



# **Gluconate Health Limited**

(A GOVERNMENT OF WEST BENGAL UNDERTAKING)

Registered & Head Office: 2, DURGA CHARAN DOCTOR LANE, KOLKATA – 700 014

Memo No.

Dt.: 10.01.19

Detailed e-Tender Notice No.

e-Tender Reference No. : NIT/PT-17/18-19

1. Invitation:- Managing Director, Gluconate Health Ltd. Invites online e-tender from reliable, resourceful bonafide and experienced firms/companies/individual/partnership firm contractors having credentials as detailed below for the under mentioned works:-

Name of Work	Estimated Amount (Rs.)	Earnest Money (Rs.)	Time of Completion
Name of Work: Repairing and renovation of Roof, Ceiling and Walls of Three Storied Administrative Building at Factory HQ, Dum Dum Cantonment of Gluconate Health Ltd.	15,77,600.00	32,000.00	4 (Four) Months.

2. Intending bidder may download the tender documents from the website <https://wbtenders.gov.in> directly with the help of Digital Signature Certificate and Earnest Money should be deposit online as per requirement of the system.
3. Submission of Tender:- a) Pre-qualification/Technical Bid and Financial Bid both will have to be submitted online concurrently duly digitally signed in the website <https://wbtenders.gov.in> as per time schedule stated herein under. Time will be reckoned as per Server Clock. b) The Financial Bid of the prospective tenderer will be opened only if the tenderer qualifies in the Technical Bid. The decision of the Tender Inviting Authority will be final and binding to all concerned and no challenge against such decision will be entertained.
4. Intending bidder should quote the rate including all Government, Statutory taxes without GST and Labour Cess as applicable. GST & Labour Cess may be charged separately with the bill as applicable as per rules. The Tax invoice(s) need to be issued by the agency / supplier for raising claim under the contract showing separately, the tax charged in accordance with the provisions of GST Act, 2017.



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## 5. Time Schedule for Downloading, Uploading and Opening of Tender Documents :-

a)	Date of Uploading of N.I.T. & Other Documents (online) (Publishing Date)	Date: 11.01.2019
b)	Documents download start date (Online)	Date: 12.01.2019, Time: 15:00 hrs.
c)	Documents download end date (Online)	Date: 28.01.2019, Time: 15.00 hrs.
d)	Pre-bid Clarification Start Date & Time	NA
e)	Pre-bid Clarification End Date & Time	NA
f)	Online Bid Submission Start Date & Time	Date: 14.01.2019, Time: 15.00 hrs.
g)	Online Bid Submission Last Date & Time	Date: 29.01.2019, Time: 15.00 hrs.
h)	Time and Date of Opening of Technical Bid (Bid will be opened by the Authorized Officer)	Date: 31.01.2019, Time: 15.00 hrs.
i)	Date for opening of Financial Proposal (Online)	To be notified later on.

Tenders will be opened by **the Managing Director, Gluconate Health Ltd.** or his authorized representative in presence of tenderer or their authorized representatives who may like to be present.

## 6. Eligibility criteria for the bidders:-

- a) The bidders should have the credentials of similar nature of work / Landscaping and beautification works with the value not less than 40% of the estimated amount put to tender in a single contract during 5(five) years prior to the date of issue of this tender notice .

### **Other Terms & Conditions of the Credentials:**

- i) Payment Certificate will not be treated as Credential.
- ii) Credential Certificate issued by the Executive Engineer or equivalent or competent Authority of a State/Central Govt., State/Central Govt. Undertaking, Statutory/Autonomous Bodies constituted under the Central / State Statute, on the executed value of completed/running work will be taken as Credential.
- b) Scanned copy of Trade License, PAN Card, P. Tax, Valid Income Tax (For last 3 yrs.), Valid 15 digit Goods and Services Taxpayer Identification Number (GSTIN) under GST , 2017, Last 3 yrs audited balance sheet, if required, Credentials, Work Order, Completion Certificate, Payment Certificate, Bank Solvency Certificate of Rs. 8.00 Lakh issued within one year from the date of publishing of NIT, Registration Certificate and/or trade license of the company must be submitted duly digitally signed at desired location in the website <https://wbtenders.gov.in>
- c) Scanned copy of one affidavit before Notary will have to be submitted mentioning the correctness of the documents and a declaration of penalty debarment etc. faced by him under any Govt./Semi-Govt./Autonomous body/Institution through on line at desired location.
- d) **Earnest Money:-** The tenderer shall have to deposit requisite earnest money along with the tender document in prescribed manner failing which the tender shall be rejected. The balance earnest money if



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any to fulfill 2(two) percent of the tender value is to be deposited at the time of execution of formal agreement.

**e) Additional Performance Security other than Security Deposit::**

1. If the accepted bid value of the successful Bidder is 80% or less of the Estimated amount put to tender, Additional Performance Security @ 10% of the Tendered Amount shall be submitted in the form of Bank Guarantee of any Scheduled Bank within seven working days from the date of issuance of Letter of Acceptance to ensure the quality and proper execution of the work. The said Bank Guarantee shall have to be valid up to end of the Contract Period and shall be renewed accordingly, if required. If the successful Bidder fails to submit the Addition Performance Security within the Time Period mentioned here, Earnest Money of the Bidder will be forfeited and other necessary actions as per NIT like blacklisting of the contractor, etc, may be taken.
2. The Bank Guarantee shall be returned immediately on successful completion of the Contract. If the bidder (the Contractor) fails to complete the work successfully, the Additional Performance Security shall be forfeited at any time during the pendency of the Contract period.
3. Necessary provisions regarding deduction of Security Deposit from the progressive bills of the Contractor as per relevant clauses of the Contract shall in no way be altered / affected by the provision of this Additional Performance Security.

**f) Defect Liability Period & Security Deposit for Work::**

1. The Defect Liability Period shall be one year from the actual date of completion of the work.

**7. a) List of common documents shall have to be uploaded by each tenderer at the time of submission of Tender through online:-**

- i) Income Tax Return (For last 3 yrs.)
- ii) Balance Sheet (For last 3 yrs.)
- iii) Pan Card.
- iv) Latest Professional Tax Paid Challan & P-TAX Enrollment Certificate.
- v) Valid 15 digit Goods and Services Taxpayer Identification Number (GSTIN) under GST Act, 2017 & Latest Vat return.
- vi) Latest Valid Trade License.
- vii) Technical Credential.
  - a) Work Order along with Completion certificate for the work in technical credential.
  - b) Payment certificate of the said work.
- viii) Current Bank Solvency Certificate of Rs. 8.00 Lakh issued within one year from the date of publishing of NIT.
- ix) Affidavit before Notary mentioning the correctness of the documents and declaration of penalty debarment etc.

**b) List of documents shall have to upload by a Partnership Firm in addition to Sl.No.**

Phone : 2265-0001 (3 Lines)  
Fax : (033) 2265-8537  
Website : [www.gluconatehealth.co.in](http://www.gluconatehealth.co.in)  
E-mail : [ghlmd@rediffmail.com](mailto:ghlmd@rediffmail.com)



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7.a)

- i) The Power of Attorney for the firm for signing the tender by a partner.
- ii) Partnership Deed.

**8. Language of Tender:-** The tender shall be submitted in the prescribed form in English. All literatures and correspondence in connection with the tenders shall be in English.

**9. Others:-** The Tender Notice along with other documents like **Technical Specification, Special Terms and Condition, BOQ, Addendum and corrigendum etc.** whatever documents uploaded by the department concerned thereto shall be part and parcel of the Tender. The agency must go through carefully the Special Terms and Conditions uploaded by the department before Quoting his rate.

**The tender inviting authority reserves the right to accept or reject any or all the tenders without assigning any reason what so ever.**

For detail information please visit <https://wbtenders.gov.in>

**Managing Director,  
Gluconate Health Ltd.**



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## **GUIDELINES TO BIDDERS**

Instruction / Guidelines for tenders for electronic submission of tenders online have been annexed for assisting the contractors to participate in e-tendering.

1. **Registration of Contractor:** - Any Contractor willing to take part in the process of e-Tendering will have to be enrolled & registered with the Government e-Procurement system through logging on to <http://wbtenders.gov.in> The contractor is to click on the link for e-Tendering site as given on the web portal.
2. **Digital Signature Certificate (DSC) :-** Each contractor is required to obtain a class – II or class – III Digital Signature Certificate (DSC) for submission of tenders from the approved service provider of the of the National Information's Centre (NIC) on payment of requisite amount details are available at the Web Site stated in Clause – 1 of Guideline to Bidder. DSC is given as a USB e-Token.
3. **Collection of Tender documents:** - The contractor can search & download NIT & Tender documents electronically from computer once he logs on to the website mentioned Clause 1 using the Digital Signature Certificate. This is the only mode of collection of Tender documents.
4. **Submission of Tenders :-**
  - a) **General process of submission:-** Tenders are to be submitted through online to the website stated in Cl.1 in two folders at a time for each work, one is Technical bid and other is Financial Bid before the prescribed date and time using the Digital Signature Certificate.
  - b) **Technical Bid:-** Technical Bid contain scanned copies of the followings further in two cover (folder).

### **A-1. Statutory Cover Containing.**

- i) Payment towards earnest money (EMD) as prescribed in the NIT.
- ii) NIT with all addendum & corrigendum (download & upload the same digitally signed.)
- iii) Declaration.

### **A-2. Non Statutory/Technical Documents Cover containing.**

- i) Income Tax Return (For Last 3 yrs.)
- ii) Audited Balance Sheet (For last 3 yrs.)
- iii) Pan Card.
- iv) Latest Professional Tax Paid Challan & P-TAX Enrollment Certificate.
- v) Valid 15 digit Goods and Services Taxpayer Identification Number (GSTIN) under GST Act, 2017 & Latest Vat return.
- vi) Latest Valid Trade License.
- vii) Technical Credential.
  - a) Work Order along with completion certificate for the work in technical credential.
  - b) Payment certificate of the said work.
- viii) Current Bank Solvency Certificate of Rs. 8.00 Lakh issued within one year from the date of publishing of NIT.
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**Note: Failure of submission of any of the above mentioned documents (as stated in A-1 & A-2) will render the tender liable to summarily rejected for both statutory & non statutory cover.**

Click the check boxes beside the necessary documents in the My Document list and then click

Sl. No.	Category Name	Sub-Category Description	Details.
A	Certificates	Certificates	i)Income Tax Return (For last 3 yrs.), ii)Audited Balance Sheet (For last 3 Yrs.) iii)Pan Card, iv)Professional Tax Challan, v)VAT Registration & Latest Vat Return & vi)Affidavit etc.
B	Company Details	Company Details-1	i)Trade License, ii)Partnership Deed, iii)Society Registration, Power of Attorney, iv) MoA/MoU etc. as applicable.
C	Credential	Credential-1	i)Credential, Work Order, Completion Certificate, Payment Certificate, Current Bank Solvency Certificate Etc.

The tab "Submit Non Statutory Documents" to send the selected documents to Non Statutory folder. Next Click the tab "Click to Encrypt and upload" and then click the "Technical" Folder to upload the Technical Documents.

#### **Financial Bid:-**

- i) The financial bid should contain the following documents in one cover (folder) i.e. Bill of Quantities (BOQ). The contractor is to the rate through on line in the space marked for quoting rate in the BOQ.
- ii) Only downloaded copies of the above documents are to be uploaded, virus scanned & digitally Signed by the contractor.

#### **6) Opening & Evaluation of Tender:-**

##### **Opening of Technical Bid:**

- i) Technical bid will be opened by the **Managing Director, Gluconate Health Ltd.** Intending tenderer may remain present if they so desire. Statutory Cover (folder) would be opened first & if found in order and correct Non Statutory Cover (folder) will be opened. If there is any deficiency in the Statutory & Non statutory documents the tender will summarily be rejected.
- ii) Decrypted (transformed in to readable formats) documents of the non statutory cover will be downloaded & handed over to the evaluation committee.
- iii) List of technically qualified tenderers would be uploaded.

**7. (a) During uploading of documents all bidders should be careful enough to assign the name of the file that it so that it can be easily understand about its content. Misleading file name may produce error in evaluation process for which Tender inviting Authority will not be responsible.**

**(b) All the bidders are requested to upload only necessary documents for the tender. Uploading unnecessary documents may create problem in the evaluation process. Tender Inviting Authority will not be responsible for any error occurred during the evaluation process due to the over uploading of unnecessary documents.**

**NB: While evaluation, the committee may summon of the tenders & seek clarification/information or additional documents or original hard copy of any of the documents already submitted & if they are not produced within the stipulated time frame, their bid will liable for rejection.**

Phone : 2265-0001 (3 Lines)  
Fax : (033) 2265-8537  
Website : [www.gluconatehealth.co.in](http://www.gluconatehealth.co.in)  
E-mail : [ghlmd@rediffmail.com](mailto:ghlmd@rediffmail.com)



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**Opening and evaluation of Financial Bid:**

i) Financial bid of tenderers declared technically eligible by the Tender Evaluation Committee will be opened electronically from the web portal on the prescribed date and time.

8. **Penalty for suppression / distortion of facts:**

Submission of false document by tenderer is strictly prohibited.

**Managing Director, Gluconate Health Ltd.**



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**Name of Work : Repairing and renovation of Roof , Ceiling and Walls of Three Storied Administrative Building at Factory HQ , Dum Dum Cantonment of Gluconet Health Ltd .**

SI no	Brief description of Item	Qty.	Rate (Rs)	Unit	Amount (Rs)
1	Dismantling all types of masonry excepting cement concrete plain or reinforced, stacking serviceable materials at site and removing rubbish as directed within a lead of 75 m. a) In ground floor including roof. b) Extra rate for each addl. Floor over the rate of ground floor. (Ref.PWD Bldg -17 / P-11 / It - 1 a & b)	6.30 6.30	447.00 50.00	CuM CuM	2816.10 315.00
2	Dismantling R.C. floor, roof, beams etc. including cutting rods and removing rubbish as directed within a lead of 75 m. including stacking of steel bars. (a) In ground floor including roof. (b) Extra rate for each addl floor over the rate of ground floor. (Ref.PWD Bldg -17 / P-11 / It - 3 a & b)	3.98 3.98	1956.00 50.00	CuM CuM	7788.88 199.00
3	Dismantling carefully terraced floor only (including floor finish if any) or lime terracing in ground floor roof and removing rubbish as directed within a lead of 75 m. (a) In Ground Floor including roof. (b) Extra rate for each addl floor over the rate of ground floor. (Ref.PWD Bldg -17 / P-11 / It - 5 a & b)	44.76 44.76	739.00 50.00	CuM CuM	33077.64 2238.00
4	Earthwork in excavation of foundation trenches or drains ,in all sorts of soil (including mixed soil but excluding laterite or sandstone) including removing, spreading or stacking the spoils within a lead of 75m as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water as required complete. (a) Depth excavation not exceeding 1500mm (Ref.PWD Bldg -17 / P-1/ It -2a)	11.25	11927.00	%CuM	1341.79
5	Single Brick Flat Soling of picked jhama bricks including ramming & dressing bed to proper level and filling joints with local sand. (Ref.PWD Bldg -17 / P-14 / It - 1) + 3rd corrigendum	25.00	357.00	SqM	8925.00



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6	Cement concrete with graded jhama Khoa 30mm size excluding shuttering and in ground floor & foundation. A)1:3:6 proportion (Ref.PWD Bldg -17/ P-23/ It -4.a)+3rd corrigendum	15.00	4778.00	CuM	71670.00
7	125mm thk Brick Work with 1st Class Brick in Cement Mortar (1:4) in ground floor. (Ref.PWD Bldg -17 / P-16 / It - 16) +3rd corrigendum	38.00	722.00	SqM	27436.00
8	Ordinary Cement concrete (mix 1:1.5:3) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement, if any, in ground floor as per relevant IS codes. A) Pakur variety (Ref.PWD Bldg -17/ P-26/ It - 10a with analysis rate)	29.84	5996.00	CuM	178920.64
9	Hire & Labour charges for shuttering with centering and necessary staging upto 4m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs,beams and columns,lintels curved or straight including fitting,fixing and striking out after completion of works(upto roof of ground floor) (a) 25mm to 30mm thick wooden shuttering as per decision & direction of EIC (Ref.PWD Bldg -17 / P-42 / It - 36a)	7.50	334.00	sqm	2505.00
10	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups, binders etc. initial straightening and removal of loose rust (if necessary) cutting to requisite length hooking and bending to correct shape, placing in proper position and binding with 16 gauge black annealed wire at every inter section, complete as per drawing and direction. a)For works in foundation ,basement and upto roof of ground floor/upto 4m. i) Tor steel /Mild Steel ii other than SAIL/TATA/RINL (Ref.PWD Bldg -17 / P-44 / It - 40.a.ii)	0.3	55629.00	MT	16688.70
11	Earth Work in filling in foundation trenches or plinth with good earth, in layers not exceeding 150 mm including watering and ramming etc. layer by layer complete. (payment to be made on the basis of measurement of finished quantity of work) (a) with earth obtained from foundation. (Ref PWD Bldg - 17 / P-1 / it.3a)	45.00	7754.00	%cum	3489.30



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12	Artificial Stone in floor, dado, staircase etc with cement concrete (1:2:4) with stone chips, laid in panels as directed with topping made with ordinary or white cement(as necessary) and marble dust in proportion(1:2) including smooth finishing and rounding off corners including raking out joints or roughening of concrete surface and application of cement slurry before flooring works using cement@1.75kg/sqm all complete including all materials and labour. In Ground Floor. 3 mm thick topping(High polishing grinding on this item is not permitted with ordinary cement) Using Grey Cement i) 35mm thick (Ref.PWD Bldg -17 / P-48 / It - 6.iii) + 3rd corrigendum	81.0	320.00	SqM	25920.00
13	Plaster (to wall, floor, ceiling, etc..) with sand and cement mortar including rounding off or chamfering corners as directed and racking out joints including throating, nosing and drip-course,scaffolding/staging where necessary.(Ground Floor)[Excluding cost of chipping over concrete surface] i) with 4: 1 Cement Mortar a) 20mm thick plaster (Ref.PWD Bldg -17/ P-189 / It - 1 ii-a) + 3rd corrigendum	488.00	185.00	SqM	90280.00
	b) 15 mm thick plaster (Ref.PWD Bldg -17 / P-189/ It - 1 ii-b) + 3rd corrigendum	242.00	160.00	SqM	38720.00
	c) 10 mm thick plaster (Ref.PWD Bldg -17 / P-189 / It - 1 ii-c) + 3rd corrigendum	155.13	129.00	SqM	20011.77
14	Neat cement punning about 1.5mm thick in wall, dado, window, Sills, floor, drain etc. (Ref.PWD Bldg -17 / P-192 / It - 15)	42.50	34.00	SqM	1445.00
15	MS or WI Ornamental Grill of approved design joints continuously welded with MS/ WI flat and bars of windows, railing, etc fitted & fixed with necessary screw and lugs in ground Floor. i) grill weighing above 10kg / sqm and upto 16kg/sqm. (Ref.PWD Bldg -17 / P-104 /It - 13 i)	0.61	7238.00	Qtl.	4415.18
16	Supplying, fitting & fixing MS clamps for door and Window frame made of flat bent bar, end Bifurcated with necessary screws etc by cement Concrete (1:2:4) as per direction. (cost of concrete will be paid separately) c) 40 mm x 6 mm,125 mm length (Ref.PWD Bldg -17 / P-140 /It -4c)	40.00	20.00	Each	800.00
17	Priming one coat on timber or plastered surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc. (Ref.PWD Bldg -17 / P-200/ It 1 b)	496.25	38.00	SqM	18857.50



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18	Priming one coat on steel or other metal surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand papering etc. (Ref.PWD Bldg -17 / P-200/ It-1a)	5.76	29.00	SqM	167.04
19	Painting with best quality synthetic enamel paint of pproved make and band including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary: (Ref.PWD Bldg -17 / P-200/ It 2 a)				
	(a) On timber or plastered Surface: With super gloss(hi-gloss) (i) Two Coats(With any shade except white)	496.25	81.00	SqM	40196.25
	(b) On Steel or other metal surface: With super gloss (hi-gloss) (i) Two Coats(with any shade except white)	5.76	77.00	SqM	443.52
20	Colour washing with "ELLA" with a coat of white wash priming including cleaning and smoothening surface thoroughly : (i) External surface (ground floor) (b) Two coats (Ref.PWD Bldg -17 / P-195/ It -3(ii)(b))	1268.40	2177.00	%SqM	27613.07
21	Removal of defective concrete, cleaning the surface thoroughly, applying the shotcrete mixture mechanically with compressed air under pressure, comprising of cement, sand, coarse aggregates, water and quick setting compound in the proportion as per clause 2807.1., sand and coarse aggregates conforming to IS: 383 and table 1 of IS: 9012 respectively, water cement ratio ranging from 0.35 to 0.50, density of gunite not less than 2000 kg/cum, strength not less than 25 MPa and workmanship conforming to clause 2807.6. (40 mm average thickness.) PWD/Roads/2018/P-320/I-16.09	155.13	261.00	SqM	40488.93
22	Cleaning the concrete surface by removing dirt and debris, marking defective locations and removing loose concrete by careful stripping untill hard surface is exposed, cutting the concrete to regular shape, wire brushing the exposed surface and removing debris from site complete as per direction of the Engineer - in - Charge. (Ref.PWD Bldg -17 / P-45/ It -5)	596.78	90.00	Sqm	53710.20
23	Applying epoxy based reactive joining agent for joining the old concrete with fresh concrete to be applied within manufacturer's specified time as per manufacturers specification. (0.4 Kg / m <sup>2</sup> of concrete surface). (Ref.PWD Bldg -17 / P-45/ It -7)	596.78	309.00	SqM	184405.02



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24	<p>Supplying best Indian sheet glass panes set in putty and fitted and fixed with nails and putty complete. (In all floors for internal wall &amp; upto 6 m height for external wall)</p> <p>(i) 3 mm thick (weighing 7.4 kg/Sq.m) (Ref.PWD Bldg -17 / P-205/ It -1(i))</p>	15.36	477.00	SqM	7326.72
25	<p>Supplying, fitting and fixing PVC pipes of approved make of Schedule 80 (medium duty) conforming to ASTM D - 1785 and threaded to match with GI Pipes as per IS : 1239 (Part - I). with all necessary accessories, specials viz. socket, bend, tee, union, cross, elbo, nipple, long screw, reducing socket, reducing tee, short piece etc. fitted with holder bats clamps, including cutting pipes, making threads, fitting, fixing etc. complete in all respect including cost of all necessary fittings as required, jointing materials and two coats of painting with approved paint in any position above ground. (Payment will be made on the centre line measurements of total pipe line including all specials. No eparate payment will be made for accesories, specials. Payment for painting will be made seperately)</p> <p>(a) For Exposed Work PVC Pipes i) 100 mm dia (Ref.PWD S&amp;P -17 / P-12/ It -19(I))</p>	132.00	1134.00	Metre	149688.00
26	<p>Supplying and laying true to line and level 20 mm / 25 mm. thick precast roof tiles made of cement conc. with stone chips as per approved strength and density set in 25mm avg. thick cement mortar (1:3) and filling up joint (3 mm wide) with cement sand mortar (1:1) applying cement slurry @ 1.75 kg per Sq.m back of tiles and then setting close the precast tiles, finishing up the joints with slurry already laid and finally finishing the top surface including providing 150 mm. high skirting with the same tiles flushed with the inside surface of parapet wall, finishing the mouth of rain water pipes, curving etc. as necessary complete as per direction of the Engineer-in-charge. (Levelling if necessary may be paid separately)</p> <p>For 25 mm. thick precast tiles (cement 14.6 kg/ Sq.m for underlayer) (Add extra @ 1.75% for each additional floor upto 4th floor (Ref.PWD/Build/ 17 / P-79/ It - 2 ( b))</p>	596.78	568.00	Sq.M	338971.04
		596.78	19.88	Sq.M	11863.99
27	<p>Providing and inserting nipples with approved fixing compound after drilling holes for grouting as per Technical specifications including subsequent cutting/removal and sealing of the hole as necessary of nipples after completion of grouting with Cement/Epoxy.</p>	150.00	102.00	Each	15300.00



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	PWD/Roads/2018/P-320/I-16.04				
28	Sealing of cracks / porous concrete by injection process through nipples/Grouting complete as per Technical specification. A. Cement mortar (1:1) Grouting PWD/Roads/2018/P-320/I-16.05	75.00	139.00	Kg	10425.00
29	Cleaning the exposed reinforcement preferably upto full diameter by wire brush, applying two coats of polymer based rust removing compound left for 24 hours, removing the coating and then applying two (2) coats of polymer modified anti corrosive protective coating formulated to inhibit the corrosion of reinforcement as per manufacturer's specification] [Mode of measurement:The affected surface area of reinforcement shall be considered for payment] PWD/Build/2017/P-45/I-6	155.125	782.00	Sq.M	121307.75
30	Removing corroded worn out portion of reinforcement (when the area of bar is damaged by more than 25%) by cutting and replacing the same by a new plain round bar of requisite diameter by binding with required lap / welding with old bar, including cost of reinforcement, complete in all respect including removing unserviceable materials from site as per direction of the Engineer - in - charge. Note : Payment on weight (Kg.) of new reinforcement. PWD/Build/2017/P-46/I-11	100.00	87.00	Kg	8700.00
31	Removal of rubbish,earth etc. from the working site and disposal of the same beyond the compound, in conformity with the Municipal / Corporation Rules for such disposal, loading into truck and leaning the site in all respect as per direction of Engineer in charge. PWD/Build/2017/P-9/I-13	55.04	166.00	Cum.	9136.64
<b>Total (Rs)</b>					<b>1577600.00</b>

GST & Labour Cess will be applicable as per rule.



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## **GENERAL INSTRUCTION TO THE TENDERERS** **AND SPECIAL TERMS AND CONDITIONS**

### **1. EARNEST MONEY :**

Earnest Money is to be deposited as per N. I. T.

### **2. SITE CONDITION :**

Intending tenderer are required to see the site of work and get themselves thoroughly acquainted with local conditions and all factors which may effect their rates, specifically regarding the accessibility to site for transport of construction materials or for removal of surplus spoils etc. which necessitate the carriage by head load or by other means or for dewatering of any quantity of water accumulated at site before starting the execution. It shall be clearly understood that no claims for extra payments on this account shall be entertained at any stage. Each tenderer shall have to furnish a certificate as a token of compliance with the above in the prescribed form of Declaration attached hereinafter.

### **5. QUOTATION OF RATES :**

The tenderer should quote his rate through on line over the estimated amount put to tender.

The rate should only be written in the prescribed format mentioned elsewhere in tender document clearly and legibly during execution of formal agreement. Erasing or overwriting shall not be allowed.

- 6.a) In the event of the tender being submitted by a FIRM, it must be signed by a member or members of the Firm having legal authority to do so. In case of Partnership Firm, it should be duly registered under the Indian Partnership Act. Any tender signed by a member not holding a POWER OF ATTORNEY shall be treated as informal.



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- b) No tender will be deemed to be fit for consideration unless the tender documents are fully and completely filled and all information that may be asked for must be unequivocally furnished. Any tender which is incomplete and does not comply with the prescribed conditions or stipulates counter to these laid down herein or in the tender documents will be liable to rejection at the time of opening or during subsequent security.

7. **VALIDITY PERIOD OF QUOTED RATES :**

Tender shall not be withdrawn within a period of 120 (one hundred twenty) days from the date of submission. If a tenderer withdraws his tender within this period of 120 (one hundred twenty) days without giving justifiable reasons to the satisfaction of the Gluconate Health Ltd, he shall render himself liable to be debarred from submitting any tender for works under Gluconate Health Ltd for minimum period of one year. The rate quoted should be valid for 120 (one Hundred Twenty) days from the date of acceptance of tender.

8. **REFUND OF EARNEST MONEY FOR UNSUCCESSFUL TENDERES :**

The earnest money of all the unsuccessful tenderers shall be refunded on application, as per existing rules.

9. **ACCEPTANCE OF TENDER :**

The acceptance of tender will rest with Managing Director / Engineer In Charge as per existing rules. He is not bound to accept the lowest tender and reserves the right to reject any or all the tenders without assigning any reason thereof. The accepting authority also reserves right to distribute the work to more than one tenderer of the rates accepted by him and the successful tenderer shall not have any claim for curtailment of works pertaining to his tender.

10. Security deposit (including the initial security deposit and the earnest money) @ 10% of the gross bill value will be deducted from each and every running bills and the final bill without any upper ceiling limit.

11. **SUBMISSION OF ADDITIONAL CONTRACT DOCUMENTS :**

- a) The successful tenderer shall have to submit 5 (five) additional sets of the contract documents, known as Formal Tenders within 10 (ten) days from the date of receipt of



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intimation about acceptance of tender. Failure to do so within the specified time, the tenderer shall render his contract liable to termination with forfeiture of initial Earnest money.

- b) Above additional contract documents will have to be purchased from the office of the Executive Engineer concerned on payment of cash / as per existing rules and must be signed in each page by the Proprietor / Partner / or authorised representative of the agency and to be submitted to the officer communicating acceptance of tender.
12. It must be clearly understood that the value of work and quantities of various items indicated in the Priced Schedule are approximate only and may be appreciably increased or decreased during actual execution. The contract shall remain unaffected by such alterations.
13. The rates shown in the schedule of items are inclusive of taxes as stated in PWD Building & Plumbing Schedule, 2017 (w.e.f. 01.11.2017) and claims will be dealt as per provision of the said schedule and as per existing Govt. Rules.
14. The rates should be quoted only due consideration of all items of "Priced Schedule of Rates", the site condition and overall nature of the work. In no circumstances, the tendered rates will be enhanced after acceptance of the tender.

No demand for escalation of price and labour rate will be entertained for any reason whatsoever, such as delay in handing over the site, delay in issue of materials, working drawings etc.

15. **SECURITY MONEY :**

In respect of the successful tenderer (thereafter called the contractor), the earnest money on acceptance of the tenders, shall be converted as a part of security deposit. The recovery of the balance security deposit will be made from each running bill / final bill percentage prescribed in Clause No. – 10 as state in hereinbefore.

16. **INCOME TAX :**



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Income tax will be deducted from the bills of contractor (running and final) in accordance with the orders of the Govt. of India prevalent during the duration of the contract.

17. **SALES TAX :**

Sales tax will be deducted from the bill of the contractor (running and final) in accordance with the orders of the Govt. of West Bengal prevalent during the duration of the contract.

18. **POWER OF ATTORNEY :**

Power of Attorney, if any, must be to the approval of the Gluconate Health Ltd, otherwise the Department shall not be bound to take cognizance of such power of Attorney.

19. **PRECEDENCE OF CONTRACT DOCUMENTS :**

If any stipulation of contract documents be at variance in any respect with those, one component will over ride the others (only in so, far as the variance is concerned) in the order of precedence stated below :-

- a) Letter of Intent (L.O.I.)
- b) Detail Notice Inviting Tender.
- c) Schedule of items of works with probable quantities including drawings where supplied.
- d) Technical Specification, if any.
- e) Special Terms and Conditions, if any.
- f) Schedule of Rates and Specification, as applicable.
- g) Agreement Form .
- h) General Condition.



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20. **AUTHORISED REPRESENTATIVE :**

The contractor may appoint an authorised representative in respect of general day to day management of work.

21. **APPLICATION OF CONTRACT LABOUR ACT, 1970 :**

The contractor should obtain the License under the provision of the contract Labour (Regulation & Abolition) General Rules 1971, including the provisions of amendments vide Govt. (W.B) Notification No. 1043 – LS / II – 16 / 75 dated the 24. 10. 1975 and subsequent amendment if any, and submit the same to the office of the Executive Engineer latest before submission of Final Bill of the work.

22. **APPLICATION OF THE APPRENTICES ACT, 1961 :**

Contractor shall comply with the provisions of the Apprentices Act 1961 and the rules and orders issued there under from time to time, failure to do so, will be deemed as breach of the contract and the tender accepting authority may in his discretion cancel the contract.

23. **ENGAGEMENT OF TECHNICAL PERSONNEL :**

The contractor shall engage adequate technical personnel for proper supervision of the work irrespective of the fact whether he is a degree or diploma holder Engineer himself in the manner as stated below :-

- a) At least one diploma holder Engineer for works costing above Rs. 50.000/- and upto Rs. 20.0 lakhs
- b) One Degree Holder Engineer for works costing above Rs. 20.0 lakhs and above.

24. **EMPLOYMENT OF LOCAL PERSON :**



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- a) No labour should be imported from any District other than where works to be executed, without prior consent of the Executive Engineer.
- b) Imported labour can be engaged with permission of the Managing Director / EIC in case of exigency or progress of work so demands.
- c) 70% of skilled labour shall have to be recruited locally.

25. **WORKS NOT COVERED IN TENDER SPECIFICATION :**

The specification for work not covered in the General and Special Terms and Conditions shall be carried out in accordance with P.W.D. (W.B.) Schedule of rates for Building works, Materials, Plumbing and labour, P.W.D (Roads) Schedule S & D and Water Supply schedule of KMDA and as per latest I.S. Code of practice.

26. If the stipulations of the various contract documents be at variance in any respect decision of the Engineer – in – Charge will be final and binding.

27. The rates are to be quoted by the Contractors shall be inclusive of all incidental fees, charges and taxes like Royalties, Octroi, Tax of materials, electricity, water and other Statutory Taxes / Charges of Municipalities, Corporations and other statutory bodies, Income Tax, Sales Tax, Service Tax etc. Nothing extra will be paid on any such account.

Requisite protection and safety measures should be taken during execution of the work to prevent any untoward incident/ accident. Offered rate of the bidder should include all those costs.

All Statutory permissions should be taken by the Contractor at his own cost before commencement of the work. Offered rate of the bidder should include all those costs.

28. **SUPPLEMENTARY / EXTRA ITEMS OF WORK :**

The items of work not included in the specific priced schedule will be considered supplementary or extra items of work.



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The rates of supplementary items of works will be determined as per schedule of rates PWD if rates are not directly available from the above schedules, market rate analysis may be done, but as per guidance given in P.W.D. Schedule in this respect.

29. **STORAGE OF MATERIALS :**

Contractor shall make their own arrangement for storage space and godown for tools and plants, materials etc. and shall also erect at their own cost, necessary sheds and godown for proper storage of materials such as cement, steel, pipes etc. which will be issued to them, as necessary from time to time.

30. **IDLE LABOUR :**

No claim for idle labour shall be entertained under any circumstance.

31. **A. SITE ORDER BOOK :**

The contractor, shall within seven days of the receipt of Work Order, provide at his own cost, a well bound "Site Order Book" to the Engineer in Charge of the work. The Site Order Book shall be kept at the site of work under the custody of the Assistant Engineer. The Site Order Book shall have machine numbered pages in triplicate. Directions or instructions from departmental officers to be issued to the contractor will be entered in the Site Order Book (in triplicate) except when such directions or instructions are given by separate letters. The contractors or his authorized representative shall regularly note the entries in the said book and also record thereon the action take or being taken by complying with the said directions or relevant point relating to the work. The Contractor may take away the duplicate page of the Site Order Book for his own record. The Site Order Book shall contain particulars as to be specified by the Engineer – in – Charge.

**B. SITE LABORATORY**



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The Contractor will be arranged the site laboratory to their site and maintain all related testing regarding bitumen and other necessary materials as required on site scope.

- i) Test for bitumen i.e. bitumen penetration test, Marshal test, Benzoin test for bitumen mix, flushing point and ductility test etc.
- ii) Test for aggregate i.e. sieve analysis of different of aggregate, aggregate impact value, and abrasion test etc.
- iii) Test register will be maintained separately under safe side custody.

**NB: Whatever may be prescribed at any clause of this tender documents, all works (Testing and Quality Control ) must be carried out in accordance with available latest relevant IS/IRC Code and cost for all testings will be borne by contractor. Bidder should quote their rates considering the same.**

## 32. **CONSUMPTION OF MATERIALS :**

The basis of consumption of materials of any description shall be the P.W.D. schedule of rates, which remains in force at the time of acceptance of the tender unless specified otherwise elsewhere in the tender documents. For the items of works whose consumption rates are not available in the schedule referred to above, the rate fixed by Engineer – in – Charge shall be final and binding.

## 33. **SUPPLY OF MATERIALS :**

If Gluconate Health Ltd issue materials like Cement, Steel or Bitumen to the contractor, Recovery of the materials would be as per Schedule of Rate considered in the BOQ (Bill of Quantities). The bidder shall quote their rates accordingly and no escalation in quoted rate shall be entertained in any form throughout pendency of the contract

## 34. **CONTRACTOR'S MATERIALS :**

Contractor's materials shall conform to the respective specifications and before supply, he shall submit samples for approval of the Engineer – in – Charge.

In addition, for the supply of the materials like cement, all sorts of steel materials, bitumen and emulsions, pipes etc., the materials shall have BIS/ISO certification and also shall conform to the list



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of Suppliers annexed with this tender documents specifically used different grade of bitumen(packd) are also mentioned in the tender specifications.

Any materials not in accordance with the approved sample or not conforming to the specifications will be rejected and must be removed by the contractor at his own cost within 24 hours of written instruction to do so.

**36. COMPLETION PHOTOGRAPH :**

The contractor shall submit within 30 (thirty) days after completion of all the construction/ repairing works 3 (three) copies of the completion Photograph (preconstruction stage, during repair/ construction stage and completed works) and CD of the said photograph.

**37. LIABILITY PERIOD :**

The Contractor shall be responsible for a period of 12 (twelve) months after taking over the work by the Gluconate Health Ltd but if the concern EIC like to consider by satisfying with the work, he may release the Security deposit either in Full or in part after elapses the security period as mentioned in form 1, cl 17 for any defects which may develop due to defective construction or workmanship of the work including defects of materials supplied by the contractor. The contractor shall rectify all such defects at his own cost when asked upon to do so, upto the satisfaction of the Engineer – in – charge. The Security Deposit retained by the Gluconate Health Ltd will be refundable after the Maintenance Period, as stated above, will be over.

**38. PUMPING DEWATERING ETC. :**

The contractor shall provide all pumping arrangements that may be required to remove water from or keep out of the foundation trenches or any part of the structure under construction. This water may be canal water, sub-soil water and water from any other sources. Such pumping or other necessary arrangement shall not be paid separately and the cost thereof is to be included in the quoted rate.

**39. SUB-LETTING**



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Considering the urgency and gravity of the Job No subletting will be allowed for this tender under any circumstances.

40. The Contract documents are to be taken as a whole. The several documents forming the contract are to be taken as mutually explanatory of one another.

#### **41. Supply of Departmental Materials:-**

KMDA will supply Cement, Steel Bar & Bitumen as required for construction except cement required for Ready Mix Concrete (RMC). Price of departmental materials will be recovered as per issue rate as mentioned in the following table from the R/A bills and Final bill as admissible.

However for any unavoidable circumstance if Department could not able to supply those materials contractor may be allowed by the competent authority to purchase those material of brand as mentioned in cl.42 below from market and the contractor must be bound to execute the work by purchasing those material from market at his own resource for which no extra claim beyond the contractual agreement will be entertained.

#### **42. LIST OF SUPPLIERS FOR SPECIFIED MATERIALS**

##### **1. TMT reinforcement steel**

[For dia up to 6 mm the steel shall conform to Grade-I of IS:432(Part-I) & for higher diameter the steel shall conform to Gr. FE-500 as per IS:1786]



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- i) SAIL
- ii) TISCO
- iii) Rastriya Ispat Nigam LTD.
- iv) SPS Steel Rolling Mill (“Elegant”)
- v) Shyam Steel Industries
2. M.S. Plate & M.S. Pipes
  - i) SAIL
  - ii)
3. CEMENT (OPC gr. 53/PSC/PPC as directed by EIC)
  - i) ACC
  - ii) Lafarge
  - iii) Ambuja
  - iv) Ultratech
  - v) Century Gold
4. Bitumen & Emulsion
  - i) Indian Oil Corporation
5. D.I. Pipes & Specials
  - i) Electrosteel
  - ii) Tata Metalics
  - iii) Jindal Steel LTD.
  - iv) Jai Balaji Industries Ltd.

NOTE : the materials supplied from the above list for consumption in the works shall be placed at the site with appropriate & requisite challan clearly indicating batch No & Identification code (as appeared on the product) supplied & also shall conform to the departmentally approved/accepted test certificate as per relevant standard to be produced from recognized University and accredited test houses including National Test house.

## **GENERAL CONDITIONS**



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1. The 'Engineer – in – Charge' shall mean the EIC of the Division concerned. The Engineer concerned is authorized to carry out, on behalf of the 'Engineer – in – Charge' general supervision, issue day to day instructions and approval of materials and workmanship. In case of dispute, the decision of the Engineer – in – Charge shall be final and binding.
2. Except when specifically mentioned in the description of the item itself, the rate for any item of work will apply equally to all floors, in any position and up to any height. In respect of concrete work etc. where the rate is on the basis of volume, the item shall apply to all cases irrespective of the thickness unless a specific item appears in the Schedule for the particular type of work.  

The work upto a particular floor level means all work upto that roof of that floor. All works in basement shall be treated as work in ground floor for payment.
3. Renewal works include dismantling and taking out old work, mending good damages after renewal and removal of waste materials. The rate for any item of original nature provided in this Schedule may be deduced from the rate of similar item of renewal work by multiplying by a factor 100 / 105 and conversely the rate of any item of renewal nature by multiplying by a factor 105 / 100.
4. White washing, painting etc. include preparation of surface (including plugging old nail holes etc.) prior to the treatment and removal of all marks or stains from walls, floor glass panes, chowkats etc. For repair works, this also includes shifting and / or covering furniture etc.
5. All materials, tools and plants besides those to be supplied by Govt. are to be arranged by the Contractor for the work. All labours (skilled and unskilled) including their housing, sanitation, procurement of food staff, medical aid etc. are to be arranged by the Contractor. Cost of transport of labour, materials, and all items aforesaid shall have to be borne by the Contractor.
6. Arrangement of water for mixing concrete, mortar, soaking bricks and other materials construction of platforms and vats including cost thereof are to be borne by the Contractor.
7. Rates of all items are inclusive of labour and materials charges and cost (including Sales tax, Turn Over Tax, Income tax, Octroi and Toll tax, Ferry charges etc.) as may have to be incurred by the contractor for getting the respective items of work executed to proper and complete form.



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8. Unless specifically mentioned otherwise in the description of the item itself, no extra charge will be paid for scaffolding (including stage scaffolding) centering, shuttering, curing etc. and rates are to be deemed to be inclusive of the same and of the cost of helping materials necessary for the satisfactory completion of the required job.
9. All materials brought to the site must be to the approval, of the Engineer – in – Charge. Rejected materials must be removed by the contractor from the site within 24 hours of the issue of orders to that effect. In case of non - compliance with such others, the nature of soil, climate conditions of work, condition of existing kutchra and pucca roads, transport difficulties, non existence of roads in many places etc. extra cost involved due to the above factors to be borne by the tenderer and should, therefore, be included in the rates to be quoted by them. Orders, the Engineer – in – Charge shall have the authority to cause such removal at the cost and expense of the contractor and the contractor shall not be entitled to claim any loss or damage on that account.
10. Departmental Materials (if available) shall be issued to the Contractor to the extent of requirements as assessed and in small installments as decided by the Engineer – in – Charge. Issue of departmental materials may be of two categories.
  - A) Materials for which value is to be recovered from the contractor.
  - B) Materials which are issued direct to work (in respect of item the rates of which do not include the cost of these materials).

For materials under Category (A) the value of the materials issued to the contractor or usual hand receipts shall be recovered from the bill of the contractor in one installment or in successive installments as may be decided by the Engineer – in – Charge.

For materials under category (B) the contractor will act as the custodian of the department and he shall take charge of the categories against appropriate receipt signed by him. The contractor shall remain responsible for proper storage and safe custody of such materials. The rate of relevant item shall be deemed to be inclusive of all consideration including duties and responsibilities of the custodian.

All materials whatever be the category thereof, shall be properly stored by the Contractor in suitable godowns near the site of work. Under no circumstances whatsoever shall any materials be removed from the site of work without prior written permission from the Engineer – in – Charge.



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The Contractor shall be responsible for any damage or loss of such materials unless he can satisfy the Engineer – in – Charge that the reason for such damage or loss are due to circumstances beyond his control. The Contractor shall also have to satisfy the Engineer – in – Charge. Regarding the proper utilisation of such materials.

Any materials under category (A) which may be surplus on completion of the work, may at the sole discretion of the Superintending Engineer be taken back provided the same be of non - perishable nature and has not been damaged in any way. Surplus materials under category (B) shall be returned to the Engineer – in – Charge in good condition.

11. Subject to the condition as aforesaid, the following materials under category (A) shall be issued to the Contractor at issue rates noted against each. The materials shall be issued at the Gluconate Health Ltd godown or godowns and for his purpose a stack yard shall also be deemed as godown as may be specified in the contract stipulations for any particular work. The Contractor will have to carry the materials at his own cost and his quoted rate will be deemed to be inclusive of all such costs including costs for loading, unloading and stacking. (See page 4 of this Specification)
12. Before submission of tenders, the tenderers shall inspect the site of work and get themselves thoroughly acquainted with the local conditions and difficulties under which the work will have to be carried out. They should consider among.

13. **ACCESS TO THE SITE & MAINTENANCE OF FOOTPATH :**

The Contractor shall make at his own cost, all weather access road to approach to his work - front. In case the Contractor likes to use the footpath belonging to municipal authority. Contractor shall have to obtain necessary permission from the municipal authorities and shall be liable to pay all necessary charges for using the footpath. In any case the Contractor shall have to maintain the footpath at his cost throughout the construction period.

The Contractor shall also provide for himself, at his own cost, the necessary access road for movement of his materials, equipment labour etc. from one location to the other within the site, during all parts of the season.

14. **NUISANCE AND POLLUTION :**



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The Contractor shall take all reasonable precautions to prevent any nuisance or inconvenience to the owners, tenants or occupiers of any other property adjacent to the construction site and to the general public, and shall take efficient protection of all streams and water ways against pollution. Regarding working hour, dust and noise pollution, rules and regulation of the **WEST BENGAL POLLUTION CONTROL BOARD** should be strictly followed. The contractor should take all protective measures to avoid any hazards/ accident to the labours owners, tenants or occupiers of any other property adjacent to the construction site and to the general public at his own cost.

## 15. **INCIDENTAL FEES**

All rates to be quoted by the contractors shall be inclusive of all incidental fees, charges and Taxes e.g. Royalties, Octroi, Toll, Ferry charges. Labour License fees, Electricity, Water and other charges of Municipalities or Statutory Bodies, Sales Tax, Income Tax and other charges as may be applicable. Nothing extra will be paid on any such account.

16. The supply of materials viz. Cement, steel materials, pipes etc. which will be issued by this department may not be continuous, uniform and regular. No claim whatsoever shall be entertained for detention or lose of contractor's labour and conveyances etc. arising out of such irregular supply of the materials mentioned above.

## 17. **IDLE LABOUR ETC. :**

Whatever may be the reason no claim for idle labour, additional cost of establishment hire and labour charges for Tools & Plants will be entertained. The tenderers shall quote their rates keeping this in view.

## 18. **CHARGES AND FEES PAYABLE BY THE CONTRACTOR :**

The contractor shall give all notices and pay all fees required to be given by any statute or any regulation or by law of any local or other statutory authority which may be applicable to the works and shall keep Gluconate Health Ltd indemnified against all penalties and liabilities of every kind for breach of such statute, regulation or bye – law. The contractor should take all necessary permissions from all competent authority / utility services before starting of the work at his own cost.

## 19. **WATER AND ELECTRICITY :**



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Water required for construction is to be arranged by the Contractor at his own cost Temporary power connection is to be taken by the Contractor in their own name directly from the CESC/SEB. Expenditure incurred towards this temporary power connection will have to be borne by the agency.

**Note :-**

- 1.) Cut pieces of steel materials left surplus on completion of works shall not be taken back if the same be considered as unsuitable for utilization in other works.
- 2.) Against supply of bulk bitumen the agency has to arrange diesel drum at site or have to construct masonry vat at site for storing of bulk bitumen at his own cost and no extra charges on this account will be entertained by the department.
- 3.) If in the interest of work materials other than those mentioned above be issued, the issue rate of such materials shall be based on the then market rate or the stock issue rate whichever is higher. Such issue rate shall be decided by the Engineer – in – Charge.
- 4.) Materials obtained by dismantling Govt. structures or part thereof shall remain the property of the Govt. The contractor shall remain the custodian of such dismantled materials till the charge of the same is taken over by the Engineer – in – Charge or his representative.
- 5.) Number of full bricks salvaged in dismantling all types **of masonry must correspond to at least 20% of the volume dismantled.**
- 6.) The carrying of all the materials supplied by the Gluconate Health Ltd to the contractor from the place of delivery / supply to work site including loading, unloading, handling etc. will be at the contractor's expense unless otherwise specifically provided in **PRICED SCHEDULE.**

IN CASE OF DISPUTE THE DECISION OF THE MANAGING DIRECTOR / ENGINEER IN CHARGE , Gluconate Health Ltd SHALL BE FINAL AND BINDING.

20. PRICE ESCALATION :No price escalation will be consider regarding supply materials & labour components & fuel during contract and extended time periods, if any.

## **CERTIFICATE**

Phone : 2265-0001 (3 Lines)  
Fax : (033) 2265-8537  
Website : [www.gluconatehealth.co.in](http://www.gluconatehealth.co.in)  
E-mail : ghimd@rediffmail.com



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***"I / We have inspected the sites of works and have made me / us fully acquainted with the local conditions in and round the sites of works. I / We shall be bound by conditions laid down in the Notice Inviting Tenders, Special Conditions, Specifications and also KMDA Form No.-I, I / We have gone through the latest P. W. D., P. C. Schedule of Rates (Bldg., Sanitary & Plumbing) and General Specifications now in force in the P & W Department, Government of West Bengal and the I. S. Code of Practice and shall follow them as required unreservedly. "I / We shall also uniformly maintain such progress with the work, as may directed by the Engineer - in – Charge of the work to ensure completion of the same within the target date."***

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**Signature of the Tenderer**

**with Office Seal**

**P-1**

## **TECHNICAL SPECIFICATION**

### **CIVIL WORKS**

#### **A) MATERIALS:**



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**General :** All materials to be used in works shall conform to the Indian Standard Specification as published by S.I.S. from time to time and in the absence thereof as approved by the Engineer-in-Charge.

- A. 1) Bricks :** All bricks shall be of approved quality and standard specifications. They should be thoroughly burnt in kiln, regular in shape and size, hard, true to shape and of standard dimension.(23.9cm x11.9cm 6.9 c.m.). The minimum crushing strength should be-of 150 kg/sq cm.
- A 2) Coarse Aggregate:** Stone chips for cement concrete shall be hard, of uniform and fine teture, free from faults and weathered faces. They should be free from any surface coating, free from organic materials or other impurities. The size of the aggregate should conform to latest IS : 383
- A. 3) Jhama Chips:** Jhama chips shall be obtained by breaking good quality jhama bats, must not be spongy or with any coating, of foreign materials.
- A. 4) Sand :** All sand shall be clean, sharp and free from clay, loam, organic or any other foreign materials and shall be obtained from approved source. Sand for all cement concrete work must be coarse and Fineness should not be less than 2.00 unless specific permission is obtained from the Engineer-in-Charge. Medium sand may be used for cement mortar for masonry, plaster etc. and in that case Fineness Modulus shall be between 2.0 to 1.8.
- A-5) Cement:**
- (a) Cement shall conform to IS : 269/1989, IS : 455/1976, IS : 8112/1989.
  - (b) Cement at site shall be stored in dry weather proof godowns (or shed) built at the cost of the contractor.
  - (c) The contractor after receipt shall satisfy himself about of the same. In case the contractor has any doubt regarding the quality of cement, the same shall be tested at his own expense. Cement which is partially set, lumpy or caked is to be treated as damaged and shall be removed form the site immediately.
- A. 6) Steel:**



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All steel shall be made clean and free from loose rust or any coatings. Any scale or loose rust shall be removed before use, even though, the same may have been supplied by the KMDA without any claim for extra charge for the same. No steel excepting those supplied by the department shall be used in work or brought to the site by the contractor.

- (a) Mild Steel reinforcement bars shall be of Grade-I and shall conform to the latest edition of IS: 432.
- (b) Tor steel reinforcement bars should conform to the latest edition of IS : 1786 and IS :1139.

## **B) EXECUTION:**

**General :** All works shall be carried out in proper workmanlike manner. Items of works not covered by the following, shall be carried out as per best practice according to the direction of the Engineer-in-Charge and to his entire satisfaction. Unless otherwise specified in this section or in the description of item, the cost of all stages of works mentioned hereunder shall be deemed to have been included in the rates of items provided in the schedule".

- 1) **Excavation of foundation and filling up of trenches :** Foundation when excavated to the level shown in the drawing shall be when to the Engineer-in-Charge and if on account of bad ground or for any reason whatsoever, he decides to go deeper, with the foundation the contractor shall excavate further to the depths required by the E.I.C. In no case shall the foundation soling or concrete be laid prior to receiving orders to that effect from the E.I.C. or his authorised representative.
  - 1.1) Execution shall include throwing the excavated earth at least one metre or half the depth of excavation, whichever is more, clear of the edge.
  - 1.2) The excavated areas around the foundations of structures are to be filled up properly to the required levels with the earth or other materials obtained from excavation as directed well rammed with watering and ramming properly. The quantity for this item of work will be measured on the basis of quantity of excavation paid for less the volume occupied by the structure in foundation.



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2.1) **Cement concrete work (Plain or Reinforced)** : All concrete work, plain or reinforced, shall be carried out strictly in accordance with the specification and any working drawing or instruction given from time to time by E.I.C. The latest relevant Clauses of IS Code shall also to be followed.

2.2) The contractor's rate shall allow for Wastage in all materials as well as testing of construction materials and finished concrete.

2.3) No concrete shall be cast in absence of the Engineer-in-Charge or his authorised -representative. Before in tempting the department, the contractor's Engineer shall Personally check that both the form work and reinforcement have been correctly : aced and fixed and shall satisfy himself that all work preparatory to the casting is completely ready. At least 24 (twenty four) hours' notice shall be given by the contractor to the department for their final inspection and approval.

Water to be used for both mixing and curing shall be potable and free from injurious Amounts of deleterious materials.

2.4) Aggregates and cement shall be mixed in the proportion laid down in the schedule. No Concrete leaner than 1:2:4 nominal mix shall be used for reinforced concrete work.

2.4) (a) The minimum compressive strength for different grades of concrete with nominal mix shall be as follows while tested on 15 cm. cubes at 28 days after mixing, test being co inducted in accordance with latest relevant IS Code.

1 : 1½ : 3 Mix concrete      200 Kg./cm<sup>2</sup>

1 : 2 : 4 Mix concrete      150 Kg./cm<sup>2</sup>

1 : 3 : 6 Mix concrete      100 Kg./cm<sup>2</sup>

The above minimum strengths of different grades of concrete should be obtained on works test as defined in latest relevant IS Code.

2.4) (b) For the purpose of ensuring the above strengths during actual construction the contractors shall carry out, if so desired by the E.I.C., preliminary tests as defined in IS : 456 on 15 cm



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cubes at 28 days after mixing, test being conducted in accordance with latest relevant IS Code.

The cost of carrying out such works tests and preliminary tests shall be entirely borne by the contractor and no extra claim whatsoever shall be entertained on this account.

- 2.4) (c) **Fine Aggregate :** In case of fine aggregate, allowance will have to be made for bulking, which may vary from day to day and at different parts of the day on account of varying moisture content. Frequent tests for bulking shall be carried but with the sand to be used and the amount of bulking should allowed for in the field mix, so as to keep the actual proportions constant throughout. Casts of such tests shall be borne by the contractor.
- 2.5) **Mixing of concrete :** Concrete shall be mixed in a Mechanical Mixer. Mixing shall be continued until there is a uniform distribution of materials and the mass is uniform in colour and consistency, for this purpose latest relevant IS Code. should be followed. Hand Mixing shall not be permitted except in unavoidable circumstances, but the same shall be purely at the discretion of the E.I.C. The contractor shall use 10% extra cement over the design requirement for hand mixing for which no extra payment shall be made to the contractor.
- a) The mixed concrete shall have slump as decided by the E.I.C. for a particular job or a part of a job. All arrangements for frequent test of slump of concrete are to be made by the contractor at his own cost.
- b) Ready Mix Concrete should be followed as per latest relevant IS Code.
- 2.6) **Placing and compaction of concrete :** Before placing the concrete, the form works shall be cleaned of all loose materials. Depositing concrete under water shall not allowed without specific permission of the E.I.C. and in that case the concrete shall contain at least 10% more cement than what is required for the same mix placed in the dry, for which no extra payment will be made.
- 2.6.1) All concrete shall be places in position as rapidly as possible before initial set commences. Concrete shall not be dropped into position from a height of more that 1 (one) metre.
- 2.6.2) During placing and also immediately after deposition the concrete shall be thoroughly, compacted by the use of approved mechanical vibrators.



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- 2.7) **Protection and curing** : The contractor shall adequately protect freshly laid from rapid drying at the top due to strong sunshine, drying winds etc. and also from running of surface water and shocks.
- 2.7.1) All concrete shall be cured with fresh water for a minimum period of 14 (fourteen) days after concreting or as advised by the E.I.C.
- 2.7.2) The rates quoted by the contractor for concrete shall include all cost of protection and earning of concrete.
- 2.8) **Test of concrete:** Tests shall be conducted in accordance with I.S. code of practice The contractor shall provide all labour, materials and appliances required for making test specimens. All costs in connection with carrying out works tests and preliminary and any other related tests in the Central Laboratory, K.M.D.A. or National Test House or any other Laboratory approved by the Engineer-in-Charge shall be entirely borne by the Contractor and no extra claim whatsoever will be entertained on this account.
- 2.9) Acceptance Criteria for acceptance of concrete of a specified grade shall be in accordance with latest relevant IS Code.
- 2.9.1) Frequency of Sampling:

Sampling Procedure – A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance to being tested, that is, the sampling should be spread over the entire period of concreting and cover all mixing units.

Frequency – The minimum frequency of sampling of concrete of each shall be in accordance with the following :

Quantity of Concrete in the Work, Cu.m	Numbers of Samples
1-5	1
6-15	2



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16-30	3
31-50	4
51 and above	4 plus one additional sample for each additional 50 m <sup>3</sup> or part thereof

**Test Specification :** The specification shall be made each sample for testing at 28 days. Additional cubes may be required for various purpose such as to determine the strength of concrete at 7 days or at the time of sinking the form ware or to determine the duration of curing or to check the testing error. Additional cubes may also be required for testing cubes cured by accelerated methods as described in IS:9013-1978. The specimen shall be tested as described in latest relevant IS Code.

(3.0) **Steel Reinforcement** : Reinforcement bars (Mild Steel or Tor Steel) issued by the department should be out only to suit the sizes required as per drawings. The contractor's rate should include the cost of initial straightening of the bars where necessary and removing oil, mud, loose rust scales etc.

(3.1) Reinforcement shall be securely bound at every intersection of bars with 16 gauge black annealed wire.

(3.2) The position, staggering, laps etc. shall be subject to the approved of the Engineer-in-Charge. Laps occurring in bars in tension and compression shall have a minimum length as stipulated in I.S. codes.

(3.3) Payment for the reinforcement work shall be made on the calculated weight of steel reinforcement excluding the weight of binding wires. Only such laps, dowels, chairs in reinforcement as approved by the Engineer-in-Charge shall be paid for.

(4.0) **Workman ship** : The form work shall conform to the shapes, lines and dimensions to suit the R.C.C. members as shown on drawings. Form works shall be adequately designed to support the full weight of workers, staff freshly laid concrete and reinforcements without yielding settlement or deflection and to ensure good and truly aligned concrete finished in accordance with the construction drawings.

(4.1) All rubbish, particularly chipping, shavings and swa dust must be removed from the interior of the form before the concrete is placed and the form work in contact with the concrete shall be cleaned and thoroughly wetted before the concrete is placed.



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(4.2) **Stripping of shattering** : In no circumstances shall formworks be struck until the concrete reaches a strength of at least twice the stress of which the concrete may be subjected at the time of striking.

All form works shall be removed without shock or vibration. In normal weather and with ordinary cement, shuttering may be removed as described below :-

- i) Vertical or side shuttering .... after 3 (three) days.
- ii) Bottom shuttering of horizontal members ;

- (a) After 14(fourteen) days in case of slabs.
- (b) 21 (Twenty one) days in case of beams, cantilevers etc.

The period should be count from the date of placing the last portion of concrete in the structure. Above periods are the minimum and may be extended if found necessary.

(5.0) **Brick Work**: All brick work shall be carried out with 1st class bricks of approved quality. Cement mortar shall be prepared by mixing sand and cement in specified proportion. Bricks should be soaked sufficiently in clean water before using in brick work.

(6.0) **Cement Plaster** : The plaster shall be of thickness as specified and the surface shall be similarly cure as for cement concrete. All cement concrete surface shall be changed off properly before taking up the plastering work. The walls to receive plaster shall be thoroughly cleaned off and blisters before commencement of the work.

(7) **Surface Drain** : Construction of surface drain should preferably start from the outfall / discharge point. The invert levels and cross-sections of the surface drain will be shown in the drawings to be supplied by the department. Contractor should strictly follow the lines and levels and if any deviations are found to be necessary due to site conditions, he should take prior permission of the Engineer- in-Charge. After completion of the work, contractor should arrange at his own expense testing of the surface drain towards smooth and instructed flow in the proper direction. During testing if it is found that the slop and invert levels are not conforming to the specification, the defective sections of the surface of drain should be dismantling and reconstructed by the contractor at his own cost/expense.



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- (7.1) **Plastering and neat cement finishing** : Plastering and neat cement finish should be extended in the outer surfaces of the walls of the surface drain upto a depth of 150mm. from the top or as directed by the Engineer- in-Charge.
- (7.2) **Excavation** : Before excavation, contractor should take levels of the ground surface with respect to the reference level to be given by the department and should preserve the levels by suitable markings. This should be done by the contractor with the help of his own engineering level. All costs to wards levelling should be borne by the contractor.

## **(8.1) Board Cast-in-situ concrete piles.**

The construction of bored cast-in-situ concrete piles shall generally be governed by recommendations of latest relevant IS/IRC Code. The pile formed within the ground by excavating or boring a hole within it with or without the use of a permanent casing and subsequent filling it with plain or reinforced concrete is termed as a bored cast-in-situ pile. For purposes of this schedule the piles shall be always reinforced for the full length with a minimum area of longitudinal reinforcement of 0.4% of the outside sectional area of the permanent casing (liner) or shaft and the lateral reinforcement which may be in the form of links or spirals shall have a minimum diameter of 6 mm with a spacing not less than 150 mm. In the top portion of pile, expected to take bending stresses in addition to the compressive one the reinforcements both longitudinal and lateral shall be designed as in a column as per I.R.C. codes. The minimum clear cover to all main reinforcement in pile shaft shall be not less than 40 mm. And the minimum clear distance between two adjacent main reinforcement shall be 100 mm for the full depth of the reinforcement cage. A minimum length of one meter of temporary casing shall be inserted in each pile. For marine situation such piles shall be formed with permanent casing. Boring operations generally be done by rotary or percussion type drilling rigs using direct or reverse mud circulation methods to bring the cutting out. Rope operated grabbing tool or Kelly mounted hydraulically operated grab may also be used. For stabilizing sides of bore holes drilling mud shall be used.

Concrete:- Use RMC for design purposes the strength of concrete mix may be taken equivalent to M25 and the design should be approved by EIC.



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On consideration of strength and other factors cement content may be increased but it shall not exceed 540 kg/m<sup>3</sup> in any mix. Slump measured at the time of discharge into the pile boring shall be in accordance with the standards shown in table below.

(8.2) Typical conditions of use

A: Placed into water-free unlined bore having widely spaced reinforcement leaving ample room for free movement between bars. Where reinforcement is not spaced widely enough cut off level of pile is within the casing and diameter of pile less than or equal to 600 mm, higher order of slump within this range may be used.

B: Where concrete is to be placed under water or drilling mud trim or placer.

(8.3) **Drilling mud:** The basic properties of drilling mud or Bentomite as it is called shall be as given in latest relevant IS/IRC Code.

(8.4) **Workmanship:** Piles shall be installed accurately as possible as per the design and drawing either vertically or to be specified better tolerance for piles shall be in accordance with latest relevant IS/IRC Code..

(8.5) **Placing of concrete** in 'dry boring': Approved measures shall be taken to avoid segregation and bleeding and to ensure that the concrete at the bottom of the pile is not deficient in grout.

(8.6) **Placing of concrete under drilling fluid or water:** Concrete to be placed under water or drilling mud shall always be placed by tremie except that when no drilling mud is used, concrete may with special permission be placed by means of specially designed under water placer, to permit deposition of concrete in successive layers, without permitting the concrete within the placer to fall through free water.

Before placing concrete, measures shall be taken to ensure that there is no accumulation of silt or other material at the base of the boring where Bentomite is used a sample of the Bentomite suspension shall be taken from the base of the boring using an approved sampler.



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If the specific gravity of the suspension exceeds 1.2 then placing of concrete shall not proceed and the bore hole shall be flushed with fresh drilling fluid. During concreting the slurry should be maintained at 1.5 m above the ground water level if casing is not used. The hopper and the pipe of the tremie shall be clean and water tight throughout. The pipe shall extend to the base of the boring and a sliding plug or barrier shall be placed in the pipe to prevent direct contact between the first charge of concrete in the pipe of the tremie and the water or drilling fluid. The pipe shall at all times penetrate the concrete which has previously been placed and shall not be withdrawn from the concrete until completion of concreting. At all times a sufficient quantity of concrete shall be maintained within the pipe to ensure that the pressure from it exceeds that from water or drilling fluid. The internal diameter of the tremie pipe shall not be less than 200 mm for 22.4 size aggregates. The placing of concrete shall be continuous and in exceptional cases of interruption lasting not exceeding two hours it should be resumed by introducing a little richer concrete with a slump of about 200 mm for easy displacement of the partly set concrete. During the period of interruption the tremie shall not be taken out of, the concrete but shall be raised or lowered time to time to prevent the concrete around the tremie from setting. Temporary casing should be extracted while the concrete within them remains sufficiently workable to ensure that the concrete is not lifted. When the casing is being extracted a sufficient quantity of concrete shall be maintained within it to ensure that the pressure from external water, drilling fluid or soil is exceeded and the pile is neither reduced in section or contaminated.

## (8.7) Pile Tests

### General

bearing capacity of a single pile may be determined from test loading a pile. The load test on a concrete pile may not be carried out earlier than 28 days from the time of casting of the pile. There shall be two categories of tests on piles, namely initial tests and routine test. Initial tests should be carried out on test piles which are not to be incorporated in the work.



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Routine tests shall be carried out, as a check on working piles. The number of initial and routine tests on piles shall be as determined by the Engineer-in-charge/appointed consultant depending upon the number of foundations, span length, type of superstructure and uncertainties of founding strata.

The above stipulations hold good for both vertical as well as lateral load tests on pile foundation.

However, both initial and routine tests may be suitably increased for important structures or cases with large variation in the subsurface strata.

The methodology of carrying out load tests and of arriving at safe load on pile shall conform to IS: 2911 (Part IV).

Load carrying capacity of working piles not subjected to routine tests, or when ordered by the Engineer-in-charge/consultant, or when provided in the contract, load tests on working piles may be supplemented by nondestructive testing. Such tests may include "Integrity Testing" of concrete in the installed pile and utilization of "Pile Driving Analyzer" which gives an indication of pile capacity in end bearing and side friction.

## (9) Programme

(9.1) The Contractor shall submit to the Engineer-in-Charge for approval of a programme showing the proposed order of boring the piles.

(9.2) Piles shall be installed within allowable tolerances as stipulated in IS 2911 (Part I/Sec-2) latest reprint.

(10) Testing Of Pile: testing of piles should be done as per stipulation of the latest relevant Code.

(10.1) There shall be one categories of test piles:

a) Routine test on working piles.

## 10.2) Procedure Of Routine Tests



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The Routine test shall commence as early as possible after installation of the pile-subject to the provisions of latest relevant IS Code. The test shall be carried out but applying a series of loads on R.C. Cap over a pile or a group of piles unaided by any other support. The load shall preferably be applied by means of hydraulic jack reacting against a loaded platform, which shall be released to not less than one and half time, the estimated safe load carrying capacity of the pile. The hydraulic jack shall be of adequate capacity and shall have pressure gauge and a remote control pump. The Engineer-in-Charge shall have the right to get the test certificate regarding calibration of the gauge at the cost of the Contractor.

Before any load test is performed the proposed set up and the load frame be got approved from the Engineer-in-Charge.

Settlement shall be recorded with minimum 2 dial gauges for single pile and 4 dial gauges of 0.01 mm sensitivity for groups, each positioned at equal distance around the piles and normally held by datum bars resting on immovable supports at a distance of 3D (subject to a minimum of 1.5 m) from the edge of the piles, or diameter of circumscribing circle in the case of square or non-circle piles.

Application of increment of test load and taking of measurement or displacement in each stage of loading is maintained till rate of displacement of the pile cap is either 0.1 mm in first 30 minutes or 0.2 mm in first one hour or till 2 hours whichever occurs first. If the limit of permissible displacement as given in 6.1.5 or 6.1.6 of I.S. 2911 (Part-4) 1985 is not exceeded, testing of pile is not required to be continued further. The test load shall be maintained for 24 hours.

### (10.3) Notice Of Testing

The Contractor shall give the Engineer-in-Charge at least 96 hours notice of the start of a test so that the Engineer-in-Charge's representative may be present throughout the test.

### (10.4) Records



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The Contractor shall supply to the Engineer-in-Charge with a record in writing of all observations made during the load test together with the graphically representative curves as mentioned in clause 9.1 & 9.2 of IS 2911 -1985 (Part-IV).

## (10.5) Replacement Of Pile

Any pile that does not satisfy the load test criterion shall have to be replaced by the Contractor at his own cost any other extra costs associated with rejection of a pile like extending the pile cap. Extra pile is if necessary and the cost initial load test shall also be borne by the Contractor.

## (11) Pile Cap

Pile Caps shall be of reinforced concrete. A minimum offset of 150 mm shall be provided beyond the outer faces of the outer most piles in the group. If the pile cap is in contact with earth at the bottom, a levelling course of minimum 100 mm thickness of M 15 nominal mix concrete shall be provided.

The attachment of the pile head to the cap shall be adequate for the transmission of loads and forces. A portion of pile top may be stripped off from concrete and the reinforcement anchored into the cap. manual chipping may be permitted after three days of pile casting, while pneumatic tools for chipping shall not be used before seven days after pile casting. The top of pile after stripping shall project at least 150 mm into the pile cap. A layer of surface reinforcement may be provided with a cover of 25 mm to retain the integrity of concrete below the main cap reinforcement which is to be laid 25 mm above the pile top.

The contractor should carry out Sonic Integrity Test or Pile Echo Test (PET) to ensure the quality and detect common defects like voids, receiving, bulging or discontinuity in the shaft of cast in place concrete as per latest relevant Code. The advantages of this testing are :

### Advantage

- i) Fast, cheap, about 100 piles can be tested in a day.
- ii) Approximate pile length can be determined.
- iii) Defects are discovered at an early stage.



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- iv) Any accessible pile can be tested.
- v) Minimum site universal interference with site activity.

Concreting of the pile cap shall be carried out in dry conditions. The bottom of the pile cap shall be laid preferably as low as possible taking account of the water level prevalent at the time of casting.

The top of concrete in a pile shall be brought above cutoff level to permit removal of all laitance and weak concrete before pile cap is laid. This will ensure good concrete at the cutoff level.

## **(11.1) Important Considerations, Inspection/Precautions for Bored Cast-in-Situ Piles:**

### **(11.2) Bored Cast-in-Situ Piles:**

While concreting uncased piles, voids in concrete shall be avoided and sufficient head of concrete is to be maintained to prevent inflow of soil or water into the concrete. It is also necessary to take precautions during concreting to minimize the softening of the soil by excess water. Uncased cast-in-situ piles shall not be allowed where mudflow conditions exist. The drilling mud such as Bentomite suspension shall be maintained at a level sufficiently above the surrounding ground water level to ensure the stability of the strata which is being penetrated throughout the boring process until the pile has been concreted.

Where Bentomite suspension is used to maintain the stability of the borehole, it is essential that the properties of the material be carefully controlled at stages of mixing, supply to the bore-hole and immediately before concrete is placed. It is usual to limit:

- i) The density of Bentomite suspension to 1.05 gm/cc.
- ii) The marsh cone viscosity between 30 and 40.
- iii) The pH value between 9.5 and 12.
- iv) The slit content less than 1 %.
- v) The liquid limit of Bentomite not less than 400%.



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These aspects shall act as controlling factors for preventing contamination of Bentomite slurry for clay and silt.

The bores shall be washed by Bentomite flushing to ensure clean bottom at two stages viz. after completion of boring and prior to concreting after placing of reinforcement cage. Flushing of Bentomite shall be done continuously with fresh Bentomite slurry till the consistency of inflowing and out-flowing slurry is similar.

Tremie of 150 mm to 200 mm diameter shall be used for concreting. The tremie should have uniform and smooth cross-section inside, and shall be withdrawn slowly ensuring adequate height of concrete outside the tremie pipe at all stages of withdrawal. Other recommendations for tremie concreting are:

- i) The sides of the bore-hole have to be stable throughout.
- ii) The tremie shall be watertight throughout its length and have a hopper attached at its head by a watertight connection.
- iii) The tremie pipe shall be large enough in relation to the size aggregate. For 20 mm aggregate the tremie pipe shall be of diameter not less than 150 mm and for larger size aggregate tremie pipe of larger diameter is required.
- iv) The tremie pipe shall be lowered to the bottom of the bore-hole, allowing water or drilling mud to rise inside it before pouring concrete.
- v) The tremie pipe shall always keep full of concrete and shall penetrate well into the concrete in the bore-hole with adequate margin of safety against accidental withdrawal if the pipe is surged to discharge the concrete.

For very long or large diameter piles, use of retarding plasticizer in concrete is desirable.

For larger diameter piles, it may be essential to conduct non destructive pile integrity tests to evaluate integrity of the pile.



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Where possible, it may be desirable to grout the base of the pile with cement slurry under suitable pressure after concrete in the pile attains the desired strength. For this purpose, conduit pipes with easily removable plugs at the bottom end should be placed in the bore along with reinforcement cage before concreting.

## Tolerances

Permissible Tolerances for Bored piles :

As per latest relevant IS/IRC Code.

## **(12) WORKMANSHIP :**

- (12.1) All works are to be carried out in proper workman like manner, items of works not covered by these specifications or by the Tender Documents shall be carried out as per the best practice according to the direction of the Engineer – in – Charge and to his satisfaction. The relevant I. R. C. Specifications or code of practice shall be taken as guide for the purpose.
- (12.2) In absence of any specific stipulation in these specifications with regard to permitted tolerance for various type of works under this tender, quality control and acceptance criteria and all these shall generally be as per I. R. C. special publication – “Hand Book of Quality Control for the construction of Roads and Railway” . In case relevant particulars are not available in the said publication, reference shall be made to the “Specification for Road and Bridge Works” of the Ministry of Shipping and Transport (Roads Wings) as published by I.R.C. (1978). - latest revision.

## **(13) BASIC MATERIALS :**

### **(13.1) Cement :**

All cement to be used in the works shall be ordinary Portland cement of Indian manufacture or Foreign manufacture complying with I. S. 269 of Blast Furnace Slag Cement Complying with I. S. 445. The quantity of cement required for the work will be procured by the Department except cement for Ready mix Concrete (RMC) and issued to the Contractor at the rate specified in Annexure of the Special Terms and Conditions. The cost of the cement consumed in works will be recovered at the issue rate from the contractor’s bill.



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With regard to the quality of cement to be used in concrete of specified strength, the responsibility of the Department shall cease on making over to the contractor such consignment or consignments of cement if the Contractor is apprehensive about the quality of cement in any consignment, the contractor will have to write immediately to the Engineer – in – Charge about such consignment on receipt of such written intimation will arrange to collect sample of cement in presence of the contractor and get the sample so collected for complete test both physical and chemical at the Chemical Laboratory, KMDA, Unnayan Bhavan, Salt Lake City. KMDA, Unnayan Bhavan, Salt Lake City. The result of the Central Laboratory of KMDA will be binding on both the parties. If the results of such test be satisfactory i.e. complying with relevant Specifications, The cost of the test including all incidental charges as determined by the Engineer-in-Charge shall have to be paid by the Contractor and will be recovered from the bills of the Contractor. If test results fail to comply with IS Specification then the cost of the test shall be borne by the department and the Engineer-in-Charge shall arrange the concerned consignment to be replaced by cement of requisite quality. In spite of unsatisfactory test results, the Engineer-in-Charge at his discretion may direct to consume the cement in unimportant nature of works and in that case the Contractor shall comply with the direction of the Engineer-in-Charge.

13.1.1 The responsibility for asking for a satisfactory test results in respect of any consignment shall rest with the Contractors and any failure on their part in this respect shall not relieve them of the liability to produce concrete of specified strength. No subsequent plea that the under strength which the resultant concrete might indicate, as per tests specified here-in-after, was due to the quality of cement below specification shall be entertained.

## **13.2 Sand :**

For use in Concrete or Masonry Work.

13.2.1 Said to be used as fine aggregate for concrete of specified strength shall be sharp grained and well graded between the size of 0.15 mm. and 2.36 mm. Sand to be used for manufacture of concrete shall generally have fineness modulus of not less than 2(two) and not less than 2.30 for concrete work of bridge proper the grading thereof complying with grading Zone I, II or III as per table 4 of IS= 333 -1970. The sand must be clean and free from earthy, saline or deleterious matter and shall



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generally comply with the requirements of IS 383-1970. Sand which in the opinion of the Engineer-in-Charge is dirty or contain undesirable amount of mica or such deleterious materials, must be washed to his satisfaction. If required by him, the sand may, in addition, have to be screened properly. The cost of screening and/or washing shall be at the expense of the Contractor.

13.2.2 Sand to be used for mortar for masonry work or for plastering work shall have to satisfy, the specifications as per Clause 4.2.1. above except that it may be finer than that required be acceptable for this purpose.

## **14. COARSE AGGREGATE FOR CONCRETE WORK :**

14.1 For manufacture of concrete of mix 1:2:4 or richer or of any concrete specified by strength, the coarse aggregate shall be of hard, strong and durable stone and shall generally comply with the requirements of IS : 383-1970. Porous nonabsorbent coarse aggregate shall but be

used. The aggregate shall be free from laminations and free from clay films, and other adherent coatings. Prohibited materials include coal and coal residues including clinkers, ashes, coke breeze, slag, clay lumps, decayed stones, organic materials or soluble Sulphate including gypsum.

Aggregate containing clay or clay films over the surface of particle shall be thoroughly washed before use, at the Contractors expense, to the satisfaction of the Engineer-in-Charge.

14.2 Course aggregate may trap crushed stone as available from Pakur or Pakur variety to be approved by the Engineer-in – Charge. The aggregate's shape shall be more or less cubical. Flaky or elongated particles shall be avoided.

14.3 Course aggregate shall be composed of particles ranging between the size 2.36 mm and the maximum size as may be specified in the schedule of pay items or as may be directed by the Engineer-in-Charge. Within this range, the coarse aggregate shall be well graded and shall be such as to produce a dense concrete that will work readily into position without segregation and without use of excessive water content.

## **15. OVER-BURNT BRICK CHIPS (JHAMA CHIPS) AS COARSE AGGREGATE FOR LEAN CONCRETE :**



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For concrete of mix leaner than 1:2:4, chips broken from over-burnt brick material (locally known as Jhama Chips) may be used where so specified. Such Jhama Chips shall be to the approval of the Engineer-in-Charge and well graded with the maximum size of 25 mm. if not specified otherwise and minimum of 2.36 mm.

## **16. WATER FOR CONCRETE WORK :**

16.1 Water for mixing concrete or mortar and for curing must be clean and free from saline or deleterious materials and must be fit for human consumption.

Such water shall generally comply with the requirements of Clause 4.3 of IS 456-1964.

16.2 All arrangements for sufficient quantity of water will have to be made by the Contractor at his own cost and expense for use in concrete, curing etc.

16.3 If necessary tubewell of adequate diameter and depth may be sunk at works site for getting water if water is not available from any other source for which no extra payment whatsoever will be made.

## **17. BRICKS FOR BRICK MASONRY :**

All brick masonry shall be with 1st Class Bricks. The bricks shall be of approved quality and of standard specifications, made of good earth, uniform, deep red, cherry or copper coloured and thoroughly burnt in kiln without being vitrified. The brick shall be regular in shape and size, sound, hard, homogeneous in texture and of standard dimension and shall be free from the cracks, chips and flaws of any kind. Brick shall not show appreciable signs of efflorescence whether dry or subsequent to soaking in water. The size of each brick shall be 9 3/4" x 4 3/4" x 2 3/4" as commercially available in the Calcutta Metropolitan District. There will be no objection to the use of modular bricks to metric standard of 200 mm x 100 mm x 100 mm provided the requisite dimensions of the structure can be obtained by use of such modular bricks.

The brick shall emit a clear ringing sound on being struck. Any brick which absorbs water more than 20% of its own dry weight after 24 hours immersion in water as per test specified in IS:3495 (Pt. II)-1976 shall be rejected.



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## **18. BRICKS FOR SOLING :**

Bricks for soling whether in structures or for pavement work shall be slightly over burnt and of the Class locally known as "picked jhama bricks" even though the same may not be specifically mentioned in the drawing or in the description of the pay item. Bricks of 9 3/4" x 4 3/4" x 2 3/4" size as is commercially available in the Calcutta Metropolitan District, shall be used for soling.

Finishing operation shall include dressing, levelling the compacted sub-base in lines and levels with reference to longitudinal and cross profile of the road shown on the drawings or as directed by the Engineer-in-Charge. Adequate protection at both ends of the sub-base should be given by compacted earth work in embankment. Permitted tolerances of the finishing surface is mentioned hereinafter.

## **19. EARTH WORK:**

### **Earth work in excavation of foundation shall include**

- a) Before taking up the construction of work, the Contractor may have to construct two earthen bundhs or may have to strengthen the earthen bundhs to protect the worksite free from seepage of canal or other stagnation water. All adequate protection for constructing such bundhs as per drawing and approval of Engineer-in-Charge. Will have to be made by the contractor.
- b) Removing the spoils within a lead of 150 metre and including lift & stacking & spreading the spoils as per direction of the Engineer-in-Charge.
- c) Trimming the sides of the trenches, leveling, dressing & ramming the bottom.

Adequate sheet piling including corner piling / wooden plank shoring of desired thickness as per approval of the E.I.C. during excavation of earth shall have to be made by the Contractor at his own cost and expense.

## **20. MODE OF PAYMENT :**



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Irrespective of the area of excavation actually done by the Contractor measurement for the purpose of payment for excavation of foundation and related items or works, such as trench filling, shall be on the following basis.

For excavation actually done by the Contractor measurements shall be on the basis of vertical shaft excavation as per drawing plus 30 cm.(thirty centimeter) or 300 mm.(three hundred millimeter) on all sizes of theoretical outlines of foundation or as actually executed whichever is less.

## **21. SAND FILLING :**

Sand filling where necessary shall be done below the concrete at places shown in the drawing or as directed by the Engineer-in-Charge. Sand filling should be done with fine sand as already mentioned in specification of materials for such works and shall be done in layer by layers. Adequate watering is to be done in each layers. The rate of sand filling works shall include cost of sand its transportation to work site, handling, spreading in layers, watering compacting with rammers of any other devices as may be directed etc. All complete.

## **22. Mode of payment:**

Payments shall be made in volume on the basis of consolidated quantity in position, for this purpose, payment will be made on the basis levels i.e. pre work levels will be taken before works and post work levels will be taken after works.

## **23. BRICK SOLING :**

Soling with brick as shown in drawings or as directed by the Engineer-in-Charge shall be done with bricks conforming to the specification as mentioned in Clause-E thereof. Unless specifically indicated otherwise in the drawing, all joints (Vertical or horizontal) shall be without any mortar but these shall be packed thoroughly with fine sand as per specification already stated earlier thereof. The form and composition shall be indicated in drawings or as directed.



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The bed to be received the first layer of bricks shall be properly dressed and compacted as per direction of the Engineer-in-Charge. A thin layer of sand shall be spread over the prepared bed and the first layer of bricks laid thereon. Each brick shall be pressed to ensure the proper bedding over the entire surface. Bricks when laid flat shall have the frog (if any) exposed on the upper surface.

In multiple layer construction, the upper layer shall be laid on a similar thin cushion of sand and the bricks laid in such a way as to break joints with that of lower layer. All joints shall be filled with sand and thoroughly packed using water as required for the purpose.

## **Method of measurements and basis of payment.**

The work shall be measured in terms of the surface area of finished work and paid for at the rate for me relevant item of work as may be included in the schedule of pay items.

## **24. LEAN CONCRETE IN FOUNDATION :**

Lean concrete for foundation mix no leaner than 1:3:6 or 1:4:8 above soling layer shall be done with 32 mm graded stone metal as coarse aggregate. Immediately after mixing, the concrete is to be laid and shall be compacted with a suitable type of vibratory compactor or manually by heavy iron rammers. The ramming if done shall be completed within an hour of laying.

## **Method of measurements and basis of payment:**

Cement concrete (plain or reinforced) as used in the works shall be completed on the basis of arranging. Payment shall be made at the rate for the relevant item of concrete as included in the schedule of item.

## **25. CEMENT CONCRETE :**

Cement concrete (Plain or reinforced) as used in the works shall comply with the requirement of IRC: 21-1972 except in so far as those are not altered or modified by specific stipulations as given in the specification herein.

## **26. MATERIALS :**



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- 26.1 All materials required for the manufacture of cement concrete (Plain or reinforced) shall comply with the specifications of basic materials as already mentioned hereinbefore.
- 26.2 Cement as per specification will be obtained from the Department as fixed issue rate to be recovered from the Contractor's bill and in terms of the Special Terms and Conditions.
- 26.3 Coarse aggregate shall be pakur stone chips of required grading and shall comply with the specifications already mentioned earlier. The maximum size of the aggregate shall be as described in the schedule of pay items or in the drawing.
- 26.4 Sand as fine aggregate shall comply with requirements as described in the specification of sand earlier.
- 26.5 Water used in the manufacture of concrete or for curing shall comply with the specifications mentioned earlier.
- 26.6 No material other than the essential ingredients (cement, aggregate, sand and water) shall be ordinarily used in the manufacture of concrete.
- 26.7 **Concrete specified by strength and proportions.**

Where concrete is specified by proportions and or strength as mentioned in the schedule of pay items, the proportions or mix e.g. 1:2:4 (or 4:2:1), the highest figure shall indicate the volume of aggregate and the smallest figure that of cement the middle figure shall be that of sand. The proportions indicated are by volume in dry condition. Though the ratio between fine aggregate and coarse aggregate is indicated as 1:2 in the proportion or mix of 1:2:4 the proportions between these two may be varied to obtain the desirable grading of the fixed aggregate. This variation is however always subject to a limit between 1.5 and 1.2. The proportion of cement shall however remain unaltered as mentioned in the proportion of mix.

- 26.8 Where concrete is specified by strength, the ultimate crushing strength at 28 (twenty) eight) days shall unless specified otherwise in the description of pay items, may be the results of 15 cm. cube test specimen cast and cured under conditions.
- 26.9 Where concrete is specified by strength, the mix to be adopted and the slump to be allowed to give the specified strength & proper work-ability shall be determined previously by experiments with



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representative samples of the materials to be used and under conditions similar to those to be adopted in the actual job. These experiments are to be done by the Contractor at his own cost and expense and under the direction and supervision of the Engineer-in-Charge. In such preliminary tests strength at least thirty percent higher than specified strength must be obtained.

- 26.10 When the mix, to be adopted is decided upon, it shall in no case be altered without specific written permission from the Engineer-in-Charge. The Contractor shall however, remain fully responsible for producing concrete of specified strengths in the actual job. In the of case concrete showing, on the result of the test hereinafter described, strengths less than those specified, fee Quantity in cubic metre certified by Engineer-in-Charge as so deficient may be allowed to remain but subject in such as are or may become due under the contract as per deficiency clause for concrete mentioned here in after.
- 26.11 If the deficiency exceeds ten percent the Engineer-in-Charge may, at his discretion, direct the full or particular portions of such concrete certified by him as so deficient in strength, to be removed from the structure and replaced by concrete of the specified strength and the Contractor shall in that case have to carry out the direction at his own cost irrespective of the amount of loss, inconvenience and difficulties involved. If any portion of concrete indicating deficiency in strength of more than ten percent, permitted by the Engineer-in-Charge, to remain in the structure, the quality of such concrete, as certified by the Engineer-in Charge, shall be subject to a reduction in rate not exceeding rupees two hundred only per Cu.m. Engineer-in-Charge, shall have to full power in his absolute discretion, to fix the actual rate deduction subject only that the rate so fixed shall not exceed the maximum specified above for the respective cases. The contractual rate for the relevant item of concrete work shall not affect the above maximum of the actual rate of deduction as actually fixed by the Engineer-in-Charge.
- 26.12 If any one out of 10 consecutive test cubes shows a deficiency in strength upto a limit of 10% but the average strength of all test moulds equals the stipulated strength, the concrete will be deemed to be satisfactory, but if the average fails to reach the stipulated strength the concrete will be deemed less satisfactory and a deduction of 1% shall be made from the cost of such volume of concrete as will be determined by the Engineer-in-Charge to be represented by 10 test moulds. If two of the 10 consecutive test cubes show a deficiency in strength upto a limit of 10% deduction of



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2% will be made on the cost of such concrete. If out of 10 consecutive test cubes three are deficient in strength upto a limit of 10%, 5% deduction on cost of such concrete will be made. If more than three test specimen prove deficient in strength upto a limit of 10% of the concrete will be rejected and shall be replaced by concrete of stipulated strength at the entire cost of the Contractor. The Engineer-in-Charge, may, however, allow such concrete to remain in position but in that event a deduction of 10% from the cost of such concrete will be made.

- 26.13 If only one out of 10 consecutive test cubes fall deficient in strength by more than 10% but not more than 20%, 2% deduction in cost of such volume of concrete as will be determined by the Engineer-in-Charge to be represented by the 10 test moulds shall be made. If two out of 10 specimens show similar deficiency, a deduction of 10% on cost of such concrete shall apply. If three test moulds out of ten show deficiency in strength, the concrete may be accepted by the Engineer-in-Charge after a deduction of 20% from cost of such concrete. If more than three test cubes cross the limit of 10% deficiency in strength the concrete will be rejected, dismantled and replaced by the specified strength. The entire cost of such replacement will have to be borne by the Contractor.
- 26.14 In no case, however any test mould should register a strength less than 30% of the stipulated strength. If any one of the group of ten shows such results the entire concrete will be rejected and this will have to be replaced by concrete of stipulated strength at the cost of Contractor, in all cases of concrete of deficient strength, the volume of concrete on which reduction in rate will apply or which will be replaced by good concrete of adequate strength will be determined by the Engineer-in-Charge and his decision of in such matters will be final.
- 26.15 When any rejected concrete shall have to be dismantled and replaced to the satisfaction of the Engineer-in-Charge by the Contractor free of cost to the Employer, it shall be carried out carefully not to disturb the adjoining portion of the structure.
- 26.16 Each set of test specimen shall be taken to cover the quantity of concrete laid on the job during the period from the time of taking the previous set of specimen and the quantity will be estimated by the Executive Engineer from records to be maintained at specified hereunder.
- 26.17 The contractor shall remain liable under provision of this Clause notwithstanding the signing by the Engineer-in-Charge of any certificate or the passing or any accounts.



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## **26.18 Mixing of concrete.**

The different ingredient for concrete will have to be for the purpose of correct proportioning be measured by weight/volume as specified in the relevant items of work.

- 26.19 If the ingredients are measured by weight, due allowance must always be made for the weight of water that may be present in the sand and the coarse aggregate.
- 26.20 If measurement is done by volume, gauge boxes corresponding to the proper quantities of sand and coarse aggregates must be used. All measurement must be carried out in such a manner that the proportions of the materials may be easily and readily checked.
- 26.21 Parts of the same day on account of varying moisture content, require tests for bulking shall be carried out with the sand to be used, and the amount of bulking allowed for in the field mix so as to keep the actual proportions constant throughout.
- 26.22 For all work concrete shall be mixed in a mechanical mixture which along with other accessories shall be kept in first class working condition and so maintained throughout the construction mixing shall be continued till materials are uniformly distributed and an uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall be mixing to be done for less than 2(two) minutes after all ingredients have been put into the mixture.
- 26.23 Hand mixing is not generally permitted. When such mixing is permitted by the Engineer-in-Charge for small jobs or for certain other reasons it shall be done on smooth water tight platform large enough to allow efficient turning over of the ingredients of concrete before and after adding water. Mixing platform should be so arranged that no foreign materials shall get mixed with concrete or does the mixing water flow out. Cement in required number of bags shall be placed in uniform layer on the top of the measured quantity of fine aggregate which shall also be spread in a layer of uniform thickness on the mixing platform Dry sand and cement shall then be mixed thoroughly by turning over to get a mixture of to form a uniform colour. Enough water shall then be added gradually and the mass turned over till the cement mortar of required consistency is obtained. Measured quantity of coarse aggregate shall then be placed on the mixing platform, and watered and the mortar added and the entire mass turned and returned until all particles of coarse



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aggregate are fully covered with mortar and a mixture obtained is of uniform colour and required consistency. In hand mixing quantity of cement shall be increased by 10%(ten) percent extra for which no extra claim will be entertained.

- 26.24 Only such quantities of concrete as are required for immediate use are to be mixed at any one time. Requisite water is to be added to certain proper work ability so that the mixture may flow readily round all the reinforcements and into every part of the job. The workability shall be measured by the amount of slump. The total water content in each batch of concrete shall always be kept constant at the amount previously determined by experiments. The quantity of water to be actually added may therefore, be very, depending on the moisture content in the aggregates. In actual job, if the quantity of ingredients remain constant the amount of slump may be taken as good guide indicating the total water content in the mixture. The consistency and consequently the water content of concrete shall, therefore, be kept constant and checked for time to time as work proceeds by means of standard slump tests. The slumps test shall be carried out on concrete immediately after it has been mixed and before any initial set has commenced, the sample being taken for placing in the moulds preferably at the point where the concrete is being delivered for placing in the moulds.

Slump for the different kind of concrete shall not exceed the following, unless specifically permitted by the Engineer-in-Charge.

## Slump

- a) For concrete with 20 mm. down stone chips  
desired crushing. Strength 300 Kg.  
per square centimeter on. 15 cm. cube                      25mm.
- b) For concrete with 20 mm. down stone chips  
desired minimum crushing strength 425 kg.  
per square centimeter on 15 cm. cube.                      25 mm.
- c) for concrete with 20 mm. down stone chips



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desired minimum crushing strength 200 kg.

per square centimeter on 15 c.m. cube. 40 mm.

## **27. PROTECTION AND CURING OF CONCRETE :**

The Contractor shall adequately protect freshly laid concrete from too rapid drying due to strong sunshine drying winds etc. and also from running of surface water and stocks. All concrete shall be cured with fresh water for a minimum period of 14(fourteen) days after concreting or as advised by the Engineer-in-Charge. Horizontal surfaces shall be kept covered with water pond by means of bundhs and vertical surface by burlaps kept constantly wet with water sprays. More sprinkling of water on vertical surfaces without sacks burlap will not be allowed. The rates quoted by the Contractor shall include all cost of protection and curing of concrete.

### **27.1 Transporting placing and compacting concrete.**

Concrete shall be handled from the place of mixing to the place of final deposit as rapidly as practicable by methods which will prevent the segregation or loss of the ingredients. It shall be deposited as nearly as practicable in its final position to avoid rehandling or flowing. Unless specially permitted by the Engineer-in-Charge, concrete shall not be dropped freely from a height of more than 2(two) meters.

27.2 Before placing the concrete, the mould whether timber or steel shuttering shall be cleaned for shavings, pieces of wood or other rubbish, and coated perfectly with layers of burnt Mobil when placing the concrete the fine materials must be carefully worked against the moulds so that the faces of the concrete shall left perfectly smooth and free from honey combed upto the withdrawal of the moulds. Any defect in this respect must be dealt with by the Contractor as directed by the Engineer-in-Charge, without an extra charge there to.

27.3 Where concrete is deposited against stone work, brick work or any surface likely to absorb moisture, such surface must be well watered immediately prior to deposition of concrete.



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- 27.4 Depositing concrete underwater shall not be allowed without specific written permission from Engineer-in-Charge. The method of concreting to be adopted in such cases shall have to be previously approved by him.
- 27.5 During placing and also immediately after deposition, the concrete shall be thoroughly compacted by ramming, spreading etc. until it has been made to penetrate and fill all space between and around the steel rod, around embedded fixture and into the corners of form work in such a manner as to ensure solid mass entirely free from voids. In addition to usual ramming spreading etc. sufficient number and suitable type of vibrators must be used to enable working with a comparatively low water cement ratio and ensure the maximum possible -degree of compaction and homogeneity. The use of vibrators may be dispensed with only for concrete of mix leaner than 1:2:4 and in case of concreting under water.
- 27.6 It is imperative that all concreting operations be done quickly as well as efficiently, and adequate number of hands must therefore be employed to ensure this.
- 27.7 Concrete shall be placed and compacted, in its final position before setting has commenced and shall not be subsequently disturbed. Concreting shall be carried out continuously upto construction joints. Any rest pauses, such as for meals, shall be subjected to the approval of the Engineer-in-Charge or of his representative. Even when such rest, pauses are permitted the concreting shall not be stopped entirely but carried on slowly, during the rest period by engaging a small skeleton gauge for this purpose.

## **28. RECORDING OF CONCRETING.**

A record shall be kept of the time and date of placing concrete and the approximately placed (together with other relevant details) in each portion of the structure.

The record shall be prepared in duplicate by the Contractor in the form and manner to be decided by the Engineer-in-Charge. The Contractor shall submit the record promptly to the Engineer-in-Charge or to his representative who will accept the same after verification and retain one copy the other copy being returned to the Contractor.

## **29. CONSTRUCTION JOINTS :**



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- 29.1 All construction joints in slabs, beams and other horizontal members are to be formed by inserting temporary vertical or inclined boards against which the concrete deposited can be properly rammed. The positions where such construction joints may be made shall be as per direction of the Engineer-in-Charge or his representative.
- 29.2 In the case of horizontal joints any excess water shall be removed & the surface of the concrete while still soft shall be swept with a stiff broom or scraped with tool left some coarse aggregates projecting, Moreover, if so directed by the Engineer-in-Charge or his representative, keys shall be formed at horizontal joints..
- 29.3 When fresh concrete has to be laid against already hardened surface (as in the case of a joints formed against a temporary board) the laitance is to be removed chipping so as to expose sound concrete. The chipping is to be done very carefully, so as to remove the laitance but not to disturb or damage the sound concrete.
- 29.4 In all cases of vertical or horizontal joints, the surface form which the laitance has been removed, shall be thoroughly cleaned. The bending surface shall then be kept constantly wet for at least two hours before placing new concrete. The surface should then be damped but slightly absorptive. Just before placing new concrete, a layer (above 10 mm. thick.) of mortar composed of equal volumes of cement and sand and mixed to the consistency of thick paste shall be placed on the surface. Concrete shall then be laid in this layer and carefully spread to prevent formation of stone pockets, If necessary in the opinion of the Engineer-in-Charge or his representative, the first few batches of concrete may have to be of richer mix. to prevent honey-combs at the joint. No extra payment shall be made for the work involved in a construction joint nor for the consumption of extra cement required for the mortar layer or for using a richer mix of concrete in the first batches. All these shall be deemed to be covered by the rates for concrete work.

## **30. TESTING OF CONCRETE :**

- 30.1 Test shall be carried out in accordance with I.S. code of practice. For testing concrete of specified strength, the Contractor shall provide all labour, materials and appliances required for making test specimens for experiments and for testing the quality of concrete going into job. Each set of specimen for experiment of four test blocks of the shape and size specified for cubical test blocks



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the end of the specimens are to be finished with utmost care so as to avoid concentric loading at the time of test. The contractor shall remain fully responsible for this and no subsequent pleas from him that any deficiency in strength which the result of the tests might show, was due to defects in the specimens, will be entertained specimens are to be Carefully removed from the moulds are cured under similar conditions to concrete in the job it self.

- 30.2 Out of four specimens in each set, the Engineer-in-Charge may arrange to have any two tests departmentally and if he likes, send the remaining two for test by the Govt. Test House at Alipore, whose report shall be binding on all parties concerned. The test results (obtained from the Govt. Test House at Alipore) shall be considered "Satisfactory" if (a) the strength of each individual specimen is at least ninety percent of the specified strength and (b) the average of the results of the two specimens is not below the specified strength both conditions to be fulfilled for the purpose of operating Clause in connection with concrete deficient in strength, the average of the results of the two test specimens shall be taken as the strength of concrete and the percentage deficiency calculated accordingly.
- 30.3 If however, the test result be unsatisfactory from the point of view of condition(a) above but the average of the results of the two specimens be not less than the specified, then the deficiency in strength shall be taken as "not exceeding five percent". For work test specimens i.e. test specimens of concrete going into works actually as are ultimately found to be "not satisfactory" and for all preliminary test specimens the Contractor shall pay the incidental charges for sending the specimen from work site to the testing laboratory at an ad hoc rate of Rs. 207- for such piece of specimen. The Contractor shall in addition, bear the Charges of the Govt. Test House at Alipore in respect of the preliminary tests (if these are actually tested there) are also in respect of work test as are ultimately found to be "not satisfactory". For all test specimens whatsoever the Contactor shall be responsible for proper packing of the specimens and necessary making with paints at his own cost for safe and convenient transport of the same from the site of the office of the concerned Assistant Engineer.

## **31. METHOD OF MEASUREMENT :**

All works of cement concrete shall be measured in terms of volumes of finished work. Those volume shall be computed from measured dimensions of work as actually executed and accepted. No



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deduction shall be made for the volume occupied by reinforcement (M. S. or T. S.) if any within the concrete small chambers or fillers each not exceeding ten Sq. cms. in cross section shall be ignored as if these were no existent no deduction shall also be made for voids (in slabs or similar members not exceeding 200 Sq. cms.) each on the exposed surface.

## **32. STEEL REINFORCEMENTS :**

Mild round bars, Tor steel for use as reinforcement shall be issued by the Department to the Contractor as per Special Terms and Conditions Black annexed type wire of suitable gauge shall however be supplied by the tenderer cost there of included in the contractual rate for reinforcement. The rate o reinforcement shall include the cost of the bars, cutting of bars to correct lengths, bending cold to shape, placing and fixing in position, as shown the drawings, with black annealed wire of 18/20 gauge (supplied by contractor) properly tied at every inter – section. The Contractor shall without extra charges provided all other supports and fixing required and shall take precautions to see that all such temporary fixings are removed before the concrete is brought up. The rate shall also include any initial straightening of the bars if necessary and removing loose rust or scales, if any and other incidental works in *Ms connect*<sup>TM</sup>. The Contractor shall be paid on the calculated weight of steel reinforcement only actually placed in the structure i.e. the weight of tying wire or of cut pieces of rods not used shall not be paid. Lap lengths as shown in the drawings, I.S. code or as permitted by the E.I.C. shall be paid for.

- 32.1 If bars of exact required lengths be not available these shall be cut from lengths of available bars as will involve minimum waste in cut pieces.

## **33. TEMPORARY STAGING :**

The Contractor shall provide sufficient and rigid temporary staging upon which the deck slabs shall be constructed. The Contractor must submit his proposals for this staging well in advance to the



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Engineer-in-Charge for his approval. The approval of the Engineer-in-Charge or otherwise to this temporary staging must be accepted as final and without approval.

- 34.1 The approval of the Engineer-in-Charge will not however relieve the Contractor of his responsibility for the safety of the staging to carry the loads it is called upon to bear.

The design of the staging must take due account of all possible local conditions likely to be met with during the period the staging is to remain in position and any other factor that may be relevant in this connection.

The staging for the superstructure is to be designed for the full dead load. The staging is also to take the weight of frame work shuttering etc. and also live load of 290 kg./m<sup>2</sup> on account of work people. Wearing course, railing and such items as are to be done after the staging is released, need not be considered in the design of the staging.

For the design of the temporary staging, stresses upto 50% in excess of the usual stresses for permanent structure shall be permitted.

The method to be employed for releasing the temporary staging must be clearly shown and must be to the approval of the Engineer-in-Charge. The staging to support any horizontal member must not be released without permission from the Engineer-in-Charge or his authorised representative who shall have the full discretion to direct any particular system or order to be followed. In no case however shall the staging of a structural horizontal member be released before 21 (twenty-one) days from the date of placing of the last portion of structural concrete in the part of the structure which are stressed in any way by the release of the staging. The Engineer-in-Charge shall have the full discretion to increase this minimum time limit to any period of in his opinion it is considered desirable for the safety of the structure.

On completion of the work. The Contractor shall remove the staging including any piles etc. which might have been driven in the ground which shall have to be pulled out completely and removed.

## **35. SHORING :**



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Shoring, if found necessary, shall be provided by the Contractor for excavations of the trenches and other connected items, of works, but shall not be paid for separately if not mentioned in the price schedule. Cost incurred by the Contractor for such shoring shall be considered to have been included in the rates for relevant items of works,

## **36. SHUTTERING :**

Shuttering should be of steel plates rigidly fabricated true to line and level. Surface in contact with concrete are to be reasonably smooth except where otherwise stated. As an alternative shuttering may be of approved dressed timber 37 mm. thick ply board if permitted by the Engineer-in-charge considering the circumstances. In every case the joints of the shutterings are to be such as to prevent the release of liquid from the concrete.

All shuttering and framing must be adequately stayed and braced to the satisfaction of the Engineer-in-charge for properly supporting the concrete during the period of hardening. It shall be so constructed that it may be removed without shock or vibration to the concrete. Drawing showing shuttering details shall be submitted by the Contractor to the Engineer-in-Charge for his approval. If required by him members spanning across an opening shall be slightly cambered to compensate for deflection.

Before concrete is placed, the shuttering must be coated with an approved preparation for preventing the adhesion of the concrete to the moulds, and it is to be of such a nature and so applied that the surface of the finished concrete is not stained. Care shall also be taken that such approved preparation shall be kept out of contact with the reinforcement. The interior of all moulds and boxes must be thoroughly washed out with hose pipe or otherwise so as to be perfectly clear and free from all stannous matter previous to the deposition of concrete.

All form work shall be removed without shock or vibration. Before the frame work is stripped the concrete surface shall be exposed where necessary in order to ascertain that concrete, has hardened sufficiently in normal weather and with ordinary cement, vertical or side shuttering may be removed after 3 days and the bottom shuttering of horizontal members such as structural slab, beams etc. after 21 days counted from the date of placing the last portion of concrete in the structure. The above periods are the minimum and may be extended if found necessary. Before stripping the shuttering of the structural members the Contractor shall take previous permission of



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the Engineer – in – Charge or his representative. The items of shuttering shall include all works in connection there with including their removal and measurement shall be on the basis of area of shuttering in actual contact with concrete surface.

If so directed by the Engineer-in-Charge or his representative corners in concrete shall have a chamfer or fillets as the case may be or 25 mm. x 25 mm section even though these may not be shown in the drawings. For the purpose of measurement of concrete or of shuttering these chamfers and fillets shall be ignored together.

## **37. FINISHED CONCRETE SURFACE :**

As soon as the shuttering has been removed, the exposed surface of the concrete shall be cleaned and blemishes or defects, if any rectified as per direction of the Engineer-in-Charge. Visible surface of concrete shall be rubbed down to smooth finish, true to lines and levels and free from all irregularities and nothing extra will be paid for the job beyond the terms of contract. .

## **38. BRICKWORK :**

All brick works shall be done in sand, cement mortar with first class bricks supplied by the Contractor and must be of 1st. class workmanship to the satisfaction of the Engineer-in-Charge. The bricks are to be kept thoroughly soaked in water for at least 24 hours before laying.

The brick work, already laid shall be cured properly, as directed in water at least for seven days after the date of laying.

All joints of brick works which shall not remain exposed shall have to be flush pointed. The exposed joints are to be raked properly and cement plaster or rule painted as shown in drawing or as directed by the Engineer –in – Charge.

## **39. MODE OF MEASUREMENT :**

The modes of measurements of some of the items or works have already been mentioned.

Shuttering shall be measured on the area of surface in contact with concrete Labour and hire charge for temporary boards for the purpose of construction joints or for any constructional facility



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in the interest or for the convenience of the Contractor, shall not be paid for. In measuring concrete items no deduction shall be made for the volume of reinforcements of fixture drain holes etc. for the purpose of measurement of concrete and also shuttering, the drain holes etc. mentioned above, and also 25 mm. x 25 mm. chamfers of fillets at corners, shall be considered as if they In case of piling works, measurement will be taken as per actual driven length below original G.L.

#### **40. Filling up expansion joints :**

Expansion joints shall be provided at location shown in the drawing. This shall consist of shaping and finishing the concrete surfaces, as directed and as per approved drawings.

41. Filling up expansion joints with bituminous joint fillers (typical shalifax joint filler with shalifax board conforming to I.S. Specification I.S. 1958-1961) and fixing the same with concrete surfaces of walls and slabs both for box and approach slab by proper fixing arrangement (I.E. using roul plug and screws etc.) Before casting the further walls and slabs as per approval of the Engineer-in-Charge and joints sealing compound and including painting (typical shalifax primer) every thing comply with the requirements of I. S. 1834-3961 specification as directed by the Engineer-in-Charge.

#### **42.1 Mode of measurement**

*This shall be measured on the area of surface in actual contact with concrete and the payment shall be made in sq metre including the cost of all materials and labour.*

- 42.2 On completion of work, all temporary structures, obstructions (including sunk piles etc. if any) must be removed. All parts of construction shall be obligated and the whole site left in clean workmen like manner to the satisfaction of the Engineer-in-Charge. No separate payment shall be made for all these the cost therefore being deemed to have been included in the rates of various items or works in the specific priced schedule of probable items.

- 43.1 The Contractor shall conduct survey jointly with KMDA personnel at the proposed.

#### **44. EXCAVATION AND EARTH WORK :**

##### **44.1 Earth work information:**



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Except otherwise specified earthwork should be done from acquired land and no extra for any lead and lift shall be paid. The rate shall include earthwork in any type of soil e.g. hard, handy slushy etc. No extra shall be paid for any difficulties in crossing the old borrow pits or existing roads etc. where such difficulties may exist.

Before starting earthwork, the following preliminaries should be completed for which no extra shall be paid :-

- i) Setting out centre line & other acquisition line.
- ii) Dag belling the centre line, other acquisition line and inter edge of borrow pits line, Dag belling should be 15cm. deep V shaped out.
- iii) Fixing the centre line with posts at every 1.5m. and at every tangent point, and apex of each curves. Every intermediate chainage, the centre should be marked with strong bamboo post. All changes should be written on the peg with approved quality paint.
- iv) Profile with 3nos. strong bamboo posts in each set and strings should be fixed at every change and the actual height of finished formation and also shrinkage allowed should be boldly marked with circular ring painted with approved quality paints. In case of height embankments of more than 2.10M strong sal posts should be used instead of bamboo posts. The borrow pits should start from 30 cm of outer acquisition line and be confirmed and uniform in depth. All earth should be utilised in making the formation. The side slopes of the pits should be (1:1) the earth in embankment should be throw in 130cm layer to the full width at that particular section and all clods must be broken with wooden rammer. There should be at least 1 rammer with 1 labour for every 10 nos. Kodalies. The earth work is to be done in successive layer of 30cm. height till the height including the allowance for shrinkage is reached.

The top and the sides which will be 2:1 slopes should be dressed. After dressing rain bund at two edges 30cm. wide and 20cm. high with 1:1 slopes should be made and similar cross bunds at every 30m. should be constructed. In bridge approaches or in steep grades the cross bunds should be at every 15m. instead of 30m.

No borrow pits should be dug within 30m from the abutment of any road bridge. Diagonal witness as directed by the E. I. C. should be kept in regular uniform manner. All witness, berms etc. must be



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removed and earth utilised in embankment with 7 days after receipt of order for removal from the E.I.C. for all intermediate payment, 10% of total earth work done shall be deducted from non removal of witness etc. In case the witness are not removed and earth utilised in embankment the same shall be get done by the department and the from the Contractor's bill in this account.

The work should be started in one section and completed in all respect before any other section is taken up. No measurement of half finished work will be taken and department shall not be responsible if the pits are filled up during the intervening period by rain or other reasons.

Unless otherwise specifically mentioned in the priced schedule or any where in the contract an item will main complete item including necessary cost of all Labour and materials and a labour item will include necessary carriage of materials from road side dumps covering any distance.

Land for borrowing earth for supplying "good earth" should be arranged by the Contractor and the cost thereof include in his rate for the relevant item.

## **SPECIAL NOTES**

- (1) The project being a specialized work involving limited and controlled structural dismantling and restoration works, bidders are specifically instructed to visit the site and acquaint themselves thoroughly about the state of structure, site condition and other relevant factors associated with satisfactory completion of the project.
- (2) Bidders should go thoroughly through the Technical Specification which is to be strictly followed throughout the entire execution process. Ignorance or non-compliance of Technical Specification will



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not be entertained nor they will absolve the successful bidders of responsibilities during dismantling and restoration process.

- (3) In case of any doubt or lack of understanding of any point as specified in the technical specification, the same should be immediately brought to the notice of E-I-C/Consultants, before undertaking the work.

## **Dismantling Work**

Dismantling work in this project is always partial with respect to the whole building structure. Dismantling is required here only to strip off the unserviceable part of structure as per design and drawing or directed by E-I-C. Hence all care shall be taken by the contractor to execute dismantling work as per the specific requirement. If it reveals at site that the dismantling can not be restricted as specified in drawing, shall require to be substantiate by proper testing of that particular area as directed by Engineer-in- Charge. Otherwise any such extra unspecified and acceptable structural portion if dismantled by the contractor on its own, that area shall be properly repaired with contractor's own cost without any additional cost to the owner.

## **Structural Performance of Restored structure**

The contractor shall require to satisfy the E-I-C or his representative by conducting test as required to establish the soundness and acceptability of structure restore prepared, before final payment and handing over.

Managing Director

Gluconate Health Limited

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