



LUCKNOW METRO RAIL CORPORATION LIMITED

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LMRC/CE-CONTRACT/LKCC-08/2017-18

Date: 24/08/2017

To,
All Bidders

Subject: - Addendum-1 & Reply to Pre-bid queries for tender LKCC-08.

Ref: - Tender LKCC-08: Civil, Architectural Finishes, Water Supply, Sanitary Installation, Drainage, External Development, Fire fighting, Fire detection, E&M works and PEB structures for Nine (8+1) nos. Elevated metro stations from K.D. Singh Babu Stadium Station to Munshipulia Station and Amausi Metro station on North – South Corridor, Phase 1A of Lucknow Metro at Lucknow, Uttar Pradesh, India.

Dear Sir,

Please find enclosed herewith the Addendum-1 & Reply to Pre-bid queries to the tender document for tender LKCC-08 along with the summary sheet.

Further, the tender submission/Opening dates remains same as per NIT.

Enclosure: As Above



(Deepak Gupta)
Chief Engineer/Contract

Contract No. LKCC-08 : Reply to Pre-Bid Queries

Contract No-LKCC-08-Civil, Architectural Finishes, Water Supply, Sanitary Installation, Drainage, External Development, Fire fighting, Fire detection, E&M works and PEB structures for Nine (8+1) nos. Elevated metro stations from K.D. Singh Babu Stadium Station to Munshipulia Station and Amausi Metro station on North – South Corridor, Phase 1A of Lucknow Metro at Lucknow, Uttar Pradesh, India.

S. NO.	Clause No./ Volume/ Page No.	Existing Provision	Bidder's Query	LMRC's Reply
1	Item No. 3.2 of Schedule-B, Vol.-6, Pg. 51	Providing and fixing of Tactile indicator made from SS-316 grade stainless steel with mirror finish.	Item no. 3.2 of NDSR items is for Tactile indicators of Stainless Steel Grade SS-316. The grade of SS should be SS-304, which have already been used at your Phase-1 stations	Please refer Annexure-1 of Addendum-1
2	Item No. 3.2.1 & 3.2.2 of Schedule-B, Vol.-6, Pg. 51	-	The rates mentioned against item no. 3.2.1 & 3.2.2 are not proportionate to the item & seems that these have been exchanged in-between the items. The rates mentioned for dots should be for directional and vice versa	Please refer Annexure-1 of Addendum-1
3	Item No. 3.2 of Schedule-B, Vol.-6, Pg. 51	-	No vendor has been mentioned for the SS Tactiles. Canon SS tactiles are already approved in the Phase 1 and have been implemented at all 8 stations. Please include Canon Fasteners as approved vendor for this item in approved vendor list	As per tender conditions.
4	Item No. 6.12 of Schedule-B, Vol.-6, Pg. 58	-	Kindly include Canon Fasteners as approved vendor for Item no. 6.12 of NDSR (aluminium façade works), as we have already executed this type of work, including design/drgs & execution of work in Phase-1 for all stations.	As per tender conditions.
5	Item No. 6.7.1 & 6.8 of Schedule-B, Vol.-6, Pg. 57	-	Rates for SS Grating & SS Bench as per item no. 6.7.1 & 6.8 respectively are on lower side as compared to other SS items. Kindly correct the rate as it should be more than other Stainless Steel items like railing etc.	As per tender conditions.
6	Item No. 51 of Vendor List, Vol.-4, Pg. 166	-	Canon name has not been mentioned as an approved vendor for SS works. PI note Canon is already approved vendor for the same in many prestigious organisations like DMRC, Rapid Metro, Northern railways etc. and all type Canon SS works (Railings, Barriers, Gates, Benches, Drains etc.) have already been executed in your Phase -1 for all stations. So you are requested to include Canon as an approved for SS Works.	As per tender conditions.
7	Item No. 10, 11 & 14 of Schedule-B, Vol.-6, Pg. 65-70	-	Quantity for items like Sanitary fixtures are mentioned in decimals. You are requested to check it again.	Quantities mentioned will be rounded off to nearest whole number. Please refer revised preamble of BOQ as Annexure-2 of Addendum-1



CR-19/1st-23

Summary Sheet of ADDENDUM No.-1: Contract LKCC-08

Contract No-LKCC-08-Civil, Architectural Finishes, Water Supply, Sanitary Installation, Drainage, External Development, Fire fighting, Fire detection, E&M works and PEB structures for Nine (8+1) nos. Elevated metro stations from K.D. Singh Babu Stadium Station to Munshipulia Station and Amausi Metro station on North – South Corridor, Phase 1A of Lucknow Metro at Lucknow, Uttar Pradesh, India.

S. NO.	Existing Clause / Pg. No.	Clause in Existing Tender Document	Revised Clause	Revised Clause placed as Annexure/ Pg. No.
1	Item No. 3.2 of Schedule-B, Vol.-6, Pg. 51	Providing and fixing of Tactile indicator made from SS-316 grade stainless steel with mirror finish.	Providing and fixing of Tactile indicator made from SS- 316 304 grade stainless steel with mirror finish.	Annexure-1 Pg. 51 R1
2	Item No. 3.2.1 & 3.2.2 of Schedule-B, Vol.-6, Pg. 51	3.2.1 Warning Tactile indicator – Shall be installed on the walking surface in a raised grid pattern of ‘dots’ or studs. They shall be placed at center to center placing of 61mm, measured along one side of a square arrangement. Minimum 10 studs to be placed in direction perpendicular to the direction of travel. This shall be 20% of the total quantity. Size – 35mm dia. x 4.5mm ht Underside - 10mm dia stem.	3.2.1 Warning Tactile indicator – Shall be installed on the walking surface in a raised grid pattern of ‘dots’ or studs. They shall be placed at center to center placing of 61mm, measured along one side of a square arrangement. Minimum 10 studs to be placed in direction perpendicular to the direction of travel. This shall be 20% of the total quantity. Size – 35mm dia. x 4.5mm ht Underside - 10mm dia stem. <i>(Quantity, rate & amount also corrected)</i>	Annexure-1 Pg. 51 R1
		3.2.2 Directional Tactile indicator – They shall be installed on walking surface, consisting of series of raised bar, oriented in line with direction of travel as per approved drawing. Min 4 bars to be placed in direction perpendicular to distance of travel. This shall be 80% of the total quantity. Size – 35mm wide x 4.5mm high x 288mm long Underside – 3x15mm,	3.2.2 Directional Tactile indicator – They shall be installed on walking surface, consisting of series of raised bar, oriented in line with direction of travel as per approved drawing. Min 4 bars to be placed in direction perpendicular to distance of travel. This shall be 80% of the total quantity. Size – 35mm wide x 4.5mm high x 288mm long Underside – 3x15mm, <i>(Quantity, rate & amount also corrected)</i>	Annexure-1 Pg. 51 R1
3	Point No. 13 of Preamble of BOQ, Vol. 6, Pg. 2	13. The work executed against BOQ items mentioned in Schedule ‘A’, Schedule ‘B’ Schedule ‘C’ and Schedule ‘D’ would be paid on measurement basis.	13. The work executed against BOQ items mentioned in Schedule ‘A’, Schedule ‘B’ Schedule ‘C’ and Schedule ‘D’ would be paid on measurement basis. <u>For items where units are mentioned as "Each"/"Nos.", their quantities will be rounded off to nearest whole number.</u>	Annexure-2 Pg. 2 R1



4	Item No. 15.1 of Schedule-B, Vol.-6, Pg. 70	15.1 Designing, Providing, Installation, Testing and Commissioning of Prefabricated (MS Sheet) Sewage treatment plant (STP) of make Thermax or equivalent 10 Kl/day above ground level including all electrical & mechanical equipments, piping, valve sleeves, control panels based on any technology like MBBR, FAB / Electronic basis, recirculation pump, wiring panel etc. complete in all respects, including all equipments and consumable materials of STP also including all civil work of R.C.C. underground pit and RCC foundation for BIO filter Skid etc. The rate shall be inclusive of operation and maintenance for twelve months including man power complete. The design basis considered to size the treatment plant is as follows including as required in the specification etc.	15.1 Designing, Providing, Installation, Testing and Commissioning of Prefabricated (MS Sheet) Sewage treatment plant (STP) of make Thermax or equivalent 10 Kl/day above ground level including all electrical & mechanical equipments, piping, valve sleeves, control panels based on any <u>MBBR/ Hybrid bio-filter</u> technology, like MBBR, FAB / Electronic basis, recirculation pump, wiring panel etc. complete in all respects, including all equipments and consumable materials of STP also including all civil work of R.C.C. underground pit and RCC foundation for BIO filter Skid etc. The rate shall be inclusive of operation and maintenance for twelve months including man power complete. The design basis considered to size the treatment plant is as follows including as required in the specification etc.	Annexure-3 Pg. 70 R1
5	S. No. 4 of Table of Contents of Employer's Requirement, Vol.-3, Pg. 1	4. PHASES (DESIGN AND CONSTRUCTION) – TENSILE ROOFING WORKS	4. PHASES (DESIGN AND CONSTRUCTION) – TENSILE <u>PEB</u> ROOFING WORKS	Annexure-4 Pg. 1 R1
6	Clause 4 heading of Employer's Requirement - General, Vol.-3, Pg. 7	4. Phases (design and construction) – tensile ROOFING WORKS	4. Phases (design and construction) – tensile <u>PEB</u> ROOFING WORKS	Annexure-5 Pg. 7 R1
7	Clause 19.1.1 & bullet (iv) of 19.2.1 of Employer's Requirement - Functional, Vol.-3, Pg. 18		<i>Please refer revised page.</i>	Annexure-6 Pg. 18 R1
8	KD 22 of Appendix 1A (Key Dates) of Employer's Requirement, Vol.-3, Pg. 51	Key Date 22 : Complete works for all 9 stations in all respect (Architectural finishes, tensile roof, E & M works, NOC from fire authority and another local bodies all complete)	Key Date 22 : Complete works for all 9 stations in all respect (Architectural finishes, tensile roof, E & M works, NOC from fire authority and another local bodies all complete)	Annexure-7 Pg. 51 R1
9	Items of Table 21. 1 of Clause 21 (Vendor List) of Technical Specifications - Architechrtural & plumbing, Vol. 4, Pg. 164 -168	Vendor List	<i>Please refer revised vendor list.</i>	Annexure-8 Pg. 164R1 to 168R1
10	Item No. 11.3 b) & c) of E.11 Part B, Schedule-D, Vol.-6, Pg. 134	Item No. 11.3 b) & Item No. 11.3 c)	<i>Quantity, rate and amount of these items corrected. Please refer revised page.</i>	Annexure-9 Pg. 134 R1



11	Item No. 1.0 of S.51 Part C, Schedule-D, Vol.-6, Pg. 139	Item No. 1.0 of S.51	<i>Point j) added to the item. Please refer revised page.</i>	Annexure-10 Pg. 139 R1
12	Item No. 1.3 of P.01 Part D, Schedule-D, Vol.-6, Pg. 147	Flow rate - 12000 ltr/ hr. (Approx.), (orewell Pump)	Flow rate - 12000 ltr/ hr. (Approx.), (Borewell Pump)	Annexure-11 Pg. 147 R1
13	Clause 7.3 of Section S.52 of Technical Specifications - E&M, Vol. 4, Pg. 274	The First Aid Hose pipe shall conform to IS: 12585 and be wound on a heavy-duty circular hose drum confirming to IS :884 – 1985 with a bracket. The hose shall be permanently connected on one end to the Wet Riser through a 25m Ball Valve with necessary hose adapter and a SS nozzle at the other end.	The First Aid Hose pipe shall conform to IS: 12585 and be wound on a heavy-duty circular hose drum confirming to IS :884 – 1985 with a bracket. The hose shall be permanently connected on one end to the Wet Riser through MS Pipe and a 25m Ball Valve with necessary hose adapter and a SS nozzle at the other end.	Annexure-12 Pg. 274 R1
14	Clause 1.1 of Section P.01 of Technical Specifications - E&M, Vol. 4, Pg. 301	1.1 Pumps for Water Supply	Point g) & h) added to the item. Please refer revised page.	Annexure-13 Pg. 301 R1
15	Item No. 6.11.8 to 6.11.10 of Schedule-B, Vol.-6, Pg. 58	-	<i>Item Description revised. Please refer revised pages.</i>	Annexure-14 Pg. 58R1
16	Item No. 8.5 of Schedule-B, Vol.-6, Pg. 61	-		Annexure-15 Pg. 61R1
17	Item No. 8.7 of Schedule-B, Vol.-6, Pg. 62	-		Annexure-16 Pg. 62R1
18	Item No. 9.6 to 9.8 of Schedule-B, Vol.-6, Pg. 65	-		Annexure-17 Pg. 65R1
19	Item No. 10.11 & 10.13 of Schedule-B, Vol.-6, Pg. 67	-		Annexure-18 Pg. 67R1
20	Item No. 4.0 of Schedule-C, Vol.-6, Pg. 77	-		Annexure-19 Pg. 77R1
21	Item No. 1.1(a) - D (a) of E.01 of Schedule-D, Vol.-6, Pg. 87	-		Annexure-20 Pg. 87R1
22	Item No. 1.7 - C (a6) & (b6) of E.01 of Schedule-D, Vol.-6, Pg. 93	-		Annexure-21 Pg. 93R1
23	Item No. 1.7 - C (c6) of E.01 of Schedule-D, Vol.-6, Pg. 94	-		Annexure-22 Pg. 94R1
24	Item No. 1.4 of E.05 of Schedule-D, Vol.-6, Pg. 118	-		Annexure-23 Pg. 118R1
25	Item No. 3(i) of E.08 of Schedule-D, Vol.-6, Pg. 126	-		Annexure-24 Pg. 126R1
26	Item No. 4 & 5 of E.08 of Schedule-D, Vol.-6, Pg. 127	-	Annexure-25 Pg. 127R1	



S.No.	Item Description	Units	Quantity	Rate	Amount (INR)
	pedestal clipped to the steel base plate. The pedestal cap shall have an electrical conductor plate for discipation of static electricity. The steel base plate of the pedestal shall be fixed on the sub-floor with Epoxy pedestal adhesive and/or mechanical fixing with fasteners (8mm X 75mm). The Access floor should be able to take a point load of minimum 2.5 KN over 25 mm sq. and UDL of minimum 15 KN/sq. mtr. The panel shall be finished with high abrasion, anti static HPL of formica colour Y606 having fire rating as per BS 476 clause 5, 6 & 7 complete as per specifications, The rates include all materials, Labours, tools, plant and equipment. Nothing shall be paid extra.				
3.1.1	Upto 450mm high cavity floor	SQM	871.99	3,304.20	28,81,229.36
3.2	Providing and fixing of Tactile indicator made from SS - 316 304 grade stainless steel with mirror finish . This Tactile should be rich / best quality. All the indicator shall be installed into correctly drilled holes and place using suitable adhesive. All the indicators shall be aligned properly. Note: - The rates include all materials, Labours, tools, plant and equipment. Nothing shall be paid extra.				
3.2.1	Warning Tactile indicator – Shall be installed on the walking surface in a raised grid pattern of 'dots' or studs. They shall be placed at center to center placing of 61mm, measured along one side of a square arrangement. Minimum 10 studs to be placed in direction perpendicular to the direction of travel. This shall be 20% of the total quantity. Size – 35mm dia. x 4.5mm ht Underside - 10mm dia stem.	Each	50,000.00 <u>80,000.00</u>	498.22 <u>93.78</u>	2,49,11,000.00 <u>75,02,400.00</u>
3.2.2	Directional Tactile indicator – They shall be installed on walking surface, consisting of series of raised bar, oriented in line with direction of travel as per approved drawing. Min 4 bars to be placed in direction perpendicular to distance of travel. This shall be 80% of the total quantity. Size – 35mm wide x 4.5mm high x 288mm long Underside – 3x15mm,	Each	80,000.00 <u>50,000.00</u>	93.78 <u>498.22</u>	75,02,400.00 <u>2,49,11,000.00</u>
3.3	Providing and laying yellow visibility vitrified tile as per control sample of size 200x100x8 mm thick at platform level over 20 mm thk bed of cement mortar 1:4 (1 cement : 4 coarse sand) in levelling course laid to proper slopes over screed base including base preparation including movement joint in screed as per specification with 10mm thick compressible filler to edge of screed with two	SQM	283.50	1,065.87	3,02,174.15

10. Errors will be corrected by the employer for any arithmetic errors in computation or summation as per contract conditions.
11. All the unit rates and amounts should be filled both in figures and words. In case of any discrepancy between the two, the value provide in words shall be treated as sacrosanct.
12. All columns in the Bill of Quantities shall be filled in indelible ink or type written and the total tender amount shown in the bottom. The person authorized to sign on behalf of the Tenderer shall sign in full with company seal and date at the bottom of all pages and at the end of Schedule 'A', Schedule 'B', Schedule 'C' and Schedule 'D'.
13. The work executed against BOQ items mentioned in Schedule 'A', Schedule 'B' Schedule 'C' and Schedule 'D' would be paid on measurement basis. **For items where units are mentioned as "Each"/"Nos.", their quantities will be rounded off to nearest whole number.**
14. The Contractor may raise their 'On Account'' payments on monthly basis as per the status of work on the last day of the respective month.
15. All work to be carried out by Specialist trade / Finishing persons / vendors with approved credentials. The Contractor shall engage manpower with specific skills to perform the task.



S.No.	Item Description	Units	Quantity	Rate	Amount (INR)
14.1	Providing and fixing C.I. wafer type Butterfly Valves conforming to PN 10/13095 with nuts, bolts, washers, 3mm thick insertion rubber gasket and two matching flanges complete as per M & W specification.				
a)	40mm dia	Each	75.60	2,255.70	1,70,530.92
b)	50mm dia	Each	94.50	1,331.26	1,25,804.07
c)	65mm dia	Each	75.60	1,538.31	1,16,296.24
d)	80mm dia	Each	47.25	1,711.83	80,883.97
e)	100mm dia	Each	113.40	4,317.91	4,89,650.99
14.2	Providing and fixing dial pressure gauge with isolation cock and chrome plated copper pipe diameter 150mm calibration 0-7 kg/cm sq	Each	37.80	1,630.17	61,620.43
TOTAL OF SUBHEAD PUMPS WORKS					10,44,786.61

15	SEWERAGE TREATMENT PLANT WORKS				
15.1	Designing, Providing, Installation, Testing and Commissioning of Prefabricated (MS Sheet) Sewage treatment plant (STP) of make Thermax or equivalent 10 KI/day above ground level including all electrical & mechanical equipments, piping, valve sleeves, control panels based on any MBBR/Hybrid bio-filter technology, like MBBR, FAB / Electronic basis, recirculation pump, wiring panel etc. complete in all respects, including all equipments and consumable materials of STP also including all civil work of R.C.C. under ground pit and RCC foundation for BIO filter Skid etc. The rate shall be inclusive of operation and maintenance for twelve months including man power complete. The design basis considered to size the treatment plant is as follows including as required in the specification etc.				
	Raw Sewage Characteristics				
	Flow : 10 m ³ / day for 20 hours operation				
	COD : 400-600 mg/l				
	BOD : 200-300 mg/l				
	TSS : 200-300 mg/l				
	Oil & Grease : < 50 mg/l				
	pH : 7-8				
	Coliform : 10 ⁶ - 10 ⁷				
	Treated Sewage Characteristics				
	COD : < 100 mg/l				
	BOD : < 20mg/l				
	TSS : <30 mg/l				



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- 7) Employer's Requirements
- 8) Indian and other International Standards referenced herein.
- 9) Indian and other International Standards.

4. Phases (design and construction) – tensile PEB ROOFING WORKS

- 1) The Contractor shall execute the Works in two phases, the Design Phase and the Construction Phase.
- 2) The Design Phase shall commence upon the date of issue of Letter of Acceptance. This phase shall include the preparation and submission of:
 - (a) the Preliminary Design
 - (b) the Definitive Design; and
 - (c) the Construction Reference Drawings.

The Design Phase will be complete upon the issue of a Notice in respect of the comprehensive and complete Construction Reference Drawings Submission for the whole of the Permanent Works.

- 3) The requirements for the Preliminary Design, Definitive Design and Construction Reference Drawings are stated in Clause 2 of the Employer's Requirements -Design.
- 4) The Construction Phase for the whole or a part of the Permanent Works shall commence immediately upon the issue of a Notice by the Engineer/Employer in respect of the relevant Construction Reference Drawings Submission. Such Notice may be issued by the Engineer in respect of a Construction Reference Drawing Submission covering a major and distinctive part of the Permanent Works. However, construction shall not be commenced until the original negatives of the appropriate Working Drawings have been endorsed:
 - (a) by the Contractor as "Good for Construction"; and
 - (b) by the Engineer that he has no objections to the drawing.

The Construction Phase shall include the completion and submission of the Final Design and the preparation and submission of the As Built Drawings and other records as specified.

- 5) Notwithstanding Clause 4(4) above, for those elements identified under Clause 2(6) of the Employer's Requirements - Design, the Construction Phase may commence immediately upon the issue of the Notice in respect of the Definitive Design Submission in respect of each such element subject to availability of the site in accordance with agreed programme

5. SPECIFICATIONS

In accordance with the provisions of these Employer's Requirements, the Contract Specification contained in the Contract shall be developed during the design stage and submitted as part of the Definitive Design Submission. When the Specification has received a Notice of No Objection from the Engineer it shall become the Particular Specifications and shall take precedence over the other Specifications for construction purposes.



19. SCOPE OF WORKS

19.1 GENERAL

19.1.1 Brief Scope

This contract covers civil works (~~tensile~~ roofing, road works, landscape works and site development works), Plumbing works (water supply, sanitary installation, drainage and all complete), E & M Works (electrical, HVAC, fire fighting, fire alarm and all complete.)

All co-ordinations with track contractor, lift and accelator contractor, civil contractor, Traction contractor is a part of contract.

19.2 Work Contents:

19.2.1 Scope of Structural Works

- i. The scope of works shall, inter-alia, include the following but not be limited to:
- ii. Site clearance and dismantling of obstructions, if any, before commencement of work as specified or as directed.
- iii. True and proper setting out and layout of the Works, bench marks and provision of all necessary labour, instruments and appliances in connection therewith as specified or as directed.
- iv. Civil works includes ~~tensile~~ roofing (design and built), approach road works, soft and hard landscaping works.

Suggested method is indicated in the drawings; however the methodology is required to be submitted by the tenderer and approved by LMRC before carrying out the works.

All disposable excavated material shall be collected and transported for disposal in specified area or at any other land fill sites approved by relevant authorities.

- v. Clearing of site and handing over of all the Works, as specified or as directed;
- vi. All aspects of quality assurance, including testing of materials and other components of the work, as specified or as directed;
- vii. Maintenance of the completed Work during the period as specified;
- viii. Submission of completion (i.e. 'as-built') drawings and other related documents as specified or as directed;
- ix. Road works, internal & external water supply, sewerage and drainage system for stations etc.
- x. Constructions of ground water re-charge pits.
- xi. Construction of RCC / masonry trenches, ducts, cable duct for crossing of various cables in stations.
- xii. Any other item of work as may be required to be carried out for completing the work under this Contract in all respects in accordance with the provisions of the Contract and/or to ensure the structural stability and safety during and after construction.
- xiii. Identification of utilities and diversions of the utilities coming in foundation area wherever required including protection during construction is included in the scope of work. Any diversion work of utility shall be done with proper laisioning with the authorities controlling the utilities.

Annexure-7

Key Dates	Time to achieve (in weeks from date of commencement)	Description of Stage	Liquidity Damages for non achieving the key dates
Key Date 18	40	Delivery of DG Set, Fire and plumbing pumps and other related material at site for all 9 stations.	0.01% of total contract value per week of delay for the key date
Key Date 19	41	Completion of flooring and cladding works for first 4 stations	0.01% of total contract value per week of delay for the key date
Key Date 20	48	Completion of flooring and cladding works for balanced 5 stations	0.01% of total contract value per week of delay for the key date
Key Date 21	50	Completion of all fire fighting and DG installation work, apply to fire authorities for NOC for all 9 stations.	0.01% of total contract value per week of delay for the key date
Key Date 22	58	Complete works for all 9 stations in all respect (Architectural finishes, tensile roof, E & M works, NOC from fire authority and another local bodies all complete)	0.01% of total contract value per week of delay for the key date
Key Date 23	62	Complete os site development works and all miscellaneous works at 9 stations, in all respect and handing over of stations to the engineer	0.01% of total contract value per week of delay for the key date

Note- 1- For each room or area, the civil contractor shall finalise with respective designated system contractors the level of finishes required to be completed before the room/area is acceptable to the respective contractor and the key date will be considered achieved only when the room/area is completed as per the requirement. The requirement finalised with system contractor duly signed by them shall be submitted to Engineer at least two months before the respective key dates.



12	Adhesive , Adhesives for Tiles and Mosaics , Stone adhesive , Glass mosaic adhesive	Pidlite, Araldite , Toyo Ferrous Crete , Unistone, Somany ezy grout , MYK laticrete, Mapel, MC Bauchemie (India) Private Ltd.
13	Polysulphide Sealants	CICO , Pidlite Industries Ltd., BASF, FOSROC, STP, SWC, SIKA, Don Construction Chemicals India Ltd.
14	Silicone Sealants and Concrete Sealer	G.E. Bayer Silicone/ Dow Corning/ Watson Bowman Acme Corporation, Sika, Mccoy soudal
15	Silicon Water Repellant Solution	G.E. Bayer Silicone , Metroark, STP Ltd , Nisiwa-SH” of MC-Bauchemnic (India) Techrepel” of Choksy Chemicals
16	Tile Joint Filler	Bal Adhesives & Grouts, Roff Construction Chemicals , Winsil 20, Silicon Sealant of GE Bayer Silicon, “Zentrival FM” of MC-Bauchemie (India) , Laticrete , Toyo Ferrous Crete , Maipai, Unistone super grout
17	Aluminium Sections	Hindustan Aluminium , Jindal , Bharuka , Bharat aluminium, Vedanta BALCO, Hindalco
18	Float Glass/ Toughened Glass / Insulating Glass/ Laminated Glass /FIRE Rated Glass	Float Glass India, Asahi Float, Modiguard, Glaverbel, Saint Gobain, Sejal.
19	Powder Coatings	Berger / Nerocoat / Jenson & Nicholson
20	Raised (Access)Floor with assembly system	Hewetson /United Access Floors United Insulation/ Acon Pan/ Unifloor, Uniflair, Armstrong
21	Interlock Paving and chequered Tile	Unistone, Nimco Prefab, Hindustan Tiles, Terra Fima, Nitco, Ultratile, Oracle Granito.
22	Ceramic Tiles & Porcelain tiles	Kajaria , Bell ceramics, Jhonson, Nitco, Somany, Orient, Regency Ceramics, Euro , Kenzai Ceramic, Hindustan Tiles
23	Vitrified Tiles	Kajaria World, Restiile Ceramics, Marbo Granit” of Bell Granito Ceramica, Orient, Asian Tiles, EON Group, Somany, H&R Jhonson, Oracle Granito.
24	Mosaic Tiles	Mridul Enterprises, Italia, Bisazza, Kenzai, Opia, EON Palladip, Siches
25	Yellow Tectile Tiles	Palican, Unistone Products,
26	Decorative Wall Cladding Tiles,	Hindustan Tiles, Super Tiles & Marble, Terra Firma Concrete & Marbles, Century Tiles, Unitile.
27	GRC Architectural Decorative Products like Grass grid pavers , drain covers , GRC pavers , GRC	Terra Firma Concrete & Marbles , Unistone , Hindustan Tiles, Nimco Prefab

	tiles , GRC brackets, GRC decorative columns, GRS planters, GRC noise barriers, GRC jali	
28	MS Tubes	Tata metal, Loyd Metal & Engineering , NSL , Bihar Tube, Swastik Pipes, JSW ISPAT
29	Modified Bituminous Membrane roof water proofing	Super Thermolay, Polylexof STP, "Lotus-3" of the Structural Waterproofing, FORSOC, SIKA, Kryton Buildmat,Cc. MBT.
30	Emulsion Paints	ICI Dulux, Acro Paints, Asian, Berger, Nerolac, Jenson & Nicholson, Shalimar paints.
31	Synthetic Enamel	ICI Dulux, Berger, Asian, Nerolac, Jenson & Nicholson, Acro Paints, Shalimar paints.
32	Textured Paints	Spectrum/Unitile/ Heritage,
33	Polyurethane Paint	MRF/NEROLAC
34	Wall care putty	J.K White Cement Works, Birla putty , unistone, Shalimar , gyproc wall putty (saint gobain)
35	Aluminium Composite panel	Alucobond, Alpolic, Alstone, AluDecor
36	Stainless steel/ copper composite panel	Canon, Jindal
37	Frameless Glass Partition Fixtures	Droma, Hafele, Doorset, Dline, Insta Hardware, HARDWYN
38	Epoxy	FOSROC, SIKA, QUALCRETE, Araldite, BASF, KunalConChem, CHRYSO, DON Chemicals, STP, Cleantech SA, TAM, CICO, MC-Bauchemie, Pinnacle, Fibrex.
39	Stone cladding champs	Hilti, BOSCH Fischer, Canon
40	Anchor Fasteners	Hilti, BOSCH Fischer, Canon, Pooja Forgo
41	Sanitary and bath fittings & Fixtures	Jaquar , Kingston , Marc, Kohler, Rocca, Hindware.
42	Fire resistant paints	Akzo , Noble , PPG , Jotun
43	Construction & Water proofing chemicals, integral water proofing compounds / methods, chloride free plasticiser cum waterproofing compound, floor hardners, silicon impregnation.	Kryton, Buildmat, BASF, Chryso, DON, Xypex, Normet India, MYK Schomburg, Penetron, MC Bauchemie (India) Private Ltd. (for Integral Crystalline waterproofing).



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Annexure-8
3 of 5

44	Cement	Ultra Tech, ACC , Grasim, Gujrat Ambuja , JK Laxmi.
45	Reinforcement Bars	Sail, RINL, Tata, JSW.
46	Admixtures	FORSOC, MBT,MC Beucheme, Sika, Apex, Pidlite, Polygon, CHRYSO, Choksey, STP, MYK Schomburg, BASF, MAPEI, KunalConchem, H&R Jhonson, Asian Lab, CICO, Fairmate, Pinnacle, Rheoplast, Normet India, Ado Additives Technologies Ltd., Don Construction Chemicals India Ltd.
47	Structural Steel	TATA, SAIL, ESSAR, Jindal steel and power ,JSW, KL steel
48	Welding Electrodes	Advani-Oerilikon, D&H Welding Electrodes, Modi Arc, Maruti weld, Modi Hitech India Ltd.
49	Form work Release Agent	Fosroc, MBT, MC Beucheme, CICO, CHRYSO, Choksey, BASF, Ado Additives Technologies Ltd., Don Construction Chemicals India Ltd.
50	Corrugated Aluminium perforated panel cladding	Canon Fastenor , <u>Hindustan Aluminium, Jindal, Bharat Aluminium, Hindalco.</u>
51	S.S. works	Ozone, JSL,(Jindal Steel), Fabrinox
52	Ready Mix Concrete(RMC)	ACC, Unitech, Grasim, Ultratech
53	Tensile Roof Fabric	Mehler, Serge Ferrari
54	Stainless steel	Jindal, Sail.
55	Horizontal tie bars/shear bars	BB bars system , Dextra
56	Hollow section pipes	Surya pipes, Hi-tech pipes, JSW, JSPL, Bihar Tubes
57	Drainage pipes	Tirupati Plastomatics, Duraline, REX.
58	Non shrink grout	Fosroc chemical (India), SIKA, BASF, MBT, CHRYSO, CHOKSEY, CICO, STP, Ado Additives Technologies Ltd., Don Construction Chemicals India Ltd., MC Bauchemie (India) Private Ltd.
59	Water stopper/Bar	Kanta Rubber, Maruti, Duron
60	Liquid Polymer membrane water proofing	BASF, PIDILITE, Cico, Normet India, MC Bauchemie (India) Private Ltd.
61	Polycarbonate Sheet	Lexan Sabic innovative plastic, DANPALON, BAYER
62	Metal Roof	Tracdek (interarch Building Products), Tata Bluescope



63	Cement/Epoxy Terrazo Flooring	NITCO, NEOCRETE TECH PVT LTD
64	Glass Fiber Reinforced Gypsum	FORMGLASS
65	Rolling Shutters	Gandhi, Avians
66	Tactile	Palican, Unistone Products, Nimco Products
67	PVC floor/Vinyl Tile	Armstrong, Tarkett, Gerfloor
68	Solid Surface / Acrylic	Corian/Dupont, Staron/Samsung, <u>Merino</u>
69	Galvalume	Tata Bluescope, JSW steel
70	Aluminium alloy roofing	Hindalco (everlast)
71	UPVC pipes & fittings	Finolex, Supreme, Polypack, Jindal Plast (India)
72	CPVC pipes & fittings	Flowguard-Astral, Ajay ,Ashirwad
73	Tunnel segment bolts, accessories with fixtures	Canon Fasteners.
74	Expansion Joints	Kantaflex, Kanta, Maruti Techno, MYK Schomburg, Prequalified Manufactures as per RDSO's latest approved list or as approved by LMRC
75	Pile Integrity Testing agency	CBRI, FUGRO-KND, Pile Dynamic, AIMIL, Geo dynamic, CEG Test House, EMC India, Mythcon, ATL AVANTECH, Soil Engineering Consultants.
76	Pre-stressing Strand(LRPC)	TATA SSL Ltd., USHA Martin
77	Pot/Elastomeric Bearings	Prequalified Manufacturers as per RDSO's latest approved list or as approved by LMRC
78	HDPE Sheathing	Rex Polyextrusion, Gwalior Polypipes Ltd., Kataria Sheathing, M/s Tirupati, M/s Dynamic Prestress
79	Prestressing System	Freyssinet, BBR, VSL, Dynamic, Killick Nixon, Tensaccai (India Ltd.), JK Prestressing, Usha Martin, Posten, VSIL
80	Reinforcement couplers	Dextra, Kridhan, JB Engg., Unitech, Moment
81	Acrylic Textured Coating	Spectrum, renova, Wallz, Surfa Nova, Asian Paints, MC Bauchemie (India) Private Ltd.



82	Bonding Coat	CICO, FOSROC, BASF, SWC, TAM, DON, CHRYSO, MYK Schomburg, MC Bauchemie (India) Private Ltd.
83	Micro Silica	Sika, Elkem, FOSROC, MAPEI, Corniche, Star Silica, TAM, CALIPAR, CICO, Rockfit.
84	Curing Compound	FOSROC, Adoadditives, TAM, STP, SWC, CICO, DON, CHRYSO, Ado Additives Technologies Ltd., Don Construction Chemicals India Ltd., MC Bauchemie (India) Private Ltd.
85	Fly Ash	Thermal Plants, Ashcrete, Ultra Pozz, Star Pozz(the Fly Ash shall be as per LMRC Specifications)
<u>86</u>	<u>STP</u>	<u>Thermax</u>



Annexure-9

f	18 HP (15 TR)	NOS	1	660842.03	660842
g	20 HP (16.6 TR)	NOS	1	762993.59	762994
11.2	DUCTABLE/ CONCEALED INDOOR UNITS				
	Supply, Installation, Testing & Commissioning of ductable (High Static) indoor units with evaporator coil, fan and fan motor drain pan. The units shall be of following capacities:				
a	2.0 TR	NOS	1	38722.63	38723
b	2.5 TR	NOS	1	45171.77	45172
c	3.0 TR	NOS	28	47974.37	1343282
d	4.5 TR	NOS	1	62379.61	62380
11.3	FCU/CEILING CONCEALED TYPE INDOOR UNITS				
	Supply, installation, tesing and commissioning of ceiling mounted FCU type (Medium Static) Metallic body indoor units each complete with coil, pre-filter, etc. including necessary steel supporting structure for wall mounting The units casing shall be of steel construction and 220 volt, 1 phase, 50 Hz, AC supply. (CFM shall be as per the approved design)				
	The capacities shall be as follows:				
a	1.0 TR	NOS	21	27504.43	577593
b	1.25 TR	NOS	36 70	32924.00 30689.32	1185264 2148252
c	1.5 TR	NOS	70 36	30689.32 32924.00	2148252 1185264
d	2.0 TR	NOS	4	34102.13	136409
e	2.5 TR	NOS	57	45169.07	2574637
11.4	Refrigerant Joints and Headers				
	Supply, installation, tesing and commissioning of Imported fittings Y-joints, distributor and headers for all Indoor units as per layout drawings.	Sets	216	5223.22	1128215
11.5	Corded Remote Controller				
	Supply, installation, tesing and commissioning of Corded Remote controllers for operation of indoor units	NOS	216	1671.74	361097
11.6	Central Remote Controller				
	Supply, installation, testing and commissioning of Central Remote Controller for complete system including all VRV/VRF indoor and outdoor units.	NOS	9	84591.48	761323
11.7	Scheduled Timer				
	Supply, installation, testing and commissioning of Scheduled Timer.	NOS	9	21346.11	192115
	Notes:				
1)	The vendor may offer the outdoor units as per availability from the manufacturer, however keeping the tonnage same as per BOQ subject to approval by LMRC.				



Annexure-10

1.0	Supply, installation, testing and commissioning of Main fire alarm panel of 32 Zone / required number of loops. The panel shall be microcontroller based with its own fire detection loop / zone interface card for initiating and indicating devices and should also be networkable with other module & repeater panel. the fire alarm panel & repeater panel, module should be connected through RS 485 interface, standby battery for 24 hours with power supply & battery charger. The panel shall have its own operating system, EPROM for event logging system, autodialler etc. as required. The panel box should be constructed with CRC sheet with powder coating. The panel should have necessary provision for interface with Building Management System. The panel shall come complete with:	Set	9	60101.21	540911
a)	Display type - Display consisting of 80 character backlight alphanumeric LCD display & yellow / green / red LED for fault / isolate / fire. LCD display shall include specific name of each room / area with each zone for display when any alarm in that room / area occurs.				
b)	Key pad for operation and monitoring display requirement to display all types of alarm condition, short, open condition with address & should also indicate time and date.				
c)	Provision for 25% expansion of panel in future				
d)	FACP with all in-built Zone Cards and displays.				
e)	Terminal strips for receiving and terminating all external cabling.				
f)	All internal wiring				
g)	Auto dialling facility to nearest fire brigade station.				
h)	Change over relay contactor for Remote Monitoring of fault.				
i)	Alarm for Gas Flooding system shall be integrated with the fire alarm system.				
j)	<u>Interface with HT Contractor & integration of HT Panel & Transformer Flooding System</u>				
2.0	Supply, installation, testing and commissioning of 32 Zone Repeater Panel with LED per zone and piezo sounder and with 40 x 2 character LCD display & RS 485 network	Set	9	13224.87	119024
3.0	Supply, installation, testing and commissioning of the following signal initiating devices complete with galvanised steel back box, base detector, etc. complete as specified, required and as approved.				



S.57	MISCELLANEOUS FIRE SERVICES EQUIPMENT				
1.0	Self- contained open circuit type compressed air Breathing apparatus set confirming to EN-137:1993 , standard complete with one spare cylinders,	Set	18	51547.51	927855
1.1	a) Air cylinder with valve				
1.2	b) Back plate with body harness				
1.3	c) Face mask				
1.4	d) Pressure reducer				
1.5	e) Lung demand valve				
1.6	f) Pressure gauge & warning whistle				
1.7	g) Hoses				
1.8	h) Carrying case				
1.9	i) Spare air cylinder				
1.10	One wall mounted cabinet to store the above breathing apparatus & associated equipments				
	TOTAL FOR S.57				927855

PART-D : Plumbing Pumps & Associated Cabling

P.01	PLUMBING PUMPS & ASSOCIATED CABLING				
1	PUMPS				
1.1	Supply, installation, testing and commissioning horizontal monoblock pump set complete with gate valve and non-return valve at delivery and suction of pump for pumping water to overhead tank as per specification including all accessories required for installation of pumps.				
	Capacity – 100 LPM, approx head - 35m, (Domestic Water Pump)	Each	18	50815.00	914670
1.2	Supply, installation, testing and commissioning submersible sump pumps with cast iron body and all S.S. internals supplied including all accessories required for installation of pumps.				
	Capacity – 250 LPM, approx head - 12m, (Sump Pump)	Each	18	67212.00	1209816
1.3	Providing Submersible pump set as per specifications with direct coupled motor rated for 3 Phase, 50 Cycles 415±10% Volts, AC supply with the following duty.				
	Total head - 200 mtr. (Approx.)				
	Flow rate - 12000 ltr/ hr. (Approx.), (Borewell Pump)	Each	18	286806.00	5162508



7.0 Fire hydrants and hose reels

- 7.1 Hydrants shall be provided internally and externally as shown on the drawings. Internal hydrants shall be provided at each landing of and escape staircase and additionally depending on the floor area as shown on drawings. Landing valve shall be single headed SS (stainless steel) valve with 63 mm diameter outlets and 80mm inlet conforming to IS 5290-1993. Landing valve shall have flanged inlet and instantaneous type outlets and mounted at 1.0m above the floor level. Instantaneous outlets for the hydrants shall be of standard pattern approved and suitable for 63mm diameter fire brigade hoses. Wherever necessary, pressure reducing orifices plate shall be provided so as to limit the pressure to 3.5 kg/cm² or any other rating as required by the Local Fire Authority.
- 7.2 Each landing valve shall have a hose reel cabinet as shown on drawings.
- Landing valve with single 63 mm diameter outlet and 80 mm diameter inlet.
 - First-aid hose reel with 45 m long 25 mm diameter high pressure thermoplastic (IS: 12585 marked) with 25 m diameter Ball Valve.
 - 2 nos. 15-meter long 38 mm diameter synthetic hoses (~~UL~~ listed IS 636 : 1988) with SS IS marked instantaneous couplings.
 - One SS branch pipe.
- 7.3 The First Aid Hose pipe shall conform to IS: 12585 and be wound on a heavy-duty circular hose drum confirming to IS :884 – 1985 with a bracket. The hose shall be permanently connected on one end to the Wet Riser through **MS Pipe and** a 25m Ball Valve with necessary hose adapter and a SS nozzle at the other end.
- 7.4 Hoses shall be in two lengths of 15 m each, of synthetic type (IS 636 : 1988) with instantaneous couplings, neatly rolled into bundles and held in position with steel brackets. Hoses shall be tested and certified by the manufacturer to withstand an internal water pressure of not less than 35 kg/cm² without bursting. The hose shall also withstand a working pressure of 7-kg/ cm² without leakage.
- 7.5 The hose cabinet shall be fabricated from mild steel sheet / stainless steel sheet / aluminium sheet. The cabinet shall have double flap-hinged doors with 5.5 mm clear glass and shall have necessary openings for riser main and brackets for all internals. The cabinet shall be provided

SECTION: P.01

PLUMBING PUMPS & ASSOCIATED CABLING

1.1 Pumps for Water Supply

This Section specifies the manufacture and installation of domestic water supply pump sets, drainage sump pump in Pump Room.

- a) Pumps shall be electrically operated and directly driven.
- b) The pump heads specified on the Drawings and / or Bill of Quantities are for guidance and information only, and are calculated based on assumed equipment pressure drops. The exact pump head based on the pipe run and the offered equipment shall be carefully checked and re - calculated for each pump before ordering the equipment. Calculation shall be submitted for approval. No modification to the piping system shall be allowed without prior approval. Any additional cost for the modification of the system (pumps, motors, switchgears, cables, panel boards, switchboards, etc.) necessary to meet the specified duties, special conditions and the offered equipment shall be provided at no extra cost to the Employer.
- c) For pumps in parallel operation at any particular time, the pumps selected shall have steep characteristic curve. For single pump operation at any particular time, the pump selected shall have flat characteristic curve. Pumps with curve indicating excessive shut-off head shall not be used.
- d) Additional vibration isolators and sound attenuators shall be provided by the contractor as may be required by the Engineer at his own cost if the noise level is found excessive and not within the requirements.
- e) Each complete pump unit including motor and drive shall be supplied from a single manufacturer as a complete factory manufactured package. All guarantees and test certificates shall apply to the entire assembly.
- f) All pumps shall be factory painted in accordance with the manufacturer's recommendations. Any damage to finishes shall be made good in the manner recommended by the manufacturer and to the satisfaction of the Engineer.
- g) **The display panels for the automation of Borewell Pump, Domestic Water Pump, Sump Pump shall be installed in the Station Control Room (SCR) & the cost shall include the work of all transducer, cabling from Pump to Station Control Room etc. (BOQ Item No. 11.2 of Schedule-B)**
- h) **The displays of Water Level Indicators of Fire Tanks, Domestic water Tanks, Water Tanks at Platform Level, Sump Pit shall be installed in the Station Control Room (SCR) & the cost shall include the work of all transducer, cabling from Different Tanks to Station Control Room etc. (BOQ Item No. 11.2 of Schedule-B).**

1.1.1 Standards

- a) All pumps shall be as per relevant codes and standards. Pumps shall be tested as per ISO 9946 or BS 599.



Annexure-14

S.No.	Item Description	Units	Quantity	Rate	Amount (INR)
	thick fully flushed double skin door with lock seam joints at stile edge and infill insulation kraft core. Door frames 57x120 mm approx. to be single rebated made of 16 gauge galvanised steel. Door shutter and frame to be primered in stoving grade epoxy zincphosphate primer and finished in aliphatic grade u.v. resistance polyurethane paint. Door shutter and frames to have all hardware preparations, prepunctured at the factory all complete with and including filling of door frames with P.C.C. 1:5:10 (1 cement : 5 aggregate : 10 coarse sand). The rates include all Materials, necessary accessories, labor, tools and plants. Nothing shall be paid extra for this items.				
6.11.1	Single leaf door shutter	Sqm.	184.38	4,263.49	7,86,102.29
6.11.2	Double leaf door shutter	Sqm.	-	4,263.49	0.00
6.11.3	Extra for 250 x 150 mm vision panel with 6mm thick clear toughened glass.	No.	-	1,012.58	0.00
6.11.4	Extra for provision of air transfer grille appx. 400x400 mm	No.	-	1,119.17	0.00
6.11.5	Heavy Duty Door Closer	Each	27.09	1,172.46	31,761.94
6.11.6	Eurofile Mortice lock -240 with double pin cylinder having master arrangement and ss handles	Each	234.78	2,238.33	5,25,515.12
6.11.7	Concealed SS finish tower bolts (300mm)	Each	-	149.22	0.00
6.11.8	Magnum or equivalent make SS 4 Ball Bearing hinges	Each	469.56	74.61	35,033.87
6.11.9	SS handles Dorma or equivalent make for double leaf door	Each	-	479.64	0.00
6.11.10	Dorma or equivalent make Panic Bar for Double leaf door	Each	-	15,348.56	0.00
6.11.11	Installation Charges	Sqm	184.38	586.23	1,08,089.09
6.12	Designing, Providing and fixing profile Aluminium perforated Sheet cladding with corrogation (40%) of required thickness 1.5 mm , The Aluminium sheet should be powder coated in approved shade. The aluminium panels/sheet to be fixed on to be extruded aluminium saving on MS frame (size as per design) with the help of angle cleats including weather sealants ,stainless steel ,screws ,rivets, fastners complete in all respects as per drawing. All required MS and Aluminium frames are included and complete in all respect. Nothing Extra payment will be made for this items. Note: The contractor shall submit fabrication drawings for approval of the LMRC.	Sqm	4,070.76	6,090.70	2,47,93,777.93



Annexure-15

S.No.	Item Description	Units	Quantity	Rate	Amount (INR)
8.1	Extra for galvanising over structural steel as per the drawings & Specifications etc complete in all respect	KG	887.25	10.66	9,458.09
8.2	Providing and fixing (approved make) galvanized chicken wire mesh of size 75 x25 mm mesh (24 guage - 12 mm size) to be fixed on junction of concrete and masonry work and other location & firmly anchored to by means of galonized wire nails including the cost of cutfign to required sizes, materials, labour, tool & plants as approved by engineer-in-charge. Nothing shall be paid extra for this items.	Sqm	945.00	53.58	50,633.10
8.3	Providing and fixing (approved make) 12 mm thick Cement fibre board clading fixed both side on Aluminium / MS pipe frame for bulkhead as per approved architectural drawings. The frame is 100 x 100 x 6 mm Sq. Pipe fixed with verticles @ 1.2 m c/c and fastener to fix bulkhead on aluminium box section, aluminium beading etc. The rates shall include all necessary materials, labour, tools & plants as per instruction of Engineer-in-charge Note: Nothing extra shall be paid against this items.	Sqm	2,362.50	1,850.00	43,70,625.00
8.4	Providing and fixing (approved make) 12 mm thick Calcium Silicate board clading fixed both side on Aluminium / MS pipe frame for bulkhead as per approved architectural drawings. The frame is 100 x 100 x 6 mm Sq. Pipe fixed with verticles @ 1.2 m c/c and fastener to fix bulkhead on aluminium box section, aluminium beading etc. The rates shall include all necessary materials, labour, tools & plants as per instruction of Engineer-in-charge Note: Nothing extra shall be paid against this items.	Sqm	708.75	1,800.00	12,75,750.00
8.5	Providing and fixing of 4 mm thick annealed GRIHA rated lacquered glass of color and shade approved by Engineer-in-Charge. The glass should be fixed with compatible neutral core silicon / lacquered glass compatible double sided tape (SGG GLASSMATE PRIMA-FIX or equivalent) on a perfectly leveled 12mm thick water proof plywood / MDF / Mineral fibre board of approved make which is mounted on the RCC work / Block work / Brick Work / MS frame as per Site. The Silicon / tape should not react with coating on glass & render even color tone when viewd from glass side. The Lacquered glass must be made industrially; must be opaque (if viewed against a support wall), coated with PU	Sqm.	1,089.38	6,728.61	73,30,013.16



Annexure-16

S.No.	Item Description	Units	Quantity	Rate	Amount (INR)
	lacquer (minimum 60 micron thick or more); must have panel to panel color consistency (measured by Minolta spectrophotometer CM5081 or eq.); highly durable (passes PERSOZ hardness test for min. 220 oscillations or more); humid resistant (conforms to BS EN 1036 1999 or eq); environmentally friendly (no lead, no arsenic, no copper, no formaldehyde); appropriate recycled content (12% post industrial / 6% post consumer or eq.); compressive strength (1000 MPa) & tensile strength (40 MPa), same as float glass. The gap between RCC Work, block work, brick work, MS frame, and Lacquered glass should be fixed with powder coated aluminium tube, channel of colour and shade approved by Engineer-in-Charge. The rates include all required holes, any grinding, bevelling, polishing, necessary accessories, materials, labour, tools and plant. Nothing shall be paid extra.				
8.6	Extra for 6 mm thickness annealed GRIHA rated lacquered glass with same specification mentioned in Item No. 8.5 mentioned above. Additional Cost shall be paid with 4 mm thick lacquered glass as mentioned in item no. 8.5	Sqm	108.94	1,500.29	1,63,441.59
8.6.1	Extra for 8 mm thickness annealed GRIHA rated lacquered glass with same specification mentioned in Item No. 8.5 mentioned above. Additional Cost shall be paid with 4 mm thick lacquered glass as mentioned in item no. 8.5	Sqm	52.50	3,000.00	1,57,500.00
8.7	Rebaring for structural connections in RCC beams, Lintels, column, slab etc including power drilling holes of appropriate diameter in reinforced or plain cement concrete to a minimum depth of 10x rebar diameter and as per manufacturer specification in position using Hilti or equivalent chemical. The rates including all material, labour, T&P etc. Nothing shall be paid extra except reinforcement. The reinforcement shall be paid under DSR Items.				
8.7.1	10 mm dia reinforcing bar	Each	472.50	145.87	68,923.58
8.7.2	12 mm dia reinforcing bar	Each	4,725.00	193.87	9,16,035.75
8.7.3	16 mm dia reinforcing bar	Each	5,906.25	316.06	18,66,729.38
8.8	Providing and fixing anchor bolt or fastener required size in masonry/C.C./concrete/frame of structure etc. surface backing including drilling necessary holes and the cost of bolt etc complete in all respect as per instruction of Engineer-in-charge.				



Annexure-17

S.No.	Item Description	Units	Quantity	Rate	Amount (INR)
	using a separating layer of 125 Micron Plastic Sheet or equivalent, movement joints as per Architectural drawings & specification, curing, testing etc. - all complete as per instruction of Engineer-in-Charge.				
8.17	Providing and applying epoxy based solvent free anti - dust concrete sealer (sealocote or equivalent) of approved make and quality on fair faced masonry and concrete surfaces inclusive of surface preparation, over primer coat/ initial coat as per manufacturer's guidelines & specifications, scaffolding / staging etc. complete				
8.17.1	To vertical masonry / concrete wall & concrete surfaces.	Sqm	959.19	132.20	1,26,806.16
	Total sub head Miscellaneous works				6,91,91,340.34
9	FIRE DOOR				
9.1	Fire check doors supply of approved make (120 Minutes) 2 hrs fire rated door fabricated and successfully tested at CBRI Roorkee in both direction -satisfying two criteria (Stability and Integrity) confirming to BS:476 Part II, IS3614 Part II as per schedule of requirement. The rates include all Materials, necessary accessories, labor,tools and plants. Nothing shall be paid extra for this items.	SQM	319.78	6,395.24	20,45,069.85
9.2	Clear Vision Panel of 200mm x 300mm	Each	19.11	479.64	9,165.92
9.3	Heavy Duty Door Closer	Each	130.62	1,172.46	1,53,146.73
9.4	Eurofile Mortice lock -240 with double pin cylinder having master arrangement and ss handles	Each	336.63	2,238.33	7,53,489.03
9.5	Concealed SS finish tower bolts (300mm)	Each	74.34	149.22	11,093.01
9.6	Magnum or-equivalent make SS 4 Ball Bearing hinges	Each	593.46	74.61	44,278.05
9.7	SS handles Dorma or-equivalent make for double leaf door	Each	-	479.64	0.00
9.8	Dorma or-equivalent make Panic Bar for Double leaf door	Each	-	15,348.56	0.00
9.9	Installation Charges	Sqm	319.78	586.23	1,87,464.63
	Total Fire Door				32,03,707.22
10	SANITARY INSTALLATIONS WORKS				
10.1	Providing and fixing CP brass twin robe hooks as per approved make.	Each	56.70	616.25	34,941.38
10.2	Providing and fixing cast brass clean out plug with suitable insert keys for opening in brass				



S.No.	Item Description	Units	Quantity	Rate	Amount (INR)
	RCC shall be only machine cut and nothing extra shall be paid on this account)				
a)	40 mm dia	Metre	761.25	262	1,99,447.50
b)	50 mm dia	Metre	756.00	333	2,51,748.00
c)	63 mm dia	Metre	1,181.25	454	5,36,287.50
10.9	Providing and fixing grap bar as per direction of Engineer incharge LMRC	Each	9.45	4500	42,525.00
10.10	Providing and fixing wash basin handel for handicap Toilet per direction of Engineer incharge LMRC	Each	9.45	3000	28,350.00
10.11	Providing and fixing Water Closet (European Type) , Wall hung of make Hindware (LARA-RIMLESS-CAT.NO. 20069, Size 53.5 x 38 x 37 cm, star white colour/ ESSENCE-Size 55 x 37.5 x 37. cm, CAT.NO. 92051, star white/ Crystal-size 60 x 36 x 40 cm, Cat. No. 20047, Star white or equivalent)/ Jagware Jaguar (Queens Cat No. QNS-WHP 7951, With UF seat cover Hinges, Accessories sets complete or equivalent/ KUBIX Cat No. KX-WXT-35951 with UF seat cover hinges accessories complete)/ Perryware (QUBEX Cat No. CH44H/HAVENA N / CASCAD N x T, cat. no. C0207 or equivalent) / CERA (Carnival 2030 CR EWC Wall hung P clen Rim 2306 CANDY soft close seat cover outlet gasket / in let gasket complete with white colour or equivalent) or any brand as approved by Engineer-in-Charge.	Each	45	10560	4,75,200.00
10.12	Providing and fixing wall hung / Sensor Urinal, integral battary operated, infrared censor operated flush with pre flush 250 ml, post flush 350 ml and consealed water inlet. complete in all respect as per satisfaction of Engineer-inCharge.	Each	27	9210	2,48,670.00
10.13	Providing and fixing concealed Cistern make Hindware (CONCEALO, 80 mm, xc complete set with flush plate or equivalent) / Jagware Jaguar (ACS-WHT-2400FS single piece clean concealed cistern with floor mounting frame, installation kit and S type drain pipe connection set for wall hung WC with flush plate or equivalent) as approved by Engineer-in-Charge.	Each	45	7490	3,37,050.00
	TOTAL OF SUBHEAD SANITARY INSTALLATIONS WORKS				33,21,069.84
11	WATER SUPPLY WORKS				



Annexure-19

Sl. No.	Item Description	Unit	Quantity	Rate (INR)	Amount (INR)
	Item to include curved sheets and crimping also. Rate shall include providing fasteners on each crest of sheets for connection with purlins and seam bolts etc. measured per unit of laid areas.				
	Measurement will be made in sqm of Plan area.				
2.1	As per item No.2 for Roof Sheeting / Side Cladding including all flashings, overlaps etc. complete in all respect.	SQM	36878	942.00	3,47,39,491.26
3.0	Providing, supplying, erecting and fixing in position 3mm thick corrugated clear Polycarbonate sheets of approved make texture and colour for Sky light. The corrugation Profile shall match with the profile of roof sheets as listed out in item 2 above, including capping and fixing to roof sheets and steel girts by same fasteners as used by roof sheeting, minimum end laps of 200 mm sealing of laps with silicon sealant, water tight complete in all respects, Contractor shall give 20 years guarantee for Polycarbonate sheets against discolour and disintegration of sheets, and leakage across laps, fastener etc. (Payment shall be made on laid plan area of polycarbonate sheet excluding end caps between sheets.)	SQM	3778	2468.80	93,26,707.80
4.0	Providing, fabricating to required profile and shape, transporting, erecting and fixing in position Structural steel (conforming to IS:2062 Grade B or equivalent) including procurement of all raw steel materials, bolts, nuts & washer incl. its testing, allowance for all types of wastages, straightening, cutting, bending of section wherever specified, drilling holes, bolting, provision of necessary tools, testing etc. The rate shall also include required surface preparation for application of all coats of shop and site primers and paints as specified. The rate Shall also include preparation of complete detailed fabrication drawings base on the design drawings, required for all permanent and temporary structures and their approval from Engineer - in - charge prior to execution. The rate shall also include provision and installation of base plate, anchor bolts (measured in tonnes) etc as per drawings and specifications. Any temporary support, Staging braces,				



a)	2 sets (4 no.) of AC operated, 3.5 Digit, independent Digital Ammeter, Digital Volt meter similar to SMP-45 models of MECO or equivalent as per approved make of list with necessary Circuit MCBs and with suitable size CTs connections as required for incoming feeders				
b)	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, kWh, kVAH, frequency, Maximum Demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and suitable size summing CTs for above two incomer metering supporting SCADA/BMS connectivity				
E	Power factor correction unit				
a)	8-step automatic power factor correction relay to sense and monitor the system power factor and provide impulses for operation of 8 capacitor circuits with automatic switching over facility with manual override.				
b)	7 nos. 100 A, 415V, 35 kA TP MCCB with fixed neutral and 100A, 3 pole Contactor (capacitor duty) for automatic switching of capacitor				
c)	2 nos. 63 A, 415V, 35 kA TP MCCB with fixed neutral and 63A, 3 pole Contactor (capacitor duty) for automatic switching of capacitor				
d)	2 nos. 5.0 kVAR, 415 V hermetically sealed heavy duty MPP capacitors in well ventilated enclosures complete as per specifications , application duty and as required				
e)	2 nos. 12.5 kVAR, 415 V hermetically sealed heavy duty MPP capacitors in well ventilated enclosures complete as per specifications , application duty and as required				
f)	2 nos. 25 kVAR, 415 V hermetically sealed heavy duty MPP capacitors in well ventilated enclosures complete as per specifications , application duty and as required				
g)	2 nos. 37.5 kVAR, 415 V hermetically sealed heavy duty MPP capacitors in well ventilated enclosures complete as per specifications , application duty and as required				
h)	Indicating lamps to give on & off status of the circuit				
F	B1 OUTGOINGS				



c)	Amber healthy trip indicating lamps for above feeders				
B	BUSBAR				
	Electrolytic high conductivity tinned copper three phase and neutral busbars rated at 125 A having a maximum current density of 1.4 A per sq mm suitable to with stand symmetrical fault level of 25kA. at 415 V. The neutral busbar is to be of same size as phases.				
C	OUTGOING				
a)	3 Nos. 40A, lcs = 25 kA, 415V, TP MCCB(Motor Duty) each with the following:				
a1)	3 nos. 15 HP (For Borewell)/ 11 kW pump Star Delta starter with bimetallic over current relay + Single phasing preventer with potential free contacts for remote monitoring and control + 3-level liquid level controller				
a2)	1 set for each Red/Green ON/OFF indicating lamps				
a3)	1 set for each start stop push buttons.				
a4)	Auto / Manual selector switch.				
a5)	Amber healthy trip indicating lamps				
a6)	1 no. for each feeder of AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent as per approved make of list with necessary Circuit MCB, suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required				
b)	6 nos. 20 A, lcs = 10 kA, 415 V, TP MCB (motor duty) each with the following:				
b1)	6 nos. 2 HP(For Domestic) / 1.5 kW pump DOL starter with bimetallic over current relay + single phase preventer with potential free contact for remote monitoring and control				
b2)	1 set for each Red/Green ON/OFF indicating lamps				
b3)	1 set for each start stop push buttons.				
b4)	Auto / Manual selector switch.				
b5)	Amber healthy trip indicating lamps				
b6)	1 no. for each feeder of AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent as per approved make of list with necessary Circuit MCB, suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and				



	suitable selector for measuring other circuit current as required			
c)	3 Nos. 16A, Ics = 10kA, 230V, DP MCB (motor duty) each with following:			
c1)	3 Nos. 1.5 HP(Sump Pump) / 1 kW pump DOL starter with bimetallic over current relay with potential free contacts for remote monitoring and control.			
c2)	1 set for each Red/Green ON/OFF indicating lamps			
c3)	1 set for each start stop push buttons.			
c4)	Auto / Manual selector switch.			
c5)	Amber healthy trip indicating lamps			
c6)	1 no. for each feeder of AC operated, 3.5 Digit, independent Digital Ammeter similar to SMP-45 models of MECO or equivalent as per approved make of list with necessary Circuit MCB, suitable size CTs and selector switch for current measurement on standby and main pumps including connections as required for incoming feeder and suitable selector for measuring other circuit current as required			
D	Metering			
	1 No., 230V, AC operated integral type Digital meter with RS-485 port for measuring Amps ,Voltage, Energy, kWH, kVAH, frequency, Maximum Demand & power factor etc with TOD facility conforming to specifications, latest IEC/ EMC and EMI standards/criterion, with necessary Circuit MCBs and supporting SCADA/BMS connectivity			
E.	Pre-settable switching timer set for each pump			
1.8(b)	Fire Pump Panel (FPP) as per specifications & Drawing as per following details complete with contactor based automatic changeover system as per following details	9	676739.80	6090658
	Internal wiring in the Starters shall be done with FR PVC insulated cables of adequate size. Internal wiring, contactors, relay contacts, push button contacts should be rated not less than 2.5 sq mm.			
A	INCOMER - I from MDB (Normal Supply)			
	1 no. 250 A, 415 V, Ics=35kA ,4P, MCCB with variable over current and short circuit releases having:			
a)	1 set of Red/Green ON/OFF indicating lamps			
b)	1- set of three phase indicating lamps (red, yellow, blue)			
c)	Amber trip indicating lamps			



Annexure-23

1.4	Supply, installation, testing and commissioning of LED 2x2 recessed fixture, with system lumen output of 2800 lumens at a system efficacy of 67 lumen/watt. The luminaire shall have powder coated CRCA housing and light output is by means of Semi High Gloss optics with 3D Lamellea and High Purity Anodized Aluminium mirrors.Similar to Philips catalogue no RC869 B W60 L60 LED or equivalent as per approved make of list and must conform to Ingress Protection Classification of IP 20.(for false ceiling equipment room)	No.	104	5395.80	561163
1.5	Supply, Installation, Testing & commissioning of luminaire similar to Philips Catalogue No. BY400V (Greenbay) or equivalent as per approved make of list. Fitting should have a aluminium pressure die cast housing with dedicated optics with protected LED's giving a lumen output of 7000 lumens giving optimal lighth distribution for symmetric/assymetrical configuration. The luminaire shall have a system efficacy of 100 lm/W and an electronic driver with a power factor of >0.9. It is designed to meet IP65 specifications ensuring L70 for 50000 burning hours with a THD<20%.The luminaire complies with requirements of CE ,CISPR 15Ed72 , IEC 61347-2-13, IEC 61547, IEC 62384 and must conform to Ingress Protection Classification of IP 65.(for Street lighting).	No.	256	22918.21	5867061
1.6	Supply, installation, testing and commissioning of surface mounted LED Bulkhead with a system lumen output of 600 lumens and a system efficacy of 60 lumen/watt. The luminaire shall be IP66 & IK09 rated and shall have a CRI of 70. The housing of luminaire is made of high pressure die cast aluminium with front cover made of polycarbonate diffuser.Similar to Philips catalogue no.WT202W LED6S and must conform to Ingress Protection Classification of IP 54.(For Shaft, Parapet wall)	No.	81	1362.88	110394
1.7	Supply, installation, testing and commissioning of LED Downlighter with a system lumen output of 1000 lumens and a minimum system efficacy of 100 lm/W. The luminaire shall have a CRI greater than 80 with rated system lifetime of 50,000 hours at L70. The luminaire optics shall have a high efficiency diffuser with more than 85% transmittance. Height of luminaire shall not be more than 70 mm.Similar to Philips catalogue no. DN	No.	246	1029.36	253221



i)	Bajaj Cat. No. BOP-1030 / Philips / Keselec or equivalent as per approved make of list welded baseplate, pedestal of specified height to IS:2713 part II-1980 or latest as per specifications and drawings.				
ii)	1:3:6 concrete foundation and pedestal coping 300 dia of height as per specification and relevant IS and as required. Contractor to obtain approval of foundation design before proceeding further.				
iii)	6 ways, 20A connector & 6A MCB mounted on 6mm thick painted MS/GI plate, insulated, and accommodated inside the pole with gasketted weather, vermin proof, hinged lockable covered GI/MS box or integral cast box in pedestal as required.				
iv)	Wiring to Luminaries from the 2A, HRC fuse, with 3 x 2.5 copper, stranded Conductor (P+N+PE) double sheathed wire and making connections & earthing of pole.				
v)	Painting of pole accessories with 2 coats of primer and 2 coats of oil paint of approved colour.				
vi)	Luminaire as specified with lamps, necessary cross arm to the luminaire, integral control gear and as under.				
3.1	Poles				
3.1.1	9.0 meter hot dipped galvanised Octagonal with single overhang arm & with foundation bolts, base plate complete with foundation, entry and exit pipes, control JB with connector generally as shown on drawings and as per specifications.	No.	1	20642.41	20642
3.1.2	9.0 meter hot dipped galvanised Octagonal with double overhang arm & with foundation bolts, base plate complete with foundation, entry and exit pipes, control JB with connector generally as shown on drawings and as per specifications.	No.	1	21198.78	21199
3.1.3	7.0 meter hot dipped galvanised Octagonal with single overhang arm & with foundation bolts, base plate complete with foundation, entry and exit pipes, control JB with connector generally as shown on drawings and as per specifications.	No.	98	16745.14	1641024
3.1.4	7.0 meter hot dipped galvanised Octagonal with double overhang arm & with foundation bolts, base plate complete with foundation, entry and exit pipes, control JB with connector generally as shown on drawings and as per specifications.	No.	41	17045.00	698845



Contract LKCC – 08: Civil, Architectural Finishes, Water Supply, Sanitary Installation, Drainage, External Development, Fire fighting, Fire detection, E&M works and PEB structures for Nine nos. Elevated metro stations (eight stations from K.D. Singh Babu Stadium Station to Munshipulia Station and one Amausi Metro station) on North – South Corridor, Phase 1A of Lucknow Metro at Lucknow, Uttar Pradesh, India.

Annexure-25

3.2	Luminaires				
3.2.1	Supply, installation, testing and commissioning of LED Street light fixture with IP66 protected LM6 high pressure aluminum die cast housing capable of delivering a nominal system lumen output of 7200 lumens with a minimum system efficacy of 85 lumen/watt and a CRI greater than 70. The luminaire shall have a life class of 50,000 hours @ L70 and driver efficiency of >85%. (Similar to Philips Cat. No. BRP410 LED CW 072 MR FG S1 PSU	No.	179	15964.44	2857635
4	Supply, installation, testing and commissioning of Extruded AL Light column. Die Cast Aluminium housing high corrosion resistance powder paint with high corrosion resistance with chemical cromotised protection with integral control gear with high purity AL reflector, suitable for 70 W, CDM-ET lamp, Similar to Philips Cat. No.CPP- 735/70W CDM-ET, Thorn NELLA or equivalent <u>as per approved make of list</u> , including the cost of Lamps	No.	1	13970.17	13970
5	Supply, installation, testing & commissioning of air craft warning lights complete with non flickering type lights similar to GEC model ZH 752, Thorn AVLT or equivalent <u>as per approved make of list</u> including lamps, mounting bracket, earthing, painting complete with accessories to automatically switch off lights. (Note:Point wiring shall be done under other Item)	No.	1	4682.43	4682
5.0	High Mast				
5.1	Supply, installation, Testing and Commissioning 20 m high area lighting High Mast of Bajaj/Philips/Keselec, suitable for 06 nos. 2X400 W luminaires complete with all standard accessories like winches, latern carriage etc. including the cost of providing supplying and fixing 6 nos 2X400 W HPSV flood light luminaires with die cast / extruded Aluminium body, pre anodised Aluminium asyemtrc/syemtric reflector, IP 54 and above, heavy duty control gear housed in a weather proof housing of Philips/Bajaj/Keselec Schreder/Thorn equivelent to cat no. RT 3/N/2X400 of philips or equvelent and including cost of the 400 W lamps type SON-T plus of Pllilips,also including Lightening Arrestor and others accessories like phosper Bronz Gear, double drum, stainless steel wire ropes, suitable MCB wires/cables as required with alongwith the folowing accessories as required as under :-	No.	1	290195.66	290196

