

Tender No: BMRCL/Phase-2/Reach-6/UG/TNL&STN/(R6-CC-02)-RT03/2018/38



Driving Bangalore Ahead

BANGALORE METRO RAIL PROJECT, PHASE-2

“Design & Construction of Underground structures (Tunnels & Stations) of length 2.884 Km (approx.) from Shivajinagar Station (excluding) to Tannery road Station (excluding) (Chainage 13938.328 m to 16822.521 m) including allied works and 2 Nos of UG Metro Stations viz Cantonment and Pottery Town in Reach-6 line of Bangalore Metro Rail Project, Phase-2.”

BMRCL/Phase-2/Reach-6/UG/TNL&STN/(R6-CC-02)-RT03/2018/38

JUNE 2018

Financial Proposal



PRICING DOCUMENT - FORM OF PRICE BID
(To be submitted in the letter head of the Tenderer)

Ref:

Dated.....

(Tenderer to provide date and reference no.)

To
The Managing Director,
Bangalore Metro Rail Corporation Ltd.
Third floor, BMTC Complex
KH Road, Shanthinagar
Bangalore-560027, Karnataka,
India.

Dear Sir,

Priced document for “**Design & Construction of Underground structures (Tunnels & Stations) of length 2.884 Km (approx.) from Shivajinagar Station (excluding) to Tannery Road Station (excluding) (Chainage 13938.328 m to 16822.521 m) including allied works and 2 Nos of UG Metro Stations viz Cantonment and Pottery Town in Reach-6 line of Bangalore Metro Rail Project, Phase-2.**”

Tender No: BMRCL/Phase-2/Reach-6/UG3/TNL&STN/(R6-CC-02)-RT03/2018/38 Dated 26-06-2018

1. We, hereby submit our priced document for the above mentioned work.
2. We understand that in the event of any information furnished by us being found later on to be incorrect or any material information having been suppressed, the following action can be taken in addition to the Provisions of **Para 4.33 of GCC.**
 - (i) Any tender submitted by us in future for other works on the basis of qualification may not be considered.
 - (ii) If any tender from us is accepted and a contract awarded to us on the basis of our qualification, the tender acceptance may be withdrawn and the contract awarded to us may be cancelled without any financial claim /Arbitration request from our side.
 - (iii) Our name will / may be removed from the panel of qualified agencies.

Yours faithfully,

(Signature)

Name of signatory:

Capacity of signatory:Name and address of Tenderer

1. PREAMBLE

- 1.1 The Pricing Document shall be read in conjunction with the Technical proposal of this Tender document including any other amendments issued thereafter, corrigendum and Addendums.
- 1.2 The item descriptions, if given, are general summaries only, therefore no omission from, or error in, item descriptions within this pricing document shall warrant an adjustment of the contract price nor entitle the contractor to seek an extension of time under the contract.
- 1.3 Quoted Price shall include all state & central taxes, duties, cess and royalties **except GST**.
- 1.4 The contract caters for granting of incentive in case of early completion of Key Dates as per Appendix 18.
- 1.5 In case of delays by the contractor, he is liable to be levied with penalties and Liquidity Damages as per Appendix 18.
- 1.6 For abnormal consumption of cutter Discs, please refer SCC clause 13 for additional payment.
- 1.7 The payment to the Contractor will be generally made on monthly basis through Interim Payment defined in the Special Conditions of Contract and the General Conditions of Contract according to the percent payable on Fixed Lump Sum Price (Payment Schedule A to B), according to the works measured as per BOQ provided (Schedule C) and according to the works measured as per SRs (Schedule D).
- 1.8 It is to be noted that the surplus excavated material (that cannot be used in the Works), shall be treated as Contractor's property. Whereas the muck/spoil that is acceptable and can be used at a later stage in the Works, shall be temporarily stockpiled in a dumpsite as proposed by the Contractor and agreed by the Engineer/Employer's Representative and the concerned regulating authorities with no extra cost to the Employer.
- 1.9 The surplus muck/spoil (soil/spoil/material/building debris), which is not acceptable or cannot be accommodated for use in the Works, shall be disposed of at the approved dumping area(s) only duly fulfilling all the Contract stipulations. In case the Contractor chooses to recycle the spoil (including the rock spoil) for his own purpose, the temporary storage and processing facilities shall have to be taken care of by the Contractor at his own cost. Any cost due to Octroi, Royalty, statutory payments/levies or any other charges etc. payable on the spoil/muck for its disposal or recycling (for Contractor's own purpose) shall have to be borne by the Contractor.
- 1.10 The activity descriptions for items in Schedule A, B, C and D shall be deemed to cover all aspects of the relevant item scope. The total amount of each of these schedules shall be deemed inclusive of all of the Contractor's obligations to execute the part of the Works covered by the schedules and to perform all of his other obligations under the Contract in respect thereof.
- 1.11 The Price Variation specified in Clause 6 of the Special Conditions of Contract will be payable on all Schedules A to D.
- 1.12 The quantities given in the Schedule – C are estimated and provisional and are given to provide a common basis for tendering. The basis of payment will be the actual quantities of work based on design and drawings prepared by the contractor and approved by the Engineer (cost of Design and Detailed Drawings will be paid separately under Schedule-B), ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates in the accepted priced document- "Bill of Quantities", wherever applicable.
- 1.13 The quoted Percentages are for completed and finished items of work and complete in all respects complying with the provisions of the Contract.
- 1.14 Cut outs are required to be provided in Concourse slab and Roof slab for lowering equipment's and materials of various systems, facilitating track linking and facilitating other related works. Such cut outs shall be closed within 30 days from date of handing over cut out for closing. The cut outs may be closed by using precast concrete members or as instructed by Engineer. Cut

outs closing can be taken up in Defect Liability Period if handing over for closing cut outs is delayed and all other works are completed by the contractor.

- 1.15 The tenderer shall make its own arrangements for providing necessary traffic sign boards, personnel for diverting/controlling/managing the road traffic, obtaining permission from traffic police authorities and utility agencies for regulating the traffic and cutting the road as necessary.
- 1.16 Any accident involving labour, construction machinery, and any person, passing vehicles and their occupants etc., at the work site due to actions or inactions of the contractor, his men and/or machinery will be the responsibility of the contractor.
- 1.17 Drawings: The drawings provided for tendering purpose shall be used for reference only. The Contractor will design all structures and get approved from BMRC.
- 1.18 The work is to be constructed as per Bill of Quantity description, Outline description of Schedules, Outline construction specification, outline design specification, specifications of MORTH, KPWD, CPWD, drawings, best Engineering practices and/or as directed by the Engineer.

APPENDIX-35

**PRICING OF UNQUALIFIED WITHDRAWAL OF CONDITIONS, QUALIFICATIONS, DEVIATIONS ETC. SUBMITTED IN APPENDIX-28 TO FORM OF
TENDER**

Item	Condition, Qualification, Deviation etc. (As Mentioned in Appendix -28 ONLY)	Key date affected by each condition, qualification, deviation etc.	Increase or Decrease for unqualified withdrawal of each condition, qualification, deviation etc
			Indian Rupees
A	B	C	D

Notes:

- 1 In this Appendix, the Tenderer shall indicate every key date that will be affected by each remark, comment, condition, qualification or deviation, etc. that has been specified in Appendix-28 and prices for unqualified withdrawal of which has been quoted in this Appendix-35.
- 2 In case price for unqualified withdrawal of any remark, comment, condition, qualification or deviation etc. indicated in Appendix-28 is not quoted in this Appendix-35, it shall be considered that the remark, comment, condition, qualification or deviation is unconditionally withdrawn without any financial implication.

Signature of the Tenderer:

Name & Designation of Authorized signature:

Place, date and seal / stamp of the tenderer:

2. PRICING DOCUMENT - SUMMARY:

“Design & Construction of Underground structures (Tunnels & Stations) of length 2.884 Km (approx.) from Shivajinagar Station (excluding) to Tannery road Station (excluding) (Chainage 13938.328 m to 16822.521 m) including allied works and 2 Nos of UG Metro Stations viz Cantonment and Pottery Town in Reach-6 line of Bangalore Metro Rail Project, Phase-2.”						
Tender No. BMRCL/Phase-2/Reach-6/UG/TNL&STN/(R6-CC-02)-RT03/2018/38 Dated 26-06-2018						
SCHE- DULES	BRIEF DESCRIPTION	ESTIMATED COST (₹)	QUOTED BY THE TENDERER			
			PERCENTAGE AT PAR/ABOVE/ BELOW ON ESTIMATED COST		TOTAL AMOUNT (₹)	
			IN FIGURES	IN WORDS	IN FIGURES	IN WORDS
A.	Fixed lump sum price towards Design and Construction of Twin Bored Tunnels from Chainage 13938.328 M to 16822.521 M excluding station lengths using suitable Tunnel Boring Machines, designing and constructing Tunnel by NATM method and construction of 3 cross passages. Tenderer to consider all the requirements mentioned in employer's requirement - Design / Construction/ Functional etc. and other related clauses.	670,30,77,920.00				
B.	Fixed lump sum Price towards Design and Construction of permanent structures of Cantonment and Pottery Town stations, and construction of Sub-way of approx. 275 m length connecting Cantonment Station to Cantonment Railway Station of SW Railways. Construction of temporary Earth Retaining structures, Restoration works and all other related works of stations and subway excluding works of architectural finish. Tenderer to consider all the requirements mentioned in employer's requirement - Design / Construction/ Functional etc. and other related clauses.	399,41,59,906.00				

C	Price towards works of Architectural Finishes of stations at Cantonment and Pottery Town and subway at cantonment as per items covered in Bill of quantities. Tenderer to consider all the requirements mentioned in employer's requirement - Design / Construction/ Functional etc. and other related clauses.	19,69,27,083.00				
D	Items not covered in Schedule-A to C, to be executed under Schedule of Rates 2016-17 published by government departments KPWD/NHSR/BWSSB/BESCOM Note: (i) If items are available in more than one Schedule of Rates, then the priority of schedule of Rates will be as follows: (1) KPWD, (2) NHSR, (3). BWSSB, (4). BESCOM (ii) If Schedule of Rates 2016-17 is not available then the previous Schedule of Rates will be adopted.	16,00,00,000.00				
	Grand Total	1105,41,64,909.00	-----	-----		

Note:

1. The tenderer is advised to quote their percentage rate up to two decimals.
2. The applicant to quote percentage rate against each schedule and indicated specifically at par/above/below.

Signature of Tenderer

3. OUTLINE DESCRIPTION OF ITEMS/WORKS AND SCOPE OF WORK INCLUDED IN SCHEDULES

3.1 SCHEDULE – A

This schedule comprises of all those obligations and ongoing activities throughout the Contract associated with Design & construction of Twin Bored Tunnel, cross passages, Tunnelling by NATM method. The contractor will receive a lump sum price for design & construction of Tunnel from Chainage: **13938.328 M to 16822.521 M (excluding station lengths)** using TBMs, Construction of 100 M length each of tunnel on north and south sides of Pottery Town station and 3 cross passages with New Austrian Tunnelling Method (NATM). The lump sum price of **Schedule – A** is further subdivided into different percentage payments as prescribed for various works. The tenderer will get Fixed Lump Sum Price for work carried in **Schedule A**. Payment towards works covered under the Schedule will be paid as per various percentage payment as shown in Interim Payment **Schedule A**. For abnormal consumption of cutter Discs, please refer SCC clause 13 for additional payment.

Scope of works covered under this head is as under but not limiting to

- 3.1.1 Submission of Base line programme for all the works such as preliminary works, Design and Construction of Tunnels, launching Retrieval shafts etc. Contractor shall furnish a detailed programme for the construction and completion of the works (using Primavera/ CPM/PERT techniques) giving, in addition to construction activities, detailed network activities for the submission and approval of materials, procurement of critical material and equipment, fabrication of special products/equipment and their installation and testing, updating of all such activities on the basis of decisions taken at periodic site review meetings or as directed by the Engineer.
- 3.1.2 Carrying out Alignment survey along entire length under the package (From **13938.328 M to 16822.521**) for both the North Bound and South Bound Metro Tunnel alignments and NATM Tunnels on both sides of Pottery Town station and finalising vertical and horizontal alignments by liaising with designated contractors for preceding and following packages.
- 3.1.3 Preparation of GAD showing horizontal alignment, vertical alignment, curve details etc. based on the survey carried out and obtaining approval.
- 3.1.4 Carrying out survey for construction of cross passages and shaft at various levels during construction to facilitate construction of all type of structures by using suitable survey instruments as per approved plan
- 3.1.5 Carrying out survey during Defect Liability Period while rectifying defects, found if any.
- 3.1.6 Carrying out Building Condition Study including preparation of drawings of Existing Buildings / Structures within Influence zone of Tunnel or 30 Meters from Centre Line of UG Alignment whichever is more before start of work and during construction, analysing the effect of Tunnel and Station Construction on buildings / structures within influence zone and propose measures to safeguard the same during construction period and submission of the study report. Suitable computer software shall be used to assess extent of influence zone of Tunnel excavation as instructed by Engineer. Obtaining approval of Engineer for the proposal.
- 3.1.7 Preparation of method statement for monitoring the structures during execution of works.
- 3.1.8 Instrumentation and Monitoring of all the Buildings/ structures falling within the influence zone of Tunnelling or 30M from Centre Line of UG Alignment whichever is more and furnishing monitoring report on daily/weekly/monthly basis using approved instruments and monitoring system.
- 3.1.9 Carrying out additional soil investigation along the Tunnel alignments to gather geotechnical and geological information as deemed fit by the Contractor so as to supplement the details provided by BMRCL and to decide upon type and specifications of TBMs to be deployed for carrying out safe tunnelling activities. Submission of Geological Interpretative Report.
- 3.1.10 Interfacing with Engineers for various systems/ other Designated Contractors during the design process, during construction and during installation of various systems.

- Preparation of Combined Implementation Plan (CIP), Combined Service Drawings (CSD), obtaining approval of BMRCL for CIP & CSD and Submission of interfacing report on monthly basis. A full time interface manager who can interface with Engineers of various systems shall be deployed.
- 3.1.11 Liaison with third parties like fire department, local municipal authorities, utility agencies etc. during the design process and construction period.
 - 3.1.12 Preparation and submission of Quality Assurance Plan for the work showing detailed quality control procedure, various tests to be carried out, frequency of testing and submission of Quality Implementation Details and obtaining approval of BMRCL for the same.
 - 3.1.13 Submission of Monthly Physical and Financial Progress Reports compiling all the details such as progress achieved against Target fixed for reporting month, Target fixed for subsequent month, short falls if any, catch up programme, etc. The report shall also include adequate number of photographs of important works carried out during the month.
 - 3.1.14 Submission of contractor's organization chart showing key staff deployed for the work. Key staff should be deployed for entire duration of contract.
 - 3.1.15 Site clearing, Levelling, fencing as required for mobilization and installation of site.
 - 3.1.16 Mobilization Activities.
 - 3.1.17 Setting up site offices, site laboratory, casting yard and related activities
 - 3.1.18 Supply, Erection and Maintenance all through the Contract Period of Fencing /barrier including Sound Proof Fencing/Barrier if required on periphery of the Area allotted for the Work / Batching Plant, casting Yard etc.
 - 3.1.19 Establishment of First Aid Base,
 - 3.1.20 Contractor's supervision and other on-going Contractual obligations for tunnelling,
 - 3.1.21 Compliance with Contract provisions for Safety, Security and Environment for tunnelling,
 - 3.1.22 Compliance with Contract provisions for Quality Assurance and Testing for tunnelling,**
 - 3.1.23 Traffic management required during the Works including designing of traffic diversion, preparation of diversion plans and obtaining approval of traffic authorities & employer.
 - 3.1.24 Liaison with Bruhat Bangalore Mahanagara Palike (BBMP), other local bodies, State Government Departments and Traffic Police to agree to traffic management works and the implementation of those agreed works,
 - 3.1.25 Liaison with local bodies and State Government Departments to agree and implement all required Utilities diversions,
 - 3.1.26 All works in connection with the pre-treatment of the ground to enable construction of Tunnels. Underpinning and protection of existing buildings and structures wherever required.
 - 3.1.27 All works in connection with the provision of temporary services including flood protection, Dust Control etc.,
 - 3.1.28 Provision of all permanent surface drainage required for the works.
 - 3.1.29 Loading and Transporting excavated material to contractors own dumping yard and providing proper barricade to dumping yard.
 - 3.1.30 Making good all the affected /damaged structures during construction of Tunnels to original condition.
 - 3.1.31 Evacuating the inmates from the affected structures, if any, within the influence zone of Tunnelling activity and rehabilitating the inmates for the required period and supporting the structures as per approved methods. Restoring structures, Buildings, Road and other areas damaged/disturbed during Tunnel works.
 - 3.1.32 Preparation and submission of detailed Design and Good for Construction Drawings for Bored Tunnels, Tunnel by NATM, Cross Passages, launching / retrieval shafts if any,

Drainage System in Tunnels, Head Walls, Face Walls and all other structures required for construction of Tunnels and obtaining approval for the same.

- 3.1.33 Preparation and submission of Design and Drawings of all temporary supports, reaction frames, cradle to move/drag TBM, foundation for cranes, staging for various concrete works, launching arrangement of precast RCC members etc. and obtaining Engineer's approval for the same.
- 3.1.34 Tunnelling using approved Tunnel Boring Machines along with backup facilities to required size, alignment, locations etc.
- 3.1.35 Ground Improvement, dewatering and recharging as required
- 3.1.36 Carrying out interventions during Tunnelling operations, replacing tools, parts etc.
- 3.1.37 Providing precast Tunnel lining as per approved drawings to the required alignment and accuracy, providing gaskets, nuts/bolts, pins, making the lining waterproof etc. Segments shall be cast in dedicated casting yard using specially fabricated moulds and shall have dimensions within tolerable limits.
- 3.1.38 Construction of Bored Tunnels of internal diameter 5.6m or more using New or Original Equipment Manufacturers Certified Tunnel Boring Machine having closed shield.
- 3.1.39 Removing all parts/components/temporary structures created for tunnelling after completion of tunnel boring.
- 3.1.40 Plugging of existing open wells and Bore wells along the Tunnel alignments. (Employer will arrange permission for plugging by acquiring / making suitable compensation to owners)
- 3.1.41 **Primary and secondary Grouting of Tunnel lining.**
- 3.1.42 Probing along alignment of completed Tunnel at every 10 meters' interval in three rows for cavities and filling the cavities with cement grout under suitable pressure.
- 3.1.43 Cleaning the Tunnel after completion of each stretch and making the Tunnel water proof.
- 3.1.44 Construction of cross passages (with or without sump) with suitable method, including ground improvement, monitoring, providing concrete lining, providing fire rated safety doors, etc. as per approved drawings.
- 3.1.45 Restoration of areas at ground level within influence zone of tunnelling after completion of Tunnelling work to its original position.
- 3.1.46 Carrying out wriggle survey and furnishing best fit track alignment. Providing first stage concrete inside the Tunnel including provisions of shear reinforcement, shear bolt etc.
- 3.1.47 Providing pre-fabricated and galvanised steel walkway in Bored Tunnel and launching /Retrieval Shafts.

Note: Structural members for walkway shall be fabricated, Galvanized and kept ready for fixing. Fixing shall be taken up after completion of Track linking works by others. Front for fixing walkway will be made available successively for various stretches. Fixing walkway shall be completed within 60 days from date of handing over the stretch. Walkway fixing can be taken up in DLP period if track linking is delayed and all other works are completed by the contractor
- 3.1.48 Preparation, submission and obtaining approval to 'As Built Drawings' for all structures after completion of work and providing required sets of approved as built drawings in physical and electronic form.
- 3.1.49 All other related works for successful completion of Tunnels & Cross passages.

3.2 **SCHEDULE - B**

This schedule comprises of all those obligations and ongoing activities throughout the Contract associated with Design & Construction of temporary structures and permanent structures of Cantonment and Pottery Town Underground Stations. The tenderer will get Fixed Lump Sum Price for work carried out in Schedule B towards Design & construction of Cantonment and

Pottery Town Stations and construction of Sub-way of approx. 275 m length connecting Cantonment station to Cantonment Railway station of SW Railways. Schedule B is further subdivided into different percentage payments as per prescribed for various works. The tenderer to quote his premium (below/at par/above) in percentage against this schedule.

Scope of works covered under this head is as under but not limiting

- 3.2.1 Submission of Base line programme for all the works such as preliminary works, Design & Construction of Stations. Contractor shall furnish a detailed programme for the construction and completion of the works (using Primavera/ CPM/PERT techniques) giving, in addition to construction activities, detailed network activities for the submission and approval of materials, procurement of critical material and equipment, fabrication of special products/equipment and their installation and testing, updating of all such activities on the basis of decisions taken at periodic site review meetings or as directed by the Engineer.
- 3.2.2 Carrying out Alignment survey for stations, fixing vertical and horizontal alignment and liaising with designated contractors for preceding and following packages.
- 3.2.3 Preparation of GAD showing horizontal alignment, vertical alignment, curve details etc. based on the survey carried out and obtaining approval.
- 3.2.4 Carrying out survey for construction of Stations, Shaft if any at various levels during construction to facilitate construction of all type of structures by using suitable survey instruments as per approved plan
- 3.2.5 Carrying out survey during Defect Liability Period while rectifying defects, found if any.
- 3.2.6 Carrying out Building Condition Study including preparation of drawings of Existing Buildings / Structures within Influence zone of Stations or 30Meters from Centre Line of UG Alignment whichever is more before start of work and during construction, analyse the effect of Station Construction on buildings / structures within influence zone and propose measures to safeguard the same during construction period and submission of the study report. Suitable computer software shall be used to assess extent of influence zone of Station excavation as instructed by Engineer.
- 3.2.7 Obtaining approval of Engineer for proposal to safeguard the Buildings.
- 3.2.8 Preparation of method statement for monitoring the structures during execution of works.
- 3.2.9 Instrumentation and Monitoring of all the Buildings/ structures falling within in the influence zone of Station excavation or 30M from Centre Line of UG Alignment whichever is more and furnishing monitoring report on daily/weekly/monthly basis using approved instruments and monitoring system or as instructed by Engineer.
- 3.2.10 Carrying out additional soil investigation in station areas to gather geotechnical and geological information as deemed fit by the Contractor so as to supplement the details provided by BMRCL and to decide upon type of temporary earth retaining structures etc. for construction of stations and other structures. Submission of Geological Interpretative Report.
- 3.2.11 Interfacing with Engineers for various systems/ other Designated Contractors during the design process, during construction and during installation of various systems. Preparation of Combined Implementation Plan (CIP), Combined Service Drawings (CSD), obtaining approval of BMRCL for CIP & CSD and Submission of interfacing report on monthly basis. A full time interface manager who can interface with Engineers of various systems shall be deployed.
- 3.2.12 Liaison with third parties like fire department, local municipal authorities, utility agencies etc. during the design process and construction period.
- 3.2.13 Preparation and submission of Quality Assurance Plan for the work showing detailed quality control procedure, various tests to be carried out, frequency of testing and submission of Quality Implementation Details on monthly basis and obtaining approval of BMRCL for the same.
- 3.2.14 Submission of Monthly Physical and Financial Progress Reports compiling all the details such as progress achieved against Target fixed for reporting month, Target fixed for

- subsequent month, short falls if any, catch up programme, etc. The report shall also include adequate number of photographs of important works carried out during the month.
- 3.2.15 Submission of contractor's organization chart showing key staff deployed for the work. Key staff should be deployed for entire duration of contract.
 - 3.2.16 Monitoring stability of Temporary Earth Retaining Structures provided in the excavated area on regular basis and submitting report on daily/weekly/monthly basis.
 - 3.2.17 Preparation & finalisation of station layout plans for Cantonment and Pottery Town Station and obtaining approval of Engineer.
 - 3.2.18 Preparation of detailed Design of temporary earth retaining structures such as secant piles, soldier piles, struts, wailers, soil / rock anchors etc. to support excavation of Stations, Launching and Retrieval Shafts if any etc. and submitting GFC drawings and obtaining approval for the same.
 - 3.2.19 Preparation and submission of Design and Drawings of all temporary supports, foundation for cranes, staging for various concrete works, launching arrangement of precast RCC members etc. and obtaining Engineer's approval for the same.
 - 3.2.20 Preparation and Submission of detailed Design and good for construction drawings for TBM Launching/retrieval shafts if any, permanent station structures such as base slab, walls, concourse slab, roof slab, entry/exit structures, VS/VE shafts, overt track exhaust ducts (OTE Ducts), under platform exhaust ducts (UPE ducts), Ancillary Buildings, ducts, etc. and for all other related structures for Cantonment and Pottery Town Station, NATM Tunnel & subway and obtaining approval for the same.
 - 3.2.21 Design of station drainage and sewage systems including sumps, ejector tanks etc.
 - 3.2.22 Carrying out 3D clash analysis with a suitable/ latest software for all cables, ducts, trays, pipes etc., of system contractors and submitting final alignment details of such cables, ducts, trays, pipes etc., in physical and electronic form.
 - 3.2.23 Traffic management required during the works including Design of Diversion Roads& Main Roads, preparation of diversion plans, obtaining approval of traffic authorities& employer, providing required number of traffic marshals and signages etc.
 - 3.2.24 Design of temporary steel deck for road and preparation of GFC drawings for the same.
 - 3.2.25 Preparation and submission of Architectural Plans, Designs and Shop drawings for all Architectural works for Cantonment and Pottery Town Station and obtaining approval for the same.
 - 3.2.26 Preparation of restoration plans for restoring the area after construction of UG stations at Cantonment and Pottery Town Station and obtaining approval of Engineer.
 - 3.2.27 Preparation, submission and obtaining approval to 'As Built Drawings' for all structures after completion of work and providing required sets of approved as built drawings in physical and electronic form.
 - 3.2.28 Providing barricades in works area and maintaining the same during construction.
 - 3.2.29 Providing temporary earth retaining structures like secant piles, soldier piles, diaphragm walls, struts, anchors etc. as per approved drawings. Maintenance of temporary supporting structures till the same are dismantled. Dismantling and Disposing of concrete piles /diaphragm walls as may be required. Dismantling and Disposing temporary structures up to 1.5M from general ground level while restoring the area.
 - 3.2.30 Providing capping beam above secant piles as per approved drawings. Providing proper flood protection along periphery of station.
 - 3.2.31 Installation of monitoring instruments like inclinometers, load cells, piezo meters, settlement markers, tilt meters, crack meters etc and monitoring temporary earth retaining structures, ground surface, buildings and structures within influence zone as per approved monitoring scheme. Online monitoring arrangements shall be provided for sensitive areas / structures as instructed by the Engineer.
 - 3.2.32 Carrying out excavation in Soil/Rock and all type of geological strata including dewatering and disposing the excavated material to contractor's own dumping yard.

- 3.2.33 Excavation of hard rock by controlled blasting method or by using mechanical rock breakers, rock splitters, diamond cutters, expansive chemicals etc. The work includes monitoring and controlling of ground vibrations.
- 3.2.34 Underpinning and protection of existing buildings and structures wherever required as instructed by Engineer based on results of monitoring.
- 3.2.35 Construction of permanent structures of stations at Cantonment and Pottery Town Stations as per approved plan / structure including entry & exit structure. Ancillary Building, ducts and galleries wherever required, all kind of exhaust / intake shafts, etc, in consultation with all designated contractors and satisfying requirement of various systems.
- 3.2.36 Make provision in the stations for all E&M openings such as water pipes, sewage pipes, firefighting system, Air Conditioning and ventilation ducts etc. as per requirement of designated contractors. Making provision of temporary cut outs for lowering equipment of designated contractors and for carrying out track work. Permanent closing of such temporary cut-outs.
- 3.2.37 Construction of Launching and Retrieval shafts if any and their subsequent closure.
- 3.2.38 Carrying out water proofing works in stations, launching and retrieval shafts etc.
- 3.2.39 Providing drainage system in stations as per approved drawings. The drainage system shall facilitate flow of water from every part of station to storage tank in undercroft through GI pipe of minimum 100mm diameter, drainage pits at every point where alignment of pipe takes deviation, Permanent G.I cover to drainage pits and all other requirements as per approved drawings.
- 3.2.40 Providing embedded pipes, inserts, hooks etc in concrete required by all designated contractors.
- 3.2.41 Backfilling after construction of stations - as required for construction of roads or providing landscaping etc.,
- 3.2.42 Construction of temporary steel deck for road traffic wherever required and maintenance of the deck during construction and removing the deck after completion of the work / restoration of road as directed by the engineer.
- 3.2.43 Providing first stage concrete and handing over the track beds in stations to track contractor.
- 3.2.44 All other related works for successful completion of Stations at Cantonment and Pottery Town Station including restoration works., and Retrieval shafts if any.

3.3 SCHEDULE – C

For providing Architectural finishes to stations at Cantonment and Pottery Town Station at all levels, items are given in schedule C with basic rates. The Tenderer to quote his premium (below/at par/above) in percentage as shown in Summary.

Scope of works covered under this head is as under but not limiting to:

- 3.3.1 Providing block masonry at all levels of stations.
- 3.3.2 Providing floor finish like Granite, vitrified tiles, ceramic tiles, etc.
- 3.3.3 Providing Wall finish like plastering, painting, cladding etc.
- 3.3.4 Railings of stainless steel or mild steel at different levels.
- 3.3.5 Providing rolling shutters.
- 3.3.6 Providing counters at ticket office and excess fare office and other finishes to same.
- 3.3.7 Providing fire rated and other doors.
- 3.3.8 All other finishing works for successful completion of the work.

3.4 SCHEDULE – D

Items under Schedule D of Summary of Pricing Document (Items under Schedule of Rates published by Government departments KPWD / NSHR / BWSSB / BESCOM for the year 2016-

17) cover the following:

- a) Road construction
- b) Water supply and sanitary works in stations.
- c) Shifting of Utilities.
- d) Construction of Employer site office
- e) Other Miscellaneous works.

4. **BILL OF QUANTITIES (BOQ) OF SCHEDULE – C**

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
1	Providing and laying 25mm thick and minimum 1200mm long Sadarahalli flamed finished granite in floors. (Colour of granite as approved by Engineer) all laid over base cement mortar 1:4, upto 30mm thick with ordinary Portland Cement, fit jointed with/ without groove, with white cement slurry mixed with pigment to match shade of granite. Rate includes cost of all materials, curing, labour, hire charges of machineries with all leads & lift at all levels complete as per drawings specifications and direction of Engineer.	Sqm	850.00	2,904.00	24,68,400.00
2	Providing and laying Polished sadarahalli granite stone of 18mm thick (+ or - 1 mm) of length not less than 1100mm and width not less than 800mm, all as required as per approved shop drawings, specifications and direction by the engineer laid over a bed of up to 25mm thick 1:4 cement mortar (1 cement : 4 coarse sand) with paper joint, finished with white cement mixed with matching pigment including all finishing as required, including cut-out /repare in floor, laying, pop on finished surface (minimum thickness 10 mm) and cleaning the surface by removing pop as per directions for floor etc., Rate includes cost of all materials, curing, labour, hire charges of machineries, with all leads & lift at all levels complete as per specifications.	Sqm	17,200.00	2,091.00	3,59,65,200.00
3	Providing and laying 25mm thick and minimum 1200mm long Sadarahalli Mirror Polished granite on approx. 300mm wide tread on stairs & landings with and including nosing and 2 Nos. 6x6 anti-slip grooves filled with carborandum powder mixed with Araldite or equal adhesives. (Colour of granite as approved by Engineer) all laid over base cement mortar 1:4, upto 30mm thick with ordinary Portland Cement, fit jointed with/ without groove, with white cement slurry mixed with pigment to match shade of granite. Rate includes cost of all materials, curing, labour, hire charges of machineries with all leads & lift at all levels complete as per drawings specifications and direction of Engineer.	Sqm	800.00	4,309.00	34,47,200.00
4	Providing and laying polished Jet Black granite stones of 18mm thick(+ or - 1mm) and joints matching to floor joints and heights upto 150-300mm all required as per approved shop drawings, specifications and direction by the Engineer, laid over a bed of 18mm thick 1:4 cement mortar (1cement : 4 Coarser sand) or with approved epoxy and tile adhesive as required at site with paper joint, finished with white cement mixed with matching pigment including all finishing as required, including laying as per directions for risers, skirting, coping etc. including nosing/edge finishing. Rate includes cost of all materials, curing, labour, hire charges of machineries with all leads & lift at all levels complete as per drawings specifications and direction of Engineer.	Sqm	450.00	3,728.00	16,77,600.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
5	Providing and laying 50 mm thick 600 mm wide and minimum 1200mm long sadarhalli flame finished granite stone with edge finishing as required at the edge of platform , all laid over base cement mortar 1:4, upto 30mm thick with white cement slurry mixed with colour pigment to match shade of granite. Rate includes cost of all materials, curing, labour, hire charges of machineries with all leads & lift at all levels complete as per drawings specifications and direction of Engineer.	Sqm	400.00	4,300.00	17,20,000.00
6	Providing and fixing 20mm thick mirror polished granite (Hassan green/ china pink / all type of black/ ocean green/ lavender blue etc.) of approved colour for counters/fascias and and other specified locations of required size laid over 19mm thick water proof plywood with epoxy adhesive material including necessary edges moulding, mirror polishing to edge to give high gloss finishing etc complete, cutting the granite to required size, shape and making necessary holes/openings, etc complete as per the architectural drawing or as directed by engineer. Note: Rate includes nosing/edge finishing as directed by Engineer, providing and fixing 19mm waterproof ply fixed to the available steel frame including necessary coat of approved primer and two or more coats of synthetic enamel paint, finishing sealant, cost of all materials, curing, labour, hire charges of machineries, with all leads & lift at all levels complete as per specifications. Steel frame- steel will be payable separately under relevant item.	Sqm	800.00	4,143.00	33,14,400.00
7	Supply, delivery and installation of vitrified tactile tiles (directional & hazardous) of approved make as per control sample in 300 x 300 x 12 mm thick, size with pigmented grout to match the colour and shade of tactile tile. Tiles shall be laid over 20mm thick bed of cement mortar 1:4 (1 cement: 4 coarse sand) and installation to be carefully co-ordinated with adjacent flooring modules i.e. tiles shall be in same level with the nearby floor with uniform joints. All tactile guide path shall be in strict accordance to relevant drawings for barrier free movement by visually impaired persons. Rate includes cost of all materials, curing, labour, hire charges of machineries with all leads & lift at all levels complete as per drawings specifications and direction of Engineer.	Sqm	800.00	2,045.00	16,36,000.00
8	Providing and fixing 450mm high cavity Unitile raised access flooring system or equivalent conforming to PSA MOB standard as per the following specifications. Unitile USF - 1500 access floor panel of size 600 X 600 mm shall be all steel welded construction, with an enclosed bottom pan of 49 hemispherical and 36 reverse cones and top plain sheet which are fuse welded at 124 locations to form a panel of an overall depth of 35mm. The inner empty core of the panel is injected with alight weight for retardant non combustible cementitious compound at high pressure to fill in all the crevices of the panel and ensure support of not less than 85 % of the top surface area of the panel. The panel after cleaning, degreasing, phospating by 7 tank process is coated with 40-60micron epoxy coat and is heated to achieve maximum adhesion and surface resistance. The panel is then laminated with 1.5mm thick fire retardant floor grade antistatic laminate (Electrical Resistance shall be in the range of 1.0 X 10 X 6 ohms to 2.0 X 10 X 10 ohms) on a semi-automatic lamination line to ensure maximum bonding to the steel surface. The edges	Sqm	500.00	6,116.00	30,58,000.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
	of the laminated are protected with a conductive PVC edge profile of the same range of the electrical resistivity as the laminate which is 5 mm wide on all sides. This edge trim is mechanically locked and sealed in place to avoid detachment. Other details as per technical specification and manufacturer's instructions including all necessary support systems like pedestals, base plates, stringers with necessary fixing arrangements etc. complete.				
9	Providing and laying flooring with M-30 grade, with cement concrete, cement content as per approved design mix using 20mm downsize aggregate. Cleaning of floor, providing slurry, placing of concrete, compaction with surface vibrators, floating and troweling, laying the surface to slope, all incidental work etc. complete. Rate includes cost of all materials, labour, curing, hire charges of machineries, with all leads & lift at all levels complete as per specifications & drawings.	Cum	525.00	7,515.00	39,45,375.00
9.1	Extra over item no. 7 of Schedule C for Vacuum De-watering System treatment including fixing of the channels / side form and setting them to the required level, 12/25 mm thick expanded polystyrene for expansion / isolation joints to the full thickness of the concrete, dewatering the surplus water using filter pads & vacuum pumps, floating with a disc, power troweling with blades including all incidental work etc., complete. The VDS equipment shall be of TREMIX / AQUARIOUS TECH. or equivalent, The channel shall have holes of dia. and intervals specified by Engineer and perpendicular at the edges. Rate includes cost of all materials, labour, hire charges of machineries, with all leads & lift at all levels complete as per specifications.	Sqm	8,833.00	78.00	6,88,974.00
10	Finishing with Epoxy paint on Vacuum Dewatered Concrete (in two layers) at all, locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete as per specifications and approved drawings.	Sqm	8,807.91	545.00	48,00,311.00
11	Providing and laying yellow visibility vitrified tile as per control sample of size 200x100x12mm thick laid over 20mm thick cement mortar bed (1:4) at platform level as per specification over screed work leveling course laid to proper slope. Rate includes cost of all materials, curing, labour, hire charges of machineries, with all leads & lift at all levels complete as per drawings, specifications and direction by the Engineer.	Sqm	100.00	1,584.00	1,58,400.00
12	Providing skirting, dadoing, risers of steps with coloured glazed tiles in 10 mm thick cement plaster 1:3 and jointed with white cement slurry over existing rough plaster surface using glazed tiles of approved make and size. - coloured glazed tiles 30 x 45 cms 6 mm thick with border of size 30 x 10 cms. Rate includes cost of all materials, curing, labour, hire charges of machineries, with all leads & lift at all levels complete as per drawings, specifications and direction by the Engineer.	Sqm	2,300.00	1,158.00	26,63,400.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
13	Providing and fixing 10 mm thick acid and / or alkali resistant vitrified tiles of approved make and colour using acid and /or alkali resisting mortar bedding and joints filled with acid and / or alkali resisting cement as per IS:4457 complete as per the direction of Engineer. On a flooring on a bed up to 30mm thick mortar of 1:4 proportion. Rate includes cost of all materials, curing, labour, hire charges of machineries, with all leads & lift at all levels complete as per drawings, specifications and direction by the Engineer.	Sqm	850.00	1,187.00	10,08,950.00
14	Providing and fixing Ceramic tiles for floors and walls of water tank, Toilet and other area: providing & fixing ceramic tiles of size 200 x 200 x 8mm or 300 x 300 x 8mm of approved make, colour, thickness and pattern as per control sampel, on the floor and walls with approved cement based adhesive / cement motar including making the surface rough, pointing in white cement with admixtur of required shade pigmrnt to match the colour of tile all complete as per relevant drawing, specification and approved drawings.	Sqm	2,900.00	1,187.00	34,42,300.00
15	Providing 18mm thick cement plaster in single coat with cement mortar 1:4 to masonry works including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specification for all heights. In an even shade, cleaning the surface of all dirt, dust and foreign materials, sand preparing. Rate includes cost of all materials, curing, scaffolding, labour, hire charges of machineries, with all leads & lift at all levels complete as per drawings, specifications and direction by the Engineer.	Sqm	48,500.00	404.00	1,95,94,000.00
16	Providing and fixing plaster mesh 200mm wide manufactured out of hot dipped galvanized iron of nominal thickness 0.35mm with a zinc coating of 120 gms per Sqm, along route of walls chipped for services, junction between RCC and brick walls/ cement concrete walls. Rate includes cost of all materials, labour, scaffolding, hire charges of machineries, with all leads & lift at all levels complete as per drawings, specifications and direction by the Engineer.	Sqm	2,575.00	274.00	7,05,550.00
17	Providing and painting exterior walls/surfaces with exterior grade emulsion paint of approved make, colour and shade 2 Coats on new work (plaster, RCC, wood or metal etc.) Including preparing even/ smooth surface with sand paper and making good the surfaces to give a smooth and even prepared surface, preparation of surface using two or more coats of wall putty, etc. before painting. Rate includes cost of all materials, labour, scaffolding, hire charges of machineries, with all leads & lift at all levels complete as per drawings, specifications and direction by the Engineer.	Sqm	6,600.00	110.00	7,26,000.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
18	Providing and painting acrylic emulsion paint of approved make, colour and shade on new work (plaster, RCC, wood or metal etc.) in two coats to give an even shade / pattern, including primer, preparation of surface using two or more coats of wall putty, etc. Surface duly emery papered to give a perfectly smooth and even prepared surface before painting. Rate includes cost of all materials, scaffolding, labour, hire charges of machineries, scaffolding, with all leads & lift, at all levels complete as per specifications.	Sqm	48,500.00	203.00	98,45,500.00
19	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, including fixing the railing with necessary accessories & stainless steel dash fasteners, stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer. Rate includes cost of all materials, labour, hire charges of machineries, with all leads & lift at all levels complete as per specifications & drawings.	Kgs	17,800.00	689.00	1,22,64,200.00
20	Providing and fixing M.S. steel hand railing as per the design and drawings and specifications to staircase approximately 1000 mm high comprising of 32 mm dia. 10 Gauge MS hollow tube vertically fixed to every fourth step welded to 50 mm dia. 10 gauge MS pipe on top for handrail and 20mm dia. MS pipe vertically in between welded to 2 Nos of 20mm dia. M.S. Pipe all as per the drawings, the vertical balusters are fixed in position with molten lead poured into 40mm dia. GI sleeve with 80 x 80 x 3mm GI Plate and embedded in RCC including necessary steel cover and completed as shown in the drawings or any other method of fixing as approved by the Engineer in charge like epoxy grout fixing etc., complete. All M.S. members will be painted with two coats of synthetic enamel paint of approved make and colour over one coat of primer all as per manufacturer's instructions and with the engineers' approval. Rate includes cost of all materials, labour, hire charges of machineries, with all leads & lift at all levels complete.	Kgs	12,600.00	150.00	18,90,000.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
21	<p>Providing and fixing of Hollow metal fire door at all levels from ISO 9001-2000 certified Manufacturer (2 hours), 3 criteria Fire rated door, fabricated and successfully tested at CBRI, in both directions(outside and inside opening) satisfying the three performance criteria of stability, integrity and insulation as per BS 476 Part 22 and IS:3614 Part II. Fire door should be as per NFPA 80 and NFPA 252. All fire doors should be tested at UL for maximum rating of (2 hours) and shall pass both UL10B and UL10C. Pressed Galvanized steel Single /Double leaf of required rating or approved equivalent which consists of frame, shutter, infill and finish as detailed below. Doors shall be supplied with appropriate labels confirming the rating. Door frame shall be double rebate profile of size 143 x 57mm made out of 1.60mm (16gauge) thick galvanized steel sheet. Frames shall be Mitred and field assembled with self tabs. All provision should be mortised, drilled and tapped for receiving appropriate ANSI / UL labelled hardware. Rubber door silencers should be provided on the striking jamb. Frames should be provided with back plate bracket and anchor fasteners for installation on a finished plastered masonry wall opening. Once frame installed should be grouted with cement & sand slurry necessary for fire doors on the clear masonry opening.</p> <p>Door leaf shall be 60mm thick fully flush double skin door with or without vision lite. Door leaf shall be manufactured from 1.2mm (18guage) thick galvanised steel sheet. In addition the door should have continuous vertical steel stiffeners of 0.8mm sheet at an interval of 150mm spot welded and smoothened. The gap should be filled with suitable infill material for required rating. All doors should be factory prepared for receiving appropriate hardware and provided with necessary reinforcement for hinges, locks, and door closers as per ANSI Standard. For temperature rise doors the average temperature on the unexposed side should not exceed 232°C for hollow metal doors for the first 30minutes. The edges should be interlocked with a bending radius of 1.4mm. For pair of doors astragals has to be provided on the meeting style for both active and inactive leaf. Vision lite wherever applicable should be of size: 200x300mm provided as per manufacturers recommendation with a clip on arrangement. The glass should be 6mm clear boro silicate fire rated glass of matching rating of the door.</p> <p>All doors and frames shall be finished with primer coating, stove zinc phosphate primer and thermosetting polyurethane aliphatic grade paint of approved colour. The door leaf and frame shall have passed minimum 250 hours of salt spray test vision panel-Providing 250 x 150 mm panels with 6 mm thick 2 hour fire rated heat resistant glass of borosilicate float glass with 5mm ceramic fibre tapes. Note: Hardware sets shall be paid separately under relevant BOQ item.</p>	Sqm	525.00	17,885.00	93,89,625.00
21.1	Hardware Fixtures for Fire doors				-
21.1.1	Providing and fixing stainless steel hinges 125 x 90 x 4 mm long of approved make for fire rated doors complete as per specification and direction by the Engineer.	Nos.	950.00	372.00	3,53,400.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
21.1.2	Providing and fixing mortise dead bolt (ML 100D) with side key operation cylinder of approved make for fire rated doors as per specification, drawing and direction by the Engineer.	Nos.	177.00	1,834.00	3,24,618.00
21.1.3	Providing and fixing mortice sash lock (ML 100A) with S.S. lever handles of approved makes for fire rated doors as per specification and direction by the Engineer.	Nos.	177.00	3,880.00	6,86,760.00
21.1.4	Providing and fixing 300 mm long concealed flush bolts of approved make for fire rated door as per specification and direction by the Engineer.	Nos.	430.00	571.00	2,45,530.00
21.1.5	Providing and Fixing 300 mm long Stainless steel Matt Finish 'D' handle (1 pair) of approved make as per specification and direction by the Engineer.	Nos.	430.00	1,362.00	5,85,660.00
21.1.6	Providing and fixing 580 mm long concealed flush bolts of approved make for fire rated door as per specification and direction by the Engineer.	Sqm	15.00	1,133.00	16,995.00
21.1.7	Providing and Fixing panic bar as per tech specification for single or double leaf doors	Nos.	58.00	11,083.00	6,42,814.00
22	Providing fabricating assembling and fixing in position Aluminium doors using following Aluminium mat finish or glassy finish, outer frame plain section 101.6 x 44.45 mm thickness 3.18 mm section weight 2.404 kg/m door shutters vertical sections 44.62 x 44.45 thickness 3 mm section weight 1.429 kg/m bottom section 114.3 x 44.45 mm thickness 3.18 mm section weight 2.648 kg/m door central section 49.9 x 44.45 mm thickness 3.00 mm section weight 1.495 kg/m glazing clips 19 x 17.3 x 11 mm thickness 0.9 mm section weight 0.124 kg/m aluminium section cut to length joint metered corners grinded , the shutters having pivoted or hinged opening arrangement, providing and fixing standard approved accessories, such as aluminium handle for full width or length, tower bolts, lock, pivots, PVC or rubber gasket with 5.5 mm thick glass for top panel and bottom panel 12 mm thick pre laminated particle board of approved colour both sides of exterior grade, aluminium sections treated for removal of any rust and prevention of further rusting formation and coated with grassy material for non-adherence of mortars or any other sticky materials the assembled frame fitted with corner angles, strips, gaskets and fitted with screws rawl plugs or teak wood gutties to RCC columns or masonry on sides, beams and flooring in bottom including cutting chiseling and making good with cement mortar to match the surface all the frames thoroughly cleaned free from rust scale or rust including cost of materials, fixtures, labours and HOM of machinery complete as per specifications. Using aluminium section powder coated to a minimum of 60-70 microns with exterior durable grade powder of approved quality.	Sqm	20.00	6,535.00	1,30,700.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
22.1	Hydraulic door closers - Providing and fixing hydraulic door closers of approved make - with mounting - heavy duty	Each	30.00	1,776.00	53,280.00
23	Providing and fixing combi pack with ultra-mortise lock (200mm), ultra-pin cylinder of (1Ck) / (2C) latch set, complete with door strike, lever or knob handles, screws, etc. complete in stainless steel, for use on paneled/solid and glazed doors etc. including all fixings and other accessories as required and as per drawings, specifications and as directed complete.	Set	14.00	2,734.00	38,276.00
24	Providing and fixing in position Aluminium windows and ventilators as per approved drawings with sliding shutters using double track window frame of size 61.85 x 31.75 mm with 1.2 mm thick bottom section weight 0.695 kg/m, sides and top sections 1.3 mm thick weight 0.659 kg/m and shutter comprising of top and bottom section of size 40 mm x 18 mm 1.25 mm thick, 0.417 kg/m shutter outer side 40 mm x 18 mm 1.25 mm thick weight 0.417 kg/m shutter interlock section of 40 mm x 26.7 mm 1.1 mm thick weight 0.469 kg/m the shutter mounted on nylon rollers with approved quality of fixtures such as aluminium handles tower bolts etc. and providing and fixing 5.5 mm thick plain glass for shutters with rubber beading aluminum sections including cutting to required length, joints metered subdividing the frame tanonned and riveted in the assembled frame stiffened with and clips at corner angles etc. and fixed to the walls, lintels, floor beams/sills as the case may be with necessary screws, rawl plugs or teak wood gatties including cutting masonry or concrete and making good the original surface using cement mortar.Using Aluminium section powdered coated to a minimum of 60-70 microns with exterior durable pure polyester grade powder of approved quality.	Sqm	1,150.00	4,221.00	48,54,150.00
25	Providing and fixing Extruded aluminum works for louvers and fixed glazing with extruded built up sections of size 61.85 x 31.75 mm with 1.2 mm thick bottom section weight 0.695 kg/m, sides and top sections 1.3 mm thick weight 0.659 kg/m and providing and fixing 5.5 mm thick plain glass with rubber beading aluminum sections of approved make, fixed with rawl pugs and screws or with fixing clips or with expansion hold fasteners including necessary filling up of gaps at junctions at top, bottom and sides with required PVC/Neoprene felt etc. Aluminum sections shall be smooth, rust free, straight, mitered and jointed mechanically wherever required including cleat angle, aluminum snap beading for glazing / paneling, CP brass/stainless steel screws, stainless steel hinges all complete as per drawings, specifications and the directions by the engineer with all lead & lift at all levels. Using Aluminum section powdered coated to a minimum of 60-70 microns with exterior durable pure polyester grade powder of approved quality.	Sqm	140.00	3,714.00	5,19,960.00
25.1	Additional cost for 5.5 mm thick toughened glass, in place of 5.5 mm normal float glass. Over item no. 21&22.	Sqm	140.00	441.00	61,740.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
25.2	Additional cost for using 11.76 mm thick (5.5mm + 0.76 + 5.5mm) PVB laminated glass, in place of 5.5 mm normal float glass. Over item no. 21&22.	Sqm	140.00	2,055.00	2,87,700.00
26	Providing and fixing pull and push type rolling shutters of approved make out of 18 gauge 75 mm wide cold rolled steel laths of convex corrugations, with side guides and bottom rails ,with interlocking arrangements for still laths by means of alternate clips ,suspension shaft with high tension coil type springs two numbers, mounted on specially designed pipe shaft, with bracket plates, guide channels ,ball bearing arrangement for inside and outside locking with push and pull operations complete including pulling hooks 4Nos, handles with all fittings and accessories, painted with a coat of red lead paint (without top over). Rate includes cost of all materials, labour, hire charges of machineries, complete as per specifications & drawings.	Sqm	350.00	4,156.00	14,54,600.00
26.1	Providing and fixing top covers made out of 18 gauge MS sheet over pull and push rolling shutters bent to shape including the cost of red lead primer, coat of painting materials, labour, Hire charges of machinery complete as per specifications.	Rmt	200.00	2,164.00	4,32,800.00
26.2	Extra for providing mechanical device chain and crank operation for operating rolling shutters or for electrical devices.	Sqm	400.00	671.00	2,68,400.00
26.3	Extra for providing grills in the rolling shutters manufactured out of 8mm dia. MS bar instead of laths as per design approved by Engineer (area of grill to be measured) and paid over item N0.8.	Sqm	100.00	314.00	31,400.00
27	Providing and fixing wall cladding using 18 mm thick Jet Black granite gang saw water cut granite in CM 1:3 proportion cut to required shape pattern with paper joint, finished with cement mortar using white cement and colour pigments to match the colour of slab making through jointing with sealant, making holes 25 mm x 12 mm grooves in joints. Rate includes nosing/edge finishing, cost of all materials, curing, labour, hire charges of machineries, with all leads & lift at all levels complete as per specifications.	Sqm	300.00	3,728.00	11,18,400.00
28	Structural steel work for station: Providing, fabricating to required profile and shape, transporting, erecting and fixing in position for suspenders of false ceiling, and similar works at all levels conforming to 'IS 2062 Grade E350 A' including procurement & testing of all raw steel materials, HSFG bolts, nuts (Confirming to IS 3757:1985 (Reaffirmed:2008)&IS 4000:1992 (Code of practice for high strength bolts in steel structures) & washer, fasteners, fabrication, joining, welding (confirming to IS: 816:1969 and IS 9595:1996) , threading, sleeves etc., including allowance for all types of wastage, straightening, cutting, bending of section wherever specified, drilling holes, bolting provision of necessary tools, testing etc. complete. The rate shall also be included required surface preparation (Sand Blasting) for application of	MT	160.00	99,451.00	1,59,12,160.00

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	QUANTITY	RATE (₹)	AMOUNT (₹)
	Zinc Epilux or equivalent primers, and two coats of Poly siloxane paint as per specifications. The rate shall also include supplying and providing of detailed fabrication drawings based on the GFC drawings, required for all permanent and temporary structures and their approval from Engineer, prior to execution. The rate shall also include provision and installation of base plate, anchor bolts (measured in tones) etc. all as per relevant drawings, specifications and directions of engineer using standard plate sections, rolled sections, like angles, channels, I sections, T sections, C sections, H sections and Light gauge steel sections confirming to IS:811-1987 (Specification for cold formed light gauge structural steel sections), hollow square/rectangle sections (Confirming to IS:4923- 1997 (reaffirmed 2009) Hollow steel sections for structural use-specification), hollow round sections confirming to IS 1161:2014 (Steel tubes for structural purposes -Specification) etc., welded and built.				
29	Providing and constructing walls with cement concrete solid blocks having compressive strength not less than 5 N/sqmm confirming to IS2185 (Part-1)-2005 with cement mortar 1:4 as per IS 2572-2005 including cost of materials, labour charges, scaffolding, lead & lift, curing , hire charges of machineries etc. and at all levels, complete as per specifications & drawings with 400 x 200 x 200mm size blocks.	Cum	6,000.00	5,384.00	3,23,04,000.00
30	Providing and constructing walls with cement concrete solid blocks having compressive strength not less than 5 N/sqmm confirming to IS2185 (Part-1)-2005 with cement mortar 1:4 as per IS 2572-2005 including cost of materials, labour charges, scaffolding, lead & lift, curing , hire charges of machineries etc. and at all levels, complete as per specifications & drawings with 400 x 200 x 100mm size blocks.	Cum	1,455.00	8,381.00	1,21,94,355.00
	TOTAL				19,69,27,083.00

5. PAYMENT SCHEDULE:**5.1 SCHEDULE – A (Tunnel Works)**

Percentage break up of Payment for various activities covered under Schedule A will be made as under:

Table – A

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	Quantity	PERCENT PAYABLE ON FIXED LUMP SUM PRICE AS ACCEPTED FOR SCHEDULE – A
1	Preliminary and other works such as works connected with surveying, submission of Base line programme, study of Condition of Existing Buildings and Structures(EBS) Monitoring all the buildings, carrying out additional soil investigation, submission of Geotechnical and Geological Interpretative reports, Interfacing with other contractors, submission of Combined Implementation Plan, submission of Drawings, submission of Quality Assurance Plan and Quality Control Plan, Submission of Monthly Progress Report, retention of Contractor's Staff etc., The Interim Payment against this item will be regulated as per Appendix-36 .	LS	-	0.90%
2	Design & Drawings: Submission/Approval of preliminary drawings, designs, Submission of GFC drawings and obtaining approval for the same, submission of Combined Services Drawings, submission of "As Built" drawings etc for the tunnels, cross passages, walkway etc., The Interim Payment against this item will be regulated as per Appendix-37	LS	-	1.00%
3	Complete assembly of New / Original Equipment Manufacturer certified Newly refurbished Tunnel Boring Machines in position at site including setting up of Plant and Machineries required such as electric Generators, Gantries, Reaction Frame and other preparatory works at launching Shaft and starting initial drive. Payment will be made after erecting first permanent ring @ 1.95% per TBM.	Nos	2	3.90%
4.	Establishment and commissioning of casting yard including procurement and fixing segment moulds, erection of gantry, setting up of concrete batching plant, steam curing arrangements etc. Payment will be made after casting and accepting segments for first ring.	LS	-	3.00%
5	Casting of Segments for Tunnel Lining. (Length of segment measured along the tunnel alignment is considered as 1.5M)	Ring	3244	9.70%
6	Construction of cross passages. Payment will be made proportionately on completion of each cross passage @ 1.0 % per Cross Passage	Nos	3	3.00%

ITEM NO.	DESCRIPTION OF ITEMS	UNIT	Quantity	PERCENT PAYABLE ON FIXED LUMP SUM PRICE AS ACCEPTED FOR SCHEDULE – A
7	Undertake tunnel boring of 5.6m finished internal dia or more, including but not limited to any necessary probing, pre-treatment of ground, excavation, muck removal, installation of linings, complete in position including transportation of segments from casting yard, providing gaskets, bolts / pins in segment joints and initial grouting from Ch. 13938.328 to Ch. 16822.521 (excluding station lengths).	Meter	4866	65.75%
8	Designing and Construction of Tunnels on both ends of Pottery town station by New Austrian Tunnelling Method (NATM) including providing all temporary supports, permanent supports, excavation in all kinds of strata, permanent lining, first stage concrete, drainage arrangements, walkway etc. and carrying out necessary alignment survey, building condition study, monitoring of buildings, carrying out repairs to buildings damaged due to tunnelling works, evacuation of inmates, if required, providing designs, working drawings and as built drawings and all other related works.	Meter	200	3.00%
9	Undertake Secondary Grouting as per approved method statement.	Meter	4866	1.50%
10	Design, procure, install and maintain temporary ventilation system, temporary lighting system and temporary drainage system to the satisfaction of Engineer to carry out Tunnelling Activities.	Meter	4866	1.00%
11	On completion of each break through @ 0.33% per TBM.	Nos	6	2.00%
12	Commencement of next drive. Payment will be made @ 0.25% per TBM	Nos	4	1.00%
13	Cleaning the Tunnel, groove filling, if any, and Pressure Grouting using suitable chemical to make the Tunnel watertight.	Meter	4866	0.50%
14	Providing first stage concrete and handing over the Tunnel to Track Contractor.	Meter	4866	1.00%
15	Providing pre-fabricated and galvanised steel walkway in Bored Tunnel, Cut & Cover tunnel etc.	Meter	4866	1.00%
16	Probing along alignment of completed Tunnel in length free of structures at every 10 meters' interval in three rows for cavities and filling the cavities with cement grout under suitable pressure. Payment will be made after completion of one rainy season subsequent to completion of Tunnelling	LS	-	0.75%
17	All other remaining works	LS	-	1.00%
	Total			100%

Note:

1. The percentage breakup of payments as mentioned above shall not be construed to represent the worth of relevant works. This percentage breakup of the Fixed Lump Sum Price will be utilized only for the purpose of mode of payment of interim payment for the Fixed Lump Sum Price portion.

2. Percentage breakup of the payment are provisional. These will be discussed and finalized by Employer after submission of revised percentage breakup of payment (not to exceed 100%) by the successful tenderer. This will be termed as APPROVED PAYMENT SCHEDULE.
3. Till such time the revised payment schedule as proposed by the contractor is approved by Employer, the above mentioned payment schedule will prevail.
4. Variation in quantities as mentioned in APPROVED PAYMENT SCHEDULE will be compared with actual quantities during execution. In case of any increase in quantities, payment will be made based on the percentage in APPROVED PAYMENT SCHEDULE for that item proportionately. If increase in quantity is due to change affected by the contractor for his convenience, such variations will not be paid. Amount towards decrease in quantity due to any reason will be deducted accordingly. The description for Item of Payment is indicative only.
5. Payment in IPCs will be made as per approved payment schedule.

SIGNATURE OF TENDERER

Appendix-36**5.1.1 Breakup of Interim Payment for Item No 1 of Schedule - A will be as under**

SL. NO.	ITEM OF PAYMENT	PERCENTAGE BREAKUP
1	Submission of Base line programme for all the works such as preliminary works, Design & Construction of Bored Tunnels, Stations, restoration works etc.	3.00%
2	Carrying out alignment survey for the length in entire package, fixing horizontal and vertical alignment, marking works area for all the stations, Launching/Retrieval shafts, restoration works etc. Fixing control points sufficient in numbers to carry out survey work during construction and restoration.	5.00%
3	Carrying out survey work for construction of Tunnels, Launching Retrieval shafts if any, Roads etc. on day today basis, setting out alignment, checking various items etc. so as to execute Tunnelling work as per approved drawings and method statement.	
3.1	For the duration of carrying out Tunnel construction as per base line programme, equally distributed over the period of completion.	10.00%
3.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) on proportionate basis.	2.50%
3.3	In Final Payment Certificate	0.50%
4	Study of condition of Existing Buildings & Structures (EBS), submission of report on present condition of EBS and submission of method statements to carry out Instrumentation & Monitoring considering unforeseen ground conditions, Bangalore seismic zone risk, Contingencies etc. within influence zone of tunnelling and stations activities or 30meter from central line of alignment whichever is more. Report to be submitted one month before start of Initial Drive of first TBM.	10.25%
5	Approval of Building Condition Study report.	1.00%
6	Monitoring all the Buildings and structures studied under item 4 above as well as ground movement within influence zone of Tunnelling and Station excavation (up to 30M from Central line or influence zone whichever is more) and submission of reports on daily/weekly/monthly basis as instructed by Engineer.	
6.1	For the duration of work as per base line programme equally distributed over the period of completion.	8.15%
6.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) to be proportionate.	2.00%
6.3	In Final Payment Certificate	0.50%
7	Carry out additional soil investigation by drilling bores along alignment of Tunnel, conducting tests on samples obtained during investigation, preparation of soil investigation report as per relevant standards and submitting the report in electronic and physical forms.	4.50%
8	Submission of Geotechnical and Geological Interpretative Report based on information provided by BMRCL and additional soil investigation carried out under item 7 above.	1.00%
9	Approval of Geotechnical and Geological Interpretative Report by BMRCL.	1.00%

SL. NO.	ITEM OF PAYMENT	PERCENTAGE BREAKUP
10	Interfacing with all the designated contractors on regular basis and submission of report on monthly basis	
10.1	For the duration of work as per base line programme equally distributed over the period of completion.	9.00%
10.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) on proportionate basis.	1.50%
10.3	In Final Payment Certificate	0.50%
11	Submission of Quality Assurance and Quality Control Plan	2.00%
12	Submission of Quality reports (containing results of all type of tests carried out in house and in approved labs) on monthly basis.	
12.1	For the duration of carrying out tunnelling activities distributed over the months scheduled as per base line programme.	7.00%
12.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) on proportionate basis.	2.00%
12.3	In Final Payment Certificate	0.20%
13	Submission of Monthly Progress Report showing planned and achieved progress for the reporting month, Target for month next to reporting month, Safety Implementation details, Environmental Management plan and photographic report.	
13.1	For the duration of carrying out tunnelling activities distributed over the months scheduled as per base line programme.	9.00%
13.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) on proportionate basis.	2.00%
13.3	In Final Payment Certificate	0.50%
14	Retention of Contractor's key staff deployed for the work.	
14.1	For the duration of carrying out tunnelling activities distributed over the months scheduled as per base line programme.	13.00%
14.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) on proportionate basis.	3.20%
14.3	In Final Payment Certificate	0.70%
Total		100%

Note:

- The Interim Payment shall be made in accordance with the prefixed percentage as per above.
- The percentage breakup of the Fixed Lump Sum Price specified in Appendix-36 shall not be construed to represent the actual worth of relevant works. This percentage breakup of the Fixed Lump Sum Price will be utilized only for the purpose of payment of interim payment for the Fixed Lump Sum Price portion.

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Appendix-37**5.1.2 Breakup of Interim Payment for Item No. 2 of schedule - A**

SL. NO.	ITEM OF PAYMENT	PERCENTAGE BREAKUP
1.	Submission of General alignment drawing for Tunnels after discussing and reaching agreement with E&M team of BMRCL / Designated Contractors duly considering all the system requirements.	6.00%
2.	Approval of General alignment drawing for Tunnels submitted as per Sl. No. 1 above.	4.00%
3.	Submission of preliminary drawings tunnel duly considering relevant Engineer's requirements.	6.00%
4.	Approval of preliminary drawings submitted as per Sl. No. 3 above.	4.00%
5.	Submission of detailed designs of Tunnel, cross passages, walk way, restoration works, Temporary structures like reaction frame, TBM cradle, Gantry, crane foundation etc. and for all the structures as required for the entire works duly considering relevant Engineer's requirements.	6.00%
6.	Approval of detailed designs submitted as per Sl. No. 5 above.	6.00%
7.	Submission of GFC drawings and obtaining approval for the same for Tunnel, cross passages, walk way, restoration works, Temporary structures like reaction frame, TBM cradle, Gantry, crane foundation etc. and for all the structures as required for the entire works.	40.00%
8.	Submission of Combined Service Drawings (CSDs) prepared after proper interfacing with designated contractors and reaching agreement with E&M team of BMRCL/Designated Contractors.	11.00%
9.	Submission of 'As Built' drawings and obtaining approval for the same for tunnels, cross passages, walkway, restoration works and for all the structures for which GFC drawings are issued for the entire works. As built drawings will be for completed Civil Structures only. Systems installed subsequent to handing over of structures to designated contractors need not be included in As Built drawings.	17.00%
	Total	100.00%

Note:

- The percentage break-up of the Fixed Lump Sum Price specified Appendix-37 shall not be construed to represent the worth of relevant works. This percentage breakup of the Fixed Lump Sum Price will be utilized only for the purpose of mode of payment of interim payment for the Fixed Lump Sum Price portion.
- The description for Item of Payment is indicative only.

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5.2 SCHEDULE – B (Station Works)

Percentage break up of Payment for various activities covered under Schedule B will be made as under:

Table – B

ITEM NOS.	DESCRIPTION OF ITEMS	PERCENT PAYABLE ON FIXED LUMP SUM PRICE AS ACCEPTED SCHEDULE - B
1.	Preliminary and other works such as, works connected with surveying, submission of Base line programme, study of Condition of Existing Buildings and Structures(EBS) Monitoring all the buildings, carrying out additional soil investigation, submission of Geotechnical and Geological Interpretative reports, Interfacing with other contractors, submission of Combined Implementation Plan, submission of Drawings, submission of Quality Assurance Plan and Quality Control Plan, Submission of Monthly Progress Report, retention of Contractor's Staff, monitoring Temporary Earth Retaining Structures etc., The Interim Payment against this item will be regulated as per Appendix-38	0.90%
2.	Design & Drawings: Submission/Approval of preliminary drawings, designs, Submission of GFC drawings and obtaining approval for the same, submission of Combined Services Drawings, submission of "As Built" drawings etc for the stations etc., The Interim Payment against this item will be regulated as per Appendix-39	4.20%
3.	Providing barricades along boundary of station areas (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	0.10% 0.10% 0.01%
4.	Providing temporary structures as per approved design and drawings	
	Providing Secant piles / Soldier Piles / Diaphragm walls as per approved drawings. (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	2.00% 7.00% 1.00%
	Providing Wallers/Struts/Anchors as per approved drawings. (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	2.00% 4.00% 0.10%
	Maintenance of supporting structure till their removal. (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	0.50% 1.50% 0.05%
5.	Excavation in soil / rock for stations, entry exit structures, ancillary buildings etc. (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	7.00% 6.00% 0.20%
6.	Casting of Base Slab (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	5.00% 7.41% 0.20%
7.	Casting of Platform Slab (a) Cantonment Station (b) Pottery Town Station	0.45% 0.45%

ITEM NOS.	DESCRIPTION OF ITEMS	PERCENT PAYABLE ON FIXED LUMP SUM PRICE AS ACCEPTED SCHEDULE - B
8.	Casting of walls / columns from base slab to concourse slab (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station (Base Slab to Roof Slab)	2.00% 3.00% 0.30%
9.	Casting of Concourse Slab (a) Cantonment Station (b) Pottery Town Station	2.50% 3.00%
10.	Casting of walls / columns from concourse slab to roof slab (a) Cantonment Station (b) Pottery Town Station	2.00% 2.50%
11.	Casting of Roof Slab (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	3.75% 5.50% 0.25%
12.	Construction of Entry Exit Structures (a) Cantonment Station (b) Pottery Town Station	2.20% 2.20%
13.	Providing of water proofing (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	1.60% 2.00% 0.20%
14.	Backfilling after waterproofing of roof slab (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	0.38% 0.60% 0.10%
15.	Construction of complete ancillary building including ventilation shaft, substations, water tanks and all other structures as per approved drawings. (a) Cantonment Station (b) Pottery Town Station	2.20% 2.20%
16.	Handing over of Ancillary building to system contractor for installation of ramps/chiller plant/cooling tower etc. pending architectural finishing (a) Cantonment Station (b) Pottery Town Station	0.10% 0.10%
17.	Handing over of station control room, station equipment rooms and other rooms for installation of systems. Pending architectural finishing (a) Cantonment Station (b) Pottery Town Station	0.15% 0.15%
18.	Handing over of ASS room/ TSS room for installation of ASS / TSS (a) Cantonment Station (b) Pottery Town Station	0.15% 0.20%
19.	Handing over of TVS room for installation of TVS system pending architectural finishing (a) Cantonment Station (b) Pottery Town Station	0.10% 0.20%
20.	Handing over of ECS room for installation of ECS system pending architectural finishing (a) Cantonment Station (b) Pottery Town Station	0.15% 0.20%

ITEM NOS.	DESCRIPTION OF ITEMS	PERCENT PAYABLE ON FIXED LUMP SUM PRICE AS ACCEPTED SCHEDULE - B
21.	Providing Track access is to track contractor in station (a) Cantonment Station (b) Pottery Town Station	0.10% 0.10%
22.	Final handing over of all paid & unpaid areas of station building as a whole. (a) Cantonment Station (b) Pottery Town Station	0.40% 0.50%
23.	Site clearance and area handover. (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	0.60% 0.60% 0.05%
24.	Ensuring dry structure during first monsoon after completion of works by grouting the structure for works leakages if any. (a) Cantonment Station (b) Pottery Town Station (c) Shaft at South of Tannery road station	0.60% 0.60% 0.05%
25.	Taking over of stations after completion of all the works including Architectural works, restoration of roads, compound walls, road furnishing, installation of traffic signals etc. in all the stations	0.25%
26.	Designing and constructing subway structure between Cantonment Metro Station and Cantonment Railway Station for a length of 275M having cut & cover type RCC Box as per approved design including excavation in all type of soils & rocks, providing waterproofing, backfilling, transportation and dumping excavated materials to contractor's own dump yard, etc. Architectural finishing works, restoration of road and above ground structures will be paid separately.	6%
	Total	100.00%

Note:

1. The percentage breakup of payment as mentioned above shall not be construed to represent the worth of relevant works. This percentage breakup of the Fixed Lump Sum Price will be utilized only for the purpose of payment of IPCs for the Fixed Lump Sum Price portion.
2. Percentage breakup of the payment are provisional. These will be discussed and finalized by Employer after submission of revised percentage breakup of payment (not to exceed 100%) by the successful tenderer. This will be termed as APPROVED PAYMENT SCHEDULE.
3. Till such time the revised payment schedule as proposed by the contractor is approved by Employer, the above mentioned payment schedule will prevail.
4. In case of any Employer's variation as per SCC Clause 12, the payment for the same will be made as per the percentage in the APPROVED PAYMENT SCHEDULE. For this purpose, the percentage in the APPROVED PAYMENT SCHEDULE will be considered on pro-rata basis after deducting quantities from approved drawings.

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Appendix-38**5.2.1 Breakup of Interim Payment for Item No. 1 Of Schedule – B**

SL. NO.	ITEM OF PAYMENT	PERCENTAGE BREAKUP
1	Submission of Base line programme for all the works such as preliminary works, Design & Construction of Stations, restoration works etc.	2.00%
2	Carrying out alignment survey for the length in entire package, fixing horizontal and vertical alignment, marking works area for all the stations, Launching/Retrieval shafts, restoration works etc. Fixing control points sufficient in numbers to carry out survey work during construction and restoration.	1.00%
3	Carrying out survey work for construction of Stations, Roads etc. on day today basis, setting out alignment, checking various items etc. so as to execute work as per approved drawing.	
3.1	For the duration of carrying out station construction as per base line programme, equally distributed over the period of completion.	8.00%
3.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate on proportionate basis.	1.00%
3.3	In Final Payment Certificate	0.50%
4	Study of condition of Existing Buildings & Structures (EBS), submission of report on present condition of EBS and submission of method statements to carry out Instrumentation & Monitoring considering unforeseen ground conditions, Bangalore seismic zone risk, Contingencies etc. within influence zone of station excavation or 30meter from central line of alignment whichever is more	2.00%
5	Approval of Building Condition Study report.	1.00%
6	Monitoring all the Buildings and structures studied under item 4 above as well as ground movement within influence zone of Station excavation (up to 30M from Central line or influence zone whichever is more) and submission of reports on daily/weekly/monthly basis as instructed by Engineer.	
6.1	For the duration of work as per base line programme equally distributed over the period of completion.	4.00%
6.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) to be proportionate.	1.00%
6.3	In Final Payment Certificate	0.50%
7	Carry out additional soil investigation by drilling bores along alignment of Stations, conducting tests on samples obtained during investigation, preparation of soil investigation report as per relevant standards and submitting the report in electronic and physical forms.	1.50%
8	Submission of Geotechnical and Geological Interpretative Report based on information provided by BMRCL and additional soil investigation carried out under item 7 above.	1.00%
9	Approval of Geotechnical and Geological Interpretative Report by BMRCL.	1.00%
10	Construction support activities including interfacing with other contractors	

SL. NO.	ITEM OF PAYMENT	PERCENTAGE BREAKUP
10.1	Submission of combined implementation plan	6.00%
10.2	Approval of combined implementation plan by BMRCL.	2.00%
10.3	Submission of combined services drawings including carrying out clash analysis using suitable latest computer software.	9.00%
10.4	Approval of combined services drawings by BMRCL.	1.00%
11	Interfacing with all the designated contractors on regular basis and submission of report on monthly basis	
11.1	For the duration of work as per base line programme equally distributed over the period of completion.	9.00%
11.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate on proportionate basis.	1.50%
11.3	In Final Payment Certificate	0.50%
12	Submission of Quality Assurance and Quality Control Plan	0.50%
13	Submission of Quality reports (containing results of all type of tests carried out in house and in approved labs) on monthly basis.	
13.1	For the duration of carrying out station activities distributed over the months scheduled as per base line programme.	4.00%
13.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) on proportionate basis.	0.90%
13.3	In Final Payment Certificate	0.20%
14	Submission of Monthly Progress Report showing planned and achieved progress for the reporting month, Target for month next to reporting month, Safety Implementation details, Environmental Management plan and photographic report.	
14.1	For the duration of station activities distributed over the months scheduled as per base line programme.	9.00%
14.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate) on proportionate basis.	1.50%
14.3	In Final Payment Certificate	0.50%
15	Retention of Contractor's key staff deployed for the work.	
15.1	For the duration of station activities distributed over the months scheduled as per base line programme.	13.00%
15.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made Final Payment Certificate) on proportionate basis.	3.20%
15.3	In last Interim Payment Certificate	0.70%
16	Monitoring safety of Temporary Earth Retaining Structures on regular basis and submitting report on daily, weekly and monthly basis as per approved monitoring plan.	

SL. NO.	ITEM OF PAYMENT	PERCENTAGE BREAKUP
16.1	For the duration of carrying out station activities distributed over the months scheduled as per base line programme.	10.00%
16.2	For the extended period if any. (If works get completed within the initially planned period, payment will be made in Final Payment Certificate on proportionate basis.	2.00%
16.3	In Final Payment Certificate	1.00%
	Total	100%

Note:

- 1 The percentage break-up of the Fixed Lump Sum Price specified in Appendix-38 shall not be construed to represent the worth of relevant works. This percentage breakup of the Fixed Lump Sum Price will be utilized only for the purpose of mode of payment of interim payment for the Fixed Lump Sum Price portion.
- 2 The description for Item of Payment is indicative only.

SIGNATURE OF TENDERER

Appendix-39**5.2.2 Breakup of Interim Payment for Item No. 2 of schedule – B**

SL. NO.	ITEM OF PAYMENT	PERCENTAGE BREAKUP
1.	Submission of station layouts after discussing and reaching agreement with E&M team of BMRCL / Designated Contractors duly considering all the system requirements.	5.00%
2.	Approval of station layouts submitted as per Sl. No. 1 above.	3.00%
3.	Submission of preliminary drawings of all the structures like temporary earth retaining structures, stations, launching / retrieval shafts etc duly considering relevant Engineer's requirements.	5.00%
4.	Approval of preliminary drawings submitted as per Sl. No. 3 above.	3.00%
5.	Submission of detailed designs of all the structures like temporary earth retaining structures, stations, launching / retrieval shafts etc duly considering relevant Engineer's requirements.	5.00%
6.	Approval of definitive designs submitted as per Sl. No. 5 above.	3.00%
7.	Submission of GFC drawings and obtaining approval for the same for stations, temporary structures, restoration works and for all the structures as required for the entire works.	50.00%
8.	Submission of Combined Service Drawings (CSDs) prepared after proper interfacing with designated contractors, carrying out clash analysis for pipes, cables, ducts etc. to be laid in station and reaching agreement with E&M team of BMRCL/Designated Contractors.	10.00%
9.	Submission of 'As Built' drawings and obtaining approval for the same for stations, temporary structures, restoration works and for all the structures for which GFC drawings are issued for the entire works. As built drawings will be for completed Civil Structures only. Systems installed subsequent to handing over of structures to designated contractors need not be included in As Built drawings.	16.00%
	Total	100.00%

Note:

1. The percentage break-up of the Fixed Lump Sum Price specified in Appendix-39 shall not be construed to represent the worth of relevant works. This percentage breakup of the Fixed Lump Sum Price will be utilized only for the purpose of mode of payment of interim payment for the Fixed Lump Sum Price portion.
2. The description for Item of Payment is indicative only.

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