00	Rmt	14731.00
	864 ( O.D.)	5.60	Rmt	7367.00
		6.40	Rmt	8412.00
		7.10	Rmt	9325.00
		7.90	Rmt	10366.00
		8.70	Rmt	11404.00
		9.50	Rmt	12440.00
		10.00	Rmt	13088.00
	914 ( O.D.)	5.60	Rmt	7796.00
		6.40	Rmt	8902.00
		7.10	Rmt	9868.00
		7.90	Rmt	10970.00
		8.70	Rmt	12071.00
		9.50	Rmt	13170.00
		10.00	Rmt	13854.00
	965 ( O.D.)	5.60	Rmt	8233.00
		6.40	Rmt	9403.00
		7.10	Rmt	10423.00
		7.90	Rmt	11468.00
		8.70	Rmt	12751.00
		9.50	Rmt	13912.00
		10.00	Rmt	14636.00

Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
	1016 ( O.D.)	5.60	Rmt	8731.00
		6.40	Rmt	9904.00
		7.10	Rmt	10978.00
		7.90	Rmt	12206.00
		8.70	Rmt	13432.00
		9.50	Rmt	14654.00
		10.00	Rmt	15418.00
		12.00	Rmt	18466.00
	1067 ( O.D.)	5.60	Rmt	9110.00
		6.40	Rmt	10403.00
		7.10	Rmt	11533.00
		7.90	Rmt	12823.00
		8.70	Rmt	14111.00
		9.50	Rmt	15396.00
		10.00	Rmt	16199.00
	1118 ( O.D.)	5.60	Rmt	9547.00
		6.40	Rmt	10903.00
		7.10	Rmt	12088.00
		7.90	Rmt	13441.00
		8.70	Rmt	14791.00
		9.50	Rmt	16139.00
		10.00	Rmt	16981.00
	1168 ( O.D.)	5.60	Rmt	9977.00
		6.40	Rmt	11394.00
		7.10	Rmt	12632.00
		7.90	Rmt	14046.00
		8.70	Rmt	15458.00
		9.50	Rmt	16867.00
		10.00	Rmt	17748.00
	1219 ( O.D.)	6.40	Rmt	11894.00
		7.10	Rmt	13187.00
		7.90	Rmt	14663.00
		8.70	Rmt	16138.00
		9.50	Rmt	17610.00
		10.00	Rmt	18529.00
		12.00	Rmt	22198.00
	1296 ( O.D.)	9.50	Rmt	18731.00
		9.98	Rmt	19669.00
		10.00	Rmt	19710.00
	1321.00	6.40	Rmt	12894.00
	( O.D.)	7.10	Rmt	14297.00

Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
		7.90	Rmt	15899.00
		8.70	Rmt	17498.00
		9.50	Rmt	19094.00
		10.00	Rmt	20093.00
		7.10	Rmt	15396.00
	1422.00	7.90	Rmt	17122.00
	( O.D.)	8.70	Rmt	18845.00
		9.50	Rmt	20566.00
		10.00	Rmt	21641.00
		12.00	Rmt	25932.00
	1473.00	9.50	Rmt	21308.00
	( O.D.)	9.98	Rmt	22378.00
	1524.00	7.10	Rmt	16506.00
	( O.D.)	7.90	Rmt	18356.00
		8.70	Rmt	20204.00
		9.50	Rmt	22051.00
		10.00	Rmt	23204.00
		11.90	Rmt	27577.00
		12.00	Rmt	27808.00
	1550.00	10.00	Rmt	23602.00
	( O.D.)	11.00	Rmt	25945.00
	1576.00	9.50	Rmt	22808.00
	( O.D.)	10.00	Rmt	24001.00
	1626.00	7.10	Rmt	17616.00
	( O.D.)	7.90	Rmt	19592.00
		8.70	Rmt	21565.00
		9.50	Rmt	23536.00
		10.00	Rmt	24767.00
		12.00	Rmt	29684.00
	1650.00	7.90	Rmt	19883.00
	( O.D.)	8.70	Rmt	21884.00
		9.50	Rmt	23885.00
		10.00	Rmt	25134.00
		12.00	Rmt	30125.00
	1700.00	7.90	Rmt	20486.00
	( O.D.)	8.70	Rmt	22550.00
		9.50	Rmt	24613.00
		10.00	Rmt	25901.00
		12.00	Rmt	31044.00



Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
	1750.00	7.90	Rmt	21092.00
	( O.D.)	8.70	Rmt	23218.00
		9.50	Rmt	25342.00
		10.00	Rmt	26668.00
		12.00	Rmt	31964.00
	1800.00	7.90	Rmt	21698.00
	( O.D.)	8.70	Rmt	23885.00
		9.50	Rmt	26070.00
		10.00	Rmt	27433.00
		12.00	Rmt	32884.00
	1850.00	7.90	Rmt	0.00
	( O.D.)	8.70	Rmt	24551.00
		9.50	Rmt	26797.00
		10.00	Rmt	28200.00
		12.00	Rmt	33803.00
	1900.00	7.90	Rmt	22909.00
	( O.D.)	8.70	Rmt	25218.00
		9.50	Rmt	27526.00
		10.00	Rmt	28967.00
		12.00	Rmt	34723.00
	1950.00	7.90	Rmt	23514.00
	( O.D.)	8.70	Rmt	25884.00
		9.50	Rmt	28253.00
		10.00	Rmt	29732.00
		12.00	Rmt	35642.00
	2000.00	7.90	Rmt	24120.00
	( O.D.)	8.70	Rmt	26551.00
		9.50	Rmt	28981.00
		10.00	Rmt	30499.00
		12.00	Rmt	36563.00
	2050.00	7.90	Rmt	24725.00
	( O.D.)	8.70	Rmt	27218.00
		9.50	Rmt	29708.00
		10.00	Rmt	31265.00
		12.00	Rmt	37482.00
	2100.00	7.90	Rmt	25331.00
	( O.D.)	8.70	Rmt	27884.00
		9.50	Rmt	30762.00
		10.00	Rmt	32032.00
		12.00	Rmt	38401.00

Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
	2150.00	7.90	Rmt	25937.00
	( O.D.)	8.70	Rmt	28552.00
		9.50	Rmt	31165.00
		10.00	Rmt	32798.00
		12.00	Rmt	39320.00
	2200.00	7.90	Rmt	26540.00
	( O.D.)	8.70	Rmt	29218.00
		9.50	Rmt	31894.00
		10.00	Rmt	33564.00
		12.00	Rmt	40241.00
	2250.00	7.90	Rmt	27146.00
	( O.D.)	8.70	Rmt	29885.00
		9.50	Rmt	32621.00
		10.00	Rmt	34331.00
		12.00	Rmt	41160.00
	2300.00	7.90	Rmt	27752.00
	( O.D.)	8.70	Rmt	30552.00
		9.50	Rmt	33349.00
		10.00	Rmt	35096.00
		12.00	Rmt	42079.00
	2350.00	7.90	Rmt	28357.00
	( O.D.)	8.70	Rmt	31218.00
		9.50	Rmt	34076.00
		10.00	Rmt	35863.00
		12.00	Rmt	42998.00
	2400.00	7.90	Rmt	28963.00
	( O.D.)	8.70	Rmt	31885.00
		9.50	Rmt	34805.00
		10.00	Rmt	36630.00
		12.00	Rmt	43919.00
	2450.00	7.90	Rmt	29568.00
	( O.D.)	8.70	Rmt	32551.00
		9.50	Rmt	35534.00
		10.00	Rmt	37396.00
		12.00	Rmt	44838.00
	2500.00	7.90	Rmt	30173.00
	( O.D.)	8.70	Rmt	33218.00
		9.50	Rmt	36262.00
		10.00	Rmt	38162.00
		12.00	Rmt	45757.00
		16.00	Rmt	60913.00

Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
2	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 railway freight, insurance, unloading from railway wagon, loading into truck, transport to stores, unloading, stacking, excluding GST levied by GOI & GOM in all respect etc. complete as per IS - 3589 and IS-5504 as applicable as per specifications (No negative tolerance in thickness is permissible).			
		5.00	Rmt	1571.00
		6.00	Rmt	1894.00
	200.00 ( I.D.)	7.00	Rmt	2221.00
	( I.D.)	8.00	Rmt	2550.00
		9.00	Rmt	2882.00
		10.00	Rmt	3218.00
		5.00	Rmt	1955.00
		6.00	Rmt	2354.00
	250.00	7.00	Rmt	2758.00
	( I.D.)	8.00	Rmt	3163.00
		9.00	Rmt	3574.00
		10.00	Rmt	3985.00
		5.00	Rmt	2336.00
		6.00	Rmt	2814.00
	300.00	7.00	Rmt	3293.00
	( I.D.)	8.00	Rmt	3776.00
		9.00	Rmt	4262.00
		10.00	Rmt	4752.00
		5.00	Rmt	2720.00
		6.00	Rmt	3274.00
	350.00	7.00	Rmt	3830.00
	( I.D.)	8.00	Rmt	4390.00
		9.00	Rmt	4952.00
		10.00	Rmt	5518.00
		5.00	Rmt	3103.00
		6.00	Rmt	3733.00
	400.00	7.00	Rmt	4367.00
	( I.D.)	8.00	Rmt	5002.00
		9.00	Rmt	5642.00
		10.00	Rmt	6284.00
		5.00	Rmt	3487.00
		6.00	Rmt	4193.00

Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
	450.00	7.00	Rmt	4903.00
	( I.D.)	8.00	Rmt	5616.00
		9.00	Rmt	6331.00
		10.00	Rmt	7050.00
		5.00	Rmt	3870.00
		6.00	Rmt	4654.00
	500.00	7.00	Rmt	5438.00
	( I.D.)	8.00	Rmt	6229.00
		9.00	Rmt	7021.00
		10.00	Rmt	7817.00
		5.00	Rmt	4253.00
		6.00	Rmt	5113.00
	550.00	7.00	Rmt	5976.00
	( I.D.)	8.00	Rmt	6841.00
		9.00	Rmt	7711.00
		10.00	Rmt	8582.00
		5.00	Rmt	4636.00
		6.00	Rmt	5572.00
		7.00	Rmt	6512.00
	600.00	8.00	Rmt	7454.00
	( I.D.)	9.00	Rmt	8400.00
		10.00	Rmt	9348.00
		12.00	Rmt	11255.00
		5.00	Rmt	5020.00
		6.00	Rmt	6032.00
		7.00	Rmt	7048.00
	650.00	8.00	Rmt	8068.00
	( I.D.)	9.00	Rmt	9090.00
		10.00	Rmt	10115.00
		12.00	Rmt	12175.00
		5.00	Rmt	5402.00
		6.00	Rmt	6492.00
		7.00	Rmt	7585.00
	700.00	8.00	Rmt	8681.00
	( I.D.)	9.00	Rmt	9779.00
		10.00	Rmt	10882.00
		12.00	Rmt	13096.00
		5.00	Rmt	5786.00
		6.00	Rmt	6952.00
		7.00	Rmt	8122.00
	750.00	8.00	Rmt	9294.00
	( I.D.)	9.00	Rmt	10469.00
		10.00	Rmt	11647.00
		12.00	Rmt	14014.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
		5.00	Rmt 6168.00
		6.00	Rmt 7412.00
		7.00	Rmt 8658.00
	800.00	8.00	Rmt 9907.00
	( I.D.)	9.00	Rmt 11159.00
		10.00	Rmt 12414.00
		12.00	Rmt 14934.00
		5.00	Rmt 6552.00
		6.00	Rmt 7871.00
		7.00	Rmt 9193.00
	850.00	8.00	Rmt 10519.00
	( I.D.)	9.00	Rmt 11848.00
		10.00	Rmt 13180.00
		12.00	Rmt 15853.00
		5.00	Rmt 6935.00
		6.00	Rmt 8332.00
		7.00	Rmt 9731.00
	900.00	8.00	Rmt 11132.00
	( I.D.)	9.00	Rmt 12538.00
		10.00	Rmt 13946.00
		12.00	Rmt 16774.00
		5.00	Rmt 7319.00
		6.00	Rmt 8791.00
		7.00	Rmt 10267.00
	950.00	8.00	Rmt 11746.00
	( I.D.)	9.00	Rmt 13229.00
		10.00	Rmt 14713.00
		12.00	Rmt 17692.00
		5.00	Rmt 7702.00
		6.00	Rmt 9251.00
		7.00	Rmt 10804.00
	1000.00	8.00	Rmt 12360.00
	( I.D.)	9.00	Rmt 13918.00
		10.00	Rmt 15479.00
		12.00	Rmt 18612.00
		5.00	Rmt 8084.00
		6.00	Rmt 9710.00
		7.00	Rmt 11339.00
	1050.00	8.00	Rmt 12972.00
	( I.D.)	9.00	Rmt 14608.00
		10.00	Rmt 16246.00
		12.00	Rmt 19531.00
		5.00	Rmt 8467.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	6.00	Rmt	10170.00
	7.00	Rmt	11876.00
1100.00	8.00	Rmt	13585.00
( I.D.)	9.00	Rmt	15298.00
	10.00	Rmt	17011.00
	12.00	Rmt	20452.00
	5.00	Rmt	8851.00
	6.00	Rmt	10631.00
	7.00	Rmt	12413.00
1150.00	8.00	Rmt	14198.00
( I.D.)	9.00	Rmt	15986.00
	10.00	Rmt	17778.00
	12.00	Rmt	21371.00
	5.00	Rmt	9234.00
	6.00	Rmt	11090.00
	7.00	Rmt	12949.00
1200.00	8.00	Rmt	14810.00
( I.D.)	9.00	Rmt	16676.00
	10.00	Rmt	18545.00
	12.00	Rmt	22290.00
	6.00	Rmt	11550.00
	7.00	Rmt	13486.00
1250.00	8.00	Rmt	15425.00
( I.D.)	9.00	Rmt	17366.00
	10.00	Rmt	19310.00
	12.00	Rmt	23210.00
	6.00	Rmt	12010.00
	7.00	Rmt	14022.00
1300.00	8.00	Rmt	16038.00
( I.D.)	9.00	Rmt	18055.00
	10.00	Rmt	20077.00
	12.00	Rmt	24130.00
	7.00	Rmt	14558.00
	8.00	Rmt	16650.00
1350.00	9.00	Rmt	18745.00
( I.D.)	10.00	Rmt	20844.00
	12.00	Rmt	25050.00
	7.00	Rmt	15094.00
	8.00	Rmt	17263.00
1400.00	9.00	Rmt	19435.00
( I.D.)	10.00	Rmt	21610.00
	12.00	Rmt	25968.00
	7.00	Rmt	15631.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	8.00	Rmt	17876.00
	1450.00 9.00	Rmt	20124.00
	( I.D.) 10.00	Rmt	22376.00
	12.00	Rmt	26888.00
	7.00	Rmt	16168.00
	8.00	Rmt	18488.00
	1500.00 9.00	Rmt	20814.00
	( I.D.) 10.00	Rmt	23142.00
	12.00	Rmt	27808.00
	7.00	Rmt	16704.00
	8.00	Rmt	19103.00
	1550.00 9.00	Rmt	21504.00
	( I.D.) 10.00	Rmt	23909.00
	12.00	Rmt	28728.00
	7.00	Rmt	17240.00
	8.00	Rmt	19716.00
	1600.00 9.00	Rmt	22194.00
	( I.D.) 10.00	Rmt	24676.00
	12.00	Rmt	29646.00
	8.00	Rmt	20329.00
	1650.00 9.00	Rmt	22884.00
	( I.D.) 10.00	Rmt	25441.00
	12.00	Rmt	30566.00
	8.00	Rmt	20941.00
	1700.00 9.00	Rmt	23574.00
	( I.D.) 10.00	Rmt	26208.00
	12.00	Rmt	31486.00
	8.00	Rmt	21554.00
	1750.00 9.00	Rmt	24263.00
	( I.D.) 10.00	Rmt	26974.00
	12.00	Rmt	32406.00
	8.00	Rmt	22168.00
	1800.00 9.00	Rmt	24953.00
	( I.D.) 10.00	Rmt	27740.00
	12.00	Rmt	33325.00
	8.00	Rmt	22781.00
	1850.00 9.00	Rmt	25643.00
	( I.D.) 10.00	Rmt	28507.00
	12.00	Rmt	34244.00
	8.00	Rmt	23394.00
	1900.00 9.00	Rmt	26332.00

Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
	( I.D.)	10.00	Rmt	29273.00
		12.00	Rmt	35165.00
		8.00	Rmt	24007.00
	1950.00	9.00	Rmt	27022.00
	( I.D.)	10.00	Rmt	30040.00
		12.00	Rmt	36084.00
		8.00	Rmt	24619.00
		9.00	Rmt	27712.00
	2000.00	10.00	Rmt	30806.00
	( I.D.)	12.00	Rmt	37004.00
		16.00	Rmt	49436.00
		8.00	Rmt	25232.00
		9.00	Rmt	28400.00
	2050.00	10.00	Rmt	31572.00
	( I.D.)	12.00	Rmt	37922.00
		16.00	Rmt	50663.00
		8.00	Rmt	25847.00
		9.00	Rmt	29090.00
	2100.00	10.00	Rmt	32339.00
	( I.D.)	12.00	Rmt	38843.00
		16.00	Rmt	51888.00
		8.00	Rmt	26459.00
		9.00	Rmt	29779.00
	2150.00	10.00	Rmt	33104.00
	( I.D.)	12.00	Rmt	39762.00
		16.00	Rmt	53114.00
		8.00	Rmt	27072.00
		9.00	Rmt	30469.00
	2200.00	10.00	Rmt	33871.00
	( I.D.)	12.00	Rmt	40682.00
		16.00	Rmt	54341.00
		8.00	Rmt	27685.00
		9.00	Rmt	31160.00
	2250.00	10.00	Rmt	34638.00
	( I.D.)	12.00	Rmt	41600.00
		16.00	Rmt	55566.00
		8.00	Rmt	28298.00
		9.00	Rmt	31849.00
	2300.00	10.00	Rmt	35404.00
	( I.D.)	12.00	Rmt	42521.00
		16.00	Rmt	56792.00



Sr. No.	Description		Unit	Rate (in Rs.) 2019-2020
1	2		3	4
		8.00	Rmt	28910.00
		9.00	Rmt	32539.00
	2350.00	10.00	Rmt	36170.00
	( I.D.)	12.00	Rmt	43440.00
		16.00	Rmt	58019.00
		8.00	Rmt	29525.00
		9.00	Rmt	33229.00
	2400.00	10.00	Rmt	36936.00
	( I.D.)	12.00	Rmt	44360.00
		16.00	Rmt	59244.00
		8.00	Rmt	30138.00
		9.00	Rmt	33918.00
	2450.00	10.00	Rmt	37702.00
	( I.D.)	12.00	Rmt	45278.00
		16.00	Rmt	60472.00
		8.00	Rmt	30750.00
		9.00	Rmt	34608.00
	2500.00	10.00	Rmt	38468.00
	( I.D.)	12.00	Rmt	46199.00
		16.00	Rmt	61697.00

<b>XV. FABRICATION OF M.S. PIPES &amp; SPECIALS</b>			
<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	<b>XV. FABRICATION OF M.S. PIPES &amp; SPECIALS</b>		
1	Providing, fabricating and fixing <b>expansion joints</b> for pipelines as per the drawing. The rate to include machining the strakes and steel ring as shown in the drawing and welding on either automatic welding machine or manually, Rate includes plates and flats required for expansion joint and all other materials such as synthetic rubber, rubber ring, etc. including packing as per specifications, grease, bolts and nuts, local handling, excluding GST levied by GOI & GOM in all respect etc. complete.		
	Expansion joints suitable for pipe diameters.		
	300 mm	Each	28832.00
	400 mm	Each	41608.00
	450 mm	Each	54122.00
	500 mm	Each	72563.00
	600 mm	Each	85246.00
	700 mm	Each	106120.00
	750 mm	Each	116944.00
	800 mm	Each	136096.00
	900 mm	Each	158016.00
	1000 mm	Each	189208.00
	1200 mm	Each	251290.00
2	<b>Blast cleaning the surface</b> of the old or new pipeline <b>internally</b> to remove all rust etc. complete, including providing copper slag/garnet, machinery, labour, cutting of pipes at required places and rewelding the same etc, complete as directed by Engineer-in-charge. (Pipes pieces if required for rewelding of old pipeline shall be paid separately.)	Sqm.	124.00
3	<b>Blast Cleaning</b> of old or new pipeline surface internally with mechanical cleaning machine having steel scraper blades with required passes including removing all rust, scaling etc. including cutting of pipes at required places, rewelding the same including cost of all materials and labour, etc, complete (Pipes pieces if required for rewelding of old pipeline shall be paid separately.)	Sqm.	124.00
4	<b>Blast Cleaning</b> of old pipeline surface internally by using swabbing method by passing polyurethane foam "Pig" with required hydraulic pressure, cutting of pipes at required places, rewelding the same including cost of all materials and labour, etc. complete. (Pipe pieces if required for rewelding of old pipeline shall be paid separately.)	Sqm.	146.00
5	<b>Blast cleaning</b> the surface of the old or new pipeline externally to remove all rust including providing copper slag/garnet machinery etc. complete as directed by Engineer-in-charge.	Sqm.	134.00
6	Providing and applying <b>primer</b> and <b>one coat of red oxide</b> of iron paint internally to blast cleaned surface of the pipes.	Sqm.	40.00
7	Providing and applying <b>primer and one coat of red oxide</b> of iron paint <b>internally</b> including cleaning the surface of the pipes with steel scrappers, wire brushes, and metal cleaning solution, etc.	Sqm.	67.00
8	Providing and applying <b>primer and one coat of red oxide</b> of iron paint <b>externally</b> to blast cleaned surface of the pipes.	Sqm.	44.00
9	Providing and applying <b>primer and one coat of red oxide of iron paint</b> externally including cleaning the surface of the pipes with steel scrappers, wire brushes, and metal cleaning solution, etc.	Sqm.	96.00

<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
10	Providing and applying <b>covering coat of grey graphite</b> of approved quality including dusting the surface etc. complete.	Sqm.	49.00
11	Providing and applying <b>one coat of zinc rich epoxy primer</b> to the internal surface of pipe line at site.	Sqm.	104.00
12	Providing and applying <b>primer first coat of intertol 49 W emaline 05/58 pipe coat</b> or any other equivalent approved paint to the internal surface of pipe line at site.	Sqm.	80.00
	b) Second coat	Sqm.	65.00
	c) Third coat	Sqm.	64.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>XVI. M. S. PIPES LAYING</b>		
1	Lowering, <b>laying in position to correct line and level including M. S. pipes</b> with / without any outcoating on pedestals or chairs upon prepared formation. The rate to include loading, unloading, hoisting, marginal cutting wherever required, assembling and tack welding, and transportation upto 500 M. etc. completed as specified.		
	<b>a) 5 mm to 8 mm thick</b>		
	Upto 250 mm. dia.	Rmt	413.00
	Above 250 mm. Upto 500 mm. dia.	Rmt	486.00
	Above 500 mm. Upto 750 mm. dia.	Rmt	557.00
	Above 750 mm. Upto 1000 mm. dia.	Rmt	631.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	705.00
	<b>b) Above 8 mm upto 12 mm thick</b>		
	From 750 mm. Upto 1000 mm. dia.	Rmt	840.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	936.00
	Above 1250 mm. Upto 1500 mm. dia.	Rmt	1033.00
	Above 1500 mm. Upto 1750 mm. dia.	Rmt	1132.00
	Above 1750 mm. Upto 2000 mm. dia.	Rmt	1229.00
	Above 2000 mm. Upto 2250 mm. dia.	Rmt	1326.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1427.00
	<b>c) Above 12 mm upto 16 mm thick</b>		
	From 2000 mm. Upto 2250 mm. dia.	Rmt	1264.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1364.00
	Above 2500 mm. Upto 2750 mm. dia.	Rmt	1456.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	1550.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	1643.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	1739.00
	<b>d) Above 16 mm upto 20 mm thick</b>		
	From 2500 mm. Upto 2750 mm. dia.	Rmt	1910.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	2016.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	2123.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	2226.00
	Above 3500 mm. Upto 3750 mm. dia.	Rmt	2334.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	2441.00
	<b>e) Above 20 mm upto 25 mm thick</b>		
	From 3500 mm. Upto 3750 mm. dia.	Rmt	2603.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	2751.00
2	Lowering, laying in position to correct line and level including <b>M. S. specials with / without any outcoating such as distance pieces, straps, bends, tapers, etc. on pedestals or chairs upon</b> formation. The rate to include loading, unloading, hoisting, marginal cutting wherever required, assembling and tack welding, and transportation upto 500M etc. complete.		
	<b>a) 5 mm to 8 mm thick</b>		
	Upto 250 mm. dia.	Rmt	576.00
	Above 250 mm. Upto 500 mm. dia.	Rmt	677.00
	Above 500 mm. Upto 750 mm. dia.	Rmt	782.00
	Above 750 mm. Upto 1000 mm. dia.	Rmt	882.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	986.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>b) Above 8 mm upto 12 mm thick</b>		
	From 750 mm.Upto 1000 mm. dia.	Rmt	1176.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	1312.00
	Above 1250 mm. Upto 1500 mm. dia.	Rmt	1447.00
	Above 1500 mm. Upto 1750 mm. dia.	Rmt	1583.00
	Above 1750 mm. Upto 2000 mm. dia.	Rmt	1723.00
	Above 2000 mm. Upto 2250 mm. dia.	Rmt	1856.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1993.00
	<b>c) Above 12 mm upto 16 mm thick</b>		
	From 2000 mm. Upto 2250 mm. dia.	Rmt	1833.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1907.00
	Above 2500 mm. Upto 2750 mm. dia.	Rmt	2041.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	2170.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	2305.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	2434.00
	<b>d) Above 16 mm upto 20 mm thick</b>		
	From 2500 mm. Upto 2750 mm. dia.	Rmt	2629.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	2747.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	2972.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	3120.00
	Above 3500 mm. Upto 3750 mm. dia.	Rmt	3266.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	3416.00
	<b>e) Above 20 mm upto 25 mm thick</b>		
	From 3500 mm. Upto 3750 mm. dia.	Rmt	3640.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	3850.00
3	Lowering, laying in position to correct line and level including M. S. pipes with / without any outcoating, on pedestals or chairs upon piers, trestles etc. The rate to include loading, unloading, hoisting, marginal cutting wherever required, assembling and tack welding, transportation upto 500 m. etc. complete.		
	<b>a) 5 mm to 8 mm thick</b>		
	Upto 250 mm. dia.	Rmt	494.00
	Above 250 mm. Upto 500 mm. dia.	Rmt	580.00
	Above 500 mm. Upto 750 mm. dia.	Rmt	669.00
	Above 750 mm. Upto 1000 mm. dia.	Rmt	757.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	846.00
	<b>b) Above 8 mm upto 12 mm thick</b>		
	From 750 mm.Upto 1000 mm. dia.	Rmt	1008.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	1123.00
	Above 1250 mm. Upto 1500 mm. dia.	Rmt	1241.00
	Above 1500 mm. Upto 1750 mm. dia.	Rmt	1357.00
	Above 1750 mm. Upto 2000 mm. dia.	Rmt	1476.00
	Above 2000 mm. Upto 2250 mm. dia.	Rmt	1592.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1707.00
	<b>c) Above 12 mm upto 16 mm thick</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	From 2000 mm. Upto 2250 mm. dia.	Rmt	1454.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1525.00
	Above 2500 mm. Upto 2750 mm. dia.	Rmt	1748.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	1862.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	1977.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	2072.00
	<b>d) Above 16 mm upto 20 mm thick</b>		
	From 2500 mm. Upto 2750 mm. dia.	Rmt	2291.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	2420.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	2545.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	2672.00
	Above 3500 mm. Upto 3750 mm. dia.	Rmt	2800.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	2928.00
	<b>e) Above 20 mm upto 25 mm thick</b>		
	From 3500 mm. Upto 3750 mm. dia.	Rmt	3121.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	3301.00
4	<b>Lowering and laying in position</b> to correct line and level including <b>M. S. specials such as distance pieces, straps, bends, tapers, etc. on pedestals or chairs upon piers or trestles.</b> The rate to include loading, unloading, hoisting, marginal cutting wherever required, assembling and tack welding, and including transportation upto 500 m. etc. complete as specified.		
	<b>a) 5 mm to 8 mm thick</b>		
	Upto 250 mm. dia.	Rmt	691.00
	Above 250 mm. Upto 500 mm. dia.	Rmt	814.00
	Above 500 mm. Upto 750 mm. dia.	Rmt	935.00
	Above 750 mm. Upto 1000 mm. dia.	Rmt	1060.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	1179.00
	<b>b) Above 8 mm upto 12 mm thick</b>		
	From 750 mm. Upto 1000 mm. dia.	Rmt	1411.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	1575.00
	Above 1250 mm. Upto 1500 mm. dia.	Rmt	1738.00
	Above 1500 mm. Upto 1750 mm. dia.	Rmt	1901.00
	Above 1750 mm. Upto 2000 mm. dia.	Rmt	2066.00
	Above 2000 mm. Upto 2250 mm. dia.	Rmt	2231.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	2394.00
	<b>c) Above 12 mm upto 16 mm thick</b>		
	From 2000 mm. Upto 2250 mm. dia.	Rmt	2199.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	2287.00
	Above 2500 mm. Upto 2750 mm. dia.	Rmt	2448.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	2606.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	2762.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	2924.00
	<b>d) Above 16 mm upto 20 mm thick</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	From 2500 mm. Upto 2750 mm. dia.	Rmt	3212.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	3387.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	3566.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	3739.00
	Above 3500 mm. Upto 3750 mm. dia.	Rmt	3919.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	4100.00
	<b>e) Above 20 mm upto 25 mm thick</b>		
	From 3500 mm. Upto 3750 mm. dia.	Rmt	4371.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	4619.00
5	<b>Transporting within 500 meters</b> , laying in position to correct line and level <b>M. S. pipes with / without any outcoating, on prepared bedding in trenches</b> including marginal cutting wherever required, assembling tack welding the same. The rate to include loading, unloading, hoisting, etc. complete as specified.		
	<b>a) 5 mm to 8 mm thick</b>		
	Upto 250 mm. dia.	Rmt	421.00
	Above 250 mm. Upto 500 mm. dia.	Rmt	498.00
	Above 500 mm. Upto 750 mm. dia.	Rmt	573.00
	Above 750 mm. Upto 1000 mm. dia.	Rmt	647.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	723.00
	<b>b) Above 8 mm upto 12 mm thick</b>		
	From 750 mm. Upto 1000 mm. dia.	Rmt	861.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	960.00
	Above 1250 mm. Upto 1500 mm. dia.	Rmt	1060.00
	Above 1500 mm. Upto 1750 mm. dia.	Rmt	1162.00
	Above 1750 mm. Upto 2000 mm. dia.	Rmt	1258.00
	Above 2000 mm. Upto 2250 mm. dia.	Rmt	1357.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1456.00
	<b>c) Above 12 mm upto 16 mm thick</b>		
	From 2000 mm. Upto 2250 mm. dia.	Rmt	1340.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1398.00
	Above 2500 mm. Upto 2750 mm. dia.	Rmt	1494.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	1590.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	2941.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	1784.00
	<b>d) Above 16 mm upto 20 mm thick</b>		
	From 2500 mm. Upto 2750 mm. dia.	Rmt	1953.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	2059.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	2170.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	2280.00
	Above 3500 mm. Upto 3750 mm. dia.	Rmt	1970.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	2498.00
	<b>e) Above 20 mm upto 25 mm thick</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	From 3500 mm. Upto 3750 mm. dia.	Rmt	2659.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	2813.00
6	Transporting within 500 meters, laying in position to correct line and level <b>M. S. specials pipes with / without any outcoating, such as distance pieces, straps, bends, tapers, etc.</b> on prepared bedding in trenches including marginal cutting wherever required, assembling tack welding, the same. The rate to include loading, unloading, hoisting, etc. complete as specified.		
	<b>a) 5 mm to 8 mm thick</b>		
	Upto 250 mm. dia.	Rmt	594.00
	Above 250 mm. Upto 500 mm. dia.	Rmt	695.00
	Above 500 mm. Upto 750 mm. dia.	Rmt	801.00
	Above 750 mm. Upto 1000 mm. dia.	Rmt	904.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	1012.00
	<b>b) Above 8 mm upto 12 mm thick</b>		
	From 750 mm. Upto 1000 mm. dia.	Rmt	1206.00
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	1345.00
	Above 1250 mm. Upto 1500 mm. dia.	Rmt	1483.00
	Above 1500 mm. Upto 1750 mm. dia.	Rmt	1623.00
	Above 1750 mm. Upto 2000 mm. dia.	Rmt	1885.00
	Above 2000 mm. Upto 2250 mm. dia.	Rmt	1968.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	2041.00
	<b>c) Above 12 mm upto 16 mm thick</b>		
	From 2000 mm. Upto 2250 mm. dia.	Rmt	1876.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	2030.00
	Above 2500 mm. Upto 2750 mm. dia.	Rmt	2089.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	2225.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	2365.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	2498.00
	<b>d) Above 16 mm upto 20 mm thick</b>		
	From 2500 mm. Upto 2750 mm. dia.	Rmt	2714.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	2886.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	3039.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	3192.00
	Above 3500 mm. Upto 3750 mm. dia.	Rmt	3344.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	3499.00
	<b>e) Above 20 mm upto 25 mm thick</b>		
	From 3500 mm. Upto 3750 mm. dia.	Rmt	3721.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	3939.00
7	<b>Welding in all positions</b> with required number of runs, for M. S. pipes internally and / or externally including gauging wherever necessary, fixing appurtenances and other accessories in connection with pipe laying work as per specification.		



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	<b>A) Butt Joints : Plate thickness</b>		
	4 mm.	Rmt	191.00
	5 mm.	Rmt	289.00
	6 mm.	Rmt	681.00
	7 mm.	Rmt	759.00
	8 mm.	Rmt	954.00
	10 mm.	Rmt	1168.00
	12 mm.	Rmt	1251.00
	14 mm.	Rmt	1489.00
	16 mm.	Rmt	1804.00
	18 mm.	Rmt	1953.00
	20 mm.	Rmt	2340.00
	22 mm.	Rmt	2937.00
	25 mm.	Rmt	3986.00
	<b>B) Lap joints with convex fillet welds Lap Lengths</b>		
	5 mm.	Rmt	268.00
	6 mm.	Rmt	343.00
	8 mm.	Rmt	454.00
	10 mm.	Rmt	507.00
	12 mm.	Rmt	759.00
	14 mm.	Rmt	1031.00
	16 mm.	Rmt	1135.00
	18 mm.	Rmt	1378.00
	20 mm.	Rmt	1553.00
	22 mm.	Rmt	2077.00
	25 mm.	Rmt	2521.00
8	<b>Shifting and aligning ring girders</b> including removing tack welds and re-tacking in the correct position etc. complete as per specification for the pipes of following diameter.		
	Above 1000 mm. Upto 1250 mm. dia.	Rmt	520.00
	Above 1250 mm. Upto 1500 mm. dia.	Rmt	637.00
	Above 1500 mm. Upto 1750 mm. dia.	Rmt	751.00
	Above 1750 mm. Upto 2000 mm. dia.	Rmt	867.00
	Above 2000 mm. Upto 2250 mm. dia.	Rmt	981.00
	Above 2250 mm. Upto 2500 mm. dia.	Rmt	1096.00
	From 2500 mm. Upto 2750 mm. dia.	Rmt	1210.00
	Above 2750 mm. Upto 3000 mm. dia.	Rmt	1328.00
	Above 3000 mm. Upto 3250 mm. dia.	Rmt	1443.00
	Above 3250 mm. Upto 3500 mm. dia.	Rmt	1559.00
	Above 3500 mm. Upto 3750 mm. dia.	Rmt	1673.00
	Above 3750 mm. Upto 4000 mm. dia.	Rmt	1799.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
9	Transporting within 500 meters and <b>fixing in position stools, base plates, roller sets, grease box covers, etc.</b> including welding wherever necessary. The rate also to include fixing stools, base plates, etc. in true line and level, connecting the base plate to anchor bolts by flush welding including cutting the bolts, if required, assembling and aligning C. I. or M. S. roller sets of any size including oiling, greasing, etc. The rate also to include grouting anchor bolts, welding of two halves of grease box covers as directed by Engineer-in-charge, for pipes of following dia.		
	Above 1000 mm. Upto 1250 mm. dia.	Each	1901.00
	Above 1250 mm. Upto 1500 mm. dia.	Each	2056.00
	Above 1500 mm. Upto 1750 mm. dia.	Each	2212.00
	Above 1750 mm. Upto 2000 mm. dia.	Each	2366.00
	Above 2000 mm. Upto 2250 mm. dia.	Each	2521.00
	Above 2250 mm. Upto 2500 mm. dia.	Each	2676.00
	From 2500 mm. Upto 2750 mm. dia.	Each	2833.00
	Above 2750 mm. Upto 3000 mm. dia.	Each	2985.00
	Above 3000 mm. Upto 3250 mm. dia.	Each	3142.00
	Above 3250 mm. Upto 3500 mm. dia.	Each	3297.00
	Above 3500 mm. Upto 3750 mm. dia.	Each	3479.00
	Above 3750 mm. Upto 4000 mm. dia.	Each	3605.00
10	Transporting within 500 meters and aligning, <b>fixing in position and tack welding expansion joints</b> suitable for pipeline of diameters.		
	Above 1000 mm. Upto 1250 mm. dia.	Each	6432.00
	Above 1250 mm. Upto 1500 mm. dia.	Each	6670.00
	Above 1500 mm. Upto 1750 mm. dia.	Each	6911.00
	Above 1750 mm. Upto 2000 mm. dia.	Each	7151.00
	Above 2000 mm. Upto 2250 mm. dia.	Each	13518.00
	Above 2250 mm. Upto 2500 mm. dia.	Each	13820.00
	From 2500 mm. Upto 2750 mm. dia.	Each	14121.00
	Above 2750 mm. Upto 3000 mm. dia.	Each	14330.00
	Above 3000 mm. Upto 3250 mm. dia.	Each	14726.00
	Above 3250 mm. Upto 3500 mm. dia.	Each	15029.00
	Above 3500 mm. Upto 3750 mm. dia.	Each	15327.00
	Above 3750 mm. Upto 4000 mm. dia.	Each	15630.00
11	Transporting within 500 meters aligning and fixing in position and tack welding only, including marginal cutting, supplying and providing <b>rubber packing</b> etc. where necessary.		
	<b>A)</b> Minor fixtures such as manhole cover, pressure and non-pressure type blank flanges, loose rings, small pipes to form saddle bypass arrangement, plug plates, ladders, platform, stiffener rings, etc.	MT	11513.00
	<b>B)</b> Minor fixtures such as tees, domes, 'Y' branches, insulating flange ring assembly, etc.	MT	5850.00
12	<b>Gas cutting (either square cut or V cut) pipes, plates, etc. of thickness.</b>		
	i) Upto 5 mm.	Rmt	87.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	ii) Above 5 mm. Upto 10 mm.	Rmt	123.00
	iii) Above 10 mm. Upto 14 mm.	Rmt	158.00
	iv) Above 14 mm. Upto 18 mm.	Rmt	182.00
	v) Above 18 mm. Upto 22 mm.	Rmt	252.00
	vi) Above 22 mm.	Rmt	337.00
13	<b>Gas cutting</b> holes upto 50 mm dia (for plugs)		
	<b>Thickness of shell</b>		
	a) 5 mm. to 12 mm	No.	95.00
	b) Above 12 mm	No.	133.00
14	Providing <b>M.S. bar mesh</b> prepared out of 16 mm dia M.S. bar at 15 cm. c/c both ways, welded to flanged ring including tack welding of bars and fixing the same with nuts and bolts on open faces of outlet/inlet pipes in the sump or reservoir, etc. complete as directed by Engineer-in-charge.	Sqm	1746.00
15	Providing <b>permanent test points</b> on the pipe line as per drawing and as directed by Engineer-in-charge including providing and fixing sluice valves, road boxes for sluice valves of size 80 mm to 250 mm in one brick masonry chamber 300 mm x 300 mm clear C. M. 1:5 with 12 mm thick in 1:3 cement plaster both inside and outside on M-100 C.C. 150 mm thick etc. complete as specified and directed.	No.	3915.00
16	Supplying transporting, the <b>S.P. fire hydrants</b> including duck foot bend, S.V. and S.V. road box, painting the hydrant, fixing the saddle piece, supplying, and laying required length of C.I. pipeline and jointing the same spun yarn, molten lead including caulking, fixing the S.V. road box in one brick masonry chamber in 1:5 C.M. with 12 mm thick 1:3 cement plaster both inside and outside on 1:3:6 C.C.150 mm thick etc, complete specified and directed. [As per I.S.900/1965 Revised]	No.	15507.00
17	<b>Hydraulic testing</b> of M.S. pipeline to specified pressure including cost of all materials and labour and water for testing for the length upto 1km., using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary.		
a)	i) Upto 600 mm. dia. (I.D.)	Km	54504.00
	ii) Above 600 mm. upto 750 mm. dia. (I.D.)	Km	54584.00
	iii) Above 750 mm. upto 900 mm. dia. (I.D.)	Km	54710.00
	iv) Above 900 mm. upto 1050 mm. dia. (I.D.)	Km	54899.00
	v) Above 1050 mm. upto 1200 mm. dia. (I.D.)	Km	55086.00
	vi) Above 1200 mm. upto 1500 mm. dia. (I.D.)	Km	55458.00
	vii) Above 1500 mm. upto 1800 mm. dia. (I.D.)	Km	56003.00
	viii) Above 1800 mm. upto 2250 mm. dia. (I.D.)	Km	56918.00
	ix) Above 2250 mm. upto 2500 mm. dia. (I.D.)	Km	57586.00
	x) Above 2500 mm. dia. (I.D.)	Km	58252.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
<b>b)</b>	<b>Extra work initial km</b>		
	xi) Upto 600 mm dia. (I.D.)	Km	276.00
	xii) Above 600 mm dia. upto 750 mm dia. (I.D.)	Km	397.00
	xiii) Above 750 mm dia. upto 900 mm dia. (I.D.)	Km	589.00
	xiv) Above 900 mm dia. upto 1050 mm dia. (I.D.)	Km	778.00
	xv) Above 1050 mm dia. upto 1200 mm dia. (I.D.)	Km	1001.00
	xvi) Above 1200 mm dia. upto 1500 mm dia. (I.D.)	Km	1480.00
	xvii) Above 1500 mm dia. upto 1800 mm dia. (I.D.)	Km	2235.00
	xviii) Above 1800 mm dia. upto 2250 mm dia. (I.D.)	Km	3430.00
	xix) Above 2250 mm dia. upto 2500 mm dia. (I.D.)	Km	4271.00
	xx) Above 2500 mm dia. upto 2750 mm dia. (I.D.)	Km	5167.00
	xxi) Above 2750 mm dia. upto 3000 mm dia. (I.D.)	Km	6096.00
18	Providing and applying with mechanical arrangement 1:3 proportion cement <b>sand gunite, 40 to 50 mm thick to M. S. pipe</b> surface under 2.1 kg. per sqcm. to 2.80 kg. per sqcm. pressure including removing the loose materials as directed by Engineer-in-charge and including scrapping the surface with wire brushes, degreasing, cleaning by compressed air and providing fixing BRC fabric no.14 as reinforcement, curing for 21 days, disposing off the rebound materials within a lead of 50 M, etc. complete as directed by Engineer-in-charge.	Sqm.	609.00
19	Providing and applying <b>anticorrosive prefabricated polymetric tape of 4mm thick, reinforced with fiber glass</b> after a coat of solvent based rubber modified bituminous primer of density 0.92 gms/cu cm and viscosity of 1000-2000 cps @ 150 gms/sqm followed by seven layers of polythene polymerised bitumen and HMHDPE ( High Molecular High Density Poly Ethelene). It should conform to requirement of IS-10221 and AWWA C-203 for prefabricated tapes including covering cost on pipe coating. Rates shall include cost of material coating and wrapping over the pipes, handling charges, preparation of pipe surface, all labour, material, etc. complete.	Sqm.	656.00
	<b>Note : Pipe coating is to be done at laying work site only.</b>		
20	Providing and applying with mechanical arrangement cement sand gunite of 50 mm thickness to floors, walls, floor slabs or any other structure under 2.1 kg. per sqcm. to 2.80 kg. per sqcm. pressure including removing the loose materials on surface, cleaning with comperssed air, degreasing, etc. including scaffolding and curing for 21 days, providing and fixing BRC fabric no. 14 but excluding cost of reinforcement, if any and removing rebound materials within a lead of 50 M, etc. complete as directed by Engineer-in-charge (for GSRs and buildings.)	Sqm.	600.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
21	Providing and applying with mechanical arrangement <b>cement sand guniting of 50 mm thickness</b> to floors, walls, roof slabs or any other structure under 2.1 kg. per sqcm. to 2.80 kg. per sqcm. pressure including removing the loose materials on surface, cleaning with compressed air, degreasing, etc. including scaffolding and curing for 21 days, providing and fixing BRC fabric no. 14 but excluding cost of reinforcement, if any and removing rebound materials within a lead of 50 M, for staging and bottom of bottom slab, etc. complete as directed by Engineer-in-charge (for RCC ESRs)	Sqm.	530.00
22	Providing and making <b>inner cement mortar lining to M.S. pipes</b> with mechanical devices in cement mortar 1:1 proportion, including cost of all materials, labour, special sand required, machinery, power generation, all equipments and taking necessary access openings and manholes, cuts at suitable intervals as directed by Engineer-in-charge and rewelding the same after done with doubler plates pipes including necessary excavation, refilling concrete breaking and remaking if any, breaking guniting and remaking the same, repainting wherever required with epoxy paint in 3 coats, all dewatering including emptying the pipeline and refilling the same after done with (water to be supplied by department free of cost within 5 km. lead at fixed point and all other arrangements to be done by agency), including carrying out "C" value performance test of pipeline, complete job as per the directions of the Engineer-in-charge.		
	i) 9 mm thick for pipes upto 700 mm dia.	Sqm.	476.00
	ii) 12 mm thick for pipes above 700 mm dia.	Sqm.	552.00
23	Providing and <b>applying of elastomeric (450% elongation), thermoplastic, fire retardant, coating skin tensile strength 18 to 21 kg/cm<sup>2</sup>, antifungal, antibacterial, anticorrosive, graft co-polymer Coating</b> on smooth plastered surface. 100 Micron dyufilm thickness of self bonding with plastered surface and 100 Micron of top coat. For sewage treatment plant (R. C. C. Tank inside coating) and water treatment plant.	Sqm.	1547.00
24	Providing and applying <b>external and internal coating for steel structures</b> in sewage treatment plant/water treatment plant with elastomeric (450% elongation), thermoplastic, fire retardant, coating skin tensile strength 18 to 21 kg/cm <sup>2</sup> , antifungal, antibacterial, anticorrosive, graft co-polymer. 50 Micron DFT. of self bonding with steel, 50 Micron DFT. of inner coat and 50 Micron DFT of top coat.	Sqm.	904.00
25	Providing and <b>applying of elastomeric (450% elongation), thermoplastic, fire retardant, coating skin tensile strength 18 to 21 kg/cm<sup>2</sup>, antifungal, antibacterial, anticorrosive, graft co-polymer coating</b> on external pipe lines in unlaidd/laid condition after proper cleaning. 50 micron DFT of self bonding grade with metal surface, <b>50 Micron DFT of self bonding grade with metal surface, 50 Micron DFT inner coat and 50 Micron DFT of top coat.</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	1) Water and sewage pipe lines (external) in unlaidd condition.	Sqm.	946.00
	2) Water and sewage pipe lines (external) in laidd condition.	Sqm.	970.00
26	Providing and <b>applying of elastomeric</b> (450% elongation), thermoplastic, fire retardant, coating skin tensile strength 18 to 21 Kg/cm2, antifungal, antibacterial, anticorrosive, graft co-polymer coating on internal surface of pipe lines. <b>100 Micron DFT of site bonding grade with steel surface and 100 Micron DFT of top coat.</b>		
	1) Pipe line in unlaidd condition	Sqm.	1191.00
	2) Pipe line in laidd condition	Sqm.	1271.00
27	Providing and <b>applying of elastomeric</b> (450% elongation), thermoplastic, fire retardant, coating skin tensile strength 18 to 21 kg/cm2, antifungal, antibacterial, anticorrosive, graft co-polymer coating on cleaned steel reinforcement bars. <b>80 to 100 micron DFT With self bonding trade of bar coating.</b>		
	1. 6 mm dia.	MT	43309.00
	2. 8 mm dia.	MT	33140.00
	3. 10 mm dia.	MT	26260.00
	4. 12 mm dia.	MT	21852.00
	5. 16 mm dia.	MT	16363.00
	6. 20 mm dia.	MT	13316.00
	7. 25 mm dia.	MT	10515.00
	8. 32 mm dia.	MT	8427.00
	9. 40 mm dia.	MT	6400.00
28	Providing and <b>applying of H D P E coating for MS pipe internally as well as externally</b> including cost of H D P E powder moulding pipe grade, labour, scrapping the pipe surface with wire brushes, degreasing, cleaning by compressed air and surface grinding and finishing including cost of loading , unloading and handling of pipe at factory etc. complete as directed by Engineer -in -charge.		
	<b>HDPE coating      thickeess in micron      Total coating</b> <b>External                   Internal                   thickness in</b> <b>micron</b>		
	1.                   0                   2000                   2000	Sq. m	2383.00
	2.                   2000 micron                   1000                   3000	Sq. m	2993.00
	3.                   3000 micron                   1000                   4000	Sq. m	3440.00
	4.                   3000 micron                   2000                   5000	Sq. m	3953.00

**SECTION - J : TREATMENT PLANT ( W.T.P. & S.T.P.)**

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
1	2	3	4
1.	Designing (aesthetically), providing and constructing high rate <b>Unconventional Water Treatment Plant</b> i.e. Simplified Water Treatment Plants consisting of Civil works including cost of Providing and applying Food Grade Epoxy paint to inside surface of water retaining structures in contact with chlorine and providing anti-termite treatment to entire structure below Ground level, Mechanical and Electrical components of various sub-works as given below : including necessary hydraulic testing, structural testing and trial run for 3 months, etc. complete as directed by Engineer-in-charge (turn-key job) works.		
	<b>1) Aeration Fountain</b>		
	<b>2) Inlet arrangements</b>		
	<b>3)Mixing channel with ventury flume and flow measuing arrangement</b>		
	<b>4)Inlet channel</b>		
	<b>5)Flocculator</b> -Confirming to I.S. 7208-1974 (Type - C) with detention period of 30 minutes		
	<b>6)Tube Settlers</b> -“Designing, fabricate and construct Tube Settlers with square or any other shaped tube like Circular, Cheveron, Hexagonal etc. having proven performance, jointing, cutting, filleting including neat cement rendering, plugging the opening with jungle wood knob complete as directed by Engineer-in-charge (0.60M depth) excluding cost of chamber.		
	<b>8) Filter house</b>		
	<b>9)Chemical house</b>		
	<b>10) Alum tanks</b> 2 Nos. with mixing carrying and dosing arrangements with piping.		
	<b>11)Gravity feed gas chlorinator</b> with 100% standby.		
	<b>12)TCL solution tank</b> with mixing, carrying and dosing arrangement with piping		
	<b>13) Bye-pass arrangement</b>		
	<b>14) External and internal electrification</b>		
	<b>15) Laboratory equipments</b>		
	<b>16)Wash water tanks</b> of capacity equal to 2% of designed quantity of filtered water in a day (+) 10%		
	<b>17)Wash water pumps</b> with 100% standby		
	<b>18)Air blowers</b> capable of delivering 600 LPM per square metre of free air of filter area at 0.4 Kg/sqcm at the under drains (100%standby)		
	<b>19)Pure water sump</b> capacity equal to 1 hour pumping capacity		
	<b>20)Pure water pump house</b> over the sump / by the side of sump		
	<b>21)Drainage arrangements</b>		
	<b>22)Alum store</b>		
	<b>23)Sanitary block</b> with necessary water supply and drainage arrangement and internal WBM roads		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	24)These rates are <b>applicable for seismic zones 2,3 and 4</b>		
	25)Rates given below are <b>inclusive of uplift pressure</b> if any and dewatering during the entire work		
	26) As per latest IS code 456 (latest edition), water retaining structures / water container shall be constructed in M300 & remaining structure shall be constructed in M 250.		
	27)Unconventional Treatment Plants less than 1 MLD capacity shall not be constructed.		
	28)Upto 3.0 MLD WTP no blower will required.		
	29)Upto 5 MLD WTP supply of 100 kg. chlorine cylinder.		
	30)In WTP specifications following item are incorporated		
	(i) Glandless valves shall be provided.		
	(ii) Stainless Steel railing shall be provided.		
	(iii) All WTP & its components out side faces shall be painted by Acrylic emulsion with silicon additives paint only.		
	31)All the structural steel works / fabrications are to be provided with application of Hot Dip Zinc Coating according to specifications as per IS 4759:1996 (Reaffirmed 2006)		
	<b>Note : Conditions from Sr. No. 1 to 31 shall form a part and parcel of the tender and must be included in draft tender papers for the work of unconventional treatment plants.</b>		
	The rates are as under :		
	1)Fixed cost for 1 MLD	Each	56.35
	2)Add for capacity above 1 MLD upto 2 MLD	Per MLD	25.30
	3)Cost of 2 MLD treatment plant	Each	81.65
	4) Add for capacity above 2 MLD upto 5 MLD	Per MLD	19.55
	5) Cost of 5 MLD treatment plant	Each	139.15
	6) Add for capacity above 5 MLD to 10 MLD	Per MLD	14.95
	7) Cost of 10 MLD treatment plant	Each	211.60
2	<b>Designing (aesthetically)</b> , providing and constructing and commissioning <b>Conventional Water Treatment Plant</b> consisting of all Civil, works including cost of Providing and applying Food Grade Epoxy paint to inside surface of water retaining structures in contact with chlorine and providing anti - termite treatment to entire structure below Ground level, Mechanical and Electrical components of various sub-works as given below : including necessary hydraulic testing, structural testing, equipment testing, trial run for a period of 3 months, etc. complete as directed by Engineer-in-charge (turn-key job).		
	<b>1) Aeration Fountain</b>		
	Plan area not less than 0.625 square metre per MLD		
	<b>2) Ventury Flume</b>		
	With necessary devices, consisting of simple mechanical indicator.(Pedestal type gauge)		
	<b>3) Flash Mixer</b>		
	Rapid mixing device, detention time 60 seconds to give velocity gradient 300 to 400 per sec. (Sec-1) vane mixer type conforming to I.S. 7090 of 1985.		



Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>4) Flocculator</b>		
	Confirming to I.S. 7208 of 1974 (Type-C) with detention period of 30 minutes.		
	<b>5) Clarifier</b>		
	Horizontal flow circular tank, detention period 2-5 hours, overflow rate 30 cubic metre per square metre per day (to be specified), Weir loading not more than 300 cu bic metre per metre per day, with mechanical sludge scraper conforming to I.S. No. 10313 -1982.		
	<b>6) Rapid Sand Filters and Filter House</b>		
	Filter designed for filtration rate of 5,000 liters per square metre per hour, minimum 2 beds for plant upto 10 MLD, for larger plants as specified, filters to be located in filter house with roof slab, pipe gallery and platform minimum 5.5 metre in width.		
	<b>a) Filter Sand</b>		
	Effective size 0.45 to 0.70 mm, uniformity coefficient not more than 1.7, nor less than 1.3, depth of water over sand 0.75 M, free board 50 cm, gravel 0.45 M in depth, sand and gravel confirming to I.S. 849 (i)-77, back wash by air wash, standard appurtenances (to be specified), rate of flow controller, filler gauge, sand expansion gauge, etc.		
	<b>b) Wash Water Tank</b>		
	Capacity to be specified and suitable to supply water to wash 2 filter units at a time where the units are 4 or more.		
	<b>c) Wash Water Pumps</b>		
	Capacity to fill water tank in 1 hour with 100 % standby.		
	<b>d) Air Blowers</b>		
	Capable of delivering 600 LMP per square metre of free air, of filter area at 0.4 kg/square cm at the underdrains (100% stand by).		
	<b>7) Chemical House in Two Storeys</b>		
	a) Ground floor to accommodate 7 days alum requirement and sundry storage.		
	b) First floor to accommodate alum PAC and bleaching solution tanks. etc.		
	<b>c) Solution tanks</b>		
	Minimum 3 tanks (one for preparation. second for dosing and third as standby), each tank capable of giving 8 hours maximum dose without interruption, minimum free board 0.30 M, trays for dissolving, level indicator, mechanical agitation devices, solution feed and drain lines, solution feed device (constant head device, strength of solution upto 10% only) confirming to I.S. 9222 part-I/1979.		
	<b>8) Pure Water Sump and Pump House</b>		
	<b>a) Capacity of sump</b>		
	One hour of designed flow.		
	<b>b) Pump House</b>		
	Pump house of required size over the sump or by the side.		
	<b>9) Store House</b>		
	Suitable for alum storage of three months requirement in monsoon with 10 % extra capacity for other sundry articles.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	10) Differential pressure type automatic chlorinators - make to be approved by MJP.		
	a) Confirming to I.S. 10553 - A Part-II 1983.		
	<b>b) Rate of withdrawal.</b>		
	Temperature Kg.of Chlorine discharge per day		
	Degree "C"		
	45 67 Tonnes		
	10 6.35 9.50 110 15 10.75 16.10 130 20 14.50 21.24 254 27 & above 18.70 28.12 315		
	<b>c) Chlorinator equipment and container room</b>		
	to confirm to I.S. 10553 Part - I 1983. d) <b>100 % standby</b> shall be provided. 11) <b>Bye pass arrangements</b> - D. I. pipes. 12) <b>Drainage arrangements</b> - RCC pipes upto plot boundary. 13) <b>Electrical installation.</b> Both internal and external including entire plant area. 14) <b>Laboratory equipment.</b>		
	As per requirement chlorine testing kit, PH meter digital turbidity meter conductivity apparatus. alum dosing jar test apparatus, weighing balance for lab.		
	15) Sanitary blocks.		
	Carpet area-15 square metre minimum upto 25 MLD and 25 square metre above 25 MLD.		
	<b>16) Administrative block and internal road.</b>		
	To accommodate office room. chlorine room, laboratory room, panel board room, blower room etc. and WBM road to connect all units from main gate of plot.		
	17) Rates given below are <b>inclusive of uplift pressure</b> if any and dewatering during entire work.		
	18) These rates are <b>applicable for seismic zones-II, III and IV.</b>		
	19) As per latest IS code 456 (latest edition) water retaining structure / water container shall be constructed in M-300 and remaining structures shall be constructed in M-250.		
	20) Upto 3.0 MLD WTP no blower will required.		
	21) Upto 5 MLD WTP supply of 100 kg. chlorine cylinder		
	22) In WTP specifications following item are incorporated		
	(i) Glandless valves shall be provided.		
	(ii) Stainless Steel railing shall be provided.		
	(iii) All WTP & its components out side faces shall be painted by Acrylic emulsion with silicon additives paint only.		
	23) All the structural steel works / fabrications are to be provided with application of <b>Hot Dip Zinc Coating</b> according to specifications as per IS 4759:1996 (Reaffirmed 2006)		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	24) Necessary factory license from department of industrial safety and health and chlorine cylinder storage permission from explosive department (GOI) (charges paid by the contractor)		
	<b>Note : Conditions from Sr. No. 1 to 24 shall form a part and parcel of the tender and must be incorporated in draft tender papers of conventional treatment plants Rates for Conventional Treatment Plants (proposed)</b>		
Sr. No.	Capacity of Plant	Unit	Rupees in Lakh
1.	Upto 5 MLD	MLD	34.50
2.	Cost of 5 MLD treatment plant	Each	174.80
3.	Add for capacity above 5 MLD upto 10 MLD	MLD	25.30
4.	Cost of 10 MLD treatment plant	Each	299.00
5.	Add for capacity above 10 MLD upto 20 MLD	MLD	16.10
6.	Cost of 20 MLD treatment plant	Each	456.55
7.	Add for capacity above 20 MLD upto 50 MLD	MLD	14.95
8.	Cost of 50 MLD treatment plant	Each	895.85
9.	Add for capacity above 50 MLD upto 100 MLD	MLD	12.65
10.	Cost of 100 MLD treatment plant	Each	1516.85
11.	Add for capacity above 100 MLD	MLD	10.35
<b>3</b>	Designing (aesthetically), providing, fabricating, <b>Package Water Treatment Plant</b> . At the shop, transporting to site, installing, testing and commissioning at the site, giving necessary one month's free test and trial run with guarantee for one year, etc. complete. Prefabricated Package Water Treatment Plant comprising following		
	1. <b>Rapid mixing channel</b> in M.S. sheets and M. S. baffle.		
	2. <b>Flocculator</b> not less than 10 minutes detention, in M.S. prefabricated box, flocculation being achieved either by glass pebbles of graded size or PVC tetrapod or equivalent arrangement to ensure good floc formation.		
	3. <b>Plate or tube settlers</b> of not less than 30 minutes mounted in the settler basin with inclination of not less detention, in M.S. prefabricated box, plates / tubes than 60 degree to horizontal.		
	4. Rapid sand gravity filter in M. S. prefabricated box with filter sand not less than 500 mm thick, supported on false floor below with polypropylene nozzles spaced at not more than 500 mm centres in either direction.		
	5. Backwashing, inlet facilities inlet and outlet facilities shall be provided.		
	5.1 Air Blowers Capacity of delivering 600 LMP per sq.mtr. of free air of filter area 0.4 Kg./Cm <sup>2</sup> at under drain ( 100 % stand by for capacity above one MLD)		
	5.2 Wash water tank of capacity equal to 2 % of designed quantity of filtered in a day (+) 10 %.		
	5.3 Wash water pumps with 100% standby ( Minimum 3 HP with all accessories)		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	5.4 Back wash with water -not less than 0.6 m3 / m2 of filter bed area in filter box.		
	5.5 Piping from outlet to sump.		
	6. Laboratory equipments viz chlorine testing kit digital turbidity meter pH meter.		
	7. External & internal Electrification.		
	8. TCL solution tank with mixing, carring & dosing arrangement with piping.		
	9. Gravity feed gas chlorinator with 100 % standby.		
	10. Four Alum storage unit.		
	11. Drainage arrangement.		
	12. Providing room with RCC roof for office and Laboratory Space with necessary water supply & drainage arrangement and internal roads.		
	13. R.C.C. sump of one hour capacity and pump house on it.		
	14. Internal road.		
	15. Wire fencing with gate for W. T. P. Premises.		
	16. All civil works for foundation, consisting of raised RCC platform above G. L.or walls in B.B. masonry or UCR masonry shall be provided as per needs at site.		
	17. Bye pass in the form of pipes or M.S. channels included in the design, effecting bye pass of such new tank and filter individually or both (Limit upto 5.0 M. from W.T.P. face)		
	18. The entire M.S. fabricated tank provided with FRP lining (5 mm thick) to inside face in contact with water epoxy painting two coats with one coat of primer on outside. The thickness of plates employed shall be not less than 6 mm.		
	19. Alum dosing and mixing arrangement to be provided in twin tanks, each of 8 hours capacity, capable of importing dose of 20 ppm with 5% solution. The alum tanks provided with a dose in steps of 5 ppm and entire unit mounted on the top of flocculator / settler box, in the form of prefabricated structure, with access platform and ladder. Alum boxes with FRP lining (5 mm thick) inside and epoxy paint two coats with one coat of primer on outside.		
	20. All metal surfaces in contact with liquid should be painted by food grade epoxy paint.		
	<b>Rates for Package Water Treatment Plant</b>		
Sr. No.	Capacity of plant	Unit	Rupees in Lakh
1.	21 Cum / Hr. (0.50 MLD)	Each	27.60
2.	34 Cum / Hr. (0.80 MLD)	Each	34.50
3.	42 Cum / Hr. (1.00 MLD)	Each	39.10
4.	63 Cum / Hr. (1.50 MLD)	Each	48.30
5.	83 Cum / Hr. (2.00 MLD)	Each	57.50
6.	125 Cum / Hr. (3.00 MLD)	Each	73.60
	<b>Note : Depending upon the capacity required for the scheme, one of the above capacity should be choiced.</b>		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
<b>4</b>	<b>SEWAGE TREATMENT PLANT (STP )</b>		
<b>4A</b>	Designing (aesthetically), providing, and constructing and giving satisfactory trials of <b>modernised Sewage Treatment Plant</b> consisting of receiving chamber, screen chamber, grit chamber, measuring flume, distribution chamber with primary and secondary treatment, without digester etc. as detailed below, administration block of suitable size including allied units for waste disposal with all civil and mechanical works involved, etc. complete (Turn key job).		
	<b>Sr. No. Capacity of plant</b>	<b>Unit</b>	<b>Rupees in Lakh Rs.</b>
	1. Upto 10 MLD	MLD	48.30
	2. Cost of 10 MLD Plant	Each	486.45
	3. Add for capacity above 10 MLD upto 20 MLD	MLD	42.55
	4. Cost of 20 MLD Plant	Each	917.70
	5. Add for capacity above 20 MLD upto 50 MLD	MLD	36.80
	6. Cost of 50 MLD Plant	Each	2012.50
	7. Add for capacity above 50 MLD upto 100 MLD	MLD	31.05
	8. Cost of 100 MLD Plant	Each	3561.55
<b>4B</b>	Designing (Aesthetically) Providing and constructing, hydraulic testing commissioning and giving satisfactory trials of <b>modernised sewage treatment plant</b> consisting of inlet chamber, screen chamber, Detritus tanks, Parshall flume, primary settling tanks, Aeration tanks, Secondary settling tanks, Sludge Sump and Pump House, Sludge Thickner, Primary digester , Secondary digester, SST Sump and Pump house, Chlorine contact tank, Chlorinators, Chlorinator room, sump cum blending tank, PST sludge sump cum blending tank, Pump house, Sludge Centrifuge, gas holder, necessary piping work with required valves, gates, drains, pathways, Administrative Building cum Laboratory, Laboratory equipments, tools and plants, Spare parts etc. complete as turnkey job with all involved civil electrical and mechanical works inclusive of following items, units as per detailed specification for civil, Electrical and Mechanical Components with including all statutory duties and taxes such as GST levied by GOI & GOM in all respect etc. complete.		
	<b>Inlet Chamber:</b> Designing, providing and constructing R.C.C. (M:300) Inlet chamber designed for the peak flow 2 DWF including necessary excavation in all types of strata including walkway around the periphery. Each compartment will have phosphor bronze, steel gate with extension rod, head stock, operating wheel, G.I. Pipe railing etc. The work includes providing and making necessary arrangements to connect the flow to screen chamber by approach channel as directed and as per specifications.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>Screen Chambers:</b> Designing, providing and constructing and testing commissioning screen chamber, designed for average 1 DWF & maximum 2 DWF in RCC (M300), including inlet pipe/Channel from inlet chamber outlet, pipe/channel to detritus tank, free board of 0.50 m minimum, RCC walkway 1.2M wide with G.I. Pipe railing. RCC stair case of 1.2 m width from G.L. to screen chamber.		
	<b>Detritus Tank :</b> Designing, providing and constructing continuously grit removal type of Detritus Tank, mechanically operated in RCC (M-300) capable of removing 100% 0.20mm size particle and above, having specific gravity 2.30, designed for one peak 2DWF with suitable arrangement of separation of grit from putrescible solids including providing and making necessary arrangement of JB-1. inlet and outlet channels of required sizes as may be required to connect the flow to parshall flume etc. complete including hydraulic testing for water tightness of the structure having minimum free board of 0.30 m, washout arrangement to grit chamber and platform 1.20m wide RCC walkway with G.I. pipe hand railing shall be provided. A pit for collecting grit conveyed by conveyor shall be provided. It should be suitable to handle the grit for carting. All arrangements shall be as per detailed specifications and as directed.		
	<b>Parshall Flume:</b> Designing, Providing and constructing Parshall Flume Channel in RCC (M:300) for measuring quantity of sewage received at the treatment works, max flow of 2 DWF and minimum flow of 1/2 DWF including providing and making necessary arrangement of approach channel as may be required to connect the flow having minimum velocity of 0.3m per second to Distribution Box (DB-1) The unit shall be provided with walkway & RCC staircase having width of 1.20 m each etc. complete, including hydraulic testing for water tightness of the civil structure having free board of 0.6 m including electrically operated, flow indicating and flow integrating devices having a standby of float operated ROF meter. All arrangements as per specifications.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<p><b>Primary Settling Tanks With Equipments :</b>            Designing, providing, constructing and hydraulic testing in RCC (M-300) water tight Primary Settling Tanks of 1 DWF capacity with feed chamber sludge and effluent chamber, base adequately supported providing 1.20m wide clear peripheral and approach walkway interconnecting C.I. double flanged pipes from feed chamber of the clarifier distribution well grouting wherever necessary, including foundation etc. as per specifications water depth at outer side shall be minimum 3.0 meters, weir loading shall not be greater than 125 cum DMF for average flow Bottom slope shall be 1:12 The floor of clarifier shall have 40 mm thick (min.) screed course of cement grout of mix in C.M. 1:2 Detention period shall be 2.25 hrs. dispersion box and stiffened weir plate made of mild steel plate not less than 8 mm thick, anitcorrosive epoxy paint on both faces shall be provided Minimum free board of 0.50 m. be provided it includes inlet pipe from distribution chamber, central shaft inlet baffle outlet chamber, Scum remover, skimming device, scum chamber, connecting channel from PST outlet chamber to DB-2 as per detailed specifications.</p>		
	<p><b>Aeration Tank (AT) :</b>            Designing, providing and constructing in RCC mix (M-300) Aeration Tank in compartments to handle combined flow of 1 DWF, incoming flow and recirculation flow including construction of inlet, outlet and distrbution chamber DB-3 and provid- ing 1.20m wide clear peripheral and approach walk ways, expansion joints wherever necessary, includ- ing foundation etc. as per specifications. Peak fac- tor shall be 2, F/M ratio shall be 0.40, low speed aerator speed between 20 to 100 RPM recirculation flow @ 50% and free board 0.60 m Depth, (SWD) 3.50 m minimum D.O. level at A.T. 2 Mg/ Lit, MLVSS concentration shall be 2500 Mg/Lit and LVSS concentration shall be 2000 Mg/Lit, HRT shall be 4 to 6 hours and STR 6-8 days. It should have compartents for washing, oxygen transfer ca- pacity of mechanical aerator shall not be less than 1.5 Kg/KWH, BOD of effluent 20 mg/lit with input to aerator 0.15 to 0.30 Kwh/1000 Cum of Aeratoion tank. All related works shall be as per detailed specifications.</p>		



Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<p><b>Secondary Settling Tanks with equipments :</b></p> <p>Designing, providing &amp; constructing in RCC (M:300) water tight secondary settling tank having detention period 2 hours and SWD shall be 4.20 meter. The effluent BOD &amp; SS from the secondary clarifier shall not be more than 20 Mg/lit and 30 mg/lit respectively. It should be hydraulically tested, bottom floor slope of 1:12 and free board of 0.60 m minimum Dispersion box shall be made of Mild Steel plate not less than 8 mm thick with anticorrosive epoxy paint from both faces and well stiffened The sewage admitted at the centre flowing upward and outwards towards periphery be slowly and continuously collected towards a convenient discharge point near centre by a rotating wheel arm. The Clarifier will be completed with end drive half rotating bridge, structural steel rake, over flow weir, walkway diffuser, over load alarms, having push buttons, starters for the clarifier, walkway and the suitable sludge withdrawing arrangement with flush valve capable of withdrawing moisture content not more than 97% to 98%, slopping floor shall have 40 mm thickness (Minimum), screed course of cement grout of mix 1 cement :2 sand, rotating sludge scrapper mechanism fitted with squeezes including providing and making necessary arrangement to connect the flow to outlet chamber (DB-4) then the gravity mains for final disposal and as per detailed specifications and obligatory provision. All other arrangements shall be as per detailed specifications.</p>		
	<p><b>Sludge Thickner with equipments:</b></p> <p>Designing providing and constructing water tight Sludge Thickner (Gravity type) including foundation in RCC (M-300) with inlet and outlet chamber influent well, inlet and outlet pipes, with sludge pit and sludge removal arrangement, grouting wherever necessary with walkway all around of 1.20 m width G.I. pipe railing interconnecting CI pipes all complete as per specifications Detention time 24 hours. SWD shall be 4.25 metre with necessary fixed bridge scraper arrangement as per detailed specifications and necessary inlet and outlet arrangement. All other arrangement as per detailed specifications.</p>		
	<p><b>Primary Digester with mixer equipment (Fixed Cover)</b></p> <p>Designing, providing and constructing unit of water tight and gas tight Primary Digester suitable for 1 DWF plant and complete with pipe gallery, building, staircase for access from dome of digester into inside staircase, walkways at springing levels etc. walls and base slab being in RCC M:300, domes in structural concrete including providing burners and civil works for gas collection, grouting wherever necessary etc. complete as per specifications. It should be designed for minimum 90 C and maximum 450C. and minimum detention time of 30 days, water depth shall not be more than 8.5m free board shall be 0.6m with inlet and outlet arrangement of C.I. flanged pipes including giving hydraulic testing and air tightness testing. The item includes providing works for collecting Gas and Gas burner as per specification.</p>		



Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<p><b>Secondary Digester with equipment (Fixed cover)</b>  Designing, providing and constructing including foundation unit of watertight and gastight Secondary Digester to deal with 1 DWF complete with pipe gallery, building, staircase for access from dome of digester into inside, staircase to walkways at springing levels etc., Walls and base slab and domes being in RCC M:300, providing arrangement for digested sludge from digesters to centrifuge, providing burners and civil works for gas collection grouting wherever necessary etc. complete. as per specifications and obligatory provision All other arrangements as per detailed specifications.</p> <p><b>S.S.T. Sump &amp; Pump House with recirculation Pumps and Sludge Pumps to Digester:</b>  Designing, providing &amp; constructing Sump &amp; Pump house of requisite capacity with ceiling height not less than 6.M., Sludge stream for recirculation to aeration tank &amp; excess sludge to SCBT, including C.I. Piping to carry this flow to sump as per de- tailed specification &amp; as directed by Engineer-in- charge.</p>		
	<p><b>Chlorine Contact Tank :</b>  Designing, providing and constructing Chlorine Contact chamber of adequate capacity to deal with 1 DWF. Average flow. The chlorine contact tank should be of 30 minutes capacity during average flow to achieve 99.99% coliform reduction. Chlo- rine dose shall be maintained as per standard provi- sions including provisions including designing, providing and constructing water supply arrangement for chlorination, including providing dewatering and by- pass arrangements jointing to final effluent main and outlet weir etc complete. The effluent quality should match with the standards laid down by Maharashtra Water pollution Control Board and as per the obligatory provision and detailed specifications and as directed by Engineer-in- charge.</p>		
	<p><b>Chlorinator and chlorinator Room/Tonner Room.</b>  Designing, providing and constructing chlorinators differential pressure type 2 Nos each having capacity of 10 Kg/Hr as per obligatory provisions and de- tailed specifications with necessary provision of chlorinator room having floor area not less than 30Sqmt including automatic residual chlorine controller with actuator and residual chlorine analyser including cost of chlorine cylinder, piping, valves, measuring and controlling equipments, safty devices, lifting equipments, etc. complete as per I.S - 10553 (Part-II) 1982.</p> <p>The tonner room should have 3 MT capacity crane for loading and unloading facility. Tonner storage should distinctly isolated and should be for minumum 10 Tonners space and arrangements as per gas laws 1981 and factory act shall be provided. and all other matching amenities be provided, 5 MT gantry shall be provided for full length of Tonner room at 6 m height from floor level, with /outlet chember and treated effluet outlet channel etc. complete as per detailed specicifications.</p>		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>Sump cum Blending Tank (SCBT)</b> Designing providing and constructing sump cum blending tank of appropriate size and detention time with free board of 0.60 m. The slope of floor 1:4 with suction pit at the centre as per detailed specifications and obligatory requirements.		
	<b>P.S.T. Sump Cum Blending Tank, Pump House with recirculation pumps:</b> Designing providing and constructing pump house of appropriate size with pumps, ceiling height minimum 6m over the circular sump for discharging the sludge to thickener and recycling of flow for blending with C.I. piping etc. complete as per detailed specifications.		
	<b>Sludge Centrifuge Room with Centrifuges.:</b> Designing, providing constructing and installing including foundation etc. Sludge Centrifuge to handle the sludge flow of one day in one hour per unit with sludge dewatering unit drain etc. Complete as per specifications. sludge centrifuge with all necessary arrangements as per detailed specifications mentioned in Volume -II and Volume -III of tender and obligatory provisions, be provided with satisfactory functioning.		
	<b>Gas Holder:</b> Designing, providing and constructing gas holder having gas collection system, gas flow meter and gas burner with floating dome arrangement and storage time 6 hrs. to be constructed in M-300 having appropriate diameter as per detailed specifications and obligatory provisions. The floating dome shall be of 8mm thick M.S. Plate minimum and shall be provided with two coats of anticorrosive epoxy coating from both faces.		
	<b>Outfall Sewer :</b> Designing providing and constructing appropriate Outfall Sewer of R.C.C. NP-2 pipe, to discharge treated effluent, untreated effluent from outlet chamber (after secondary clarifier) to the local nallah at a point shown on the drawing including necessary chambers for inspection / cleaning including necessary excavation dewatering, refilling, concrete encasing/bedding concrete steps to reach the nallah bed level. pitching and energy dissipation chamber in the nallah portion etc. complete upto 50m length R.C.C. NP-2 pipe line and including all above items.		
	<b>Piping work in D. I. Class including Sluice Valve, Reflux Valve, M. S. Gate.</b> Providing laying and jointing pipes other than those already included in the above items for interconnection by-pass drains etc. of all units including adequate numbers of manhole chambers. The item includes excavations, refilling and hydraulic testing of pipes, valves, gates, accessories and cost of jointing materials. The item includes required channels with gates for interconnection of units by pass drains etc. for all units and as directed etc. complete as per detailed specifications.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>Administrative Building Cum Laboratory ( G+ 1 )</b> Designing providing and constructing Adminisrative Building, Office Cum Laboratory including stores. This shall be a building having appropriate Carpet area at ground floor and at first floor complete as per specifications including necessary excavation, foundation in RCC M-250 framed structure B. B. masonry (II-Class in C. M. 1:6) 20 mm cement plaster in C. M. 1:3 inside and outside painting. Alluminum door and window with glass pannels, mosaic tile flooring and skirting and all other allied items, fixtures fastening electrification arrangement water supply arrangment etc. complete. The building will have laboratory on upper floor of administrative building and should be so centralised that it should not be attached with any unit but should have complete control of every unit as per Laboratory Equipment, beautification, telephone and intercom arrangement and Wireless system.		
	<b>Primary and secondary treatment-with digesters, sludge drying beds etc. complete.</b>		
<b>Sr. No.</b>	<b>Capacity of plant</b>	<b>Unit</b>	<b>Rupees in Lakh Rs.</b>
1.	Upto 10 MLD Plant	MLD	58.65
2.	Cost of 10 MLD Plant	Each	586.50
3.	Add for capacity above 10 MLD upto 20 MLD	MLD	50.60
4.	Cost of 20 MLD Plant	Each	1094.80
5.	Add for capacity above 20 MLD upto 50 MLD	MLD	43.70
6.	Cost of 50 MLD Plant	Each	2421.90
7.	Add capacity above 50 MLD upto 100 MLD	MLD	36.80
8.	Cost fo 100 MLD	Each	4246.95
	1) All the structural steel works / fabrications are to be pro vided with application of <b>Hot Dip Zinc Coating</b> according to specifications as per IS 4759:1996 (Reaffirmed 2006)		
<b>4C</b>	<b>Moving Media Bio Reactor (MMBR) / FAB (Fluidised Aerated Bed) Process</b>		
	Designing, providing, construction, hydraulic testing, commissioning and giving satisfactorily trials of STP consisting of Inlet Chamber, screen chamber, Grit Separator, MMBR / FAB (Based on technologies providing attached growth on plastic meddi kept suspended in the waste water due to low density of plastic & provided with compressed air for aeration with very high MLSS of greater than 15,000 mg/lit.) tank, Secondary Clari settler, Sludge sump, Sludge Thickener, Chlorine Contact Tank, Chlorinator room/ Shed, sludge Centrifuge, associated piping work with required valves, gates, drains, pathways, Administration Block cum Laboratory, Laboratory Equipments, spares parts for 2 years of operation, etc. complete as turnkey job with all involved civil, electrical and mechanical works inclusive of following items, units as per detailed specifications for civil, electrical and mechanical components with excluding GST levied by GOI & GOM in all respect etc. complete. Treated sewage can be used for irrigation, horticulture purposes.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>FOLLOWING UNITS ARE INCLUDED</b>		
	<b>1. Inlet Chamber</b> Designing, providing and constructing RCC (M:25) inlet chamber designed for the peak flow including necessary excavation in all types of strata including walkway all around the periphery. Each compartment will have CI gates with extension rod. Head stock, operating wheels, GI pipe railing etc. The work includes providing and making necessary arrangements to connect the flow to screen chamber by approach channel as directed and as per specifications.		
	<b>2. Screen Chamber</b> Designing, providing, constructing, testing and commissioning of screen chamber, designed for peak flow in RCC (M-25), including walkway 1.2 m wide with GI pipe.		
	<b>3. Grit Separator</b> Designing, providing & constructing detritor type grit removal mechanism in RCC (M-25) capable of removing 100% 0.2 mm size particle & above having specific gravity 2.30 designed for peak flow with suitable arrangement of separation of grit from putrescible solids including providing & making necessary arrangements of Jb-1. Inlet & outlet channels of required sizes as make be required to connect the flow to connecting unit etc. complete including hydraulic testing for water tightness of structure having minimum FB of 0.3 m, wash out arrangement to grit chamber & platform 1.2 m wide RCC walkway with GI pipe handling shall be provided. A pit for collecting grit conveyed by conveyor shall be provided. It should be suitable to handle the grit for carting. All arrangements shall be as detailed specifications and as directed.		
	<b>4. MMBR / FAB Tank</b> Designing, providing & constructing in RCC (M-25) biological reactor tank for removal of BOD along with nutrient removal to handle the average flow & having hydraulics suitable to handle peak flow conditions with suitable 1.2 m wide walk way, expansion joints as required, including foundation etc as per specifications. The tank shall be equipped with inlet & outlet arrangement, air blowers for supply of air, coarse bubble diffusers & aeration grid in SS 304, PP carrier bio media etc. FB of 0.5 m & SWD as required should be complete as per detailed specifications.		
	<b>5. Secondary Clarisettler</b> Designing, providing & constructing in RCC (M-25) water tight secondary clarisettler having SWD of 3.75 m + 0.5 m FB & has tube media in the clarification zone to provide additional surface area for settling. The settler shall be provided with a scraper mechanism in MS with epoxy painting for collecting the settled solids at the bottom (bottom slope 1:12). The central feed well shall be made of MS with epoxy painting from both faces & well stiffened. The sewage will be admitted in the feed well & then will move outwards towards periphery slowly & continuously over a weir & will be collected in a launder.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>6. Chlorine Contact Tank</b> Designing, providing & constructing chlorine contact tank of adequate capacity to deal with average flow. The contact time provided is 30 mm to achieve 99.99 % reduction in coliform during average flow condition. Chlorine dosage will be as per standard provisions including designing, providing & constructing water supply provision for chlorination, including providing dewatering & by pass arrangement for joining to final effluent mains & outlet weir etc complete. The effluent quality should match with the standards laid down by Maharashtra Pollution Control Boars & as per obligatory provision & as detailed specification & as directed by engineer in charge.		
	<b>7. Chlorinator &amp; Chlorinator Room / Tonner Room</b> Designing, providing & constructing diffrential pressure type chlorinators having adequate capacity for dosage of adequate chlorine to ensure 99.99% coliform reduction as per obligatory provisions detailed specifications with necessary provision of having chlorinator room of adequate size. The chlorinator equipment shall include chlorine cylinders / tonners, piping, valves, measuring controlling equipments, safety devises, lifting equipment etc. complete as per IS 10553 (Part II) 1982. The tonner room should have mm 3 MT capacity crane for loading & unloading facility. Tonner storage should be distinctly isolated and should have min. storage space as per the detailed specifications & as per gas law 1981 & factory act shall be provided. All other matching amenities shall be provided, 5 MT gantry rail shall be provided for full length of tonner room a 6 m Ht from level of tonner room with outlet.		
	<b>8. Sludge Sump</b> Designing, providing & constructing of sludge sump and pump for discharging sludge to sludge thickener using MS pipe complete as per detailed specification.		
	<b>9. Sludge Thickener</b> Designing, providing & constructing water tight of sludge thickener gravity type in RCC (M-25) with inlet & outlet pipes, central feed well, sludge it & sludge removal arrangement, grouting wherever necessary with walkway all around of 1.20 m with GI pipe railing interconnecting CI pipes all complete as per specification, having bottom slope 1:8 & 3 m SWD with necessary fixed bridge scraper arrangement as per detailed specifications & necessary inlet & outlet arrangement. All other arrangement as per detailed specifications.		
	<b>10. Sludge Centrifuge Platform with Centrifuge</b> Designing, providing, constructing & installing including foundation etc. Sludge centrifuge to handle the sludge flow of 1 day in 18 hrs per unit with sludge dewatering unit drain etc complete is per specification. Sludge centrifuge with necessary arrangements as per detailed specification mentioned in tender and obligatory provisions to be provided with satisfactory functioning.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>11. Outfall Sewer</b> Designing, providing, constructing appropriate outfall sewer of RCC NP2 pipe to discharge treated effluent, untreated effluent from outlet chamber (after basin / chlorination tank) to the local Nallah at the point shown on the drawing including necessary chambers for inspection & cleaning including excavation, dewatering, refilling, concrete encasing / bedding concrete.		
	<b>12. Piping work in CI- LA class including sluice valves, reflux valves, MS Gates</b> Providing, laying & jointing pipes other than hose already included in the above items for interconnection by pass drains etc. of all units including adequate numbers of manhole chambers. The item includes excavations, refilling & hydraulic testing of pipes, valves, gates, accessories & cost of jointing materials. The item includes required channels with gates or interconnection of units, by pass drains etc. for ill units as directed etc complete as per detailed specifications.		
	<b>13. Administrative Building cum Laboratory (G+1)</b> Designing, providing & constructing administrative building, office cum laboratory including stores. This shall be building having appropriate carpet area & ground floor & at first floor complete as per specifications including necessary excavation, foundation in RCC M 20 framed structure, BB masonry (II class in CM 1:6) 20 mm cement plaster in CM 1:3 inside & outside painting, aluminum door & window with glass panels, mosaic tile flooring & skirting & all other allied items, fixtures, fastening, electrification arrangement, water supply arrangement etc complete. The building will have laboratory on upper floor of administrative building & should have complete control of every unit as per laboratory equipment, beautification, telephone & intercom arrangement & wireless system.		
	<b>Capacity of the Plant      Area Required</b>		
	<b>In MLD      In sq m</b>		
	1      450	MLD	156.20
	3      650	MLD	92.40
	5      1000	MLD	79.20
	8      1500	MLD	72.60
	10      1800	MLD	70.40
	13      2300	MLD	63.80
	15      2650	MLD	58.30
	18      3250	MLD	57.20
	20      3500	MLD	55.00
	25      4350	MLD	52.80
	<b>NOTES</b>		
	1. Screen chamber & grit separator up to 5 MLD Capacity are manual type.		
	2. Up to 5 MLD Capacity STP chlorination is done by using sodium hypochlorite solution. Above 5 MLD capacity gas chlorinator is provided.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	3. Sludge thickener is not provided up to 3 MLD capacity STP. Sludge will be collected into sludge sump & pumped directly to sludge dewatering system		
	4. For all STP sludge dewatering is using solid bowl centrifuge.		
	5. Chlorinator room not provided for STP up to 3 MLD. For STP up to 3 MLD laboratory / administration building is not provided. Only a room for operator is provided.		
	6. Boundary wall, fencing, gate, storm water drains, site clearance is not considered in scope.		
	7. All water retaining structures are in M 25 grade of concrete.		
	8. Water table is considered 5 m below GL for design.		
	9. Soil bearing capacity is considered as 20 T/m <sup>2</sup> at 1.5 m below GL.		
	10. Lead for excavation is considered as 0.5 km.		
	11. Grade of cement used is OPC 43 grade.		
	12. Grade of steel used is Fe 415/Fe 500		
	13. Peak factor considered for design for plants up to 3 MLD is 3, 4 to 15 MLD is 2.5, 16 to 20 MLD is 2.0.		
	14. Chemicals required during trial run & commissioning is not considered.		
	15. Water & power during construction, trial run & commissioning shall be provided by client.		
	16. Power available at STP location is assumed as LT power supply.		
	17. All the structural steel works / fabrications are to be provided with application of Hot Dip Zinc coating according to specifications as per IS 4759 : 1996 (Reaffirmed 2006)		
	<b>MAKES OF EQUIPMENT</b>		
	<b>Description Make</b>		
	Centrifugal Pumps Kirloskar / Johnson		
	/ Kishor / Equivalent.		
	Screw Pumps Roto / Tushaco / Equivalent		
	Air Blower Usha / Swam / Kay / Kulkarni Equivalent./		
	Dosing Pumps Milton Roy / VK Pumps// Positive /Minimax / Equivalent.		
	Agitators / Flocculators Pavan / Fibre & Fibre /Ceecons		
	Clarifier / Thickener Mechanism To be fabricated as per MJP approved design / make		
	Screens To be fabricated as per MJP approved design / make		
	Grit Separator To be fabricated as per MJP approved design / make		
	Chlorinator Toshcon Jesco /		
	Banaco / Perfect Chloro /		



Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	Chlorocontrol / Metito / Eqv.		
	Chlorine Tonner Meenakshi / Eqv.		
	Solid Bowl Centrifuge Alfa Laval / Humbolt		
	/ Wedag/ Hiller/ Eqv.		
	Motors Crompton/ Siemens/Lakshmi		
	Cables Finolex/ Polycab		
	MS pipes Welspun/ Topworth		
	Maharashtra Seamless/ Jindal/ Eqv.		
	CI Pipes Truform/Electrosteel/		
	Kejriwal/ Eqv.		
	Valves Intervale/BDK/		
	Procon/ Tyco/ AV valves/ Eqv.		
	Clarissetler Media Cooldeck/ Munters		
	Bio Reactor Carrier Media As per MJP approved design / make		
	<b>Cyclic Activated Sludge Process</b>		
<b>4D</b>	Designing , providing, constructing, hydraulic testing, commissioning and giving satisfactory trials of <b>STP based on SBR technology</b> consisting of Inlet Chamber, Screen Chamber, Detritus Tanks, Distribution Chamber and Biological CASP Basins, Sludge Sump, Chlorine Contact Tank, Chlorinator Room/Shed, Sludge Centrifuge necessary piping work with required valves, gates, drains, pathways administration Block cum Laboratory, Laboratory Equipments, Tools and Plants, Spare Parts, etc. complete as turnkey job with all involved civil, electrical and mechanical works inclusive of following items, units as per detailed specification for civil, electrical and mechanical components with excluding GST levied by GOI & GOM in all respect etc. complete to achieve BOD < 30 ppm, COD < 30 ppm, TSS < 100 ppm, to get recyclable quality of water for industrial / agricultural purposes.		
	<b>UNITS INCLUDED</b>		
	<b>1. Inlet Chamber</b> Designing, providing, and constructing RCC (M:250) inlet chamber for the peak low of 2 DWF including necessary excavation in all types of strata including walkway all around the periphery. Each compartment will have phosphor bronze steel gates with extension rod, head stock, operating wheels. GI pipe railing etc. The work includes providing and making necessary arrangements to connect the flow to screen chamber by approach channel as directed and as per specifications.		
	<b>2. Screen Chamber</b> Designing, providing, constructing, testing and commissioning of screen chamber, designed for average 1 DWF and maximum peak flow of 2 DWF in RCC (M -250), including inlet pipe / channel from inlet chamber, outlet pipe channel to detritus tank, free board of 0.5 m minimum, RCC walkway 1.2 m wide with GI pipe railing, RCC stair case of 1.2 m width from GL to screen chamber.		



Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<p><b>3. Detritus Tank</b></p> <p>Designing, providing and constructing continuous grit removal type of Detritus Tank, mechanically operated in RCC (M 250) capable of removing 100% of 0.2 mm size particle and above, having specific gravity 2.30 designed for one peak 2 DWF with suitable arrangement of separation of grit from putrescible solids. Inlet and outlet channels of required sizes as may be required to connect the flow to connecting unit etc. Complete including hydraulic testing for water tightness of structure having minimum FB of 0.3 m, wash out arrangement to Grit chamber and platform 1.2 m wide RCC walkway with GI pipe handling shall be provided. A pit for collecting grit conveyed by conveyor shall be provided. It should be suitable to handle the grit for carting. All arrangements shall be as detailed specifications and as directed.</p>		
	<p><b>4. CASP Basins</b></p> <p>Designing, providing and constructing in RCC (M:250), CASP basins for biological removal of BOD along with nitrification, denitrification, Bio-P removal in compartments to handle combine flow of 1 DWF incoming flow and recirculation flow including construction of selector compartments and providing 1.2 m wide clear approach walkways, expansion joints wherever necessary, including foundations etc as per specifications. Peak factor shall be 2, F/M ration shall be 0.15, complete with air blowers, fine diffused aeration grid / equipment and FB 0.5 m and SWD as required. DO level in basin to be minimum 2 mg/l complete with “Oxygen Uptake ate” control system and all related instruments. Stainless steel decanters and automation works. MLSS concentrations shall be 2000-5500 mg/l or more, MLVSS to MLSS ratio to be 0.8. HRT shall be between 12 to 13 hrs and SRT suitable for fully digested sludge. It should have all other related works as per detailed specification. In Case CASP is designed to achieve N, P removal HRT.</p>		
	<p><b>5. Chlorine Contact Tank</b></p> <p>Designing providing and constructing chlorine contact chamber of adequate capacity to deal with 1 DWF average flow. The chlorine contact tank should be 30 min capacity, during average flow to achieve 99.99% coliform reduction. Chlorine dose shall be maintained as per standard provisions, including designing, providing and constructing water supply provision for chlorination including providing dewatering and by pass arrangement jointing to final effluent mains and outlet weir, etc complete. The effluent quality should match with the standards laid down by Maharashtra water pollution control board and as per obligatory provision and as detailed specification and as directed by Engineer-in-charge.</p>		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>6. Chlorinator and Chlorinator Room / Tonner Room</b> Designing, providing and constructing chlorinators vacuum type 2 Nos. with auto switchover facility and having capacity for dosage of adequate chlorine to ensure 99.99% coliform reduction as per obligatory provisions and detailed specifications with necessary provision of having chlorinator room of adequate size. The chlorinator equipment shall include cost of chlorine cylinders / tonner piping, valves, measuring and controlling equipments, safety devices, lifting equipments, etc. complete as per IS-10553 (part II) 1982. The tonner room should have minimum 3 MT capacity Hoist for loading and unloading facility. Tonner storage should be distinctly isolated and should be for minimum storage space as directed in the design specification and as per gas laws 1981 and factory act shall be provided. All other matching amenities shall be provided, 5 MT gantry rail shall be provided for full length of tonner room at 6 m height from level of tonner room, with outlet chamber and treated effluent outlet channel etc. complete as per detailed specification		
	<b>7. Sludge Sump</b> Designing, providing and constructing of sludge sump and pump house of appropriate size with pumps, ceiling height minimum 6 m over sump for discharging sludge to centrifuge using CI pipe complete as per detailed specification.		
	<b>8. Sludge Centrifuge Platform with Centrifuges</b> Designing, providing, constructing and installing including foundation etc., sludge centrifuge to handle the sludge flow of 1 day in 20 hours per unit with sludge dewatering unit drain etc complete as per specification. Sludge centrifuges with the necessary arrangement, as per detailed specification mentioned in tender and obligatory provisions to be provided with satisfactory functioning.		
	<b>9. Outfall Sewer</b> Designing, providing and constructing appropriate outfall sewer of RCC NP2 pipe, to discharge treated effluent from outlet chamber after chlorination tank to the local Nallah at the point shown on the drawing including necessary chamber for inspection and cleaning including necessary excavation, dewatering, refilling concrete encasing / bedding concrete steps to reach the nallah bed level, pitching and energy dissipation chamber in nallah portion etc. complete upto 50 m length RCC NP2 pipe line and including all above items.		
	<b>10. Piping work in DI K-9 Class including Sluice valves, Reflux Valves, MS gates</b> Providing laying and jointing pipes other than those already included in the above items for interconnection by - pass drains etc. of all units including adequate numbers of manhole chambers. The item includes excavations, refilling and hydraulic testing of pipes, valves, gates, accessories and cost of jointing materials. The items includes required channels with gates for interconnection of units by pass drains etc for all units as directed etc complete as per detailed specifications.		

Sr. No.	Description	Unit	Rate (in Lakhs) 2019-2020
	<b>11. Administrative Building cum Laboratory (G+1)</b> Designing, providing and constructing administrative building, office cum laboratory including stores. This shall be a building having appropriate carpet area and ground floor and at first floor complete as per specifications including necessary excavation, foundation in RCC M 200 framed structure B. B masonry (11- class in C.M. 1:6) 20 mm cement plaster in CM 1:3 inside and outside painting. Aluminium door and window with glass panels, mosaic tile flooring and skirting and all other allied items, fixtures fastening electrification arrangement water supply arrangement etc complete. The building will have laboratory on upper floor of administrative building and should be so centralized that it should not be attached with any unit but should have complete control of every unit as per laboratory equipment, beautification, telephone and intercom arrangement and wireless system.		
	<b>Capacity of      Area req      No of</b> <b>in MLD            in Ha.          Basin</b>		
	1                      0.16                  2	MLD	326.00
	2                      0.2                    2	MLD	218.00
	5                      0.4                    2	MLD	137.00
	10                     0.7                    2	MLD	112.00
	15                     0.75                   2	MLD	100.00
	20                     0.8                    4	MLD	95.00
	25                     1                        4	MLD	91.00
	30                     1.2                    4	MLD	86.00
	40                     1.6                    4	MLD	81.00
	50                     1.75                   4	MLD	79.00
	60                     1.9                    4	MLD	77.00
	75                     2.25                   4	MLD	75.00
	100                    2.4                    6	MLD	72.00
	125                    3                        6	MLD	70.00
	150                    3.5                    6	MLD	68.00
	<b>NOTES</b>		
	a. These Rates are for Civil Works, in M30 grade RCC.		
	b. Water Table is considered at 5 m below ground level.		
	c. Soil bearing capacity considered as 20 T/m <sup>2</sup> at 1.5 m below ground level.		
	d. OPC has been considered for costing purposes.		
	e. All civil items, electrical, piping, valves, pumps, motors, blowers, etc. are considered as per MJP Schedule of Rates.		
	f. I. No.1,2 includes sludge drying beds instead of sludge centrifuge and DWPE dosing system.		
	g. I. No.1,2,3 includes NaOCI Dosing System instead of Gas Chlorination.		
	h. I. No.1,2,3 do not includes Lab and Lab Equipments.		
	i. O & M shall be added extra.		

<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Lakhs) 2019-2020</b>
	j. No pilling, dewatering, soil improvement, de silting considered in the cost.		
	k. Site is cleared flat and levelled. No site development works, filling, dewatering considered.		
	l. Peak factor is considered as 2.0 times average flow. For every 25 % increase in pick factor, 10 % extra cost shall be added over the above rates.		
	m. OPC Tor steel considered.		
	n. Treated water disposal upto 50 m considered.		
	o. HT Electrical works shall be added as per case specific condition.		
	p. Raw sewage pumping works shall be added as per case specific conditions.		
	q. Cost of I No 1 to 5 do not include HT station, Laband Mechanical dewatering of sludge..		
	r. All the structural steel works / fabrications are to be provided with application of Hot Dip Zinc Coating according to specifications as per IS 4759:1996 (Reaffirmed 2006)		

<b>SECTION - K : R.C.C. G.S.R. AND SUMPS</b>			
<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	<b>R.C.C. G.S.R.s AND SUMPS</b>		
1	Designing (aesthetically), and constructing RCC ground service reservoirs / RCC sumps in M-300 mix. of required capacity including excavation in all types of strata, foundation concrete, container walls, bottom slab top RCC roof slab / or dome, 20 mm thick cement plaster with water proofing compound in CM 1:3 proportion. to inside face of the container, including food grade epoxy paint from inside including refilling and disposing of surplus stuff within lead of 50 M, all labour and material charges, for laying and jointing of pipe assembly for inlet, outlet washout, over flow and bye-pass arrangement consisting of C.I./ M.S. D/F. pipes, specials and valves of given diameters, providing and fixing accessories such as Stainless Steel ladder inside and outside, C.I. Manhole frame and cover, water top slab, B.B. masonry chamber for all valves, ventilating shafts, including giving satisfactory hydraulic test and water tightness test as per IS code and providing three coats of Acrylic emulsion with Silicon additives Paint to all expose surface of structure including roof surface etc. complete as per design data, criteria, obligatory requirements and detailed specifications. Antitermite treatment shall be given for under ground portion of the structure.		
	<b>Note :</b>		
	1. The designing shall be in accordance with various relevant I.S. specification (I.S. 456/2000 (Latest edition) , I.S. 875 - 1987, I.S.3370-1965 or revised.)		
	2. Only M.S. bars grade I confirming to I.S. 432 part-I or high yield strength deformed bars confirming to I.S. 1786 or I.S.1139 shall be used grade II M.S. bars shall not be used.		
	3. Entire structure shall be constructed in M300 only.		
	4. The scope of pipe assembly work shall be upto 5 metre beyond outside face of the wall, cost of pipes valves and specials is not included in the rate but labour cost for laying and jointing is included.		
	5. The G.S.R. / Sump above 15 lakh litres capacity shall be in two compartment.		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	6. The job includes designing the structure for uplift pressure and dewatering if required using entire execution and disposal of surplus excavated stuff within lead of 50 metres as directed by Engineer-in-charge. If up lifts considered in design then these rate shall be increased by 7.5%.		
	7. G.S.R. outlets shall be with bell mouth of approved pattern in bottom slab and cost of designing bell mouth is included in the rate. Sump well includes cost of suction pit required at bottom.		
	8. For pipe diameters upto 300 mm only CI pipes and CI specials shall be used. For pipe diameters above 300mm, M.S. pipes and specials minimum 10 mm thick shall be used with proper anticorrosive epoxy treatment from inside and outside.		
	9. Cost of pump house is not included in these rates.		
	10. Above rates are applicable for seismic zones-2,3 and 4.		
	11. 75% part rate shall be payable for reinforcement, concrete and plastering items of all types of G.S.R.s. and sumps till satisfactory hydraulic testing for water tightness test is given and till that work shall be treated as incomplete.		
	12. 10% shall be added for sump if overhead pump house is proposed		
	<b>Note : Condition from Sr. No. 1 to 11 shall form a part and parcel of tender and must be included in the Draft tender papers for work of R.C.C. GSRs and sump.</b>		
	<b>Rates for R.C.C.G.S.Rs or Sumps</b>		
		<b>Unit</b>	<b>Rates in Rs.</b>
	1. Upto 25,000 litres	Per Lit.	13.80
	2. Cost of 25,000 litres capacity	Each	350100.00
	3. Add for capacity	Per Lit	9.20
	above 25,000 upto 50,000 litres		
	4. Cost of 50,000 litres capacity	Each	566800.00
	5. Add for capacity	Per Lit.	6.90
	above 50,000 upto 75,000 litres		
	6. Cost of 75,000 litres capacity	Each	752150.00
	7. Add for capacity	Per Lit.	5.75
	above 75,000 upto 1,00,000 litres		
	8. Cost of 1,00,000 litres capacity	Each	906300.00
	9. Add for capacity	Per Lit.	5.75
	above 1,00,000 upto 1,50,000 litres		
	10. Cost of 1,50,000 litres capacity	Each	1172550.00
	11. Add for capacity	Per Lit.	4.60
	above 1,50,000 upto 2,00,000 litres		

<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	12. Cost of 2,00,000 litres capacity	Each	1423400.00
	13. Add for capacity above 2,00,000 upto 3,00,000 litres	Per Lit.	4.60
	14. Cost of 3,00,000 litres capacity	Each	1861700.00
	15. Add for capacity above 3,00,000 upto 5,00,000 litres	Per Lit.	3.45
	16. Cost of 5,00,000 litres capacity	Each	2613350.00
	17. Add for capacity above 5,00,000 upto 10,00,000 litres	Per Lit.	3.45
	18. Cost of 10,00,000 litres capacity	Each	4180100.00
	19. Add for capacity above 10,00,000 upto 15,00,000 litres	Per Lit.	2.30
	20. Cost of 15,00,000 litres capacity	Each	5441800.00
	21. Add for capacity above 15,00,000 litres	Per Lit.	2.30

**SECTION - L : R.C.C. E.S.R.**

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1.	<b>RCC ESR</b>		
	Designing (aesthetically), and constructing <b>RCC elevated service reservoirs</b> of following capacity with RCC staging consisting of columns, internal and external bracings spaced vertically not more than 4.5 meters centre to centre distance for ESR having Capacity upto 500 Cum. and not more than 6 m c/c distance for ESRs having capacity above 500 cum including excavation in all types of strata, foundation concrete, cement plaster with water proofing compound to the inside face of the container including refilling disposing of the surplus stuff within a lead of 50 meters, all labour and material charges including lower- ing, laying, erecting, hoisting and jointing of pipe assembly of inlet, outlet, washout, overflow and bypass arrangements as per departmental design, providing and fixing accessories such as Stainless Steel ladder, C. I. manhole frame and covers water level indicators, lightening conductor, G. I. pipe railing around walk way and top slab, providing spiral staircase from ground level to roof level, M.S. grill gate of 2 mtr. height with locking arrangement of approved design. B.B. masonry chambers for all valves, ventilating shafts, providing and applying three coats of Acrylic emulsion with silicon additives Paint to the structure including roof slab, food grade epoxy painting to internal surface & anti termite treatment for underground parts of the structure. and giving satisfactory water tightness test as per I.S. code, The job to include painting the name of the scheme and other details on the reservoir as per the directions of Engineer-in-charge.		
	<b>Note :</b>		
	1. The design of the structure be in accordance with relevant ( I.S. 3370 - 1965 or revised.)		
	2. The design shall satisfy the stipulations as per IS 1893 -1984 and I.S. 13920 / 1993 for seismic force and I. S.-11682/1985 for R.C.C. staging of overhead tanks.		
	3. For design having more than 6 columns, provision of internal bracing is obligatory. External bracing is also obligatory.		
	4. The Entire structure shall be constructed in M300 only.		
	5. Plain round mild steel bars grade - I conforming to I.S. 432 part-I or high yield strength deformed bars conforming to I.S. 1786 or I. S. 1139 shall be used, grade-II mild steel bars will not be allowed.		
	6. Irrespective of the type of foundation proposed in the design, one set of bracing be provided at the ground level.		
	7) These rates include providing M.S. ladder for E.S.R's upto 2 lakh litres capacity and providing spiral staircase for E.S.R. above 2 lakh litres capacity		



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	8) Staggering shall have to be designed with stresses of M-250 for ESR. However all RCC construction should be done in M-300		
	9) These rates are including the cost of uplift pressure if any and entire dewatering during execution. In case of water logging area where water is struck at shallow depth extra provision of dewatering shall be made as per site condition.		
	10) All conditions given in the Member Secretary's Circular No.MJP / TS-I / 350 / 1668 dt. 2-8-97 and MJP / S-1/ 350/2127 dt. 13-7-99 shall be strictly followed and additional cost, if any, due to these conditions is included in the rates mentioned below.		
	11) 75% part rate shall be payable for reinforcement concrete and plastering items of containers of E.S.R. till satisfactory hydraulic testing for water tightness is given; and till that work shall be treated as incomplete. foundations sulphate resistant cement shall only be used. Single pile for the column is not permitted Group of piles shall be designed with pile cap for each column of ESR.		
	12) The rates indicated in the table are excluding the cost of pipes, specials and valves required for inlet, outlet, washout, overflow and by-pass arrangement. The scope of work, however and includes cost of erecting, laying and jointing of pipes and valves including cost of jointing materials upto 5 M beyond outer face of outermost column.		
	13) For ESR upto 500 cum capacity C.I. Double flanged pipe upto 300 mm dia shall be provided and C.I. specials shall be used. For ESR above 500 cum capacity C.I. /M.S. pipe assembly with minimum 8 m.m. thickness up to 500 mm dia. and minimum 10 mm. thickness above 500 mm.dia can be used with proper anti-corrosive epoxy treatment from inside and outside.		
	14) Below mentioned rates are for foundations, with individual footing with bearing capacity of 20 tonnes per square metre. For raft foundations, these rates shall be increased by 7.5% Where safe bearing capacity (SBC) is 5 M.T. per sqm and by 5% where SBC is more than 5 MT/ sqm and upto 10 MT /Sqm. This % of 5% or 7.5 % is applicable for estimation of amount of L.S. item of ESR. For Extra Item due to change from individual foundation to raft, actual increase in concrete and steel be paid as per relevant DSR Item.		
	15. The rate shall be increased by 30% for bearing piles upto depth of 10 m & for further increase in depth by 5 M each, it shall be increased by another 10%. These rates are applicable where raft is not feasible for pile		
	16. The rates are applicable for staging height of 12 M. These rates shall be increased or decreased for per metre variation in this staging height as below.		
	12 to 16 M staging - 2% per metre		
	16 to 20 M staging - 3% per metre		
	20 M and above - 4% per metre		
	For 17 M Staging height percentage calculation will be like below		
	12 to 16 M --- $4 \times 2 = 8\%$		
	16 X 17 M --- $1 \times 3 = 3\%$		
	Total = 11 %		
	For 21 M Staging height percentage calculation will be like below.		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	12 to 16 M --- 4 X 2 = 8 %		
	16 X 20 M --- 4 X 3 = 12 %		
	20 X 21 M --- 1 X 4 = 4 %		
	Total = 24 %		
	17. Following rates are for seismic zone-III For zone-IV, these rates shall be increased by 5% and for zone - II, these rates shall be decreased by 5%. Concerned Executive Engineer shall confirm the seismic zone for the scheme from seismic zones plan before estimation and adopt appropriate rates as per actual seismic zones. (Seismic maps attached in this C.S.R.)		
	<b>Note :</b> 1) Conditions from Sr. No. 1 to 11 of form a part and parcel of the tender shall be included in the draft tender papers for works of R.C.C.E.S.R.		
	2) Conditions from Sr. No.12 to17 are for estimation purpose only and shall not be appear in the tender.		
Sr. No.	Capacity in litres	Unit	
1.	Upto 25,000 litres	Per Lit.	27.60
2.	Cost of 25,000 litres capacity E.S.R.	Each	681500.00
3.	Add for capacity	Per Lit.	17.25
	above 25,000 upto 50,000 litres		
4.	Cost of 50,000 litres capacity E.S.R.	Each	1114950.00
5.	Add for capacity	Per Lit.	11.50
	above 50,000 upto 75,000 litres		
6.	Cost of 75,000 litres capacity E.S.R.	Each	1394250.00
7.	Add for capacity	Per Lit.	9.20
	above 75,000 upto 1,00,000 litres		
8.	Cost of 1,00,000 litres capacity E.S.R.	Each	1626700.00
9.	Add for capacity	Per Lit.	8.05
	above 1,00,000 upto 1,50,000 litres		
10.	Cost of 1,50,000 litres capacity E.S.R.	Each	2018400.00
11.	Add for capacity	Per Lit.	6.90
	above 1,50,000 upto 2,00,000 litres		
12.	Cost of 2,00,000 litres capacity E.S.R.	Each	2347600.00
13.	Add for capacity	Per Lit.	5.75
	above 2,00,000 upto 2,50,000 litres		
14.	Cost of 2,50,000 litres capacity E.S.R.	Each	2665850.00
15.	Add for capacity	Per Lit.	5.75
	above 2,50,000 upto 3,00,000 litres		
16.	Cost of 3,00,000 litres capacity E.S.R.	Each	2953300.00
17.	Add for capacity	Per Lit.	5.75
	above 3,00,000 upto 4,00,000 litres		
18.	Cost of 4,00,000 litres capacity E.S.R.	Each	3507300.00
19.	Add for capacity	Per Lit.	5.75
	above 4,00,000 upto 5,00,000 litres		
20.	Cost of 5,00,000 litres capacity E.S.R.	Each	4039800.00

<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	21. Add for capacity	Per Lit.	4.60
	above 5,00,000 upto 7,50,000 litres		
	22. Cost of 7,50,000 litres capacity E.S.R.	Each	5294250.00
	23. Add for capacity	Per Lit.	4.60
	above 7,50,000 upto 10,00,000 litres		
	24. Cost of 10,00,000 litres capacity E.S.R.	Each	6469300.00
	25. Add for capacity	Per Lit.	4.60
	above 10,00,000 upto 15,00,000 litres		
	26. Cost of 15,00,000 litres capacity E.S.R.	Each	8660750.00
	27. Add for capacity	Per Lit.	4.60
	above 15,00,000 upto 20,00,000 litres		
	28. Cost of 20,00,000 litres capacity E.S.R.	Each	10698550.00

<b>SECTION - M : CHAMBERS, MANHOLES &amp; DRAINAGE DROPS</b>			
<b>Sr. No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate (in Rs.) 2019-2020</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1.</b>	<b>Valve chamber with precast R.C.C. covers.</b>		
	Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion, 20mm thick cement plaster in CM 1:4 proportion on both side, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.		
	(Note : Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )		
<b>A</b>	As above of <b>60 X 45</b> cm internal size and depth upto <b>0.9 M</b> with precast R.C.C. slab cover.	No.	6331.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1390.00
<b>B</b>	As above of <b>90X45</b> cm internal size and depth upto <b>1.2 M</b> with precast R.C.C. slab cover.	No.	9340.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1660.00
<b>c</b>	As above of <b>90X60</b> cm internal size and depth upto <b>1.2 M</b> with precast R.C.C. slab cover.	No.	10164.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1913.00
<b>D.</b>	As above of <b>90X90</b> cm internal size and depth upto <b>1.2 M</b> with precast R.C.C. slab cover.	No.	12180.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	2091.00
<b>E.</b>	As above of <b>90 cm internal dia.</b> size and depth upto <b>1.2 M</b> with precast R.C.C. slab cover.	No.	9232.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1792.00
<b>F.</b>	As above of <b>1.2 X 1.2 M</b> internal size and depth upto <b>1.2 M</b> with precast R.C.C. slab cover.	No.	16333.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	2688.00
<b>G.</b>	As above of <b>1.5 X 1.5 M</b> internal size and depth upto <b>1.5 M</b> with precast R.C.C. slab cover.	No.	23210.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	3286.00
<b>2</b>	<b>Valve chamber with cast iron manhole frame and covers.</b>		
	Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 proportion 12 mm thick cement plaster in cm 1:4 proportion on both sides with providing and fixing C.I. manhole frame and cover in RCC 1:2:4 coping or RCC 1:2:4 proportion x 15 cm thick slab,etc.complete as directed by Engineer-in-charge.		
	(Note : Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M)		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
<b>A</b>	As above of <b>60X45</b> cm internal size and depth upto <b>0.9 M</b> with 60 x 45 cm size C.I. manhole frame and cover of 40 kg.	No.	9460.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1419.00
<b>B</b>	As above of <b>90X45</b> cm internal size and depth upto <b>1.2 M</b> with 90 x 45 cm size C.I. manhole frame and cover of 40 kg.	No.	12439.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1660.00
<b>C</b>	As above of <b>90X60</b> cm internal size and depth upto <b>1.2 M</b> with 90 x 60 cm size C.I. manhole frame and cover of 50 kg.	No.	14149.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1775.00
<b>D</b>	As above of <b>90X90</b> cm internal size and depth upto <b>1.2 M</b> with 53 cm dia C.I. manhole frame and cover of 90 kg. fixed in RCC slab.	No.	19493.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	2079.00
<b>E</b>	As above of <b>1.2 X1.2 M</b> internal size and depth upto <b>1.2 M</b> with 53 cm dia C.I. manhole frame and cover of 90 kg. fixed in RCC slab.	No.	23147.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	2688.00
<b>F</b>	As above of <b>1.5 X1.5 M</b> internal size and depth upto <b>1.5 M</b> with 53 cm dia C.I. manhole frame and cover of 90 kg. fixed in RCC slab.	No.	29974.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	3390.00
<b>3</b>	<b>Valve chamber with precast steel fibre reinforced concrete frame and covers (S.F.R.C. frame and covers.)</b>		
	Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion 20mm thick cement plaster in CM 1:4 proportion on both side, precast S. F. R. C.frame and cover,etc.complete as directed by Engineer-in-charge.		
	<b>( Note : Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M)</b>		
<b>A</b>	As above of <b>60X45 cm</b> internal size and depth upto <b>0.9 M</b> with S.F.R.C. frame and cover.	No.	8755.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1390.00
<b>B</b>	As above of <b>90X45 cm</b> internal size and depth upto <b>1.2 M</b> with S.F.R.C. frame and cover.	No.	13251.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1660.00
<b>C</b>	As above of <b>90X60 cm</b> internal size and depth upto <b>1.2 M</b> with S.F.R.C. frame and cover.	No.	13306.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	1660.00
<b>D</b>	As above of <b>90X90 cm</b> internal size and depth upto <b>1.2 M</b> with S.F.R.C. frame and cover.	No.	17472.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	2079.00
<b>E</b>	As above of <b>1.2X1.2 M</b> internal size and depth upto <b>1.2 M</b> with S.F.R.C. frame and cover of size 540 mm dia. fixed in RCC slab.	No.	21655.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	2644.00
<b>F</b>	As above of <b>1.5X1.5 M</b> internal size and depth upto <b>1.2 M</b> with S.F.R.C. frame and cover of size 540 mm dia. fixed in RCC slab.	No.	28927.00
	a) Add for every increase in depth of 30 cm or part thereof	30 cm depth	3398.00
<b>4</b>	Providing and fixing in position <b>M.S. Air valve boxes</b> fabricated with 2 mm thick M.S. plate, 30 x 30 x 3 mm size M.S. angle frame, concreting in M-150 for fixing the box in position, applying two coats of oil paint, painting chainage, locking arrangement, etc. complete as directed by Engineer-in-charge.		
	a) For single ball air valve	No.	2198.00
	b) For double ball air valve	No.	2484.00
<b>5</b>	Providing and fixing <b>C.I. road box</b> including loading, unloading and carting to site of work including all necessary excavation in all types of strata and fixing in murum packing, etc. complete.		
	a) 100 mm x 225 mm (20 kg)	No.	1859.00
	b) 225 mm x 300 mm (40 kg)	No.	3650.00
<b>6</b>	Providing and constructing on sewer, B.B. masonry circular manhole concentric cone <b>1.2 M dia.</b> at bottom and 0.5 M dia. at top and upto a depth of <b>2.00 M</b> with 23 cm brick work in CM 1:4 proportion 20mm thick cement plaster in CM 1:4 proportion on both side, excluding excavation including foundation concrete 250 mm thick and haunches and channels in c.c.1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56 cm.dia. etc. complete as directed by Engineer-in-charge	No.	24816.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	3584.00
<b>7</b>	Providing and constructing on sewer, B.B. masonry circular manhole concentric cone <b>1.5 M dia.</b> at bottom and 0.5 M dia. at top and upto a depth of 5.00 M with 23 cm brick work up to depth of 2 M from top and 35 cm thick brick work for balance depth in CM 1:4 proportion with 20 mm thick smooth plaster on both side in cm 1:2 proportion excluding excavation including foundation concrete 250 mm thick and haunches and channels in C.C.1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56 cm.dia. etc. complete as directed by Engineer-in-charge	No.	71683.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	7244.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
8	Providing and constructing on sewer, B.B. masonry <b>circular man-hole</b> with concentric cone <b>1.5 M dia.</b> at bottom and 0.5 M dia. At top and upto a depth of 9.00 M with 23 cm brick work, upto depth of 2 M from top and 35 cm thick brick work for depth of 2 M and 45 cm thick brick work for remaining depth upto 9 M in CM 1:4 proportion with 20 mm thick smooth plaster on both sides in CM 1:2 proportion excluding excavation, including foundation concrete 250 mm thick and haunches and channels in C.C.1:2:4 proportion, finishing channels in smooth rendering, providing C.I.dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56 cm.dia. etc. complete as directed by Engineer-in-charge	No.	145156.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	8993.00
9	Providing and constructing <b>B.B. masonry circular manhole with out conical shape</b> excluding excavation, RCC 1:2:4 proportion, 20 cm bedding brick masonry in CM 1:4 proportion, 23 cm thick for 2 M depth from top 35 cm thick for 2 M below it and 45 cm thick for balance depth, RCC slab at top and at 2 M depth from top for supporting brick masonry above it, plastering with smooth finish in CM 1:2 proportion C.C.1:2:4 finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., providing and fixing S.F.R.C. frame and cover of 56 cm.dia.at top including cost of all materials and labour, etc.complete.		
A	1.00 M dia. x 2 M depth	No.	20460.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	2985.00
B	1.00 M dia. x 3 M depth	No.	34222.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	5800.00
C	1.00 M dia. x 4.5 M depth	No.	53816.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	7437.00
D	1.50 M dia. x 2 M depth	No.	32599.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	4818.00
E	1.50 M dia. x 3 M depth	No.	46428.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	7654.00
F	1.50 M dia. x 4.5 M depth	No.	72159.00
	a) Rebate for every decrease in depth of 50 cm or part thereof	50 Cm Depth	9746.00
	<b>Drainage Drops</b>		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
10	Providing 150 mm dia S.W. or R.C.C.pipes in vertical drop arrangement including providing 150 mm dia S.W.and R.C.C. pipe fixed in B.B. masonry of manhole at the required level including providing 150 mm dia double tee ,150 mm dia right angled bend, encasing in B.B. masonry 1:4 proportion all around the pipe 20mm thick cement plaster in CM 1:4 proportion on both side,double tee, bend upto the foundation of manhole,jointing, cutting, filleting including neat cement rendering, plugging the opening with jungle wood knob complete as directed by Engineer-in-charge (0.60M depth) excluding cost of chamber.	No.	1932.00
11	a) Extra for every 0.5 M depth beyond initial depth of 0.60 M	50 Cm depth	704.00
	As above but for 200 mm dia pipes and depth 0.60 M	No.	2545.00
12	a) Extra for every 0.5 M depth beyond initial depth of 0.60 M	50 Cm depth	838.00
	As above but for 250 mm dia pipes and depth 0.60 M	No.	3045.00
12	a) Extra for every 0.5 M depth beyond initial depth of 0.60 M	50 Cm depth	964.00
	As above but for 300 mm dia pipes and depth 0.60 M	No.	3697.00
13	a) Extra for every 0.5 M depth beyond initial depth of 0.60 M	50 Cm depth	1106.00
	As above but for 400 mm dia pipes and depth 0.60 M	No.	5194.00
14	a) Extra for every 0.5 M depth beyond initial depth of 0.60 M	50 Cm depth	1360.00
	As above but for 500 mm dia pipes and depth 0.60 M	No.	6567.00
15	a) Extra for every 0.5 M depth beyond initial depth of 0.60 M	50 Cm depth	1502.00
	As above but for 600 mm dia pipes and depth 0.60 M	No.	7558.00
16	a) Extra for every 0.5 M depth beyond initial depth of 0.60 M	50 Cm depth	1729.00
17	Providing and fixing in position steel fibre reinforced concrete (S.F.R.C.) frame and covers of approved make including loading, unloading, transportation, all taxes, etc. complete as directed by Engineer-in-charge (20 tonnes capacity)		
	a) 540 mm dia.	No.	3251.00
	b) 560 mm dia.	No.	4478.00
	c) 90 x 45 cm size	No.	3251.00



Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	d) 90 x 60 cm size	No.	3521.00
	e) 60 x 60 cm size	No.	3216.00
	f) 60 x 45 cm size	No.	2786.00
18	Providing and fixing intercepting sewer trap including concrete bedding, etc. complete.		
	a) 150 x 100 mm	No.	450.00
	b) 100 x 100 mm	No.	325.00
19	Providing and fixing in position S.W. bends of various size, etc. complete.		
	a) 100 mm	No.	143.00
	b) 150 mm	No.	171.00
20	Providing and fixing 'Y' junction and labour, etc. complete		
	a) Saddle junction 100 x 100 mm	No.	174.00
	b) 'Y' junction 150 x 150 x 100 mm	No.	201.00
	c) 'Y' junction 300 x 300 x 300 mm	No.	237.00
	d) 'Y' junction 300 x 300 x 100 mm	No.	201.00
21	Providing and fixing in position A.C. soil ventilators / slotted as necessary and as directed by Engineer-in-charge etc. complete		
	a) 80 mm	No.	171.00
	b) 100 mm	No.	206.00
	c) 150 mm	No.	293.00
22	Providing and fixing A.C. soil pipe or downtake pipe with all required fittings, taking hole, etc. complete (as per manufacturer's code of practice)		
	a) 80 mm	No.	298.00
	b) 100 mm	No.	354.00
	c) 150 mm	No.	530.00
23	Providing and fixing Cast Iron soil pipe of 1.8 M length including taking out holes and all required fittings, etc. complete		
	S / S		
	a) 80 mm	No.	983.00
	b) 100 mm	No.	1169.00
	D / S		
	a) 80 mm	No.	1111.00
	b) 100 mm	No.	1230.00

# SECTION - N : WELL SINKING AND RIVER INFILTRATION WORKS

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1.	Providing, constructing <b>coffer dam</b> in river basin / dam storages as per type design including excavation, filling, the middle portion with B. C. soil (in gunny bags if required). Providing impervious / semipervious materials on both side of B.C. soil (in gunny bags if required) including ramming, compacting to the satisfaction of Engineer-in-charge, till the completion of work including dismantling coffer dam after completion of works and disposing off the material as directed by the Engineer-in-charge.	Cum	617.00
	<b>Note :</b> Pay line maximum- Top width payable shall be 2 mtr. And maximum payable side slopes shall be 1.5 Horizontal to 1 vertical, if the constructed top width of the side slopes are less, then the measurements at actual are payable. Extra top width or flatter slopes are not payable Contractor is free to use ballies, plastic sheets, piles, pipes, CGI sheets for supporting hearting materials instead of impervious/semipervious hearting materials for which no extra payments shall be payable. 30% payment shall be withheld for dismantling of coffer dam. This foot note shall appear in tender condition. (type section is shown on last page of type design section of CSR)		
2.	Providing and fabricating at work shop, carting to site of work, including transport, loading, unloading, hoisting, lowering and setting out at actual site of well, sinking <b>M.S. plate cutting edge. for R.C.C. well curb</b> consisting of 350 mm M.S. plate, 10 mm thick, champhering at bottom. Cutting edge should be provided in pieces not less than 2 M in length. Each joint should be plain from outside and jointed by gusset plate 400 x 200 x 12 mm thick M. S. plate with 12 nos. of 20 mm dia. crurshank headed bolts (gusset plates from inside) with unequal angle of 90 x 60 x 10 mm should be welded from top of chamfered portion at 14mm from bottom so that 15mm side should be in contact with cutting edge with overlap of 300 mm joints. 16 mm dia bar should be welded to M.S. plate 200 mm below the top surface and length should be 1.8 M above plate with a bend 300 mm from plate surface including 3 coats of anticorrosive paint as directed by Engineer-in-charge.	Kg.	86.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
3.	Providing and filling <b>puddle</b> (selected good impervious clay) in Kolhapur type weirs in proper layers of 15 cm including water- ing, ramming and compaction, etc. complete with all leads and lifts.	Cum.	279.00
4.	Providing and filling around the well <b>boulders filling</b> of selected variety and size of boulders including cost of all materials, labour, transportation, etc. complete with all leads and lifts.	Cum	961.00
5.	Providing, and fixing 80 mm dia <b>A.C./P.V.C. pipe weep holes</b> at 1.5 M c/c staggered including cost of all materials and labour involved with all leads and lifts.etc. complete with all leads and lifts.	RMT	209.00
6.	Providing and fixing M.S. <b>chequerred plate</b> flooring of following thickness supported on M.S.angles (25 x 25 x 5 mm size) including welding, cutting and fabricating the plate to the required square or rounding shape, making holes in the plate, including providing and applying 3 coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge.		
	a) 6 mm thick	Sqm	3710.00
	b) 8 mm thick	Sqm	4692.00
7.	<b>Providing</b> at site of works ISI standard RCC slotted pipes of NP-3 class including cost of all central and local taxes, octroi,inspection, transportation, etc. complete including cost of RCC collar, etc. complete.		
	a) 450 mm dia.	RMT	4692.00
	b) 600 mm dia.	RMT	5998.00
8.	<b>Lowering, laying and jointing RCC slotted pipes</b> of following diameters including all leads and lifts, cost of jointing material, labour, etc. complete as directed by Engineer-in-charge.		
	a) 450 mm dia.	RMT	206.00
	b) 600 mm dia.	RMT	274.00
9.	<b>Lowering, laying and jointing CI 'B' class connecting mains with rubber gaskets</b> including transportation of pipes from stores to site of works, cost of jointing materials, cost of rubber gasket with all leads and lifts, etc. complete.		
	i) 300 mm dia.	RMT	246.00
	ii) 350 mm dia.	RMT	290.00
	iii) 400 mm dia.	RMT	374.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	iv) 450 mm dia.	RMT	387.00
	v) 500 mm dia.	RMT	465.00
	vi) 600 mm dia.	RMT	633.00
	vii) 700 mm dia.	RMT	846.00
	viii) 750 mm dia.	RMT	955.00
10	Providing, lowering, laying and placing in position, <b>shrouding material</b> for porous pipe gallery / slotted pipe gallery/ trench gallery with all leads and lifts involved including transportation of materials to site of works, screening and washing of materials and placing in position with given section, etc. complete as directed by Engineer-in-charge.		
	a) 40 mm gauge pebbles	Cum	1366.00
	b) 12 mm to 20 mm gauge pebbles	Cum	1653.00
	c) 6 mm to 12 mm gauge pebbles	Cum	1884.00
	d) Fine sand	Cum	1700.00
11	Providing and fixing in position <b>C.I. dapuri steps</b> or 22 mm dia.M.S. bar step with proper anchorage, etc. and providing and applying 3 coats of anticorrosive paint, etc complete as directed by Engineer-in-charge.	No	399.00
12	Providing and fixing <b>M.S. sluice gates</b> in position as per detailed drawing and specification including cost of all materials, labour, operating pedestal, connecting rod, painting with three coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge.	No	106.00
13	Providing and fixing in position <b>C.I. /M.S. rose pieces</b> in intake wells including cost of all materials and labour, painting with three coats of anti-corrosive oil paint, etc.complete as directed by Engineer-in-charge.	No	97.00
14	Providing and spreading around the well 1 mm thick <b>polyethylene sheet</b> complete as directed by Engineer-in-charge.	Sqm	29.00
15	Dewatering charges for estimation purpose for head works in river basin or dam :		
	1) Approach Channel	RMT	5676.00
	2) Intake Well of 3 M dia.	No	75694.00
	3) Inspection Well of 2 M dia.	No	49570.00
	4) Connecting Main	RMT	4549.00
	5) Jack Well of 6 M dia.	No	227070.00
	6) Approach Bridge	Rmt	765.00

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	Note : (i) The Contractor at his request may be allowed to start construction of masonry steining so as not to allow silting of well in oncoming monsoon and while paying masonry, 25% amount shall be withheld and released only when excavation to the full depth is completed.		
	(ii) Dewatering : Total dewatering charges are to be proposed in the tender as lumpsum amount and 75% is payable for excavation and 25 % is payable for construction of well / gallery. Out of 75% excavation, break- up shall be as under :		
	25% for last 1 M depth.		
	20% for 2 M depth which just above last 1 M depth. 15% for 2 M depth which just above last 3 M depth. 15% for the rest of depth from water table level.		
	(iii) The provisions made for dewatering in the tender being on lumpsum basis, the same shall have to be reduced /increased proportionately as the length of approach channel, connecting main or approach bridge reduces/ increase during actual execution.		
	Condition No. ( i ) and ( ii )shall appear in tender conditions.		
16	Carrying out <b>recuparation/ yield test</b> for ascertaining the discharge of constructed well / excavated profile as directed by Engineer- in- charge. The test carried out by drawing down water from the well/ profile below normal / subsoil water level upto full depth rise in water level is recorded. The normal water level / subsoil water level in the well / profile as well as strainer / suction level at pump as per design of W.S. scheme shall be recorded prior to the test including cost of all materials,overhead,labours etc. complete as directed.		
	The test shall be carried out as per Tech circular No. 2597 dated 20- 11-97 and shall be carried out for 7 days.		
	Lps more than 25,000	Day	2591.00
	Lps less than 25,000	Day	1865.00

**SECTION - O : ANCILLARY ITEMS FOR RESERVOIRS**

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1.	Providing and fixing in position <b>copper lightening conductor including</b> copper rod of 20 mm dia as per upper terminal 1.5 M long with a knob at end and with conical spike at top, <b>copper tape conductor</b> 20 x 3 mm size, copper earth plate of 3 mm thick and 0.81 sqm. in area, clamps at 1 M centre to centre including, necessary excavation, laying and fixing the conductor, providing and fixing 40 mm G.I pipe upto 3 M height from ground and 0.5 M below ground including making all connections, filling the earthing pit with charcoal, salt, etc. and refilling and watering, etc. complete as per specifications laid down in relevant I.S. codes.		
	i) For tape of 10 M length	No.	12795.00
	ii) Rebate / extra rate per metre length or part thereof over and above initial length of 10 M.	Mtr.	355.00
2.	Providing and fixing in position <b>copper lightening conductor</b> including copper rod of 20 mm dia as per upper terminal 1.5M long with a knob at end and with conical spike at top, <b>aluminium tape conductor</b> 20 x 3 mm size copper earth plate of 3 mm thick and 0.81 sqm. in area, clamps at 1 M centre to centre including, necessary excavation, laying and fixing the conductor, providing & fixing 40 mm G.I pipe upto 3 M height from ground and 0.5 M below ground including making all connections, filling the earthing pit with charcoal, salt, etc. and refilling and watering, etc. complete as per specifications laid down in relevant I.S. codes.		
	i) For tape of 10 M length	No.	11290.00
	ii) Rebate / extra rate per metre length or part thereof over and above initial length of 10 M.	Mtr.	142.00
3	Providing, hoisting and fixing in position inverted 'J' type 100 mm dia. <b>C.I. cowl type ventilators</b> with mosquitoproof aluminium mesh at top including applying 2 coats of anti-corrosive paint, etc. complete as directed by Engineer-in-charge, weighing not less than 35 kg.	No.	2160.00
4	Providing, hoisting and fixing in position <b>C.I. manohole, frame and cover</b> of best quality and of required size and shape with locking arrangements including applying 2 coats of anti-corrosive paint, etc. complete.		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	i) 90 x 60 cm size and weight 35 kg.	No.	2951.00
	ii) Rate on weight basis for any size and type of frame and cover.	Kg.	84.00
5	Providing and fixing in position <b>M.S. ladder</b> 0.50 M wide consisting of 75 x 10 mm M.S. flats as stringers and 16 mm dia M.S. bars in double rows as steps placed at 25 cm paint, c/c including cost of material and labour involved, welding, anchoring and applying 3 coat of anti-corrosive paint, etc. complete as directed by Engineer-in-charge.	RMT	1262.00
6	Providing and applying <b>epoxy paint</b> of approved make (Shalimar, Ciba or Mahindra & Mahindra) to concrete surface (food grade for internal surface) of <b>RCC ESR or GSR or any other structure</b> including cleaning the surface by scrapping and air blowers to the satisfaction of Engineer-in-charge, necessary scaffolding, etc complete with all leads and lifts and giving satisfactory hydraulic test for water tightness, film test as per I.S. codes.		
	a) For new surfaces - Two coats.	Sqm.	704.00
	b) For old surfaces - Two coats.	Sqm.	793.00
7.	Providing and constructing <b>RCC spiral staircase</b> in M-250 mix concrete at site of work and consisting of central vertical column of 400 mm dia and steps in RCC M-250, tie members at each brace level, RCC parapet wall 80 cm high including cost of all labour and material involved, cost of scaffolding, centering, shuttering, curing, finishing in CM 1:3 proportion including RCC M-250 footing foundation, its excavation, refilling and cleaning the site, etc. complete as per type design, with 3 coats of cement paint.	RMT	5866.00
8.	Providing and constructing <b>RCC ventilating shaft</b> of diameters and height mentioned below with required number of RCC 15 x 15 cm size columns and RCC circular slab or dome over the pillars in M-150 including cost of all material and over the pillars in M-150 including cost of all material and labour, providing and fixing steel or wooden frame & providing & fixing G.I. flyproof mesh of 26 gauge and providing and applying in 3 coats of oil paint to wooden or steel frame and cement paint to concrete structure. etc. complete as directed by Engineer-in-charge.		

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
	i) 0.9 M dia x 1.35 M height	No.	6210.00
	ii) 1.2 M dia x 1.80 M height	No.	8023.00
	iii) 1.5 M dia x 2.25 M height	No.	12681.00
9.	Providing and installing <b>mercury water level indicator</b> for RCC ESR and wash water tank site as per instructions of Engineer-in-charge at ground level of the tank or nearing pump house or room for RCC ESR having 15 mtrs. stage height and 5 mtrs. water storage height with indication of water height in storage tank in metre and 1/10th of meter including providing and installing 15 mm dia class 'B' G.I. piping with necessary accessories from bottom of the tank upto the instrument as per instructions of Engineer-in-charge.	No.	20612.00
	For extra stage height over 15 mtrs. or part thereof and water depth over 5 mtrs. or part thereof for Item. No. 9.	Metre	1066.00
10.	Providing , erecting, installing & commissioning <b>Barometric leg chlorination system for water treatment plant</b> upto 5 MLD capacity as per manufacturers specification with all required materials viz 15 Kg. Pressure yellow P.V.C. pipe .Specially prepared chamber, mixing chamber, Scrubber unit, Gas pressure flexible pipe, brass nozzle nipple, electronic alarm unit, PPM dose, indicator of 25 mm dia, 4 mm thick glass tube Borosil, gas unit opening spanner 3 hole type. Instruction board, aluminium pipe upto sump (maximum length 15 M ) etc. including civil works wherever required for above materials fit- tings, including satisfactory test & trial at work site etc. complete. ( Item do not include construction of chlorine gas room of 3.0 x3.0 M or adequate size. ) as per drawing attached.		
	i) For 5.0 Mld capacity.	No.	134719.00
	ii) Add / deduct per MLD or part of per MLD capacity.	M.L.D.	5186.00
11.	Providing & fixing water level indicator upto 5 M height including M.S.enamelled gauge plate 300 mm wide 3 mm thick., copper float, providing and fixing required accessories such as pointer, pulleys, nylon thread including cost of all material, labour, etc. complete.		
	i ) MS enable gauge plate 300mm wide	No.	10585.00
	ii) MS enable gauge plate 150mm wide	No.	6478.00



**SECTION - P : TRIAL RUN**

Sr. No.	Description	Unit	Rate (in Rs.) 2019-2020
1	2	3	4
1.	<p><b>Commisioning, running and maintaining the scheme</b> to quantites, rated capacity, including manning necessary personnel such as operator, valveman, etc. as per requirements of the scheme and who should also administer chemical dose for a period of 1 month for individual scheme and <b>3 months</b> for regional scheme, together with training of personnel spared by MJP/ Local Body and handing over the scheme to Local Body after completion of the above period as directed by Engineer-in-charge.</p> <p><b>Note. : Required chemicals to be supplied by Department free of cost and electricity bill will also be paid by the Department.</b></p>		
	a) For single village without WTP	Per Month	22399.00
	a-1) For single village with WTP	Per Month	26132.00
	b) For Regional scheme upto 3 villages with raw water pumping, one treatment plant with pumps, raw water pumping main, leadingmain, ESR, BPT and distribution system, etc.	Per Month	46372.00
	c ) For Regional scheme upto 3 villages with raw water pumping,with pumps, raw water pumping main,leading main, ESR, BPT and distribution system, etc. <b>without WTP</b>	Per Month	30076.00
	d ) For Regional scheme more than three villages trialperiod shall be one year with raw water pumping,one treament plant with pumps, raw water pumping main, leading main,ESR,BPT and distribution system etc. <b>Wih WTP</b>	Per Month	47037.00
	e ) For Regional scheme more than three villages & trial period shall be one year with raw water pumping,pumps, raw water pumping main, leading main, ESR,BPT and distribution system etc. <b>without WTP .</b>	Per Month	30448.00
	f) Add for every additional villages or part thereof	Per Month	8296.00
	g) Add for every additional pumping station.	Per Month	13649.00

**◆ Specification for Comprehensive cleaning**

**of the ESR /GSR/Sump /Clariflocculator or any storage unit of water supply ,sewerage works in wet or dry condition with the help of water jet cleaning System.**

**(Item No. 16 of Miscellaneous Section)**

**Work under this contract**

Comprehensive cleaning of the ESR /GSR/Sump /Clariflocculator or any storage unit of water supply ,sewerage works in wet or dry condition during planned shutdown of the water supply with the help of water jet cleaning system including all lifts and leads .The item to include record submission of photographs taken during the cleaning process.

**Supply of materials to the contractors**

MJP will not supply any materials/consumables/Electricity required . Electric supply will have to be arranged by the Contractor at his own cost.

### ◆ **Special instructions to the contractor**

Care should be taken such that column assembly of pumping machinery is not disturbed or damaged otherwise necessary compensation would be recovered from firm. The water in the reservoir is highly chlorinated having dose of 2 PPM or more .The Contractor must take all safety precaution like helmets before start of work and during execution period. In case of any Mishappening at the site to any structure / equipments or human being the same shall be sole responsibility of the Contractor. The Contractor must ensure the guidelines of NHRC and factories Act in this regard in case any compensation is to be paid the same shall be responsibility /paid by the Contractor. The contractor should ensure the closure and opening of outlet valves before and after cleaning process.All the machinery like air compressor,desludging pump,storage tank for cleaning shall be bought to site of work well in advance. Proper lightening in tank should be ensured to facilitate the cleaning process and avoiding any accident. The suction pipes shall also be used for cleaning off accumulation over and around bell mouth or otherwise. Any visible cracks during cleaning process should be filled with solution of cement and sodium silicate and allow to harden. Incase of electrical breakdown and department is not able to provide electric supply then it will be entire responsibility of contractor to arrange for generator to complete the planned cleaning activity. Energy charges for electric supply to contractor will have to paid to department by the contractor.

### **Standards**

Where reference is made to particular standards ,it shall be latest revision of Indian standard institution.

### **Mode of measurement and payment.**

The tender rate shall be for one Litre of tank Capacity. 90% payment will be release after satisfactory completion of work, 10% of payable amount will be withheld and will be release after 3 months from completion of work. Unit price of item includes all taxes and duties.

◆ **Specification for Providing V wire underdrain system including V wire screen fitted on UPVC base V wire screen etc complete.**

**(Item No. 17 of Miscellaneous Section)**

**Work under this contract**

Providing V wire underdrain system including V wire screen made of SS304 fitted on UPVC base 90mm diameter V wire screen having screen shot of 300/350 microns having 16% open area .base pipe of lateral is 80mm dia UPVC SCH- 40 Air header made up of UPVC SCH40.Tee for main fold with air distribution is made of UPVC fittings .Air clamps with main header is of UPVC saddle with SS 304 nuts and bolts .

**Technical Information-**

Direct Retention-Direct retention of most media (Sand, garnet, dual media ,mixed media, GAC etc)Material with effective size of 0.007 inch -0.008inch (0.18mm - 0.20mm) can be supported without the use of any support gravel.

**Slot width-** Can be tailored to suit media specification

**Pressure drop Across underdrain**

During Backwash @  $37 \text{ m}^3/\text{m}^2/\text{hr} = 0.5 \text{ m}$  and

During Filtration @  $12.5 \text{ m}^3/\text{m}^2/\text{hr} = 0.05\text{m}$

**Filtration Mode-** Application rates of 5-25  $\text{m}^3/\text{m}^2/\text{hr}$  depending on media type and size.

**Typical Backwash-**

- 1) Shut off influent into filter and run filter level down to top of media.
- 2) Air at 35-55 m<sup>3</sup>/hr/m<sup>2</sup>
- 3) Air/Water wash – Air @ 55m<sup>3</sup>/hr/m<sup>2</sup> @ 27.5 kPa. And water at 7 m<sup>3</sup>/hr/m<sup>2</sup> @ 27.5 KPa.
- 4) When the water reaches the bottom of the filter trough , shut the air off and wash at the high water rate of 35-50 m<sup>3</sup>/hr/m<sup>2</sup> .

**Installation-** Laterals must be installed to be flat within plus or minus 5 mm

**Materials of Construction-** 304 and 316L stainless steel & in side UPVC Pipe.

**Mode of measurement and payment.**

The tender rate shall be for Running meter of laterals. Unit price to include all material, taxes and duties including packing,forwarding,insurance ,freight or any other charges .90% payment made after supply of above items and 10% payment will be release after installation and testing.

- ◆ **Specification for Laying V wire underdrain system including laterals , end caps , air header with coupler. All central assembly , end of the laterals must be embedded with M25 concrete curing testing etc complete.**

**(Item No. 18 of Miscellaneous Section)**

**Work under this contract**

Laying V wire underdrain system including laying and fixing of laterals in position, fixing end caps to one end and tee to other end of the lateral, fixing separate air header with coupler over tee of the lateral and air header with couple whole assembly arranged over the manifold. All central assembly and end of the laterals must be embedded with M25 concrete. Filtration Rate of  $12 \text{ M}^3/\text{Hr}/\text{M}^2$  of bed area should be observed.

**Method of construction-**

The main construction details shall be as explained as follows-

**1) Pipe base V wire screen laterals-** These are the heart of the system. Following shall be the salient construction features-

- a) The laterals should be of sufficient length to cover entire bed and should be placed at appropriate centre distance across the length of the bed to provide effective collection and backwash area.

- b) The laterals shall be made by fitting a perforated base pipe inside the V wire screen of appropriate size of silt opening to retain the fine sand media. The base pipe can be either SS 304 stainless steel or UPVC and screens are necessarily made of SS 304 stainless steel. The base pipe shall be closed from one end and other end has connection to suit the header manifold.
- c) The upper pipe should be divided into 2 compartment longitudinally , the upper one being the collection section and bottom one being the back wash section .The upper half of the pipe has larger holes for collection uniformly distributed over the periphery and length of the pipe and lower half of pipe has properly sized back wash holes to achieve uniform pressure distribution across the length of the lateral at optimum flow and pressure of back wash water and air.
- d) The angular distribution of collection holes should be such as to cause minimum distortion in flow lines and back wash holes to create proper agitating pattern around lateral to effectively back wash the media from the bottom and reach upto the top leaving no grey zones.
- e) The size of the compartment shall be designed such as to offer minimum resistance to collection flow at rated capacity and provide proper cross section to maintain the enough back pressure pool to generate uniform back washing jets from all the holes through out the length.

**2) Header-** Existing header shall be used.

**3) Back Wash system-** Separate air header shall be provided with drop tubes to all the pair of laterals.The drop tube connects to the flow divider inside the manifold and finally to extended nozzles extending into the back wash compartments of both

the lateral base pipe individually. This ensures delivery of air right into the last zone to ensure most effective utilization of air and prevent diffusion of air pressure while passing through the main header as done in most system. Moreover this result into the air and back wash water flowing in the same direction and hence air jet providing ventury effect to aggravate the water flow .The back wash water is fed through the main header and then to the laterals. The air does the job of scouring and media fluidizing and water does the job of rinsing and taking away the impurities. Hence the head of the water is required just to over come the frictional losses of the system and to raise the water level upto the level of back wash out let gutters. This combined action and efficient air delivery system ensures optimum quantity and pressure of back wash air and water.

### **Standards**

Where reference is made to particular standards ,it shall be latest revision of Indian standard institution. Concrete shall be as per IS 456 latest version.

### **Mode of measurement and payment.**

The tender rate shall be for Running meter of laterals. Unit price to include all material labour, dewatering charges , consumables, transportation, taxes etc .but excluding the cost of concrete which will be paid separately. 80% payment shall be made on installation at site, 20% after 3 months, after satisfactory completion of work. The necessary dismantling and any reconstruction or repair will not be paid separately as it will be part of the work. The work should be completed in a planned programme so as to complete the work at an earliest without disturbing the water supply to the area.



- ◆ **Specification for Providing and making MDPE pipe service connection to consumers with C.I/D.I/HDPE pipes with the help of electrofusion machine or Ratchet and dye drill including all labour and material charges etc complete.**

**(Item No. 19 of Miscellaneous Section)**

**Work under this contract**

Providing and making MDPE pipe service connection to consumers with C.I/D.I/HDPE pipes with the help of electrofusion machine or Ratchet and dye drill including all labour , The Item include providing necessary materials for service connection such as MDPE pipe 10 m length ,MDPE specials like electrofusion tee, double compresion elbow, female threaded adopter with metal insert, , UPVC compression end ball valve, G.I casing pipe of 40/50 mm for road crossing.

MDPE pipe PH-16 (SDR-9)conforming to IS :4427-1996 including cost of testing all materials ,taxes, transportation shall be provided

**Mode of Measurement –**

The measurement of this item shall be taken as per number basis of completed work as per description of item and specification.Payment will be made per number of service connections made. Unit Price includes labour required, excavation , fitting , refilling ,Closing the water supply in that area ,dewatering and restarting the water supply, transportation . 10% amount shall be with held till satisfactory hydraulic testing.

◆ **Specification for Providing and applying 3 layer polyethylene coating and internal fusion bonded epoxy lining for M.S pipes etc complete**

**(Item No.20 of Miscellaneous Section)**

Providing and applying 3 layer polyethylene coating of minimum 1000 micron composite coating thickness as per standards and internal fusion bonded epoxy lining as per IS 3589 annex C of 400 micron thickness for underground laying M.S pipes ,Similarly dual layer polyster coating of 400 micron externally and internal fusion bonded lining as per 3531 for above ground laying M.S pipes . Pipe coating shall be done at factory .The external 3 LPE Coating is bonded to the carbon steel pipe surface by a FBE layer.The mean strength of adhesion of the FBE (both internal and external ) to the steel surface is at least 125 kg/cm<sup>2</sup>.The pipes supplied prior to coating shall be cleaned by Grit blasting,M.S.pipe free from dust,oil greaseand moisture prior to application of coating ,loading,unloading and handling of pipe at factory.

**Mode of Measurement -**

The measurement of this item shall be taken as per Square meter basis of pipe area . Rates shall include cost of material coating and wrapping over the pipes, handling charges, preparation of pipe surface ,all labour, material etc complete.

# **SPECIFICATION FOR NEW ITEM**

## **Item No-1.**

**Online comprehensive cleaning of water supply, sewerage works with the help of online Robotic underwater System.**

### **Work under this contract**

Work includes Cleaning of supply well, Jack well, intake well, head works sump, G.S.R, E.S.R, Clarifloculator of water supply sewerage works with the help of online Robotic System. Robot shall be equipped with underwater camera and lights all cleaning process shall recorded and whole reservoir is thoroughly inspected .The cleaning is done until satisfaction of Engineer in charge. The work should be carried out without taking any shutdown and without affecting the water supply and water quality. The item to include records submission of videography taken during cleaning process. The person who execute the work at site must have electrical qualification or Electrical license. The Contractor must get checked the water samples before start of work and after completion of work from the laboratory ,the testing cost will be borne by the Contractor.

### **Supply of materials to the contractors**

MJP will not supply any materials/consumables/Electricity required . Electric supply will have to be arranged by the Contractor at his own cost.

### **Special instructions to the contractor**

Care should be taken such that column assembly of pumping machinery is not disturbed or damaged otherwise necessary compensation would be recovered from firm. The water in the reservoir is highly chlorinated having dose of 2 PPM or more .The Contractor must take all safety precaution before start of work and during execution period. . In case of any dishappening at the site to any structure / equipments or human being the same shall be sole responsibility of the Contractor. The Contractor must ensure the guidelines of NHRC and factories Act in this regard in case any compensation is to be paid the same shall be responsibility /paid by the Contractor .

## **Standards**

Where reference is made to particular standards, it shall be latest revision of Indian standard institution.

## **Mode of measurement and payment.**

The tender rate shall be for one Square meter of tank area. 90% payment will be released after satisfactory completion of work, 10% of payable amount will be withheld and will be released after 3 months from completion of work. Unit price of item includes all taxes and duties. The measurement will be area of the bottom surface of the tank. No separate measurement will be taken for suction pit. The scope also includes cleaning of vertical walls and columns inside the tank however there will be no separate measurements and payments for the same. The rate per Square meter for bottom surface will include all such cleaning.

**Specification for Comprehensive cleaning of the ESR /GSR/Sump / Clariflocculator or any storage unit of water supply ,sewerage works in wet or dry condition with the help of water jet cleaning System.**

**(Item No. 16 of Miscellaneous Section)**

## **Work under this contract**

Comprehensive cleaning of the ESR /GSR/Sump /Clariflocculator or any storage unit of water supply ,sewerage works in wet or dry condition during planned shutdown of the water supply with the help of water jet cleaning system including all lifts and leads .The item to include record submission of photographs taken during the cleaning process.

### **Supply of materials to the contractors**

MJP will not supply any materials/consumables/Electricity required . Electric supply will have to be arranged by the Contractor at his own cost.

### **Special instructions to the contractor**

Care should be taken such that column assembly of pumping machinery is not disturbed or damaged otherwise necessary compensation would be recovered from firm. The water in the reservoir is highly chlorinated having dose of 2 PPM or more .The Contractor must take all safety precaution like helmets before start of work and during execution period. . In case of any Mishappening at the site to any structure /equipments or human being the same shall be sole responsibility of the Contractor. The Contractor must ensure the guidelines of NHRC and factories Act in this regard in case any compensation is to be paid the same shall be responsibility /paid by the Contractor . The contractor should ensure the closure and opening of outlet valves before and after cleaning process.All the machinery like air compressor,desludging pump,storage tank for cleaning shall be bought to site of work well in advance. Proper lightening in tank should be ensured to facilitate the cleaning process and avoiding any accident. The suction pipes shall also be used for cleaning off accumulation over and around bell mouth or otherwise. Any visible cracks during cleaning process should be filled with solution of cement and sodium silicate and allow to harden. Incase of electrical breakdown and department is not able to provide electric supply then it will be entire responsibility of contractor to arrange for generator to complete the planned cleaning activity. Energy charges for electric supply to contractor will have to paid to department by the contractor.

### **Standards**

Where reference is made to particular standards ,it shall be latest revision of Indian standard institution.

### **Mode of measurement and payment.**

The tender rate shall be for one Litre of tank Capacity. 90% payment will be release after satisfactory completion of work, 10% of payable amount will be withheld and

will be release after 3 months from completion of work. Unit price of item includes all taxes and duties.

**Specification for Laying V wire underdrain system including laterals , end caps , air header with coupler.All central assembly , end of the laterals must be embedded with M25 concrete curing testing etc complete . (Item No. 18 of Miscellaneous Section)**

### **work under this contract**

Laying V wire underdrain system including laying and fixing of laterals in position, fixing end caps to one end and tee to other end of the lateral, fixing separate air header with coupler over tee of the lateral and air header with couple whole assembly arranged over the manifold.All central assembly and end of the laterals must be embedded with M25 concrete .Filtration Rate of 12 M3 /Hr/M2 of bed area should be observed.

### **Method of construction-**

The main construction details shall be as explained as follows-

1)Pipe base V wire screen laterals- These are the heart of the system. Following shall be the salient construction features-

a) The laterals should be of sufficient length to cover entire bed and should be placed at appropriate centre distance across the length of the bed to provide effective collection and backwash area.

b) The laterals shall be made by fitting a perforated base pipe inside the V wire screen of appropriate size of silt opening to retain the fine sand media. The base pipe can be either SS 304 stainless steel or UPVC and screens are necessarily made of SS 304 stainless steel. The base pipe shall be closed from one end and other end has connection to suit the header manifold.

c) The upper pipe should be divided into 2 compartment longitudinally , the upper one being the collection section and bottom one being the back wash section .The upper half of the pipe has larger holes for collection uniformly distributed over the periphery and length of the pipe and lower half of pipe has properly sized back wash holes to achieve uniform pressure distribution across the length of the lateral at optimum flow and pressure of back wash water and air.

d) The angular distribution of collection holes should be such as to cause minimum distortion in flow lines and back wash holes to create proper agitating pattern around lateral to effectively back wash the media from the bottom and reach upto the top leaving no grey zones.

e)The size of the compartment shall be designed such as to offer minimum resistance to collection flow at rated capacity and provide proper cross section to maintain the enough back pressure pool to generate uniform back washing jets from all the holes through out the length.

**2) Header-** Existing header shall be used.

**3) Back Wash system-** Separate air header shall be provided with drop tubes to all the pair of laterals.The drop tube connects to the flow divider inside the manifold and finally to extended nozzles extending into the back wash compartments of both the lateral base pipe individually.This ensures delivery of air right into the last zone to ensure most effective utilization of air and prevent diffusion of air pressure while passing through the main header as done in most system.Moreover this result into the air and back wash water flowing in the same direction and hence air jet providing ventury effect to aggravate the water flow .The back wash water is fed through the main header and then to the laterals.The air does the job of scouring and media fluidizing and water does the job of rinsing and taking away the impurities.Hence the head of the water is required just to over come the frictional losses of the system and to raise the water level upto the level of back wash out let gutters.This combined action and efficient air delivery system ensures optimum quantity and pressure of back wash air and water.

## **Standards**

Where reference is made to particular standards ,it shall be latest revision of Indian standard institution.Concrete shall be as per IS 456 latest version.

## **Mode of measurement and payment.**

The tender rate shall be for Running meter of laterals. Unit price to include all material labour,dewatering charges , consumables, transportation, taxes etc .but excluding the cost of concrete which will be paid separately.80% payment shall be made on installation at site,20% 3 months after satisfactory completion of work.The necessary dismantling and any reconstruction or repair will not be paid separately as it will be part of the work.The work should be completed in a planned programme so as to complete the work at an earliest without disturbing the water supply to the area.

**Specification for Providing V wire underdrain system including V wire screen fitted on UPVC base V wire screen etc complete.**

**(Item No. 17 of Miscellaneous Section)**

## **work under this contract**

Providing V wire underdrain system including V wire screen made of SS304 fitted on UPVC base 90mm diameter V wire screen having screen shot of 300/350 microns having 16% open area .base pipe of lateral is 80mm dia UPVC SCH- 40 Air header made up of UPVC SCH40.Tee for main fold with air distribution is made of UPVC fittings .Air clamps with main header is of UPVC saddle with SS 304 nuts and bolts .



## **Technical Information-**

**Direct Retention-**Direct retention of most media (Sand, garnet, dual media ,mixed media, GAC etc)Material with effective size of 0.007 inch -0.008inch (0.18mm - 0.20mm) can be supported without the use of any support gravel.

**Slot width-** Can be tailored to suit media specification

**Pressure drop Across underdrain-** During Backwash @ 37 m<sup>3</sup>/m<sup>2</sup>/hr = 0.5 m and

During Filtration @ 12.5 m<sup>3</sup>/m<sup>2</sup>/hr = 0.05m

**Filtration Mode-** Application rates of 5-25 m<sup>3</sup>/m<sup>2</sup>/hr depending on media type and size.

**Typical Backwash-**1) Shut off influent into filter and run filter level down to top of media.

2) Air at 35-55 m<sup>3</sup>/hr/m<sup>2</sup>

3) Air/Water wash – Air @ 55m<sup>3</sup>/hr/m<sup>2</sup> @ 27.5 kPa. And water at 7 m<sup>3</sup>/hr/m<sup>2</sup> @ 27.5 KPa.

4) When the water reaches the bottom of the filter trough , shut the air off and wash at the high water rate of 35-50 m<sup>3</sup>/hr/m<sup>2</sup> .

**Installation-** Laterals must be installed to be flat within plus or minus 5 mm

**Materials of Construction-** 304 and 316L stainless steel & in side UPVC Pipe.

## **Mode of measurement and payment.**

The tender rate shall be for Running meter of laterals. Unit price to include all material, taxes and duties including packing,forwarding,insurance ,freight or any

other charges .90% payment made after supply of above items and 10% payment will be release after installation and testing.

**Specification for Providing and making MDPE pipe service connection to consumers with C.I/D.I/HDPE pipes with the help of electrofusion machine or Ratchet and dye drill including all labour and material charges etc complete.**

**(Item No. 19 of Miscellaneous Section)**

**work under this contract**

Providing and making MDPE pipe service connection to consumers with C.I/D.I/HDPE pipes with the help of electrofusion machine or Ratchet and dye drill including all labour , The Item include providing necessary materials for service connection such as MDPE pipe 10 m length ,MDPE specials like electrofusion tee, double compresion elbow, female threaded adopter with metal insert, , UPVC compression end ball valve, G.I casing pipe of 40/50 mm for road crossing.

MDPE pipe PH-16 (SDR-9)conforming to IS :4427-1996 including cost of testing all materials ,taxes, transportation shall be provided

**Mode of Measurement –**

The measurement of this item shall be taken as per number basis of completed work as per description of item and specification.Payment will be made per number of service connections made. Unit Price includes labour required, excavation , fitting , refilling ,Closing the water supply in that area ,dewatering and restarting the water supply, transportation . 10% amount shall be with held till satisfactory hydraulic testing.

**Specification for Manufacturing ,Providing and supplying spirally welded/ ERW/SAW/fabricates M.S.pipes (Commercial Quality )With 3LPE and FBE coating.**

**(Item No. 16 of Miscellaneous Section)**

Manufacturing ,Providing and supplying spirally welded/ERW/SAW/fabricates M.S.pipes (Commercial Quality )With 3 layer polyethylene coating of minimum 1000 micron composite coating thickness as per standards and internal fusion bonded epoxy lining as per IS 3589 annex C of 400 micron thickness for underground laying .Similarly dual layer polyester coating of 400 micron externally and internal fusion bonded lining as per 3589 for above ground laying .Specifications of pipes will be as per 3589 and applicable standards.

The pipe surface shall be free of all mill preservatives,oil,grease,dirt,rust and scale.These pipes are internally/externally grit blasted.All coated pipes shall be 100% electrically inspected with high voltage inspection immediately after coating application.

To prevent damage to the coating ,all pipe that is coated with polyethylene shall be handled with wide non metallic canvas or leather belts, end hooks,or other equipment designed to protect the coating and the pipe.

Pipes have a very good corrosion resistance and there is no need of excess expenditure on corrosion preventive techniques like cathodic protection ,corrosion resistance paint. The specification of internal and external coating will be as per annexures of IS 3589-2001.

**Mode of Measurement -**

The measurement of this item shall be taken as per Running meter basis of pipe length as per description of item and above specification.Pipes cost includes all taxes (Central and Local )railway freight,insurance unloading from railway

wagon,loading into truck , transport to stores/site, unloading inner and outer coating cost,stacking etc complete.

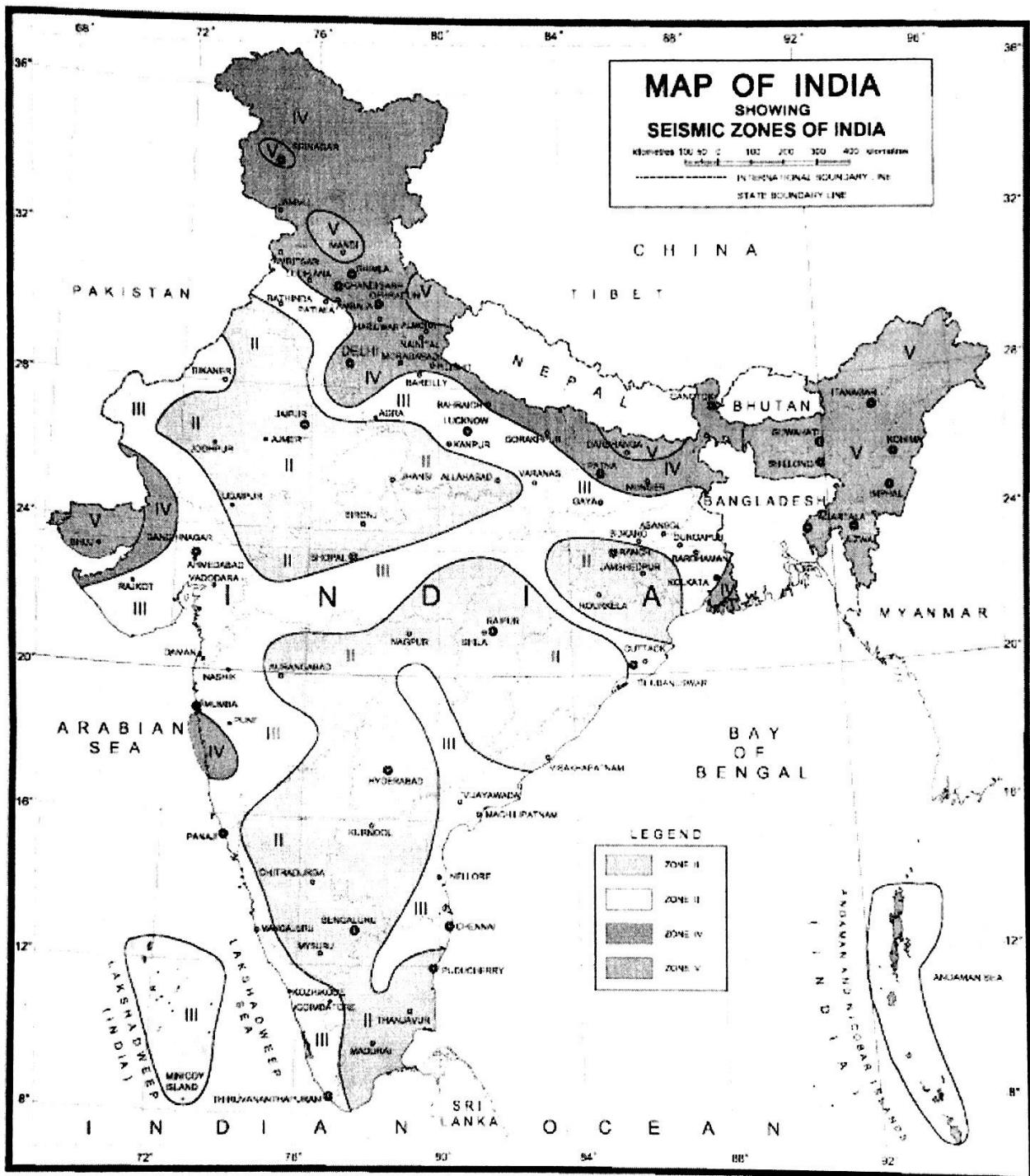
**Specification for Providing and applying 3 layer polyethylene coating and internal fusion bonded epoxy lining for M.S pipes etc complete**

**(Item No.20 of Miscellaneous Section)**

Providing and applying 3 layer polyethylene coating of minimum 1000 micron composite coating thickness as per standards and internal fusion bonded epoxy lining as per IS 3589 annex C of 400 micron thickness for underground laying M.S pipes ,Similarly dual layer polyester coating of 400 micron externally and internal fusion bonded lining as per 3531 for above ground laying M.S pipes . Pipe coating shall be done at factory .The external 3 LPE Coating is bonded to the carbon steel pipe surface by a FBE layer.The mean strength of adhesion of the FBE (both internal and external ) to the steel surface is at least 125 kg/cm<sup>2</sup>.The pipes supplied prior to coating shall be cleaned by Grit blasting,M.S.pipe free from dust,oil greaseand moisture prior to application of coating ,loading,unloading and handling of pipe at factory.

**Mode of Measurement -**

The measurement of this item shall be taken as per Square meter basis of pipe area . Rates shall include cost of material coating and wrapping over the pipes, handling charges, preparation of pipe surface ,all labour, material etc complete.



Based upon Survey of India Political map printed in 2002

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The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate baseline.  
 The interstate boundaries between Arunachal Pradesh, Assam and Meghalaya shown on this map are as interpreted from the North-Eastern Areas (Reorganization) Act, 1971, but have yet to be verified.  
 The state boundaries between Uttarakhand & Uttar Pradesh, Bihar & Jharkhand, and Chhattisgarh & Madhya Pradesh have not been verified by the Governments concerned.  
 The administrative headquarters of Chandigarh, Haryana and Punjab are at Chandigarh.  
 The external boundaries and coastlines of India agree with the Record Master Copy certified by Survey of India.  
 The responsibility for the correctness of internal details rests with the publisher.

NOTE — Towns falling at the boundary of zones demarcation line between two zones shall be considered in higher zone.

FIG. 1 SEISMIC ZONES OF INDIA

displacement of sand and mud; change of water level in wells; water from canals, lakes, rivers, etc, thrown on land. New lakes occur.

**XI Destruction**

- i) —
- ii) Severe damage even to well built buildings, bridges, water dams and railway lines. Highways become useless. Underground pipes destroyed.
- iii) Ground considerably distorted by broad cracks and fissures, as well as movement in horizontal and vertical directions. Numerous landslips and falls of rocks. The intensity of the earthquake

requires to be investigated specifically.

**XII Landscape Changes**

- i) —
- ii) Practically all structures above and below ground are greatly damaged or destroyed.
- iii) The surface of the ground is radically changed. Considerable ground cracks with extensive vertical and horizontal movements are observed. Falling of rock and slumping of river banks over wide areas, lakes are dammed; waterfalls appear and rivers are deflected. The intensity of the earthquake requires to be investigated specially.

**ANNEX E**

(Foreword)

**LIST OF SOME TOWNS WITH POPULATION MORE THAN 3 LAKHS (as per CENSUS 2011)  
AND THEIR SEISMIC ZONE FACTOR Z**

Town	Zone	Z	Town	Zone	Z
Agra	III	0.16	Calicut (Kozhikode)	III	0.16
Ahmedabad	III	0.16	Chandigarh	IV	0.24
Ajmer	II	0.10	Chennai	III	0.16
Allahabad	II	0.10	Chitradurga	II	0.10
Almora	IV	0.24	Coimbatore	III	0.16
Ambala	IV	0.24	Cuddalore	II	0.10
Amritsar	IV	0.24	Cuttack	III	0.16
Asansol	III	0.16	Darbhanga	V	0.36
Aurangabad	II	0.10	Darjeeling	IV	0.24
Bahraich	IV	0.24	Dharwad	III	0.16
Bangalore (Bengaluru)	II	0.10	Dehra Dun	IV	0.24
Barauni	IV	0.24	Dharampuri	III	0.16
Bareilly	III	0.16	Delhi	IV	0.24
Belgaum	III	0.16	Durgapur	III	0.16
Bhatinda	III	0.16	Gangtok	IV	0.24
Bhilai	II	0.10	Guwahati	V	0.36
Bhopal	II	0.10	Gulbarga	II	0.10
Bhubaneswar	III	0.16	Gaya	III	0.16
Bhuj	V	0.36	Gorakhpur	IV	0.24
Bijapur	III	0.16	Hyderabad	II	0.10
Bikaner	III	0.16	Imphal	V	0.36
Bokaro	III	0.16	Jabalpur	III	0.16
Bulandshahr	IV	0.24	Jaipur	II	0.10
Burdwan	III	0.16	Jamshedpur	II	0.10

Town	Zone	Z
Jhansi	II	0.10
Jodhpur	II	0.10
Jorhat	V	0.36
Kakrapara	III	0.16
Kalpakkam	III	0.16
Kanchipuram	III	0.16
Kanpur	III	0.16
Karwar	III	0.16
Kochi	III	0.16
Kohima	V	0.36
Kolkata	III	0.16
Kota	II	0.10
Kurnool	II	0.10
Lucknow	III	0.16
Ludhiana	IV	0.24
Madurai	II	0.10
Mandi	V	0.36
Mangaluru	III	0.16
Mungher	IV	0.24
Moradabad	IV	0.24
Mumbai	III	0.16
Mysuru	II	0.10
Nagpur	II	0.10
Nagarjunasagar	II	0.10
Nainital	IV	0.24
Nashik	III	0.16
Nellore	III	0.16
Osmanabad	III	0.16
Panjim	III	0.16
Patiala	III	0.16

Town	Zone	Z
Patna	IV	0.24
Pilibhit	IV	0.24
Pondicherry (Puducherry)	II	0.10
Pune	III	0.16
Raipur	II	0.10
Rajkot	III	0.16
Ranchi	II	0.10
Roorkee	IV	0.24
Rourkela	II	0.10
Sadiya	V	0.36
Salem	III	0.16
Shillong	V	0.36
Shimla	IV	0.24
Sironj	II	0.10
Solapur	III	0.16
Srinagar	V	0.36
Surat	III	0.16
Tarapur	III	0.16
Tezpur	V	0.36
Thane	III	0.16
Thanjavur	II	0.10
Thiruvananthapuram	III	0.16
Tiruchirappalli	II	0.10
Tiruvannamalai	III	0.16
Udaipur	II	0.10
Vadodara	III	0.16
Varanasi	III	0.16
Vellore	III	0.16
Vijayawada	III	0.16
Vishakhapatnam	II	0.10

# ORIENTED PVC PIPE (O-PVC)

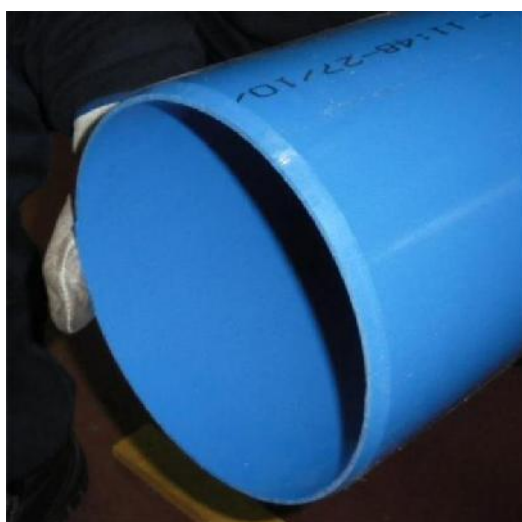
## RECEPTION, STORAGE, INSTALLATION AND TEST INSTRUCTIONS

### RECEPTION

After the reception of the pipes, it is necessary to check their state. Before its installation, you should remove the caps and make a sampling to verify that all the pipes are correct.

Checking the next points is particularly important:

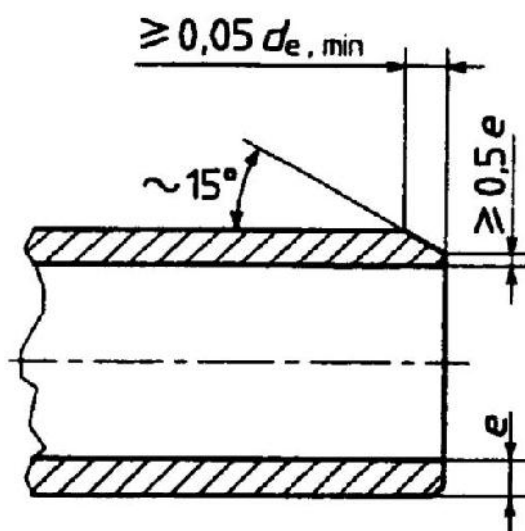
- The pipes should be free of dirt.
- The chamfer in the spigot end should not be damaged.



CORRECT



INCORRECT





- The seals should be placed correctly in their housings.



**CORRECT**



**INCORRECT**

- The surface and the inner part of the pipes and sockets should not be damaged.

## STORAGE

We suggest the following guidelines:

- Store the pipes horizontally on a flat surface and place supports every 1.5 meters to avoid the bending of the product.
- Avoid scratches especially in the crest of the socket, due to dragging the pipe on the ground, mainly if the surface is made of stone, concrete or asphalt.
- Do not stack more than 1.5 meters high, as this can damage lower pipes or even the upper pipes could fall.
- The sockets should be free, alternating sockets and ends.
- In case of prolonged sun exposure, protect pallets with an opaque material. White colour is preferable because it avoids the over-heating of the pipes.



## REALIZATION OF THE TRENCH

The trench must be free of stones at the bottom and at the sides.

Stones smaller than 10-20 mm are allowed, but they cannot be the main size of the ground particles.

Minimum trench width:

DN (mm)	Minimum width of trench B (m)	Depth of trench H (m)	Minimum width of trench B (m)
90-250	0.60	$h < 1.00$	0.60
315	0.85	$1.00 < h < 1.75$	0.80
355	1.00	$1.75 < h < 4.00$	0.90
400	1.10	$h > 4.00$	1.00
450	1.15		
500	1.20		
630	1.35		
800	1.65		

As a rule of thumb, when there is no road traffic involved, the pipes' crown will be at a minimum depth of 0.6 meters; with road traffic, the minimum depth is 1 meter.

## BEDDING AND FILLING THE TRENCH

Pipe must be installed in the following circumstances:

1. Before placing the pipe, a sand bed should be prepared (a fine granular material could be used instead of sand) with a thickness from 10 cm to 15 cm. The pipe should be well aligned and levelled.
2. The pipe must lie on the sand bed. It must be ensured that all the lower part of the pipe is settled on the sand bed trying to soak as much as possible in order to make the angle of sand that supports the kidneys of the pipe as big as possible.
3. Once the pipe is placed, chamberlain sides must be filled with the selected material and compacted to achieve >95% Proctor Normal.
4. The trench must be filled with the selected material and compacted laterally until the upper part of the pipe is buried at least 30 cm.
5. Steps 3 and 4 can be done with the same natural material obtained from the excavation, trying to avoid rocks and large stones, and checking that this natural material can support the forces produced by the pressure inside of the pipe.

Natural soil can be used as the selected filler material whenever it fulfills the following criteria:

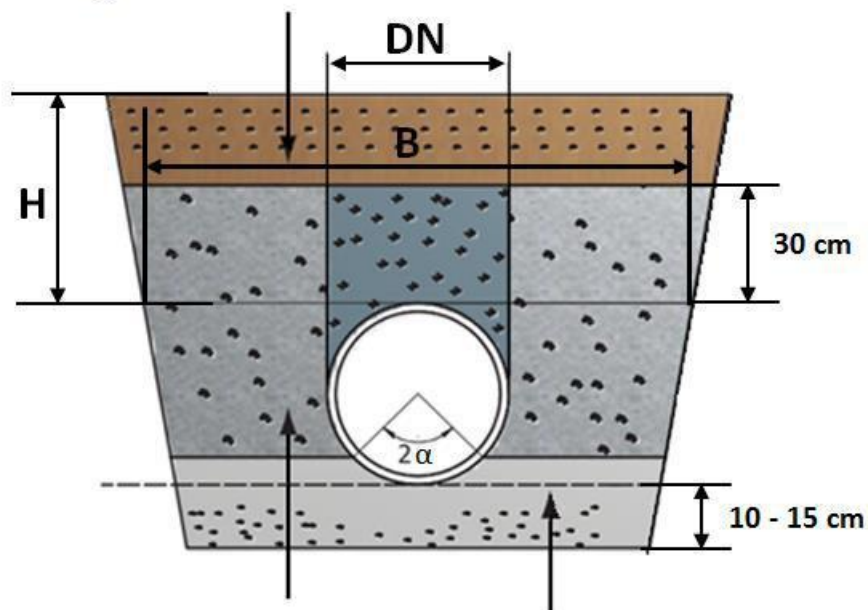
- a) The material cannot consist of angular stones or similar material.
- b) Filler material should not contain bigger particles than the ones shown in the following table.
- c) Filler material should not contain blocks of soil twice the size of the maximum dimensions of the particles given in the table.

**Maximum particle size**

Nominal diameter DN	Maximum size mm
DN <100	15
100 ≤ DN <300	20
300 ≤ DN <600	30
600 ≤ DN	40

- 6. From the 30 cm above the pipe until the surface of the ground, the trench can be filled with natural material not specifically selected and compacting directly over the whole surface of the trench.

Natural, tightly-packed  
filling 100% P.N.

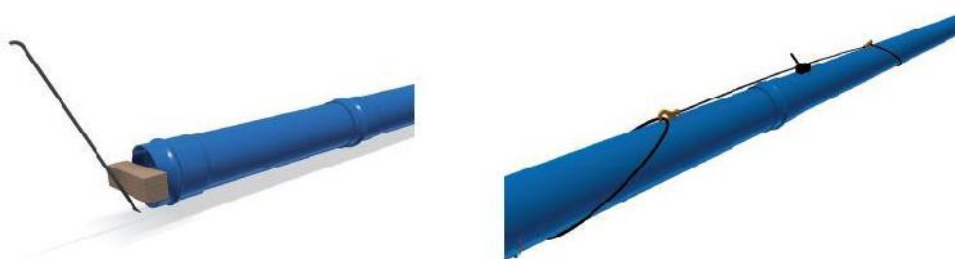


Selected,  
tightly-packed  
filling  
>95% P.N.

Granular  
tightly-packed  
material  
>95% P.N.

## ASSEMBLY

- Remove the protection caps.
- Verify that the pipe is clean and in good condition. Paying attention to the sockets and spigot ends.
- Check that the chamfer is correct and free of cracks.
- Verify that the seal is in its place, clean and free of foreign materials (stones, sand, etc.).
- Lubricate the chamfer of the spigot and the seal with joint lubricant.
- Line up the pipe as much as possible horizontal and vertically.
- Insert only the chamfer edge of the socket, just to support the pipe but leaving the socket lip free.
- In the case of pipes with nominal diameter  $\leq 250$  mm, a firm and dry push should be given to seize the momentum produced by the free movement in the lip of the socket and introduce it until the mark is hidden into the socket.
- When installing diameters  $> 250$  mm, one should use mechanical means to introduce the pipe using materials such as wood, hoists, tackles or slings.



In the next table, you can find an approximated number of assemblies per diameter with 1kg of lubricant.

DN (mm)	90	110	140	160	200	225	250	315	355	400	450	500	630	800
Assemblies	87	76	54	46	34	32	30	25	21	17	16	14	12	9

## PIPE CUTTING

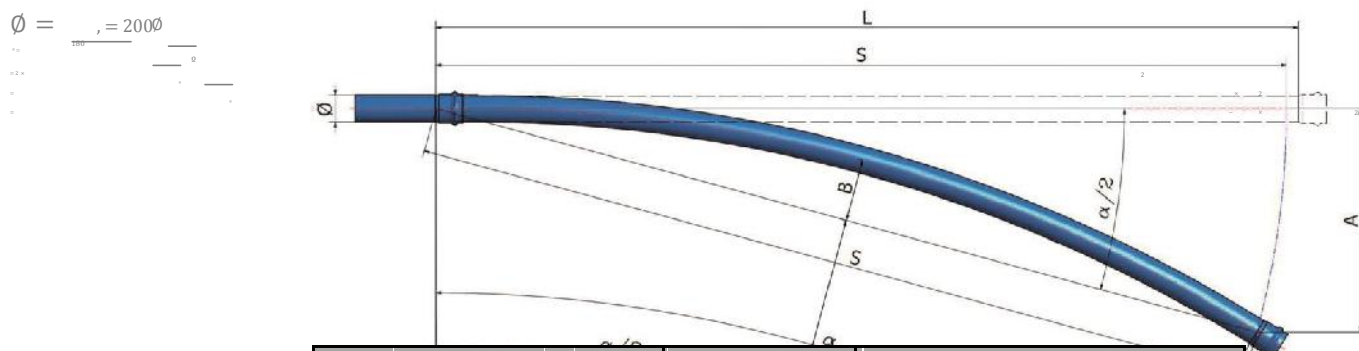
Pipes can be cut transversally using a circular saw or a hacksaw. The resulting male cut ends should be chamfered in order to be entered manually in another socket pipe or fitting. The chamfer can be made with a circular saw and be reviewed later with a file. The chamfer should be approximately of 15°.

A mask must be worn to prevent dust inhalation and protections and safety measures must to be taken for cutting machines.

Pipes chamfered on-site are less accurate than those made at the factory. Because of that, they could require higher introduction efforts or even require simple mechanical means to place the spigot inside the socket.

## COLD BENDING OF PIPE (23° C)

The pipe can bend at room temperatures ( $\pm 23^{\circ}\text{C}$ ) in the trench up to the limits defined in the next table. These curves must to be done always in cold (don't heat any part of the pipe or socket) by manual efforts (you can use simple items to help in case of pipes  $\text{DN} > 250\text{mm}$ ) and without damaging the geometry of the plugs.



		Pipe curvature			Angular deviation of the socket	Curvature + angular deviation (full angle) angular		
DN	L	R	$\alpha/2$	A	angle	R'	$\alpha'/2$	A'
mm	m	m	degrees	m	degrees	m	degrees	m
90	5,78	18	9,2	0,92	2	15	11,2	1,12
110	5,78	22	7,5	0,75	2	17	9,5	0,95
140	5,76	28	5,9	0,59	2	21	7,9	0,79
160	5,75	32	5,1	0,52	2	23	7,1	0,71
200	5,73	40	4,1	0,41	2	27	6,1	0,61
225	5,70	45	3,6	0,36	2	29	5,6	0,56
250	5,68	50	3,3	0,32	2	31	5,3	0,52
315	5,63	63	2,6	0,25	2	35	4,6	0,45
355	5,61	71	2,3	0,22	2	38	4,3	0,42
400	5,58	80	2,0	0,19	2	40	4,0	0,39
450	5,56	90	1,8	0,17	2	42	3,8	0,37
500	5,58	100	1,6	0,16	2	44	3,6	0,35
630	5,53	126	1,3	0,12	2	49	3,3	0,31
800	5,42	160	1,0	0,09	2	52	3,0	0,28

The pipes may be subjected to greater curvatures with high efforts, but it is not recommended to overcome these limits to avoid compromising the safety coefficient of the pipe.

## ANGULAR DEVIATION ALLOWED IN THE SOCKET

In addition to the curvature of the pipe, an angular deviation is allowed at the junction between pipes. Therefore in the final layout of the pipes, one can add both effects.

It is important not to exceed the established values of angular deviation in the socket-end when bending the pipe.



(1) Total length of the pipe: 5.95 meters.

DN	Maximum angular deviation	Displacement in the socket (D)
mm	angle (°)	D(mm) <sup>(1)</sup>
<b>90-800</b>	2°	200

The pipe connections can be subject to greater angular deviations if subjected to high stresses. It's recommended not to exceed those limits in order to avoid endangering the safety coefficients of the assembly under pressure.

## FORCES PRODUCED BY THE BENDING OF THE PIPE

The bent pipeline behaves like a narrow-angle curve; this means that there is some backpressure on the ground as the table below shows. These cross-pressures, under normal conditions, can be supported by a sufficiently compacted soil, otherwise, if necessary, they should be supported with anchors in excessive curvatures.

	Forces in a curved pipe ( $\alpha / 2$ ) <sup>(2)</sup>					
	bar	bar	bar	bar	bar	bar
DN	1	5	10	15	20	25
mm	kN	kN	kN	kN	kN	kN
<b>90</b>	0,10	0,51	1,02	1,53	2,04	2,55
<b>110</b>	0,12	0,62	1,25	1,87	2,49	3,12
<b>140</b>	0,16	0,79	1,58	2,37	3,17	3,96
<b>160</b>	0,18	0,90	1,81	2,71	3,61	4,51
<b>200</b>	0,22	1,12	2,25	3,37	4,50	5,62
<b>225</b>	0,25	1,26	2,52	3,78	5,04	6,29
<b>250</b>	0,28	1,39	2,79	4,18	5,58	6,97
<b>315</b>	0,35	1,74	3,48	5,22	6,96	8,70
<b>355</b>	0,39	1,96	3,91	5,87	7,82	9,78
<b>400</b>	0,44	2,19	4,38	6,57	8,76	10,96
<b>450</b>	0,49	2,46	4,91	7,37	9,82	12,28
<b>500</b>	0,55	2,74	5,48	8,22	10,96	13,69
<b>630</b>	0,68	3,42	6,84	10,26	13,68	17,10
<b>800</b>	0,85	4,26	8,51	12,77	17,03	21,28

(2) Resultant forces in a pipe 5.95 meters long.

## PRESSURE TEST AT WORKS

On-site testing should be performed according to local regulations and instructions laid down in the project.

During the assembly, the pipe installed should be tested in sections fully executed (the length may vary between 500 and 1.000 meters). The ends of the sections should be closed with appropriate fittings when being tested.

- Two main aspects must be taken into account: When the assembly are exposed, the water-tightness of the network should be checked, to see if there is any leak in such unions and locate them in case they exist. Except the cases of seal expulsion due to over-pressures or excessive angular deflections, leaks are manifested especially at very low pressures.
- On the other hand, for testing high-pressure pipes and fittings, they must be properly anchored (reductions, changes in direction, junctions, valves, cutting, etc.) and the pipes should be conveniently set in the trench (burial and compaction landfill). Otherwise, pipes and fittings could be unplugged by landslides in the field.

Therefore, it is recommended to test one of the following methods:

■

### **Method A:**

Burying the pipe conveniently with enough compaction to be able to withstand the stresses caused by the pressure of the test, but leaving assemblies uncovered (in some circumstances it is difficult to anchor pipes and fittings, leaving the unions visible). Any reductions, changes in direction, junctions and shutoff valves must be properly anchored.

Under these conditions, all pressure and leakage tests can be performed observing the uncovered unions and spot the appearance of leaks.

■

### **Method B:**

Perform a shallower anchorage of pipes and fittings, leaving assemblies out of any possible problems. Doing a first leak test by filling the line with water and observe that there are no water losses at the unions (most of the leaks occur at low pressures). In case of leaks, the reparation would be easier than with the fully anchored and buried pipes.

If required by local regulations, you could anchor the pipes and accessories conveniently for testing high pressure, keeping the assemblies exposed. If not, you can complete the burial of pipes and fittings with the correct compaction, thus facilitating the necessary anchorage for the high pressure test.

The pressures and time limits to test the pipes on-site are:

	Pressure	Maximum Time	Pressure	Maximum Time
<b>PN16</b>	Up to 21 bars	120 minutes	21 – 22.4 bars	60 minutes
<b>PN20</b>	Up to 25 bars	120 minutes	25 - 28 bars	60 minutes
<b>PN25</b>	Up to 30 bars	120 minutes	30 - 35 bars	60 minutes



## EFFECT OF TEMPERATURE

When the temperature is high, plastic pipes undergo a loss of mechanical properties and we must take this into account. Because of that, we must avoid the following conditions during pressure tests:

- Pipe partially or fully exposed to weathering (line uncovered).
- High outside temperature.
- Standing water inside the pipe.
- Prolonged sun exposure prior to the test.

All these circumstances may increase the temperature of the pipe above its operating temperature, so the overpressure test can damage the pipeline. In order to avoid that, it is recommended to:

- Cover the pipe once the tightness of the network is verified.
- Wait for pressure testing when the pipe has been exposed to sunlight.

High temperatures (over 25°C) or demanding or aggressive applications can reduce Allowable Operating Pressure (**PFA**) of pipes in comparison to the Nominal Pressure (NP).

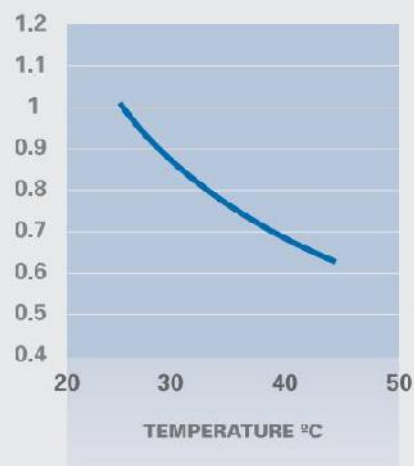
$$PFA = PN \cdot f_T \cdot f_A$$

The derating factor ( $f_T$ ) as function of operating temperature can be obtained from the graph on the right.

The derating factor related to application of the system ( $f_A$ ) must be determined by the Project Manager.

Note: Project design and execution is responsibility of the Project Manager and the Contractor, respectively.

Temperature Ratio Graph





**CLAUSE NO. SPECIFICATIONS FOR INTERNAL LINING & EXTERNAL COATING OF STEEL PIPES IN POTABLE WATER SERVICE WITH 100% SOLIDS (SOLVENT LESS) TWO COMPONENT, FAST CURING, RIGID, DIRECT TO METAL (DTM) POLYURETHANE COATING**

**1.00.00 SCOPE**

This specification governs the minimum requirements for materials, equipment, application, inspection, repair and handling aspects associated with the coating and lining of steel pipes using 100% Solids (Solvent less) Two Component, Fast Curing, Rigid, Direct to Metal (DTM) Polyurethane Coating classified under ASTM D-16, Type V.

- 1.01.00 It is envisaged that the Polyurethane lining & coating will provide a hard, inert, impermeable barrier with outstanding adhesion; corrosion, impact and abrasion resistance to protect the surface from corrosion and abrasion in the operating conditions. Further, the Polyurethane Lining shall not impart any odor, flavor, color or turbidity to the water; shall not leach toxic chemicals or metals and shall not provide nutrient for growth of microbes / aquatic microorganisms.
- 1.02.00 The steel surface preparation, prior to actual commencement of coating, to conform to SSPC-SP 10/ NACE No.2 (Joint Surface Preparation Standard from Society for Protective Coatings, USA and NACE International, USA dated September 15, 1994) near white blast cleaning, included in the scope of cleaning.
- 1.03.00 Bidder shall obtain prior written approval from the Owner for any deviations from the requirements of this specification and / or the standard referred herein.
- 1.04.00 The work shall conform to the following documents a) to f) (latest revision or as specified). Serial g) is provided for reference.

a) SSPC SP – 1	Solvent Cleaning
b) SSPC SP – 10 /NACE No.2	Near – White Blast Cleaning
c) SSPC – SP COM	Surface Preparation Commentary
d) SSPC PA2	Measurement of Dry Paint Thickness with Magnetic Gauges
e) ASTM D 4541	Method for Pull Off Strength of Coatings Using Portable Adhesion Testers
f) NACE RP 0188	Discontinuity (Holiday) Testing of New Protective Coatings On Conductive Substrates
g) ANSI / AWWA C 222	Polyurethane Coating for The Interior & Exterior of Steel Water Pipe Fittings

**2.00.00 GENERAL REQUIREMENTS & COATING VENDOR REQUIREMENTS**

- 2.01.00 The bidder shall perform all work in accordance with this specification and other requirements noted herein.
- 2.02.00 100% Solids, Two Component Polyurethane are specialized coatings characterized by very short pot lives and plural component airless spray. For coating/ lining at the pipe mill, the coating/ lining shall be applied by the pipe mill under technical guidance and

supervision of the coating material manufacturer. For site application and for field joints of cutback sections, the coating manufacturer shall undertake the work on 'Supply & Apply Basis'.

#### 2.03.00 VENDOR REQUIREMENTS - COATING MATERIALS

Bidder shall provide following details of coating materials proposed to be used in conformance to tender requirements:

2.03.01 Product Data Sheet of the coating material.

2.03.02 Test Reports from internationally reputed test agencies for properties listed in Para 3.01.00 in order to prima facie establish conformance of the coating material with the requirements of this specification. Actual conformance shall be established as per 4.02.00 and 4.04.00.

#### 2.04.00 VENDOR REQUIREMENTS - COATING APPLICATION

Bidder shall provide, following details:

2.04.01 List of equipment to be deployed for the coating works, such as blast cleaning equipment, airless spray equipment, with hourly / daily capacities.

2.04.02 List of applications of liquid spray applied coating & lining such as 100% Solids Polyurethane Coating.

2.04.03 Copy of agreement with coating contractor wherein the coating manufacturer commits to provide full time technical supervision and quality control assistance during all phases of the coating and lining process.

2.05.00 Bidder shall submit a detailed written description in the form of a QA/QC PROCEDURE & FIELD QUALITY PLAN MANUAL for owner's approval prior to commencing the work. The approved manual shall contain entire understanding between all parties concerned relating to coating materials, application procedure and quality assurance procedures of the coating work. The following details will be provided in the manual:

- a) Coating Materials Product Data Sheet & Performance Tests Reports in compliance of properties listed in Para 3.01.00, A) to L). Test reports must be from internationally reputed laboratory.
- b) Coating Materials Storage at Shop.
- c) Surface Preparation & Application Equipment Proposed to Be Used
- d) Surface Preparation Procedure & QC
- e) Coating Procedure & QC
- f) Repair Procedure
- g) Testing of Coating

#### Field Joints

For field joints, the following additional details will be provided:

- h) Methodology / Sequence of Coating
- i) Daily Log Sheet Formats
- j) Field Quality Plan with Tests & Frequency for Coating Materials, Blast Cleaning, Coating & Final Testing.

2.06.00 The materials shall be applied by international standard Plural Component Airless Spray

System such as Graco, Gusmer, Wiwa etc. as per the requirements specified by the coating material manufacturer. No make shift/ nonstandard spray equipment shall be used.

#### Pipe Mill Coating / Lining

Blast cleaning operations will be carried out using automated internal and external centrifugal wheel blast cleaning equipment. Coating and lining operations will be carried out using automated internal & external coating equipment with spinning pipes and longitudinal traveling spray tips.

#### Site Coating/ Lining (Projects/ Sections)

For smaller projects/ sections, it shall be viable to conduct coating operations on the site. Blast cleaning operations will **only** be carried out using automated internal blast cleaning equipment with longitudinal traveling, rotating blast nozzles, compressed air and disposable abrasive. Rotation and transverse speeds shall be set by variable speed drives.

Coating operations will be carried out using automated internal coating equipment with longitudinal traveling, rotating spray tips. Rotation and transverse speeds shall be set by variable speed drives.

**Hand held nozzle blast cleaning or coating operations will not be permitted, except for joint areas and special fabricated items such as bends, T's etc.**

2.07.00 100% Solids Polyurethane systems are solvent free eliminating solvent health hazards and flammability concerns All safety precautions warranted by good industrial hygiene practices and regulated by local, state or central laws must be taken into consideration while applying these coatings.

#### 2.08.00 Procedure Qualification Trial (PQT)

On commencement of works a pre-qualification trial will be conducted on the pipe. The following parameters shall be recorded during procedure qualification test.

- Salt content in abrasive and after blast cleaning.
- Blast profile and cleanliness
- Visual inspection of coating.
- DFT
- Adhesion
- Hardness

Following PQT, the pipe will be cleared for regular work.

#### 3.00.00 MATERIAL SPECIFICATIONS

#### 3.01.00 **POLYURETHANE COATING:**

Spray applied, 100% Solids (Solvent less) Two Component, Fast Curing, Rigid, Direct to Metal (DTM) Polyurethane Coating with following performance requirements:

<b><u>Production Quality Control Tests</u></b>			
A) NOMINAL THICKNESS as per SSPC PA 2	<b>Internal Lining:</b>		<b>500 Microns</b>
	<b>External Coating:</b>		<b>As under:</b>
	Pipe Dia From (m)	Pipe Dia To (m)	Coating DFT

			Microns
	> 0.4	Up to 1.0	<b>625</b>
	> 1.0	Up to 1.5	<b>750</b>
	> 1.5	Up to 2.2	<b>875</b>
	> 2.2	Up to 3.2	<b>1,000</b>
B) ADHESION ASTM D-4541 (Elcometer Pull Off)	10 N / mm <sup>2</sup> Min.		
C) SURFACE HARDNESS ASTM D 2240 (Cured Film - Shore D) Test @ 25°C.	> 65 Shore D		
D) ELECTRICAL INSPECTION (NACE RP-0188)	0 (Nil) Holidays		
<b><u>Type Test – Short Duration</u></b>			
E) IMPACT RESISTANCE ASTM G-14, Test @ 25°C.	75 Inch – Lb. Min.		
F) ABRASION RESISTANCE ASTM D 4060 Taber Abraser CS-17 Wheel 1,000 gms. 1,000 cycles. Test @ 25°C.	Weight Loss 100 mgs. Max		
G) FLEXIBILITY 180° Bend -1.0 mm thick ASTM D 1737/ D 522. Test @ 25°C.	Pass over 77 mm Mandrel without cracking or delamination.		
H) DIELECTRIC STRENGTH ASTM D 149 Test @ 25°C.	400 Volts/ Mil (Min.)		
I) CATHODIC DISBONDMENT (3% NaCl, -1.5 V, 70-75°F, 30 days) ASTM G-8 or G-95, 1.00 mm Coating	Average radius 12 mm (Max)		
<b><u>Type Test – Long Duration</u></b>			
J) WATER ABSORPTION ASTM D570-98, Procedure 7.4 (Long Term Immersion) Test @ 25°C.	< 2.00 %		
K) POTABLE WATER CERTIFICATION As per ANSI - NSF 61 or Singapore SS375 or WRAS 5030. Tested at 35°C	Complies with requirement of the standard.		
L) Total Organic Carbon (TOC) as per APHA-AWWA-WEF5310C	< 2.00 milligram/ Litre		
<b>Tests K) and L) are for internal lining only (not for external coating).</b>			

### 3.02.00 PRIMER

No primer shall be permitted.

### 3.03.00 TOP COAT (FOR ABOVE GROUND APPLICATIONS ONLY)

Sections which are above ground and exposed to sunlight and UV will be top coated

with approx. 50-75 Microns DFT of color fast Acrylic Aliphatic Polyurethane. The top coating shall be done before the 100% Solids Polyurethane Coating is fully cured.

#### 4.00.00 **COATING QUALIFICATION & TESTING**

4.01.00 **Coating Material Qualification:** In order to establish conformance of the coating brand (with product identification number), with the requirements of this specification test reports from internationally reputed test agencies such as KTA Tator Inc., USA/ equal will be provided by the bidder for properties listed in Para 3.01.00 a) to k).

4.02.00 **Verification Of Properties:** In order to verify the reports provided as per 4.01.00, buyer will retain the option to get the product tested **once** from internationally reputed test agencies such as KTA Tator Inc., USA/ equal for properties listed in para 3.01.00 e) to k) at vendors cost. Testing shall also include 'Chemical Fingerprinting' of liquid components by Fourier Transform Infra-Red Spectroscopy (FTIR). Sample witnessing, and sealing shall be done jointly by the bidder, owner & coating vendor at site during PQT.

4.03.00 **Approved Coating Brands:** (with specific product identification number) once tested as per 4.02.00 and found in conformity with this specification will not need to tested again for 3.01.00 e) to k) for further packages. Instead, only FTIR testing as per 4.04.00 only will be done for approved makes.

4.04.00 **Verification of Supply Batches:** In order to verify that the supply lots have the same formulation as the coating tested as per 4.02.00, supply batches will be randomly tested for FTIR. The test laboratory shall confirm that supplied materials conform to the reference spectrum on record. Sample witnessing, and sealing shall be done jointly by the bidder, owner & coating vendor.

4.05.00 **Production Quality Control Tests:** Applied coating will be field tested for properties a) to d) of Para 3.01.00: Thickness, Adhesion, Hardness and Holidays in accordance with Section 8.00.00.

#### 5.00.00 **SURFACE PREPARATION**

100% Solids, Polyurethane Coatings have exceptional corrosion and abrasion / impact resistant properties but must be considered part of an engineered system which includes adequate surface preparation. It is axiomatic in protective coating work that the performance of the most appropriately chosen coating system will be no better than the surface preparation.

##### BLAST CLEANING

5.01.00 Before blast cleaning, visible deposits of oil and grease shall be removed in accordance with SSPC SP-1. Any surface imperfections remaining (after fabrication) such as sharp fins, weld spatter, or burning, slag shall be removed from the surface.

5.02.00 The steel surface shall be blast cleaned to SSPC SP-10 / NACE No.2 Near White Blast Cleaning.

5.03.00 A near - white blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products and other foreign matter, except for staining as noted in section 5.04.00.

5.04.00 Random staining shall be limited to no more than 5 percent of each unit area of surface as defined in section 5.07.00 and may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale or stains of previously applied coating.

- 5.05.00 Acceptable variations in appearance that do not affect surface cleanliness as defined in section 5.03.00 include variations caused by type of steel, original surface condition, thickness of the steel, weld metal, mill or fabrication marks, heat treating, heat effected zones, blasting abrasive, and differences in the blast pattern.
- 5.06.00 Anchor profile obtained by blast cleaning will be > 75 Microns when measured with a surface profile gauge such as Elcometer 123. The average reading from five (5) randomly selected areas shall constitute the height of the profile. In case pipe curvature causes error in readings, the blast profile will be tested on reference flat steel coupons.
- 5.07.00 Unit area for determining staining shall be approximately 6,400 mm<sup>2</sup>
- 5.08.00 The bidder shall immediately bring to the Owner's attention any unacceptable metal defects detected at the time of surface preparation and hold the steel piece till such time as cleared for further action.
- 5.09.00 Any of the following methods of surface preparation may be used to achieve a near white blast cleaned surface:
- 5.09.01 Air Abrasive Blast Using Disposable Abrasive: Dry abrasive blasting using compressed air, blast nozzles and disposable abrasive. Abrasive will be disposed off after single used and shall not be re-used.
  - 5.09.02 Air Abrasive Blast Using Recycled Abrasive: Dry abrasive blasting using a dosed cycle, re-circulating abrasive system, with compressed air, blast nozzle, and abrasive, with or without vacuum for dust and abrasive recovery.
  - 5.09.03 Centrifugal Wheel Blast Using Recycled Abrasive: Dry abrasive blasting using a dosed cycle, re-circulating abrasive system with centrifugal wheels and abrasive.
- 5.10.00 Selection of abrasive media for the blasting operation will depend upon the type of system employed (5.09.00 above). Abrasives used shall be as under:
- 5.10.01 For Air Abrasive Blast (5.09.01): Granulated Copper Slag or Coal Slag.
  - 5.10.02 For Air Abrasive Blast Using Recycled Abrasive (5.09.02) & Centrifugal Wheel Blast (5.09.03) : Steel Grit & Garnet.
  - 5.10.03 No other abrasive media shall be used by the bidder. Bidder shall adopt good blasting practices such as those recommended in SSPC SP-COM.
  - 5.10.04 Bidder shall use size of abrasive media that will ensure the necessary anchor profile height specified. The blast cleaning abrasive shall be dry and free of oil, grease and other contaminants.
  - 5.10.05 The cleanliness and size of recycled abrasive (5.10.02) shall be maintained by the re-cycling system using jet air wash etc. to ensure compliance with this standard. Non-standard or makeshift recycling equipment will not be permitted.
- 5.11.00 Compressed air used for air abrasive blast cleaning shall be dean, dry and free of moisture and oil. Moisture separators, oil separators, traps or other equipment may be necessary to achieve dean, dry air.
- 5.12.00 Blast cleaning shall not be conducted during times when the surface will become wet after blast cleaning or when ambient conditions are such that visible rusting occurs before coating, If any rust forms after blast cleaning, the surface shall be re-blasted before coating.
- 5.13.00 Blast cleaning operations shall be done in such a manner that no damage is done to partially or entirely completed portions of the work.

- 5.14.00 Wet abrasive blasting shall not be permitted by this specification.
- 5.15.00 Dust and residues shall be removed from prepared surface by brushing, blowing off with dean, dry air or vacuum cleaning.
- 5.16.00 SALT CONTAMINATION
- Blast surface will be provided with Chloride contamination not exceeding 20 mg/ m<sup>2</sup>. Presence of Chlorides on pipe surface just after blast cleaning of pipe shall be checked using CHLOR-RID Test Kit /equivalent by owner at random intervals as per the decision of EIC. **No coating will be permitted to be applied on surface contaminated with Chloride.**
- 6.00.00 **COATING**
- 6.01.00 Nominal thickness of the Polyurethane shall be as per 3.01.00 A) when measured in accordance with SSPC PA 2. The coating shall be applied in a single coat using multiple passes of the spray gun. The finished coating shall be generally smooth and free of sharp protuberances, blistering, bubbling, cracks, de-lamination or other visible defects. A minor amount of sags, dimpling and “curtaining” or overspray spots which otherwise meets specification requirements shall not be considered cause for rejection.
- The coating will be dense, free of foam/ porosity and of uniform consistency in its entire thickness.**
- Material consumption for top coat will be calculated as under:**  
**0.500 mm Thick: 1 Sq.M = 0.500 Litre plus overspray/ wastage.**  
**0.625 mm Thick: 1 Sq.M = 0.625 Litre plus overspray/ wastage.**  
**Etc.**
- The coating vendor shall state the overspray wastage used in his estimation which will not be less than 30% (Thirty Percent) for automated application. This minimum quantum of material will be supplied and recorded. However, supply & usage of this quantum of material will not be construed as the vendor having met thickness requirements and he will have to comply with provisions of 3.01.00 a) and 8.02.03.**
- 6.02.00 Before beginning coating, measure the humidity using a digital psychrometer or sling psychrometer and calculate the dew point. Measure surface temperature using an Infra-Red non-contact thermometer. Temperature of surface must be at least 3°C higher than the dew point.
- 6.03.00 The materials shall be applied by international standard Plural Component Airless Spray System such as Graco, Gusmer, Wiwa etc. as per the requirements specified by the coating material manufacturer. No make shift/ nonstandard spray equipment shall be used. Equipment shall consist of Material Feed Pumps, Purge Pump, Proportioning Pump, Mix Manifold, Static Mixer, Interconnecting Hoses etc. System shall normally be capable of 1500-3000 Psi fluid pressure (at tip) and a material supply rate of 4-10 Litres / Minute.
- 6.04.00 Applicator must follow standard written instructions from coating manufacturer on material storage, handling and spray.
- 6.05.00 Partially used and unused material drums must be tightly sealed and contain a blanket of nitrogen to prevent moisture contamination when not in use.
- 6.06.00 Before application on the substrate apply a test patch for runs or drips and gel time as well as tack free time.

- 6.07.00 The proportioning pump shall be fitted with a numeric counter to keep track of the volume of materials being used while spraying. Volume of materials used shall be recorded in daily log sheets as per FQP.
- 6.08.00 Entire thickness shall be built up in a single application (with a number of passes). If the surface is large enough to require more than one day for the coating, the edges of the coated areas shall be feathered and roughened with a grinding tool prior to beginning and coating.
- 6.09.00 Areas not to be coated shall be masked with tape.
- 7.00.00 **COATING REPAIRS / WELD SEAM COATING**
- 7.01.00 **REPAIRS**

7.01.01 Defects - Blisters, Cracks Bubbles, De-Lamination Other Visible Defects; Adhesion and Holiday Points

- a) Remove the dis-bonded coating by cutting till edge of well adhered coating. Adhesion test points will already have exposed steel. For holiday defects coating removal is not required and only coating surface may be spot ground as per para c).
- b) Wipe clean the marked area with a clean cloth. Use solvent in case of oil / grease deposits. Allow to dry.
- c) Using steel grinder, grind the exposed area till there is no evidence of rust and surface is new metallic. The steel surface should not be smooth. At the same time roughen slight the surface of approx. 1/2" of the adjacent intact coating. Blast cleaning may also be used instead of steel grinder if available.
- d) Wipe clean the marked area with a clean cloth.
- e) Mix small amounts of Polyurethane Hand Mix coating in correct volumetric ratio. Apply using brush or squeegee to the discontinuity and required overlap, taking care to coat within the abraded area only (including overlap).

7.01.02 Coating Thickness Less Than Specified Thickness

- a) Record the DFT of the areas marked for repairs.
- b) Lightly abrade using brush off blast cleaning or power sanding. Wipe with clean cloth and compressed air.
- c) Estimate materials requirement for additional coat and spray apply Polyurethane to obtain required thickness making WFT checks.
- d) Test the coating in the same manner as outlined in inspection.

7.02.00 **WELD SEAMS – COATING OF CUTBACK SECTIONS**

A cutback of 150 mm from ends of pipe shall be left uncoated to prevent damage during seam welding at site. The cutback area may be blast cleaned and may contain primer to reduce corrosion during the installation period. Due care shall be taken during welding to ensure no damage to adjacent intact coating by mechanical damage or weld spatter. Bare steel exposed at the weld seam area shall be blast cleaned using the same procedure as the main pipe.

An overlap of 50 mm (but not more than 100 mm) on the adjacent intact pipe coating shall be roughened during the blast cleaning process. These areas (including overlap) shall be primed, coated and tested using the same procedure as the mainline pipe.



## Manual Scarification

In locations where field blast cleaning is prohibited or impractical, the steel surface at cutback location shall be ground to bare shiny metal using steel grinder. Resultant surface shall be rough and not smooth. A width of approx. 50 mm on the adjacent intact pipe coating shall be roughened during the grinding process. Hand mix coating materials shall be applied on the ground steel as well as 25 mm width of the roughened coating using roller or trowel taking care to apply a uniform coating with no depressions in the middle.

- 7.02.01 The same coating material as the mainline pipe shall be used for coating the cutback section to ensure chemical compatibility and adhesion. The coating materials shall be spray applied at site using procedures outlined in Para 5, 6 & 7.
- 7.02.02 The ditch will be fully dewatered by bidder prior to any coating operations since water in the ditch will cause ambient humidity to rise making it unsuitable for coating.
- 7.02.03 Water used for hydro test will be sweet water which will not contaminate the pipe surface. *Due care shall be taken by bidder not to let water / dirt accumulate inside the pipe since this leads to corrosion and corrosive salt deposition on the steel surface which may not be removed by blast cleaning.* This may be achieved by welding vertical steel plate bunds at bottom ends of either side of the pipe.

## 8.00.00 **INSPECTION**

- 8.01.00 All work under this specification shall be subject to inspection by the owner or his representative. All parts of work shall be accessible. The bidder shall correct such work as is found defective under the specifications.
- 8.02.00 The following tests shall be made by the applicator prior to, during and after priming and coating application:
  - 8.02.01 Blast surface profile using Elcometer 123 or equivalent surface profile gauge. The average of readings from five randomly selected areas shall constitute the average surface profile. In case pipe curvature causes error in readings, the blast profile will be tested on reference flat steel coupons.
  - 8.02.02 Hardness shall be tested with a portable Shore D Durometer as per ASTM D 2240. Frequency shall be as per 8.02.05 and the measurement point shall be adjacent to the adhesion test so that the coating repair covers the pinpoint holiday caused by the Durometer.
  - 8.02.03 The dry film thickness shall be checked with a Magnetic Mil Gauge (Positest by DeFelsko or equivalent) in accordance with SSPC PA 2. The average of readings from five randomly selected areas shall constitute the film thickness. No single spot measurement shall be less than 80% of specified thickness. Frequency shall be as per SSPC PA 2.

DFT checks over weld seams shall not be included in the above readings.
  - 8.02.04 Holidays testing using high voltage holiday detector (Tinker Razor or equivalent) as per NACE International RP 0188-90 "Holiday Testing". Coating to have cured at least 24 Hours prior to holiday test. The location of the holidays shall be noted on the coated surface for repair as per 8.02.02. Final coating shall be holiday free.

Holiday testing shall not be done more than two times on the surface as repeated testing can lead to creation of holidays due to the testing process. Holiday testing after repairs shall be pinpointed and restricted only to the repaired area.

8.02.05 Pull off Adhesion to steel shall be measured using Elcometer/ Positest / equivalent adhesion tester as per ASTM D 4541 using an Aluminum dolly attached to the coating & a perpendicular force applied to the dolly. Average reading from three (3) randomly selected spots shall constitute one test and shall be at least 10 (Ten) N/ mm<sup>2</sup>. 1 test shall be carried out 500 Sq.M surface area. Adhesion test shall be carried out on fully cured coating (7 days at 25°C).

Use standard 20mm dolly to obtain direct reading from the analog dial gauge of the self-aligning, Type V adhesion tester. For the 20mm dolly the pressure reacted by the dolly is the same as pressure in the actuator and is transmitted directly to the pressure gauge. When using digital version of the tester, enter the correct dolly size being used i.e 20mm.

The following protocol shall be used for determining adhesion test failure / success.

Gauge Reading	Type of Failure		Result / Conclusion
> 10 N/mm <sup>2</sup>	T1	90% or more of break at coating – steel surface interface	Coating meets adhesion criteria. Take actual reading of bond strength.
	T2	90% or more of break at coating – dolly interface	Coating meets adhesion criteria. Glue Failure.
<10 N/mm <sup>2</sup>	T1	90% or more of break at coating – steel surface interface	Coating does not meet adhesion criteria. Repeat test after 7 days (full cure) of coating application. If adhesion still fails, remove and re-coat.
	T2	90% or more of break at coating – dolly interface	Glue Failure. Allow more curing of glue / replace glue and re-test.

In case pipe curvature causes error in readings, the adhesion will be tested on reference flat steel coupons.

## 9.00.00 **FIELD PROCEDURES**

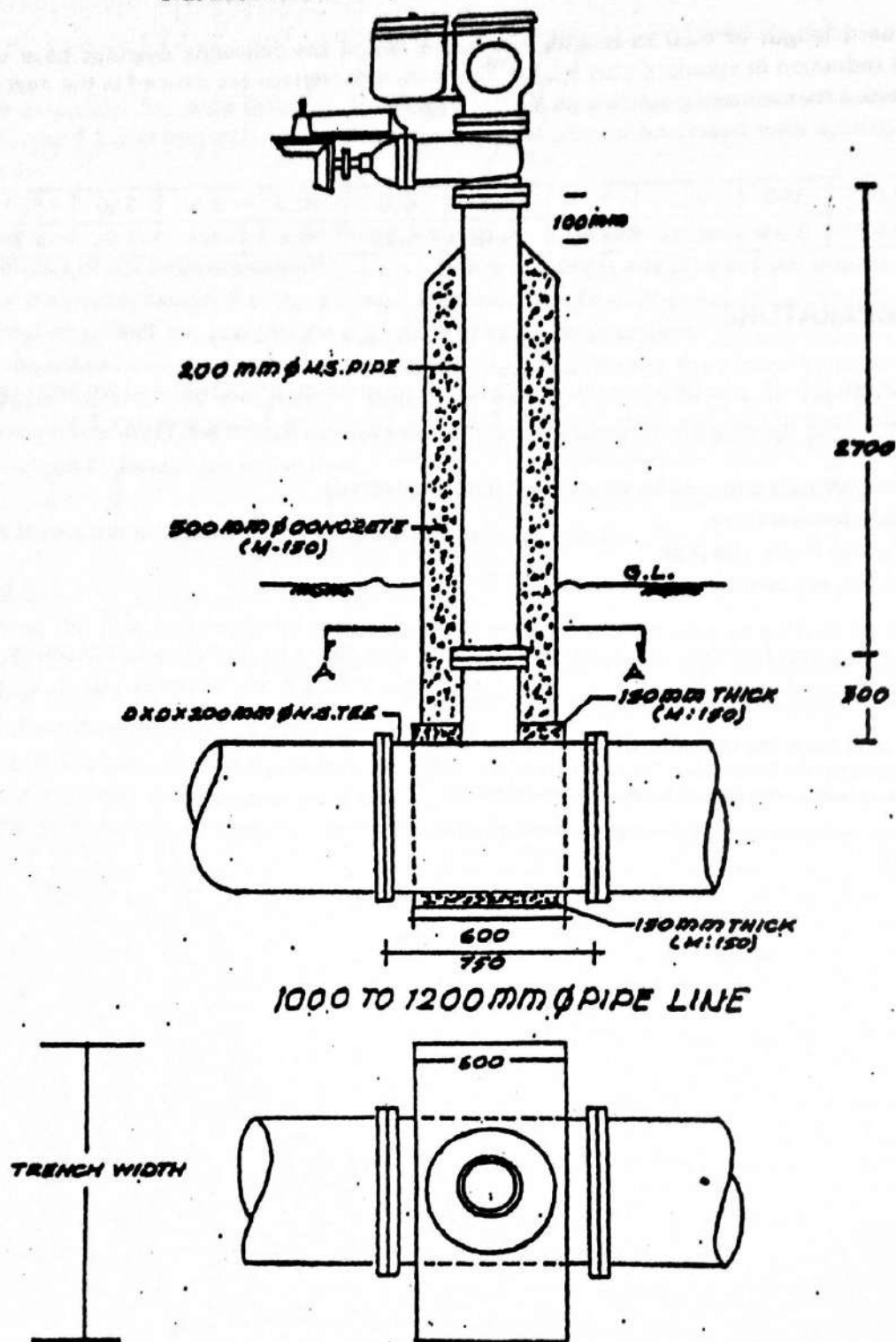
Field procedures shall be as per AWWA C 222-08, para 4.10.1 (General), 4.10.2 (Hoisting) and 4.10.3 including sub-sections (Bedding and Trench Back Fill). The contractor shall use every precaution to prevent damage to the protective coating when constructing the pipeline. No metal tools or heavy objects shall be permitted to come into contact with the finished coating. Wide belt slings shall be used to hoist coated pipes. The use of chains, cables, tongs, or other equipment likely to damage the polyurethane coating will not be permitted, nor shall the pipe be dragged or skidded. Where the trench traverses rocky ground containing hard objects that could penetrate the protective coating, a layer of screened earth, sand, or gravel no less than 150 mm thick with maximum particle size of 19 mm shall be placed in the bottom of the trench before installing the coated pipe. If rocks or other hard objects occur in the backfill material along any section of the pipeline, screened backfill with a maximum particle size of 19 mm shall be placed around the coated pipe to a minimum depth of 150 mm above the polyurethane coating before the remainder of the trench is backfilled.

10.00.00     **METHODOLOGY & EXECUTION**

10.01.00     General

- 10.01.01 Coating work will be planned and coordinated well in advance of actual execution between bidder and coating vendor to ensure that the work is carried out in a smooth and expeditious manner.
- 10.01.02 Prior to start of work a “kick off” meeting shall be held between the bidder, coating vendor, FQA and Execution at site to discuss, agree and put on record all operational aspects of installing the Polyurethane Coating.

# MAHARASHTRA JEEVAN PRADHIKARAN

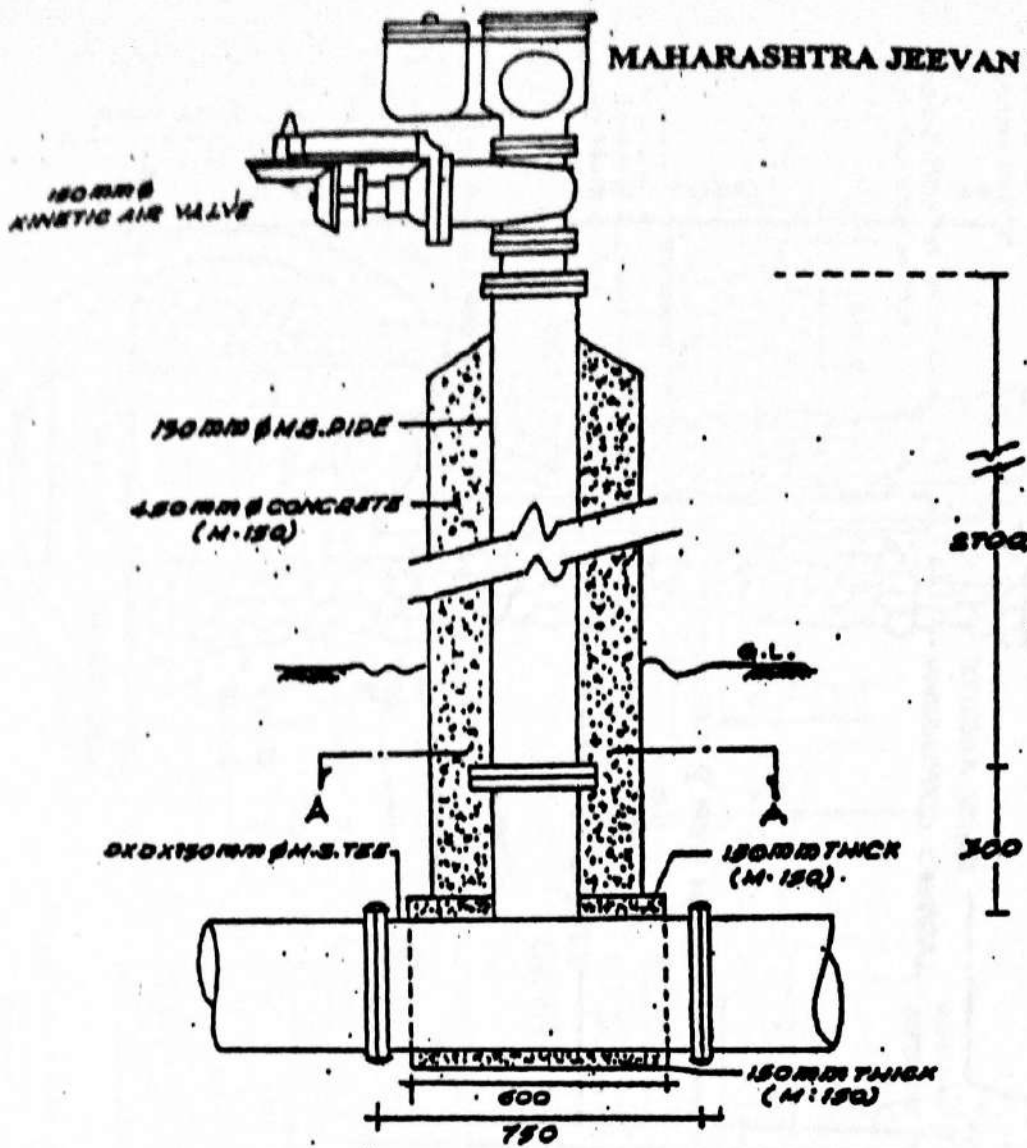


PLAN AT A-A

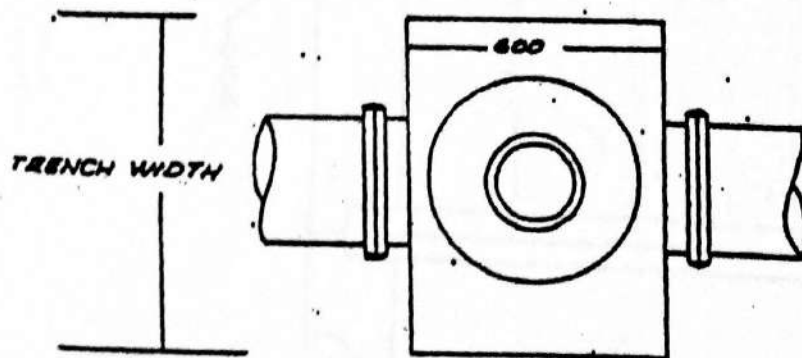
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TYPE DESIGN FOR FIXING OF AIR VALVE ON SHAFT

# MAHARASHTRA JEEVAN PRADHIKARAN



450 TO 900mm  $\phi$  PIPE LINE

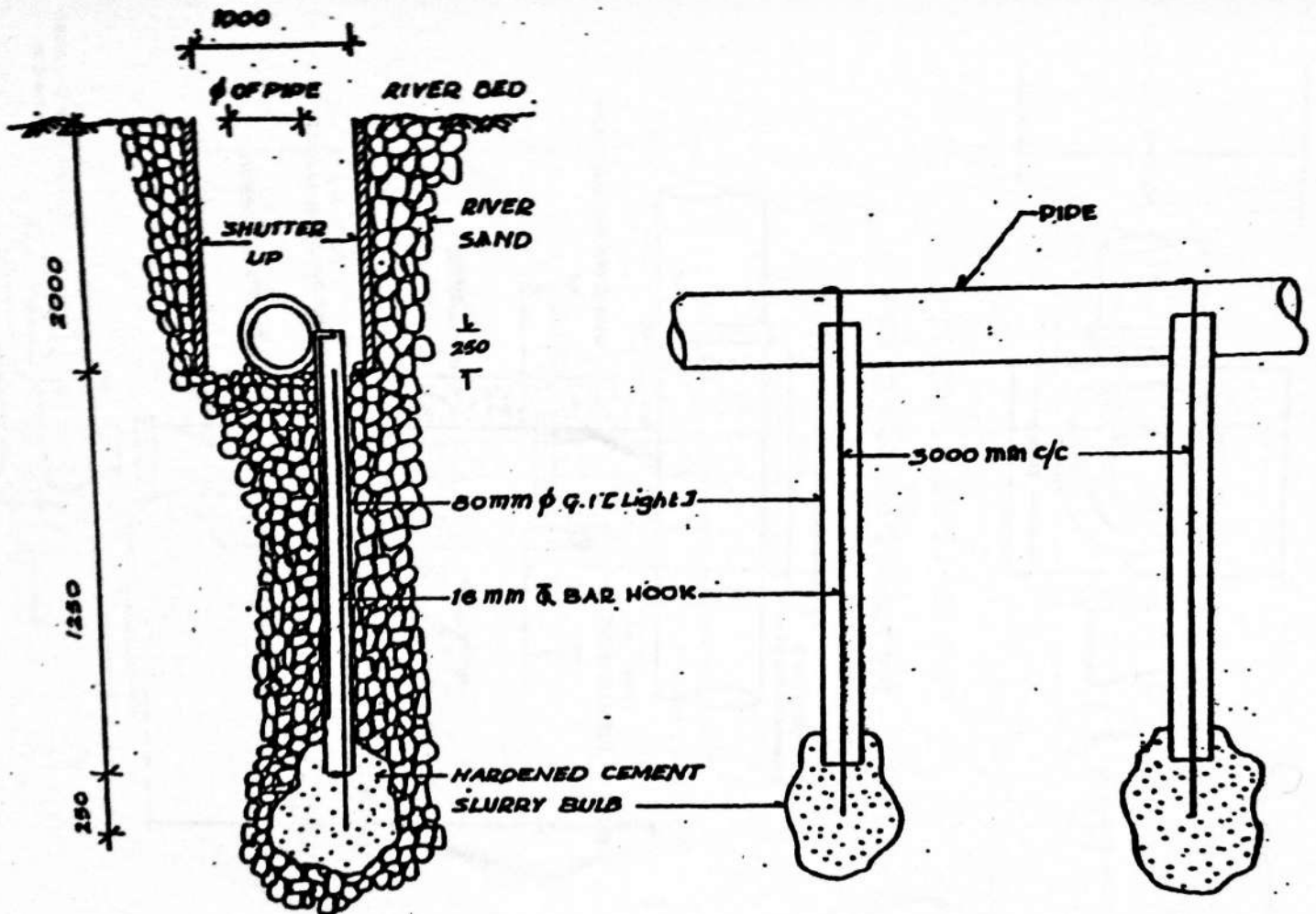


PLAN AT A-A

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TYPE DESIGN FOR FIXING OF AIR VALVE ON SHAFT

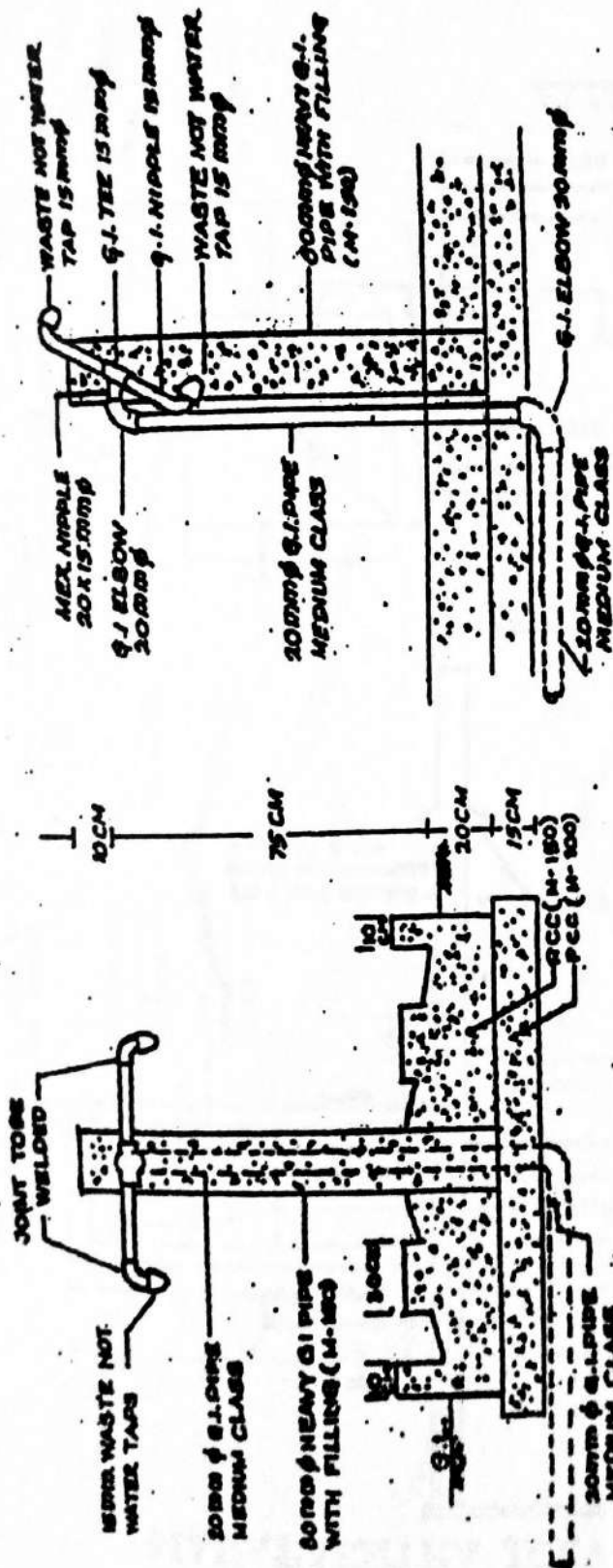
## MAHARASHTRA JEEVAN PRADHIKARAN



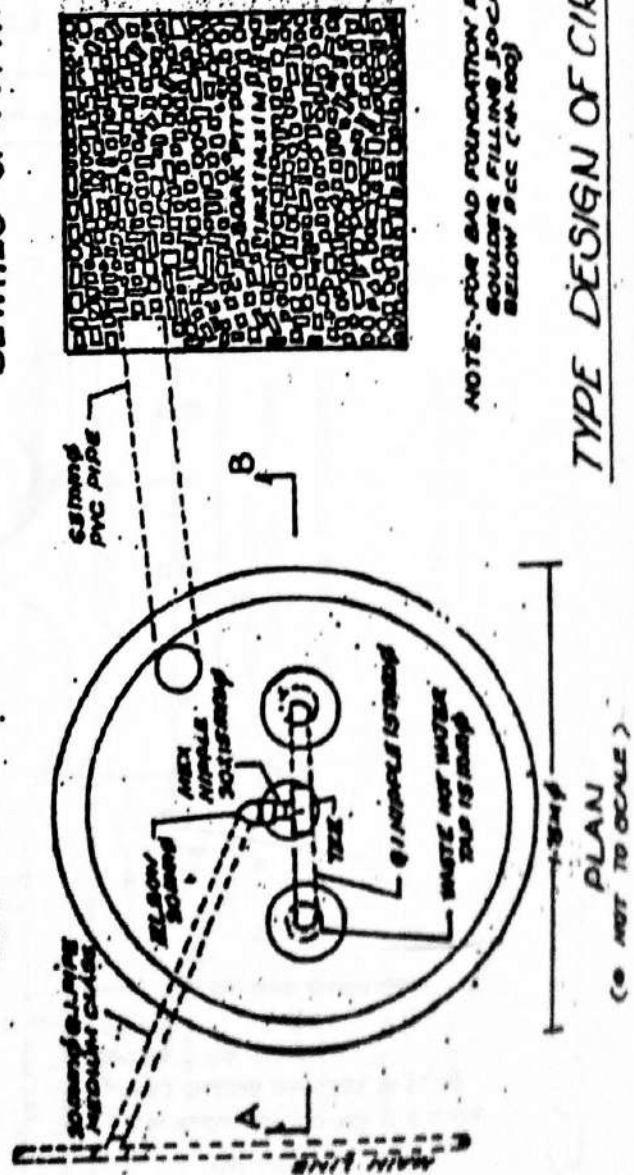
### MAKING AN ANCHORAGE ARRANGEMENT

• ALL DIMENSIONS ARE IN MM OTHERWISE SPECIFIED  
(• NOT TO SCALE)

**MAHARASHTRA JEEVAN PRADHIKARAN**



## DETAILS OF FITTING



NOTE: FOR BAD FOUNDATION PROVIDE  
BOULDER FILLING 30CM THICK  
BELOW PCC (A-100)

TYPE DESIGN OF CIRCULAR STAND POST



**MAHARASHTRA JEEVAN PRADHAN**

ROOF PLATE IN MASONRY  
100 T/M

R.C. MASCHARY DOOR THIN IN C.M. H.O.

R.C. SHELLA & LINTAL IN MASONRY  
100

STEEL WINDOW (900 X 1200)

STEEL DOOR (1800 X 1800)

STEPS

LANDING (1000 X 1000 X 100)

G.C. FLOOR IN FIELD

GROUND BEAM 200 X 200 (MTRG)

BULB

CONCRETE DOUBLE UNDER BEAMED PILES 4 NOS. IN SITE.

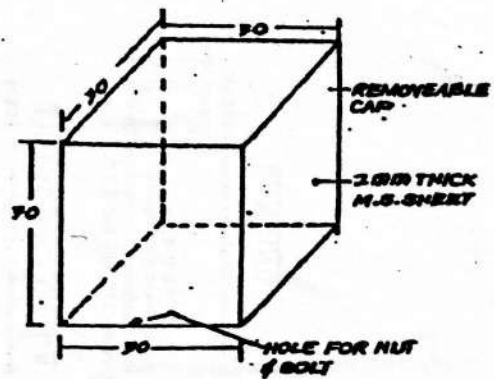
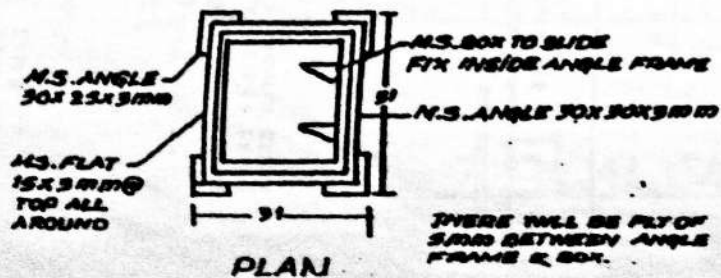
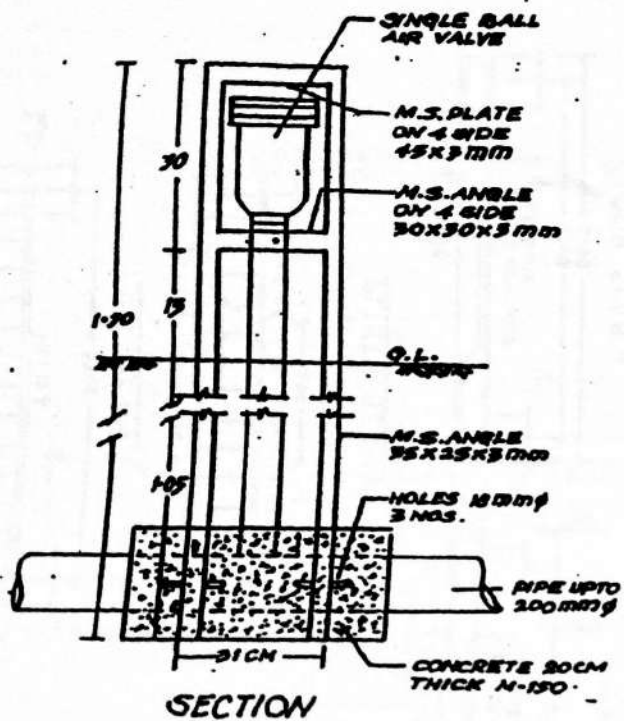
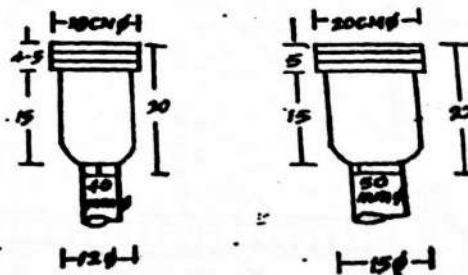
Dimensions: 100, 700, 100, 1270, 600, 600, 1300, 4000, 3300, 1540

The diagram shows a rectangular frame with an outer width of 2730. Inside, there is a smaller rectangle with a width of 2270. A horizontal dashed line with a triangle at its right end passes through the structure. The distance from the left edge to the start of the dashed line is 2370. The distance from the start of the dashed line to the right edge is 2270. The overall width of the structure is 2730.

**TYPE DESIGN OF SWITCH HOUSE WHEN B.C. SOIL IS AVAILABLE AND G.L. IS ABOVE H.F.L.**



**MAHARASHTRA JEEVAN PRADHIKARAN**

**ELEVATION**

## DETAILS OF AIR VALVES

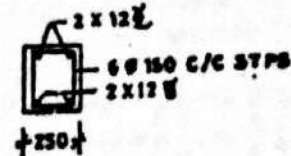
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DETAILS OF CAGE FOR SINGLE BALL AIR VALVES 50mm Ø & BELOW 50mm Ø

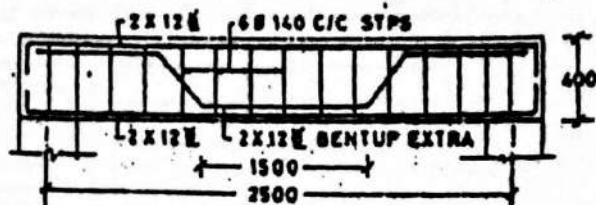
# MAHARASHTRA JEEVAN PRADHIKARAN



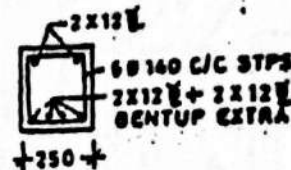
G. L. BEAM



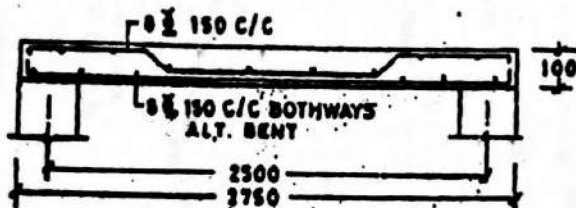
SEC.



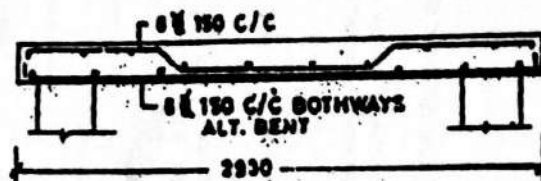
PLINTH BEAM



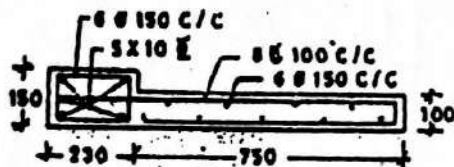
SEC.



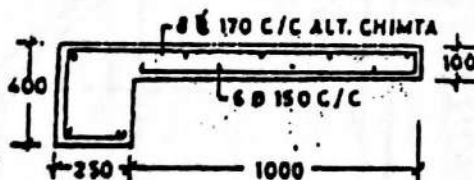
FLOOR SLAB



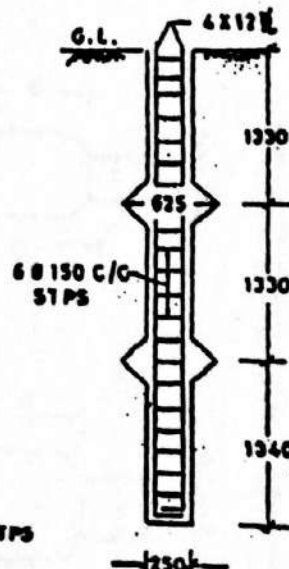
ROOF SLAB



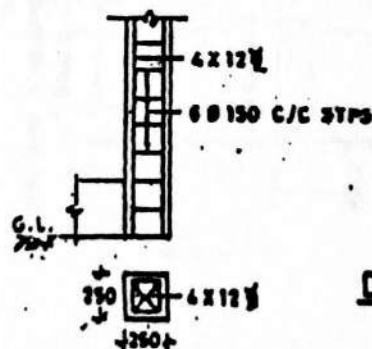
LINTAL AND CHEJJA



LANDING



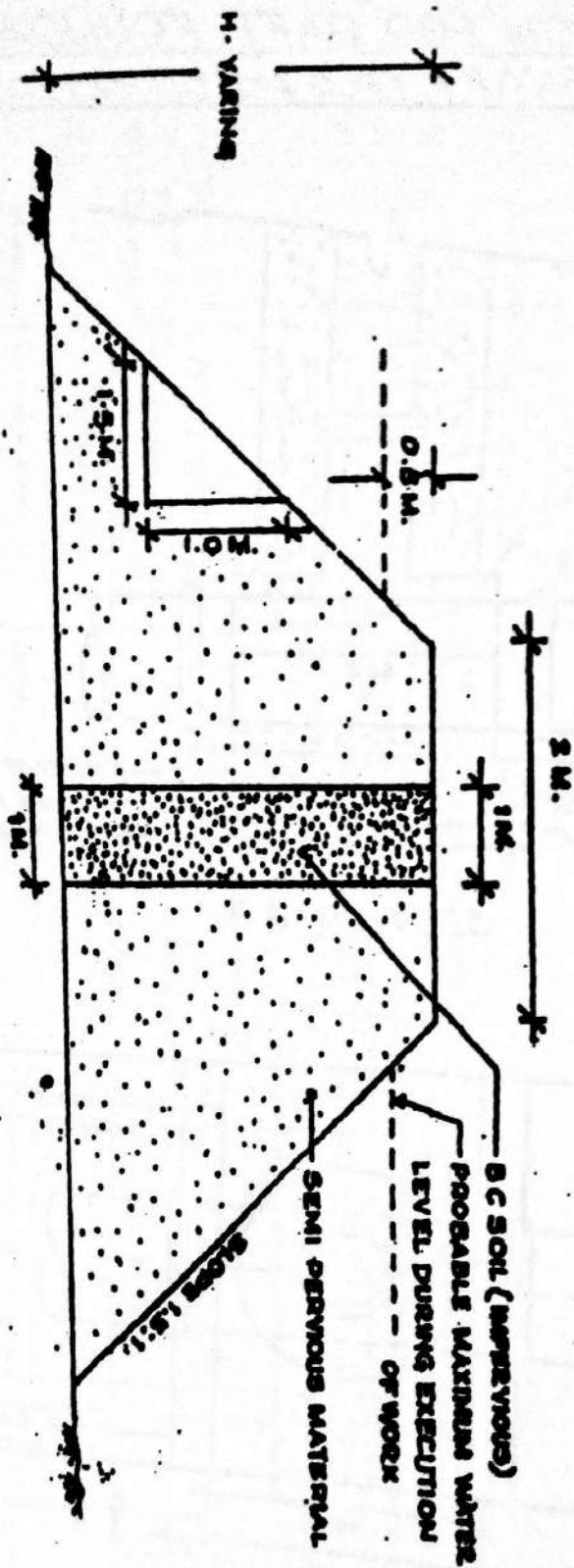
DETAILS OF R.C.C. PILE



COLUMN

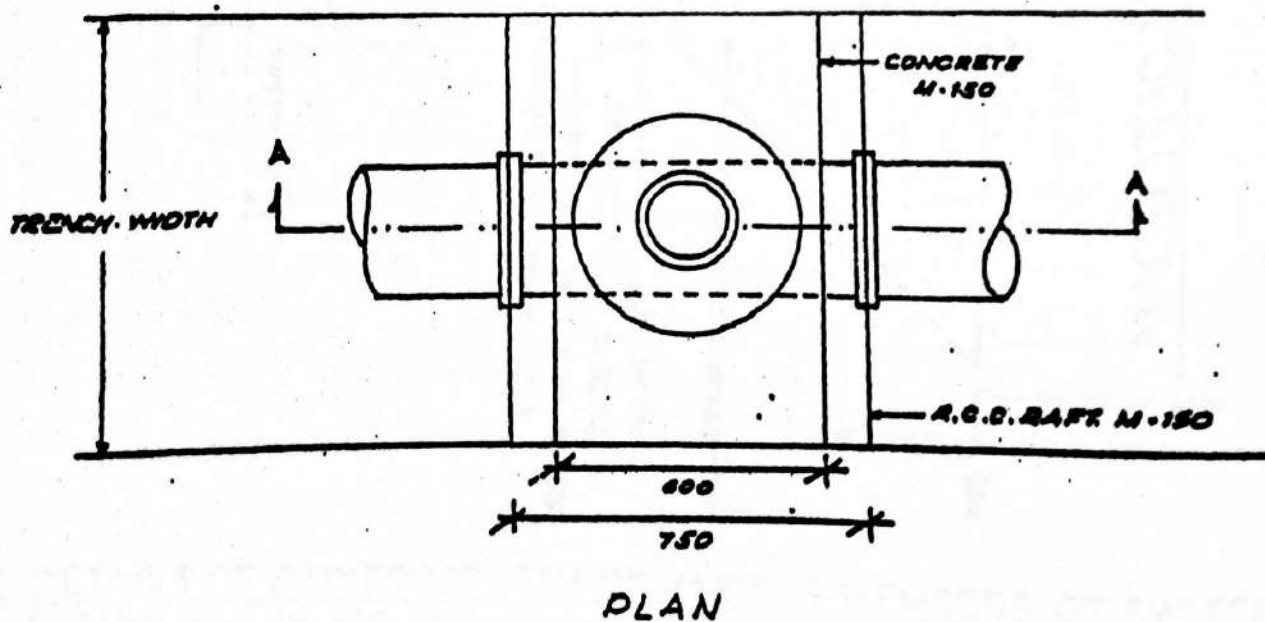
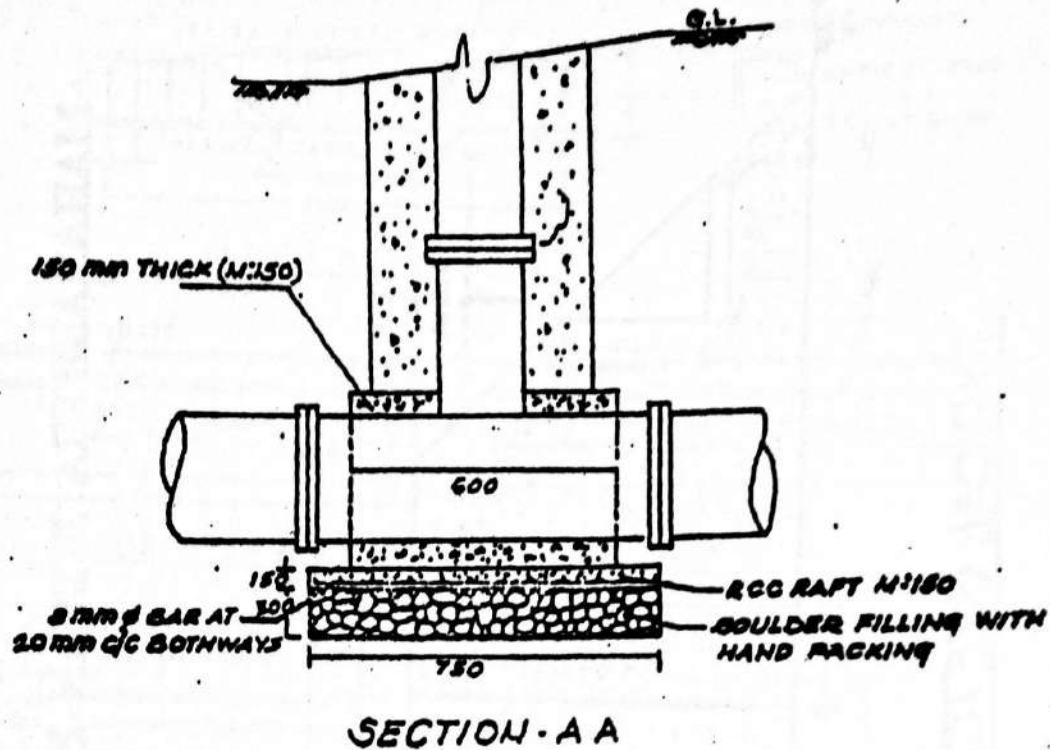
DETAILS OF REINFORCEMENT OF VARIOUS MEMBERS OF SWITCH HOUSE WHERE B.C. SOIL IS AVAILABLE AND G.L. IS BELOW H.F.L.

# MAHARASHTRA JEEVAN PRADHIKARAN



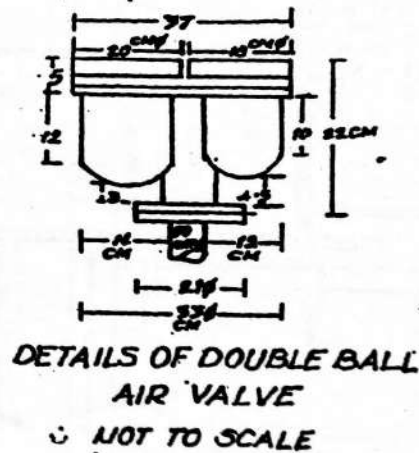
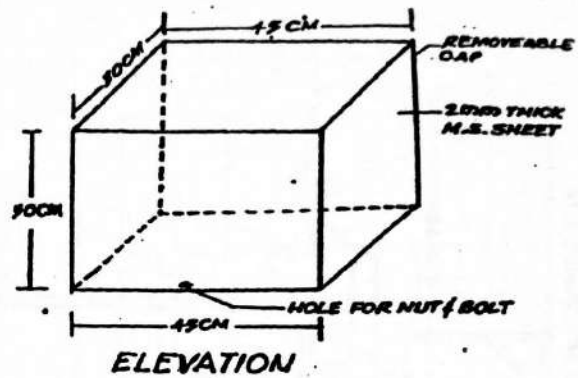
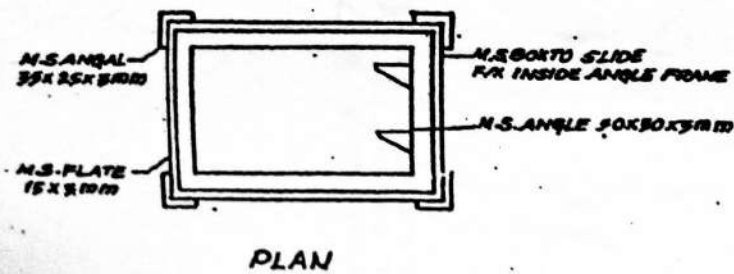
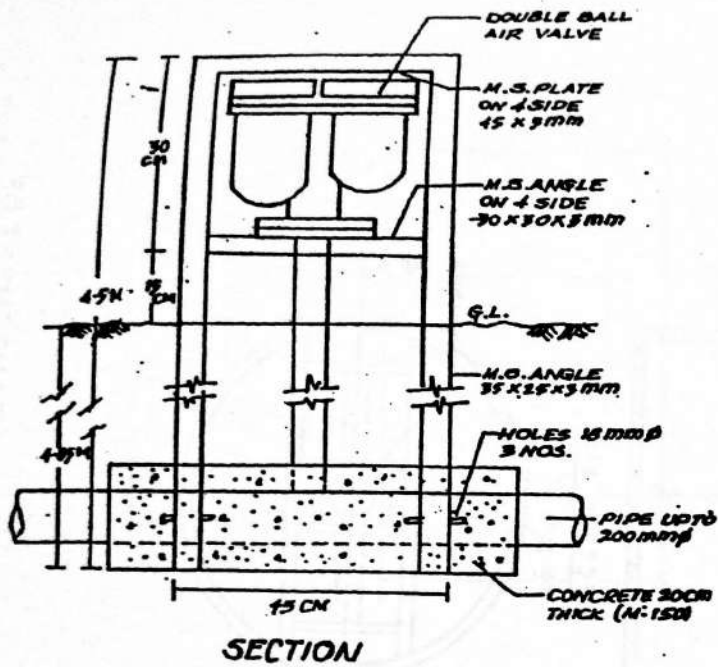
TYPICAL SKETCH OF COFFERDAM

**MAHARASHTRA JEEVAN PRADHIKARAN**  
**TYPE DESIGN FOR RAFT FOUNDATION**  
**OF AIR-VALVE SHAFT (FOR ALL DIAMETERS OF PIPELINE)**



(@ NOT TO SCALE)

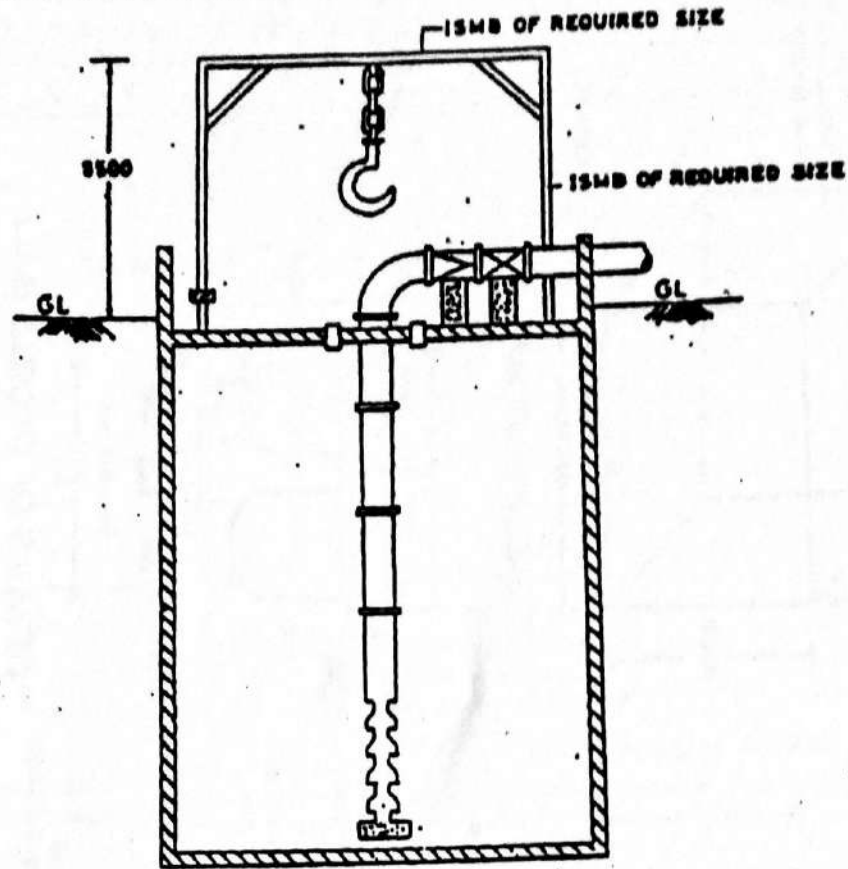
# MAHARASHTRA JEEVAN PRADHIKARAN



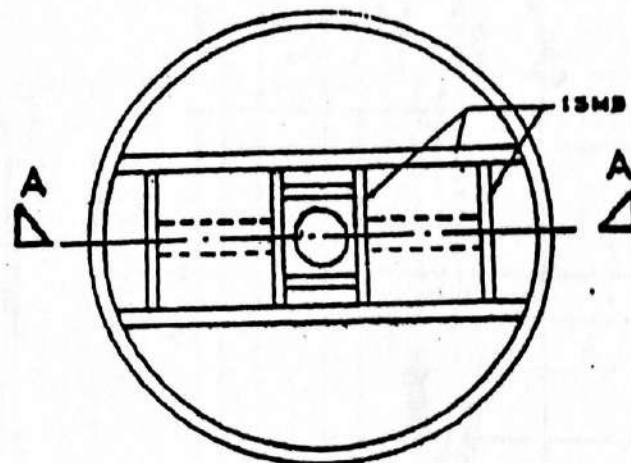
DETAILS OF CAGE FOR DOUBLE BALL AIR VALVE 50mm Ø & BELOW 50mm Ø



# MAHARASHTRA JEEVAN PRADHIKARAN



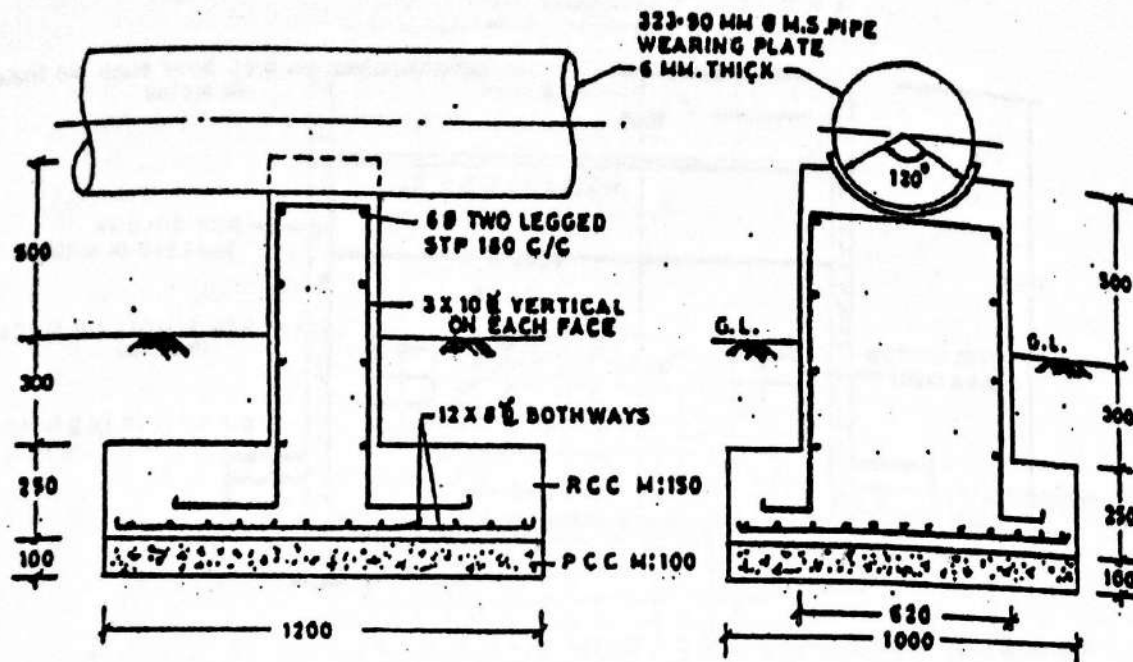
SECTION A-A



PLAN

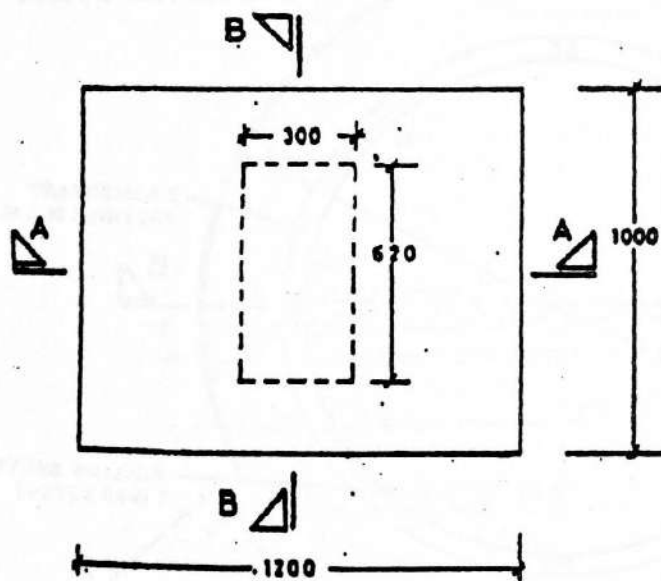
TYPE DESIGN OF LIFTING ARRANGEMENT OF  
SUBMERSIBLE PUMPS ON PERCOLATION WELL

# MAHARASHTRA JEEVAN PRADHIKARAN



**SECTION A-A**

**SECTION B-B**

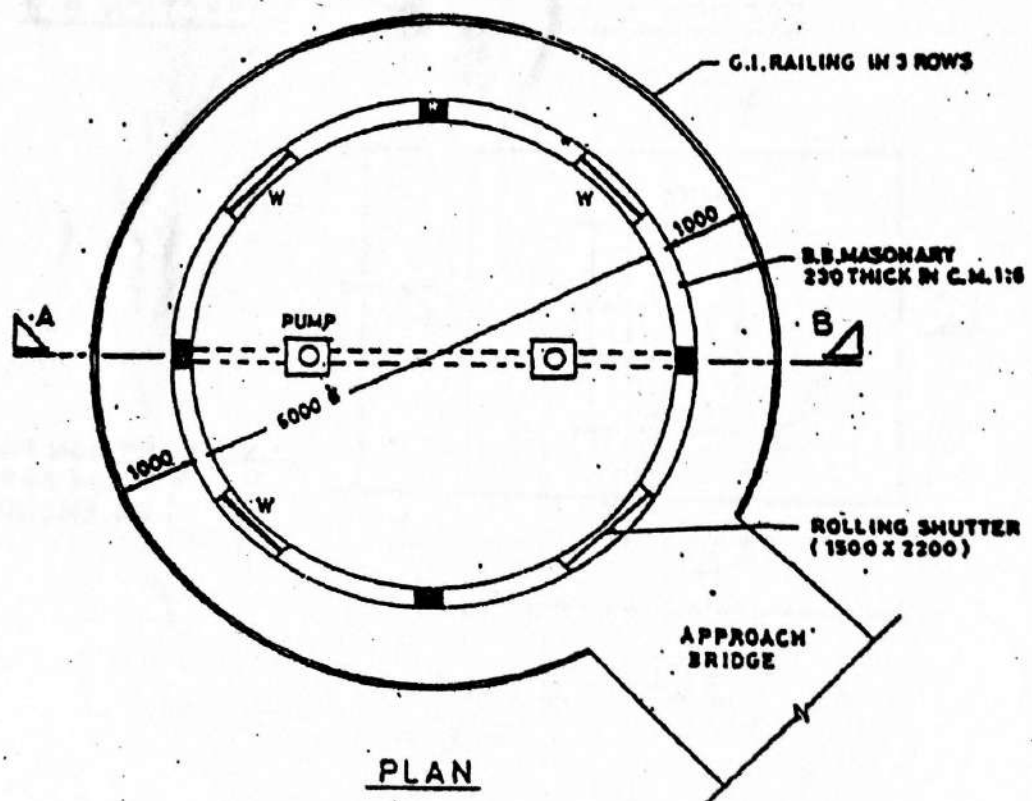
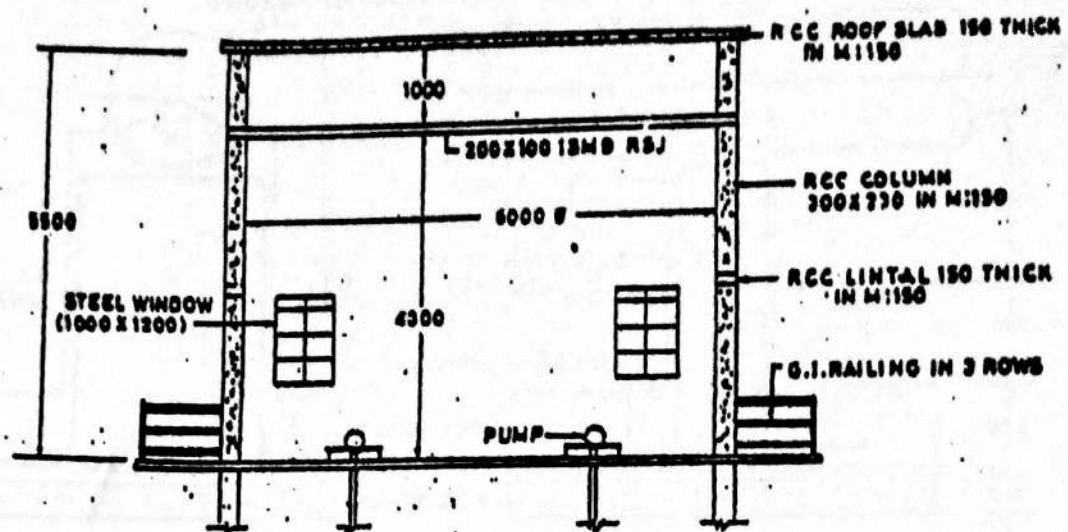


**PLAN**

NOTE - DESIGN FOR EACH CASE  
TO BE APPROVED BY  
EX. ENGINEER INCHARGE

**TYPE DESIGN OF R.C.C. CHAIR UP TO 355.6 MM. DIA.**

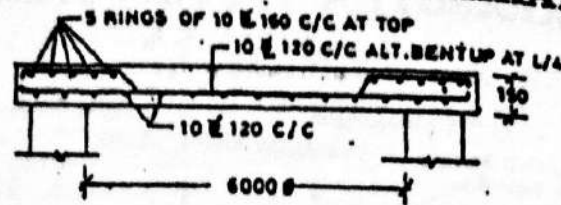
# MAHARASHTRA JEEVAN PRADHIKARAN



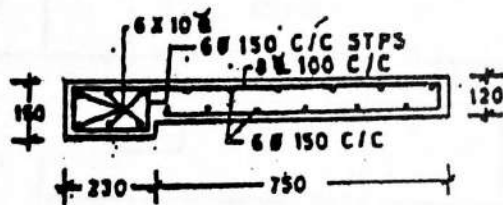
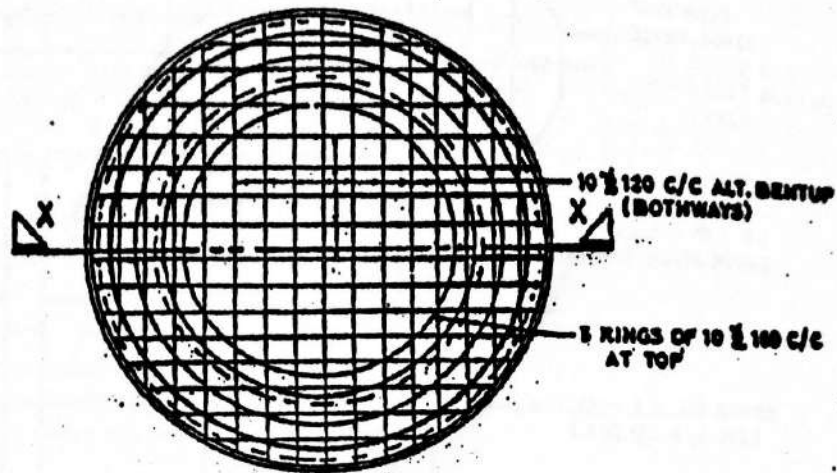
TYPE DESIGN OF PUMP HOUSE OVER R.C.C. JACK-WELL



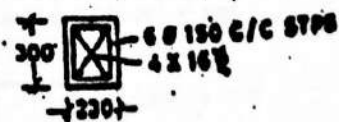
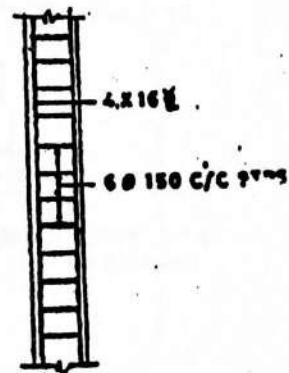
# MAHARASHTRA JEEVAN PRADHIKARAN



SECTION X-X



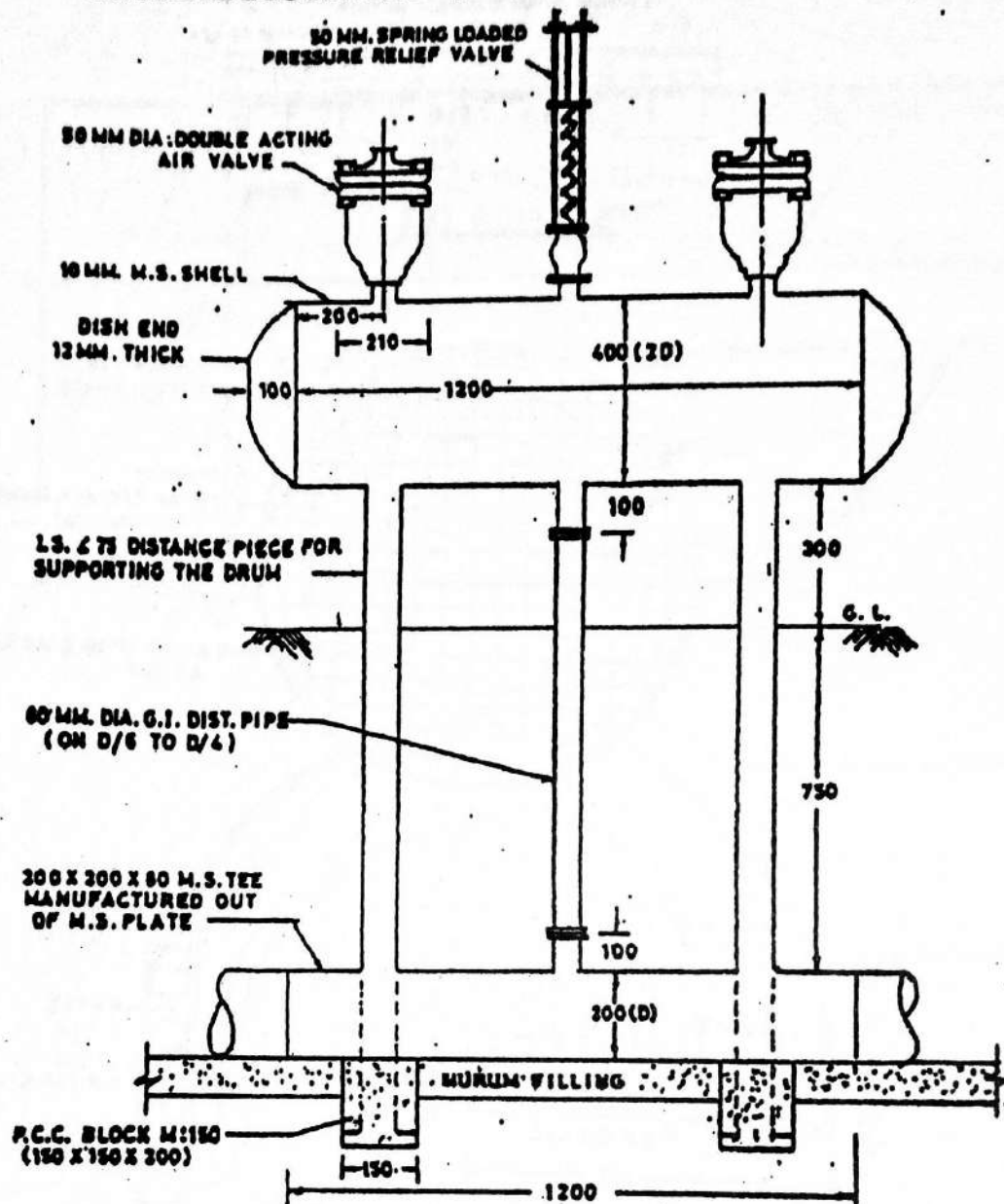
LINTAL AND CHEJJA



COLUMN

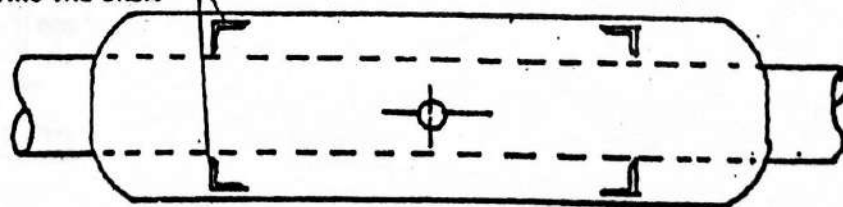
TYPE DESIGN OF REINFORCEMENT OF VARIOUS MEMBERS OF PUMP HOUSE OVER R.C.C. JACK-WELL

# MAHARASHTRA JEEVAN PRADHIKARAN



**SECTION**

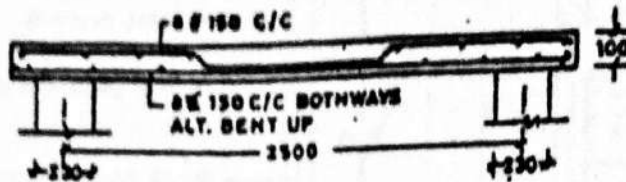
1.5. 475 DIST. PIECE (4 NOS) FOR SUPPORTING THE DRUM



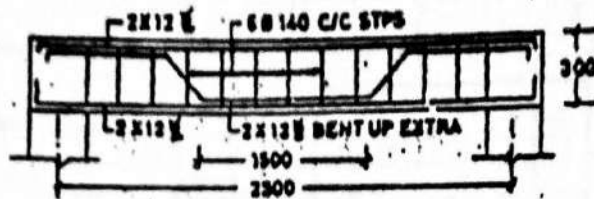
**PLAN**

## TYPE DESIGN OF DRUM TYPE AIR VALVE

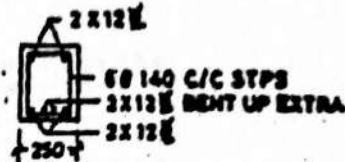
# MAHARASHTRA JEEVAN PRADHIKARAN



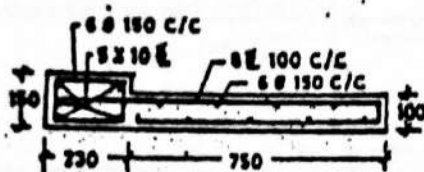
ROOF SLAB



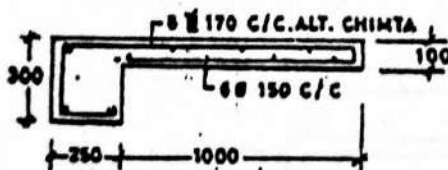
G. L. BEAM



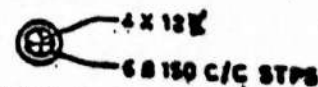
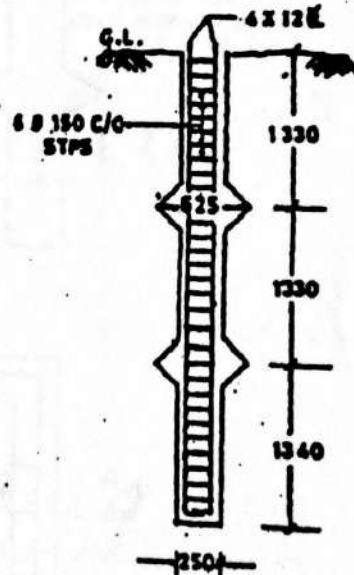
SEC.



LINTAL AND CHEJJA



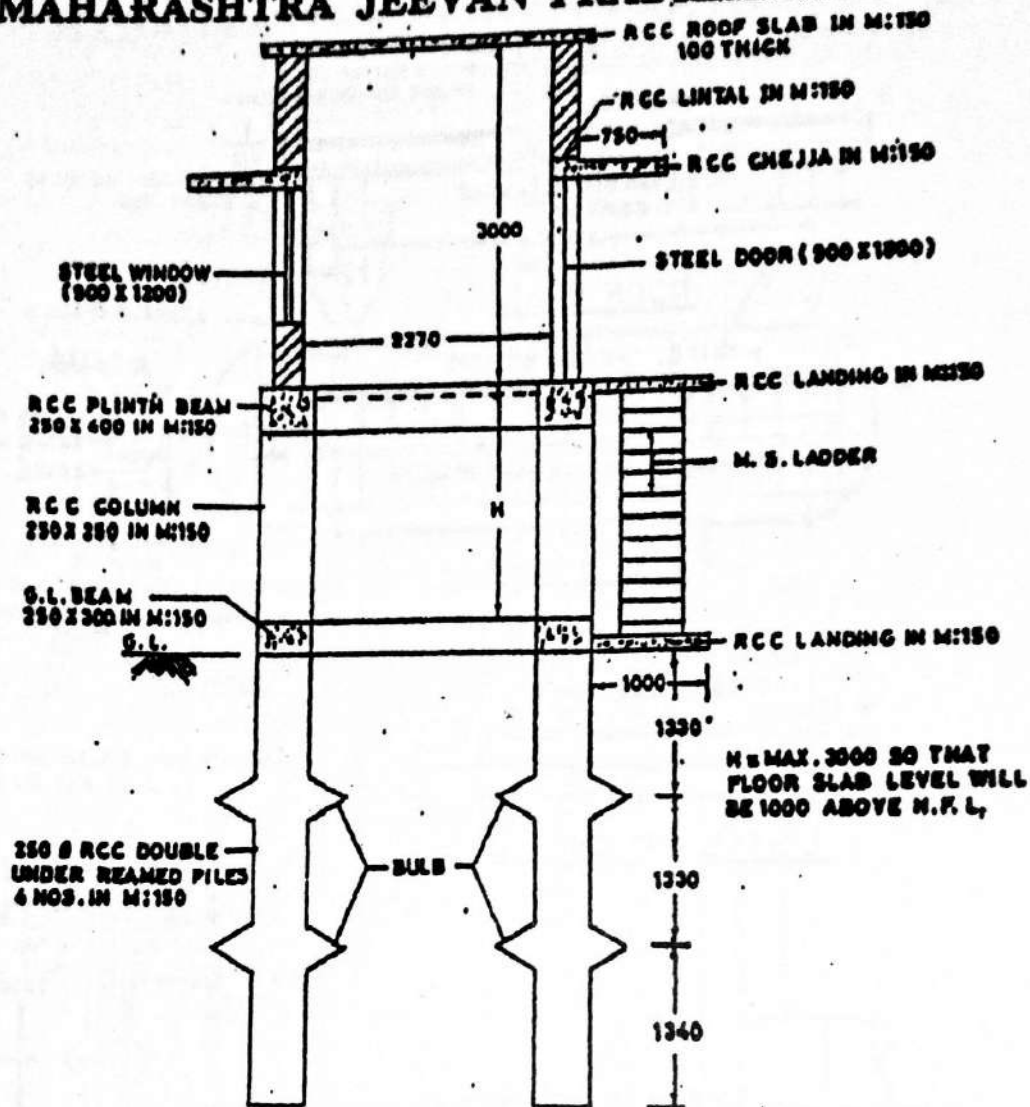
LANDING



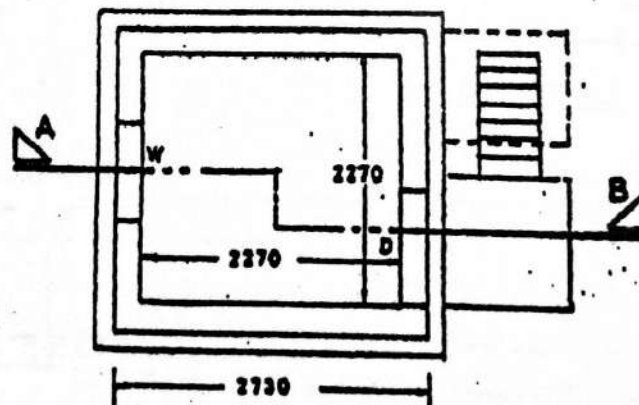
DETAILS OF R.C.C. PILE

DETAILS OF REINFORCEMENT OF VARIOUS MEMBERS OF SWITCH HOUSE WHERE B.C. SOIL IS AVAILABLE AND G. L. IS ABOVE H. F. L.

# MAHARASHTRA JEEVAN PRADHIKARAN



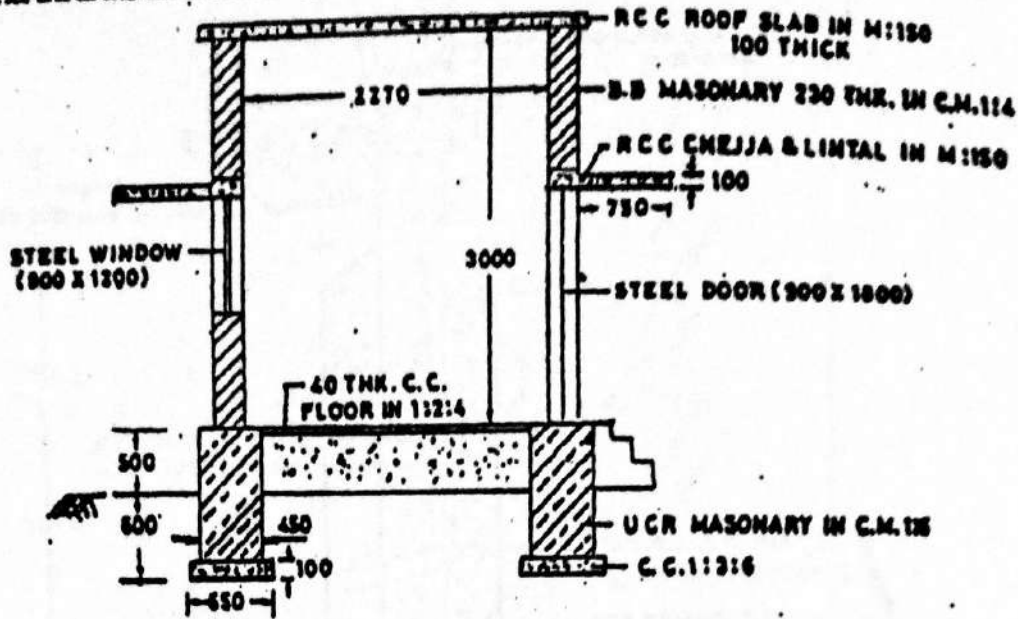
SECTION A-B



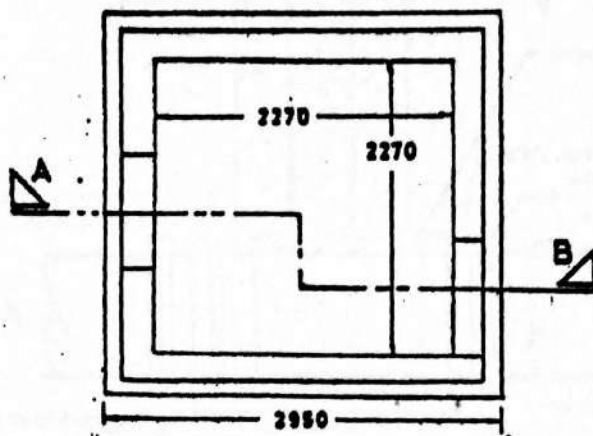
PLAN

TYPE DESIGN OF SWITCH HOUSE WHEN B.C. SOIL  
IS AVAILABLE AND G.L. IS BELOW H.F.L.

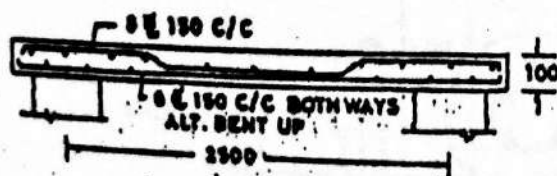
# MAHARASHTRA JEEVAN PRADHIKARAN



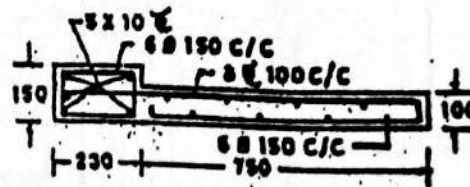
**SECTION A-B**



**PLAN**



**ROOF SLAB**

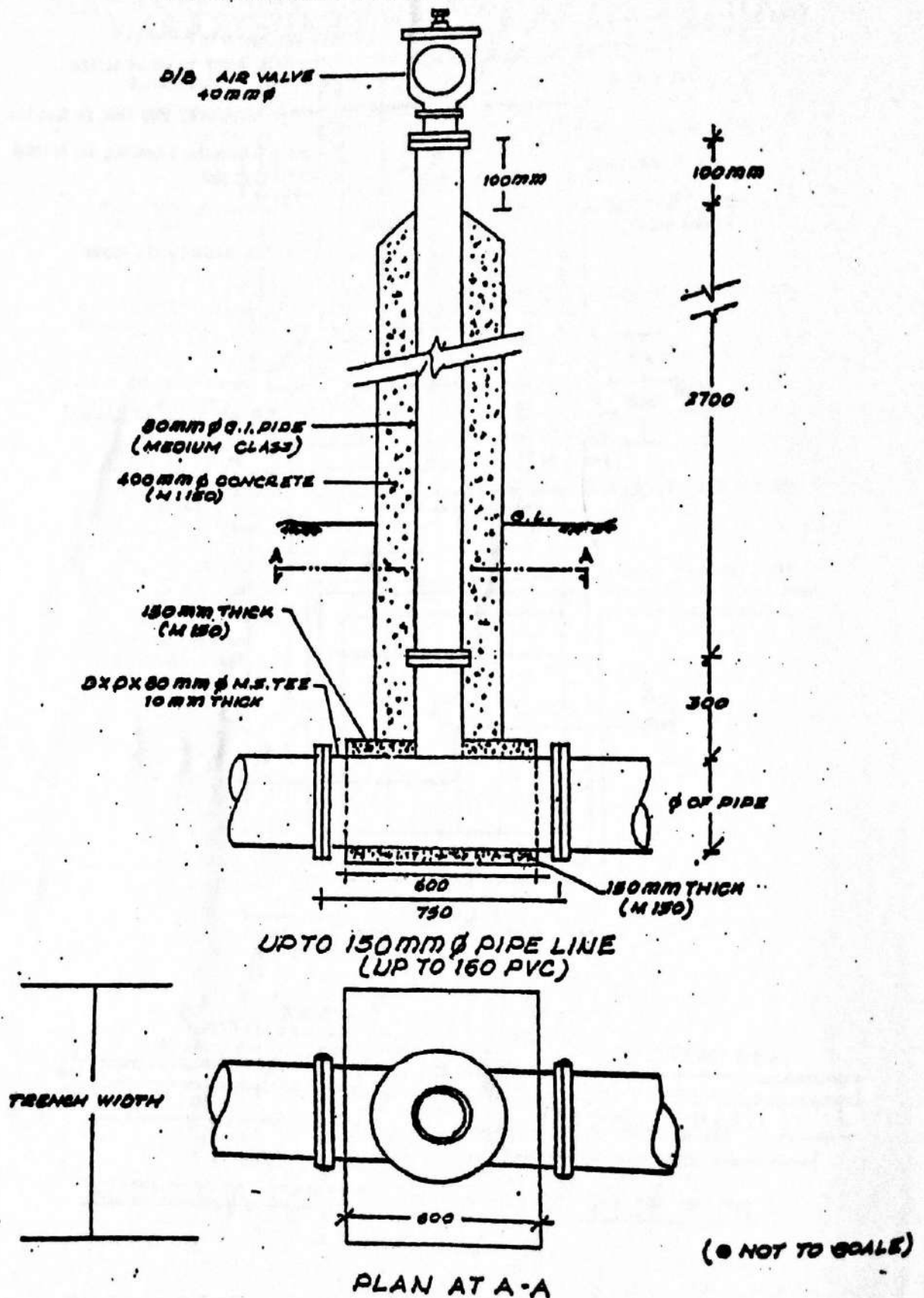


**LINTEL AND CHEJJA**

**TYPE DESIGN OF SWITCH HOUSE WHEN GOOD FOUNDATION IS AVAILABLE AND G.L. IS ABOVE H.F.L.**

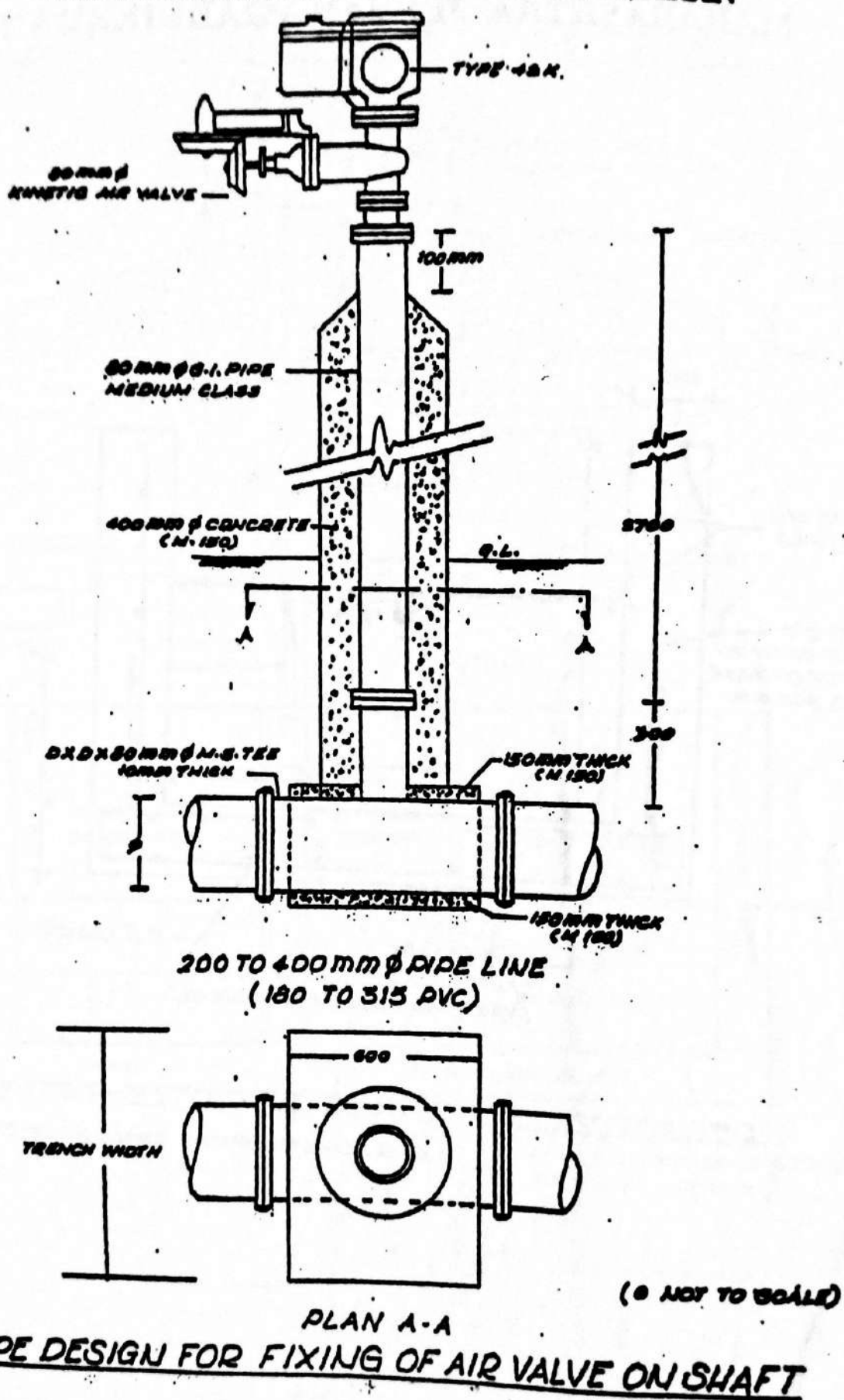


# MAHARASHTRA JEEVAN PRADHIKARAN

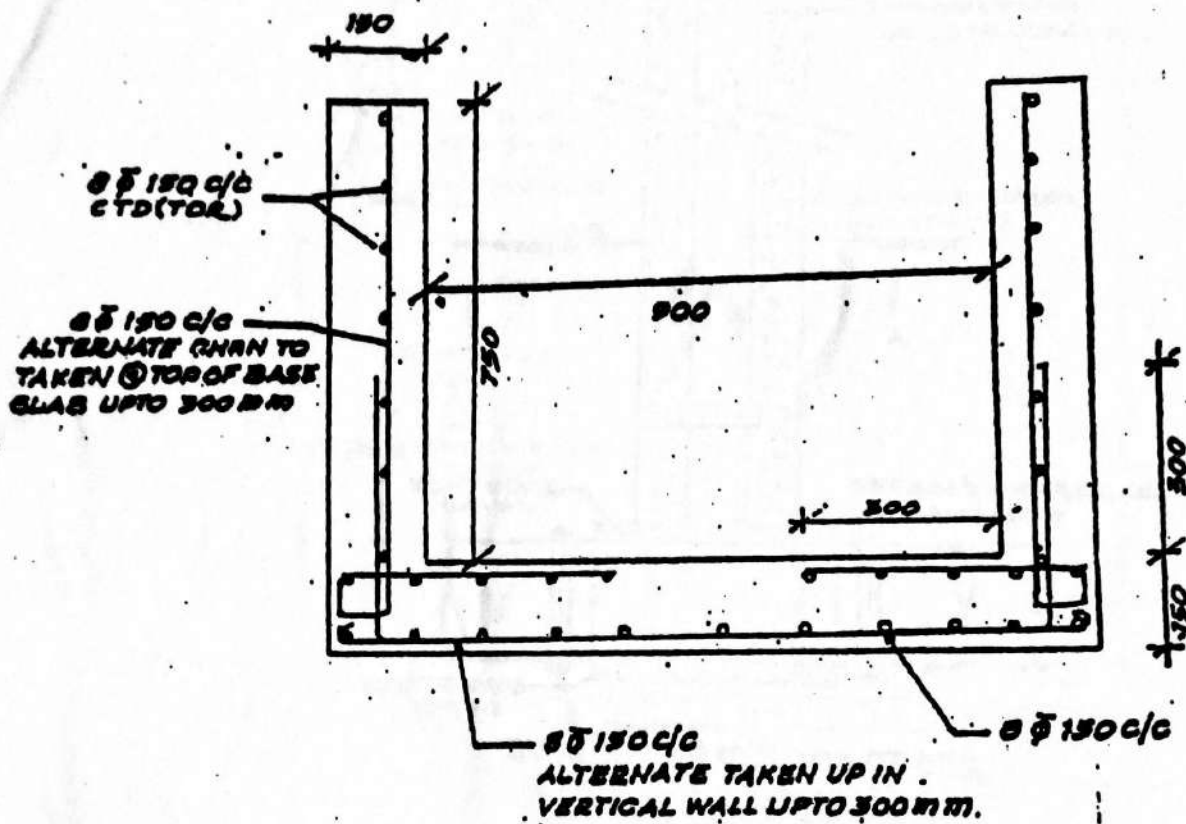


TYPE DESIGN FOR FIXING OF AIR VALVE ON SHAFT

# MAHARASHTRA JEEVAN PRADHIKARAN



# MAHARASHTRA JEEVAN PRADHIKARAN



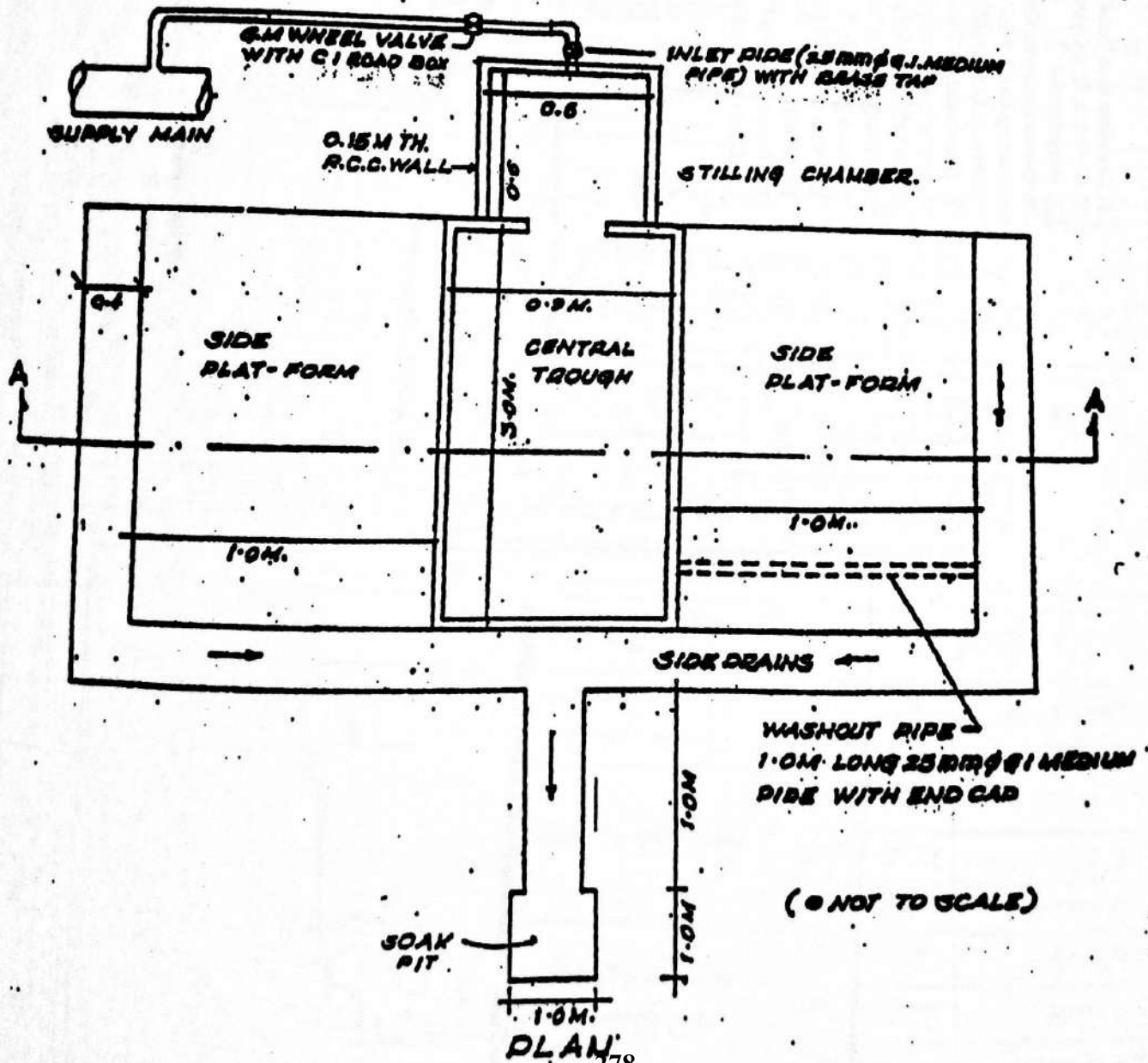
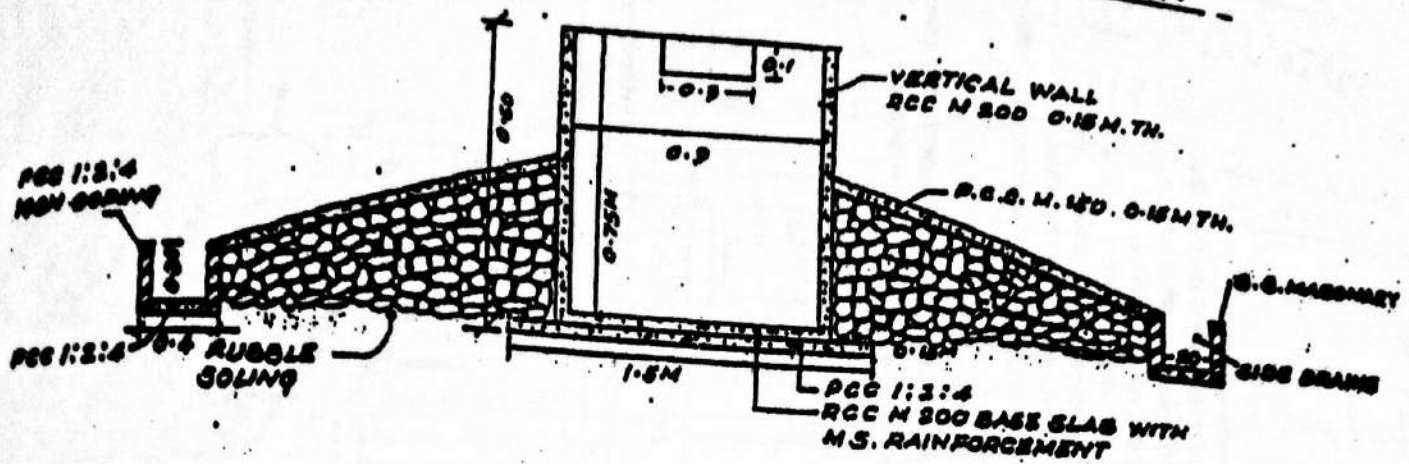
## REINFORCEMENT DETAILS OF CATTLE TROUGH

NOTE: REINFORCEMENT SHALL BE OF CTD (TOR STEEL)



# MAHARASHTRA JEEVAN PRADHIKARAN

## TYPE DRAWING OF R.C.C. CATTLE TROUGH



# MAHARASHTRA JEEVAN PRADHIKARAN BAROMETRIC CHLORINATION SYSTEM

1. Chlorine Gas Room
2. Chlorine Gas Cylinder
3. Regulator
4. Brass Union for Gas connection
5. Heavy Quality 1/2" Dia. Reinforced PVC flexible pipe.
6. Heavy Quality 1/2" Dia. PVC plumbing pipe for Gas.
7. Overhead PVC Water Tank Cap. Min. 1000 L.
8. 3/4" dia. PVC/GI pipe for Inlet for water tank.
9. 3/4" dia. PVC/GI pipe for Overflow for water tank.
10. Heavy quality 1/2" dia. PVC plumbing pipe for water.
11. Heavy quality 1" dia. PVC plumbing pipe for concentrated solution of chlorine gas.
12. Pure water channel.
13. Sump.
14. Heavy quality 1" dia. PVC plumbing pipe for connection to Glass tube.
15. Calibrated glass tube for measuring the chlorine dose.

