



Ref. No. GVSCCL/Projects/03(Smart Streets-3)/2016-17

Draft Agreement for

RFP for Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam's Area Based Development (ABD) area under Smart Cities Mission on Engineering, Procurement and Construction (EPC) mode.

GREATER VISAKHAPATNAM SMART CITY CORPORATION LIMITED

RFP for Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam's Area Based Development (ABD) area under Smart Cities Mission on Engineering, Procurement and Construction (EPC) mode.

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Part I: Preliminary

ENGINEERING, PROCUREMENT AND CONSTRUCTION AGREEMENT

THIS AGREEMENT¹ is entered into on this the day of, 20....

BETWEEN

Greater Visakhapatnam Smart City Corporation Limited(GVSCCL),....., having its office at Room No 306, Tanneti Bhavan, Asilmetta, Visakhapatnam, Andhra Pradesh, India, Pin – 530003, the “Authority” which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns of One Part;

AND

{-----},² means the selected bidder³ having its registered office at, (hereinafter referred to as the “Contractor” which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns) of the Other Part.

WHEREAS:

- (A) The Authority is engaged in the development of Greater Visakhapatnam city area under the implementation of Smart City Proposal of Greater Visakhapatnam. As a part of the smart city proposal, it is proposed to undertake Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam's Area Based Development (ABD);
- (B) The Authority had resolved to taken up the Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam's Area Based Development (ABD) (hereinafter called the “project”) on Engineering, Procurement, Construction (“EPC”) basis in accordance with the terms and conditions to be set forth in an agreement to be entered into.

The Authority had accordingly invited proposals by its Request for Proposal **Ref. No. GVSCCL/Projects/03(Smart Streets-3)/2016-17** dated 27th July 2017 (the “Request for Proposal” or “RFP”) for selection of bidders for EPC of the above referred project. The Authority had also prescribed the technical and commercial terms and conditions, and invited bids pursuant to the said RFP for undertaking the project.

(C)

¹ *Serially numbered footnotes in this Agreement are for guidance of the Authority and should be omitted from the draft Agreement forming part of Bid Documents. Footnotes marked "\$" shall be retained in the draft Agreement.*

² *All provisions enclosed in curly parenthesis shall be retained in the Bid Documents and shall be modified as required after the selected bidder has been identified.*

³ *Refers to the single entity or the lead member of the consortium/joint venture, which is the selected bidder under the RFP. Authority had also prescribed the technical and commercial terms and conditions, and invited bids pursuant to the said RFP for undertaking the project.*

(D) After evaluation of the bids received, the Authority had accepted the bid of the selected bidder and issued its Letter of Acceptance No. dated (hereinafter called the "LOA") to the selected bidder for redevelopment of the said project at the contract price specified hereinafter, requiring the selected bidder to inter alia:

- (i) deliver to the Authority a legal opinion from the legal counsel of the selected bidder with respect to the authority of the selected bidder to enter into this Agreement and the enforceability of the provisions thereof, within 10 (ten) days of the date of issue of LOA;
- (ii) submit the performance bank guarantee in accordance with terms and conditions of the RFP; and (iii) execute this Agreement within 15 (fifteen) days of the date of issue of LOA.

(E) The Contractor has fulfilled the requirements specified in Recital (D) above;

NOW THEREFORE in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the sufficiency and adequacy of which is hereby acknowledged, the Authority hereby covenants to pay the Contractor, in consideration of the obligations specified herein, the Contract Price or such other sum as may become payable under the provisions of the Agreement at the times and in the manner specified by the Agreement and intending to be legally bound hereby, the Parties agree as follows:

ARTICLE 1

1 DEFINITIONS AND INTERPRETATION

1.1 Definitions

The words and expressions beginning with capital letters and defined in this Agreement (including those in Article 28) shall, unless the context otherwise requires, have the meaning ascribed thereto herein, and the words and expressions defined in the Schedules and used therein shall have the meaning ascribed thereto in the Schedules.

1.2 Interpretation

1.2.1 In this Agreement, unless the context otherwise requires,

- (a) references to any legislation or any provision thereof shall include amendment or re-enactment or consolidation of such legislation or any provision thereof so far as such amendment or re-enactment or consolidation applies or is capable of applying to any transaction entered into hereunder;
- (b) references to laws of Visakhapatnam / India or Indian law or regulation having the force of law shall include the laws, acts, ordinances, rules, regulations, bye laws or notifications which have the force of law in the territory of India and as from time to time may be amended, modified, supplemented, extended or re-enacted;
- (c) references to a "person" and words denoting a natural person shall be construed as a reference to any individual, firm, company, corporation, society, trust, government, state or agency of a state or any association or partnership (whether or not having separate legal personality) of two or more of the above and shall include successors and assigns;
- (d) the table of contents, headings or sub-headings in this Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Agreement;
- (e) the words "include" and "including" are to be construed without limitation and shall be deemed to be followed by "without limitation" or "but not limited to" whether or not they are followed by such phrases;
- (f) references to "construction" or "building" include, unless the context otherwise requires, survey and investigation, design, developing, engineering, procurement, supply of plant, materials, equipment, labour, delivery, transportation, installation, processing, fabrication, testing, and commissioning of the Project, including maintenance during the Construction Period, removing of defects, if any, and other

- activities incidental to the construction and “construct” or “build” shall be construed accordingly;
- (g) references to “development” include, unless the context otherwise requires, construction, renovation, refurbishing, augmentation, up-gradation and other activities incidental thereto during the Construction Period, and “develop” shall be construed accordingly;
 - (h) any reference to any period of time shall mean a reference to that according to Indian standard time;
 - (i) any reference to day shall mean a reference to a calendar day;
 - (j) references to a “business day” shall be construed as a reference to a day (other than a Sunday) on which banks in Visakhapatnam are generally open for business;
 - (k) any reference to month shall mean a reference to a calendar month as per the Gregorian calendar;
 - (l) references to any date, period or Project Milestone shall mean and include such date, period or Project Milestone as may be extended pursuant to this Agreement;
 - (m) any reference to any period commencing “from” a specified day or date and “till” or “until” a specified day or date shall include both such days or dates; provided that if the last day of any period computed under this Agreement is not a business day, then the period shall run until the end of the next business day;
 - (n) the words importing singular shall include plural and vice versa;
 - (o) references to any gender shall include the other and the neutral gender;
 - (p) “lakh” means a hundred thousand (100,000) and “crore” means ten million (10,000,000);
 - (q) “indebtedness” shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;
 - (r) references to the “winding-up”, “dissolution”, “insolvency”, or “reorganisation” of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganisation, dissolution, arrangement, protection or relief of debtors;
 - (s) save and except as otherwise provided in this Agreement, any reference, at any time, to any agreement, deed, instrument, license or document of any description shall be construed as reference to that agreement, deed, instrument, license or other document as amended, varied, supplemented, modified or suspended at the time of such reference; provided that this Clause shall not operate so as to increase liabilities or obligations of the Authority here under or pursuant hereto in any manner whatsoever;

- (t) any agreement, consent, approval, authorisation, notice, communication, information or report required under or pursuant to this Agreement from or by any Party or the Authority's Engineer shall be valid and effective only if it is in writing under the hand of a duly authorised representative of such Party or the Authority's Engineer, as the case may be, in this behalf and not otherwise;
 - (u) the Schedules and Recitals to this Agreement form an integral part of this Agreement and will be in full force and effect as though they were expressly set out in the body of this Agreement;
 - (v) references to Recitals, Articles, Clauses, Sub-clauses or Schedules in this Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses and Schedules of or to this Agreement, and references to a Paragraph shall, subject to any contrary indication, be construed as a reference to a Paragraph of this Agreement or of the Schedule in which such reference appears;
 - (w) the damages payable by either Party to the other of them, as set forth in this Agreement, whether on per diem basis or otherwise, are mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Party entitled to receive the same and are not by way of penalty (the "Damages"); and
 - (x) time shall be of the essence in the performance of the Parties' respective obligations. If any time period specified herein is extended for the reasons specified in the Agreement, such extended time shall also be of the essence.
- 1.2.2 Unless expressly provided otherwise in this Agreement, any Documentation required to be provided or furnished by the Contractor to the Authority shall be provided free of cost and in three copies, and if the Authority is required to return any such Documentation with its comments and/or approval, it shall be entitled to retain two copies thereof.
- 1.2.3 The rule of construction, if any, that a contract should be interpreted against the parties responsible for the drafting and preparation thereof, shall not apply. 1.2.4 Any word or expression used in this Agreement shall, unless otherwise defined or construed in this Agreement, bear its ordinary English meaning and, for these purposes, the General Clauses Act, 1897 shall not apply.

1.3 Measurements and arithmetic conventions

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down.

1.4 Priority of agreements and errors/discrepancies

- 1.4.1 This Agreement, and all other agreements and documents forming part of or referred to in this Agreement are to be taken as mutually explanatory and, unless otherwise expressly provided elsewhere in this Agreement, the priority of this Agreement and other documents and agreements forming part hereof or referred to herein shall, in the event of any conflict between them, be in the following order:
- (a) this Agreement; and
 - (b) all other agreements and documents forming part hereof or referred to herein; i.e. this Agreement at (a) above shall prevail over the agreements and documents at (b).
- 1.4.2 Subject to the provisions of Clause 1.4.1, in case of ambiguities or discrepancies within this Agreement, the following shall apply:
- (a) between two or more Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in other Clauses;
 - (b) between the Clauses of this Agreement and the Schedules, the Clauses shall prevail and between Schedules and Annexes, the Schedules shall prevail;
 - (c) between any two Schedules, the Schedule relevant to the issue shall prevail;
 - (d) between the written description on the Drawings and the Specifications and Standards, the latter shall prevail;
 - (e) between the dimension scaled from the Drawing and its specific written dimension, the latter shall prevail; and
 - (f) between any value written in numerals and that in words, the latter shall prevail.

1.5 Joint and several liability

- 1.5.1 If the Contractor has formed a Consortium of two or more persons for implementing the Project:
- (a) these persons shall, without prejudice to the provisions of this Agreement, be deemed to be jointly and severally liable to the Authority for the performance of the Agreement; and
 - (b) the Contractor shall ensure that no change in the composition of the Consortium is effected without the prior consent of the Authority.
- 1.5.2 {Without prejudice to the joint and several liability of all the members of the Consortium, the Lead Member shall represent all the members of the Consortium and shall at all times be liable and responsible for discharging the functions and obligations of the Contractor. The Contractor shall ensure that each member of the Consortium shall be bound by any decision, communication, notice, action or inaction of the Lead Member on any matter related to this Agreement and the Authority shall be entitled to rely upon any such action, decision or communication of the Lead Member. The

Authority shall have the right to release payments solely to the Lead Member and shall not in any manner be responsible or liable for the inter se allocation of payments among members of the Consortium.}§

§This Clause 1.5 may be omitted if the Contractor is not a Consortium. Even if the Contractor is a Consortium, the Authority may, at its discretion, delete this provision.

Part II: Scope of Project

ARTICLE 2

2 SCOPE OF THE PROJECT

2.1 Scope of the Project

Under this Agreement, the scope of the Project (the “Scope of the Project”) shall mean and include:

- (a) construction and development of the Project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of Project Facilities as specified in Schedule-C, and in conformity with the Specifications and Standards set forth in Schedule-D;
- (b) Maintenance of the Project in accordance with the provisions of this Agreement and in conformity with the requirements set forth in Schedule-E; and
- (c) Performance and fulfillment of all other obligations of the Contractor in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Contractor under this Agreement.

ARTICLE 3

3 OBLIGATIONS OF THE CONTRACTOR

3.1 Obligations of the Contractor

- 3.1.1 Subject to and on the terms and conditions of this Agreement, the Contractor shall undertake the survey, investigation, design, engineering, procurement, construction, and maintenance during defect liability period of the Project and observe, fulfil, comply with and perform all its obligations set out in this Agreement or arising hereunder.
- 3.1.2 The Contractor shall comply with all Applicable Laws and Applicable Permits (including renewals as required) in the performance of its obligations under this Agreement.
- 3.1.3 Subject to the provisions of Clauses 3.1.1 and 3.1.2, the Contractor shall discharge its obligations in accordance with Good Industry Practice and as a reasonable and prudent person.
- 3.1.4 The Contractor shall remedy any and all loss or damage to the Project from the Appointed Date until the end of the Construction Period at the Contractor's cost, save and except to the extent that any such loss or damage shall have arisen from any default or neglect of the Authority.
- 3.1.5 The Contractor shall remedy any and all loss or damage to the Project during the Defects Liability Period at the Contractor's cost to the extent that such loss or damage shall have arisen out of the reasons specified in Clause 17.3.
- 3.1.6 The Contractor shall remedy any and all loss or damage to the Project during the defect liability Period at the Contractor's cost, including those stated in Clause 14.1.2, save and except to the extent that any such loss or damage shall have arisen on account of any default or neglect of the Authority or on account of a Force Majeure Event.
- 3.1.7 The Contractor shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this Agreement:
 - (a) make, or cause to be made, necessary applications to the relevant Government Instrumentalities with such particulars and details as may be required for obtaining Applicable Permits set forth in Schedule-F and obtain and keep in force and effect such Applicable Permits in conformity with the Applicable Laws;
 - (b) procure, as required, the appropriate proprietary rights, licences, agreements and permissions for Materials, methods, processes and systems used or incorporated into the Project;
 - (c) make reasonable efforts to maintain harmony and good industrial relations among the personnel employed by it or its Sub-contractors in connection with the performance of its obligations under this Agreement;

- (d) ensure and procure that its Sub-contractors comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Contractor's obligations under this Agreement;
- (e) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;
- (f) support, cooperate with and facilitate the Authority in the implementation and operation of the Project in accordance with the provisions of this Agreement;
- (g) ensure that the Contractor and its Sub-contractors comply with the safety and welfare measures for labour in accordance with the Applicable Laws and Good Industry Practice;
- (h) keep, on the Site, a copy of this Agreement, publications named in this Agreement, the Drawings, Documents relating to the Project, and Change of Scope Orders and other communications given under this Agreement. The Authority's Engineer and its authorised personnel shall have the right of access to all these documents at all reasonable times;
- (i) cooperate with other contractors employed by the Authority and personnel of any public authority; and (j) not interfere unnecessarily or improperly with the convenience of the public, or the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the Authority or of others.

3.1.8 The Contractor shall undertake all necessary superintendence to plan, arrange, direct, manage, inspect and test the Works.

3.2 Obligations relating to sub-contracts and any other agreements

- 3.2.1 The Contractor shall not sub-contract any Works of more than 30% (thirty per cent) of the total value of the Project and shall carry out Works directly under its own supervision and through its own personnel for at least 70% (seventy per cent) of the total value of the Project. Provided, however, that in respect of the Works carried out directly by the Contractor, it may enter into contracts for the supply and installation of Materials, Plant, equipment, street furniture, safety devices and labour, as the case may be, for such Works. The Parties further agree that all obligations and liabilities under this Agreement for the entire project shall at all times remain with the Contractor. {The Parties also agree that obligation of the Contractor to carry out Works directly in at least 50% (fifty per cent) of the total value of the Project shall be discharged solely by the Lead Member.}⁵
- 3.2.2 In the event any sub-contract for Works, or the aggregate of such sub-contracts with any Sub-contractor, exceeds 5% (five percent) of the Contract Price, the Contractor shall communicate the name and particulars, including the relevant experience of the sub-

contractor, to the Authority prior to entering into any such sub-contract. The Authority shall examine the particulars of the sub-contractor from the national security, quality of work and public interest perspective and may require the Contractor, no later than 15 (fifteen) business days from the date of receiving the communication from the Contractor, not to proceed with the sub-contract, and the Contractor shall comply therewith.

[§] *May be deleted if the Contractor is not a Consortium.*

- 3.2.3 In the event any sub-contract referred to in Clause 3.2.2 relates to a sub-contractor who has, over the preceding 3 (three) years, not undertaken at least one work of a similar nature with a contract value exceeding 40% (forty per cent) of the value of the sub-contract to be awarded hereunder and received payments in respect thereof for an amount equal to at least such 40% (forty per cent), the Authority may, no later than 15 (fifteen) business days from the date of receiving the communication from the Contractor, require the Contractor not to proceed with such sub-contract, and the Contractor shall comply therewith.
- 3.2.4 It is expressly agreed that the Contractor shall, at all times, be responsible and liable for all its obligations under this Agreement notwithstanding anything contained in the agreements with its Sub-contractors or any other agreement that may be entered into by the Contractor, and no default under any such agreement shall excuse the Contractor from its obligations or liability hereunder.

3.3 DELETED

3.4 Contractor's personnel

- 3.4.1 The Contractor shall ensure that the personnel engaged by it or by its Sub-contractors in the performance of its obligations under this Agreement are at all times appropriately qualified, skilled and experienced in their respective functions in conformity with Good Industry Practice.
- 3.4.2 The Authority's Engineer may, for reasons to be specified in writing, direct the Contractor to remove any member of the Contractor's or Sub-contractor's personnel. Provided that any such direction issued by the Authority's Engineer shall specify the reasons for the removal of such person.
- 3.4.3 The Contractor shall on receiving such a direction from the Authority's Engineer order for the removal of such person or persons with immediate effect. It shall be the duty of the Contractor to ensure that such persons are evicted from the Site within 10 (ten) days of any such direction being issued in pursuance of Clause 3.4.2. The Contractor shall further ensure that such persons have no further connection with the Works or

Maintenance under this Agreement. The Contractor shall then appoint (or cause to be appointed) a replacement.

3.5 Advertisement on Project

The Project or any part thereof shall not be used in any manner to advertise any commercial product or services.

3.6 Contractor's care of the Works

The Contractor shall bear full risk in and take full responsibility for the care of the Works, and of the Materials, goods and equipment for incorporation therein, from the Appointed Date until the date of Provisional Certificate (with respect to the Works completed prior to the issuance of the Provisional Certificate) and/or Completion Certificate (with respect to the Works referred to in the Punch List), save and except to the extent that any such loss or damage shall have arisen from any default or neglect of the Authority.

3.7 Electricity, water and other services

The Contractor shall be responsible for procuring of all power, water and other services that it may require.

3.8 Unforeseeable difficulties

Except as otherwise stated in the Agreement:

- (a) the Contractor accepts complete responsibility for having foreseen all difficulties and costs of successfully completing the Works;
- (b) the Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs; and
- (c) the Scheduled Completion Date shall not be adjusted to take account of any unforeseen difficulties or costs.

ARTICLE 4

4 OBLIGATIONS OF THE AUTHORITY

4.1 Obligations of the Authority

- 4.1.1 The Authority shall, at its own cost and expense, undertake, comply with and perform all its obligations set out in this Agreement or arising hereunder.
- 4.1.2 The Authority shall be responsible for the correctness of the Scope of the Project, Project Facilities, Specifications and Standards and the criteria for testing of the completed Works.
- 4.1.3 The Authority shall provide to the Contractor:
 - (a) upon receiving the Performance Security under Clause 7.1.1, the Right of Way in accordance with the provisions as specified in Schedule A.
 - (b) deleted
 - (c) all environmental clearances as required under Clause 4.3.⁵
- 4.1.4 Delay in providing the Right of Way, in accordance with the provisions of Clause 4.1.3 shall entitle the Contractor to Damages in a sum calculated in accordance with the provisions of Clause 8.3 of this Agreement and Time Extension in accordance with the provisions of Clause 10.5 of this Agreement.
- 4.1.5 Notwithstanding anything to the contrary contained in this Agreement, the Parties expressly agree that the aggregate Damages payable under Clauses 8.3 and 9.2 shall not exceed 5% (Five per cent) of the Contract Price. For the avoidance of doubt, the Damages payable by the Authority under the aforesaid Clauses shall not be additive if they arise concurrently from more than one cause but relate to the same part of the Project. Both the parties agree that payment of these Damages shall be full and final settlement of all claims of the Contractor and such compensation shall be the sole remedy against delays of the Authority and both parties further agree this as final cure against delays of the Authority.
- 4.1.6 The Authority agrees to provide support to the Contractor and undertakes to observe, comply with and perform, subject to and in accordance with the provisions of this Agreement and the Applicable Laws, the following:
 - (a) upon written request from the Contractor, and subject to the Contractor complying with Applicable Laws, provide reasonable support to the Contractor in procuring Applicable Permits required from any Government Instrumentality for implementation of the Project;

- (b) upon written request from the Contractor, provide reasonable assistance to the Contractor in obtaining access to all necessary infrastructure facilities and utilities, including water and electricity at rates and on terms no less favorable than those generally available to commercial customers receiving substantially equivalent services;
- (c) procure that no barriers that would have a material adverse effect on the works are erected or placed on or about the Project by any Government Instrumentality or persons claiming through or under it, except for reasons of Emergency, national security, law and order or collection of inter-state taxes;
- (d) not do or omit to do any act, deed or thing which may in any manner be violative of any of the provisions of this Agreement;
- (e) support, cooperate with and facilitate the Contractor in the implementation of the Project in accordance with the provisions of this Agreement; and
- (f) upon written request from the Contractor and subject to the provisions of Clause 3.3, provide reasonable assistance to the Contractor and any expatriate personnel of the Contractor or its Sub-contractors to obtain applicable visas and work permits for the purposes of discharge by the Contractor or its Sub-contractors of their obligations under this Agreement and the agreements with the Sub-contractors.

4.2 Maintenance obligations prior to the Appointed Date

The Authority shall, prior to the Appointed Date, maintain the Project, at its own cost and expense, so that its traffic worthiness and safety are at no time materially inferior as compared to its condition 10 (ten) days prior to the last date for submission of the Bid, and in the event of any material deterioration or damage other than normal wear and tear, undertake repair thereof. For the avoidance of doubt, the Authority shall undertake only routine maintenance prior to the Appointed Date, and it shall undertake special repairs only in the event of excessive deterioration or damage caused due to unforeseen events such as floods or earthquake.

4.3 Environmental Clearances

The Authority represents and warrants that the environmental clearances required for construction of the Project, if any, shall be procured by the Authority prior to the date of issue of LOA. For the avoidance of doubt, the present status of environmental clearances is specified in Schedule-A.

⁵ *Clause 4.1.3 (c) may be suitably modified in the event that all the environmental clearances for the Project road have been received or are not required. It should be clearly stated that all the environmental clearances for the Project road have been received; or such environmental clearances for the Project road are not required.*

ARTICLE 5

5 REPRESENTATIONS AND WARRANTIES

5.1 Representations and warranties of the Contractor

The Contractor represents and warrants to the Authority that:

- (a) it is duly organised and validly existing under the laws of Andhra Pradesh / India, and has full power and authority to execute and perform its obligations under this Agreement and to carry out the transactions contemplated hereby;
- (b) it has taken all necessary corporate and/or other actions under Applicable Laws to authorise the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;
- (c) this Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement will be legally valid, binding and enforceable obligations against it in accordance with the terms hereof;
- (d) it is subject to the laws of Andhra Pradesh / India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of this Agreement or matters arising thereunder including any obligation, liability or responsibility hereunder;
- (e) the information furnished in the Bid and as updated on or before the date of this Agreement is true and accurate in all respects as on the date of this Agreement;
- (f) the execution, delivery and performance of this Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its memorandum and articles of association or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected;
- (g) there are no actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its obligations under this Agreement;
- (h) it has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on its ability to perform its obligations under this Agreement and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;

- (i) it has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have a material adverse effect on its ability to perform its obligations under this Agreement;
- (j) no representation or warranty by it contained herein or in any other document furnished by it to the Authority or to any Government Instrumentality in relation to Applicable Permits contains or will contain any untrue or misleading statement of material fact or omits or will omit to state a material fact necessary to make such representation or warranty not misleading;
- (k) no sums, in cash or kind, have been paid or will be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for securing the contract or entering into this Agreement or for influencing or attempting to influence any officer or employee of the Authority in connection therewith;
- (l) all information provided by the {selected bidder/ members of the Consortium} in response to the Request for Proposal or otherwise, is to the best of its knowledge and belief, true and accurate in all material respects; and
- (m) nothing contained in this Agreement shall create any contractual relationship or obligation between the Authority and any Sub-contractors, designers, consultants or agents of the Contractor.

5.2 Representations and warranties of the Authority

The Authority represents and warrants to the Contractor that:

- (a) it has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and perform its obligations, under this Agreement;
- (b) it has taken all necessary actions under the Applicable Laws to authorise the execution, delivery and performance of this Agreement;
- (c) it has the financial standing and capacity to perform its obligations under this Agreement;
- (d) this Agreement constitutes a legal, valid and binding obligation enforceable against it in accordance with the terms hereof;
- (e) it has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any legally binding order of any Government Instrumentality which may result in any material adverse effect on the Authority's ability to perform its obligations under this Agreement;
- (f) it has complied with Applicable Laws in all material respects;

- (g) it has good and valid right to the Site and has the power and authority to grant the Right of Way in respect thereof to the Contractor; and
- (h) it has procured Right of Way and environment clearances such that the Contractor can commence construction forthwith on as specified in Schedule A.

5.3 Disclosure

In the event that any occurrence or circumstance comes to the attention of either Party that renders any of its aforesaid representations or warranties untrue or incorrect, such Party shall immediately notify the other Party of the same. Such notification shall not have the effect of remedying any breach of the representation or warranty that has been found to be untrue or incorrect nor shall it adversely affect or waive any obligation of either Party under this Agreement.

ARTICLE 6

6 DISCLAIMER

6.1 Disclaimer

- 6.1.1 The Contractor acknowledges that prior to the execution of this Agreement, the Contractor has, after a complete and careful examination, made an independent evaluation of the Request for Proposal, Scope of the Project, Specifications and Standards of design, construction and maintenance, Site, local conditions, physical qualities of ground, subsoil and geology, traffic volumes, suitability and availability of access routes to the Site and all information provided by the Authority or obtained, procured or gathered otherwise, and has determined to its satisfaction the accuracy or otherwise thereof and the nature and extent of difficulties, risks and hazards as are likely to arise or may be faced by it in the course of performance of its obligations hereunder. Save as provided in Clause 4.1.2 and Clause 5.2, the Authority makes no representation whatsoever, express, implicit or otherwise, regarding the accuracy, adequacy, correctness, reliability and/or completeness of any assessment, assumptions, statement or information provided by it and the Contractor confirms that it shall have no claim whatsoever against the Authority in this regard.
- 6.1.2 The Contractor acknowledges and hereby accepts to have satisfied itself as to the correctness and sufficiency of the Contract Price.
- 6.1.3 The Contractor acknowledges and hereby accepts the risk of inadequacy, mistake or error in or relating to any of the matters set forth in Clause 6.1.1 above and hereby acknowledges and agrees that the Authority shall not be liable for the same in any manner whatsoever to the Contractor, or any person claiming through or under any of them, and shall not lead to any adjustment of Contract Price or Scheduled Completion Date.
- 6.1.4 The Parties agree that any mistake or error in or relating to any of the matters set forth in Clause 6.1.1 above shall not vitiate this Agreement, or render it voidable.
- 6.1.5 In the event that either Party becomes aware of any mistake or error relating to any of the matters set forth in Clause 6.1.1 above, that Party shall immediately notify the other Party, specifying the mistake or error.
- 6.1.6 Except as otherwise provided in this Agreement, all risks relating to the Project shall be borne by the Contractor; and the Authority shall not be liable in any manner for such risks or the consequences thereof.

Part III: Construction and Maintenance

ARTICLE 7

7 PERFORMANCE SECURITY

7.1 Performance Security

- 7.1.1 The Contractor shall, for the performance of its obligations hereunder during the Construction Period, provide to the Authority, within 10 (ten) days of the date of the Agreement, an irrevocable and unconditional guarantee from a Bank in the form set forth in Schedule-G (the "Performance Security") for an amount equal to 10% (ten percent) of the Contract Price. The Performance Security shall be valid up to 60 (sixty) days after the Defects Liability Period. Until such time the Performance Security is provided by the Contractor pursuant hereto and the same comes into effect, the Bid Security shall remain in force and effect, and upon such provision of the Performance Security, the Authority shall release the Bid Security to the Contractor.
- 7.1.2 Notwithstanding anything to the contrary contained in this Agreement, the Parties agree that in the event of failure of the Contractor to provide the Performance Security in accordance with the provisions of Clause 7.1.1 and within the time specified therein or such extended period as may be provided by the Authority, in accordance with the provisions of Clause 7.1.3, the Authority may encash the Bid Security and appropriate the proceeds thereof as Damages, and there upon all rights, privileges, claims and entitlements of the Contractor under or arising out of this Agreement shall be deemed to have been waived by, and to have ceased with the concurrence of the Contractor, and this Agreement shall be deemed to have been terminated by mutual agreement of the Parties.
- 7.1.3 In the event the Contractor fails to provide the Performance Security within 10 (ten) days of this Agreement, it may seek extension of time for a period not exceeding 20 (twenty) days on payment of Damages for such extended period in a sum calculated at the rate of 0.05% (zero point zero five per cent) of the Contract Price for each day until the Performance Security is provided.

7.2 Extension of Performance Security

The Contractor may initially provide the Performance Security for a period of 4 (four) years including defect liability period; provided that it shall procure the extension of the validity of the Performance Security, as necessary, at least 2 (two) months prior to the date of expiry thereof. Upon the Contractor providing an extended Performance Security, the previous Performance Security shall be deemed to be released and the

Authority shall return the same to the Contractor within a period of 7 (seven) business days from the date of submission of the extended Performance Security.

7.3 Appropriation of Performance Security

- 7.3.1 Upon occurrence of a Contractor's Default, the Authority shall, without prejudice to its other rights and remedies hereunder or in law, be entitled to encash and appropriate the relevant amounts from the Performance Security as Damages for such Contractor's Default.
- 7.3.2 Upon such encashment and appropriation from the Performance Security, the Contractor shall, within 30 (thirty) days thereof, replenish, in case of partial appropriation, to its original level the Performance Security, and in case of appropriation of the entire Performance Security provide a fresh Performance Security, as the case may be, and the Contractor shall, within the time so granted, replenish or furnish fresh Performance Security as aforesaid failing which the Authority shall be entitled to terminate the Agreement in accordance with Article 23. Upon replenishment or furnishing of a fresh Performance Security, as the case may be, as aforesaid, the Contractor shall be entitled to an additional Cure Period of 30 (thirty) days for remedying the Contractor's Default, and in the event of the Contractor not curing its default within such Cure Period, the Authority shall be entitled to encash and appropriate such Performance Security as Damages, and to terminate this Agreement in accordance with Article 23.

7.4 Release of Performance Security

The Authority shall return the Performance Security to the Contractor within 60 (sixty) days of the later of the expiry of the Defects Liability Period under this Agreement. Notwithstanding the aforesaid, the Parties agree that the Authority shall not be obliged to release the Performance Security until all Defects identified during the Defects Liability Period have been rectified.

7.5 Deleted

ARTICLE 8

8 RIGHT OF WAY

8.1 The Site

The site of the Project (the "Site") shall comprise the site described in Schedule-A in respect of which the Right of Way shall be provided by the Authority to the Contractor.

The Authority shall be responsible for:

- a) acquiring and providing Right of Way on the Site in accordance with the alignment finalised by the Authority, free from all encroachments and encumbrances, and free access thereto for the execution of this Agreement; and
- b) obtaining licences and permits for environment clearance, required if any, for the Project.

8.2 Procurement of the Site

- 8.2.1 The Authority Representative and the Contractor shall, within 10 (ten) days of issue of LOA inspect the Site and prepare a memorandum containing an inventory of the Site including the vacant and unencumbered land, buildings, structures, road works, trees and any other immovable property on or attached to the Site. Subject to the provisions of Clause 8.2.3, such memorandum shall have appended thereto an appendix (the "Appendix") specifying in reasonable detail those parts of the Site to which vacant access and Right of Way has not been given to the Contractor. Signing of the memorandum, in two counterparts (each of which shall constitute an original), by the authorised representatives of the Parties shall be deemed to constitute a valid evidence of giving the Right of Way to the Contractor for discharging its obligations under and in accordance with the provisions of this Agreement and for no other purpose whatsoever.
- 8.2.2 Whenever the Authority is ready to hand over any part or parts of the Site included in the Appendix, it shall inform the Contractor, by notice, the proposed date and time such of handing over. The Authority Representative and the Contractor shall, on the date so notified, inspect the specified parts of the Site, and prepare a memorandum containing an inventory of the vacant and unencumbered land, buildings, structures, road works, trees and any other immovable property on or attached to the Site so handed over. Signing of the memorandum, in two counterparts (each of which shall constitute an original), by the authorised representatives of the Parties shall be deemed to constitute a valid evidence of giving the relevant Right of Way to the Contractor.
- 8.2.3 The Authority shall provide the Right of Way to the Contractor in respect of all land included in the Appendix by the date specified in Schedule-A for those parts of the Site referred to therein, or no later than 540 (Five hundred and forty) days of the Appointed Date for those parts of the Site which have not been specified in Schedule-A, and in the event of delay for any reason other than Force Majeure or breach of this Agreement by the Contractor, it shall pay to the Contractor, Damages in a sum calculated in accordance with Clause 8.3.
- 8.2.4 Deleted.

8.3 Damages for delay in handing over the Site

8.3.1 In the event the right of way to any part of the site is not provided by the Authority on or before the date(s) specified in clause 8.2 for a for any reason other than Force Majeure or breach of this Agreement by the Contractor, the Authority shall provide the provision for the price escalation subjected to maximum of 5% (five) of the contract price and the time extension equal to the period of the delay.

- (a) if any delays involve time overlaps, the overlaps shall not be additive; and
- (b) such Time Extension shall be restricted only to the Works which are affected by the delay in providing the Right of Way.

For the avoidance of doubt, the Parties expressly agree that the Damages specified hereunder and the Time Extension specified in Clause 10.5 shall be restricted only to failure of the Authority to provide the Right of Way for and in respect of the width of the roadway.

8.3.2 Notwithstanding anything to the contrary contained in this Agreement, the Contractor expressly agrees that Works on all parts of the Site for which Right of Way is granted within 60 (Sixty) days of the Appointed Date, or with respect to the parts of the Site provided in Schedule-A, no later than the date(s) specified therein, as the case may be, shall be completed before the Scheduled Completion Date and shall not qualify for any Time Extension under the provisions of Clause 8.3.1.

8.3.3 Notwithstanding anything to the contrary contained in this Agreement, the Authority may at any time withdraw any Works forming part of this Agreement, subject to such Works not exceeding an aggregate value, such value to be determined in accordance with Schedule-H, equal to 10 (ten) percent of the Contract Price.

Provided that if any Works cannot be undertaken because the requisite clearances or approvals for commencing construction of Works therein have not been given within 540 (five hundred and forty) days of the Appointed date, the affected Works shall be deemed to be withdrawn under the provisions of this Clause 8.3.3 unless the Parties agree to the contrary, and such Works shall not be computed for the purposes of the aforesaid ceiling of 10% (ten per cent) hereunder.

8.3.4 In the event of withdrawal of Works under Clause 8.3.3, the Contract Price shall be reduced by an amount equal to 90 (ninety) per cent of the value of the Works withdrawn and the Contractor shall not be entitled to any other compensation or Damages for the withdrawal of Works.

Provided that if any Works are withdrawn after commencement of the Construction of such works, the Authority shall pay to the Contractor 110% (one hundred and ten per cent) of the fair value of the work done, as assessed by the Authority's Engineer:

8.4 Site to be free from Encumbrances

Subject to the provisions of Clause 8.2, the Site shall be made available by the Authority to the Contractor pursuant hereto free from all Encumbrances and occupations and without the Contractor being required to make any payment to the Authority on account of any costs, compensation, expenses and charges for the acquisition and use of such Site for the duration of the Project Completion Schedule. For the avoidance of doubt, it is agreed that the existing rights of way, easements, privileges, liberties and appurtenances to the Site shall not be deemed to be Encumbrances. It is further agreed that, unless otherwise specified in this Agreement, the Contractor accepts and undertakes to bear any and all risks arising out of the inadequacy or physical condition of the Site.

8.5 Protection of Site from encroachments

On and after signing the memorandum and/or subsequent memorandum referred to in Clause 8.2.1, and until the issue of the Completion Certificate, the Contractor shall maintain a round-the-clock vigil over the Site and shall ensure and procure that no encroachment thereon takes place. During the Construction Period, the Contractor shall protect the Site from any and all occupations, encroachments or Encumbrances, and shall not place or create nor permit any Sub-contractor or other person claiming through or under the Agreement to place or create any Encumbrance or security threat over all or any part of the Site or the Project Assets, or on any rights of the Contractor therein or under this Agreement, save and except as otherwise expressly set forth in this Agreement. In the event of any encroachment or occupation on any part of the Site, the Contractor shall report such encroachment or occupation forthwith to the Authority and undertake its removal at its own cost and expenses.

8.6 Special/temporary Right of Way

The Contractor shall bear all costs and charges for any special or temporary right of way required by it in connection with access to the Site. The Contractor shall obtain at its cost such facilities on or outside the Site as may be required by it for the purposes of the Project and the performance of its obligations under this Agreement.

8.7 Access to the Authority and the Authority's Engineer

- 8.7.1 The Right of Way given to the Contractor hereunder shall always be subject to the right of access of the Authority and the Authority's Engineer and their employees and agents for inspection, viewing and exercise of their rights and performance of their obligations under this Agreement.
- 8.7.2 The Contractor shall ensure, subject to all relevant safety procedures, that the Authority has un-restricted access to the Site during any emergency situation, as decided by the Authority's Engineer.

8.8 Geological and archaeological finds

It is expressly agreed that mining, geological or archaeological rights do not form part of this Agreement with the Contractor for the Works, and the Contractor hereby acknowledges that it shall not have any mining rights or interest in the underlying minerals, fossils, antiquities, structures or other remnants or things either of particular geological or archaeological interest and that such rights, interest and property on or under the Site shall vest in and belong to the Authority or the concerned Government Instrumentality. The Contractor shall take all reasonable precautions to prevent its

workmen or any other person from removing or damaging such interest or property and shall inform the Authority forthwith of the discovery thereof and comply with such instructions as the concerned Government Instrumentality may reasonably give for the removal of such property. For the avoidance of doubt, it is agreed that any reasonable expenses incurred by the Contractor hereunder shall be reimbursed by the Authority. It is also agreed that the Authority shall procure that the instructions hereunder are issued by the concerned Government Instrumentality within a reasonable period.

ARTICLE 9

9 UTILITIES AND TREES

9.1 Existing utilities and roads

Notwithstanding anything to the contrary contained herein, the Contractor shall ensure that the respective entities owning the existing roads, right of way, level crossings, structures, or utilities on, under or above the Site are enabled by it to keep them in continuous satisfactory use, if necessary, by providing suitable temporary diversions with the authority of the controlling body of that road, right of way or utility.

9.2 Shifting of obstructing utilities

The Contractor shall, in accordance with Applicable Laws and with assistance of the Authority, cause shifting of any utility (including electric lines, water pipes and telephone cables) to an appropriate location or alignment, if such utility or obstruction adversely affects the execution of Works or Maintenance of the Project during the defects liability period ;in accordance with this Agreement. The actual cost of such shifting, as approved and communicated by the entity owning the utility, shall be paid by the Contractor and reimbursed by the Authority to the Contractor on certification by the entity owning such utility that the work has been satisfactorily executed by the Contractor. In the event of any delay in such shifting by the entity owning the utility beyond a period of 180 (one hundred and eighty) days from the date of notice by the Contractor to the entity owning the utility and to the Authority, the Contractor shall be entitled to Damages in a sum calculated in accordance with the formula specified in Clause 8.3.1 for the period of delay, and to Time Extension in accordance with Clause 10.5 for and in respect of the part(s) of the Works affected by such delay; provided that if the delays involve any time overlaps, the overlaps shall not be additive.

9.3 New utilities

- 9.3.1 The Contractor shall allow, subject to such conditions as the Authority may specify, access to, and use of the Site for laying telephone lines, water pipes, electric cables or other public utilities. Where such access or use causes any financial loss to the Contractor, it may require the user of the Site to pay compensation or damages as per Applicable Laws. For the avoidance of doubt, it is agreed that use of the Site under this Clause 9.3 shall not in any manner relieve the Contractor of its obligation to construct and maintain the Project in accordance with this Agreement and any damage caused by such use shall be restored forthwith at the cost of the Authority.
- 9.3.2 The Authority may, by notice, require the Contractor to connect any adjoining road to the Project, and the connecting portion thereof falling within the Site shall be constructed by the Contractor at the Authority's cost in accordance with Article 10.
- 9.3.3 The Authority may by notice require the Contractor to connect, through a paved road, any adjoining service station, hotel, motel or any other public facility or amenity to the Project, where upon the connecting portion thereof that falls within the Site shall be constructed by the Contractor on payment of the cost. The cost to be paid by the Authority to the Contractor shall be determined by the Authority's Engineer. For the avoidance of doubt, in the event such road is to be constructed for the benefit of any entity, the Authority may require such entity to make an advance deposit with the Contractor or the Authority, as the case may be, of an amount equal to the estimated cost as determined by the Authority's Engineer and such advance shall be adjusted against the cost of construction as determined by the Authority's Engineer hereunder.
- 9.3.3 In the event the construction of any Works is affected by a new utility or works undertaken in accordance with this Clause 9.3, the Contractor shall be entitled to a reasonable Time Extension as determined by the Authority's Engineer.

9.4 Felling of trees

The Authority shall assist the Contractor in obtaining the Applicable Permits for felling of trees to be identified by the Authority for this purpose if and only if such trees cause a Material Adverse Effect on the construction or maintenance of the Project. The cost of such felling shall be borne by the Authority and in the event of any delay in felling thereof for reasons beyond the control of the Contractor; it shall be excused for failure to perform any of its obligations hereunder if such failure is a direct consequence of delay in the felling of trees. The Parties hereto agree that the felled trees shall be deemed to be owned by the Authority and shall be disposed in such manner and subject to such conditions as the Authority may in its sole discretion deem appropriate. For the

avoidance of doubt, the Parties agree that if any felling of trees hereunder is in a forest area, the Applicable Permit thereof shall be procured by the Authority within the time specified in the Agreement.

ARTICLE 10

10 DESIGN AND CONSTRUCTION OF THE PROJECT

10.1 Obligations prior to commencement of Works

10.1.1 Within 20 (twenty) days of the Appointed Date, the Contractor shall:

- (a) appoint its representative, duly authorised to deal with the Authority in respect of all matters under or arising out of or relating to this Agreement;
- (b) appoint a design director (the "Design Director") who will head the Contractor's design unit and shall be responsible for surveys, investigations, collection of data, and preparation of preliminary and detailed designs;
- (c) undertake and perform all such acts, deeds and things as may be necessary or required before commencement of Works under and in accordance with this Agreement, the Applicable Laws and Applicable Permits; and
- (d) make its own arrangements for materials needed for the Project under and in accordance with the Applicable Laws and Applicable Permits.

10.1.2 The Authority has appointed its Project Management Consultant (the "PMC") for assisting it to Design, Develop, Manage, and Implement Smart City Project under Smart City Mission to be the independent consultant under this Agreement (the "Independent Expert"), until the expiry of the contract between the Authority and the PMC. On expiry or termination of the aforesaid contract, the Authority may in its discretion renew the appointment, or appoint another firm from a fresh panel constituted pursuant to Schedule-M to be the Independent Expert for a term of 3 (three) years, and such procedure shall be repeated after expiry of each appointment.

10.1.3 Within 30 (thirty) days of the Appointed Date, the Contractor shall submit to the Authority and the Authority's Engineer a programme (the "Programme") for the Works, developed using networking techniques giving the following details:

Part I: Contractor's organisation for the Project, the general methods and arrangements for design and construction, environmental management plan, Quality Assurance Plan including design quality plan, traffic management and safety plan covering safety of users and workers during construction, Contractor's key personnel and equipment.

Part II: Programme for completion of all stages of construction given in Schedule-H and Project Milestones of the Works as specified in Project Completion Schedule set forth in Schedule-J. The Programme shall include:

- (a) the order in which the Contractor intends to carry out the Works, including the anticipated timing of design and stages of Works;
- (b) the periods for reviews under Clause 10.2;
- (c) the sequence and timing of inspections and tests specified in this Agreement.

The Contractor shall submit a revised programme whenever the previous programme is inconsistent with the actual progress or with the Contractor's obligations.

Part III: Monthly cash flow forecast.

- 10.1.4 The Contractor shall compute, on the basis of the Drawings prepared in accordance with Clause 10.2.4, and provide to the Authority's Engineer, the length, area and numbers, as the case may be, in respect of the various items of work specified in Schedule-H and comprising the Scope of the Project. The Parties expressly agree that these details shall form the basis for estimating the interim payments for the Works in accordance with the provisions of Clause 19.3. For the avoidance of doubt, the sum of payments to be computed in respect of all the items of work shall not exceed the Contract Price, as may be adjusted in accordance with the provisions of this Agreement.
- 10.1.5 The Contractor shall appoint a safety consultant (the "Safety Consultant") to carry out safety audit at the design stage of the Project in accordance with the Applicable Laws and Good Industry Practice. The Safety Consultant shall be appointed after proposing to the Authority a panel of three names of qualified and experienced firms from whom the Authority may choose one to be the Safety Consultant. Provided, however, that if the panel is not acceptable to the Authority and the reasons for the same are furnished to the Contractor, the Contractor shall propose to the Authority a revised panel of three names from the firms empanelled as safety consultants by the [Ministry of Road Transport and Highways] for obtaining the consent of the Authority. The Contractor shall also obtain the consent of the Authority for the key personnel of the Safety Consultant who shall have adequate experience and qualifications in safety audit of the highway projects. The Authority shall, within 15 (fifteen) days of receiving a proposal from the Contractor hereunder, convey its decision, with reasons, to the Contractor, and if no such decision is conveyed within the said period, the Contractor may proceed with engaging of the Safety Consultant.
- 10.1.6 The safety audit pursuant to Clause 10.1.5 shall be carried out by the Safety Consultant in respect of all such design details that have a bearing on safety of Users as well as pedestrians and animals involved in or associated with accidents. The recommendations of the Safety Consultant shall be incorporated in the design of the Project and the Contractor shall forward to the Authority's Engineer a certificate to this effect together with the recommendations of the Safety Consultant. In the event that any works required by the Safety Consultant shall fall beyond the scope of Schedule-B, Schedule-C or Schedule-D, the Contractor shall make a report thereon and seek the instructions of the Authority for Change in Scope. For the avoidance of doubt, the Safety Consultant to be engaged by the Contractor shall be independent of the design and implementation team of the Contractor.

10.2 Design and Drawings

- 10.2.1 Design and Drawings shall be developed in conformity with the Specifications and Standards set forth in Schedule-D. In the event, the Contractor requires any relaxation in design standards due to restricted Right of Way in any section, the alternative design criteria for such section shall be provided for review of the Authority's Engineer.
- 10.2.2 The Contractor shall appoint a proof check consultant (the "Proof Consultant") after proposing to the Authority a panel of three names of qualified and experienced firms from whom the Authority may choose one to be the Proof Consultant. Provided, however, that if the panel is not acceptable to the Authority and the reasons for the same are furnished to the Contractor, the Contractor shall propose to the Authority a revised panel of three names from the firms empanelled as proof consultants by the [Ministry of Road Transport and Highways] for obtaining the consent of the Authority. The Contractor shall also obtain the consent of the Authority for two key personnel of the Proof Consultant who shall have adequate experience and qualifications in highways and bridges respectively. The Authority shall, within 15 (fifteen) days of receiving a proposal from the Contractor hereunder, convey its decision, with reasons, to the Contractor, and if no such decision is conveyed within the said period, the Contractor may proceed with engaging of the Proof Consultant.
- 10.2.3 The Proof Consultant shall:
- (a) evolve a systems approach with the Design Director so as to minimise the time required for final designs and construction drawings; and
 - (b) proof check the detailed calculations, drawings and designs, which have been approved by the Design Director.
- 10.2.4 In respect of the Contractor's obligations with respect to the design and Drawings of the Project as set forth in Schedule-I, the following shall apply:
- (a) The Contractor shall prepare and submit, with reasonable promptness and in such sequence as is consistent with the Project Completion Schedule, three copies each of the design and Drawings, duly certified by the Proof Consultant, to the Authority's Engineer for review. Provided, however, that in respect of culverts and major structures, the Authority's Engineer may require additional drawings for its review in accordance with Good Industry Practice.
 - (b) by submitting the Drawings for review to the Authority's Engineer, the Contractor shall be deemed to have represented that it has determined and verified that the design and engineering, including field construction criteria related thereto, are in conformity with the Scope of the Project, the Specifications and Standards and the Applicable Laws;

- (c) within 15 (fifteen) days of the receipt of the Drawings, the Authority's Engineer shall review the same and convey its observations to the Contractor with particular reference to their conformity or otherwise with the Scope of the Project and the Specifications and Standards. The Contractor shall not be obliged to await the observations of the Authority's Engineer on the Drawings submitted pursuant hereto beyond the said period of 15 (fifteen) days and may begin or continue Works at its own discretion and risk; Provided, however that in case of a culverts and major structures , the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days;
- (d) if the aforesaid observations of the Authority's Engineer indicate that the Drawings are not in conformity with the Scope of the Project or the Specifications and Standards, such Drawings shall be revised by the Contractor in conformity with the provisions of this Agreement and resubmitted to the Authority's Engineer for review. The Authority's Engineer shall give its observations, if any, within 10 (ten) days of receipt of the revised Drawings. In the event the Contractor fails to revise and resubmit such Drawings to the Authority's Engineer for review as aforesaid, the Authority's Engineer may withhold the payment for the affected works in accordance with the provisions of Clause 19.5.4. If the Contractor disputes any decision, direction or determination of the Authority's Engineer hereunder, the Dispute shall be resolved in accordance with the Dispute Resolution Procedure;
- (e) no review and/or observation of the Authority's Engineer and/or its failure to review and/or convey its observations on any Drawings shall relieve the Contractor of its obligations and liabilities under this Agreement in any manner nor shall the Authority's Engineer or the Authority be liable for the same in any manner; and if errors, omissions, ambiguities, inconsistencies, inadequacies or other Defects are found in the Drawings, they and the construction works shall be corrected at the Contractor's cost, notwithstanding any review under this Article 10;
- (f) the Contractor shall be responsible for delays in submitting the Drawing as set forth in Schedule-I caused by reason of delays in surveys and field investigations, and shall not be entitled to seek any relief in that regard from the Authority; and
- (g) the Contractor warrants that its designers, including any third parties engaged by it, shall have the required experience and capability in accordance with Good Industry Practice and it shall indemnify the Authority against any damage, expense, liability, loss or claim, which the Authority might incur, sustain or be subject to arising from any breach of the Contractor's design responsibility and/or warranty set out in this Clause.

- 10.2.5 Any cost or delay in construction arising from review by the Authority's Engineer shall be borne by the Contractor.
- 10.2.6 Works shall be executed in accordance with the Drawings provided by the Contractor in accordance with the provisions of this Clause 10.2 and the observations of the Authority's Engineer thereon as communicated pursuant to the provisions of Clause 10.2.4 (d). Such Drawings shall not be amended or altered without prior written notice to the Authority's Engineer. If a Party becomes aware of an error or defect of a technical nature in the design or Drawings, that Party shall promptly give notice to the other Party of such error or defect.
- 10.2.7 Within 90 (ninety) days of the Project Completion Date, the Contractor shall furnish to the Authority and the Authority's Engineer a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project and setback lines, if any, of the buildings and structures forming part of Project Facilities.

10.3 Construction of the Project

- 10.3.1 The Contractor shall construct the Project as specified in Schedule-B and Schedule-C, and in conformity with the Specifications and Standards set forth in Schedule-D. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works. The 720th (Seven hundred and twentieth) day from the Appointed Date shall be the scheduled completion date (the "Scheduled Completion Date") and the Contractor agrees and undertakes that the construction shall be completed on or before the Scheduled Completion Date, including any extension thereof.

- 10.3.2 The Contractor shall construct the Project in accordance with the Project Completion Schedule set forth in Schedule-J. In the event that the Contractor fails to achieve any Project Milestone or the Scheduled Completion Date within a period of 30 (thirty) days from the date set forth in Schedule-J, unless such failure has occurred due to Force Majeure or for reasons solely attributable to the Authority, it shall pay Damages to the Authority of a sum calculated at the rate of 0.05% (zero point zero five percent) of the Contract Price for delay of each day reckoned from the date specified in Schedule –J and until such Project Milestone is achieved or the Works are completed; provided that if the period for any or all Project Milestones or the Scheduled Completion Date is extended in accordance with the provisions of this Agreement, the dates set forth in Schedule-J shall be deemed to be modified accordingly and the provisions of this Agreement shall apply as if Schedule-J has been amended as above; provided further that in the event the Works are completed within or before the Scheduled Completion Date including any Time Extension, applicable for that work or section, the Damages paid under this Clause 10.3.2 shall be refunded by the Authority to the Contractor, but without any interest thereon. For the avoidance of doubt, it is agreed that recovery of Damages under this Clause 10.3.2 shall be without prejudice to the rights of the Authority under this Agreement including the right of Termination thereof. The Parties further agree that Time Extension hereunder shall only be reckoned for and in respect of the affected works as specified in Clause 10.5.2.
- 10.3.3 The Authority shall notify the Contractor of its decision to impose Damages in pursuance with the provisions of this Clause 10.3. Provided that no deduction on account of Damages shall be effected by the Authority without notifying the Contractor of its decision to impose the Damages, and taking into consideration the representation, if any, made by the Contractor within 20 (twenty) days of such notice. The Parties expressly agree that the total amount of Damages under Clause 10.3.2 shall not exceed 10% (ten percent) of the Contract Price.

10.4 Maintenance during Construction Period

During the Construction Period, the Contractor shall maintain, at its cost, the existing lane(s) of the Project so that the traffic worthiness and safety thereof are at no time materially inferior as compared to their condition 10 (ten) days prior to the date of this Agreement (as per the videography recorded by the Authority), and shall undertake the necessary repair and maintenance works for this purpose; provided that the Contractor may, at its cost, interrupt and divert the flow of traffic if such interruption and diversion is necessary for the efficient progress of Works and conforms to Good Industry Practice; provided further that such interruption and diversion shall be undertaken by the

Contractor only with the prior written approval of the Authority's Engineer which approval shall not be unreasonably withheld. For the avoidance of doubt, it is agreed that the Contractor shall at all times be responsible for ensuring safe operation of the Project. It is further agreed that in the event the Project includes realignment of the existing carriageway, the Contractor shall maintain the existing highway in such sections until the new Works are open to traffic.

In the event ,the contractor fails to maintain the existing lanes, then the Authority's Engineer shall issue a 7(seven) days' notice to the contractor to comply the same, failing which the Authority's Engineer will advise the Authority to have the work executed by another agency. The cost so incurred by the Authority for undertaking such work shall, without prejudice to the rights of the Authority to recover Damages in accordance with the provisions of this Agreement, be recoverable from the Contractor and may be deducted by the Authority from any money due to be paid to the Contractor.

10.5 Extension of time for completion

10.5.1 Without prejudice to any other provision of this Agreement for and in respect of extension of time, the Contractor shall be entitled to extension of time in the Project Completion Schedule (the "Time Extension") to the extent that completion of any Project Milestone is or will be delayed by any of the following, namely:

- (a) delay in providing the Right of Way, environmental clearances or approval of competent authorities, specified in Clause 4.1.4;
- (b) Change of Scope (unless an adjustment to the Scheduled Completion Date has been agreed under Article 13);
- (c) occurrence of a Force Majeure Event;
- (d) any delay, impediment or prevention caused by or attributable to the Authority, the Authority's personnel or the Authority's other contractors on the Site; and
- (e) any other cause or delay which entitles the Contractor to Time Extension in accordance with the provisions of this Agreement.

- 10.5.2 The Contractor shall, no later than 15 (fifteen) business days from the occurrence of an event or circumstance specified in Clause 10.5.1, inform the Authority's Engineer by notice in writing, with a copy to the Authority, stating in reasonable detail with supporting particulars, the event or circumstances giving rise to the claim for Time Extension in accordance with the provisions of this Agreement. Provided that the period of 15 (fifteen) business days shall be calculated from the date on which the Contractor became aware, or should have become aware, of the occurrence of such an event or circumstance. Provided further that notwithstanding anything to the contrary contained in this Agreement, Time Extension shall be due and applicable only for the Works which are affected by the aforesaid events or circumstances and shall not in any manner affect the Project Completion Schedule for and in respect of the Works which are not affected hereunder.
- 10.5.3 In the event of the failure of the Contractor to issue to the Authority's Engineer a notice in accordance with the provisions of Clause 10.5.2 within the time specified therein, the Contractor shall not be entitled to any Time Extension and shall forfeit its right for any such claims in future. For the avoidance of doubt, in the event of failure of the Contractor to issue notice as specified in this clause 10.5.3, the Authority shall be discharged from all liability in connection with the claim.
- 10.5.4 The Authority's Engineer shall, on receipt of the claim in accordance with the provisions of Clause 10.5.2, examine the claim expeditiously within the time frame specified herein. In the event the Authority's Engineer requires any clarifications to examine the claim, the Authority's Engineer shall seek the same within 15 (fifteen) days from the date of receiving the claim. The Contractor shall, on receipt of the communication of the Authority's Engineer requesting for clarification, furnish the same to the Authority's Engineer within 10 (ten) days thereof. The Authority's Engineer shall, within a period of 60 (sixty) days from the date of receipt of such clarifications, forward in writing to the Contractor its determination of Time Extension. Provided that when determining each extension of time under this Clause 10.5, the Authority's Engineer shall review previous determinations and may increase, but shall not decrease, the total Time Extension.
- 10.5.5 If the event or circumstance giving rise to the notice has a continuing effect:
- (a) a fully detailed claim shall be considered as interim;
 - (b) the Contractor shall, no later than 10 (ten) days after the close of each month, send further interim claims specifying the accumulated delay, the extension of time claimed, and such further particulars as the Authority's Engineer may reasonably require; and
 - (c) the Contractor shall send a final claim within 30 (thirty) days after the effect of the event or the circumstance ceases. Upon receipt of the claim hereunder, the Authority's

Engineer shall examine the same in accordance with the provisions of Clause 10.5.4 within a period of 60 (sixty) days of the receipt thereof.

10.6 Incomplete Works

In the event the Contractor fails to complete the Works in accordance with the Project Completion Schedule, including any Time Extension granted under this Agreement, the Contractor shall endeavor to complete the balance work expeditiously and shall pay Damages to the Authority in accordance with the provisions of Clause 10.3.2 for delay of each day until the Works are completed in accordance with the provisions of this Agreement. Recovery of Damages under this Clause shall be without prejudice to the rights of the Authority under this Agreement including the right to termination under Clause 23.1.

10.7 Maintenance Manual

No later than 60 (sixty) days prior to the Project Completion Date, the Contractor shall, in consultation with the Authority's Engineer, evolve a maintenance manual (the "Maintenance Manual") for the regular and preventive maintenance of the Project in conformity with the Specifications and Standards, safety requirements and Good Industry Practice, and shall provide 5 (five) copies including a copy in electronic format thereof to the Authority's Engineer. The Authority's Engineer shall review the Maintenance Manual within 15 (fifteen) days of its receipt and communicate its comments to the Contractor for necessary modifications, if any.

ARTICLE 11

11 QUALITY ASSURANCE, MONITORING AND SUPERVISION

11.1 Quality of Materials and workmanship

The Contractor shall ensure that the Construction, Materials and workmanship are in accordance with the requirements specified in this Agreement, Specifications and Standards and Good Industry Practice.

11.2 Quality control system

11.2.1 The Contractor shall establish a quality control mechanism to ensure compliance with the provisions of this Agreement (the "Quality Assurance Plan" or "QAP").

11.2.2 The Contractor shall, within 30 (thirty) days of the Appointed Date, submit to the Authority's Engineer its Quality Assurance Plan which shall include the following:

- (a) organisation, duties and responsibilities, procedures, inspections and documentation;
- (b) quality control mechanism including sampling and testing of Materials, test frequencies, standards, acceptance criteria, testing facilities, reporting, recording and interpretation of test results, approvals, check list for site activities, and proforma for testing and calibration in accordance with the Specifications for Road and Bridge Works issued by MORTH, relevant IRC specifications and Good Industry Practice; and
- (c) internal quality audit system.

The Authority's Engineer shall convey its comments to the Contractor within a period of 21 (twenty-one) days of receipt of the QAP stating the modifications, if any, required, and the Contractor shall incorporate those in the QAP to the extent required for conforming with the provisions of this Clause 11.2.

11.2.3 The Contractor shall procure all documents, apparatus and instruments, fuel, consumables, water, electricity, labour, Materials, samples, and qualified personnel as are necessary for examining and testing the Project Assets and workmanship in accordance with the Quality Assurance Plan.

11.2.4 The cost of testing of Construction, Materials and workmanship under this Article 11 shall be borne by the Contractor.

11.3 Methodology

The Contractor shall, at least 15 (fifteen) days prior to the commencement of the construction, submit to the Authority's Engineer for review the methodology proposed to be adopted for executing the Works, giving details of equipment to be deployed,

traffic management and measures for ensuring safety. The Authority's Engineer shall complete the review and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

11.4 Inspection and technical audit by the Authority

The Authority or any representative authorised by the Authority in this behalf may inspect and review the progress and quality of the construction of Project and issue appropriate directions to the Authority's Engineer and the Contractor for taking remedial action in the event the Works are not in accordance with the provisions of this Agreement.

11.5 External technical audit

At any time during construction, the Authority may appoint an external technical auditor to conduct an audit of the quality of the Works. The findings of the audit, to the extent accepted by the Authority, shall be notified to the Contractor and the Authority's Engineer for taking remedial action in accordance with this Agreement. The Contractor shall provide all assistance as may be required by the auditor in the conduct of its audit hereunder. Notwithstanding anything contained in this Clause 11.5, the external technical audit shall not affect any obligations of the Contractor or the Authority's Engineer under this Agreement.

11.6 Inspection of construction records

The Authority shall have the right to inspect the records of the Contractor relating to the Works.

11.7 Monthly progress reports

During the Construction Period, the Contractor shall, no later than 10 (ten) days after the close of each month, furnish to the Authority and the Authority's Engineer a monthly report on progress of the Works and shall promptly give such other relevant information as may be required by the Authority's Engineer.

11.8 Inspection

11.8.1 The Authority's Engineer and its authorised representative shall at all reasonable times:

- (a) have full access to all parts of the Site and to all places from which natural Materials are being obtained for use in the Works; and
- (b) during production, manufacture and construction at the Site and at the place of production, be entitled to examine, inspect, measure and test the Materials and workmanship, and to check the progress of manufacture of Materials.

- 11.8.2 The Contractor shall give the Authority's Engineer and its authorised agents access, facilities and safety equipment for carrying out their obligations under this Agreement.
- 11.8.3 The Authority's Engineer shall submit a monthly inspection report (the "Inspection Report") to the Authority and the Contractor bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. For the avoidance of doubt, such inspection or submission of Inspection Report by the Authority's Engineer shall not relieve or absolve the Contractor of its obligations and liabilities under this Agreement in any manner whatsoever.

11.9 Samples

The Contractor shall submit the following samples of Materials and relevant information to the Authority's Engineer for pre-construction review:

- (a) manufacturer's test reports and standard samples of manufactured Materials; and
- (b) samples of such other Materials as the Authority's Engineer may require.

11.10 Tests

- 11.10.1 For determining that the Works conform to the Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out or cause to be carried out tests, at such time and frequency and in such manner as specified in this Agreement and in accordance with Good Industry Practice for quality assurance. The test checks by the Authority's Engineer shall comprise at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.
- 11.10.2 In the event that results of any tests conducted under this Clause 11.10 establish any Defects or deficiencies in the Works, the Contractor shall carry out remedial measures and furnish a report to the Authority's Engineer in this behalf. The Authority's Engineer shall require the Contractor to carry out or cause to be carried out tests to determine that such remedial measures have brought the Works into compliance with the Specifications and Standards, and the procedure shall be repeated until such Works conform to the Specifications and Standards. For the avoidance of doubt, the cost of such tests and remedial measures in pursuance thereof shall be solely borne by the Contractor.

11.11 Examination of work before covering up

In respect of the work which the Authority's Engineer is entitled to examine, inspect, measure and/or test before it is covered up or put out of view or any part of the work is placed thereon, the Contractor shall give notice to the Authority's Engineer whenever any such work is ready and before it is covered up. The Authority's Engineer shall then either carry out the examination, inspection or testing without unreasonable delay, or promptly give notice to the Contractor that the Authority's Engineer does not require to do so. Provided, however, that if any work is of a continuous nature where it is not possible or prudent to keep it uncovered or incomplete, the Contractor shall notify the schedule of carrying out such work to give sufficient opportunity, not being less than 3 (three) business days' notice, to the Authority's Engineer to conduct its inspection, measurement or test while the work is continuing. Provided further that in the event the Contractor receives no response from the Authority's Engineer within a period of 3 (three) business days from the date on which the Contractor's notice hereunder is delivered to the Authority's Engineer, the Contractor shall be entitled to assume that the Authority's Engineer would not undertake the said inspection.

11.12 Rejection

If, as a result of an examination, inspection, measurement or testing, any Plant, Materials, design or workmanship is found to be defective or otherwise not in accordance with the provisions of this Agreement, the Authority's Engineer shall reject the Plant, Materials, design or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the Defect and ensure that the rejected item complies with the requirements of this Agreement. If the Authority's Engineer requires the Plant, Materials, design or workmanship to be retested, the tests shall be repeated under the same terms and conditions, as applicable in each case. If the rejection and retesting cause the Authority to incur any additional costs, such cost shall be recoverable by the Authority from the Contractor; and may be deducted by the Authority from any monies due to be paid to the Contractor.

11.13 Remedial work

- 11.13.1 Notwithstanding any previous test or certification, the Authority's Engineer may instruct the Contractor to:
- (a) remove from the Site and replace any Plant or Materials which are not in accordance with the provisions of this Agreement;
 - (b) remove and re-execute any work which is not in accordance with the provisions of this Agreement and the Specification and Standards; and

- (c) execute any work which is urgently required for the safety of the Project, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event; the provisions of Clause 21.6 shall apply.

11.13.2 If the Contractor fails to comply with the instructions issued by the Authority's Engineer under Clause 11.13.1, within the time specified in the Authority's Engineer's notice or as mutually agreed, the Authority's Engineer may advise the Authority to have the work executed by another agency. The cost so incurred by the Authority for undertaking such work shall, without prejudice to the rights of the Authority to recover Damages in accordance with the provisions of this Agreement, be recoverable from the Contractor and may be deducted by the Authority from any monies due to be paid to the Contractor.

11.14 Delays during construction

Without prejudice to the provisions of Clause 10.3.2, in the event the Contractor does not achieve any of the Project Milestones or the Authority's Engineer shall have reasonably determined that the rate of progress of Works is such that Completion of the Project is not likely to be achieved by the end of the Scheduled Completion Date, it shall notify the same to the Contractor, and the Contractor shall, within 15 (fifteen) days of such notice, by a communication inform the Authority's Engineer in reasonable detail about the steps it proposes to take to expedite progress and the period within which it shall achieve the Project Completion Date.

11.15 Quality control records and Documents

The Contractor shall hand over to the Authority's Engineer a copy of all its quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2.

11.16 Video recording

During the Construction Period, the Contractor shall provide to the Authority for every calendar quarter, a video recording, which will be compiled into a 3 (three)-hour compact disc or digital video disc, as the case may be, covering the status and progress of Works in that quarter. The video recording shall be provided to the Authority no later than 15 (fifteen) days after the close of each quarter after the Appointed Date.

11.17 Suspension of unsafe Construction Works

- 11.17.1 Upon recommendation of the Authority's Engineer to this effect, the Authority may by notice require the Contractor to suspend forthwith the whole or any part of the Works if, in the reasonable opinion of the Authority's Engineer, such work threatens the safety of the Users and pedestrians.
- 11.17.2 The Contractor shall, pursuant to the notice under Clause 11.17.1, suspend the Works or any part thereof for such time and in such manner as may be specified by the Authority and thereupon carry out remedial measures to secure the safety of suspended works, the Users and pedestrians. The Contractor may by notice require the Authority's Engineer to inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked. Upon receiving the recommendations of the Authority's Engineer, the Authority shall either revoke such suspension or instruct the Contractor to carry out such other and further remedial measures as may be necessary in the reasonable opinion of the Authority, and the procedure set forth in this Clause 11.17 shall be repeated until the suspension hereunder is revoked.
- 11.17.3 Subject to the provisions of Clause 21.6, all reasonable costs incurred for maintaining and protecting the Works or part thereof during the period of suspension (the "Preservation Costs"), shall be borne by the Contractor; provided that if the suspension has occurred as a result of any breach of this Agreement by the Authority, the Preservation Costs shall be borne by the Authority.
- 11.17.4 If suspension of Works is for reasons not attributable to the Contractor, the Authority's Engineer shall determine any Time Extension to which the Contractor is reasonably entitled.

ARTICLE 12

12 COMPLETION CERTIFICATE

12.1 Tests on completion

- 12.1.1 At least 30 (thirty) days prior to the likely completion of the Project, or a Section thereof, the Contractor shall notify the Authority's Engineer of its intent to subject the Project or a Section thereof, to Tests. The date and time of each of the Tests shall be determined by the Authority's Engineer in consultation with the Contractor, and notified to the Authority who may designate its representative to witness the Tests. The Contractor shall either conduct the Tests as directed by the Authority's Engineer or provide such assistance as the Authority's Engineer may reasonably require for conducting the Tests. In the event of the Contractor and the Authority's Engineer failing to mutually agree on the dates for conducting the Tests, the Contractor shall fix the dates by giving not less than 10 (ten) days notice to the Authority's Engineer.
- 12.1.2 All Tests shall be conducted in accordance with Schedule-K. The Authority's Engineer shall either conduct or observe, monitor and review the Tests conducted by the Contractor, as the case may be, and review the results of the Tests to determine compliance of the Project or a Section thereof, with Specifications and Standards and if it is reasonably anticipated or determined by the Authority's Engineer during the course of any Test that the performance of the Project or Section or any part thereof, does not meet the Specifications and Standards, it shall have the right to suspend or delay such Test and require the Contractor to remedy and rectify the Defect or deficiencies. Upon completion of each Test, the Authority's Engineer shall provide to the Contractor and the Authority copies of all Test data including detailed Test results. For the avoidance of doubt, it is expressly agreed that the Authority's Engineer may require the Contractor to carry out or cause to be carried out additional Tests, in accordance with Good Industry Practice, for determining the compliance of the Project or Section thereof with the Specifications and Standards.

12.2 Provisional Certificate

- 12.2.1 Subject to the provisions of Clause 12.2.5, upon completion of all Works forming part of the Project, save and except the Works for which Time Extension has been granted under Clause 10.5, the Authority's Engineer shall, at the request of the Contractor, issue a provisional certificate of completion substantially in the form set forth in Schedule-L (the "Provisional Certificate") if the Tests for and in respect of the completed Works are successful. The Provisional Certificate shall have appended thereto a list of outstanding items of work (the "Punch List") that need to be completed in accordance with the provisions of this Agreement. The Contractor undertakes to complete the minor outstanding items of works in respect of those Sections of the Project for which the Provisional Certificate has been issued, within a period of 30 (thirty) days of the date of Provisional Certificate, and those parts of the Works in respect of which Time Extension has been granted, within the extended period thereof. For the avoidance of doubt, the Parties agree that the Punch List shall include all Works for which Time Extension has been granted and shall also include any minor outstanding items of work forming part of the completed Sections if such works do not materially affect the use of the completed Sections for their intended purpose. The Parties further agree that Provisional Certificate shall not be issued if the completed Works cannot be safely and reliably placed in service of the Users thereof.
- 12.2.2 Upon issue of Provisional Certificate, the provisions of Articles 14 and 17 shall apply to the completed parts of the Project and the property and ownership of all such completed Works shall vest in the Authority.
- 12.2.3 If the Authority's Engineer determines that the Project or any completed part thereof does not conform to the provisions of this Agreement and cannot be safely and reliably placed in operation, it shall forthwith make a report in this behalf and send copies thereof to the Authority and the Contractor and withhold issuance of the Provisional Certificate until the Defects or deficiencies are rectified by the Contractor and Tests are successful in accordance with this Article 12.
- 12.2.4 Notwithstanding anything to the contrary contained in Clause 12.2.3, the Authority may, at any time after receiving a report from the Authority's Engineer under that Clause, direct the Authority's Engineer to issue a Provisional Certificate under Clause 12.2.1 and such direction shall be complied forthwith.

12.2.5 No Provisional Certificate shall be issued under the provisions of this Clause 12.2 until the Contractor has submitted valid claims for payment of at least 80% (eighty per cent) of the amount arrived at after reducing the lump sum price specified in Clause 19.1.1 by the amount attributable to works which have been withdrawn under the provisions of Clause 8.3.3. For the avoidance of doubt and by way of illustration, the Parties agree that if the Contract Price specified in Clause 19.1.1 is Rs.105 cr. (Rs. one hundred and five crore) and the works withdrawn under Clause 8.3.3 have a value of Rs.5 cr. (Rs. five crore), a Provisional Certificate shall not be issued until valid claims for payment of an amount of Rs.80 cr. (Rs. eighty crore) have been submitted by the Contractor in accordance with the provisions of this Agreement. It is further agreed that all price adjustments made in pursuance of Clause 19.10 shall not be reckoned for computation of the claims for payments referred to in this Clause 12.2.5.

12.3 Completion of remaining Works

All items in the Punch List shall be completed by the Contractor in accordance with the provisions of this Agreement. For any delay in their completion other than for the reasons solely attributable to the Authority or due to Force Majeure, the Authority shall be entitled to recover Damages from the Contractor in accordance with the provisions of Clause 10.3.2 of this Agreement.

12.4 Completion Certificate

- 12.4.1 Upon completion of all Works, including the items specified in the Punch List, and the Authority's Engineer determining the Tests to be successful, it shall forthwith issue to the Contractor and the Authority a certificate substantially in the form set forth in Schedule-L (the "Completion Certificate").
- 12.4.2 Upon receiving the Completion Certificate, the Contractor shall remove its equipment, materials, debris and temporary works from the Site within a period of 30 (thirty) days thereof, failing which the Authority may remove or cause to be removed, such equipment, materials, debris and temporary works and recover from the Contractor an amount equal to 120% (one hundred and twenty per cent) of the actual cost of removal incurred by the Authority.
- 12.4.3 Without prejudice to the obligations of the Contractor specified in Articles 14 and 17, the property and ownership of all the completed Works forming part of the Project shall vest in the Authority.

12.5 Rescheduling of Tests

If the Authority's Engineer certifies to the Authority and the Contractor that it is unable to issue the Completion Certificate or Provisional Certificate, as the case may be, because of events or circumstances on account of which the Tests could not be held or had to be suspended, the Contractor shall be entitled to re-schedule the Tests and hold the same as soon as reasonably practicable.

ARTICLE 13

13 CHANGE OF SCOPE

13.1 Change of Scope

13.1.1 The Authority may, notwithstanding anything to the contrary contained in this Agreement, require the Contractor to make modifications/alterations to the Works ("Change of Scope") before the issue of the Completion Certificate either by giving an instruction or by requesting the Contractor to submit a proposal for Change of Scope involving additional cost or reduction in cost. Any such Change of Scope shall be made and valued in accordance with the provisions of this Article 13.

13.1.2 Change of Scope shall mean:

- (a) change in specifications of any item of Works;
- (b) omission of any work from the Scope of the Project except under Clause 8.3.3; provided that, subject to Clause 13.5, the Authority shall not omit any work under this Clause in order to get it executed by any other authority; and / or
- (c) any additional work, Plant, Materials or services which are not included in the Scope of the Project, including any associated Tests on completion of construction.

13.1.3 If the Contractor determines at any time that a Change of Scope will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Authority of executing, maintaining or operating the Project, (iii) improve the efficiency or value to the Authority of the completed Project, or (iv) otherwise be of benefit to the Authority, it shall prepare a proposal with relevant details at its own cost. The Contractor shall submit such proposal, supported with the relevant details and the amount of reduction in the Contract Price to the Authority to consider such Change of Scope. The Authority shall, within 15 (fifteen) days of receipt of such proposal, either accept such Change of Scope with modifications, if any, and initiate proceedings therefor in accordance with this Article 13 or reject the proposal and inform the Contractor of its decision. For the avoidance of doubt, the Parties agree that the Contractor shall not undertake any Change of Scope without the express consent of the Authority, save and except any Works necessary for meeting any Emergency.

13.2 Procedure for Change of Scope

13.2.1 In the event of the Authority determining that a Change of Scope is necessary, it may direct the Authority's Engineer to issue to the Contractor a notice specifying in reasonable detail the works and services contemplated thereunder (the "Change of Scope Notice").

13.2.2 Upon receipt of a Change of Scope Notice, the Contractor shall, with due diligence, provide to the Authority and the Authority's Engineer such information as is necessary, together with preliminary documentation in support of:

- (a) the impact, if any, which the Change of Scope is likely to have on the Project Completion Schedule if the works or services are required to be carried out during the Construction Period; and
- (b) the options for implementing the proposed Change of Scope and the effect, if any, each such option would have on the costs and time thereof, including the following details:
 - (i) break down of the quantities, unit rates and cost for different items of work;
 - (ii) proposed design for the Change of Scope; and
 - (iii) proposed modifications, if any, to the Project Completion Schedule of the Project.

For the avoidance of doubt, the Parties expressly agree that, subject to the provisions of Clause 13.4.2, the Contract Price shall be increased or decreased, as the case may be, on account of Change of Scope.

13.2.3 The Contractor's quotation of costs for the Change of Scope shall be determined on the following principles:

- (a) For works where Schedule of Rates (SOR) of concerned circle of State's Public Works Department are available shall be applicable for determination of costs. In case of non-availability of current SOR, the available Schedule of Rates shall be applied by updating the same based on WPI.
- (b) For works not similar in nature to the Works being executed, the cost of work shall be derived on the basis of MORTH Standard Data Book and the applicable schedule of rates for the relevant circle, as published by the State Government, and such rates shall be indexed with reference to the WPI once every year, with the base being the month and year of the publication of the said schedule of rates; provided, however, that for any item not included in the schedule of rates, the prevailing market rates as determined by the Authority's Engineer shall apply, and for any item in respect of which MORTH Standard Data Book does not provide the requisite details, the Authority's Engineer shall determine the rate in accordance with Good Industry Practice.

13.2.4 Upon reaching an agreement, the Authority shall issue an order (the "Change of Scope Order") requiring the Contractor to proceed with the performance thereof. In the event that the Parties are unable to agree, the Authority may:

- (a) issue a Change of Scope Order requiring the Contractor to proceed with the performance thereof at the rates and conditions approved by the Authority till the matter is resolved in accordance with Article 26; or
- (b) proceed in accordance with Clause 13.5.

13.2.5 The provisions of this Agreement, insofar as they relate to Works and Tests, shall apply mutatis mutandis to the works undertaken by the Contractor under this Article 13.

13.3 Payment for Change of Scope

Payment for Change of Scope shall be made in accordance with the payment schedule specified in the Change of Scope Order.

13.4 Restrictions on Change of Scope

- 13.4.1 No Change of Scope shall be executed unless the Authority has issued the Change of Scope Order save and except any Works necessary for meeting any Emergency.
- 13.4.2 Unless the Parties mutually agree to the contrary, the total value of all Change of Scope Orders shall not exceed 10 (ten) per cent of the Contract Price.
- 13.4.3 Notwithstanding anything to the contrary in this Article 13, no change made necessary because of any default of the Contractor in the performance of its obligations under this Agreement shall be deemed to be Change of Scope, and shall not result in any adjustment of the Contract Price or the Project Completion Schedule.

13.5 Power of the Authority to undertake works

- 13.5.1 In the event the Parties are unable to agree to the proposed Change of Scope Orders in accordance with Clause 13.2, the Authority may, after giving notice to the Contractor and considering its reply thereto, award such works or services to any person on the basis of open competitive bidding from amongst bidders who are pre-qualified for undertaking the additional work; provided that the Contractor shall have the option of matching the first ranked bid in terms of the selection criteria, subject to payment of 2% (two per cent) of the bid amount to the Authority⁵, and thereupon securing the award of such works or services. For the avoidance of doubt, it is agreed that the Contractor shall be entitled to exercise such option only if it has participated in the bidding process and its bid does not exceed the first ranked bid by more than 10% (ten percent) thereof. It is also agreed that the Contractor shall provide assistance and cooperation to the person who undertakes the works or services hereunder, but shall not be responsible for rectification of any Defects and/ or maintenance of works carried out by other agencies.
- 13.5.2 The works undertaken in accordance with this Clause 13.5 shall conform to the Specifications and Standards and shall be carried out in a manner that minimises the disruption in operation of the Project. The provisions of this Agreement, insofar as they relate to Works and Tests, shall apply mutatis mutandis to the works carried out under this Clause 13.5.

⁵ *The Authority shall transfer 75% (seventy five percent) of the amount so received to the first ranked bidder whose bid shall have been matched by the Contractor.*

ARTICLE 14

14 MAINTENANCE (During Defects Liability period)

14.1 Maintenance obligations of the Contractor

- 14.1.1 The Contractor shall maintain the Project for a period of 2 (Two) years commencing from the date of issuance of the Completion Certificate (the "Defects Liability Period").
- 14.1.2 During the Maintenance Period, the Authority shall provide to the Contractor access to the Site for Maintenance in accordance with this Agreement. The obligations of the Contractor hereunder shall include:
- (a) permitting safe, smooth and uninterrupted flow of traffic on the Project;
 - (b) undertaking routine maintenance including prompt repairs of potholes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices;
 - (c) undertaking repairs to structures, street furniture, tree protections etc.;
 - (d) informing the Authority of any unauthorised use of the Project;
 - (e) informing the Authority of any encroachments on the Project; and
 - (f) operation and maintenance of all communication, patrolling, and administrative systems necessary for the efficient maintenance of the Project in accordance with the provisions of this Agreement.
- 14.1.3 In respect of any Defect or deficiency not specified in Schedule-E, the Contractor shall, at its own cost, undertake repair or rectification in accordance with Good Industry Practice, save and except to the extent that such Defect or deficiency shall have arisen on account of any default or neglect of the Authority or a Force Majeure Event.
- 14.1.4 The Contractor shall remove promptly from the Project any waste materials (including hazardous materials and waste water), rubbish and other debris (including, without limitation, accident debris) and keep the Project in a clean, tidy and orderly condition, and in conformity with the Applicable Laws, Applicable Permits and Good Industry Practice.

14.2 Maintenance Requirements

The Contractor shall ensure and procure that at all times during the Maintenance Period, the Project conforms to the maintenance requirements set forth in Schedule-E (the "Maintenance Requirements").

14.3 Maintenance Programme

14.3.1 The Contractor shall prepare a monthly maintenance programme (the Maintenance Programme”) in consultation with the Authority’s Engineer and submit the same to the Authority’s Engineer not later than 10 (ten) days prior to the commencement of the month in which the Maintenance is to be carried out. For this purpose a joint monthly inspection by the Contractor and the Authority’s Engineer shall be undertaken. The Maintenance Programme shall contain the following:

- (a) The condition of the road in the format prescribed by the Authority’s Engineer;
- (b) the proposed maintenance works; and
- (c) deployment of resources for maintenance works.

14.4 Safety, vehicle breakdowns and accidents

- 14.4.1 The Contractor shall ensure safe conditions for the Users, and in the event of unsafe conditions, lane closures, diversions, vehicle breakdowns and accidents, it shall follow the relevant operating procedures for removal of obstruction and debris without delay. Such procedures shall conform to the provisions of this Agreement, Applicable Laws, Applicable Permits and Good Industry Practice.
- 14.4.2 The Contractor shall maintain and operate a round-the-clock vehicle rescue post with one mobile crane having the capacity to lift a truck with a Gross Vehicle Weight of 30,000 (thirty thousand) kilograms; and such post shall be located within the stretch. The Contractor shall promptly remove any damaged vehicles and debris from the Project Highway to enable safe movement of traffic and shall report all accidents to the police forthwith.

14.5 Lane closure

- 14.5.1 The Contractor shall not close any lane of the Project for undertaking maintenance works except with the prior written approval of the Authority's Engineer. Such approval shall be sought by the Contractor through a written request to be made at least 10 (ten) days before the proposed closure of lane and shall be accompanied by particulars thereof. Within 5 (five) business days of receiving such request, the Authority's Engineer shall grant permission with such modifications as it may deem necessary and a copy of such permission shall be sent to the Authority.
- 14.5.2 Upon receiving the permission pursuant to Clause 14.5.1, the Contractor shall be entitled to close the designated lane for the period specified therein, and in the event of any delay in re-opening such lane, the Contractor shall, for every stretch of 250 (two hundred and fifty) metres, or part thereof, pay Damages to the Authority calculated at the rate of 0.1% (zero point one per cent) of the monthly maintenance payment for each day of delay until the lane has been re-opened for traffic.

14.6 Reduction of payment for non-performance of Maintenance obligations

- 14.6.1 In the event that the Contractor fails to repair or rectify any Defect or deficiency set forth in Schedule-E within the period specified therein, it shall be deemed as failure of performance of Maintenance obligations by the Contractor and the Authority shall be entitled to levy penalty, including Termination thereof.
- 14.6.2 If the nature and extent of any Defect justifies more time for its repair or rectification than the time specified in Schedule-E, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

14.7 Authority's right to take remedial measures

In the event the Contractor does not maintain and/or repair the Project or any part thereof in conformity with the Maintenance Requirements, the Maintenance Manual or the Maintenance Programme, as the case may be, and fails to commence remedial works within 15 (fifteen) days of receipt of the Maintenance Inspection Report under Clause 15.2 or a notice in this behalf from the Authority or the Authority's Engineer, as the case may be, the Authority shall, without prejudice to its rights under this Agreement including Termination thereof, be entitled to undertake such remedial measures at the cost of the Contractor, and to recover its cost from the Contractor. In addition to recovery of the aforesaid cost, a sum equal to 20% (twenty per cent) of such cost shall be paid by the Contractor to the Authority as Damages.

14.8 Restoration of loss or damage to Project

Save and except as otherwise expressly provided in this Agreement, in the event that the Project or any part thereof suffers any loss or damage during the Maintenance from any cause attributable to the Contractor, the Contractor shall, at its cost and expense, rectify and remedy such loss or damage forthwith so that the Project conforms to the provisions of this Agreement.

14.9 Overriding powers of the Authority

- 14.9.1 If in the reasonable opinion of the Authority, the Contractor is in material breach of its obligations under this Agreement and, in particular, the Maintenance Requirements, and such breach is causing or likely to cause material hardship or danger to the Users and pedestrians, the Authority may, without prejudice to any of its rights under this Agreement including Termination thereof, by notice require the Contractor to take reasonable measures immediately for rectifying or removing such hardship or danger, as the case may be.
- 14.9.2 In the event that the Contractor, upon notice under Clause 14.9.1, fails to rectify or remove any hardship or danger within a reasonable period, the Authority may exercise overriding powers under this Clause 14.9.2 and take over the performance of any or all the obligations of the Contractor to the extent deemed necessary by it for rectifying or removing such hardship or danger; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required hereunder; provided further that any costs and expenses incurred by the Authority in discharge of its obligations hereunder shall be recovered by the Authority from the Contractor, and the Authority shall be entitled to deduct any such costs and expenses incurred from the payments due to the Contractor under Clause 19.7 for the performance of its Maintenance obligations.
- 14.9.3 In the event of a national emergency, civil commotion or any other circumstances specified in Clause 21.3, the Authority may take over the performance of any or all the obligations of the Contractor to the extent deemed necessary by it, and exercise such control over the Project or give such directions to the Contractor as may be deemed necessary; provided that the exercise of such overriding powers by the Authority shall be of no greater scope and of no longer duration than is reasonably required in the circumstances which caused the exercise of such overriding power by the Authority. For the avoidance of doubt, it is agreed that the consequences of such action shall be dealt in accordance with the provisions of Article 21. It is also agreed that the Contractor shall comply with such instructions as the Authority may issue in pursuance of the provisions of this Clause 14.9.3, and shall provide assistance and cooperation to the Authority, on a best effort basis, for performance of its obligations hereunder.

ARTICLE 15

15 SUPERVISION AND MONITORING DURING MAINTENANCE (Defects Liability Period)

15.1 Inspection by the Contractor

- 15.1.1 The Authority's Engineer shall undertake regular inspections to evaluate continuously the compliance with the Maintenance Requirements.
- 15.1.2 The Contractor shall carry out a detailed pre-monsoon inspection of all culverts and drainage system in accordance with the guidelines contained in IRC: SP35. Report of this inspection together with details of proposed maintenance works as required shall be conveyed to the Authority's Engineer forthwith. The Contractor shall complete the proposed maintenance works before the onset of the monsoon and send a compliance report to the Authority's Engineer. Post monsoon inspection shall be undertaken by the Contractor and the inspection report together with details of any damages observed and proposed action to remedy the same shall be conveyed to the Authority's Engineer forthwith.

15.2 Inspection and payments

- 15.2.1 The Authority's Engineer may inspect the Project at any time, but at least once every month, to ensure compliance with the Maintenance Requirements. It shall make a report of such inspection ("Maintenance Inspection Report") stating in reasonable detail the Defects or deficiencies, if any, with particular reference to the Maintenance Requirements, the Maintenance Manual, and the Maintenance Programme, and send a copy thereof to the Authority and the Contractor within 10 (ten) days of such inspection.
- 15.2.2 Deleted.
- 15.2.3 For each case of non-compliance of Maintenance Requirements as specified in the inspection report of the Authority's Engineer, the Authority's Engineer shall calculate the amount of reduction in payment in accordance with the formula specified in Schedule-M.

15.2.4 Any deduction made on account of non-compliance will not be paid subsequently even after establishing the compliance thereof. Such deductions will continue to be made every month until the compliance is procured. 15.3 Tests For determining that the Project conforms to the Maintenance Requirements, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests specified by it in accordance with Good Industry Practice. The Contractor shall, with due diligence, carry out or cause to be carried out all such tests in accordance with the instructions of the Authority's Engineer and furnish the results of such tests forthwith to the Authority's Engineer.

15.3 Reports of unusual occurrence

15.3.1 The Contractor shall, during the Maintenance Period, prior to the close of each day, send to the Authority and the Authority's Engineer, by facsimile or e-mail, a report stating accidents and unusual occurrences on the Project relating to the safety and security of the Users and Project. A monthly summary of such reports shall also be sent within 3 (three) business days of the closing of month. For the purposes of this Clause 15.4, accidents and unusual occurrences on the Project shall include:

- (a) accident, death or severe injury to any person;
- (b) damaged or dislodged fixed equipment;
- (c) flooding of Project; and
- (d) any other unusual occurrence.

ARTICLE 16

16 TRAFFIC REGULATION

16.1 Traffic regulation by the Contractor

- 16.1.1 The Contractor shall take all the required measures and make arrangements for the safety of Users during the construction and maintenance of the Project or a Section thereof in accordance with the provisions of MORTH Specifications. It shall provide, erect and maintain all such barricades with proper branding of the Authority's name and logo, signs, markings, flags, and lights as may be required by Good Industry Practice for the safety of the traffic passing through the Section under construction or maintenance.
- 16.1.2 All works shall be carried out in a manner creating least interference to traffic passing through the Project or a Section thereof. In stretches where construction or maintenance works on the carriageway are taken up, the Contractor shall ensure that proper passage is provided for the traffic. Where it is not possible or safe to allow traffic on part width of the carriageway, a temporary diversion of proper specifications shall be constructed by the Contractor at its own cost. The Contractor shall take prior approval of the Authority's Engineer for any proposed arrangement for traffic regulation during Construction and Maintenance, which approval shall not be unreasonably withheld.

ARTICLE 17

17 DEFECTS LIABILITY

17.1 Defects Liability Period

17.1.1 The Contractor shall be responsible for all the Defects and deficiencies, except usual wear and tear in the Project or any Section thereof, till the expiry of a period of 2 (Two) years commencing from the date of issuance of Completion Certificate (the "Defects Liability Period"). Provided that the Defects Liability Period shall in no case be less than 24 (Twenty Four) months from the date of issuance of Completion Certificate for and in respect of works for which Time Extension was granted. Provided further that in the event no Provisional Certificate is issued, the Defects Liability Period shall commence from the date of issuance of the Completion Certificate. For the avoidance of doubt, any repairs or restoration on account of usual wear or tear in the Project or any Section thereof shall form a part of the Maintenance obligations of the Contractor as specified in Article 14.

17.1.2 DELETED.

17.2 Remedying Defects

17.2.1 Save and except as provided in Clause 14.1.2, the Contractor shall repair or rectify all Defects and deficiencies observed by the Authority's Engineer during the Defects Liability Period within a period of 15 (fifteen) days from the date of notice issued by the Authority's Engineer in this behalf, or within such reasonable period as may be determined by the Authority's Engineer at the request of the Contractor, in accordance with Good Industry Practice.

17.3 Cost of remedying Defects

For the avoidance of doubt, any repair or rectification undertaken in accordance with the provisions of Clause 17.2, including any additional testing, shall be carried out by the Contractor at its own risk and cost, to the extent that such rectification or repair is attributable to:

- (a) the design of the Project;
- (b) Plant, Materials or workmanship not being in accordance with this Agreement and the Specifications and Standards;

- (c) improper maintenance during construction of the Project by the Contractor;
and/ or
- (d) failure by the Contractor to comply with any other obligation under this Agreement.

17.4 Contractor's failure to rectify Defects

In the event that the Contractor fails to repair or rectify such Defect or deficiency within the period specified in Clause 17.2, the Authority shall be entitled to get the same repaired, rectified or remedied at the Contractor's cost so as to make the Project conform to the Specifications and Standards and the provisions of this Agreement. All costs consequent thereon shall, after due consultation with the Authority and the Contractor, be determined by the Authority's Engineer. The cost so determined and an amount equal to twenty percent of the cost as Damages shall be recoverable by the Authority from the Contractor and may be deducted by the Authority from any monies due to the Contractor.

17.5 Contractor to search cause

- 17.5.1 The Authority's Engineer may instruct the Contractor to examine the cause of any Defect in the Works or part thereof before the expiry of the Defects Liability Period.
- 17.5.2 In the event any Defect identified under Clause 17.5.1 is attributable to the Contractor, the Contractor shall rectify such Defect within the period specified by the Authority's Engineer, and shall bear the cost of the examination and rectification of such Defect.
- 17.5.3 In the event such Defect is not attributable to the Contractor, the Authority's Engineer shall, after due consultation with the Authority and the Contractor, determine the costs incurred by the Contractor on such examination and notify the same to the Contractor, with a copy to the Authority, and the Contractor shall be entitled to payment of such costs by the Authority.

17.6 Extension of Defects Liability Period

The Defects Liability Period shall be deemed to be extended till the identified Defects under Clause 17.2 have been remedied.

ARTICLE 18

18 AUTHORITY'S ENGINEER

18.1 Appointment of the Authority's Engineer

The Authority has appointed its Project Management Consultant (the "PMC") for assisting it to Design, Develop, Manage, and Implement Smart City Project under Smart City Mission to be the independent consultant under this Agreement (the "Independent Expert"), until the expiry of the contract between the Authority and the PMC. On expiry or termination of the aforesaid contract, the Authority may in its discretion renew the appointment, or appoint another firm from a fresh panel constituted pursuant to Schedule-M to be the Independent Expert for a term of 3 (three) years, and such procedure shall be repeated after expiry of each appointment.

18.2 Duties and authority of the Authority's Engineer

18.2.1 The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, and substantially in accordance with the terms of reference ("Terms of Reference" or "TOR") set forth in Annex 1 of Schedule N, but subject to obtaining prior written approval of the Authority before determining:

- (a) any Time Extension;
- (b) any additional cost to be paid by the Authority to the Contractor;
- (c) the Termination Payment; or
- (d) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. fifty lakh).

18.2.2 No decision or communication of the Authority's Engineer shall be effective or valid unless it is accompanied by an attested true copy of the approval of the Authority for and in respect of any matter specified in Clause 18.2.1.

18.2.3 The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month. For the avoidance of doubt, the Authority's Engineer shall include in its report, compliance of the recommendations of the Safety Consultant.

18.3 Delegation by the Authority's Engineer

- 18.3.1 The Authority's Engineer may, by order in writing, delegate any of his duties and responsibilities to suitably qualified and experienced personnel who are accountable to Authority's Engineer, or may revoke any such delegation, under intimation to the Authority and the Contractor. Provided, however, that the Authority's Engineer shall be responsible and liable for all actions and omissions of such personnel. 18.3.2 Any failure of the Authority's Engineer to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Authority to reject the work, Plant or Materials, which is not in accordance with the provisions of this Agreement and the Specifications and Standards.
- 18.3.2 Notwithstanding anything stated in Clause 18.3.1 above, the Authority's Engineer shall not delegate the authority to refer any matter for the Authority's prior approval wherever required in accordance with the provisions of Clause 18.2.

18.4 Instructions of the Authority's Engineer

- 18.4.1 The Authority's Engineer may issue to the Contractor instructions for remedying any Defect. The Contractor shall take such instructions from the Authority's Engineer, or from an assistant to whom appropriate authority has been delegated under Clause 18.3.
- 18.4.2 The instructions issued by the Authority's Engineer shall be in writing. However, if the Authority's Engineer issues any oral instructions to the Contractor, it shall confirm in writing the oral instructions within 2 (two) working days of issuing them.
- 18.4.3 In case the Contractor does not receive the confirmation of the oral instruction within the time specified in Clause 18.4.2, the Contractor shall seek the written confirmation of the oral instructions from the Authority's Engineer. The Contractor shall obtain acknowledgement from the Authority's Engineer of the communication seeking written confirmation. In case of failure of the Authority's Engineer or its delegated assistant to reply to the Contractor within 2 (two) days of the receipt of the communication from the Contractor, the Contractor may not carry out the instruction. 18.4.4 In case of any dispute on any of the instructions issued by the delegated assistant, the Contractor may refer the dispute to the Authority's Engineer, who shall then confirm, reverse or vary the instructions within [3 (three)] business days of the dispute being referred.

18.5 Determination by the Authority's Engineer

- 18.5.1 The Authority's Engineer shall consult with each Party in an endeavour to reach agreement wherever this Agreement provides for the determination of any matter by the Authority's Engineer. If such agreement is not achieved, the Authority's Engineer shall make a fair determination in accordance with this Agreement having due regard to all relevant circumstances. The Authority's Engineer shall give notice to both the Parties of each agreement or determination, with supporting particulars.
- 18.5.2 Each Party shall give effect to each agreement or determination made by the Authority's Engineer in accordance with the provisions of this Agreement. Provided, however, that if any Party disputes any instruction, decision, direction or determination of the Authority's Engineer, the Dispute shall be resolved in accordance with the Dispute Resolution Procedure.

18.6 Remuneration of the Authority's Engineer

The remuneration, cost and expenses of the Authority's Engineer shall be paid by the Authority.

18.7 Termination of the Authority's Engineer

- 18.7.1 The Authority may, in its discretion, replace the Authority's Engineer at any time, but only after appointment of another Authority's Engineer in accordance with Clause 18.1.
- 18.7.2 If the Contractor has reasons to believe that the Authority's Engineer is not discharging its duties and functions in accordance with the provisions of this Agreement, it may make a written representation to the Authority and seek termination of the appointment of the Authority's Engineer. Upon receipt of such representation, the Authority shall hold a tripartite meeting with the Contractor and Authority's Engineer and make best efforts for an amicable resolution of the representation. In the event that the appointment of the Authority's Engineer is terminated hereunder, the Authority shall appoint forthwith another Authority's Engineer in accordance with Clause 18.1.

Part IV: Financial Covenants

ARTICLE 19

19 PAYMENTS

19.1 Contract Price

- 19.1.1 The Authority shall make payments to the Contractor for the Works on the basis of the lump sum price accepted by the Authority in consideration of the obligations specified in this Agreement for an amount of Rs. (Rs.)(the "Contract Price"), which shall be subject to adjustments in accordance with the provisions of this Agreement. For the avoidance of doubt, the Parties expressly agree that the Contract Price shall not include the cost of Maintenance which shall be paid separately in accordance with the provisions of Clause 19.7. The Parties further agree that save and except as provided in this Agreement, the Contract Price shall be valid and effective until issue of Completion Certificate.
- 19.1.2 The Contract Price includes all duties, taxes, royalty, and fees that may be levied in accordance with the laws and regulations in force as on the Base Date on the Contractor's equipment, Plant, Materials and supplies acquired for the purpose of this Agreement and on the services performed under this Agreement. Nothing in this Agreement shall relieve the Contractor from its responsibility to pay any tax including any tax that may be levied in India on profits made by it in respect of this Agreement.
- 19.1.3 The Contract Price shall not be adjusted for any change in costs stated in Clause 19.1.2 above, except as stated in Clauses 19.10 and 19.17.
- 19.1.4 The Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs, unless otherwise provided for in this Agreement.
- 19.1.5 Unless otherwise stated in this Agreement, the Contract Price covers all the Contractor's obligations for the Works under this Agreement and all things necessary for the Construction and the remedying of any Defects in the Project.
- 19.1.6 All payments under this Agreement shall be made in Indian Rupees.

19.2 Advance Payment

- 19.2.1 The Authority shall make an interest-bearing (As per the bank rate) advance payment per Annum (the "Advance Payment"), equal in amount to 10 (ten) percent of the Contract Price, for mobilisation expenses and for acquisition of equipment. The Advance Payment shall be made in three instalments. The first instalment shall be an amount equal to 3% (three percent) of the Contract Price, the second instalment shall be equal to 3% (three percent) of the Contract Price, the third instalment shall be equal to 4% (Four percent) of the Contract Price .
- 19.2.2 The Contractor may apply to the Authority for the first instalment of Advance Payment at any time after the Appointed Date, along with an irrevocable and unconditional guarantee from a Nationalised or Scheduled Bank, counter guaranteed by its branch at Visakhapatnam for an amount equivalent to 110% (one hundred and ten per cent) of such instalment, substantially in the form provided at Annex-III of Schedule-G, to remain effective till the complete and full repayment thereof.
- 19.2.3 After mobilization of office and key resources and machineries within 30 (thirty) days from the Appointed Date, the Contractor may apply for the second instalment of the Advance Payment along with an irrevocable and unconditional guarantee from a Nationalised or Scheduled Bank, counter guaranteed by its branch at Visakhapatnam for an amount equivalent to 110% (one hundred and ten per cent) of such instalment, substantially in the form provided at Annex-III of Schedule-G, to remain effective till the complete and full repayment thereof.
- 19.2.4 After mobilization of materials required to achieve the first mile stone as specified in Schedule J, the Contractor may apply to the Authority for the third instalment of the Advance Payment along with an irrevocable and unconditional guarantee from a Nationalised or Scheduled Bank, counter guaranteed by its branch at Visakhapatnam for an amount equivalent to 110% (one hundred and ten per cent) of such instalment, substantially in the form provided at Annex-III of Schedule-G, to remain effective till the complete and full repayment thereof.
- 19.2.5 The first, second and third instalments shall be paid by the Authority to the Contractor within 15 (fifteen) days of the receipt of its respective requests in accordance with the provisions of this Clause 19.2.
- 19.2.6 Each instalment of Advance Payment shall be repaid by the Contractor to the Authority no later than 365 (three hundred and sixty five) days from the respective date of Advance Payment.

- 19.2.7 The Contractor shall repay each instalment of the Advance Payment on or before the due date of repayment. In the event of the Contractor's failure to make the repayment on time, the Authority shall be entitled to encash the Bank guarantee for Advance Payment. The Parties expressly agree that for any delay in repayment of the Advance Payment, the Contractor shall pay interest to the Authority for each day of delay, such interest to be calculated at the rate of 18% (eighteen per cent) per annum.
- 19.2.8 If the Advance Payment has not been fully repaid prior to Termination under Clause 21.7 or Article 23, as the case may be, the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Authority. Without prejudice to the provisions of Clause 19.2.7, in the event of Termination for Contractor Default, the Advance Payment shall be deemed to carry interest at the rate of 10% (ten per cent) per annum from the date of Advance Payment to the date of recovery by encashment of the Bank Guarantee for the Advance Payment. For the avoidance of doubt, the aforesaid interest shall be payable on each instalment of the Advance Payment, regardless of whether the instalment or any part thereof has been repaid to the Authority prior to Termination.

19.3 Procedure for estimating the payment for the Works

- 19.3.1 The Authority shall make interim payments to the Contractor as certified by the Authority's Engineer on completion of a stage, in a length, number or area as specified, and valued in accordance with the proportion of the Contract Price assigned to each item and its stage in Schedule-H.
- 19.3.2 The Contractor shall base its claim for interim payment for the stages completed till the end of the month for which the payment is claimed, valued in accordance with Clause 19.3.1, supported with necessary particulars and documents in accordance with this Agreement.

19.3.3 Any reduction in the Contract Price arising out of Change of Scope or the works withdrawn under Clause 8.3 shall not affect the amounts payable for the items or stage payments thereof which are not affected by such Change of Scope or withdrawal. For avoidance of doubt and by way of illustration, the Parties agree that if the amount assigned to Major Bridges is reduced from Rs. 10 crore to Rs. 8 crore owing to Change of Scope or withdrawal of work, the reduction in payment shall be restricted to relevant payments for Major Bridges only and the payment due in respect of all other stage payments under the item Major Bridges shall not be affected in any manner. The Parties further agree that the adjustments arising out of the aforesaid modifications shall be carried out in a manner that the impact of such modifications is restricted to the said Change of Scope or withdrawal, as the case may be, and does not alter the payments due for and in respect of items or stage payments which do not form part of such Change of Scope or withdrawal.

19.4 Stage Payment Statement for Works

The Contractor shall submit a statement (the "Stage Payment Statement"), in 3 copies, by the 7th(seventh) day of the month to the Authority's Engineer in the form set forth in Schedule-O, showing the amount calculated in accordance with Clause 19.3 to which the Contractor considers himself entitled for completed stage(s) of the Works. The Stage Payment Statement shall be accompanied with the progress reports and any other supporting documents. The Contractor shall not submit any claim for payment of incomplete stages of work.

19.5 Stage Payment for Works

- 19.5.1 Within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, the Authority's Engineer shall broadly determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment against the Stage Payment Statement, pending issue of the Interim Payment Certificate by the Authority's Engineer. Within 10 (ten) days of the receipt of recommendation of the Authority's Engineer, the Authority shall make electronic payment directly to the Contractor's bank account.
- 19.5.2 Within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, the Authority's Engineer shall determine and shall deliver to the Authority and the Contractor an IPC certifying the amount due and payable to the Contractor, after adjusting the payments already released to the Contractor against the said statement. For the avoidance of doubt, the Parties agree that the IPC shall specify all the amounts that have been deducted from the Stage Payment Statement and the reasons therefor.
- 19.5.3 In cases where there is a difference of opinion as to the value of any stage, the Authority's Engineer's view shall prevail and interim payments shall be made to the Contractor on this basis; provided that the foregoing shall be without prejudice to the Contractor's right to raise a Dispute.
- 19.5.4 The Authority's Engineer may, for reasons to be recorded, withhold from payment:
- (a) the estimated value of work or obligation that the Contractor has failed to perform in accordance with this Agreement and the Authority's Engineer had notified the Contractor; and
 - (b) (b) the estimated cost of rectification of work done being not in accordance with this Agreement.

19.5.5 Payment by the Authority shall not be deemed to indicate the Authority's acceptance, approval, consent or satisfaction with the work done.

19.6 Monthly Maintenance Statement of the Project

19.6.1 The Contractor shall submit to the Authority's Engineer a monthly maintenance statement ("Monthly Maintenance Statement") in 3 (three) copies by the 7th (seventh) day of each month in the format set forth in Schedule-O for the Maintenance of the Project during the previous month.

19.6.2 The monthly lump sum amount payable for Maintenance shall be 1/12th (one-twelfth) of the annual cost of Maintenance as specified in Clause 14.1.1.

19.7 Payment for Maintenance of the Project

19.7.1 Within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, the Authority's Engineer shall verify the Contractor's monthly maintenance statement and certify the amount to be paid to the Contractor taking into account:

- (a) Compliance with the Maintenance Requirements; and
- (b) reduction for non-compliance with the Maintenance Requirement in accordance with Clause 19.7.2. The Authority's Engineer shall deliver to the Authority an IPC approving or amending the monthly maintenance statement to reflect the amount due to the Contractor in accordance with this Agreement.

- 19.7.2 Maintenance shall be measured in units of one kilometer each; provided, however, that payment thereof shall be made in fixed monthly amounts in accordance with this Agreement. If the Maintenance Requirements set forth in Schedule-E are not met, reduction in payments shall be made in accordance with the provisions of Schedule-M. The reductions for non-compliance with the Maintenance Requirements shall be applied on the basis of monthly inspections by the Authority's Engineer.
- 19.7.3 The deduction made on account of non-compliance with the Maintenance Requirements shall not be subsequently considered for payment after the compliance is achieved by repair or rectification.
- 19.7.4 The Authority shall pay to the Contractor every quarter any amount due under any IPC under this Clause 19.7. The payment shall be made no later than 30 (thirty) days from the date of submission of the last IPC for the relevant quarter.

19.8 Payment of Damages

- 19.8.1 The Contractor may claim Damages due and payable to it in accordance with the provisions of this Agreement.
- 19.8.2 The Authority's Engineer shall issue the IPC within 15 (fifteen) days of the receipt of the claim under Clause 19.8.1, after making adjustments in accordance with the provisions of this Agreement. The Authority shall pay to the Contractor the amount due under any IPC within a period of 30 (thirty) days from the date of the submission of the claim under this Clause 19.8. In the event of the failure of the Authority to make payment to the Contractor within the specified time, the Authority shall be liable to pay to the Contractor interest thereon and the provisions of Clause 19.9 shall apply mutatis mutandis thereto.

19.9 Time of payment and interest

- 19.9.1 The Authority shall pay to the Contractor any amount due under any payment certificate issued by the Authority's Engineer in accordance with the provisions of this Article 19, or in accordance with any other clause of this Agreement as follows:
- (a) payment shall be made no later than 30 (thirty) days from the date of submission of the Stage Payment Statement by the Contractor to the Authority's Engineer for certification in accordance with the provisions of Clause 19.4 for an IPC; provided that, in the event the IPC is not issued by the Authority's Engineer within the aforesaid period of 30 (thirty) days, the Authority shall pay the amount shown in the Contractor's Stage Payment Statement and any discrepancy therein shall be added to, or deducted from, the next payment certificate issued to the Contractor; and

- (b) payment shall be made no later than 30 (thirty) days from the date of submission of the Final Payment Certificate for Works along with the discharge submitted to the Authority's Engineer in accordance with the provisions of Clause 19.15 for certification.

19.9.2 In the event of the failure of the Authority to make payment to the Contractor within the time period stated in this Clause 19.9, the Authority shall be liable to pay to the Contractor interest at the Base Rate plus 2% (two percent), calculated at quarterly rests, on all sums remaining unpaid from the date on which the same should have been paid, calculated in accordance with the provisions of Clause 19.9.1(a) and (b) and till the date of actual payment.

19.10 Price adjustment for the Works

19.10.1 The amounts payable to the Contractor for Works shall be adjusted in accordance with the provisions of this Clause 19.10.

19.10.2 Subject to the provisions of Clause 19.10.3, the amounts payable to the Contractor for Works, shall be adjusted in the IPC issued by the Authority's Engineer for the increase or decrease in the index cost of inputs for the Works, by the addition or subtraction of the amounts determined by the formulae prescribed in Clause 19.10.4.

19.10.3 To the extent that full compensation for any increase or decrease in costs to the Contractor is not covered by the provisions of this or other Clauses in this Agreement, the costs and prices payable under this Agreement shall be deemed to include the amounts required to cover the contingency of such other increase or decrease of costs and prices.

19.10.4 The Contract Price shall be adjusted for increase or decrease in rates and price of labour, cement, steel, Plant, machinery and spares, bitumen, fuel and lubricants, and other material inputs in accordance with the principles, procedures and formulae specified below:

- (a) Price adjustment shall be applied on completion of the specified stage of the respective item of work in accordance with Schedule-H;
- (b) Adjustment for each item of work/stage shall be made separately.
- (c) The following expressions and meanings are assigned to the value of the work done:
RW= Value of work done for the completion of a stage under the following items of Schedule-H:
 - (i) Roadworks; and

(d) Price adjustment for changes in cost shall be paid in accordance with the following formulae:

(i)
$$VRW = 0.85 RW \times [PL \times (LI - LO)/LO + PA \times (AI - AO)/AO + PF \times (FI - FO)/FO + PB \times (BI - BO)/BO + PM \times (MI - MO)/MO + PC \times (CI - CO)/CO + PS \times (SI - SO)/SO]$$

Where

VRW = Increase or decrease in the cost of road works/other works during the period under consideration due to changes in the rates for relevant components as stated in sub-paragraph (e)

PB, PC, PL, PM, and PS are the percentages of bitumen, cement, labour, other materials, and steel/components (including strands and cables) respectively for the relevant item as stated in sub-paragraph (e)

PA is the percentage of Plant, machinery and spares component for the relevant item as stated in sub-paragraph (e).

PF is the percentage of fuel and lubricants for the relevant items as stated in sub-paragraph (e).

AO = The wholesale price index as published by the Ministry of Commerce & Industry, Government of India (hereinafter called "WPI") for construction machinery for the month of the Base Date.

AI = The WPI for construction machinery for the month three months prior to the month to which the IPC relates. BO = The official retail price of bitumen at the nearest refinery at [Haladia/ Vizag] on the Base Date.

BI= The official retail price of bitumen at nearest refinery at [Haladia/ Vizag], on the first day of the month three months prior to the month to which the IPC relates.

CO = The WPI for cement for the month of the Base Date.

CI= The WPI for cement for the month three months prior to the month to which the IPC relates.

FO = The official retail price of high speed diesel (HSD) oil at the existing consumer pumps of Indian Oil Corporation ("IOC") in the State of [Andra Pradesh] on the Base Date.

FI = The official retail price of HSD at the existing consumer pumps of IOC in the State of Andra Pradesh on the first day of the month three months prior to the month to which the IPC relates.

LO = The consumer price index for industrial workers for the State of Andra Pradesh, published by Labour Bureau, Ministry of Labour, Government of India, (hereinafter called "CPI") for the month of the Base Date.

LI = The CPI for the month three months prior to the month to which the IPC relates.

MO = The WPI for all commodities for the month of the Base Date.

MI = The WPI for all commodities for the month three months prior to the month to which the IPC relates.

SO = The WPI for steel (rods) for the month of the Base Date.

SI = The WPI for steel (rods) for the month three months prior to the month to which the IPC relates.

(e) The following percentages shall govern the price adjustment of the Contract Price:

| Component | Item | | | |
|-----------------------------------|---|-----------------|--------------------------|--------------------------|
| | Road Works | | | |
| | Earthwork, Granular work, and Other works | Bituminous work | Cement Concrete Pavement | Cement Concrete Pavement |
| Labour (PL) | [20%] | [20%] | [20%] | [15%] |
| Cement (PC) | [5%] | Nil | [20%] | [15%] |
| Steel (PS) | Nil | Nil | Nil | [15%] |
| Bitumen (PB) | Nil | [15%] | Nil | Nil |
| Fuel and lubricants (PF) | [10%] | [10%] | [10%] | [10%] |
| Other Materials (PM) | [50%] | [40%] | [35%] | [30%] |
| Plant, machinery and spares. (PA) | [15%] | [15%] | [15%] | [15%] |
| Total | 100% | 100% | 100% | 100% |

- (f) In case an IPC relates to a month which is within 3 (three) months from the Base Date, no price adjustment shall be applicable.

19.11 Restrictions on price adjustment

Price adjustment shall be due and payable only in respect of the stages of Works for which the Stage Payment Statement has been submitted by the Contractor no later than 30 (thirty) days from the date of the applicable Project Milestone or the Scheduled Completion Date, as the case may be, including any Time Extension granted therefor in accordance with the provisions of this Agreement. For the avoidance of doubt, in the event of submission of any Stage Payment Statement after the period specified herein, price adjustment shall be applicable until the date of the respective Project Milestone or the Scheduled Completion Date, as the case may be.

19.12 Price adjustment for Maintenance of Project

Lump sum payment for Maintenance shall be adjusted every quarter for changes in rates and prices of various inputs in accordance with the formula given below:

$$V = P \times (WI - WO) / WO$$

V = Increase or decrease in the quarterly lump sum payment

P = Quarterly lump sum payment due to the Contractor after adjusting any reduction in payment for non-compliance of the Maintenance Requirements

WO = The wholesale price index (all commodities) for the month of the Base Date.

WI = The wholesale price index (all commodities) for the first day of the quarter under consideration for determining the price adjustment.

19.13 Final Payment Statement

19.13.1 Within 60 (sixty) days after receiving the Completion Certificate under Clause 12.4, the Contractor shall submit to the Authority's Engineer for consideration six copies of a Final Payment Statement (the "Final Payment Statement") for Works, with supporting documents showing in detail, in the form prescribed by the Authority's Engineer:

- (a) the summary of Contractor's Stage Payment claims for Works as submitted in accordance with Clause 19.4;
- (b) the amounts received from the Authority against each claim; and
- (c) any further sums which the Contractor considers due to it from the Authority.

If the Authority's Engineer disagrees with or cannot verify any part of the Final Payment Statement, the Contractor shall submit such further information as the Authority's Engineer may reasonably require. The Authority's Engineer shall deliver to the Authority:

(i) an IPC for those parts of the Final Payment Statement which are not in dispute, along with a list of disputed items which shall then be settled in accordance with the provisions of Article 26; or

(ii)a Final Payment Certificate in accordance with Clause 19.15 if there are no disputed items.

19.13.2 If the Authority's Engineer does not prescribe the form referred to in Clause

19.13.3 within 15 (fifteen) of the date of issue of the Completion Certificate, the Contractor shall submit the statement in such form as it deems fit.

19.14 Discharge

Upon submission of the Final Payment Statement for Works under Clause 19.13, the Contractor shall give to the Authority, with a copy to the Authority's Engineer, a written discharge confirming that the total of the Final Payment Statement represents full and final settlement of all monies due to the Contractor in respect of this Agreement for all the Works arising out of this Agreement, except for any monies due to either Party on account of any Defect. Provided that such discharge shall become effective only after the payment due has been made in accordance with the Final Payment Certificate issued pursuant to Clause 19.15.

19.15 Final Payment Certificate

19.15.1 Within 30 (thirty) days after receipt of the Final Payment Statement for Works under Clause 19.13, and the written discharge under Clause 19.14, and there being no disputed items of claim, the Authority's Engineer shall deliver to the Authority, with a copy to the Contractor, a final payment certificate (the "Final Payment Certificate") stating the amount which, in the opinion of the Authority's Engineer, is finally due under this Agreement or otherwise. For the avoidance of doubt, before issuing the Final Payment Certificate, the Authority's Engineer shall ascertain from the Authority all amounts previously paid by the Authority and for all sums to which the Authority is entitled, the balance, if any, due from the Authority to the Contractor or from the Contractor to the Authority, as the case may be.

19.15.2 The Authority shall, in accordance with the provisions of Clause 19.9, pay to the Contractor the amount which is stated as being finally due in the Final Payment Certificate.

19.16 Final payment statement for Maintenance

19.16.1 Within 30 (thirty) days after completion of the Maintenance Period, the Contractor shall submit to the Authority's Engineer six copies of the final payment statement for Maintenance of the Project, with supporting documents showing the details set forth below in the form prescribed by the Authority's Engineer :

- (a) the total amount claimed in accordance with the monthly statement for Maintenance of Project;
- (b) the amount paid in accordance with the Interim Payment Certificates; And
- (c) any sums which the Contractor considers to be due to it, with supporting documents.

19.16.2 The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance under Clause 19.16.1, segregating the items of amount payable from the items of amount disallowed. The Authority shall make payment on the basis of the final payment authorised by the Authority's Engineer within a period of 30 (thirty) days of the receipt of the Final Payment Statement from the Authority's Engineer.

19.16.3 If the Authority's Engineer does not prescribe the form within 15 (fifteen) days of the date of issue of the Completion Certificate, the Contractor shall submit the statement in such form as it deems fit.

19.17 Change in law

19.17.1 If as a result of Change in Law, the Contractor suffers any additional costs in the execution of the Works or in relation to the performance of its other obligations under this Agreement, the Contractor shall, within 15 (fifteen) days from the date it becomes reasonably aware of such addition in cost, notify the Authority with a copy to the Authority's Engineer of such additional cost due to Change in Law.

19.17.2 If as a result of Change in Law, the Contractor benefits from any reduction in costs for the execution of this Agreement or in accordance with the provisions of this Agreement, either Party shall, within 15 (fifteen) days from the date it becomes reasonably aware of such reduction in cost, notify the other Party with a copy to the Authority's Engineer of such reduction in cost due to Change in Law.

19.17.3 The Authority's Engineer shall, within 15 (fifteen) days from the date of receipt of the notice from the Contractor or the Authority, determine any addition or reduction to the Contract Price, as the case may be, due to the Change in Law.

19.18 Correction of Interim Payment Certificates

The Authority's Engineer may by an Interim Payment Certificate make any correction or modification in any previous Interim Payment Certificate issued by the Authority's Engineer.

19.19 Authority's claims

If the Authority considers itself to be entitled to any payment from the Contractor under any Clause of this Agreement, it shall give notice and particulars to the Contractor 20 (twenty) days before making the recovery from any amount due to the Contractor, and shall take into consideration the representation, if any, made by the Contractor in this behalf, before making such recovery.

19.20 Bonus for early completion

In the event that the Project Completion Date occurs prior to the Scheduled Completion Date, the Contractor shall be entitled to receive a payment of bonus equivalent to 0.03% (zero point zero three percent) of the Contract Price for each day by which the Project Completion Date precedes the Scheduled Completion Date, but subject to a maximum of 3% (three percent) of the Contract Price. Provided, however, that the payment of bonus, if any, shall be made only after the issue of the Completion Certificate. For the avoidance of the doubt, the Parties agree that for the purpose of determining the bonus payable hereunder, the Contract Price shall always be deemed to be the amount specified in Clause 19.1.1, and shall exclude any revision thereof for any reason. The Parties also agree that bonus shall be payable only if each work for which Extension of Time has been granted is completed within respective Extended Time.

ARTICLE 20

20 INSURANCE

20.1 Insurance for Works and Maintenance

20.1.1 The Contractor shall effect and maintain at its own cost the insurances specified in Schedule-P and as per the requirements under the Applicable Laws.

20.1.2 Subject to the provisions of Clause 21.6, the Authority and the Contractor shall, in accordance with its obligations as provided for in this Agreement, be liable to bear the cost of any loss or damage that does not fall within the scope of this Article 20 or cannot be recovered from the insurers.

20.1.3 Subject to the exceptions specified in Clause 20.1.4 below, the Contractor shall, save and except as provided for in this Agreement, fully indemnify, hold harmless and defend the Authority from and against any and all losses, damages, costs, charges and/or claims with respect to:

- (a) the death of or injury to any person; or
- (b) the loss of or damage to any property (other than the Works); that may arise out of or in consequence of any breach by the Contractor of this Agreement during the execution of the Works or the remedying of any Defects therein.

20.1.4 Notwithstanding anything stated above in Clause 20.1.3, the Authority shall fully indemnify the Contractor from and against any and all losses, damages, costs, charges, proceedings and/or claims arising out of or with respect to

- (c) the use or occupation of land or any part thereof by the Authority;
- (d) the right of the Authority to execute the Works, or any part thereof, on, over, under, in or through any land;
- (e) the damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any Defects therein, in accordance with this Agreement; and
- (f) the death of or injury to persons or loss of or damage to property resulting from any act or neglect of the Authority, its agents, servants or other contractors, not being employed by the Contractor. Provided that, in the event of any injury or damage as a result of the contributory negligence of the Contractor, the Authority shall be liable to indemnify the Contractor from and against any and all losses, damages, costs, charges, proceedings and/or claims to the extent as may be proportionately determined to be the liability of the Authority, its servants or agents or other contractors not associated with the Contractor in such injury or damage.

20.1.5 Without prejudice to the obligations of the Parties as specified under Clauses 20.1.3 and 20.1.4, the Contractor shall maintain or effect such third party insurances as may be required under the Applicable Laws.

20.1.6 The Contractor shall provide to the Authority, within 30 days of the Appointed Date, evidence of professional liability insurance maintained by its Design Director and/or consultants to cover the risk of professional negligence in the design of Works. The professional liability coverage shall be for a sum of not less than 3% (three per cent) of the Contract Price and shall be maintained until the end of the Defects Liability Period.

20.2 Notice to the Authority

No later than 15 (fifteen) days after the date of this Agreement, the Contractor shall by notice furnish to the Authority, in reasonable detail, information in respect of the insurances that it proposes to effect and maintain in accordance with this Article 20. Within 15 (fifteen) days of receipt of such notice, the Authority may require the Contractor to effect and maintain such other insurances as may be necessary pursuant hereto, and in the event of any difference or disagreement relating to any such insurance, the Dispute Resolution Procedure shall apply.

20.3 Evidence of Insurance Cover

20.3.1 All insurances obtained by the Contractor in accordance with this Article 20 shall be maintained with insurers on terms consistent with Good Industry Practice. Within 10 (ten) days from the Appointed Date, the Contractor shall furnish to the Authority notarised true copies of the certificate(s) of insurance, copies of insurance policies and premia payment receipts in respect of such insurance, and no such insurance shall be cancelled, modified, or allowed to expire or lapse until the expiration of at least 45 (forty-five) days after notice of such proposed cancellation, modification or non-renewal has been delivered by the Contractor to the Authority. The Contractor shall act in accordance with the directions of the Authority. Provided that the Contractor shall produce to the Authority the insurance policies in force and the receipts for payment of the current premia.

20.3.2 The Contractor shall ensure the adequacy of the insurances at all times in accordance with the provisions of this Agreement.

20.4 Remedy for failure to insure

If the Contractor shall fail to effect and keep in force all insurances for which it is responsible pursuant hereto, the Authority shall have the option to either keep in force any such insurances, and pay such premium and recover the costs thereof from the

Contractor, or in the event of computation of a Termination Payment, treat an amount equal to the Insurance Cover as deemed to have been received by the Contractor.

20.5 Waiver of subrogation

All insurance policies in respect of the insurance obtained by the Contractor pursuant to this Article 20 shall include a waiver of any and all rights of subrogation or recovery of the insurers thereunder against, inter alia, the Authority, and its assigns, successors, undertakings and their subsidiaries, Affiliates, employees, insurers and underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance.

20.6 Contractor's waiver

The Contractor hereby further releases, assigns and waives any and all rights of subrogation or recovery against, inter alia, the Authority and its assigns, undertakings and their subsidiaries, Affiliates, employees, successors, insurers and underwriters, which the Contractor may otherwise have or acquire in or from or in any way connected with any loss, liability or obligation covered by policies of insurance maintained or required to be maintained by the Contractor pursuant to this Agreement (other than third party liability insurance policies) or because of deductible clauses in or inadequacy of limits of any such policies of insurance.

20.7 Cross liabilities

Any such insurance maintained or effected in pursuance of this Article 20 shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Authority as separately insured.

20.8 Accident or injury to workmen

Notwithstanding anything stated in this Agreement, it is hereby expressly agreed between the Parties that the Authority shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or Sub-contractor, save and except as for death or injury resulting from any act, omission or default of the Authority, its agents or servants. The Contractor shall indemnify and keep indemnified the Authority from and against all such claims, proceedings, damages, costs, charges, and expenses whatsoever in respect of the above save and except for those acts, omissions or defaults for which the Authority shall be liable.

20.9 Insurance against accident to workmen

The Contractor shall effect and maintain during the Agreement such insurances as may be required to insure the Contractor's personnel and any other persons employed by it on the Project from and against any liability incurred in pursuance of this Article 20.

Provided that for the purposes of this Clause 20.9, the Contractor's personnel/any person employed by the Contractor shall include the Sub-contractor and its personnel. It is further provided that, in respect of any persons employed by any Sub-contractor, the Contractor's obligations to insure as aforesaid under this Clause 20.9 shall be discharged if the Sub-contractor shall have insured against any liability in respect of such persons in such manner that the Authority is indemnified under the policy. The Contractor shall require such Sub-contractor to produce before the Authority, when required, such policy of insurance and the receipt for payment of the current premium within 10 (ten) days of such demand being made by the Authority.

20.10 Application of insurance proceeds

The proceeds from all insurance claims, except for life and injury, shall be applied for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Project and the provisions of this Agreement in respect of construction of works shall apply mutatis mutandis to the works undertaken out of the proceeds of insurance.

20.11 Compliance with policy conditions

Each Party hereby expressly agrees to fully indemnify the other Party from and against all losses and claims arising from its failure to comply with conditions imposed by the insurance policies effected in accordance with this Agreement.

Part V: Force Majeure and Termination

ARTICLE 21

21 FORCE MAJEURE

21.1 Force Majeure

As used in this Agreement, the expression “Force Majeure” or “Force Majeure Event” shall mean occurrence in India of any or all of Non-Political Event, Indirect Political Event and Political Event, as defined in Clauses 21.2, 21.3 and 21.4 respectively, if it affects the performance by the Party claiming the benefit of Force Majeure (the “Affected Party”) of its obligations under this Agreement and which act or event (i) is beyond the reasonable control of the Affected Party, and (ii) the Affected Party could not have prevented or overcome by exercise of due diligence and following Good Industry Practice, and (iii) has Material Adverse Effect on the Affected Party.

21.2 Non-Political Event

A Non-Political Event shall mean one or more of the following acts or events:

- (a) act of God, epidemic, extremely adverse weather conditions, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical or radioactive contamination or ionising radiation, fire or explosion (to the extent of contamination or radiation or fire or explosion originating from a source external to the Site);
- (b) strikes or boycotts (other than those involving the Contractor, Sub-contractors or their respective employees/representatives, or attributable to any act or omission of any of them) interrupting supplies and services to the Project for a continuous period of 24 (twenty-four) hours and an aggregate period exceeding 30 (thirty) days in an Accounting Year, and not being an Indirect Political Event set forth in Clause 21.3;
- (c) any failure or delay of a Sub-contractor but only to the extent caused by another Non-Political Event;
- (d) any judgment or order of any court of competent jurisdiction or statutory authority made against the Contractor in any proceedings for reasons other than
 - (i) failure of the Contractor to comply with any Applicable Law or Applicable Permit, or
 - (ii) on account of breach of any Applicable Law or Applicable Permit or of any contract, or
 - (iii) enforcement of this Agreement, or
 - (iv) exercise of any of its rights under this Agreement by the Authority;
- (e) the discovery of geological conditions, toxic contamination or archaeological remains on the Site that could not reasonably have been expected to be discovered through a site inspection; or

- (f) any event or circumstances of a nature analogous to any of the foregoing.

21.3 Indirect Political Event

An Indirect Political Event shall mean one or more of the following acts or events:

- (a) an act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, riot, insurrection, terrorist or military action, civil commotion or politically motivated sabotage;
- (b) industry-wide or State-wide strikes or industrial action for a continuous period of 24 (twenty-four) hours and exceeding an aggregate period of 30 (thirty) days in an Accounting Year;
- (c) any civil commotion, boycott or political agitation which prevents construction of the Project by the Contractor for an aggregate period exceeding 30 (thirty) days in an Accounting Year;
- (d) any failure or delay of a Sub-contractor to the extent caused by any Indirect Political Event;
- (e) any Indirect Political Event that causes a Non-Political Event; or
- (f) any event or circumstances of a nature analogous to any of the foregoing.

21.4 Political Event

A Political Event shall mean one or more of the following acts or events by or on account of any Government Instrumentality:

- (a) Change in Law, only if consequences thereof cannot be dealt with under and in accordance with the provisions of Clause 19.17;
- (b) compulsory acquisition in national interest or expropriation of any Project Assets or rights of the Contractor or of the Sub-Contractors;
- (c) unlawful or unauthorised or without jurisdiction revocation of, or refusal to renew or grant without valid cause, any clearance, licence, permit, authorisation, no objection certificate, consent, approval or exemption required by the Contractor or any of the Sub-contractors to perform their respective obligations under this Agreement; provided that such delay, modification, denial, refusal or revocation did not result from the Contractor's or any Sub-contractor's inability or failure to comply with any condition relating to grant, maintenance or renewal of such clearance, licence, authorisation, no objection certificate, exemption, consent, approval or permit;
- (d) any failure or delay of a Sub-contractor but only to the extent caused by another Political Event; or

- (e) any event or circumstances of a nature analogous to any of the foregoing.

21.5 Duty to report Force Majeure Event

21.5.1 Upon occurrence of a Force Majeure Event, the Affected Party shall by notice report such occurrence to the other Party forthwith. Any notice pursuant hereto shall include full particulars of:

- (a) the nature and extent of each Force Majeure Event which is the subject of any claim for relief under this Article 21 with evidence in support thereof;
- (b) the estimated duration and the effect or probable effect which such Force Majeure Event is having or will have on the Affected Party's performance of its obligations under this Agreement;
- (c) the measures which the Affected Party is taking or proposes to take for alleviating the impact of such Force Majeure Event; and
- (d) any other information relevant to the Affected Party's claim.

21.5.2 the Affected Party shall not be entitled to any relief for or in respect of a Force Majeure Event unless it shall have notified the other Party of the occurrence of the Force Majeure Event as soon as reasonably practicable, and in any event no later than 10 (ten) days after the Affected Party knew, or ought reasonably to have known, of its occurrence, and shall have given particulars of the probable material effect that the Force Majeure Event is likely to have on the performance of its obligations under this Agreement.

21.5.3 For so long as the Affected Party continues to claim to be materially affected by such Force Majeure Event, it shall provide the other Party with regular (and not less than weekly) reports containing information as required by Clause

21.5.4 21.5.1, and such other information as the other Party may reasonably request the Affected Party to provide.

21.6 Effect of Force Majeure Event on the Agreement

21.6.1 Upon the occurrence of any Force Majeure after the Appointed Date, the costs incurred and attributable to such event and directly relating to this Agreement (the "Force Majeure costs") shall be allocated and paid as follows:

- (a) upon occurrence of a Non-Political Event, the Parties shall bear their respective Force Majeure costs and neither Party shall be required to pay to the other Party any costs thereof;
- (b) upon occurrence of an Indirect Political Event, all Force Majeure costs attributable to such Indirect Political Event, and not exceeding the Insurance Cover for such Indirect Political Event, shall be borne by the Contractor, and to the extent Force Majeure costs exceed such Insurance Cover, one half of such excess amount shall be reimbursed by the Authority to the Contractor for the Force Majeure events; and
- (c) upon occurrence of a Political Event, all Force Majeure costs attributable to such Political Event shall be reimbursed by the Authority to the Contractor. For the avoidance of doubt, Force Majeure costs may include costs directly attributable to the Force Majeure Event, but shall not include debt repayment obligations, if any, of the Contractor.

21.6.2 Save and except as expressly provided in this Article 21, neither Party shall be liable in any manner whatsoever to the other Party in respect of any loss, damage, cost, expense, claims, demands and proceedings relating to or arising out of occurrence or existence of any Force Majeure Event or exercise of any right pursuant hereto.

21.6.3 Upon the occurrence of any Force Majeure Event during the Construction Period, the Project Completion Schedule for and in respect of the affected Works shall be extended on a day for day basis for such period as performance of the Contractor's obligations is affected on account of the Force Majeure Event or its subsisting effects.

21.7 Termination Notice for Force Majeure Event

21.7.1 If a Force Majeure Event subsists for a period of 60 (sixty) days or more within a continuous period of 120 (one hundred and twenty) days, either Party may in its discretion terminate this Agreement by issuing a Termination Notice to the other Party without being liable in any manner whatsoever, save as provided in this Article 21, and upon issue of such Termination Notice, this Agreement shall, notwithstanding anything to the contrary contained herein, stand terminated forthwith; provided that before issuing such Termination Notice, the Party intending to issue the Termination Notice shall inform the other Party of such intention and grant 15 (fifteen) days' time to make a representation, and may after the expiry of such 15 (fifteen) days period, whether or not it is in receipt of such representation, in its sole discretion issue the Termination Notice.

21.8 Termination Payment for Force Majeure Event

21.8.1 In the event of this Agreement being terminated on account of a Non-Political Event, the Termination Payment shall be an amount equal to the sum payable under Clause 23.5. Provided that in the event Termination occurs during the Maintenance Period, the Authority's Engineer shall only determine the value of Works associated with Maintenance.

21.8.2 If Termination is on account of an Indirect Political Event, the Termination Payment shall include: (a) any sums due and payable under Clause 23.5; and (b) the reasonable cost, as determined by the Authority's Engineer, of the Plant and Materials procured by the Contractor and transferred to the Authority for use in Construction or Maintenance, only if such Plant and Materials are in conformity with the Specifications and Standards; Provided that in the event Termination occurs during the Maintenance Period, the Authority's Engineer shall only determine the value of Works associated with Maintenance.

21.8.3 If Termination is on account of a Political Event, the Authority shall make a Termination Payment to the Contractor in an amount that would be payable under Clause 23.6.2 as if it were an Authority Default.

21.9 Dispute resolution

In the event that the Parties are unable to agree in good faith about the occurrence or existence of a Force Majeure Event, such Dispute shall be finally settled in accordance with the Dispute Resolution Procedure; provided that the burden of proof as to the occurrence or existence of such Force Majeure Event shall be upon the Party claiming relief and/or excuse on account of such Force Majeure Event.

21.10 Excuse from performance of obligations

If the Affected Party is rendered wholly or partially unable to perform its obligations under this Agreement because of a Force Majeure Event, it shall be excused from performance of such of its obligations to the extent it is unable to perform on account of such Force Majeure Event; provided that:

- (a) the suspension of performance shall be of no greater scope and of no longer duration than is reasonably required by the Force Majeure Event;
- (b) the Affected Party shall make all reasonable efforts to mitigate or limit damage to the other Party arising out of or as a result of the existence or occurrence of such Force Majeure Event and to cure the same with due diligence; and
- (c) when the Affected Party is able to resume performance of its obligations under this Agreement, it shall give to the other Party notice to that effect and shall promptly resume performance of its obligations hereunder.

ARTICLE 22

22 SUSPENSION OF CONTRACTOR'S RIGHTS

22.1 Suspension upon Contractor Default

Upon occurrence of a Contractor Default, the Authority shall be entitled, without prejudice to its other rights and remedies under this Agreement including its rights of Termination hereunder, to (i) suspend carrying out of the Works or Maintenance or any part thereof, and (ii) carry out such Works or Maintenance itself or authorise any other person to exercise or perform the same on its behalf during such suspension (the **"Suspension"**). Suspension hereunder shall be effective forthwith upon issue of notice by the Authority to the Contractor and may extend up to a period not exceeding 90 (ninety) days from the date of issue of such notice.

22.2 Authority to act on behalf of Contractor

During the period of Suspension hereunder, all rights and liabilities vested in the Contractor in accordance with the provisions of this Agreement shall continue to vest therein and all things done or actions taken, including expenditure incurred by the Authority for discharging the obligations of the Contractor under and in accordance with this Agreement shall be deemed to have been done or taken for and on behalf of the Contractor and the Contractor undertakes to indemnify the Authority for all costs incurred during such period. The Contractor hereby licences and sub-licences respectively, the Authority or any other person authorised by it under Clause 22.1 to use during Suspension, all Intellectual Property belonging to or licenced to the Contractor with respect to the Project and its design, engineering, construction and maintenance, and which is used or created by the Contractor in performing its obligations under the Agreement.

22.3 Revocation of Suspension

- 22.3.1 In the event that the Authority shall have rectified or removed the cause of Suspension within a period not exceeding 60 (sixty) days from the date of Suspension, it shall revoke the Suspension forthwith and restore all rights of the Contractor under this Agreement. For the avoidance of doubt, the Parties expressly agree that the Authority may, in its discretion, revoke the Suspension at any time, whether or not the cause of Suspension has been rectified or removed hereunder.
- 22.3.2 Upon the Contractor having cured the Contractor Default within a period not exceeding 60 (sixty) days from the date of Suspension, the Authority shall revoke the Suspension forthwith and restore all rights of the Contractor under this Agreement.

22.4 Termination

- 22.4.1 At any time during the period of Suspension under this Article 22, the Contractor may by notice require the Authority to revoke the Suspension and issue a Termination Notice. The Authority shall, within 15 (fifteen) days of receipt of such notice, terminate this Agreement under and in accordance with Article 23.
- 22.4.2 Notwithstanding anything to the contrary contained in this Agreement, in the event that Suspension is not revoked within 90 (ninety) days from the date of Suspension hereunder, the Agreement shall, upon expiry of the aforesaid period, be deemed to have been terminated by mutual agreement of the Parties and all the provisions of this Agreement shall apply, mutatis mutandis, to such Termination as if a Termination Notice had been issued by the Authority upon occurrence of a Contractor Default.

ARTICLE 23

23 TERMINATION

23.1 Termination for Contractor Default

23.1.1 Save as otherwise provided in this Agreement, in the event that any of the defaults specified below shall have occurred, and the Contractor fails to cure the default within the Cure Period set forth below, or where no Cure Period is specified, then within a Cure Period of 60 (sixty) days, the Contractor shall be deemed to be in default of this Agreement (the "Contractor Default"), unless the default has occurred solely as a result of any breach of this Agreement by the Authority or due to Force Majeure. The defaults referred to herein shall include:

- (a) the Contractor fails to provide, extend or replenish, as the case may be, the Performance Security in accordance with this Agreement;
- (b) subsequent to the replenishment or furnishing of fresh Performance Security in accordance with Clause 7.3, the Contractor fails to cure, within a Cure Period of 30 (thirty) days, the Contractor Default for which the whole or part of the Performance Security was appropriated;
- (c) the Contractor does not achieve the latest outstanding Project Milestone due in accordance with the provisions of Schedule-J, subject to any Time Extension, and continues to be in default for 45 (forty five) days;
- (d) the Contractor abandons or manifests intention to abandon the construction or Maintenance of the Project without the prior written consent of the Authority;
- (e) the Contractor fails to proceed with the Works in accordance with the provisions of Clause 10.1 or stops Works and/or the Maintenance for 30 (thirty) days without reflecting the same in the current programme and such stoppage has not been authorised by the Authority's Engineer;
- (f) the Project Completion Date does not occur within the period specified in Schedule-J for the Scheduled Completion Date, or any extension thereof;
- (g) failure to complete the Punch List items within the periods stipulated therefor in Clause 12.2.1;
- (h) the Contractor fails to rectify any Defect, the non-rectification of which shall have a Material Adverse Effect on the Project, within the time specified in this Agreement or as directed by the Authority's Engineer;
- (i) the Contractor subcontracts the Works or any part thereof in violation of this Agreement or assigns any part of the Works or the Maintenance without the prior approval of the Authority;

- (j) the Contractor creates any Encumbrance in breach of this Agreement;
- (k) an execution levied on any of the assets of the Contractor has caused a Material Adverse Effect ;
- (l) the Contractor is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for the Contractor or for the whole or material part of its assets that has a material bearing on the Project;
- (m) the Contractor has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the Authority, a Material Adverse Effect;
- (n) a resolution for winding up of the Contractor is passed, or any petition for winding up of the Contractor is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 (ninety) days of the date thereof or the Contractor is ordered to be wound up by court except for the purpose of amalgamation or reconstruction; provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of the Contractor are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of the Contractor under this Agreement; and provided that:
 - (i) the amalgamated or reconstructed entity has the capability and experience necessary for the performance of its obligations under this Agreement; and
 - (ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under this Agreement and has a credit worthiness at least as good as that of the Contractor as at the Appointed Date;
- (o) any representation or warranty of the Contractor herein contained which is, as of the date hereof, found to be materially false or the Contractor is at any time hereafter found to be in breach thereof;
- (p) the Contractor submits to the Authority any statement, notice or other document, in written or electronic form, which has a material effect on the Authority's rights, obligations or interests and which is false in material particulars;
- (q) the Contractor has failed to fulfill any obligation, for which failure Termination has been specified in this Agreement; or
- (r) the Contractor commits a default in complying with any other provision of this Agreement if such a default causes a Material Adverse Effect on the Project or on the Authority.

- 23.1.2 Without prejudice to any other rights or remedies which the Authority may have under this Agreement, upon occurrence of a Contractor Default, the Authority shall be entitled to terminate this Agreement by issuing a Termination Notice to the Contractor; provided that before issuing the Termination Notice, the Authority shall by a notice inform the Contractor of its intention to issue such Termination Notice and grant 15 (fifteen) days to the Contractor to make a representation, and may after the expiry of such 15 (fifteen) days, whether or not it is in receipt of such representation, issue the Termination Notice.
- 23.1.3 After termination of this Agreement for Contractor Default, the Authority may complete the Works and/or arrange for any other entities to do so. The Authority and these entities may then use any Materials, Plant and equipment, Contractor's documents and other design documents made by or on behalf of the Contractor.

23.2 Termination for Authority Default

- 23.2.1 In the event that any of the defaults specified below shall have occurred, and the Authority fails to cure such default within a Cure Period of 90 (ninety) days or such longer period as has been expressly provided in this Agreement, the Authority shall be deemed to be in default of this Agreement (the "Authority Default") unless the default has occurred as a result of any breach of this Agreement by the Contractor or due to Force Majeure. The defaults referred to herein shall include:
- (a) the Authority commits a material default in complying with any of the provisions of this Agreement and such default has a Material Adverse Effect on the Contractor;
 - (b) the Authority has failed to make payment of any amount due and payable to the Contractor within the period specified in this Agreement;
 - (c) the Authority has failed to provide, within a period of 180 (one hundred and eighty) days from the Appointed Date, the environmental clearances required for construction of the Project;
 - (d) the Authority repudiates this Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by this Agreement; or
 - (e) the Authority's Engineer fails to issue the relevant Interim Payment Certificate within 60 (sixty) days after receiving a statement and supporting documents.

23.2.2 Without prejudice to any other right or remedy which the Contractor may have under this Agreement, upon occurrence of an Authority Default, the Contractor shall be entitled to terminate this Agreement by issuing a Termination Notice to the Authority; provided that before issuing the Termination Notice, the Contractor shall by a notice inform the Authority of its intention to issue the Termination Notice and grant 15 (fifteen) days to the Authority to make a representation, and may after the expiry of such 15 (fifteen) days, whether or not it is in receipt of such representation, issue the Termination Notice. If on the consideration of the Authority's representation or otherwise, the contractor does not issue the Termination Notice on such 15th day and prefers to continue with the project, it is deemed that the cause of action of the Termination Notice has been condoned by the Contractor. Hence he forfeits his right to any other remedy on that count.

23.3 Termination for Authority's convenience

Notwithstanding anything stated hereinabove, the Authority may terminate this Agreement for convenience. The termination shall take effect 30 (thirty) days from the date of notice hereunder.

23.4 Requirements after Termination

Upon Termination of this Agreement in accordance with the terms of this Article 23, the Contractor shall comply with and conform to the following:

- (a) deliver to the Authority all Plant and Materials which shall have become the property of the Authority under this Article 23;
- (b) deliver all relevant records, reports, Intellectual Property and other licences pertaining to the Works, Maintenance, other design documents and in case of Termination occurring after the Provisional Certificate has been issued, the "as built" Drawings for the Works;
- (c) transfer and/or deliver all Applicable Permits to the extent permissible under Applicable Laws; and
- (d) vacate the Site within 15 (fifteen) days.

23.5 Valuation of Unpaid Works

23.5.1 Within a period of 45 (forty-five) days after Termination under Clause 23.1, 23.2 or 23.3, as the case may be, has taken effect, the Authority's Engineer shall proceed in accordance with Clause 18.5 to determine as follows the valuation of unpaid Works (the "Valuation of Unpaid Works"):

- (a) value of the completed stage of the Works, less payments already made;

- (b) reasonable value of the partially completed stages of works as on the date of Termination, only if such works conform with the Specifications and Standards; and
- (c) value of Maintenance, if any, for completed months, less payments already made, and shall adjust from the sum thereof (i) any other amounts payable or recoverable, as the case may be, in accordance with the provisions of this Agreement; and (ii) all taxes due to be deducted at source.

23.5.2 The Valuation of Unpaid Works shall be communicated to the Authority, with a copy to the Contractor, within a period of 30 (thirty) days from the date of Termination.

23.6 Termination Payment

23.6.1 Upon Termination on account of Contractor's Default under Clause 23.1, the Authority shall:

- (a) encash and appropriate the Performance Security and Retention Money, or in the event the Contractor has failed to replenish or extend the Performance Security, claim the amount stipulated in Clause 7.1.1, as agreed pre-determined compensation to the Authority for any losses, delays and cost of completing the Works and Maintenance, if any;
- (b) encash and appropriate the bank guarantee, if any, for and in respect of the outstanding Advance Payment and interest thereon; and
- (c) pay to the Contractor, by way of Termination Payment, an amount equivalent to the Valuation of Unpaid Works after adjusting any other sums payable or recoverable, as the case may be, in accordance with the provisions of this Agreement.

23.6.2 Upon Termination on account of an Authority Default under Clause 23.2 or for Authority's convenience under Clause 23.3, the Authority shall:

- (a) return the Performance Security and Retention Money forthwith;
- (b) encash and appropriate the bank guarantee, if any, for and in respect of the outstanding Advance Payment; and
- (c) pay to the Contractor, by way of Termination Payment, an amount equal to:
 - (i) Valuation of Unpaid Works;
 - (ii) the reasonable cost, as determined by the Authority's Engineer, of the Plant and Materials procured by the Contractor and transferred to the Authority for its use, only if such Plant and Materials are in conformity with the Specifications and Standards;
 - (iii) the reasonable cost of temporary works, as determined by the Authority's Engineer; and

- (iv) 10% (ten percent) of the cost of the Works and Maintenance that are not commenced or not completed, and shall adjust from the sum thereof (i) any other amounts payable or recoverable, as the case may be, in accordance with the provisions of this Agreement, and (ii) all taxes due to be deducted at source.

23.6.3 Termination Payment shall become due and payable to the Contractor within 30 (thirty) days of a demand being made by the Contractor to the Authority with the necessary particulars, and in the event of any delay, the Authority shall pay interest at the Base Rate plus 2% (two percent), calculated at quarterly rests, on the amount of Termination Payment remaining unpaid; provided that such delay shall not exceed 90 (ninety) days. For the avoidance of doubt, it is expressly agreed that Termination Payment shall constitute full discharge by the Authority of its payment obligations in respect thereof hereunder.

23.6.4 The Contractor expressly agrees that Termination Payment under this Article 23 shall constitute a full and final settlement of all claims of the Contractor on account of Termination of this Agreement and that it shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

23.7 Other rights and obligations of the Parties

Upon Termination for any reason whatsoever

- (a) property and ownership in all Materials, Plant and Works and the Project shall, as between the Contractor and the Authority, vest in the Authority in whole; provided that the foregoing shall be without prejudice to Clause 23.6
- (b) risk of loss or damage to any Materials, Plant or Works and the care and custody thereof shall pass from the Contractor to the Authority; and
- (c) the Authority shall be entitled to restrain the Contractor and any person claiming through or under the Agreement from entering upon the Site or any part of the Project except for taking possession of materials, stores, implements, construction plants and equipment of the Contractor, which have not been vested in the Authority in accordance with the provisions of this Agreement.

23.8 Survival of rights

Notwithstanding anything to the contrary contained in this Agreement any Termination pursuant to the provisions of this Agreement shall be without prejudice to the accrued rights of either Party including its right to claim and recover money damages, insurance proceeds, security deposits, and other rights and remedies, which it may have in law or Agreement. All rights and obligations of either Party under this Agreement, including

Termination Payments, shall survive the Termination up to a period of 3 (three) years for giving effect to such rights and obligations.

Part VI: Other Provisions

ARTICLE 24

24 ASSIGNMENT AND CHARGES

24.1 Restrictions on assignment and charges

This Agreement shall not be assigned by the Contractor to any person, save and except with the prior consent in writing of the Authority, which consent the Authority shall be entitled to decline without assigning any reason.

24.2 Hypothecation of Materials or Plant

Notwithstanding the provisions of Clause 24.1, the Contractor may pledge or hypothecate to its lenders, any Materials or Plant prior to their incorporation in the Works. Further, the Contractor may, by written notice to the Authority, assign its right to receive payments under this Agreement either absolutely or by way of charge, to any person providing financing to the Contractor in connection with the performance of the Contractor's obligations under this Agreement. The Contractor acknowledges that any such assignment by the Contractor shall not relieve the Contractor from any obligations, duty or responsibility under this Agreement.

ARTICLE 25

25 LIABILITY AND INDEMNITY

25.1 General indemnity

25.1.1 The Contractor will indemnify, defend, save and hold harmless the Authority and its officers, servants, agents, Government Instrumentalities and Government owned and/or controlled entities/enterprises, (the "Authority Indemnified Persons") against any and all suits, proceedings, actions, demands and third party claims for any loss, damage, cost and expense of whatever kind and nature, whether arising out of any breach by the Contractor of any of its obligations under this Agreement or from any negligence under the Agreement, including any errors or deficiencies in the design documents, or tort or on any other ground whatsoever, except to the extent that any such suits, proceedings, actions, demands and claims have arisen due to any negligent act or omission, or breach or default of this Agreement on the part of the Authority Indemnified Persons.

25.2 Indemnity by the Contractor

25.2.1 Without limiting the generality of Clause 25.1, the Contractor shall fully indemnify, hold harmless and defend the Authority and the Authority Indemnified Persons from and against any and all loss and/or damages arising out of or with respect to:

- (a) failure of the Contractor to comply with Applicable Laws and Applicable Permits;
- (b) payment of taxes required to be made by the Contractor in respect of the income or other taxes of the Sub-contractors, suppliers and representatives; or
- (c) non-payment of amounts due as a result of Materials or services furnished to the Contractor or any of its Sub-contractors which are payable by the Contractor or any of its Sub-contractors.

25.2.2 Without limiting the generality of the provisions of this Article 25, the Contractor shall fully indemnify, hold harmless and defend the Authority Indemnified Persons from and against any and all suits, proceedings, actions, claims, demands, liabilities and damages which the Authority Indemnified Persons may hereafter suffer, or pay by reason of any demands, claims, suits or proceedings arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the Contractor or by the Sub-contractors in performing the Contractor's obligations or in any way incorporated in or related to the Project. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, the Contractor shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the revocation or suspension of the injunction or restraint order. If, in any such suit, action, claim or proceedings, the Project, or any part thereof or comprised therein, is held to constitute an infringement and its use is permanently enjoined, the Contractor shall promptly make every reasonable effort to secure for the Authority a licence, at no cost to the Authority, authorising continued use of the infringing work. If the Contractor is unable to secure such licence within a reasonable time, the Contractor shall, at its own expense, and without impairing the Specifications and Standards, either replace the affected work, or part, or process thereof with non-infringing work or part or process, or modify the same so that it becomes non-infringing.

25.3 Notice and contest of claims

In the event that either Party receives a claim or demand from a third party in respect of which it is entitled to the benefit of an indemnity under this Article 25 (the "Indemnified Party") it shall notify the other Party (the "Indemnifying Party") within 15 (fifteen) days of receipt of the claim or demand and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim or demand, it may conduct the proceedings in the name of the Indemnified Party, subject to the Indemnified Party being secured against any costs involved, to its reasonable satisfaction.

25.4 Defence of claims

- 25.4.1 The Indemnified Party shall have the right, but not the obligation, to contest, defend and litigate any claim, action, suit or proceeding by any third party alleged or asserted against such Party in respect of, resulting from, related to or arising out of any matter for which it is entitled to be indemnified hereunder, and reasonable costs and expenses thereof shall be indemnified by the Indemnifying Party. If the Indemnifying Party acknowledges in writing its obligation to indemnify the Indemnified Party in respect of loss to the full extent provided by this Article 25, the Indemnifying Party shall be entitled, at its option, to assume and control the defence of such claim, action, suit or proceeding, liabilities, payments and obligations at its expense and through the counsel of its choice; provided it gives prompt notice of its intention to do so to the Indemnified Party and reimburses the Indemnified Party for the reasonable cost and expenses incurred by the Indemnified Party prior to the assumption by the Indemnifying Party of such defence. The Indemnifying Party shall not be entitled to settle or compromise any claim, demand, action, suit or proceeding without the prior written consent of the Indemnified Party, unless the Indemnifying Party provides such security to the Indemnified Party as shall be reasonably required by the Indemnified Party to secure the loss to be indemnified hereunder to the extent so compromised or settled.
- 25.4.2 If the Indemnifying Party has exercised its rights under Clause 25.3, the Indemnified Party shall not be entitled to settle or compromise any claim, action, suit or proceeding without the prior written consent of the Indemnifying Party (which consent shall not be unreasonably withheld or delayed).
- 25.4.3 If the Indemnifying Party exercises its rights under Clause 25.3, the Indemnified Party shall nevertheless have the right to employ its own counsel, and such counsel may participate in such action, but the fees and expenses of such counsel shall be at the expense of the Indemnified Party, when and as incurred, unless:
- (a) the employment of counsel by such party has been authorised in writing by the Indemnifying Party; or
 - (b) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the conduct of the defence of such action; or
 - (c) the Indemnifying Party shall not, in fact, have employed independent counsel reasonably satisfactory to the Indemnified Party, to assume the defence of such action and shall have been so notified by the Indemnified Party; or
 - (d) the Indemnified Party shall have reasonably concluded and specifically notified the Indemnifying Party either:

- (i) that there may be specific defences available to it which are different from or additional to those available to the Indemnifying Party; or
- (ii) that such claim, action, suit or proceeding involves or could have a material adverse effect upon it beyond the scope of this Agreement: Provided that if Sub-clauses (b), (c) or (d) of this Clause 25.4.3 shall be applicable, the counsel for the Indemnified Party shall have the right to direct the defence of such claim, demand, action, suit or proceeding on behalf of the Indemnified Party, and the reasonable fees and disbursements of such counsel shall constitute legal or other expenses hereunder.

25.5 No consequential claims

Notwithstanding anything to the contrary contained in this Article 25, the indemnities herein provided shall not include any claim or recovery in respect of any cost, expense, loss or damage of an indirect, incidental or consequential nature, including loss of profit, except as expressly provided in this Agreement.

25.6 Survival on Termination

The provisions of this Article 25 shall survive Termination.

ARTICLE 26

26 DISPUTE RESOLUTION

26.1 Dispute Resolution

- 26.1.1 Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the "Dispute") shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure set forth in Clause 26.2.
- 26.1.2 The Parties agree to use their best efforts for resolving all Disputes arising under or in respect of this Agreement promptly, equitably and in good faith, and further agree to provide each other with reasonable access during normal business hours to all non-privileged records, information and data pertaining to any Dispute.

26.2 Conciliation

In the event of any Dispute between the Parties, either Party may call upon the Authority's Engineer, or such other person as the Parties may mutually agree upon (the "Conciliator") to mediate and assist the Parties in arriving at an amicable settlement thereof. Failing mediation by the Conciliator or without the intervention of the Conciliator, either Party may require such Dispute to be referred to the Managing Director ,Greater Visakhapatnam Smart City Corporation Limited (GVSCCL), Visakhapatnam and the Chairman of the Board of Directors of the Contractor for amicable settlement, and upon such reference, the said persons shall meet no later than 7 (seven) business days from the date of reference to discuss and attempt to amicably resolve the Dispute. If such meeting does not take place within the 7 (seven) business day period or the Dispute is not amicably settled within 15 (fifteen) days of the meeting or the Dispute is not resolved as evidenced by the signing of written terms of settlement within 30 (thirty) days of the notice in writing referred to in Clause 26.1.1 or such longer period as may be mutually agreed by the Parties, either Party may refer the Dispute to arbitration in accordance with the provisions of Clause 26.3.

26.3 Arbitration

- 26.3.1 Any Dispute which is not resolved amicably by conciliation, as provided in Clause 26.2, shall be finally decided by reference to arbitration by a Board of Arbitrators appointed in accordance with Clause 26.3.2. Such arbitration shall be held in accordance with the Arbitration and Conciliation Act, 1996 of India. The venue of such arbitration shall be Visakhapatnam, and the language of arbitration proceedings shall be English.
- 26.3.2 There shall be a Board of three arbitrators, of whom each Party shall select one, and the third arbitrator shall be appointed by the two arbitrators so selected and in the event of disagreement between the two arbitrators, the appointment shall be made in accordance with the Rules.
- 26.3.3 The arbitrators shall make a reasoned award (the "Award"). Any Award made in any arbitration held pursuant to this Article 26 shall be final and binding on the Parties as from the date it is made, and the Contractor and the Authority agree and undertake to carry out such Award without delay.
- 26.3.4 The Contractor and the Authority agree that an Award may be enforced against the Contractor and/or the Authority, as the case may be, and their respective assets wherever situated.
- 26.3.5 This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder.
- 26.3.6 In the event the Party against whom the Award has been granted challenges the Award for any reason in a court of law, it shall make an interim payment to the other Party for an amount equal to 75% (seventy five per cent) of the Award, pending final settlement of the Dispute. The aforesaid amount shall be paid forthwith upon furnishing an irrevocable Bank Guarantee for a sum equal to 120 % (one hundred and twenty per cent) of the aforesaid amount. Upon final settlement of the Dispute, the aforesaid interim payment shall be adjusted and any balance amount due to be paid or returned, as the case may be, shall be paid or returned with interest calculated at the rate of 10% (ten per cent) per annum from the date of interim payment to the date of final settlement of such balance.

26.4 Adjudication by Regulatory Authority, Tribunal or Commission

In the event of constitution of a statutory regulatory authority, tribunal or commission, as the case may be, with powers to adjudicate upon disputes between the Contractor and the Authority, all Disputes arising after such constitution shall, instead of reference to arbitration under Clause 26.3, be adjudicated upon by such regulatory authority,

tribunal or commission in accordance with the Applicable Law and all references to Dispute Resolution Procedure shall be construed accordingly. For the avoidance of doubt, the Parties hereto agree that the adjudication hereunder shall not be final and binding until an appeal against such adjudication has been decided by an appellate tribunal or court of competent jurisdiction, as the case may be, or no such appeal has been preferred within the time specified in the Applicable Law.

ARTICLE 27

27 MISCELLANEOUS

27.1 Governing law and jurisdiction

This Agreement shall be construed and interpreted in accordance with and governed by the laws of Andhra Pradesh/ India, and the courts at Visakhapatnam shall have exclusive jurisdiction over matters arising out of or relating to this Agreement.

27.2 Waiver of immunity

Each Party unconditionally and irrevocably:

- (a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;
- (b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Party with respect to its assets;
- (c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and
- (d) consents generally in respect of the enforcement of any judgement or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgement that may be made or given in connection therewith).

27.3 Delayed payments

The Parties hereto agree that payments due from one Party to the other Party under the provisions of this Agreement shall be made within the period set forth therein, and if no such period is specified, within 30 (thirty) days of receiving a demand along with the necessary particulars. In the event of delay beyond such period, the defaulting Party shall pay interest for the period of delay calculated at a rate equal to Base Rate plus 2 (two) percent, calculated at quarterly rests, and recovery thereof shall be without prejudice to the rights of the Parties under this Agreement including Termination thereof.

27.4 Waiver

27.4.1 Waiver, including partial or conditional waiver, by either Party of any default by the other Party in the observance and performance of any provision of or obligations under this Agreement:-

- (a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;
- (b) shall not be effective unless it is in writing and executed by a duly authorised representative of the Party; and
- (c) shall not affect the validity or enforceability of this Agreement in any manner.

27.4.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation thereunder nor time or other indulgence granted by a Party to the other Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

27.5 Liability for review of Documents and Drawings

Except to the extent expressly provided in this Agreement:

- (a) no review, comment or approval by the Authority or the Authority's Engineer of any Document or Drawing submitted by the Contractor nor any observation or inspection of the construction, or maintenance of the Project nor the failure to review, approve, comment, observe or inspect hereunder shall relieve or absolve the Contractor from its obligations, duties and liabilities under this Agreement, the Applicable Laws and Applicable Permits; and
- (b) the Authority shall not be liable to the Contractor by reason of any review, comment, approval, observation or inspection referred to in Sub-clause (a) above.

27.6 Exclusion of implied warranties etc.

This Agreement expressly excludes any warranty, condition or other undertaking implied at law or by custom or otherwise arising out of any other agreement between the Parties or any representation by either Party not contained in a binding legal agreement executed by both Parties.

27.7 Survival

27.7.1 Termination shall:

- (a) not relieve the Contractor or the Authority, as the case may be, of any obligations hereunder which expressly or by implication survive Termination hereof; and
- (b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such Termination or arising out of such Termination.

27.7.2 All obligations surviving Termination/ final settlements shall only survive for a period of 3 (three) years following the date of such Termination/ final settlements.

27.8 Entire Agreement

This Agreement and the Schedules together constitute a complete and exclusive statement of the terms of the agreement between the Parties on the subject hereof, and no amendment or modification hereto shall be valid and effective unless such modification or amendment is agreed to in writing by the Parties and duly executed by persons especially empowered in this behalf by the respective Parties. All prior written or oral understandings, offers or other communications of every kind pertaining to this Agreement are abrogated and withdrawn. For the avoidance of doubt, the Parties hereto agree that any obligations of the Contractor arising from the Request for Qualification or Request for Proposals, as the case may be, shall be deemed to form part of this Agreement and treated as such.

27.9 Severability

If for any reason whatever, any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to the Dispute Resolution Procedure set forth under this Agreement or otherwise.

27.10 No partnership

This Agreement shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party, and neither Party shall have any right, power or authority to

enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

27.11 Third parties

This Agreement is intended solely for the benefit of the Parties, and their respective successors and permitted assigns, and nothing in this Agreement shall be construed to create any duty to, standard of care with reference to, or any liability to, any person not a Party to this Agreement.

27.12 27.12 Successors and assigns

This Agreement shall be binding upon, and inure to the benefit of the Parties and their respective successors and permitted assigns.

27.13 Notices

Any notice or other communication to be given by any Party to the other Party under or in connection with the matters contemplated by this Agreement shall be in writing and shall:

- (a) in the case of the Contractor, be given by facsimile or e-mail and by letter delivered by hand to the address given and marked for attention of the person set out below or to such other person as the Contractor may from time to time designate by notice to the Authority; provided that notices or other communications to be given to an address within Andhra Pradesh may, if they are subsequently confirmed by sending a copy thereof by registered acknowledgement due, air mail or by courier, be sent by facsimile or e-mail to the person as the Contractor may from time to time designate by notice to the Authority; [***]
- (b) in the case of the Authority, be given by facsimile or e-mail and by letter delivered by hand and be addressed to the Authority with a copy delivered to the Authority Representative or such other person as the Authority may from time to time designate by notice to the Contractor; provided that if the Contractor does not have an office in Visakhapatnam it may send such notice by facsimile or e-mail and by registered acknowledgement due, air mail or by courier; and
- (c) any notice or communication by a Party to the other Party, given in accordance herewith, shall be deemed to have been delivered when in the normal course of post it ought to have been delivered and in all other cases, it shall be deemed to have been delivered on the actual date and time of delivery; provided that in the case of facsimile or e-mail, it shall be deemed to have been delivered on the working day following the date of its delivery.

27.14 Language

All notices required to be given by one Party to the other Party and all other communications, Documentation and proceedings which are in any way relevant to this Agreement shall be in writing and in English language.

27.15 Counterparts

This Agreement may be executed in two counterparts, each of which, when executed and delivered, shall constitute an original of this Agreement.

27.16 Confidentiality

The Parties shall treat the details of this Agreement as private and confidential, except to the extent necessary to carry out obligations under it or to comply with Applicable Laws. The Contractor shall not publish, permit to be published, or disclose any particulars of the Works in any trade or technical paper or elsewhere without the previous agreement of the Authority.

27.17 Copyright and Intellectual Property rights

27.17.1 As between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor. The Contractor shall be deemed (by signing this Agreement) to give to the Authority a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall:

- (a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,
- (b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and
- (c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by this Agreement, including replacements of any computers supplied by the Contractor:

27.17.2 The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Authority for purposes other than those permitted under this Clause 27.17.

27.17.3 As between the Parties, the Authority shall retain the copyright and other intellectual property rights in this Agreement and other documents made by (or on behalf of) the Authority. The Contractor may, at its cost, copy, use, and obtain communication of these documents for the purposes of this Agreement. They shall not, without the Authority's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the contract.

27.18 Limitation of Liability

27.18.1 Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with this Agreement, save and except as provided under Articles 23 and 25.

27.18.2 The total liability of one Party to the other Party under and in accordance with the provisions of this Agreement, save and except as provided in Articles 23 and 25, shall not exceed the Contract Price. For the avoidance of doubt, this Clause shall not limit the liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

ARTICLE 28

28 DEFINITIONS

28.1 Definitions

In this Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them:

“Accounting Year” means the financial year commencing from the first day of April of any calendar year and ending on the thirty-first day of March of the next calendar year;

“Advance Payment” shall have the meaning set forth in Clause 19.2;

“Affected Party” shall have the meaning set forth in Clause 21.1;

“Affiliate” means, in relation to either Party {and/or Members}, a person who controls, is controlled by, or is under the common control with such Party {or Member} (as used in this definition, the expression

“control” means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person, whether by operation of law or by contract or otherwise);

“Agreement” means this Agreement, its Recitals, the Schedules hereto and any amendments thereto made in accordance with the provisions contained in this Agreement;

“Applicable Laws” means all laws, brought into force and effect by GOI or the State Government including rules, regulations and notifications made thereunder, and judgements, decrees, injunctions, writs and orders of any court of record, applicable to this Agreement and the exercise, performance and discharge of the respective rights and obligations of the Parties hereunder, as may be in force and effect during the subsistence of this Agreement; **“Applicable Permits”** means all clearances, licences, permits, authorisations, no objection certificates, consents, approvals and exemptions required to be obtained or maintained under Applicable Laws in connection with the construction, operation and maintenance of the Project during the subsistence of this Agreement;

“Appointed Date” means that date which is later of the 15th day of the date of this Agreement, the date on which the Contractor has delivered the Performance Security in accordance with the provisions of Article 7 and the date on which the Authority has provided the Right of Way on no less than 40% (Forty per cent) of the total length of Project;

“Arbitration Act” means the Arbitration and Conciliation Act, 1996 and shall include modifications to or any re-enactment thereof, as in force from time to time; **“Authority”** shall have the meaning attributed thereto in the array of Parties hereinabove as set forth in the Recitals;

“Authority Default” shall have the meaning set forth in Clause 23.2;

“Authority’s Engineer” shall have the meaning set forth in Clause 18.1; **“Authority Representative”** means such person or persons as may be authorised in writing by the Authority to act on its behalf under this Agreement and shall include any person or persons having authority to exercise any rights or perform and fulfil any obligations of the Authority under this Agreement; **“Bank”** means a Nationalised Bank in India;

“Base Rate” means the floor rate of interest announced by the State Bank of India for all its lending operations;

“Base Date” means the last date of that calendar month, which date precedes the Bid Due Date by at least 28 (twenty eight) days;

“Bid” means the documents in their entirety comprised in the bid submitted by the [selected bidder/Consortium] in response to the Request for Proposals in accordance with the provisions thereof;

“Bid Security” means the bid security provided by the Contractor to the Authority in accordance with the Request for Proposal, and which is to remain in force until substituted by the Performance Security;

“Change in Law” means the occurrence of any of the following after the Base Date:

- (a) the enactment of any new Indian law;
- (b) the repeal, modification or re-enactment of any existing Indian law;
- (c) the commencement of any Indian law which has not entered into effect until the Base Date;
- (d) a change in the interpretation or application of any Indian law by a judgement of a court of record which has become final, conclusive and binding, as compared to such interpretation or application by a court of record prior to the Base Date; or
- (e) Deleted

“Change of Scope” shall have the meaning set forth in Article 13;

“Change of Scope Notice” shall have the meaning set forth in Clause 13.2.1;

“Change of Scope Order” shall have the meaning set forth in Clause 13.2.4;

“Completion Certificate” shall have the meaning set forth in Clause 12.4;

“Consortium” means the consortium of entities which have formed a joint venture for implementation of this Project; **“Construction”** shall have the meaning set forth in Clause 1.2.1 (f);

“Construction Period” means the period commencing from the Appointed Date and ending on the date of the Completion Certificate; **“Contract Price”** means the amount specified in Clause 19.1.1;

“Contractor” shall have the meaning attributed thereto in the array of Parties hereinabove as set forth in the Recitals; **“Contractor Default”** shall have the meaning set forth in Clause 23.1;

“Cure Period” means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Party responsible for such breach or default and shall:

(a) commence from the date on which a notice is delivered by one Party to the other Party asking the latter to cure the breach or default specified in such notice;

(b) not relieve any Party from liability to pay Damages or compensation under the provisions of this Agreement; and

(c) not in any way be extended by any period of Suspension under this Agreement; provided that if the cure of any breach by the Contractor requires any reasonable action by the Contractor that must be approved by the Authority or the Authority's Engineer hereunder, the applicable Cure Period shall be extended by the period taken by the Authority or the Authority's Engineer to accord their approval;

“Damages” shall have the meaning set forth in paragraph (w) of Clause 1.2.1;

“Defect” means any defect or deficiency in Construction of the Works or any part thereof, which does not conform with the Specifications and Standards, and in the case of Maintenance, means any defect or deficiency which is specified in Schedule-E;

“Defects Liability Period” shall have the meaning set forth in Clause 17.1;

“Dispute” shall have the meaning set forth in Clause 26.1.1;

“Dispute Resolution Procedure” means the procedure for resolution of Disputes set forth in Article 26;

“Drawings” means all of the drawings, calculations and documents pertaining to the Project as set forth in Schedule-I, and shall include ‘as built’ drawings of the Project;

“Document” or “Documentation” means documentation in printed or written form, or in tapes, discs, drawings, computer programmes, writings, reports, photographs, films, cassettes, or expressed in any other written, electronic, audio or visual form;

“Emergency” means a condition or situation that is likely to endanger the safety or security of the individuals on or about the Project, including Users thereof, or which poses an immediate threat of material damage to any of the Project Assets;

“Encumbrances” means, in relation to the Project, any encumbrances such as mortgage, charge, pledge, lien, hypothecation, security interest, assignment, privilege or priority of any kind having the effect of security or other such obligations, and shall include any designation of loss payees or beneficiaries or any similar arrangement under any

insurance policy pertaining to the Project, where applicable herein but excluding utilities referred to in Clause 9.1;

"EPC" means engineering, procurement and construction;

"Final Payment Certificate" shall have the meaning set forth in Clause 19.15.1;

"Final Payment Statement" shall have the meaning set forth in Clause 19.13.1;

"Force Majeure" or **"Force Majeure Event"** shall have the meaning ascribed to it in Clause 21.1;

"GAD" or **"General Arrangement Drawings"** shall have the meaning set forth in Clause 4.1.3 (b);

"GOI" or **"Government"** means the Government of India;

"Good Industry Practice" means the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced contractor engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Contractor in accordance with this Agreement, Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner

"Government Instrumentality" means any department, division or sub-division of the Government or the State Government and includes any commission, board, authority, agency or municipal and other local authority or statutory body including panchayat under the control of the Government or the State Government, as the case may be, and having jurisdiction over all or any part of the Project or the performance of all or any of the services or obligations of the Contractor under or pursuant to this Agreement;

"IRC" means the Indian Roads Congress;

"Indemnified Party" means the Party entitled to the benefit of an indemnity pursuant to Article 25;

"Indemnifying Party" means the Party obligated to indemnify the other Party pursuant to Article 25;

"Indirect Political Event" shall have the meaning set forth in Clause 21.3;

"Insurance Cover" means the aggregate of the maximum sums insured under the insurances taken out by the Contractor pursuant to Article 20, and includes all insurances required to be taken out by the Contractor under Clauses 20.1 and 20.9 but not actually taken, and when used in the context of any act or event, it shall mean the aggregate of the maximum sums insured and payable or deemed to be insured and payable in relation to such act or event;

"Intellectual Property" means all patents, trademarks, service marks, logos, get-up, trade names, internet domain names, rights in designs, blue prints, programmes and manuals, drawings, copyright (including rights in computer software), database rights, semi-

conductor, topography rights, utility models, rights in know-how and other intellectual property rights, in each case whether registered or unregistered and including applications for registration, and all rights or forms of protection having equivalent or similar effect anywhere in the world;

“Interim Payment Certificate” or “IPC” means the interim payment certificate issued by the Authority’s Engineer for payment to the Contractor in respect of Contractor’s claims for payment raised in accordance with the provisions of this Agreement;

{“Lead Member” shall, in the case of a consortium, mean the member of such consortium who shall have the authority to bind the contractor and each member of the Consortium; and shall be deemed to be the Contractor for the purposes of this Agreement;}

§This definition may be omitted if the Contractor is not a Consortium.

“LOA” or “Letter of Acceptance” means the letter of acceptance referred to in Recital (E);

“Maintenance” means the maintenance of the Project as set forth in Article 14 for the period specified therein;

“Maintenance Inspection Report” shall have the meaning set forth in Clause 15.2.1;

“Maintenance Manual” shall have the meaning ascribed to it in Clause 10.7;

“Maintenance Programme” shall have the meaning set forth in Clause 14.3;

“Maintenance Period” shall have the meaning set forth in Clause 14.1.1;

“Maintenance Requirements” shall have the meaning set forth in Clause 14.2;

“Major Bridge” means a bridge having a total length of more than 60 (sixty) metres between the inner faces of the dirt walls as specified in IRC:5-1998;

“Manual” shall mean the Manual of Standards and Specifications for Two Laning of Highways (IRC:SP:73-2007);

“Material Adverse Effect” means a material adverse effect of any act or event on the ability of either Party to perform any of its obligations under and in accordance with the provisions of this Agreement and which act or event causes a material financial burden or loss to either Party;

“Materials” are all the supplies used by the Contractor for incorporation in the Works or for the maintenance of the Project;

“Monthly Maintenance Statement” shall have the meaning set forth in Clause 19.6.1;

“MORTH” means the Ministry of Road Transport and Highways or any substitute thereof dealing with Highways;

“Non-Political Event” shall have the meaning set forth in Clause 21.2;

“Parties” means the parties to this Agreement collectively and “Party” shall mean any of the parties to this Agreement individually;

“Performance Security” shall have the meaning set forth in Clause 7.1;

“Plant” means the apparatus and machinery intended to form or forming part of the Works;

“Political Event” shall have the meaning set forth in Clause 21.4;

“Programme” shall have the meaning set forth in Clause 10.1.3;

“Project” means the construction and maintenance of the Project in accordance with the provisions of this Agreement, and includes all works, services and equipment relating to or in respect of the Scope of the Project;

“Project Assets” means all physical and other assets relating to (a) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road over-bridges, drainage works, traffic signals, sign boards, kilometre-stones, [toll plaza(s)], electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; and (b) Project Facilities situated on the Site;

“Project Completion Date” means the date on which the Provisional Certificate is issued and in the event no Provisional Certificate is issued, the date on which the Completion Certificate is issued;

“Project Completion Schedule” means the progressive Project Milestones set forth in Schedule-J for completion of the Project on or before the Scheduled Completion Date;

“Project Facilities” means all the amenities and facilities situated on the Site, as described in Schedule-C;

“Project” means the Site comprising the 4.8 km stretch from Vani Vihar Square to Shishu Bhawan Square, access roads on all sides up to 100 meters at intersections amounting to a total of 5.5 km as per direction of Authority Engineer, all Project Assets, and its subsequent development and augmentation in accordance with this Agreement;

“Project Milestone” means the project milestone set forth in Schedule-J;

“Proof Consultant” shall have the meaning set forth in Clause 10.2.2;

“Provisional Certificate” shall have the meaning set forth in Clause 12.2;

“Punch List” shall have the meaning set forth in Clause 12.2.1;

“Quality Assurance Plan” or **“QAP”** shall have the meaning set forth in Clause 11.2;

“Re.”, “Rs.” or “Rupees” or “Indian Rupees” means the lawful currency of the Republic of India;

“Request for Proposals” or **“RFP”** shall have the meaning set forth in article ‘D’;

“Request for Qualification” or **“RFQ”** shall have the meaning set forth in article ‘C’;

“Retention Money” shall have the meaning set forth in Clause 7.5.1;

“Right of Way” means the constructive possession of the Site free from encroachments and encumbrances, together with all way leaves, easements, unrestricted access and

other rights of way, howsoever described, necessary for construction and maintenance of the Project in accordance with this Agreement;

"Safety Consultant" shall have the meaning set forth in Clause 10.1.5;

"Scheduled Completion Date" shall be the date set forth in Clause 10.3.1;

"Scope of the Project" shall have the meaning set forth in Clause 2.1;

"Section" means a part of the Project;

"Site" shall have the meaning set forth in Clause 8.1;

"Specifications and Standards" means the specifications and standards relating to the quality, quantity, capacity and other requirements for the Project, as set forth in Schedule-D, and any modifications thereof, or additions thereto, as included in the design and engineering for the Project submitted by the Contractor to, and expressly approved by, the Authority;

"Stage Payment Statement" shall have the meaning set forth in Clause 19.4;

"Structures" means an elevated road or a flyover, as the case may be;

"Sub-contractor" means any person or persons to whom a part of the Works or the Maintenance has been subcontracted by the Contractor and the permitted legal successors in title to such person, but not an assignee to such person;

"Suspension" shall have the meaning set forth in Article 22;

"Taxes" means any Indian taxes including excise duties, customs duties, value added tax, sales tax, local taxes, cess and any impost or surcharge of like nature (whether Central, State or local) on the goods, Materials, equipment and services incorporated in and forming part of the Project charged, levied or imposed by any Government Instrumentality, but excluding any interest, penalties and other sums in relation thereto imposed on any account whatsoever. For the avoidance of doubt, Taxes shall not include taxes on corporate income;

"Termination" means the expiry or termination of this Agreement;

"Termination Notice" means the communication issued in accordance with this Agreement by one Party to the other Party terminating this Agreement;

"Termination Payment" means the amount payable by either Party to the other upon Termination in accordance with Article 23;

"Terms of Reference" or **"TOR"** shall have the meaning set forth in Clause 18.2.1;

"Tests" means the tests set forth in Schedule-K to determine the completion of Works in accordance with the provisions of this Agreement;

"Time Extension" shall have the meaning set forth in Clause 10.5.1;

"User" means a person who travels or intends to travel on the Project or any part thereof in/on any vehicle;

"Valuation of Unpaid works" shall have the meaning set forth in Clause 23.5.1;

“Works” means all works including survey and investigation, design, engineering, procurement, construction, Plant, Materials, maintenance, temporary works and other things necessary to complete the Project in accordance with this Agreement; and

“WPI” means the wholesale price index for various commodities as published by the Ministry of Commerce and Industry, GOI and shall include any index which substitutes the WPI, and any reference to WPI shall, unless the context otherwise requires, be construed as a reference to the WPI published for the period ending with the preceding month.

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED
THIS AGREEMENT AS OF THE DAY, MONTH AND YEAR FIRST ABOVE
WRITTEN.

SIGNED, SEALED AND
DELIVERED

For and on behalf of

[MANAGING DIRECTOR, GVSCCL, VISAKHAPATNAM,
ANDRA PRADESH] by:

SIGNED, SEALED AND
DELIVERED

For and on behalf of

THE CONTRACTOR by:

(Signature)

(Name)

(Designation)

(Signature)

(Name)

(Designation)

In the presence of:

- 1.
- 2.

{COUNTERSIGNED and accepted by:

Name and particulars of other members of the Consortium}

SCHEDULES

SCHEDULE A

SITE OF THE PROJECT

1 The Site

- 1.1 Site of this project shall include the land, buildings, structures and road works are a part of the ROW. The Chainage wise length of the roads is as described in Annex-I of this Schedule-A.
- 1.2 The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.
- 1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.
- 1.4 The alignment plans of the Project are specified in Annex-III.
- 1.5 The status of the environment clearances and other State Government and Local Body Clearances to be obtained is given in Annex IV.

2 PROJECT BACKGROUND

2.1 GENERAL

2.1.1 Background

With the India Smart Cities Challenge, the Government of India took the first step towards realising its vision of building 100 smart cities in the country. As part of the India Smart Cities Challenge, Visakhapatnam (Vizag) is one of the cities that was selected amongst top 20, in a nationwide competition between 100 cities (ranked 8th).

Vizag is now working on an implementation plan to convert the Smart City Proposal (SCP) ideas into reality, beginning with retrofitting a designated area within the city known as the Area Based Development (ABD) that will catalyse future scalability to entire city.

Vizag is the 5th fastest growth Industrial Metropolis in the Asian subcontinent, largest city in the state of Andhra Pradesh, 3rd largest on east coast of India and has a strong education and health facilities. The Greater Visakhapatnam Municipal Corporation (GVMC) spread is around 625 Sq Km and includes 72 Wards. According to 2011 census, the City's population is around 1.9 million. ABD area is around 6 sq Km with a population of around 80,000. The location map of GVMC and ABD is show in Fig 1 & 2

The Smart City Plan for Vizag revolves around the vision of creating - "**A Resilient and Healthy Metropolis for People**". The city of destiny is envisioned to become a leader in sustainability, healthy living, equality and innovation.

Vizag has shown high vehicle growth rate in recent years (9%) – is envisioned to be the most healthy and livable city in India by 2030 (Strategic focus and blueprint of Vizag Smart City Proposal). Such a strategic focus for Vizag will ensure that it becomes a benchmark city in the country where economic development and healthy living can co-exist.

The modern day lifestyles where all kinds of entertainment is available at a press of a remote or button has resulted in a sedentary lifestyle. The health statistics of Vizag citizens indicate increased number of Life Style diseases like obesity, hyper tension etc. With an emphasis on "Prevention is better than cure", the strategic focus of Vizag is to ensure that its citizens have healthy lifestyle choices; have walkable access to parks/playgrounds/other destinations and walkable streets; have safe mobility choices of walking and cycling - as a result have better air to breathe and livable place to live.

Aligning with the Smart City Vision, Vizag will focus on managing its environment (for example air quality), safety of its citizens especially making streets safe for all citizens, and providing dedicated pedestrian zones to make people healthy since **Walking** is good for **health** and so is **cycling**

Greater Visakhapatnam Municipal Corporation (GVMC) has around 70km of streets within its Area Based Development (ABD).

The employer (Greater Visakhapatnam Smart City Corporation Ltd – GVSCCL) has taken up different projects for implementation. Transforming roads into "Smart Streets" is one such project taken up for implementation. The focus of this RFP is 19.4km of Smart Streets as a pilot project within the Smart City Vizag. The table below illustrates the 16 (sixteen streets) that has been taken up as smart streets. The location map of the Smart Street Project is shown in Fig 1 & 2.

| S.No. | Road Name | Road Length (in Km) |
|-------|--|------------------------|
| 1 | Waltair main Rd | 4.91 |
| 2 | Chinna waltair road | 2.07 |
| 3 | KGH Down (Iepakshi to coastal battery) | 1.08 |
| 4 | KGH Up | 0.45 |
| 5 | Collector office to Nowroji | 0.93 |
| 6 | Zilla parshid Jn to Novotel Via century club | 0.96 |
| 7 | Nowroji Rd | 1.37 |
| 8 | Nowroji to circuit house | 0.80 |
| 9 | Oota gedda road(Nowroji to AIR) | 0.98 |
| 10 | Daspalla hills residential roads | 0.87 |
| 11 | Harbour park | 1.19 |
| 12 | Pandaranga puram Dn | 1.00 |
| 13 | Vuda office Rd | 0.47 |
| 14 | Polamamba temple to beach rd via TB hospital | 0.95 |
| 15 | TB hospital Rd to Pedda waltair | 0.40 |
| 16 | KDPM school to Beach Road | 0.97 |

Figure 1: Map showing location of 16 roads (Smart Streets) in context of GVMC boundary

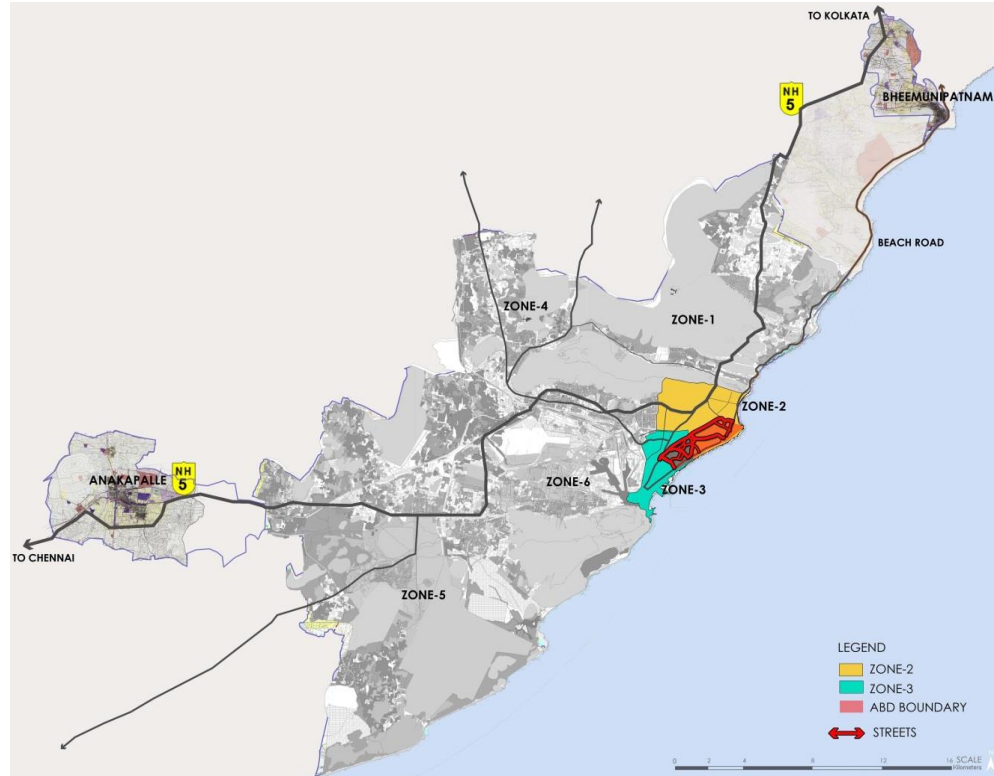
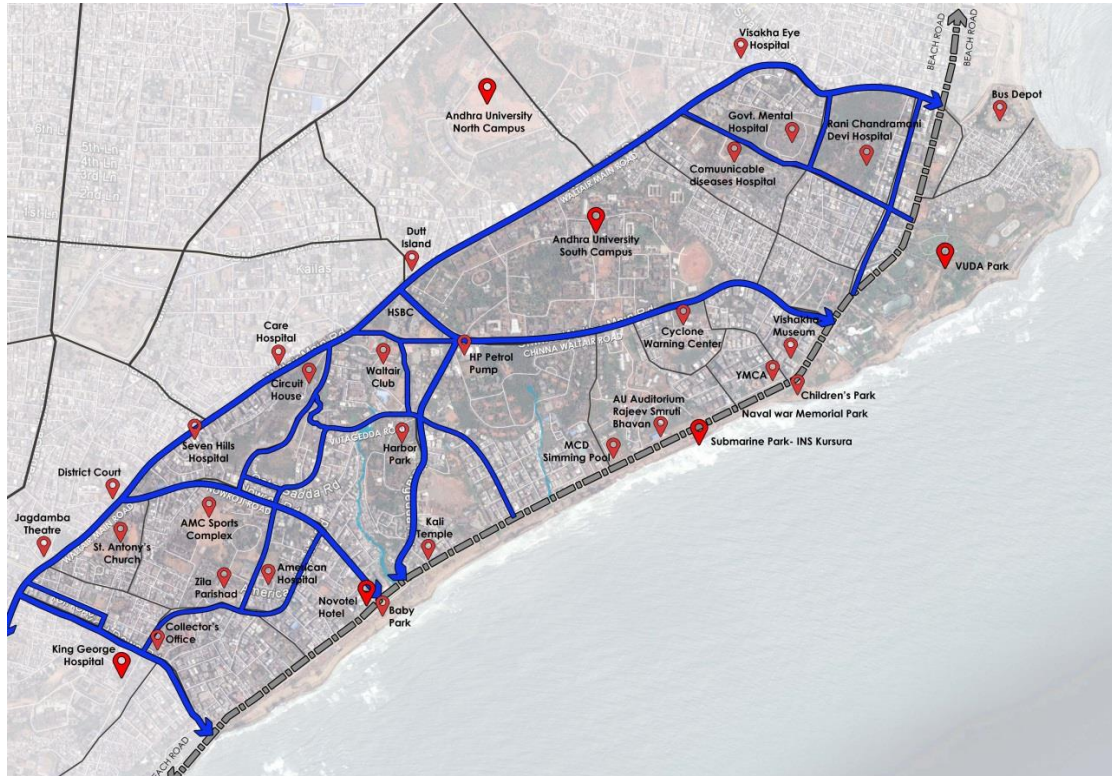


Figure 2: Map showing location of 16 roads (Smart Streets) in context of ABD boundary



public Right of Way (ROW) of the sixteen streets which includes (but is not limited to) – refurbishment of existing carriageway, laying of new footpaths and cycle tracks, external development works for landscape, hardscape, street furniture, lighting, wayfinding and signage, junction geometry improvements.

Smart Streets include **Four Broad Objectives and resultant Outcomes**, namely

OBJECTIVE 1:

- **ROAD DIET & SAFE STREETS:** Also known as lane-width reduction or road re-channelization, is a technique in transportation planning whereby the effective width of the carriageway is reduced in order to achieve systemic improvements.
- **Expected Outcomes** - Streets with clearly demarcated spaces for vehicles, pedestrians, cyclists and dedicated on-street parking that will minimize conflicts between vehicular and pedestrian traffic. Safe streets with shaded walkways will promote walking as a daily activity – encouraging healthy lifestyles

OBJECTIVE 2:

- **RESILIENT STREETS:** Streets with increased green cover through trees, reduced paved surface through increased landscaped areas, and adequate lighting during night through pedestrian lights, and clean public realm through dustbins placed at regular intervals.
- **Expected Outcomes** - Streets where the sidewalks have increased green cover through trees will not only improve air quality, also facilitate temperature reduction and provide shaded areas for comfort of users. Streets with reduced paved surface through increased landscaped areas and pervious surfaces - will reduce urban heat island effect while less expensively manages the flow of stormwater runoff than do concrete sewers. Streets with adequate pedestrian light will provide safe walking experience in night.

OBJECTIVE 3:

- **INCLUSIVE STREETS:** Streets that provide multiple mobility options to its citizens of all age groups and abilities.
- **Expected Outcomes** - Streets that allow and provide multiple mobility options to its citizens including walking, cycling, driving private vehicles and commuting through public transport. Streets with universal accessible design that will allow safe walking experience to all citizens especially elderly and people with special needs.

OBJECTIVE 4:

- **STREETS AS PUBLIC SPACES:** Streets that provide spaces outside our homes for social, cultural or intellectual interactions, to walk or to just breathe fresh air.
- **Expected Outcomes** - Streets should provide dedicated spaces for bus stops, public bicycle sharing system stops, dedicated vending zones, seating areas and walking. Streets that reduces

congestion through replacement of encroachments on streets to its designated areas and achieving low carbon emission.

ANNEXURE I (Schedule A)

Chainage wise road lengths

| Road Name | Chainage's | Length (m) |
|-----------------------------|----------------|-----------------|
| MAIN WALTAIR ROAD | | |
| VIZAG_ROAD_R1A | +0.00 to 1+075 | 960 |
| | | 215.26 |
| VIZAG_ROAD_R1B | +0.00 to 1+061 | 1061.157 |
| VIZAG_ROAD_R2 | +0.00 to 2+715 | 2715.115 |
| | | 4951.532 |
| CHINNA WALTAIR ROAD | | |
| VIZAG_ROAD_R3 | +0.00 to 0+325 | 324.259 |
| VIZAG_ROAD_R4 | +0.00 to 1+757 | 1756.728 |
| | | 2080.987 |
| KGH ROAD | | |
| VIZAG_ROAD_R5 | +0.00 to 1+060 | 360 |
| | | 400 |
| | | 300 |
| | | 1060 |
| NOWJI ROAD | | |
| VIZAG_ROAD_R10 | +0.00 to 1+367 | 700 |
| | | 666.5 |
| | | 1366.5 |
| HORBUR ROAD | | |
| VIZAG_ROAD_R15 | +0.00 to 1+189 | 1188.93 |
| | | |
| | | |
| OTHER INTERNAL ROADS | | |
| VIZAG_ROAD_R6 | +0.00 to 0+444 | 443.565 |
| VIZAG_ROAD_R7 | +0.00 to 0+916 | 916.021 |
| VIZAG_ROAD_R8 | +0.00 to 0+576 | 575.397 |
| VIZAG_ROAD_R9 | +0.00 to 0+373 | 372.457 |
| VIZAG_ROAD_R11 | +0.00 to 0+811 | 540 |
| | | 271 |
| VIZAG_ROAD_R12 | +0.00 to 0+461 | 460.45 |
| VIZAG_ROAD_R13a | +0.00 to 0+170 | 169.167 |
| VIZAG_ROAD_R13b | +0.00 to 0+535 | 534.714 |

| Road Name | Chainage's | Length (m) |
|---------------------|-------------------|-------------------|
| VIZAG_ROAD_R14 | +0.00 to 1+268 | 1267.094 |
| VIZAG_ROAD_R16 | +0.00 to 0+340 | 339.682 |
| VIZAG_ROAD_R17 | +0.00 to 0+460 | 460.085 |
| VIZAG_ROAD_R18 | +0.00 to 1+109.5 | 1109.461 |
| VIZAG_ROAD_R19 | +0.00 to 0+360.5 | 360.295 |
| VIZAG_ROAD_R20a | +0.00 to 0+444.5 | 444.201 |
| VIZAG_ROAD_R20b | +0.00 to 0+504 | 503.85 |
| | | 8767.439 |
| Total Length | | 19415.388 |

*Note – It is the responsibility of the contractor to measure the Complete ROW based on the chainage and identify the location of various existing elements within the ROW.

ANNEXURE II (Schedule A)

Dates for providing Right of Way.

The dates on which the Authority shall provide Right of Way to the Contractor on different stretches of the Site are stated below:

| Sl. No. | Right of Way (as a percentage of length of road) | Date of handover of Right of way |
|---------|---|-------------------------------------|
| 1 | 15% of the length of project | Within 60 days from appointed date |
| 2 | 30% of the length of project | Within 180 days from appointed date |
| 3 | 30% of the length of project | Within 360 days from appointed date |
| 4 | 25% of the length of project | Within 540 days from appointed date |

Note :

1. The total length of the project will be handed over to the contractor within 180 days from the appointed date for the design and approval.
2. Site will be handed over to the contractor for construction activity after the necessary approval and the clearance from the Authority.

ANNEXURE III (Schedule A)

Alignment Plans

The existing center-line alignment is indicated in the existing survey drawing set as part of the Part III of this document. The alignment details are available in the form of an ACAD survey drawing which forms a part of the RFP package.

ANNEXURE IV (Schedule A)

Environment clearances required from relevant authorities.

| Sr.no | Description | Department |
|-------|--|--|
| 1. | Permission for cutting of trees, if required | Environmental Clearance Application, Ministry of Environment and Forest , Central Govt. (MoEF) |

SCHEDULE B – DEVELOPMENT OF THE PROJECT

1. Development of the Project

Development of the Project shall include design and construction of the Project as described in this Schedule-B and in Schedule-C.

2. Redevelopment and Streetscape Enhancements

Redevelopment and streetscape enhancements shall include Streetscape Design, Beautification, Landscaping, Intersection Redesign, and Infrastructure Upgrades of the Project Site as described in Annex-I of this Schedule-B and in Schedule-C.

3. Specifications and Standards

The Project shall be designed and constructed in conformity with the Specifications and Standards specified in Annex-I of Schedule-D.

DESIGN PARAMETERS – AREA-WISE

1.1.1. SCOPE

The section provides the necessary minimum “Design Parameters” for Design layout and Implementation of a “SMART STREET” in the ABD area of Vishakapatnam Smart City.

1.1.2. LIST OF RELEVANT DOCUMENTS

This specification to be read in conjunction with:

Indicative concept Design Drawings package (Landscape & allied services) in **SCHEDULE-I** or revisions issued thereafter;

Tables (Table of Finishes, Table of Furniture, Fittings & Fixtures, Table of Planting items, Table of Signage & Road Fittings, and Table of Excluded Items) as listed in **SCHEDULE C-** Project Facilities or revisions issued thereafter;

Relevant Indian Standards as listed in “**Schedule D , Subhead 1.2** General Requirements, **Section 1.2.8.** List of standards”;

Note: If work item is not included in Indian Standards, appointed contractor should refer to relevant international standard (BS or equivalent). This is to be approved by Client’s representative prior to commencing any works on site;

Other documents – any documents not included above but considered as required to prepare a price for the works and relevant to the tender process.

Note: Drawings take precedence over specifications and other documents.

1.1.3. Table of Design Parameters

| S.No. | Area/ Location | Employer's Requirements- Design parameter |
|-------|---------------------------------------|--|
| 1. | Carriageway & Traffic Island & Median | <p>ROAD DIET</p> <ul style="list-style-type: none"> • Equitable distribution of road space for pedestrians, cycles and cars. • Reduction in traffic lane widths in order to prioritize pedestrian movement and right of way. Reduction in Lane width from 3.5m to 3.2m (as per IRC code). • Road scarification and laying pavement correction course with necessary binder coat for maintain 2.5% cross slope both side of the road . • Bituminous concrete Top surface for throughout the road stretch. • Maintain Super-elevation at curve as per IRC standard in urban roads. • Design Speed: (Design guidelines reference IRC-86, 1983) The sub arterial road has a speed of 60 km/hr. as per the IRC code. The design speed for this road has been proposed to be 30km/hr for increased pedestrian safety. • Road lane marking & Junction Marking as per IRC Standard and reference typical drawing. • Road Safety furniture as per standard Practice – Rubble speed breaker, Solar stud, median reflector, Solar Blinkers and other safety related items as per material specification & drawing. • Junction Island geometry design as per IRC & as per drawings with 300mm raised kerb above ground. • Reduction in traffic speeds by introducing traffic calming measures. • Designing adequate road crossings with blinkers/flashing information elements and visible signage. <p>PEDESTRIAN CROSSINGS & RAISED TABLE-TOPS</p> <ul style="list-style-type: none"> • Crosswalks / Table tops: (Design guidelines reference IRC-103, 2012) Raised pedestrian crossings/table tops to be introduced at strategic locations and intersections, for the ease of cyclists and pedestrian crossings respectively at 120 Location as per drawings. - Recommended width for crossing: 3.0m (pedestrian) & |

| | | |
|----|--|--|
| | | <p>1.2m (cyclists).</p> <ul style="list-style-type: none"> - Recommended slope of entrance ramps: 1:10 with 10 kph target speed for motorized traffic. • Pedestrian crossings recommended every 150m distance (maximum), regardless of median openings. • Ensuring a “barrier-free” access with ramps at a reasonable grade or level grade to facilitate easy crossing for all including wheelchair users, people pushing strollers, bicyclists, and others. • Other key recommendations include: <ul style="list-style-type: none"> - Dedicated crossing for each mode of transport to minimise conflicts. - Pedestrian refuge islands. - Geometric features such as Kerb extensions/bulb-outs as traffic calming measures. - Bollards. - <p>MEDIAN</p> <ul style="list-style-type: none"> • Retain Existing median as per current situation. • Proposed median at some location as per drawings with 150mm raised Kerb. |
| 2. | On-Street Parking, Driveway access to existing properties | <ul style="list-style-type: none"> • To provide “On-street parking” as per adjacent land uses and applicable planning standards. It is recommended that the parking slots are maximised near identified commercial zones while residential zones are provided more space. • On street parking: (Design guidelines reference IRC SP-12) • Material difference (paving pattern or colour) to delineate Parking lay-by from adjacent travel lanes and sidewalks. • Access to existing private properties to be retained and vehicular ramps to have a maximum slope of 1:10 and minimum width of 4.5m excluding slopes. A turning radius of 3.0m minimum to be maintained from the carriageway. |
| 3. | Green Areas: Overall Strategy, Landscape Buffer Strip, Trees with Grating | <ul style="list-style-type: none"> • To increase green areas via landscaped, pedestrian walkways, the addition of landscape green buffer between the pedestrian area and road. Intent is to create a shaded micro climate, reducing the urban heat island impacts on the users. • All existing trees to be retained (both in road median and on sidewalks) and suitably integrated with the overall landscape strategy. • To implement careful siting of trees and landscaping around existing utilities (above and below-grade) as well as assuring visibility of traffic signal/signs and junctions. • Landscape Buffer (greenbelt) with trees is recommended between cyclists and vehicular carriageway. A minimum width of 1.5m -1.8m. Landscape strip: (Design guidelines |

| | | |
|----|-----------------------------|---|
| | | <p>reference UTTIPEC, Street Guidelines DDA)</p> <ul style="list-style-type: none"> • Trees with tree gratings on the Walkway will ensure unobstructed sidewalk width of no less than 1.8m on all stretches. • Refer Table of Planting Items in Schedule C- Project Facilities for recommended planting |
| 4. | Cycle Track | <ul style="list-style-type: none"> • Promote healthier mobility options – like walking, Bicycles • Cycle tracks: (Design guidelines reference IRC-11, 2015) • The bicycle track to remain at the same grade level as the sidewalk with visual separation to allow for a wider shared space • Material difference (paving pattern or colour) to delineate from adjacent sidewalks. • Pervious pavement design recommended as a sustainable measure. • Median refuge areas and table top crossings to be designed for safe and easy bicycle crossing. • Adequate PBS stands (minimum 2 locations, preferably near Amenity zones). |
| 5. | Pedestrian Walkway/ Pathway | <ul style="list-style-type: none"> • Sidewalk width varies from 1.8m minimum to up to 3.0m width in the widest stretch of the ROW. • Different furnishing elements are designed and carefully located in the sidewalk space including 3 x dedicated amenity zones of 4.5m width where bus shelters, public toilets, PBS stands, and hawker's zones have been located. Other sidewalk elements included are; pedestrian grade separation, pedestrian refuge island, pedestrian crossings. • Sidewalk raised to give pedestrians their own dedicated space and provide separation from the vehicle trafficable areas • Trees added on the sidewalks for shade and comfort • Pedestrian walkway: (Design guidelines reference IRC 103, 2012) A minimum clear walking distance of 1.8m and kerb height at sidewalk is maintained at 150 mm as recommended by IRC code. • Universal accessibility: (Design guidelines reference Govt. of India, MoUD 2016) |
| 6. | Amenity Zone | <ul style="list-style-type: none"> • <u>To provision for SPACE ONLY</u> for dedicated "Amenity Zone" for locating Bus-Stops/Waiting shelters, Public Toilet clubbed with other facilities such as ATM, water ATM, Public Bike Sharing stands and designated Hawker zones etc. • Dedicated amenity zones to be provided. • Provision for Smart Bus Shelters clustered with public toilets, Kiosks as per concept design provided in this RFP. • Provision for Public Bike Sharing Stands as per concept design provided in this RFP: |

| | | |
|----|----------------|---|
| | | <ul style="list-style-type: none"> • Dedicated Hawker/ Vending zones: (Design guidelines reference UTTIPEC, Street Guidelines DDA) and as per concept design provided in this RFP - The minimum vending zone width to be maintained as 1.8m with allowable minimum pedestrian walkway beyond the hawker zone to be 1.8m. - Hawker zones to be away from roads junctions. - To be ideally located near high-footfall zone. |
| 7. | Site Furniture | <ul style="list-style-type: none"> • Site furniture of high aesthetic value, comfort and quality to include (but not limited to): - Comfortable seating: designed for permanent fixing using exterior grade material, - Dustbins, using exterior grade material. - Bollards • Refer Table of Furniture, Fittings & Fixtures in Schedule C-Project Facilities for recommended minimum (specification and quantity) for site furniture to be provided. • Key considerations while locating street furniture: <ul style="list-style-type: none"> - To integrate multiple elements like lighting poles, signage, trees, street furniture (benches, bins) into a cohesive layout scheme. First priority of location to be given to functional elements like lighting poles, statutory signage, then to trees, and finally to street furniture. - Near zones of high footfall & pedestrian activity like Amenity zones, street corners/curb extensions, commercial areas. <p>SEATING BENCH:</p> <ul style="list-style-type: none"> • To be located under trees wherever possible to provide shade and comfort. • To be oriented parallel to the kerb. • To maintain 500mm separation from movement corridor and maximum distance of 50m between Bench clusters. • Recommended material: high quality concrete base without back rest to ensure access and use from both directions of the pedestrian sidewalk zone. <p>RUBBISH BIN:</p> <ul style="list-style-type: none"> • Each bin to have two separate containers for green & blue waste collection and finished with a lid to ensure hygiene and aesthetics. Lid opening restricted to minimize use as household refuse system. • Maximum distance between bin locations: 75m. <p>BOLLARDS:</p> <ul style="list-style-type: none"> • Bollards to act as a safety element to separate pedestrians or streetscape elements from vehicular traffic in the |

| | | |
|----|-------------------------|--|
| | | <p>following minimum locations:</p> <ul style="list-style-type: none"> - Corners at intersections, - Sidewalks adjacent to on-street parking zones, - On either side of vehicular access ramps/driveways (4.5m wide) to properties, - Near median pedestrian refuge islands and kerb extensions. • Alternate bollards may be proposed in special locations, including pedestrian-oriented spaces like plazas. • Recommended minimum Bollard C/C distance: 0.9m for ease of wheelchair movement yet ensuring pedestrian safety and vehicles cannot pass through. |
| 8. | External Signage | <p>ROAD SIGNAGE:</p> <ul style="list-style-type: none"> • Refer Design guidelines reference IRC 67, 2010: As per IRC: 67- 2010 'Code of Practice for Road Signs', classified under 3 categories: <ul style="list-style-type: none"> - Mandatory/ Regulatory Signs - Cautionary/ Warning Signs - Informatory/ Guide Signs • Refer Table of Signage & Road Fittings in Schedule C- Project Facilities for recommended minimum (specification and quantity) for signage and Road Fittings. • Refer Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53 for further details. <p>ADVERTISING SIGNAGE:</p> <ul style="list-style-type: none"> • Refer Table of Excluded Items in Schedule C- Project Facilities for recommended minimum (specification and quantity) for signage. • Key location criteria include: <ul style="list-style-type: none"> - Traffic and parking signs have been placed so that they are unobstructed by other streetscape elements. - <u>Signs to be placed in locations where they do not obstruct the minimum clearance widths for pedestrian walkways etc.</u> <p>Use high quality materials with durability in the public realm.</p> |
| 9. | Street Lighting | <ul style="list-style-type: none"> • Street Lighting (Vehicular & Pedestrian) to achieve a combined lighting lux level of 35 and a minimum uniformity factor of 0.4. • Light fitting/fixtures to adhere to the electrical specification, refer Schedule D- Standards & Specifications- Electrical Works • Ensure integration of lighting poles with Smart poles proposed at ABD level. |

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|--|--|---|
| | | <ul style="list-style-type: none"> • Refer Table of Furniture, Fittings & Fixtures in Schedule C-Project Facilities for recommended Lighting Luminaire/Fixture. • Refer Schedule I - Indicative concept drawings package, Drawing no. VSC-ACM-MP-RFP-DWG-320-10, for fixing details. • Lighting Poles to have a minimum clearance from all trees (3.0m), from other softscape features (1.5m). |
| | | |

SCHEDULE C – PROJECT FACILITIES

1.1. GENERAL





The Contractor shall construct the Project Facilities in accordance with the provisions of this Agreement. Such Project Facilities shall include: Fabricating, constructing, or procuring all relevant streetscape elements and furniture, including but not limited to:

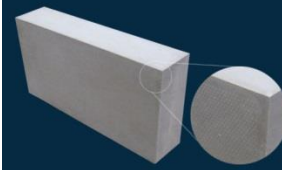

- a. Paving Materials like interlocking pavers, tactile pavers - as provided in the “Table of Finishes”
- b. Kerbs - as provided in the “Table of Finishes”
- c. Benches - as provided in the “Table of Furniture, Fittings & Fixtures”
- d. Bollards - as provided in the “Table of Furniture, Fittings & Fixtures”
- e. Dustbins - as provided in the “Table of Furniture, Fittings & Fixtures”
- f. Tree Grates - as provided in the “Table of Furniture, Fittings & Fixtures”
- g. Pedestrian Lights - as provided in the “Table of Furniture, Fittings & Fixtures”
- h. Trees, Shrubs, Grassing and Geo-Textile membranes – as provided in the “Table of Planting Items”
- i. Signage - as provided in the “Table of Signage & Road Fittings”
- j. Road Fittings - as provided in the “Table of Signage & Road Fittings”
- k. Additional elements for plazas, if any, as per instructions of approving authority, and based on technical specifications as listed under Schedule D of this tender document.
- l. Designated locations to be provided for future installation for all items as provided in the “Table of Excluded Items”.

1.2. PROJECT FACILITIES – TABLES

1.2.1. TABLE OF FINISHES



The below table to be read along with ***Schedule D- Specifications and standards*** and ***Concept drawings package included in Part III***, Drawing no. VSC-ACM-MP-RFP-DWG-R1A-401-01 to VSC-ACM-MP-RFP-DWG-R20B_423-02; VSC-ACM-MP-RFP-DWG-400-02; VSC-ACM-MP-RFP-DWG-320-01 to VSC-ACM-MP-RFP-DWG-320-10



| S. No. | INDICATIVE IMAGE | DESCRIPTION | LOCATION | VENDOR/ MAKE |
|--------|---|---|--------------------------------------|---|
| | | PAVING | | |
| 1. |  | P1- Interlocking Concrete Pavers <u>Material:</u> cement concrete M40 grade <u>Finish :</u> Shot blasted Granite Finish <u>Size:</u> 97x175x80thk <u>Color:</u> Yellow | Pathway | NITCO/ PAVIT (PM enterprises) /SUPERTILES or equivalent |
| 2. |  | P2- Interlocking Concrete Pavers <u>Material:</u> cement concrete M40 grade <u>Finish :</u> Shot blasted Granite Finish <u>Size:</u> 97x175x80thk <u>Color:</u> Red | Cycle Track | NITCO/ PAVIT (PM enterprises) /SUPERTILES or equivalent |
| 3. |  | P3- Interlocking Concrete Pavers <u>Material:</u> cement concrete M40 grade <u>Finish :</u> Shotblasted Granite Finish <u>Size:</u> 97x175x80thk <u>Color:</u> Dark Grey | On-street Parking, Maintenance Strip | NITCO/ PAVIT (PM enterprises) /SUPERTILES or equivalent |
| 4. |  | P4- Concrete Tactile Pavers <u>Material:</u> cement concrete M40 grade <u>Finish:</u> Anti-Skid <u>Size:</u> 300 X 300 X 9.8mm. <u>Colour :</u> Grey to match adjacent paving colour | Pathway and others | NITCO/ PAVIT (PM enterprises) /SUPERTILES or equivalent |

| | | | | |
|----|---|--|--|---------------------|
| 5. |  | E1- Flush Kerb <u>Material:</u> Cast in situ cement concrete M25 grade <u>Finish:</u> Smooth <u>Size:</u> 150(B)x300(H) | Hardscape Edges along road, pathway and plaza. | AS PER TECH. SPECS. |
| 6. |  | E2- Raised Kerb <u>Material:</u> Cast in situ cement concrete M25 grade <u>Finish:</u> Smooth, bull nose edge <u>Size:</u> 150(B)x300(H) | Hardscape Edges along road, pathway and plaza. | AS PER TECH. SPECS. |

1.2.2. TABLE OF FURNITURE, FITTINGS & FIXTURES






The below table to be read along with ***Schedule D- Specifications and standards***, and ***Concept drawings package in Part III***, Drawing no. VSC-ACM-MP-RFP-DWG-R1A-401-01 to VSC-ACM-MP-RFP-DWG-R20B_423-02; VSC-ACM-MP-RFP-DWG-400-02; VSC-ACM-MP-RFP-DWG-320-01 to VSC-ACM-MP-RFP-DWG-320-10







| S. No. | INDICATIVE IMAGE | DESCRIPTION | LOCATION | VENDOR/ MAKE |
|-----------------------|---|--|---|--|
| SITE FURNITURE | | | | |
| 1. |  | Benches (supply & installation) <u>Monolithic Rock Bench</u> <u>Size:</u> 1500x450x450 (LxBxH) | Pathway & Plaza | AS PER TECH. SPECS. |
| 2. |  | Stainless steel Bollards (Supply & installation) Finish: Stainless Steel SS-316 Size: 100 mm dia., 600mm height, to the required shape/specification | Road Edge Plaza, crossings & Drop-off areas @ 750mm c/c | Jindal steel/ Ozone/ Reddy Concept or equivalent |
| 3. | | Dust Bins (Fabrication, supply & | Pathways | Saflow/Jindal steel/ |







| | | | | |
|-----------------|--|--|---------|---|
| |  | installation) <u>Capacity</u> : 50 Ltr 2 container bin <u>Finish</u> : Perforated Stainless Steel Sheet SS316 duly galvanized with Powder coated M.S. Pole stand 300x600mm and height 1650 mm. | | Ozone/ Blue stream or equivalent |
| 4. |  | Tree Grate <u>Material</u> : Stainless Steel SS-316 <u>Size</u> : 1200mm x 1200mm x 25mm thk. & Inner Dia. opening of 450mm | Pathway | Crescent Foundry or equivalent |
| LIGHTING | | | | |
| 5. |  | Pedestrian Lighting: <u>LED Post Top Luminaire</u> single arm – on 4.5m high <u>GI conical Pole</u> <u>Wattage</u> : 40-45W C/C distance: 25m | Pathway | <u>LUMINAIRE List of makes</u> Philips (Green Line) / Osram / Schreder (Brika) / Ge / Vin (Sto) / Crompton (Lexus+) / Bajaj (Edge+) / Halonix (Lumos - Super) / Havells (Endura Cityline r Neo); <u>LED List of makes</u> : Philips Lumileds / Cree / Nichia; <u>POLE List of makes</u> : Bajaj / Kemrock / Sumip/Helipole |

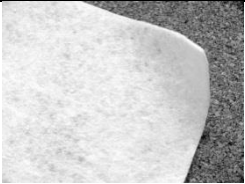
1.2.3. TABLE OF PLANTING ITEMS

The below table to be read along with ***Schedule D- Specifications and standards*** and ***Concept drawings package in Part III***, Drawing no. VSC-ACM-MP-RFP-DWG-R1A-501-01 to VSC-ACM-MP-RFP-DWG-R20B_523-02

| S. No. | IMAGE | DESCRIPTION | LOCATION |
|--------|---|---|------------------------------------|
| 1. |  | <u>Tree:</u> Terminalia catappa (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm caliper at 1.0m height , straight trunk & balanced canopy) | Road- R15 |
| 2. |  | <u>Tree:</u> Thespesia populnea (3m height overall, clear trunk height 1.5m, with a 2.5m canopy width, 50-80mm caliper, straight trunk & balanced canopy) | Road- R11, R12, R13, R14, R16, R17 |
| 3. |  | <u>Tree:</u> Barringtonia asiatica (3m height overall, clear trunk height 1.5m, with a 2.5m canopy width, 50-80mm caliper, straight trunk & balanced canopy) | Road –R6, R7, R8, R9, R18, R19 |
| 4. |  | <u>Tree:</u> Pongamia Pinnata/ Karanj (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm caliper, straight trunk & balanced canopy) | Road –R2, R10 |
| 5. |  | <u>Tree:</u> Erythrina variegata (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm caliper, straight trunk & balanced canopy) | Road –R2, R5 |
| 6. | | <u>Tree:</u> Lagerstroemia speciosa (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm caliper, straight trunk & balanced canopy) | Road-R1A, R2, R18 |



| | | | |
|-----|---|--|---|
| |  | canopy) | |
| 7. |  | <u>Tree:</u> Peltophorum pterocarpum (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm caliper, straight trunk & balanced canopy) | Road-R1B |
| 8. |  | <u>Tree:</u> Spathodea campanuata (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm caliper, straight trunk & balanced canopy) | Road-R1A, R1B |
| 9. |  | <u>Tree:</u> Anthocephalus cadamba (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm caliper, straight trunk & balanced canopy) | Road- R3, R4 |
| 10. |  | <u>Shrub:</u> Barleria cristata @300mm c/c, >300 mm high, multi branched, well developed | Jagdamba Road Junction, Dutt Island Junction, |
| 11. |  | <u>Shrub:</u> Hibiscus cannbinus @300mm c/c, >400 mm high, multi branched, well developed | Road R4 |
| 12. | | <u>Shrub:</u> Phyllanthus nivosus @200mm c/c, >300 mm high, multi branched, well developed | Road R1A, R18 |







| | | | |
|-----|---|--|---|
| |  | | |
| 13. |  | <u>Shrub:</u> Sansevieria trifasciata @200mm c/c, >300 mm high, multi branched, well developed | Road Junctions: R1A –R5 Jn; R1B-R17 Jn, R15-R17-R4 Jn |
| 14. |  | <u>Shrub:</u> Ixora coccinea @400mm c/c, >300 mm high, multi branched, well developed | Road R1A, R1B, R2, R3, R17 |
| 15. |  | <u>Shrub:</u> Bougainvillea glabra/rubra/formosa @400mm c/c, >300 mm high, multi branched, well developed | Dutt Island Plaza, Road R2 |
| 16. |  | <u>Shrub:</u> Clerodendrum inerme @300mm c/c, >300 mm high, multi branched, well developed | Dutt Island Plaza, Road R2 |
| 17. |  | <u>Grass:</u> Axonopus compressus | Dutt Island Plaza, |
| 18. | | Geotextile membrane 160-180gsm Non-woven | Rain water harvesting pits |

| | | | |
|--|---|--|--|
| |  | | |
|--|---|--|--|







1.2.4. TABLE OF SIGNAGE & ROAD FITTINGS



The below table to be read along with ***Schedule D- Specifications and standards*** and ***Concept drawings package Part III, Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53***

| S.No | INDICATIVE IMAGE | DESCRIPTION | LOCATION | VENDOR /MAKE |
|------|---|---|--|------------------|
| 1 |  | Cantilever Butterfly/ Cantilever <u>Size:</u> 5400mm x 2100mm <u>Scenario:</u> Junction | <ul style="list-style-type: none"> • MVP Double Road Junction • Appughar Junction • Kailasagiri Junction • VISAKHA valley School • Sagar Nagar Junction • Musalyapalem Junction • Yendada • IT SEZ | 3M or equivalent |
| 2 |  | Cautionary Boards <u>Size:</u> 900mm triangle <u>Scenario:</u> a. Single way approach road b. School Zone c. Pedestrian Crossing d. Median Opening e. S-Curve Ahead f. Right Curve Ahead g. Left Curve Ahead h. Falling rock Board | <ul style="list-style-type: none"> • Two way approach road • School Zone • Pedestrian Crossing • Median Opening • Curve treatment • Curve treatment • Curve treatment • Rock falling Zone | 3M or equivalent |

| | | | | |
|---|---|---|--|------------------|
| 3 |  | Chevron Boards <u>Size:</u> 750 X 450 500mm x 600mm <u>Scenario:</u> Curve treatment | <ul style="list-style-type: none"> All road curves | 3M or equivalent |
| 4 |  | Facility information Boards <u>Size:</u> 800 X 600 <u>Scenario:</u> Bus Stop | <ul style="list-style-type: none"> All Bus Stops | 3M or equivalent |
| 5 |  | Map Sign Board <u>Size:</u> 1050 X1500 <u>Scenario:</u> You are Here | <ul style="list-style-type: none"> Kailasagiri Ropeway Tenneti Park Zoopark ISKAN Temple Geetam Univ Rishi Konda Beech IT SEZ | 3M or equivalent |
| 6 |  | Other useful Information Sign <u>Size:</u> 600x600 <u>Scenario:</u> Parking | <ul style="list-style-type: none"> All Parking lots | 3M or equivalent |
| 7 |  | Speed Limit Boards <u>Size:</u> 900mm Circle <u>Scenario:</u> Speed Limit | <ul style="list-style-type: none"> All roads | 3M or equivalent |
| 8 |  | Street name board <u>Size:</u> 1600 x 900 <u>Scenario:</u> Street/Colony | <ul style="list-style-type: none"> Kurupam circle - MVP Double Rd | 3M or equivalent |

| | | | | |
|----|---|--|---|------------------|
| 9 |  | U-Turn Board Size: 900mm Circle <u>Scenario:</u> U-Turn | <ul style="list-style-type: none"> All U-Turns | 3M or equivalent |
| 10 |  | Way finding sign board Size: 1050 X1500 <u>Scenario:</u> Reassurance | <ul style="list-style-type: none"> Ropeway - Tenneti park after kailasagir junction Visaka to ZOO Park Zoopark to Sagr Nagar ISKAn to Geetam Yendada to Peda Rishi Konda Peda Rishikonda to IT SEZ | 3M or equivalent |
| 11 |  | School/Hospital sign board | <ul style="list-style-type: none"> All School & Hospitals | 3M or equivalent |
| 12 |  | AFP Size: NA <u>Scenario:</u> Poles and Culvert Treatment | <ul style="list-style-type: none"> All Poles Along all Culverts | 3M or equivalent |
| 13 |  | Variable Message Sign | <ul style="list-style-type: none"> Park Hotel Junction, 3 Nos. Siripuram Junction Children's Area, 3 Nos. Jagadamba Circle, 1 No. Old Jai Road near Central Park, 2 Nos. RK Beach, 4 Nos. Collector Office/KGH, 1 No. | 3M or equivalent |
| 14 |  | Variable Message Sign with ANPR | Refer Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53 | 3M or equivalent |

| | | | | |
|-----|---|---|---|------------------|
| 15 |  | Solar Blinkers Size: 300mm dia Red/Amber blinker lamp | Refer Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53 | 3M or equivalent |
| 16 |  | Rubber Speed Breaker Size: 500mm length x 415mm width x 75mm height (per m, two pieces-one black, one yellow) | Refer Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53 | 3M or equivalent |
| 17 |  | Raised pavement marker RPM/ Road stud Size: 50x100x100 (HxWxL) | Refer Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53 | 3M or equivalent |
| 18 |  | Median Markers – 2 sided Size: NA <u>Scenario:</u> Median Treatment | <ul style="list-style-type: none"> All road medians | 3M or equivalent |
| 19 |  | Delineators Vertical Double sided Size: NA <u>Scenario:</u> Curve treatment Median treatment | <ul style="list-style-type: none"> All road curves All road medians | 3M or equivalent |
| 20a | Paint Work  | Paint Markings Synthetic enamel paint in black and white or yellow @ two coats | Kerbs | 3M or equivalent |
| 20b | Paint Work | Paint Markings-Solid lines/Yellow | Junctions and zebra crossings, parking bays lane | 3M or equivalent |

| | | | | |
|-----|--|--|---|----------------------|
| |  | Box Junction Thermoplastic paint, Line size 100mm wide & 2.5mm thk. | markings Refer Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53 | t |
| 20c | Paint Work  | Paint Markings-Zebra Crossing in white colour Thermoplastic paint, Line size 2.5mm thk. | Refer Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53 | 3M or equivalen t |
| 21 | Any other item as mentioned in the Schedule D-Specifications & Standards for Traffic & Signage works | Note: Specifications as mentioned in “Schedule D” take precedence over above mentioned “Table of Signage & Road Fittings” | Refer Dwg. No. VSC-ACM-TRA-RFP-DWG-900-1 to 53 | 3M or equivalen t |

1.2.5. ROAD/JUNCTION WORKS

The below table to be read along with ***Schedule D- Specifications and standards and Concept drawings package in Part III, Dwg. No.*** VSC-ACM-TRA-RFP-DWG-900-1 to 53

| S.No | DESCRIPTION | |
|------|---|------------------|
| 1 | Scarifying the existing bituminous road surface up to 100mm | Handover to GVMC |
| 2 | primer coat with bitumen emulsion (SS-1) | SS-1 |
| 3 | Pavement Correction Course (PCC)- Dense Graded Bituminous Macadam 100mm | VG-30 |
| 4 | Tack coat with Bitumen emulsion (RS-1) | RS-1 |
| 5 | Bituminous concrete 30mm | VG-30 |
| 6 | Precast Kerb Stone size – 150mm x 150mm x 500mm for Traffic Junction Island works | M-25 |

DETAIL "A"

1.2.6. TABLE OF EXCLUDED ITEMS

The below table to be read along with ***Schedule D- Specifications and standards*** and ***Concept drawings package in Part III***, for information on locations to be provided as “Designated zones” for future installation of items as mentioned in the table below.

Please note that for all items as listed in this schedule, procurement does not form part of this RFP.

| S No. | IMAGE | LOCATION |
|-------|--|---|
| 1. | PBS Stand | Refer Drawing no. VSC-ACM-MP-RFP-DWG-R1A-401-01 to VSC-ACM-MP-RFP-DWG-R20B_423-02 |
| 2. | Rest Shelter + TOILET + Water ATM | Refer Drawing no. VSC-ACM-MP-RFP-DWG-R1A-401-01 to VSC-ACM-MP-RFP-DWG-R20B_423-02 |
| 3. | ADVERTISING SIGNAGE | Refer Drawing no. VSC-ACM-MP-RFP-DWG-R1A-401-01 to VSC-ACM-MP-RFP-DWG-R20B_423-02 |

SCHEDULE D: Specification and Standards – External Development Works

1.1. Preliminaries

1.1.1. PURPOSE OF SPECIFICATION

The specification (hardscape, softscape) defines the requirements and gives guidance for design, implementation and maintenance of hard & soft landscape works.

1.1.2. SCOPE OF SPECIFICATION

The HARDSCAPE specification describes the general requirements for hard landscape elements in the landscape works. The works under this section include but are not limited to the following:

EARTHWORKS

General Ground works, protection of existing trees, site clearance, excavation, placing of fill, ground shaping, grading and compacting earth fill. Earthwork excludes slope protection, and reinforcement;

KERBS AND EDGES

Section includes scope of work for kerbs, edges etc., as well as all allied works;

PAVING

Section includes scope of work for hard surface finishes (including tactile paving) to walkways, paths, bike paths etc. as well as all allied works;

SITE FURNITURE

All furniture elements including seats/benches, signage as well as bins, bollards, recessed manhole covers, water points, tree grates etc.

The SOFTSCAPE specification describes the general requirements for soft landscape elements in landscape works. The works under this section include but are not limited to the following:

EARTHWORKS

Ground works general, site clearing, supply & soil placement for all planting areas, fine grading, mounding, excavation of pits and erosion control;

PLANTING

Section includes plant procurement, delivery & storage, installation of plant materials, maintenance during execution, plant replacement, pruning, tree staking operations, pest and weed control etc.;

POST-CONSTRUCTION

Section includes maintenance during Defects Liability Period, Operations and Maintenance Manual and as-built drawings;

1.1.3. LIST OF RELEVANT DOCUMENTS

This specification to be read in conjunction with:

Indicative concept Design Drawings package (Landscape & allied services) in ***SCHEDULE-I*** or revisions issued thereafter;

Design Parameters as listed in ***SCHEDULE B- Development of the Project;***

Tables (Table of Finishes, Table of Furniture, Fittings & Fixtures, Table of Planting items, Table of Signage & Road Fittings, and Table of Excluded Items) **as listed in SCHEDULE C- Project Facilities** or revisions issued thereafter;

Relevant Indian Standards as listed in ***"Schedule D , Subhead 1.2 General Requirements, Section 1.2.8 List of standards"***;

Note: If work item is not included in Indian Standards, appointed contractor should refer to relevant international standard (BS or equivalent). This is to be approved by Client's representative prior to commencing any works on site;

Other documents – any documents not included above but considered as required to prepare a price for the works and relevant to the tender process.

Note: Drawings take precedence over specifications and other documents.

1.1.4. TERMINOLOGY

In this Specification and other Documents forming part of the Contract, the following expressions and words shall, unless the context otherwise requires, have the meaning hereby respectively assigned to them:

| | |
|----------------------------|--|
| "Approved" or "approval" | means approved by or approval of the Client's Representative |
| "Submitted" or "submit" | means submitted to or submit to the Client's Representative in writing |
| "Accepted" or "acceptance" | means accepted by or acceptance of the Client's Representative |
| "As shown on Drawings" | means all works required to conform with the intent shown on the tender and/or contract drawings |
| "As required" | means as required in the Specification and other Documents forming part of the Contract |
| "As directed" | means as directed by the Client's Representative |

1.1.5. DEFINITIONS

In the Specification and other Documents forming part of the Contract, the following terms or words shall, unless the context otherwise requires, have the meaning hereby respectively assigned to them:

| | | |
|--------------------------|------------|--|
| Authorized Excavation | Additional | Additional works including excavation below Sub-grade elevations or beyond indicated lines and dimensions as directed by Client's Representative. |
| | | Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Soil Placement & Finish |

Grading Works.

| | |
|-------------------------|--|
| Backfill | Approved soil material used to fill an excavation above the required sub-grade. |
| Bad Ground | Ground unsuitable for the purposes of the Works, including filling liable to subsidence; ground full of vegetative matter; ground containing cavities, faults or fissures; ground contaminated by harmful substances including oil, cement and chemicals; ground containing acid sulphate soil; or ground which is or becomes soft, wet and unstable after rain; and the like. |
| Earth | Earth shall consist of all materials except rock be it soil, gravel, shale or any other material that can be removed, without the use of explosives, or mechanical plant. |
| Excavation | Removal of material encountered above noted levels for sub-grade elevations and to lines and dimensions indicated. |
| Finish Grade | Finished elevation of hard landscape surfaces to noted levels as defined in the Drawings. |
| Rock | Rock shall be boulders more than 0.5cu.m. in size and rock in solid banks or layers or beds of conglomerate of other materials appearing as solid as rock. |
| Structures | Buildings, footings, foundations, retaining walls, slabs, tanks, kerbs, mechanical and electrical accessories, or other man-made stationary features constructed above or below the ground surface. |
| Sub-grade | Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill, before placing General Planting Soil Mix. |
| Unauthorized Excavation | Excavation beyond indicated lines and dimensions without direction of Client's Representative. Unauthorized excavation, as well as |

remedial work as a result of the unauthorized works as directed by Client shall be without additional compensation to the Contractor.

| | |
|---------------------|--|
| Utilities | On-site underground services, pipes, conduits, ducts, and cables. |
| Sub-soil | All soil beneath the topsoil layer of the soil profile, which is typified by the lack of organic matter and soil organisms. Based on site conditions, Softscape Contractor will be responsible for delivery and placement of approved Soil Mix to make-up specified final finish level. |
| Imported Soil | Client approved soil imported from off-site for use to prepare Soil Mix |
| Local Soil Material | Locally available top soil stored on-site. |
| Soil Mix | Planting Soil Mix from available local soil (from on-site top soil dump) or imported soil, soil conditioners, approved fertilizers, soil amendments and/or sand. Approved composition shall be referred to in ' Subhead 1.5. Softscape works, Section 1.5.2.3. Planting soil mixes '. |
| Imported Soil Mix | Soil Mix prepared off-site for on-site use, which is evenly textured, fertile, sandy loam, free from weeds, deleterious matter and stones larger than 25mm in any dimension and shall not be excessively sandy, gritty or water logged. |
| Ripping | Controlled mechanical de-compaction to a minimum depth of 300mm of the upper layers of the existing soil after Site Clearing and Grubbing to improve the natural percolation of water. |
| Soil Amendment | Stabilized organic materials added to local soil (from on-site top soil dump) |

| | |
|----------------------------|--|
| Soil Placement Works | The supply and placement of Soil Mix over the existing sub-grade for all areas indicated in the Planting Plans, to the Finish Grade elevations as defined in the Drawings. |
| Sub-standard Planting Soil | Where the imported Planting Soil does not meet the criteria requirements set out in ' Subhead 1.5 . Softscape works, Section 1.5.2.3 . Planting soil mixes'. It may be modified by the addition of soil amendment materials as specified, in quantities to be approved by the Client's Representative to form General Planting Soil Mix. |
| Topsoil | All soil above the subsoil layer of the soil profile, excavated and stockpiled in the on-site top soil dump as defined by Client's Representative. |
| Balled and Burlapped Stock | Plants dug with firm, natural balls of earth in which they are grown for not less than two growing seasons, and prepared not less than six months in the growing season; root ball is wrapped around in burlap and tied, rigidly supported, and drum laced with straw or Coco fibre. |
| Balled and Potted Stock | Plants dug with firm, natural balls of earth in which they are grown and placed for not less than two growing season, unbroken, in a container. |
| Clear Trunk Height | Linear measurement starting from root collar to the lowest branch of trees; also called 'branching height'. |
| Caliper | The diameter of the trunk measured at 1 meter up from the root crown. |
| Container-Grown Stock | Healthy, vigorous, well-rooted plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during transport. Size of contained should be suitable for type and size of plant required. |

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| Exterior Plants | Plants acclimatized to growing in outdoor environment which include Tree, Palms, Shrubs, Ground Cover, Annuals, Biennials, Perennials, Climbers and Bamboos. |
| Interior Plants | Plants acclimatized to growing in shaded or indoor environments which include Specimen, secondary and filler plants. |
| Fertilizer | A chemical compound containing nitrogen (N), phosphorous (P), potassium (K) and/or other specified macro and micro nutrients in adequate quantities to promote plant growth. |
| Fabric Bag-Grown Stock | Healthy, vigorous, well-rooted plants established and grown in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume for type and size of plant. |
| Nurseries | Sites of natural ground, which serves as nursing place of tree stock and temporarily storage area for planting materials and bulk materials. |
| Multi-stem | Where three or more main trunks/stems arise from the ground from a single root crown or at a point right above the root crown. |
| Root ball | The firmly bound fibrous root with soil that is removed intact with the plant. |
| Root Crown | The position on the plant stem where the plant naturally forms from the ground when growing in the nursery |
| Root Pruning | The cutting away of part of the root system to stimulate fibrous root growth with-in a compact root ball. |

1.2. General Requirements

1.2.1. SCOPE OF WORK

- (a) The work in this contract covers the design, supply and installation of all landscape works (hardscape, softscape) and allied civil and services work. The Contractor shall furnish all labour, material, tools and equipment necessary to complete the works as indicated on the drawings. Any item not specifically shown in the drawings or specified, but normally required to complete the works to best practise standards, should be considered part of the work unless raised by the Contractor and approved by the Client's representative prior to commencement of works. Contractor shall then include and price for such item in the BOQ accordingly;
- (b) All works indicated in the Drawings by notes are to be provided for, whether or not mentioned in this specification. Any item not specified nor specifically shown in the drawings, but are normally required to conform to such intent, are considered part of the work and deemed to be included in this contract and their execution shall be covered by the contract price, in the same manner as if they have been expressly shown on the drawings and described in the specifications.
- (c) The works shall be completed within the scheduled time and shall be certified by the Client's Representative in consultation with the PMC team upon Practical Completion;
- (d) The landscape planting shall be provided in the areas shown in the Drawings with plants in a healthy and vigorous growing condition.
- (e) The Contractor shall submit for approval, his proposed Work Programme based on the criteria of the overall programme showing the intended sequences, stages and order of proceeding with the works together with the period of time he has estimated for each and every stage of the progress upon notification of his successful tender price for the project;
- (f) The Contractor shall complete the works within or by the date of completion as set forth in the Contract. The Contractor shall undertake all responsibility for rectification of defects of the landscape (Defects liability period).

1.2.2. ADJUSTMENTS TO SCOPE

- (a) Client's Representative reserves the right to make field adjustments and reasonable substitutions to ensure implementation of the landscape concept in relation to field conditions.
- (b) The PMC reserves the right to make field adjustments and reasonable substitutions to ensure proper implementation of the landscape concept in

relation to the field condition with the approval of the Clients representative.

- (c) If any material or installation specified is not available or achievable, the Contractor shall submit a written proposal to the PMC within two (2) weeks of award of the contract. This request may present an alternative material or process which fulfils the same design intent, with the proposed adjustment to the contract price for each item due to the change.
- (d) Substitution of materials is not permitted unless authorised in writing by the PMC & Client.

1.2.3. TIMELINES

The Contractor shall complete the works within or by the date of completion as set forth in the Contract.

1.2.4. DISCREPANCIES

The Contractor to study the drawings at the time of the tender and notify Client's Representative of any discrepancy at the time of the tender submission.

1.2.5. ERROR AND OMISSION

- (a) The general description of the works mentioned above is only for the guidance of the Contractor and any error or omission shall not constitute ground for claim by the Contractor. The onus for investigating and ensuring the actual extent and nature of the works comprised in this Contract prior to the submission of the quotation is solely with the Contractor. Any doubts should be clarified with the Client's Representative before the quotation is submitted. No claim arising out of lack of clarity or availability of information will be entertained post Contract award. Allowance for any or all of these provisions shall be made in the tender BOQ.

1.2.6. SUBMITTALS

1.2.6.1. TENDER STAGE SUBMITTALS

As part of the tender documentation contractor shall submit the following:

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| Contractor Qualifications | Management structure, employee strength and equipment owned; |
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|---------------------------|--|
| List of Subcontractors | If relevant provide the list of subcontractors for specific works; |
| List of Suppliers/vendors | Provide the list of all the suppliers/vendors for materials and products relevant to the projects; |
| Material/Product samples | For plant material, submit list of plants with nursery source and quantity available for each representative tree, palm, shrub, climber, bamboo and ground cover species indicating height, spread, calliper, root ball size; Type and number of samples as specified in relevant sections of this document; Product literature for manufactured products should be submitted; |
| Procurement Schedule | Programme for supply of all materials including all plants with rough quantities as per BOQ; For all plants, indicate quantities with height, spread, caliper, root ball size, growth and nursery source. Plants to match the recommended specifications; Lead time required for supply of specialised materials should be indicated here. |

1.2.6.2. POST TENDER SUBMITTALS

Prior to starting the works on site the Appointed Contractor shall submit the following documentation for approvals by the Client's representative:

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| Detailed Programme of Work for all Works | Prepare a detailed programme showing the stages, sequence and timing of all parts of work (including subcontractors involvement/items and itemized items from Outline Programme of Work); Timelines should be clearly defined. They should include estimated completion date and number of working |
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days;

Programme should include detailed information on resources (manpower, equipment etc.), works by subcontractors etc.;

Schedules are to be coordinated with the main contractor's program and subject to Client's approval;

Method statement for all works, including transport & delivery of materials, site works including earth works, hard-works installation, plant protection, temporary storage etc. should be clearly defined and approved by the Landscape Architect and Clients representative prior to site works commencing;

Potential risks to programme should be summarised and mitigation methods provided (alternative programme of work if applicable);

Special coordination requirements to be defined.

Procurement Plan

Submit a Procurement Plan based on Client Representative's comments regarding the Procurement Schedule (as submitted with the tender document). The submitted Procurement Plan shall provide clear information on the following;

Procurement schedule for all materials (hardscape, softscape);

Information of Supplier's (hardscape, facade)

Existing and future availability of materials;

Information of Supplier's nursery and/or Contractor's Off- site Nursery (softscape);

Existing and future availability of planting materials (softscape).

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| Material/Product samples | <p>All samples for non-plant material are to be submitted as required;</p> <p>Product certificates for manufactured products should be submitted;</p> <p>Type and number of samples as specified in relevant sections of this document;</p> <p>All samples need to be approved by Client/ PMC prior to commencement of works on site.</p> <p>For plant material, re-submit list of plants with nursery source and quantity available for each representative tree, palm, shrub, climber, bamboo and ground cover species indicating height, spread, caliper and root ball size, for final approval by Client's Representative/PMC. Any agreed substitutions to plants species or specifications should be included here.</p> <p>Contractor to arrange for visit by Client's Representative/ PMC to supplier nurseries to approve selected plant materials prior to procurement.</p> |
| Site Management Plan | <p>Showing detailed information on site preparation measures to be taken before commencement of works as well as during the works and maintenance period,</p> <p>Site arrangement layout for temporary structures, storage, water and electricity supply etc.;</p> <p>PHASING Plan to be submitted for approval to client representative/PMC prior to commencement of site work. It is to be ensured that at no time during the construction phase, Plan should comply with section "Subhead 1.2. General Requirements, Section 1.2.10. Site Management" of this Specification;</p> |

Show existing conditions (with photographs showing date and time of the image) of adjoining construction including existing finish surfaces that might be misconstrued as damage caused by earthwork operations. Submit before earth work begins.

Health and Safety Plan

Prior to commencing site works the following will be provided to the Client's representative:

Method statements on how risks from hazards will be addressed;

Details of management structure and responsibilities;

Arrangements for issuing health and safety directions;

Procedures for informing other contractors and employees of health and safety hazards ;

Procedures for communications between the project team, other contractors and site operatives;

Arrangements for coordination and cooperation between contractors;

Procedures for carrying out risk assessments and for managing and controlling the risks;

Emergency procedures including those for fire prevention and escape;

Arrangements for ensuring that all accidents, illness and dangerous occurrences are recorded;

Procedures for ensuring that all persons on site have received relevant health and safety information and training;

Arrangements for consulting and taking the views of people on site;

Arrangements for preparing site rules and drawing them

to the attention of those affected and ensuring their compliance;

Monitoring procedures to ensure compliance with site rules, selection of management procedures, health and safety standards and statutory requirements;

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| Site Waste Management Plan | <p>Plan should include details on type and quantities of the waste generated – including demolition waste, day to day generated waste etc.;</p> <p>Detail description of the waste management methods and actions to minimise/reuse/recycle waste,</p> <p>Recourses required and detail plan of work for waste management team;</p> <p>Record keeping procedures;</p> <p>Auditing protocols;</p> |
|----------------------------|--|

All of the above should be approved by the Client/Client's representative prior to commencement of works on site. No works shall be executed without above mentioned approvals.

1.2.6.3. CONSTRUCTION STAGE

Following items should be submitted by Appointed Contractor during the construction stage of work (if required):

| | |
|--------------------------|--|
| Material/Product samples | <p>All materials/samples to be submitted to the Client representative/ PMC for comments and approval prior to commencement of works;</p> <p>Type and number of samples as specified in relevant sections of this document.</p> |
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| Sample panels/ Mock-ups | <p>All sample panel/mock-up to be presented to the Client/Client's Representative for comments and approval prior to commencement of works;</p> <p>Type and number of sample panels as specified in relevant sections of this document. Mock-ups may be installed as part of the future works and retained with the Client's approval.</p> |
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1.2.6.4. POST CONSTRUCTION SUBMITTALS

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| Operations & Maintenance Manual | This should include schedule and instructions for all activities to be undertaken for operations and maintenance of established works. |
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| As-built drawings | <p>The Contractor shall prepare As-Built drawings and certify on these drawings that the drawings reflect the actual works installed.</p> <p>Three sets of these drawings (A1 hardcopy, printed to scale and softcopy – AutoCAD and PDF on a CD) shall be submitted to the client post approval and record.</p> <p>The sub-contractor shall ensure that this submission of 'As-Built' drawings will not delay subsequent inspections and tests by the relevant authorities; otherwise he shall be fully responsible for any consequence due to his delay.</p> |
|-------------------|---|

1.2.7. QUALITY STANDARDS AND CONTROL

1.2.7.1. PRODUCTS AND EXECUTION

GENERAL

- (a) Establish and maintain procedures to ensure that the Works, including the work of subcontractors, comply with specified requirements;
- (b) Maintain full records, keep copies on site for inspection, and submit copies on request;
- (c) Records should include:
 - Identification of the element, item, batch or lot including location in the Project Works,
 - Nature and dates of inspections, tests and approvals,
 - Nature and extent of non-conforming work found,
 - Details of corrective action.

INCOMPLETE DOCUMENTATION

- (a) Where and to an extent that products are not fully documented, the Contractor shall make all effort that they should be:
 - of a standard appropriate to the nature and character of that part of works where they will be used;
 - suitable for the purpose stated or reasonably to be inferred from the project documents;
- (b) Omissions or errors in description or quantity shall not vitiate the Contract nor release the Contractor from any obligations or liabilities.

INSTALLER QUALIFICATIONS & SKILLS

- (a) The Contractor shall guarantee that onsite operatives should be appropriately skilled and experienced for the type and quality of work inferred by the contract.
- (b) Operatives should be able to produce evidence of their qualifications when requested.

PRODUCTS

- (a) Products should be new and unused, properly wrapped, boxed and shipped to site (and approved by the Client/Client's representative);
- (b) Supply of the product should be from the same source or manufacturer;
- (c) Whole quantity of the product procured should be of consistent kind, size, quality and overall appearance;
- (d) Where critical, measure a sufficient quantity to determine compliance;
- (e) Deterioration should be prevented during the lifecycle of the project construction program; products should be ordered in suitable quantities to a programme and used in appropriate sequence.

EXECUTION

- (a) Generally fix, lay, apply, install products securely, accurately, plumb, neatly and in specified alignment;
- (b) Do not use different colour batches where they can be seen together unless specified;
- (c) Check on-site dimensions and provide feedback to the Landscape Architect of any deviation;
- (d) Finished work should be free of defects, not damaged, disfigured, dirty, and faulty or out of tolerance;
- (e) Adjust construction lines and paving joints open so they are even and regular.

COMPLIANCE

- (a) Proprietary specifications should be followed;
- (b) Evidence that the proprietary product specified has been supplied and used on site should be retained by Contractor;
- (c) Should specified product being not available, notify the Client's Representative with both available substitution and reasonable explanation for approval of Client's Representative.

INSPECTIONS

- (a) Notify Client's Representative in writing 2 days in advance, when reasonable sections of the following stages are ready for inspection on the works quality. Obtain confirmation from Client's Representative before proceeding to next stage. Inspections should be done at the following stages:
 - Delivery of each shipment of materials to site,
 - After spreading and levelling site area,
 - After setting out of trees, planting beds and any additional features,
 - After completion of tree planting pits,
 - At the time of initial installation of trees,
 - Mock-up of paving/edging/other hardscape elements,
 - After completion of all hardscape elements installation,
 - At time of Substantial Completion inspection,
 - At completion of every three-months of maintenance period.
- (b) Inspection or any other action must not be taken as approval unless confirmed in writing. Written statement should include:
 - Date of the inspection,

- Part of the work inspected,
- Characteristics which are approved,
- Extent and purpose of the approval,
- Any associated conditions.

MANUFACTURERS RECOMMENDATIONS/INSTRUCTIONS

- (a) Always comply with manufacturers printed recommendations and instructions current on the date of the invitation to tender;
- (b) If there are any changes to recommendations or instructions – submit details to Clients Representative prior to ordering for approval.

1.2.7.2. SAMPLES AND APPROVALS

GENERAL

- (a) Products or installations should comply with all specification requirements and in respect of the stated or implied characteristics to match a sample expressly approved as a standard for the purpose.

APPROVAL OF PRODUCTS

- (a) Submissions, samples, inspections and tests should be undertaken and arranged to suit the Works programme;
- (b) Do not confirm orders or use the product until approval of the sample has been obtained;
- (c) Approved sample should be retained in good, clean condition on site. Remove when no longer required in accordance with approved disposal methods.

APPROVAL OF EXECUTION

- (a) Submissions, samples, inspections and tests should be undertaken and arranged to suit the Works programme;
- (b) Do not conceal, or proceed with affected work until compliance with requirements is confirmed.

SETTING OUT/ACCURACY

- (a) If tolerances and dimensions likely to be critical to execution or difficult to achieve, the contractor is to propose a site inspection to review the condition should be arranged as early as possible;
- (b) General tolerances (maximum) should be as noted on the drawing set or comply with approved local standards.

1.2.7.3. WORK RELATED TO OR AROUND SERVICES

COMPLIANCE WITH REGULATIONS

- (a) Work related to or around any existing or new services should comply with the Bylaws and Regulations of the relevant statutory authority;
- (b) Any relevant documentation required to start the work or at the completion to be submitted to relevant statutory authorities. This should be included in Detailed Programme of Work;
- (c) Site organisation staff must include one or more persons with appropriate knowledge and experience of mechanical and electrical engineering services to ensure compatibility between engineering and the Works generally;
- (d) Contractor to review all necessary drawings to understand the location of existing utilities and coordinate with all/ any sub-contractor for any simultaneous utilities installation works being executed along with landscape works.
- (e) The Contractor is to submit when requested, CVs or other documentary evidence relating to the experience of the staff concerned to the relevant authority;

1.2.7.4. SUPERVISION/INSPECTION/DEFECTIVE WORK

KICK-OFF MEETING

- (f) Prior to commencing work, the Contractor/Landscape Contractor will meet the PMC and all other concerned parties on the site to review the work under this section. The Contractor/Landscape Contractor will request this meeting in writing one (1) week prior to the desired meeting time;
- (g) The meeting will define the scope of work of the Contractor/Landscape Contractor, and also identify all key stakeholders involved in the overall site works;
- (h) The sequence and schedule for Works, key contacts and communication protocol shall be discussed and agreed;
- (i) Contractor to highlight if any additional information is required by them prior to commencement of works.

SUPERVISION

- (a) In addition to the constant management and supervision of the Works provided by the Contractor's person in charge, all significant types of work must be under the close control of competent site supervisors to ensure maintenance of satisfactory quality and progress. C.V's of proposed Works Superintendent and Site Supervisors with their documented experience to be submitted with Tender documents;
- (b) Replacement of the person in charge of on-site works should be notified to the Client/Client's representative a minimum one week in advance of departure and approval in writing received prior to replacement of said person.

DEFECTS IN EXISTING WORK

- (a) When defects discovered, immediately give notice to the Clients representative. Do not proceed with affected related work until a written response from the Clients Representative has been received;
- (b) Documented remedial work. Do not execute work which may
 - hinder access to defective products or work;
 - Be rendered abortive by remedial work.

ACCESS FOR INSPECTION

- (c) Before removing scaffolding or other facilities for access, give notice of not less than 48 hours.

TESTS AND INSPECTIONS

- (a) Agree and record dates and times of tests and inspections to enable all affected parties to be represented;
- (b) Confirm each test or inspection minimum 2 days in advance. If sample or test is not ready, agree a new date and time;
- (c) Always submit a copy of test certificates to Clients Representative upon receipt and retain copies on site in a ledger with type, date and time of testing.

RECTIFICATION OF DEFECTIVE PRODUCTS/ EXECUTIONS

- (a) Immediately after any execution or product is known, or appears, to be not in accordance with the Contract, submit proposals for opening up,

inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution of works;

- (b) Such proposals may be unacceptable and contrary instructions may be issued by the Clients representative.

MEASURES TO ESTABLISH ACCEPTABILITY

- (a) Wherever inspection or testing shows that the work, materials or goods are not in accordance with the contract and measures (e.g. testing, opening up, experimental making good) are taken to help in establishing whether or not the work is acceptable, such measures:
 - Will be at the expense of the Contractor;
 - Will not be considered as grounds for extension of time.

1.2.7.5. WORK AT OR AFTER COMPLETION

- (a) Make good (correct/repair) all damage consequent upon the Works;
- (b) Remove all temporary markings, coverings and protective wrappings unless otherwise instructed,
- (c) Clean work site, thoroughly inside and out, including all accessible ducts and voids. Remove all splashes deposits, efflorescence, rubbish and surplus materials,
- (d) Cleaning materials and methods for proprietary products should follow recommendations by manufacturers for products being cleaned, and must not damage or disfigure other materials or construction,
- (e) Substances hazardous to health, information sheets to be obtained for all materials used for cleaning and ensure they are used only as recommended by their manufacturers,
- (f) For minor faults - touch up in newly painted work, carefully matching colour and brushing out edges. Repaint badly marked areas back to suitable breaks or junctions,
- (g) Any moving parts of new work should be adjusted, eased and lubricated as necessary to ensure easy and efficient operation.
- (h) Leave the Works and storage areas secure, with where appropriate, all accesses closed and locked. Account for and adequately label all keys and hand over to Client.
- (i) For any remedial work to make good defects, arrange access with the Client's Representative after giving reasonable notice. For completion notify when remedial works have been completed.

1.2.8. LIST OF STANDARDS

Appointed contractor shall be aware and follow the below listed Indian Standards:

| | |
|--------------|---|
| IS 73-2013 | Paving Bitumen |
| IS 1121-2013 | Methods of test for determination of strength properties of natural building stones: Part I Compressive strength |
| IS 1122-1974 | Method of test for determination of true specific gravity of natural building stones |
| IS 1123-1975 | Method of identification of natural building stones |
| IS 1124-1974 | Method of test for determination of water absorption, apparent specific gravity and porosity of natural building stones |
| IS 1125-2013 | Determination of weathering of Natural building stones - Method of Test |
| IS 1126-2013 | Determination of durability of natural building stones - Method of test |
| IS 1128-1974 | Limestone (Slab and Tiles) |
| IS 1129-1972 | Recommendation of dressing of natural building stones |

| | |
|---------------------------|---|
| IS 1200 (Part 1)-1992 | Methods of measurement of building and civil engineering works: Part 1 Earthwork |
| IS 1200 (Part 2)-1974 | Method of measurement of building and civil engineering works: Part 2 concrete works |
| IS 1200 (Part 4)-1976 | Method of measurement of building and civil engineering works: Part 4 stone masonry |
| IS 1200 (Part 8)-1993 | Method of measurement of building and civil engineering works: Part 8 steel work and iron work |
| IS 1200 (Part 9)-1973 | Method of measurement of building and civil engineering works: Part 9 roof covering (including cladding) |
| IS 1200 (Part 11)-2013 | Method of Measurement of Building and Civil Engineering Works Part 11 Paving, Floor Finishes, Dado and Skirting |
| IS 1200 (Part 15)-1987 | Method of measurement of building and civil engineering works: Part 15 painting, polishing, varnishing etc |
| ISO1595 (Part 1)-1992 | Construction of Stone Masonry - Code of Practice - Part 1 : Rubble Stone Masonry |

IS 1805-1973 Glossary of terms relating to stones, quarrying and dressing

IS 4101 Code of practice for external facings and veneers: Part I
(Part1)-1967 Stone facing

IS 15658-2006 Precast concrete blocks for paving

1.2.9. HEALTH AND SAFETY

1.2.9.1. GENERAL

- (a) The safe completion of the works is a primary aim of the contract. All works should be executed in compliance with all applicable statutory requirements. Below listed are general requirements and items, contractor should take care of and provide in respect to Health and Safety on site.
- (b) Contractor should always liaise with Client's Health and Safety Representative during pre-construction, construction and post construction/maintenance stage of work.
- (c) Client's Health and Safety Representative responsibilities should include the following;
 - advise and assist the Client, Contractor and Consultants involved in project with their Health and Safety duties,
 - notify details of the project to respective Health and Safety authorities,
 - co-ordinate health and safety aspects of construction work and co-operate with others involved with the project,
 - facilitate good communication between the client, designers and contractors,
 - liaise with the principal contractor regarding ongoing work,
 - identify, collect and pass on pre-construction information,
 - prepare/ update the health and safety file on a weekly basis and maintain the original in a secure container in the site office.

1.2.9.2. PRE-CONSTRUCTION STAGE

TENDER STAGE

- (a) Health and Safety should be taken into consideration at tender stage. Any major Health and Safety items which may affect the tender should be included in the proposal.

POST TENDER

- (a) Post tender and prior to commencing works on site Contractor to submit detailed Health and Safety Plan (Construction Stage Health and Safety Plan);
- (b) Health and Safety Plan to be approved by the Client/Client's representative prior to handling the site to Contractor and start of any works.

HEALTH AND SAFETY PLAN

- (a) Health and Safety Plan to be submitted by Contractor to the Client/Client's representative for written approval;
- (b) Following items should be included as part of the plan
 - Method statements on how risks from hazards identified in pre-construction information and other hazards identified by the Contractor will be addressed,
 - Details of management structure and responsibilities, with clearly stated point of contact in case of emergency,
 - Arrangements for issuing health and safety directions,
 - Selection procedures for ensuring competency of other contractors,
 - Procedures for informing other contractors and employees of health and safety hazards,
 - Procedures for communications between the project team, other contractors and site operatives,
 - Arrangements for coordination and cooperation between contractors,
 - Procedures for carrying out risk assessments and for managing and controlling the risks,
 - Emergency procedures including those for fire prevention and escape,
 - Arrangements for ensuring that all accidents, illness and dangerous occurrences are recorded,
 - Arrangements for welfare facilities,
 - Procedures for ensuring that all persons on site have all the required safety gear and have received relevant health and safety information and training,
 - Arrangements for ensuring that all visitors to site receive the required safety gear and training prior to entering the site,
 - Arrangements for consulting with and taking views of people on site,
 - Arrangements for preparing site rules and drawing them to the attention of the those affected and ensuring their compliance,

- Monitoring procedures to ensure compliance with site rules, health and safety standards and statutory requirements.
- (c) In addition, all statutory health and safety requirements should be included as part of the Health and Safety Plan.

1.2.9.3. CONSTRUCTION STAGE

SITE PREPARATION - GENERAL

- (a) All health and safety measures and procedures as stated in Health and Safety Plan should be followed during site preparation,
- (b) Construction site should be fenced off from general public. No unauthorised access should be possible,
- (c) Any fencing and barriers should be clearly visible during the day and night time,
- (d) If public pedestrian/vehicular roads are blocked due to construction works, alternative route should be provided and clearly labelled,
- (e) Any excavated areas, particularly pits and deep excavation, should be fenced off and clearly identified.

GENERAL EXECUTION HAZARDS

- (a) All common hazards during execution should be controlled by good management and common practice.

GENERAL PRODUCT HAZARDS

- (a) When dealing with hazardous substances site personnel exposure levels must not exceed occupational exposure standards (upper limit on the acceptable concentration of a hazardous substance in workplace) and maximum exposure limits stated in the relevant local regulations.

SECURITY

- (a) Safeguard the site, the Works, products, materials, and any existing buildings affected by the Works from damage and theft,
- (b) Take all reasonable precautions to prevent unauthorized access to the site storage areas, site facilities, the Works and adjoining property,
- (c) Liaise with Client's Health and Safety Representative.

STABILITY

- (a) Maintain the stability and structural integrity of the Works and adjacent structures during the Contract,
- (b) When design loads included, obtain details, support as necessary and prevent overloading.

OCCUPIED PREMISES

- (a) Any existing buildings on or along the site will be occupied and/ or used during the Contract as follows need to be secured and provided an access if required,
- (b) All works should be carried out without undue inconvenience and nuisance and without danger to occupants and users.

COMMUNICATION

- (a) Clear communication procedures should be established and followed as per Health and Safety Plan on daily basis,
- (b) Health and Safety information should be provided across the site by clearly marked access points, emergency exits, medical points etc.

EMPLOYEES HEALTH AND SAFETY

- (a) All employees should be given health and safety training prior to start of any new works,
- (b) All employees should be aware of Health and Safety Plan and items related to their work,
- (c) All employees should be provided with health and safety compliant protective clothing and equipment,
- (d) If required contractor shall provide site quarters for Employees. These should be equipped with water, electricity and sanitary facilities (toilets, showers etc.) to comply with statutory Health and Safety regulations.

SITE VISITS BY CLIENT REPRESENTATIVE

- (a) Submit in advance, to the Client/Client's Representative details of safety provisions and procedures (including those relating to materials, which may be deleterious), which will require their compliance when visiting the site,
- (b) Protective clothing and/ or equipment should be provided and maintained on site for the Client/Client's representative and other visitors to the site,

- (c) Visitors to site must undertake a site induction process and be trained in basic site safety procedures prior to entering the site. A register to be kept of staff and visitors who have undertaken the site induction program.

TEMPORARY STRUCTURES

- (a) as required the Contractor shall provide adequate offices, toilet and sheds for the protection of equipment and materials from theft and weather conditions,
- (b) Any temporary structures should comply with local Health and Safety regulations.

PROTECT AGAINST THE FOLLOWING

- (a) Noise control
 - Comply with local regulations and minimise the noise level where possible.
- (b) Pollution
 - Protect the site, the Works and the general environment including the atmosphere, land, streams and waterways against pollution. If pollution occurs inform immediately, including to the appropriate authorities and provide relevant information.
- (c) Nuisance
 - Prevent nuisance from smoke, dust, rubbish, vermin and other causes. Prevent hazardous build-up on site, in excavations and to surrounding areas and roads,
 - No dumping of material in the surrounding areas is permitted.
- (d) Asbestos containing materials
 - Report immediately any suspected materials discovered during execution of the Works. Agree methods for safe removal or encapsulation.
- (e) Fire prevention
 - Prevent personal injury or death, and damage to the Works or other property from fire. Comply with local statutory fire regulations.
- (f) Smoking on site
 - Smoking on site not permitted.
- (g) Burning on site
 - Burning on site not permitted.
- (h) Moisture

- Prevent from wetness and dampness where this may cause damage to the works.
- (i) Contaminated materials
 - Where instructed to remove material affected by contamination from the site, minimize the risk of infecting other parts of the site.
- (j) Waste
 - Waste includes rubbish, debris, spoil, containers and surplus material. Keep site and works clean and tidy,
 - Remove waste frequently and dispose offsite in a manner approved by Waste Regulation Authority and as per Waste Management Plan.

PROTECT THE FOLLOWING

- (a) Existing services
 - Notify all service authorities, statutory undertakers and/ or adjacent owners and obtain written approvals prior to commencement of proposed works, not less than one week before commencing site operations,
 - Before starting work, check, identify and mark positions of all utilities/ services. Where positions are not shown on drawings obtain relevant details from service authorities, statutory authorities or other owners,
 - To identify services below ground prior to commencing works, use signboards or other approved methodology, giving type and depth,
 - Damage to services; if damage to services as results from execution of the Works, immediately notify appropriate service authority/ statutory authority. Make arrangements for the work to be made good without delay to the satisfaction of service authority/ statutory authority or other owner as appropriate,
 - Marker tapes or protective covers - replace, if disturbed during site operations, to service authority's/ statutory authority recommendations.
- (b) Roads and footpaths
 - Maintain roads and footpaths within and adjacent to the site clear of mud and debris at all times,
 - If any damage occurs as a result of the Works, make good to the satisfaction of the Client, Local Authority or the Owner.
- (c) Existing topsoil and subsoil
 - Prevent over compaction of existing topsoil and subsoil in those areas which may be damaged by construction traffic, parking of vehicles, temporary site accommodation or storage of materials and which will require reinstatement prior to completion of the Works. Before starting work submit proposals for protective measures.

(d) Retained trees/shrubs/grasses

- Preserve and prevent damage, excepting to those not required. Mature trees and shrubs if uprooted, destroyed, or damaged beyond reasonable chance of survival in their original shape, due to Contractor's negligence, must be replaced with those of a similar type and age at the Contractor's expense and as per local government norms,
- If excavation around existing trees may affect the stability of the plant, make sure trees are secured and protected from falling or causing any hazards.

(e) Existing features

- Prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features, which are to remain in position during execution of the Works

(f) Existing work

- Prevent damage to existing work, structures or other property during the course of the work.

(g) Adjoining property

- Obtain permissions as necessary from owners if is required to erect scaffolding on or otherwise using adjoining property.
- The Contractor shall exercise extreme care in the execution of his work, will provide all necessary safeguards and exercise caution against injury or defacement of existing site. He will ensure that his works in no way shall adversely affect the work of others or adjoining properties;
- The Contractor/Landscape Contractor will prevent vehicles of any kind from passing over sidewalks, curbs, etc, unless adequate protection is provided. If any damage to existing roads or kerbs occurred, they shall be rectified immediately by the contractor at his own cost to the original or better condition;
- The Contractor/Landscape Contractor is responsible for any damages resulting from hard landscape operations, and will repair all damages and return the area to its previous condition at his own expense.

(h) Materials for recycling/reuse

- Sort and prevent damage to stated products or materials, clean off bedding and jointing materials and other contaminants,
- Stack neatly and protect until required by the Employer or for use in the Works as instructed.

1.2.9.4. POST CONSTRUCTION AND MAINTENANCE STAGE

MAINTENANCE

- (a) Contractor should follow Health and Safety Plan during the maintenance period.

HEALTH AND SAFETY FILE

- (a) The Health and Safety File should be revised by Client's Health and Safety Representative for the project post construction works. The file should contain information necessary for future construction, maintenance, refurbishment or demolition to be carried out safely, and should be retained by the client or any future owner of the property.
- (b) All necessary information for Health and Safety File should be provided to Client's Health and safety Representative at the end of works and maintenance.

1.2.10. SITE MANAGEMENT

1.2.10.1. KEY CRITERIA

SITE MANAGEMENT PLAN

- (a) Plan to be prepared by Contractor and approved by the Client/Client's representative prior to handover of the site.
- (b) Plan should be followed during Construction.
- (c) Plan should comply with all relevant statutory regulations as well as Health and safety requirements (*as per Subhead 1.2. General Requirements, Section 1.2.9. Health and Safety", of this Specification*).
- (d) Plan should include and detail the following items;
 - Detailed information on site preparation measures to be taken up before commencement of works as well as during the works and maintenance period,
 - Clear site arrangement layout for temporary structures, storage, water, electricity supply, vehicular circulation and parking areas etc.,
 - Method statements on how site management will be carried out,
 - Details of management structure and responsibilities, with clearly stated points of contact,
 - Communication procedure within site team,
 - Procedures for informing other contractors and employees of site management issues,

- Procedures for communications between the project team, other contractors and site operatives,
- Procedures for keeping the records of site queries, obtained approvals, tests, any documentation that affects the site works etc.,
- Storage of the materials and equipment on site,
- Any additional information required by statutory regulations.

CONTRACTOR'S TEMPORARY STRUCTURES

- (a) Any temporary structures should comply with Health and Safety requirements and relevant statutory regulations.
- (b) Positioning of these facilities shall be on the approval of the Client's Representative and shall be done in co-operation with him.
- (c) Cost of these facilities shall be for the account of the Contractor, unless agreed otherwise.
- (d) The Contractor shall make provision for installation and removal, as agreed, of toilets, and the eventual clearing of the site to the satisfaction of the health inspector. The Contractor shall ensure that the toilets are, indeed used by his staff.
- (e) After the contract is fulfilled, the Contractor shall remove all structures and leave the site in a tidy condition to the satisfaction of the Client's Representative.

STORAGE FOR MATERIALS/EQUIPMENT ON SITE

- (a) The Contractor should allow for a storage area for materials and equipment used on site to be approved by the Clients representative.
- (b) The Contractor shall ensure that no material is delivered, dumped or off loaded on the site unless the Client's Representative has approved the area for it.
- (c) Storage area should follow Health and Safety requirements as *(as per Subhead 1.2. General Requirements, Section 1.2.9. Health and Safety", of this Specification)* in respect to security, protection from weather conditions etc.

SITE BOARD AND INFORMATION BOARDS

- (a) The erection of the site information board at the site shall be at the commencement of the contract, and shall be removed when the contract is completed.
- (b) The Contractor shall make provision for Health and Safety information boards across the site.

COMMUNICATION PROCEDURES

- (a) Contractor should communicate with the Client through a single point of contact, as proposed in Site Management Plan.
- (b) Clear communication procedures between the site team should be established and followed, as per Management Plan.
- (c) All Employees should be provided with training on site communication protocols site, site team structure and employee responsibilities.
- (d) All design queries shall be communicated and clarified with the Client/Client's Representative and records of the communication should be kept on site.
- (e) Any major issues affecting the works and programme should be immediately communicated to the Client and mitigation procedures should be established.

PROTECTION OF PROPERTY

- (a) The Contractor shall take all necessary precautions against damage that might occur to any person, animal, building, structure, services, vegetation, vehicles etc. Enough warning signs, railings, lighting etc. shall be placed around excavations, obstacles, and heaps. Foot bridges, shall be placed over trenches, where necessary for the convenience of the public. Construction activity is to be limited to pre-designated areas.

TRAFFIC

- (a) Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
- (b) Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without written permission from authorities and Client's Representative having jurisdiction.
- (c) Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction so that traffic movement around the site is not hampered.

WATER LOGGING & CONSERVATION OF WATERWAYS

- (a) The site shall be maintained free from stagnant of water. The contractor shall provide and maintain slopes, crowns and drains on excavations and

embankments to ensure satisfactory drainage. Freshly laid out work should be protected from water damage. Where directed by the Client's Representative the contractor shall carry out minor earthworks to top up low-lying area or excavate drain to prevent stagnation of water. Earth for the filling shall be cut from site as indicated on the drawings or from the Contractors own source as indicated and directed.

CLEARING UP

- (a) The Contractor/Landscape Contractor will keep all planting areas and other work areas clean, neat and orderly at all times during the period of the Contract and free from accumulation of waste materials or rubbish. No waste materials or rubbish shall be allowed to remain at the areas of work at the end of each working day.
- (b) Upon completion of the work, the Contractor shall remove all waste materials or rubbish from and around the work areas, together with all tools, equipment and materials, and shall leave said areas in a condition satisfactory to Client's Representative.
- (c) Carefully remove items indicated to be salvaged and stored the site where indicated. Except for stripped Subsoil or other materials indicated to remain on Owner's property, cleared materials shall become the Contractor's property and shall be removed from the project site, on a periodic basis and on completion of site works.

1.3. Site Preparation & Earthworks

1.3.1. SITE PREPARATION

Prior to the start of any construction works on site contractor should make sure that the below listed items have been executed.

1.3.1.1. SITE SURVEY

GENERAL

- (a) Prior to commencing the works Contractor shall carry out own survey and inform the Client's Representative/PMC of any discrepancies with the Design Intent Drawings. Subsequently, appropriate revision to be incorporated in the construction drawings by the Contractor and to be submitted for approval to the PMC/ Client representative.

- (b) Site survey shall be carried out by qualified, skilled and experienced team for the type of work.
- (c) If any unforeseen/unrecorded hazards or items have been discovered during the survey, the Contractor shall give notice to the PMC/Client's Representative. No works shall be carried out until the issue has been resolved.

1.3.1.2. SITE INVESTIGATION

GENERAL

- (d) Contractor shall be solely responsible for obtaining all the information on the nature of the site and sub-surface soil conditions for the purpose of preparing tender and the subsequent execution of the contract.
- (e) Site investigation shall provide data to allow Contractor to proceed with works.
- (f) Extent of the investigation shall be determined by the PMC/Client's Representative and the Contractor.
- (g) Site investigation shall include;
 - Establish records of mean water table,
 - Identify all previous known uses of the site,
 - Identify site features to be preserved,
 - Identify areas of limited access, incomplete work by others or any other issues which may hamper the execution of the works,
 - Locate and identify all known land and water contaminants,
 - Locate and identify soil types to a depth of 4.0m below existing ground level,
 - Recommendations for further investigations.

FIELD TESTS GENERAL

- (a) Each test shall be recorded and following data shall be provided;
 - Project name and reference,
 - Date and time of test,
 - Weather conditions,
 - Soil types and description,
 - Location and detail of the sample,
 - Site photograph,
 - If any feature should be encountered, provide description and depth of:
 - o Changes in soil strata,
 - o Drains,

- Foundations/structures,
- Hard strata,
- Services.

FIELD TEST - SOIL

- (a) Soil test shall be carried out in accordance with relevant local standards;
- (b) Tests shall be carried out at every test pit;
- (c) Method of testing to be proposed by contractor.
- (d) Test shall provide the information on the following:
 - Permeability,
 - Geophysical conditions,
 - Any special features, as advised by Contractor.

SAMPLES

- (a) When taking soil samples make sure the following;
 - Sample complies with relevant local standards,
 - Method should be proposed by Contractor. It should include information on depth, frequency and locations,
 - Samples should be collected and stored in a manner that prevents exposure to direct heat and sunlight, extreme temperatures,
 - Samples should not be contaminated,
 - Ensure samples are a typical representation of the zone from which they were taken,
 - Retain samples for 28 days post submission of the final report.

SITE TESTS – WATER

- (a) Tests should identify ground water levels and pressures.
- (b) Method to be proposed by Contractor.

LABORATORY TESTS

- (a) Mechanical and Chemical properties shall be tested.
- (b) Method of testing should be proposed by Contractor.

FINAL REPORT

- (a) Final site investigation report should include;
 - All known land and water contaminants,

- Identify all previously known uses of the site,
- Locate and identify soil types to a depth of the 4.0m below existing ground level,
- Mean water table,
- Recommendations for further investigation,
- Features to be included;
 - o All above and below ground features,
 - o All underground services,
 - o Topography.

1.3.1.3. PRESERVATION OF EXISTING SITE FEATURES

All existing features identified as to be retained should be dealt with in accordance with the below listed procedures.

Existing features include hard landscape structures as well as trees and other feature soft landscape elements.

PRESERVATION OF HARD LANDSCAPE

- (a) All hard landscape elements identified as to be retained shall be protected from all on going site works.
- (b) No structural elements should be removed/ relocated without written permission of Client representative.
- (c) All protected elements should be kept clean and clear from works area.
- (d) All protected elements should be clearly identified and labelled, site team should be aware of all the items to be protected.

PRESERVATION OF TREES – GENERAL NOTES

- (e) No existing trees should be cut/ pruned without written permission of Client representative/PMC.
- (f) All works shall be carried out in coordination with experienced horticulturalist.
- (g) All works to trees shall be in accordance with relevant local standards;

TREES TO BE REMOVED

- (a) Any existing trees identified as “to be removed” or any dead trees;
 - Contractor shall cut and fell, as close to the ground as possible,
 - Trunks to be cut to convenient lengths,

- Root stumps to be removed to a minimum depth of 800mm below ground level,
 - Any debris or material that comes from the above works shall be utilised in accordance with Waste Management Plan.
- (b) All works shall follow Health and Safety procedures.

TREES TO BE RETAINED

- (a) Trees identified as “to be retained”.
- (b) All retained trees should be clearly identified and information signs should be displayed on site in prominent positions at each entrance.
- (c) All retained trees shall be marked by visible, durable tags, lettered to tree number or symbol (if any) on the drawings.
- (d) Trees should be fenced off the works area if possible, in all cases tree trunk and roots should be protected from site works.
- (e) Protected area should be in a shape of a circle around each tree with radius of 3m or to the width of the canopy line, measured from tree trunk.
- (f) Do not allow soil compaction to occur under the tree canopy.
- (g) Do not store any materials or site equipment under or near the trees.
- (h) Do not allow for any vehicles to be parked near retained trees or to pass under the trees.
- (i) Prevent damage to tree bark; do not attach any items to trees.
- (j) Do not expose tree roots.
- (k) When works under the tree;
 - Do not add or remove topsoil within the drip line of trees, do not fill against tree trunks even temporarily,
 - Open excavation under tree canopy should be carried out for as short period of time as possible. If exposing roots unnecessary temporarily cover with polyethylene sheet to reduce evaporation,
 - Use only hand methods to locate, expose, and cleanly remove the soil around roots on the line of excavation. Root systems should be preserved intact,
 - When it is necessary to cut the roots bigger than 25mm diameter, make sure the cutting does not disturb remaining root system. Cut should be smooth with no ragged edges. Clean cut surface should be immediately treated with bituminous fungicidal sealant.

1.3.1.4. DEMOLITION

GENERAL NOTES

- (a) Contractor to survey and seek agreeance with the Client representative/PMC on the extent of demolition and methodology to undertake works.
- (b) Extent of works should be within site boundary, otherwise notify and agree with Client representative/PMC.
- (c) Contractor to submit details of the demolition works prior to proceeding. The document should include;
 - Location and types of structures, site and surrounding area,
 - Extent,
 - Removal method,
 - Information on adjoining premises which may be affected,
 - Information on below and above ground services, including arrangements for disconnection/removal,
 - Health and safety procedures for protecting public and site workers;
 - Proposed programme of workplace,
 - Any special requirements.
- (d) Report to be submitted to client representative in 3 x No A4 printed copies, as well as electronic copy.

SERVICES AFFECTED BY DEMOLITION:

- (a) Works should be carried out in accordance with relevant local regulations.
- (b) Any services affected by works, shall be clearly marked and demolition/diversion should be agreed with PMC/Client representative prior to commencement.
- (c) Contractor shall arrange for disconnection (in coordination with Local Authorities) of services if needed.
- (d) Any drains that will not be in future use (redundant) shall be disconnected and removed. Connections shall be sealed.
- (e) Drains to be retained shall be protected and kept clean. This includes; manholes, inspection chambers, gullies, vent pipes, fittings.
- (f) Retained services should be protected from works.

TIMING

- (a) Do not proceed with demolition works until commencement of other works in the area is imminent.

1.3.1.5. SITE CLEARANCE

GENERAL

- (a) The Contractor/Landscape Contractor will clear all planting areas of existing vegetation not specified to remain and all other debris and foreign materials considered a hindrance to the planting operation and considered part of the proposed works.
- (b) The Contractor/Landscape Contractor will maintain previously established grades and swales.
- (c) The Main Contractor will be responsible for cleaning the planting areas after completion of civil and other works in that area, and turning them over to the Contractor/Landscape Contractor in a manner suitable for planting and free from deleterious material. It is to the responsibility of the Contractor/Landscape Contractor to ensure that this is done. Failing this, site works to clean up will be the responsibility of the Contractor/Landscape Contractor.
- (d) The Contractor/Landscape Contractor will arrange to have all cleared materials moved to areas on/off site as directed by the Main Contractor.

UTILITY LOCATIONS

- (a) Coordinate with Client's Representative regarding potential utility obstructions and their location before site clearing operations.
- (b) Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Client's Representative or responsible authority and then only after arranging to provide temporary utility services according to requirements indicated;
 - Notify Client's Representative not less than two days in advance of proposed utility interruptions,
 - Do not proceed with utility interruptions without Client's Representative's and Responsible Authorities written permission.

CLEARING OPERATIONS

- (a) Remove everything on or above the site surface, including rubbish, vegetal matter, construction debris and other unwanted material and dispose off all serviceable material within the Project Site and all unserviceable/unsuitable material outside the Project Site.

1.3.2. EARTHWORKS

1.3.2.1. GENERAL ITEMS

GENERAL NOTES

- (a) The section refers to excavation and filling of soil across the site as part of the works.
- (b) Contractor should carry out own survey to identify levels and services, prior to start of works and identify any discrepancies in writing to the Clients Representative.
- (c) If significant variations in site levels or ground water levels are identified in comparison to site investigation report or Drawings provided by the Client, Contractor shall notify PMC/Client Representative immediately.

RELEVANT CONTRACT DOCUMENTS

- (a) The section to be read in conjunction below listed Drawings:

| | | |
|------------------------------|-------|--------------------------|
| VSC-ACM-MP-RFP-DWG-R1A-401to | 423-N | GA, MATERIAL & LEVEL |
| series | | INDICATION PLAN |
| VSC-ACM-MP-RFP-DWG-601-01 | | TYPICAL SETTING OUT PLAN |

- (b) Contractor to make sure relevant Drawings from other packages are in his possession (e.g. relevant structural details).

1.3.2.2. PRESERVATION OF EXISTING TOPSOIL

STRIPPING TOPSOIL

- (a) Before beginning general excavation or filling, Contractor shall strip topsoil from areas where there will be regrading, paving/roads and other areas shown on drawings.
- (b) Topsoil shall be removed to an average depth of 300mm, if the depth of topsoil is difficult to determine Contractor shall give notice to PMC/Client's Representative.
- (c) Stripped topsoil may be reused immediately after stripping or stockpiled in the on-site top soil dump as directed by the Client's Representative for later use;

- (d) Location of stockpile: To be agreed - topsoil shall be stored in an area of the site where it should not interfere with other site operations so that it can be left undisturbed during the construction process.
- (e) Site Clearance: The area that is to be used for storing the topsoil shall be cleared of vegetation and any waste arising from the development e.g. building rubble and fill materials.
- (f) Protection:
 - Topsoil not to be mixed with subsoil, stone, granular aggregate, rubbish or material from demolition, other soil or materials containing aggressive weeds or non-soil forming materials, oil, fuel cement or other substances harmful to plant growth.
 - Do not place any other material on top of storage heaps.
 - Do not allow construction plant to pass over storage heaps.
 - Prevent compaction and contamination, by fencing and covering as appropriate.
- (g) Height:
 - If the topsoil is reasonably dry and friable, the topsoil shall be heaped to a maximum height of 4m. Compaction of the surface to be done.
 - If the topsoil is moist and plastic, the topsoil shall then be heaped up to a maximum height of 2m. No further compaction required.
- (h) Stock-piled top soil should be planted with rough grasses etc. to limit erosion of soil and reduce windborne dust, complying with applicable environmental guidelines.

DISPOSAL MATERIALS

- (a) Surplus subsoil to be stockpiled in temporary storage heaps or spread and level on site as per Contractor's proposal. Protection from wind and disturbance shall be provided.
- (b) Never rise soil levels within root spread and above the root flare of existing trees that are to be retained.
- (c) Remaining material to be removed from site, as per Site Waste Management Plan, refer *(as per **Subhead 1.2. General Requirements, Section 1.2.9. Health and Safety**, of this Specification)*.

1.3.2.3. EXCAVATION

GENERAL NOTES

- (a) All excavation works shall be in accordance with relevant local standards.

- (b) The work shall include the hauling and satisfactory disposal of surplus excavated or deleterious material;
- (c) Any features like pavement wearing surface, concrete paths, kerbs, channels or alike, should be cut by saw to give clean break line along the edge of excavation.
- (d) All excavation shall be carried out by mechanical equipment, unless specified otherwise by Client representative. Contractor can suggest alternative methodology for Client's Representative approval. However any consequent loss or damage will be still under Contractor's liability.
- (e) Notify Client's Representative if unexpected rock, hardpan or obstructions detrimental to trees or shrubs are encountered in excavations.
- (f) Hardpan Layer: Drill 150-mm diameter holes, 600 mm apart, into free-draining strata or to a depth of 10 feet (3 m), whichever is less, and backfill with free-draining material.
- (g) Remove any rubbish or debris from the planting surfaces. Grades, which have been established, shall be maintained in a true and even condition;
- (h) Maintenance shall include any necessary repairs to previous graded areas;
- (i) Remove obstructions, debris, rubbish, rocks greater than 100mm in diameter, trees, shrubs, grass, and other vegetation to permit installation of soil layers during the Filling works;
- (j) Side slopes shall be as steep as will withstand safely for actual site conditions encountered for planting beds;
- (k) The following actions need to be followed during this process;
 - Cut minor roots and branches of trees indicated to remain, as per horticultural practises where branches obstruct installation of new construction. Ensure adequate protection is provided to any exposed roots.
 - Grind stumps and remove roots, obstructions, and debris extending to a depth of 450 mm below exposed sub-grade.
 - Chip removed tree branches and stockpile or dispose in areas approved by Client's Representative.
 - The type of soil to be excavated for pits will cover all soil types such as soft soil, hard moorum and soft rock as is found on site.
 - Soil excavated from planting holes shall be removed and may be re-used in back filling, if instructed by the Client's Representative, by proving it acceptable through amendments to form specified General Planting Soil Mix as provided in this Specification.

EXCAVATION ADJACENT TO EXISTING FOUNDATIONS AND STRUCTURES

- (a) Prior to commencing excavation excavate trial pits adjacent to existing foundations to determine extent and formation level.

- (b) Agree with engineer formation level in the new excavation for the safety of the structure.
- (c) Backfill material to excavation to be determined by engineer.
- (d) Provide support to adjacent structures if necessary and written approval by appropriately qualified Engineer provided in writing to Clients Representative, prior to works commencing, sufficient to prevent damage arising from works.
- (e) Supports should be lateral (shoring) and vertical (piling or underpinning).
- (f) If permanent support required give notice to PMC/Client's Representative.
- (g) Where excavation encroaches below a line drawn at 45 degree angle (angle of repose) from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto must be completed before higher excavation is made.
- (h) Provide support to adjacent structures if necessary and written approval by appropriately qualified Engineer provided in writing to Clients Representative, prior to works commencing.

EXISTING WATERCOURSES

- (a) Divert water courses which are to be filled, remove vegetable growths and soft deposit.

EXCAVATING IN MADE UP GROUND

- (a) Excavate down to a natural formation of undisturbed subsoil. Notify PMC/Client's Representative if discrepancy identified greater or lesser than given depth.

SIZES & DEPTH FOR PLANTING PITS

- (a) Pits and Trenches: Excavate square or circular pits for trees and palms, and circular pits for large shrubs, with side slopes vertical. Where impractical to do so due to non-cohesive nature of the soil, they shall be so excavated as to provide not less than the specified plan size at the bottom of the excavation. Trim base leaving central area slightly raised to support root ball and assist in drainage. Break base to 100mm depth. Scarify sides of plant pit smeared or smoothed during excavation.
- (b) Fill excavations with water and allow percolating away before positioning trees and shrubs.
- (c) Pest control treatment to be done as required in pits before planting, with approval of Client's Representative.

- (d) The minimum size of tree & shrub pits and planting beds shall be as follows:
- Trees/ Palms: 1.2m x 1.2m x 1.0m or as specified in the Drawings.
 - Large Shrubs: 0.6m x 0.6m x 0.6m
 - Shrub beds: 0.6m depth x area as per Drawings
 - Ground cover beds: 0.3m depth x area as per Drawings
 - Turf areas: 0.3m depth x area as per Drawings

INSPECTIONS

- (a) Contractor to give 5 days' notice for inspections of formations for foundations and filling formations, service trenches, roads and paving.
- (b) Seal the approved formation with blinding concrete within 4 hours of inspection.

1.3.2.4. LEVELLING & GRADING WORKS

GENERAL

- (a) The work shall consist of grading, contouring, smoothing or otherwise shaping areas beyond the planting beds and lawns at the locations shown on the drawings, including earth mounds.
- (b) Roadway shoulders and soil areas left exposed after planting shall be graded as required to leave a generally smooth appearance conforming to the general shape and cross section indicated on the drawings. The final surfaces shall be raked. All objectionable material, trash, brush, weeds and stones larger than <50 mm in diameter shall be removed from the site and disposed of in an approved manner.
- (c) Make up any deficiency of existing sub-grade level on site with approved backfill to achieve required sub-grade levels.
- (d) Landscape levels will be tied to existing conditions such as existing trees, palms, landscape features, utility lines, pavement and kerbs, etc. Finished grades will bear proper relationship to such control. The Contractor will adjust all works as necessary to meet the conditions and fulfill the intention of the Drawings.
- (e) All grades shall provide for natural run off of water without low spots or pockets, flow lines shall be accurately set and shall not be less than 2% gradient, unless otherwise noted. Grades will be smooth and even on a uniform plane without abrupt changes or pockets and slope it away from all buildings.

- (f) The Contractor will verify the surface drainage of all planting areas and notify the Client's Representative of any discrepancies, obstructions, or other conditions considered detrimental to proper execution of the work and plant growth. The Contractor will adjust finished grading with screened soil as necessary.

RIPPING

- (a) Light and non-cohesive sub-grade: When ground conditions are reasonably dry, rip sub-grade thoroughly to a minimum depth of 300 mm.
- (b) Stiff clay and cohesive sub-grade: When ground conditions are reasonably dry, rip sub-grade thoroughly to a minimum depth of 450 mm.
- (c) Remove stones larger than 25mm in any dimension and sticks, roots, rubbish, weeds and other extraneous matter harmful to plants growth and legally dispose of them outside the Project Site.
- (d) Roughly grade to form free flowing contour without humps and water retaining hollows. Operate along with contour when on slope area to avoid significant alteration of formed sub grade level.
- (e) Ripping on slope:
 - Sub-grade at slope between 15 and 27 degree (2:1) shall be ripped parallel to the contour lines of existing sub grade.
 - Sloped sub-grade exceeding 27 degree (2:1) shall not be ripped.

1.3.2.5. FILLING WORKS

MIXING

- (a) Refer **subhead item 1.3.2.5, Treatment of Beds** for necessary anti-termite treatment prior to mixing and backfilling of soil.
- (b) Thoroughly blend top soil/ imported sub-standard planting soil applied with the recommended soil amendments and fertilizers to form General Planting Soil Mix. Mixing to be done at approved site area as approved by Client's Representative, before spreading on surface of specific planting area.
 - Delay mixing fertilizer with planting soil if planting will not proceed within a few days.

FILLING

- (a) Planting pits and beds shall be filled carefully to fill all voids and to avoid breaking or bruising roots. Pack backfill firm to prevent settlement. When pit or bed is nearly filled, water thoroughly and allow water to soak away. If settling of the fill occurs after watering, add more fill to bring to level.

- (b) Sloped surfaces steeper than 1 vertical to 4 horizontal should be ploughed, scarified, or broken up sloped so fill material will bond with existing material.
- (c) Spread specified Planting Soil Mix corresponding to planting types and as indicated in the Drawings to meet finish grades after natural settlement. Place and compact fill material in layers as follows:
 - Under planted areas, place specified soil material;
 - Over Drainage Cells place specified soil material;
 - In raised planter areas place specified soil material.
- (d) Do not spread if planting soil or sub-grade is muddy, or excessively wet.
 - Spread approximately one-half the thickness of planting soil mix over loosened sub-grade. Compact the layer reasonably. Spread remainder of planting soil mix.
 - Do not mix or spread specified Planting Soil Mix until sample from each blended batch has analysed, reported and is submitted and approved by Client's Representative.
 - Cover and temporarily store prepared plant mix on site area designated by Client's Representative during the period of soil testing; Take measure to prevent degradation, fermentation, puddling and pest of the soil during the period.

FINISHED GRADING

- (a) Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Water the plant bed thoroughly and allow settlement of planting soil mix. Finishing level and finished contouring profile as indicated on the drawings.
- (b) Unless otherwise specified, finishing grade for planting areas shall be:

| | |
|----------------------|---|
| Planting bed | 50mm below hard finish level |
| Lawn area | 25mm below hard finish level when compacted |
| Raised planters | 100mm below adjoining hard finish level |
| Adjoining soil areas | Merge |
- (c) Before planting, restore planting beds if eroded or otherwise disturbed after finished grading.

TOLERANCE

- (a) The tolerance of the fill level or those on slope shall not be more than 25mm from the proposed level. The same tolerance shall be applicable to the limits and lines of cut and fill. All levels are those applicable at the end

of the Defects Liability Period. The Contractor should therefore make the necessary allowance for consolidation, settlement and any other losses and to include all expenses for this in his quoted rates.

PREPARATION FOR TURF

- (a) Check and ensure drainage of lawn area is in place and working properly; report to Client's Representative if any irregularity is spotted.
- (b) Fill the planting bed with the Soil Mix to the required depths as per drawings and meet Final Grade as indicated on drawing.
- (c) Level the soil in gradient as indicated and tread or roll to firm up soil to prevent any settling of soil mass but without compaction; never firm up soil when it is wet.
- (d) Rip through the Top soil to remove impurity, materials harmful to plant growth, stones over 25mm in diameter and to form a fine tilth. If carpet or seeding is not installed on the same day, rake the area again just before sod is laid only in areas previously undisturbed. Protect the prepared plant bed from soil erosion or soil compaction if carpet is not installed on the same day of preparation works.

1.3.2.6. TREATMENT OF PITS/ BEDS

PRE-PLANTING WEED CONTROL

- (a) The Softscape Contractor will remove all visible weeds before any soil placement.
- (b) Herbicides and weedicides are not allowed.

ANTI-TERMITE TREATMENT-PLANTING BEDS

- (a) Any of the following chemicals (conforming to relevant Indian Standards) in water emulsion shall be applied by pressure pumps, uniformly over the area treated:

| Chemical | Relevant Indian Standard | Concentration by weight_ % |
|---------------------|--------------------------|----------------------------|
| Chlorpyriphos 20 EC | IS: 8944-1978 | 1.0 |
| Lindane 20 EC | IS: 632-1978 | 1.0 |

- (b) The method of application and the stages it will be applied shall be submitted for approval and this shall conform to relevant IS codes.
- (c) All works related to application of the Chemicals shall strictly follow Health and Safety procedures;
- (d) No work shall be carried out under unsuitable weather conditions, these include:
 - Rain or when the soil is wet due to rain or sub-soil water;
 - Strong winds;
 - Heat waves or Temperature exceeding the manufacturers specifications for application or during extreme weather conditions.
- (e) Chemicals shall be brought to the site of work in sealed original containers. The materials shall be brought in at a time, in adequate quantity to suffice for the work. The material shall be kept in cool and locked stores. The empties shall not be removed from the work site till the relevant item of work has been completed and permission granted by the Client's Representative.
- (f) Chemicals available in concentrated forms with concentration indicated on the sealed containers shall only be used. Chemicals shall be diluted with water in the desired quantity before use, using graduated containers to achieve the desired percentage of concentration. Destruction and disposal of empty containers to be made in accordance with manufacturers recommendations.
- (g) Hand operated pressure pump with graduated containers shall be used to ensure uniform spraying and to facilitate proper penetration of the chemical. Continuous check shall be kept to ensure that the specified quantity of chemicals is used for the required area during the operation.
- (h) The treated soil barriers shall not be disturbed after they are formed. If by chance, treated soil barriers are disturbed, immediate steps shall be taken to restore the continuity and completeness of the barrier system.

ANTI TERMITE TREATMENT-GENERAL

- (a) This section covers the general requirements for Anti-Termite Treatment measures, chemical treatment of soils for the protection of features & buildings attack of subterranean termites, Chemicals to be used with their minimum rates of application and procedure to be followed for treatment of Foundation.
- (b) The chemical used for soil treatment shall be any one of the following;

| Chemical | Relevant Indian Standard | Concentration by weight_ % |
|--|--------------------------|----------------------------|
| Chlorpyriphos emulsifiable concentrate | IS: 8944-1978 | 1.0 |
| Heptachlor emulsifiable concentrate | IS: 6439-1972 | 0.5 |
| Chlordane emulsifiable concentrate | IS:2682-1966 | 1.0 |

- (c) The method of application and the stages it will be applied shall be submitted for approval and this shall conform to relevant IS codes.
- (d) All works related to application of the Chemicals shall strictly follow Health and Safety procedures. Workers shall be properly protected during application and shall wear the necessary clothes, masks, goggles and other gear to avoid direct contact and inhalation of chemicals ;
- (e) No work shall be carried out under unsuitable weather conditions, these include:
 - Rain or when the soil is wet due to rain or sub-soil water;
 - Strong winds;
 - Heat waves;
- (f) Chemicals shall be brought to the site of work in sealed original containers. The materials shall be brought in at a time, in adequate quantity to suffice for the work. The material shall be kept in cool and locked stores. The empties shall not be removed from the work site till the relevant item of work has been completed and permission granted by the Client/ Client's Representative.
- (g) Chemicals available in concentrated forms with concentration indicated on the sealed containers shall only be used. Chemicals shall be diluted with water in the desired quantity before use, using graduated containers to achieve the desired percentage of concentration.
- (h) Hand operated pressure pump with graduated containers shall be used to ensure uniform spraying and to facilitate proper penetration of the chemical. Continuous check shall be kept to ensure that the specified quantity of chemicals is used for the required area during the operation.
- (i) Soil treatment shall start when the foundation trenches and pits are ready to receive mass concrete in foundations. Laying of mass concrete will start when the chemical emulsion has been absorbed by the soil and the surface is quite dry. The above mentioned also applies in the case of treatment to the filled earth surface within the plinth before laying the sub grade for the floor. The treated soil barriers shall not be disturbed after they are formed. If by chance, treated soil barriers are disturbed, immediate steps shall be taken to restore the continuity and completeness of the barrier system.

1.4. Hardscape Works

1.4.1. GENERAL

1.4.1.1. QUALITY ASSURANCE

- (a) All items and works related to the section shall be compliant with relevant local standards;
- (b) Installer Qualifications: Registered Contractor.
- (c) All paving materials to be obtained from single source as per approved Supplier's list – submitted by Contractor and approved by Client's Representative;
- (d) Source Limitations for Other Materials: Obtain each type of cementitious material, mortar, and other material from single source or producer for each aggregate and sufficient quantity ordered to allow for damage and colour variation.
- (e) Pre-construction Compatibility and Adhesion Testing: Submit the latex-additive manufacturer, for testing indicated below, samples of paving materials that will contact or affect mortar and grout that contain latex additives.
- (f) Use manufacturer's standard test methods to determine whether mortar and grout materials will obtain optimum adhesion with, and will be non-staining to, installed paving stones and other materials constituting stone paver installation.
- (g) Pre-installation Inspection: Conduct inspection at Project site with Client's Representative as per approved Works Programme.

1.4.1.2. SAMPLES, MOCKUPS AND APPROVAL

- (a) Construct Mockups to set quality standards for materials and execution as coordinated and request written approval by Client's Representative prior to continuing works.
- (a) Kerb mock ups to be incorporated into paving mock-ups.
- (b) Construct Mockups for each type of paving, each Mockup shall be to scale, and surface areas as dimensioned as stipulated in the Drawings'. Notes for each Mockup to be provided.
- (c) Contractor to submit the drawing showing layout, location and dimensions for 'on-site' Mock-up area, for Client's Representative's approval prior to construction of Mock-up.
- (d) Mock-up should include kerbs, recessed manhole covers, paving transitions, interface with lighting and any additional feature as required;

- (e) Approval of mock-ups should include quality of finish, materials, mortars & P.C.C. and workmanship;
- (f) Approval of mock-ups is also for other material and construction qualities that the Client's Representative specifically approves in writing. Approval of mock-ups does not constitute approval of deviations from the Contract Documents unless Client's Representative specifically approves such deviations in writing.
- (g) If any major item has been rejected, mock-up panel shall be removed or corrected and presented again for approval.
- (h) If minor items have been rejected, notes shall be taken and followed during the construction programme in respect to mentioned items.

1.4.1.3. DELIVERY, STORAGE, AND HANDLING

- (a) Paving units to be delivered on site in packaging that should not allow for cracks, chippings or discolorations of the material.
- (b) Store materials on elevated platforms, under cover, and in a dry location. Do not use materials that have become damp.
- (c) Store all accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.
- (d) All materials shall be stored in a secured location and in accordance with Health and Safety Plan *(as per **Subhead 1.2. General Requirements, Section 1.2.9. Health and Safety**, of this Specification)*.

1.4.2. KERBS AND EDGES

1.4.2.1. GENERAL ITEMS

SCOPE

- (a) This section of the Specification covers the general requirements for kerbs and edges and allied works including all materials, labour, curing, scaffolding, tools etc.

RELEVANT CONTRACT DOCUMENTS

- (a) The section to be read in conjunction with below listed Drawings:

VSC-ACM-MP-RFP-DWG-R1A-401to 423-N GA, MATERIAL & LEVEL INDICATION PLAN series

VSC-ACM-MP-RFP-DWG-320-04

TYPICAL KERB DETAIL

- (b) Contractor to make sure relevant Drawings are in his possession (e.g. relevant structural details).

1.4.2.2. PRODUCTS

CONCRETE KERBS – Kerb Type – E1/E2

- (a) Concrete type and quality to Engineer's specification and to comply with local standards and regulations;
- (b) Contractor to submit samples of all the concrete kerbs in specified sizes, finishes and with any special features (if applicable) for approval prior to commencement of works;
- (c) All concrete kerbs should be free from vents, cracks, fissures, discolouration or other defects deleterious to strength, durability or appearance;
- (d) Kerb sizes, colour, finish, pattern, jointing, remarks and any other aesthetic characteristics to follow submitted Landscape Drawings. Allow for oversized units;
- (e) Fixing of the kerb and any structural related details to Engineer's specification.
- (f) Contractor to reject any kerb units that do not comply with the above requirements. Client's Representative to reserve right to reject the inaccurate products.

1.4.2.3. EXECUTION

LAYING CONCRETE KERBS – Kerb Type – E1/E2

- (a) All works shall be executed in accordance with relevant local standards;
- (b) Contractor to follow Health and Safety procedures set in Health and Safety Plan (*as per **Subhead 1.2. General Requirements, Section 1.2.9. Health and Safety**, of this Specification*) at any time during the works;
- (c) Do not install in adverse weather conditions. Adequately protect foundations, bedding and haunching against extreme temperatures and rapid drying by wind and sun.
- (d) Cutting to be neat and accurate, without spalling. Form neat junctions. Minimum cut as specified on Drawings. If minimum cut not possible use oversized unit;

- (e) Use special corner and radii units at bends, corners and junctions, refer to Drawings for details.
- (f) Units to be positioned true and levelled along top and front faces, in a mortar bed on accurately cast foundations;
- (g) Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately
- (h) After bedding has set, secure units with a continuous haunching of concrete;
- (i) Deviation in finish kerb levels should be no more than 5mm, horizontal and vertical alignment should not exceed 3mm in 3m.

1.4.3. PAVING

1.4.3.1. GENERAL ITEMS

SCOPE

- (a) This section of the Specification covers the general requirements for concrete paving, natural stone paving, bituminous surfaces, tactile paving and allied works including all materials, labour, curing, scaffolding, tools etc.

RELEVANT CONTRACT DOCUMENTS

- (a) The section to be read in conjunction with below mentioned drawings:

| | |
|--|---|
| VSC-ACM-MP-RFP-DWG-R1A-401to 423-N series | GA, MATERIAL & LEVEL INDICATION PLAN |
| VSC-ACM-MP-RFP-DWG-320-05 | TYPICAL PAVING DETAIL |

- (b) Contractor to make sure relevant Drawings are in his possession (e.g. relevant structural details).

1.4.3.2. PRODUCTS

CONCRETE PAVERS- Paving Type – P1/P2/P3/P4 Interlocking/ Tactile

- (a) Concrete type and quality to Engineer's specification and to comply with local standards and regulations;
- (b) Contractor to submit samples of all the concrete paver types in specified sizes, finishes and with any special features (if applicable) for approval prior

to commencement of works. These to include tactile paving and pathway markers with metal inlay;

- (c) All concrete pavers should be free from vents, cracks, fissures, discolouration or other defects deleterious to strength, durability or appearance;
- (d) Paver sizes, colour, finish, pattern, jointing, remarks and any other aesthetic characteristics to follow submitted Landscape Drawings. Allow for oversized units;
- (e) Fixing of the pavers and any structural related details to Engineer's specification.
- (f) Contractor to reject any pavers that do not comply with the above requirements. Client's Representative to reserve right to reject the inaccurate products.
- (g) Tactile paving works to comply with Indian CPWD Braille Standards, 2014 for standards related to Disability Act. Tactile tiles to include both directional tile & Hazard warning tile.

BRUSHED CONCRETE FINISH – Paving Type CC

- (a) Concrete type and quality to Engineer's specification and to comply with relevant Indian standards and regulations; reinforced as per structural consultant.
- (b) M25 grade of concrete in 1:1.5:3 ratio or as specified as per standards.
- (c) Slab thickness 125mm or as per approved structural drawings;
- (d) Slump of concrete should be maximum 110mm.
- (e) Slab length should not be larger than 9.0m in any direction
- (f) Tool Joints at 2m c/c.
- (g) Broom finish on Concrete:

Surface Finish:

- Tools: Broom comprising a stiff synthetic material such as nylon. Brush finish applied when surface water has evaporated and no more than 2mm of the surface is affected by the broom action
- Workmanship: surface treatment to be undertaken by skilled labour working under supervision of contractor following all standards and specifications and using a single continuous action in one direction to apply the surface finish.

1.4.3.3. EXECUTION

LAYING CONCRETE PAVERS – Paving Type – P1/P2/P3/P4 Interlocking/ Tactile

- (a) All works shall be executed in accordance with relevant local standards;

- (b) Contractor to follow Health and Safety procedures set in Health and Safety Plan (as per **Subhead 1.2. General Requirements, Section 1.2.9. Health and Safety**”, of this Specification) ;
- (c) Do not install in adverse weather conditions. Adequately protect foundations, bedding and haunching against extreme temperatures and rapid drying by wind and sun, heavy rainfall.
- (d) Sub base and bedding to be laid to Engineer's specification;
- (e) Bedding to be firm and properly compacted. Rocking or subsidence should not occur or develop.
- (f) Saturated sand bedding to be removed and replaced, otherwise allow to dry and assess the stability before proceeding with works.
- (g) Use geotextile sheet around obstructions to prevent washing away of bedding. Lay immediately below sand bedding course for 1.0m perimeter around obstruction. Joint by overlap, lap to be 300mm. When approaching the edge turn the sheet up to form an upstand against the features, height no less than thickness of sand bedding.
- (h) All masonry cutting to be machine made and neat and accurate, without spalling, and forming neat junctions with edging and adjoining finishes. Minimum cut as specified on Drawings.
- (i) When laying on the slope, lay paving units from the bottom of slope, upwards;
- (j) Paving should appear even and regular with even joint widths and free of mortar and sand stains.
- (k) Deviation in finish paving levels should be no more than $\pm 5\text{mm}$. Allowed deviation in height of finished paving above features (gullies/drainage channels/kerbs) to be no more than $\pm 3\text{mm}$.

Sudden irregularities are not permitted. Variation in levels between adjacent block/pavers sets to be no more than $\pm 2\text{mm}$.

- (l) Paving should be clean and free from mortar droppings, oil and other materials likely to cause staining after completion.
- (m) After laying of paving, brush in clean granular sand into all the joints and use vibrating plate compaction machine to level the entire paved area.
- (n) Water down the paved area after compaction and repeat the process until all the joint voids are filled with sand and properly compacted.
- (o) Do not overload previously laid paving with stacks of materials. Avoid damage to unit corners, surfaces etc.
- (p) After laying do not allow for any pedestrian traffic for 24h, vehicular traffic for 28days.

1.4.4. SITE FURNITURE AND FEATURES

1.4.4.1. GENERAL ITEMS

SCOPE

- (a) This section of the Specification covers the general requirements for all site furniture and features like benches, bins, signage, digital information panel and allied works including all materials, labour, curing, scaffolding, tools etc.

RELEVANT CONTRACT DOCUMENTS

- (a) The section to be read in conjunction with below listed Drawings:

| | |
|--|---|
| VSC-ACM-MP-RFP-DWG-R1A-401to 423-N series | GA, MATERIAL & LEVEL INDICATION PLAN |
| VSC-ACM-MP-RFP-DWG-320-01 | TREE GRATE, BENCH AND MANHOLE |
| VSC-ACM-MP-RFP-DWG-320-10 | LIGHT BOLLARD AND FIXING |
| VSC-ACM-TRA-RFP-DWG-900-1 53 | to SIGNAGE DRAWINGS |

- (b) Contractor to make sure relevant Drawings are in his possession (e.g. relevant structural details).

1.4.4.2. PRODUCTS

FEATURE BENCH/ BIN/ SIGNAGE

- (a) Material quality and details to Engineer's/ Manufacturers specification and to comply with local standards and regulations;
- (b) Contractor to submit Shop Drawings for PMC/Client Representative's approval. Shop drawing's to include material detail specifications, fixing details and any other relevant information.
- (c) Contractor to submit samples of all material types in specified colours, finishes and with any special features (if applicable) for approval prior to commencement of works. In case of solid rock bench, ensure proper finishing after chiselling work so that there are no sharp edges.

- (d) All feature bench/bin/signage items should be free from chipping, vents, cracks, fissures, discolouration or other defects deleterious to strength, durability or appearance.
- (e) Feature bench/bin/signage items sizes, colour, finish, pattern, jointing, and any other aesthetic characteristics to match submitted Landscape Drawings and Approved Shop Drawings.
- (f) All special features related to design of any street furniture product should be executed to the highest quality. Any cracks, discolouration, edge defects must be corrected or may lead to rejection of the whole unit.
- (g) Fixing of the feature bench/ bin/signage on site and any structural related details to Manufacturers specification. This should be included in Shop Drawing's for PMC/Client's Representative approval.
- (h) Contractor to reject any feature bench/ bin/signage unit that does not comply with the above requirements. Client's Representative reserves the right to reject any non-compliant products.

1.4.4.3. INSTALLATION

INSTALLATION OF FEATURE BENCH/ BIN/SIGNAGE

- (a) Fixing of the feature bench/bin/signage items to Manufacturers /Contractor's specification whichever is higher.
- (b) All works shall be executed in accordance with relevant local standards.
- (c) Contractor to follow Health and Safety procedures set in Health and Safety Plan *(as per **Subhead 1.2. General Requirements, Section 1.2.9. Health and Safety**, of this Specification)* at any time during the works.
- (d) Do not install in adverse weather conditions. Adequately protect against extreme temperatures and strong winds, sun, heavy rainfall;
- (e) During installation avoid damage to already executed works (paving, edging, wall cladding etc.). Any faults should be corrected to same quality and appearance.
- (f) Feature bench/bin/signage items to be installed plumb and level and to best practise standards. All adhesives or residue from installation process to be removed prior to staining the surface. Any timbers/ concrete or steel works that are irreparably stained are to be removed and replaced prior to handover.
- (g) After installation leave the area clean and tidy, do not leave any tools or materials on site. Any waste should be utilised in accordance with Waste Management Plan.

1.5. Softscape Works

1.5.1. GENERAL

1.5.1.1. QUALITY ASSURANCE

- (a) All plants shall be supplied by the Contractor and must immediately review all stock received and inform the Landscape Architects in writing if the plants are not suitable for any reason. The following applies to all plants.

They shall:

Meet or exceed – **All Plants and trees specimen** should meet the require standards recommended or as per the specifications given by the PMC/Client Representative.

- (b) Plant species should be free of pests and disease including of viruses, nematodes, phytopthera, scale, mealy bug, red spider, aphids, white fly and thrips.
- (c) Plant species should be free of mechanical or insect damage including leaf burn, chewing insects and stem marks.
- (d) Plant species should be healthy and showing consistent vigour during the growth period.
- (e) Plant species should be well hardened with consistent even growth typical of the species.
- (f) Plant species should be fully acclimated to light and climatic conditions for interior operations, where applicable.
- (g) Plant species should be correctly and clearly labelled with plant scientific name, size, and production and approval reference numbers.
- (h) Plant species should be supplied in approved recyclable containers .e.g. "Spring Ring" to provide room for root pruning during root growth.
- (i) Trees shall be vigorous, healthy trees that can be easily trained into attractive trees with structurally strong roots and crowns:

- All trees shall be true to type or name as ordered or shown on the plans and are to individually tagged or tagged in groups by species and cultivar (variety).
- All trees shall be healthy, have a form typical for the species or cultivar, be well-rooted, and properly trained.
- The root-balls of all trees shall be moist throughout and their crown is to show no signs of moisture stress.
- For trees in pedestrian areas, be properly and adequately pruned to acceptable clear stem height prior to installation.

1.5.1.2. SAMPLES, MOCKUPS AND APPROVALS

- (a) Procurement plan should be submitted to identify the procurement and delivery schedule for all plant material.
- (b) All plant samples shall be approved by Client's Representative/PMC either at pre-arranged nursery visit prior to delivery or on site). As required, take photos and tag approved plants with waterproof label indicating their species, size, serial number and nursery source. Submit list of approved plants together with photo taken to Client's Representative at least 7 days before delivery to site.
- (c) Plant materials identified as specimen will be subject to inspection and approval by the Client's Representative/PMC at the place of growth and after it's delivery at site for conformance with the specification as stated in the Bill of Quantities. All plant materials not conforming to the specification will be rejected.
- (d) Notify Client's Representative/PMC in writing 1 week in advance to arrange for any nursery visits. As the plants are ready to deliver in each shipment, notify the Client's Representative/PMC at least 7 days prior to the delivery on site.
- (e) All plants supplied on site should be of same or similar specifications as the selected plant sample. No substitution to plant species or alternate specifications of plants shall be permitted. Plants that are not approved shall be replaced with properly conforming materials.

1.5.1.3. DELIVERY, STORAGE AND HANDLING

- (a) Dig and immediately deliver plants prepared at the off-site or on-site nursery after site preparation for planting to be completed.
- (b) Handle plants in protective manner and keeping natural form,
 - Protect bark, branches, and root systems from sunscald, drying, sweating, whipping, and other handling and tying damage,
 - Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape,
 - Provide protective covering and any other measures to plants during delivery to avoid damages,
 - Do not drop plants during delivery and handling,
 - Handle planting stock by root ball, especially as lifting,
 - Tie up fronds of palm trees reasonably to protect fronds and meristem from mechanical damage,
 - Maintain and prevent loss of plant label during delivery,
 - All equipment and transport vehicles required, including cranes required to transport semi-mature trees and large palms, are to be

informed to the Client's Representative along with the delivery schedule to ensure adequate access as required.

(c) Deliver plants to construction site and/or On-site Nursery as designated by Client's Representative:

- Provide Procurement Schedule as set out in *(as per **Subhead 1.2. General Requirements, Section 1.2.6.2. Post Tender Submittals**, of this Specification)*.
- Schedule item delivery date in accordance with the approved overall project schedule.
- Ensure the provision of watering system is in place and adequate to plants temporarily stored in On-site Nursery and verify with Client's Representative.
- Notify Client's Representative in writing prior to delivery for on-site material inspection and material confirmation arrangement and of list of material to be delivered.
- Before on-site material inspection and subsequent approval by Client's Representative, the plants and materials shall not be used.
- Replace all plants and materials rejected by Client's Representative.
- Document all plant material damaged, dead or degraded during shipment and notifies Client's Representative.
- Receive, unload and maintain plants as delivered to site prior to installation.
- Plants of the same species used in any defined area should be of similar specifications and form.

(d) If planting is delayed more than six hours after delivery, temporarily store plants and/or turf at On-Site Nursery as specified;

- Store and maintain nursery plants grown in shade conditions in equivalent shade conditions.
- Plants stored on-site shall be spaced to allow clearance for light and air and shall not be spaced together such that branches might die or wilt.
- Plants shall be stored on free draining soil surface without deleterious materials.
- Set balled stock on ground and cover ball with soil, jute bag, sawdust, or other acceptable material to keep moist.
- Water root systems and crown of plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.
- Do not remove container-grown stock from containers before time of planting.
- Trees and palms which are not immediately planted in their respective positions at On-site Nurseries shall be stood upright on

level ground, protected and maintained in good condition by the Contractor at location approved.

- Client's Representative shall reject any plants dead, dried out, wilted or degraded due to improper or prolonged storage.

(e) Delivery of Fertilizer and Bulk Materials:

- Fertilizers shall be delivered to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, and trademark.
- Bulk materials including organic soil amendment, inorganic soil amendment, mulch, etc. shall be delivered to site in proper containers with certificate that includes manufacturers, quantity, chemical analysis, and trademark.
- Keep all sacks, bags, containers and the like On-site for inspection by Client's Representative.
- Stored material, particularly chemicals and fertilizers, are to be covered and enclosed in a defined area, or contained in any other way as required, to prevent mixing with nearby soil or water and causing soil and ground water pollution.

(f) Storage of soil materials

- Stockpile all soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
- Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

(g) Transportation:

- In preparing plants for moving, all precautions customary in good trade practice shall be taken. Workmanship that fails to meet the highest standards will not be accepted. All plants shall be dug to retain as many fibrous roots as possible. All plants shall be dug immediately before moving unless otherwise specified.
- Prior to transportation, all plants shall be dug, handled, prepared and packed for shipment with care and skill, in accordance with recognized standard practice for each species. The root systems of all plants shall not be permitted to dry out at any time.
- Plants shall be protected at all times against the sun and the wind while in transit.
- During transportation in closed vehicles, plants shall receive adequate ventilation to prevent "sweating". Plants delivered in a wilted, burned or wind damaged condition will be rejected.

(h) Delivery:

- All plant balls shall be firm and intact. Plants whose stems are loose at the root collar may be rejected

- Plants delivered, inspected and found acceptable for planting shall normally be planted within 24 hours after delivery to the project site. Plants which cannot be planted within 24 hours after delivery shall be stored at onsite nursery.
- Plants with broken, loose or tampered root balls will be rejected.
- All temporarily stored plants shall be protected from extreme weather conditions and roots shall be kept moist.

1.5.2. SOILS

1.5.2.1. SOIL MATERIALS

LOCAL SOIL MATERIAL

- (a) Availability: Top soil to be used for planting mixes is to be transported from the on-site top soil dump. The location of the top-soil dump will be provided by the Client's Representative.
- (b) Composition: Topsoil obtained shall generally be reasonably loose and friable in form containing not more than 10-15% of moisture content. Client's Representative will reject topsoil delivered in a wet and soggy condition. Where required, the Topsoil may be used as sub soil as well.
- (c) Uses: Top soil from on-site dump is to be improved by addition of soil nutrients to comply to form the Soil Mix.
- (d) Testing: Imported Planting Soil shall be tested for N.P.K. value, organic matter content, Cation Exchange Capacity ratio, organic carbon, pH value, physical content of sand, silt and clay and water content. Soil testing shall be arranged by the Contractor and carried out by an approved reputable firm or institute at Contractor's cost, and the Report shall be submitted to the Client's Representative for approval.

IMPORTED SUB-SOIL

- (a) The imported sub-soil shall be evenly textured local soil as per specifications, that meets the following as minimum requirements:
 - pH range of 6.0 to 7.5
 - Free of grass or weed growth of any kind, sticky clays, or stones 100 mm or larger in any dimension and extraneous materials harmful to plant growth
 - Total percentage of stones should be less than 30% in volume
 - Salinity range of 2.0 – 4.0 ECe (dS/m)

IMPORTED PLANTING SOIL

- (a) Availability: Planting Soil is prepared off-site for on-site use. The Contractor has to ensure that the prepared soil is mixed as per the requirements for planting mixes specified in this Specification.
- (b) Composition: Imported Planting Soil shall be evenly textured, fertile, dark brown or black coloured medium loam free from weeds, deleterious matter and stones larger than 25mm in any dimension and shall not be excessively sandy, gritty or water logged.
- (c) Uses: Imported Planting Soil may need to be amended per the specification here-in to produce specialty Planting soil Mixes for Palms, seasonals and lawn areas, upon approval of the Client's Representative.
- (d) Testing: Imported Planting Soil shall be tested for N.P.K. value, organic matter content, Cation Exchange Capacity ratio, organic carbon, pH value, physical content of sand, silt and clay and water content. Soil testing shall be arranged by the Contractor and carried out by an approved reputable firm or institute at Contractor's cost, and the Report shall be submitted to the Client's Representative for approval. The soil analysis report shall be submitted to the Client's Representative at least 6 weeks in advance of the programme date for the start of filling operations. Upon approval by the Project Manager the Contractor would be able to prepare the soil stock mix. .
- (e) Imported Planting Soil for General Planting Soil purposes shall comply with the following minimums:

| | |
|---|-------------------------|
| pH value | : 5.5 – 7.5 % |
| Organic Matter | : not less than 7.5% |
| % Organic Carbon | : 2.0 – 3.0 |
| % Total Nitrogen | : 0.09 – 0.15 |
| Carbon / Nitrogen ratio | : 25:1 – 45:1 |
| Available P ₂ O ₅ | : 7mg/100 – 10mg/100g |
| Exchangeable K ₂ O | : 15mg/100g – 30mg/100g |
| Cation Exchange Capacity | : 16 – 20 m.e. % |

Soil Texture

- (a) Sandy loam preferable; soil amelioration to take place only after review of soil reports and approval of Clients Representative.

- (b) Source: The Contractor should submit details of the source of Imported Planting Soil to the Client's Representative. No change in the source of Imported planting Soil shall be allowed at a later date without the prior approval of the Client's Representative based on such tests and samples as specified here-in.

1.5.2.2. SOIL AMENDMENTS

INORGANIC SOIL AMENDMENTS

- (a) Charcoal: Horticultural charcoal, size not more than 10mm.
- (b) River Sand: Clean, washed, natural or manufactured quartz sand, free of toxic materials, brick and other building materials and wastes, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the sand unsuitable for use.

FERTILIZER

- (a) N-P-K 15:15:15 chemical fertilizer as per approval and as recommended by soil analysis. Will be uniformed in composition, free flowing and suitable for application with approved equipment. It will be delivered to the site in un-opened containers, each fully labelled and conforming to the applicable fertilizer laws. It will bear the name or mark of the manufacturer.

ORGANIC COMPOST

- (a) Farm yard manure (FYM): Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 13mm sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.

1.5.2.3. PLANTING SOIL MIXES

GENERAL REQUIREMENTS

- (a) Planting soil mix shall be fertile, friable soil. It shall be free draining, non-toxic and capable of sustaining healthy plant growth.
- (b) Planting soil mix shall be reasonably free from calcium carbonate, subsoil, refuse, roots, heavy clay, clods, noxious weed seeds, phytotoxic materials, coarse sand, rocks, sticks, brush, litter and other deleterious substances. It shall have a pH not lower than six or greater than eight.

- (c) The Softscape Contractor shall submit a sample to be approved by the Client's Representative/ Landscape Architect prior to commencement of work. This approved sample shall be used as reference for the whole project.
- (d) Topsoil and all planting media shall be free from any termite infestation, whether sub-terranean termites or dry wood termites. In the event termite infestation is found due to any softscape material (which shall be decided by the Landscape Architect, whose decision shall be final and conclusive), the Softscape Contractor shall carry out all necessary replacements and remedial works and make good all defects, damages or other faults (including but not limited to damage to any adjoining surfaces and /or finishes or any other works and properties caused directly or indirectly by the termite infestation).
- (e) Any other organic matter and additives to balance the pH value of the soil mix will not be more than 15% of the total soil mix.

SOIL MIX A

- (a) For use of tree pits, low shrubs and planting areas, comprise the following components in proportions by volume, which shall be mechanically cultivated to the correct proportions, prior to installation or backfilling:
 - Good quality, loamy topsoil 50%
 - Coco peat 20%
 - River sand (no salty materials) 20%
 - Organic compost 10%
 - NPK 15-15-15 Chemical Fertilizer 5 kg/10m³
- (b) (as per approval by Client's
- (c) Representative/ Landscape Architect)

SOIL MIX B

- (a) For use in raised planters/planting areas over slab, comprises the following components in proportions by volume, which shall be mechanically cultivated to the correct proportions, prior to installation or backfilling:
 - Good quality, loamy topsoil 50%
 - Coco peat 10%
 - River sand (no salty materials) 10%
 - Organic compost 10%
 - Lightweight aggregate 20%
 - NPK 15-15-15 Chemical Fertilizer 5 kg/10m³
- (b) (as per approval by Client's
- (c) Representative/ Landscape Architect)

SOIL MIX C

- (a) For use as potting compost in containerized planters the following components in proportions by volume, which shall be mechanically cultivated to the correct proportions, prior to installation or backfilling:
- Good quality, loamy topsoil 40%
 - River sand (no salty materials) 30%
 - Charcoal 20%
 - Organic compost 20%
 - Water-retention crystals – according to manufacturer's specifications

1.5.2.4. EXECUTION

GENERAL

- (a) The work shall consist of furnishing, hauling and placing general planting soil mix in accordance with the details shown on the drawings and the requirements of these Specifications.
- (b) Planting soil mix shall be spread uniformly on the designated areas to the required depths. When necessary, the area shall be cultivated to a sufficient depth to break up any materials which may have been compacted as a result of the spreading operations.
- (c) The finished surface shall be free of all rocks and stones larger than one inch 25 mm in diameter.
- (d) The Softscape Contractor will mix the soil mix composition thoroughly before placing it into the planting pit.
- (e) Clean all subsoil areas to be filled free of rubbish and foreign materials and remove all stones exceeding >25mm in diameter and builders' debris from site. Any areas contaminated by petrol, oil or other toxic builders' chemical substances shall be immediately, fully and completely removed from site before filling commences.
- (f) Excavated silty-clay site materials must not be used in backfilling. Dispose all excavated materials at the location as indicated by the Client's Representative.
- (g) The soil mix must be free from heavy clay or coarse sand, stones, lumps, other vegetation, roots, sticks and other foreign material larger than <25 mm in diameter.
- (h) The soil mix will be of the same composition and structure throughout and will not be delivered, handled or placed in a muddy condition.

1.5.3. PLANTING

The softscape work is intended to achieve an instant, visually lush effect. All plant materials are to be of an instant, well-grown quality that is free from any infestation &/or defects. The installation is to be executed to the best of professional horticultural standards thereby achieving the required visual effect – well-established, lush-looking with full, bushy plant specimens & materials.

1.5.3.1. GENERAL

RELEVANT CONTRACT DOCUMENTS

(a) The section to be read in conjunction with below listed Drawings:

| | | |
|----------------------------|-----------|----------------|
| VSC-ACM-MP-RFP-DWG-R1A-501 | to | SOFTSCAPE PLAN |
| 523-N | | |
| VSC-ACM-MP-RFP-DWG-320-06 | TREE | PIT WITH |
| | RAINWATER | HARVESTING |
| | DETAIL | |
| VSC-ACM-MP-RFP-DWG-320-07 | TYPICAL | SOFTSCAPE |
| | DETAILS | |

(b) Contractor to make sure relevant Drawings from other packages are in his possession (e.g. relevant structural details).

SITE CONDITIONS

(a) Weather Limitations:

- Proceed with plant bed establishment, planting and related works only when existing and forecasted weather conditions permit the works to be performed. Notify Client's Representative of any works delay and/or any deviation from Works Program approved due to weather limitations.
- Planting operations shall be conducted under favourable weather conditions during the next season or seasons which are normal for such work as determined by accepted practice in the locality of the project. At the Softscape Contractor's option and full responsibility, planting operations may be conducted under unseasonable conditions without additional compensation.

(b) Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns unless otherwise acceptable to

Client's Representative. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

- (c) All planting shall be done during the time specified by the Architect.
- (d) Planting shall not be done in soil that is excessively moist or otherwise in a condition not satisfactory for planting in accordance with accepted horticultural practice.
- (e) Plants in containers shall be planted and watered the same day the plant is potted.
- (f) Plants shall be removed from containers in such a manner that the root ball is not broken. Plants with broken root balls or with root balls that fall apart while being planted may be rejected.

PRE-PLANTING MEETING

- (a) Contractor shall coordinate a Meeting with the Client's Representative prior to the installation of any of the works here-in.

1.5.3.2. PRODUCTS

GENERAL

- (a) Furnish nursery-grown trees and shrubs with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- (b) Provide trees and shrubs of sizes and ball or container sizes as indicated. Trees and shrubs of a larger size may be used if acceptable to Client's Representative, with a proportionate increase in size of roots or balls.
- (c) Root flare shall be visible before planting.
- (d) Label one tree and one shrub of each variety in every delivery batches with a securely attached waterproof label indicating their species, size, serial number, nursery source and noted planting location.
- (e) Plant List: A complete list of plants, including a schedule of qualities, sizes and other requirements is shown on the Drawings and shall be included in the Bill of Quantities.
- (f) Nomenclature: Botanical plant names shall be as per the International Code of Botanical Nomenclature. Common names of plants will conform to names generally accepted in the local nursery trade and as interpreted by the Landscape Architect. In all cases of dispute, the decision of the Landscape Architect will be final.

(g) Quantities

- The Landscape Sub-Contractor will provide sufficient quantities of plant materials needed to complete the work as shown in the Drawings for the lump sum price items.
- Quantities indicated in the Drawings for unit price items are approximate only and are provided for the convenience of the Landscape Sub-Contractor. The Bill of Quantities will have precedence over the Drawings.
- In the event that discrepancies occur between the quantities of plants in the Bill of Quantities and those shown on the drawing, the Bill of Quantity shall take precedence. In any event, it will be the Landscape Sub-Contractors responsibility to make sure that correct quantities provided on site.

(h) Watering: The Main Contractor will provide water for the period during the installation of the landscape works. The Landscape Sub-Contractor will be responsible for providing hoses, water trucks and necessary equipment to ensure that there is adequate water for the plants and thoroughly water each.

TREES

- (a) Trees: Provide all trees with single sturdy straight trunk (or as indicated on drawing), branching spread equal or greater than indicated in the Plant Schedule (or as indicated on Drawings), well-balanced crown with sufficient branches and spread dimension as indicated on drawing, intact leader, with height, calliper and form as required.
- (b) All Trees fulfil requirement of as listed in the Plant Schedule or as indicated in the Drawings.
- (c) All plants shall be typical of their species or variety. All plants shall have normal, with developed branches and vigorous root systems. Trees and palms will be straight and have uniformed shape without damage. They shall be sound, healthy, vigorous, and free from defects, plant disease, insect eggs, borers, and all other forms of infections. Trees with abrasions on the bark, sunscalds, disfiguring knots or damaged limbs over 25mm diameter which have not been pruned, will be rejected.
- (d) All plants shall be nursery grown unless otherwise stated and shall have been growing under the same climatic conditions as the location of this project after the award of Sub-Contract. Refer to the drawings for specific forms and branching of plant material.
- (e) The minimum acceptable size of all trees after pruning, with branches in normal positions, will conform to the measurement specified in the Planting Schedule or related document unless stated otherwise.

- (f) Calliper measurement will be taken at a point on the trunk 1.0 meter above the ground.
- (g) Plants that meet the specified measurement, but do not possess a normal configuration or balance of height and spread will be rejected. All trees supplied will be branched as specified in the Planting Schedule or related document. Natural form of the trees must be kept after pollarding. De-topped trees will be rejected. All trees supplied must have terminal shoots.
- (h) Plant materials larger in size than specified may be used, but are subjected to the approval of the Landscape Architect. The use of larger plant material will make no change in the contract price. Height will not be substituted for balanced form.
- (i) All plant materials will have a root ball of sufficient size to support the plant's recovery from transplanting. Any plant materials delivered with small or inadequate root balls will be rejected. In all cases, the decision of the Landscape Architect will be final.
- (j) All trees and palms will be transplanted from growing site and planted at project site by mechanical crane whenever possible.
- (k) All specimen trees must have a minimum crown spread of not less than half the size of the overall height.
- (l) All instant trees must have minimum four main branching from the trunk with a minimum crown spread of not less than half the size of overall height.
- (m) In case discrepancy between specification given in the Plant Schedule and indication on the Drawings, Drawings shall take precedent.
- (n) GUYING FOR LARGE/SPECIMEN TREES
 - Guy Cables: 5-strand, 4.8 mm diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 75 mm long, with two 10-mm galvanized eyebolts per Detail.
 - Deadman Anchor: Pressure-Preservative (alternate material to be suggested) with thickness by length as indicated, pointed at one end per Detail.
 - Hose Chafing Guards: Reinforced rubber hose at least 12 mm in diameter, black, cut to lengths required to protect tree trunks from damage per Detail.
- (o) STAKING FOR TREES
 - Wooden/Bamboo Stakes: Wooden/Bamboo with at least 50mm diameter flat cut at both end with length as per detail.
 - Trunk Padding: Rubber sheath cut to lengths to protect tree trunks from damage as per Detail.
 - Rubber Ties per Detail.
 - Bamboo Stake Foot Plate: For Tree installation with-in Tree Grates.

SHRUBS

- (a) Shrubs: Provide shrubs grown from transplanted seedling or rooted cutting, pruned to encourage bushiness, with minimum of 3 numbers of canes/stems, with spread dimension at least two-third of height, and with well-developed root system.
- (b) Shrub sizes indicated are sizes after pruning.

GROUND COVER PLANTS

- (a) Provide ground covers of species, height, spread as indicated in the Plant Schedule or on the Drawings, established and well rooted in pots or similar containers of reasonable size.

SEASONALS

- (a) Provide seasonals of species, height, spread as indicated in the Plant Schedule or on the Drawings, established and well rooted in pots or similar containers of reasonable size.

FERTILIZER

- (a) **Material handling:** Chemical fertilizers shall be stored in waterproof sealed bags under shelter away from water and direct sunlight.
- (b) Commercial Fertilizer (Post-planting fertilizer, only if recommended by soils Report): Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- (c) Slow-Release Fertilizer (Pre-planting Fertilizer): Granular or tablet fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

1.5.3.3. EXECUTION

PLANTING - PREPARATION

- (a) Examine areas to receive soil, plants and lawns for compliance with requirements and conditions affecting installation and performance.
- (b) Locate and clearly flag utilities, trees or vegetation to remain or to be relocated
- (c) Proceed with installation only after unsatisfactory conditions have been corrected
- (d) Lay out individual tree and shrub locations and areas for multiple plantings as set out in the Drawings. Stake locations, outline areas, adjust locations when requested, and obtain Client's Representative's acceptance of layout before planting. Make minor adjustments as required.

TREE AND LARGE SHRUBS

- (a) **Trees & Shrubs:** Set Trees and Shrubs plumb and in centre of pit or trench with root ball resting on a soil bench as per Drawings.
- (b) Before planting, verify that root collar is not visible at top of root ball covered by 25mm of soil.
 - Remove covering from tops of root balls and partially from sides, but do not remove from under root balls or carefully remove root ball from container/ fabric bag. Do not use planting stock if root ball is cracked or broken before or during planting operation.
 - Place appropriate Planting Soil Mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix. Soil material shall be carefully firmed around the roots or the ball of the plant so as to eliminate air pockets. Soil shall be compacted around the roots or ball of the plants after planting operations to stabilise the rootball and ensure the tree is upright and vertical.
 - Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water, as per detail drawing.
 - Remove any wrapping and tying materials on trees/shrubs.
 - Remove any wrapping and tying materials from palms; if planting is not during planting season, keep fronds tied until establishment at location.
 - Immediately after planting, all plants shall be thoroughly irrigated until the soil fill around and below the roots or the root ball of each plant is saturated.
- (c) **Tree on Slope:** Planting should be carried out as soon as excavation or loosening of the prepared plant bed and immediately is fully supported as

specified. Formed saucer indentation around tree or planting basin should be made with fall to drain as indicated on drawing.

SHRUB, GROUND COVER AND SEASONALS

- (a) Plant Ground Cover, Seasonals, Climber and Bamboo as following as general requirement:
- Set out and space as indicated on drawing.
 - Dig holes large enough to allow spreading of roots and backfill with planting soil type as indicated in the Drawings.
 - Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
 - Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
 - Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

GUYING & STAKING

- (a) **Guying for Semi-Mature Trees:** Unless otherwise indicated, securely attach no fewer than 3 guys to stakes 500 mm long, driven to grade.
- For trees more than 150 mm in calliper, anchor guys to pressure-preservative-treated Deadman, 100 mm in diameter and 500 mm long buried at least 450 mm below grade. Provide turnbuckle for each guy wire and tighten securely.
 - Secure trees with guy wire looped as detailed with-in reinforced rubber hose at contact points with tree trunk and reaching to turnbuckle. Allow enough slack to avoid rigid restraint of tree.
 - Paint turnbuckles with luminescent white paint.
- (b) **Stakes for Standard Trees:** Unless otherwise indicated, provide bracing system with stakes around perimeter of trunk as form of tripod to secure until established.
- Place 2 X 2 stakes on either side of the tree trunk. Supporting point should be at one third of the trunk height. Firmly press end of all four bamboo stakes against finished grade and into the ground for stability but without disturbing root ball area. Care should be taken that the stakes remain firm and stable throughout the staking period.
 - Cushion contact area between stake and trunk with 5mm thick, 150 x 150 rubber tire trunk protection sheath.
 - Secure Bamboo stakes together where they join at contact area at trunk with rubber ties in an '8' profile, as detailed in the drawings and mock-up approved by the Landscape Architect/ Client's Representative.

- For Tree Grate installations, secure stakes to Stake Foot Plate as per detail.

TREE AND SHRUB PRUNING

- (a) Remove only dead, dying, or broken branches.
- (b) Prune, thin and shape trees and shrubs as directed by Client's Representative.
- (c) Prune, thin and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Client's Representative, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character or achieve desired form as specified in the drawing.
- (d) Clean all wounds with an approved fungicidal.

TRANSPLANTING

- (a) Transplant trees and shrubs designated for relocation to locations shown on the Drawings.
- (b) Prune, dig, ball and burlap, and move designated trees for relocation to the designated plant storage area for storage of materials until final planting areas are prepared, if required.
 - Maintain plants in storage areas by bracing plants in vertical position and setting balls in enclosed berms of topsoil or bark. Water as required for maintaining adequate root moisture.
 - Re-burlap plant balls if required before final transplanting operations.
 - Move to final locations shown on the drawings and plant in accordance with specified tree planting requirements.

DISPOSAL

- (a) **Disposal:** Remove surplus soil material, unsuitable Subsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property only upon the direction and approval of Client's Representative.
- (b) Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to an approved recycling facility or dumpsite.

COMPLETION INSPECTION

- (a) When all the works are to be completed and ready for inspection for issuance of Completion Certificate, the Contractor should notify the Client's Representative at least 7 days in advance to confirm completion and any outstanding works items.

1.6. Road Works

1.6.1. GENERAL

1.6.1.1. QUALITY ASSURANCE

- (b) All materials to be used, all methods adopted and all works performed shall be strictly in accordance with the requirements of these Specifications. The Contractor shall set up a field laboratory at locations approved by the Engineer and equip the same with adequate equipment and personnel in order to carry out all required tests and Quality Control work as per Specifications and/or as directed by the Engineer.
- (c) The Contractor's laboratory should be manned by a qualified Material Engineer/Civil Engineer assisted by experienced technicians, and the set-up should be got approved by the Engineer.
- (d) The Contractor shall carry out quality control tests on the materials and work to the frequency stipulated in subsequent paragraphs. In the absence of clear indications about method and or frequency of tests for any item, the instructions of the Engineer shall be followed.
- (e) For satisfying himself about the quality of the materials and work, quality Control tests will also be conducted by the Engineer (by himself, by his Quality Control Units or by any other agencies deemed fit by him), generally to the frequency set forth herein under. Additional tests may also be conducted where, in the opinion of the Engineer, need for such tests exists.
- (f) The Contractor shall provide necessary co-operation and assistance in obtaining the samples for tests and carrying out the field tests as required by the Engineer from time to time. This may include provision of labour, attendants, assistance in packing and dispatching and any other assistance considered necessary in connection with the tests.
- (g) For testing of samples of soils/soil mixes, granular materials, and mixes,

bituminous materials and mixes, aggregates, cores etc., samples in the required quantity and form shall be supplied to the Engineer by the Contractor at his own cost.

- (h) The method of sampling and testing of materials shall be as required by the "Handbook of Quality Control for Construction of Roads and Runways" (IRC : SP : 11), and these MOST Specifications. Where they are contradicting, the provision in these Specifications shall be followed. Where they are silent, sound engineering practices shall be adopted. The sampling and testing procedure to be used shall be as approved by the Engineer.

1.6.1.2. EXECUTION

GENERAL

- (a) Scarification Work as per the Guideline of MORTH Clause Number – 501.8.3.2.
- (b) Prime Coat work as per the Guideline of MORTH Clause Number – 502.
- (c) Tack Coat work as per the Guideline of MORTH Clause Number – 503.
- (d) Dense Bituminous Macadam work as per the Guideline of MORTH Clause Number – 505.
- (e) Bituminous Concrete work as per the Guideline of MORTH Clause Number – 507.
- (f) Traffic Island work as per the Guideline of MORTH Clause Number – 408.

1.7. Specifications of Materials

- i. Steel – Steel shall be procured from primary producers meeting the BIS Standard.
- ii. Cement-Cement shall be procured from any reputed manufacturers meeting the BIS standard.
- iii. Bitumen and Emulsion-Bitumen and Emulsion shall be procured from IOCL/ HPCL or equivalent and shall be used if meet the BIS Standard.
- iv. All other materials and finishes, including paver blocks, kerb stones, chamber covers, street furniture and other ancillary components must be in conformance with IRC, IS, MORT&H and BIS and as per the approval of the Engineer.

1.8. Deviations from the Specifications and Standards

The terms “Concessionaire”, “Independent Engineer” and “Concession Agreement” used in the Manual shall be deemed to be substituted by the terms “Contractor”, “Authority's Engineer” and “Agreement” respectively.

Notwithstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:

| Specifications for Civil Works, Landscaping, Signage's and Road Furniture. | |
|---|--|
| A | DISMANTLING, DEMOLITION AND DISPOSAL OF EXISTING STRUCTURE |
| 1 | Demolishing cement concrete manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable materials with Initial Lead of 1 Km and additional lead of 10 Km , The rate shall be including of all labour, machineries, lift, lead and other related works etc., to complete as per direction of Engineer-in-charge. (Cement Concrete Pavement, base and sub base, CC Kerb, PCC base & sub base, Light pole foundations) |
| 2 | Scarifying Existing Bituminous Surface to a max depth of 150 mm by Mechanical Means with in all lifts. Demolition / cutting of existing Bituminous concrete road to max 150 mm thick with required plant and equipment's, tools and tackles including demolition of existing structures all complete including levelling and making the surface to required level and stacking the serviceable materials and disposal of unserviceable material with Initial Lead of 1 Km and additional lead of 10 Km . Complete including all lead and lifts and as per the directions of Engineer In Charge. (Stacking of serviceable material for reuse) |
| B | EXCAVATION |
| 1 | Excavation in Soil using Hydraulic Excavator and Tippers with disposal with Initial Lead of 1 Km and additional lead of 10 KM Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross-sections, and transporting to the embankment location with all lifts and lead up to 10000 m as per Technical Specification Clause 302.3 MORD / 301 MORTH (Excavation of existing Non Carriage way) |
| 2 | Excavation in Soil using Hydraulic Excavator and Tippers with disposal with Initial Lead of 1 Km and additional lead of 10 KM Earthwork excavation soil by mechanical means including cutting and loading in tippers trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting to the embankment location or disposal of unserviceable soil with all leads and lifts etc., complete for finished item of work for trench cutting as per MORT&H specification No.301 and as directed by the Engineer-in-Charge (Excavation for Rain Water Harvesting Tree Pits) |
| 3 | Back Filling in foundation trenches as per drawing and technical specification Clause 305.3.9 MORD & 304.3.7 MORTH. (Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m) |
| 4 | Sand Filling in trenches / pits as per drawing and technical specification Clause 305.3.9 MORD & 304 MORTH |
| C | CEMENT CONCRETE WORKS |
| 1 | Providing concrete for plain cement concrete in open foundations using 40 mm nominal size Graded hard stone aggregate, mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203 MORD and 1500, 1700 & 2100 MORTH. P.C.C 1:3:6 |

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| 2 | <p>Providing concrete for reinforced cement concrete in open foundations / Roads using 20 mm nominal size Graded hard stone aggregate, mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days complete as per drawings and technical specifications Clause 802, 803, 1202 & 1203 MORD and 1500, 1700 & 2100 MORTH.</p> <p>R.C.C grade M 20 using Concrete mixer (Nominal Mix) using 20 mm Graded Metal (MORD)</p> |
| 3 | <p>Supplying, fitting and placing HYSD bar reinforcement in foundation complete as per drawings and technical specifications Clauses 1000 and 1202 MORD & 1100, 1600 MORTH for Bars below 36 mm dia including over laps and wastage, where they are not welded.</p> |
| D | CYCLE TRACK, PEDESTRIAN PLATFORM |
| 1 | <p>Cement Treated Crushed Rock or combination as per clause 403.2 and table 400.4 in Sub base/ Base</p> <p>Providing, laying and spreading crushed rock material from approved quarry including cost of all materials, machinery, labour, spreading stones and spalls in layers, hand packing, wedging, finished surface to required slope and compacting using plate vibrator etc complete with initial lead up to 50m and all lifts</p> |
| 2 | <p>Interlocking Concrete Block Pavement</p> <p>Providing and Laying of Interlocking Concrete Block Pavements using CC M40 (Minimum Cement Content - 430 Kg) having thickness 80 mm as per drawings and Technical Specification Clause 1504 MORD. (Providing and laying factory made coloured chamfered edge Cement Concrete paver blocks of required strength, thickness & size/shape, made by table vibratory method using PU mould, laid in required colour & pattern over 30 mm thick compacted bed of fine sand, compacting and proper embedding/laying of 'S Lock pavers 97mm x 175mm x 80mm or similar approved interlock pavers (Yellow colour)' into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with fine sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand in footpath, parks, lawns, drive ways or light traffic parking etc. complete as per manufacturer's specifications & direction of Engineer in-Charge. (For Pedestrian Path way.) -</p> <p>Note: Quantity of cement proposed for the design mixes is for estimating purpose only. Actual quantity of cement will be as per approved mix design. Similarly quantity for coarse and fine aggregates is for estimating purpose and the exact quantity shall be as per the mix design. Nominal mix of grades M20 is to be used with adequate supervision and quality control requirements.</p> |

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| 3 | <p>Interlocking Concrete Block Pavement</p> <p>Providing and Laying of Interlocking Concrete Block Pavements using CC M40 (Minimum Cement Content - 430 Kg) having thickness 80 mm as per drawings and Technical Specification Clause 1504 MORD.(Providing and laying factory made coloured chamfered edge Cement Concrete paver blocks of required strength, thickness & size/shape, made by table vibratory method using PU mould, laid in required colour & pattern over 30 mm thick compacted bed of fine sand, compacting and proper embedding/laying of 'S Lock pavers 97mm x 175mm x 80mm or similar approved interlock pavers (Red colour)' into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with fine sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand in footpath, parks, lawns, drive ways or light traffic parking etc. complete as per manufacturer's specifications & direction of Engineer in-Charge. (For Cycle Track)</p> <p>Note: Quantity of cement proposed for the design mixes is for estimating purpose only. Actual quantity of cement will be as per approved mix design. Similarly quantity for coarse and fine aggregates is for estimating purpose and the exact quantity shall be as per the mix design. Nominal mix of grades M20 is to be used with adequate supervision and quality control requirements.</p> |
| 4 | <p>Interlocking Concrete Block Pavement Providing and Laying of Interlocking Concrete Block Pavements using CC M40 (Minimum Cement Content - 430 Kg) having thickness 80 mm as per drawings and Technical Specification Clause 1504 MORD.(Providing and laying factory made coloured chamfered edge Cement Concrete paver blocks of required strength, thickness & size/shape, made by table vibratory method using PU mould, laid in required colour & pattern over 30 mm thick compacted bed of fine sand, compacting and proper embedding/laying of 'S Lock pavers 97mm x 175mm x 80mm or similar approved interlock pavers (Dark Grey colour)' into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with fine sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand in footpath, parks, lawns, drive ways or light traffic parking etc. complete as per manufacturer's specifications & direction of Engineer in-Charge. (For Maintenance Strip) Note: Quantity of cement proposed for the design mixes is for estimating purpose only. Actual quantity of cement will be as per approved mix design. Similarly quantity for coarse and fine aggregates is for estimating purpose and the exact quantity shall be as per the mix design. Nominal mix of grades M20 is to be used with adequate supervision and quality control requirements.</p> |
| 5 | <p>Cast in Situ Cement Concrete M25 Kerb - Flushed Kerb E1</p> <p>Construction of cement concrete kerb with top and bottom width 150 and 150 mm respectively, 300 mm high in M 25 grade PCC on M-10 grade foundation as shown in the drawing, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, formwork all complete as per clause 408 MORTH</p> |
| 6 | <p>Cast in Situ Cement Concrete M25 Kerb - Raised Kerb E2</p> <p>Construction of cement concrete kerb with top and bottom width 150 with chambered edge and 150 mm respectively, 300 mm high in M 25 grade, PCC M-10 grade foundation as shown in the drawing, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually and formwork, all complete as per clause 408 MORTH</p> |

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| 7 | Flooring with Tactile tiles , set over base coat of cement mortar (1:4), 20 mm thick over crushed rock bed already laid on Non Carriage way, including neat cement slurry of honey like consistency spread @ 3.3.kgs per sqm & jointed neatly with white cement paste to full depth mixed with pigment of matching shade, including cost of all materials like cement, sand water and tiles etc., complete, including seigniorage charges, etc., complete for finished item of work, . |
| E | PLANTING AND RAIN WATER HARVESTING |
| 1 | Supply of General Planting soil mix (Topsoil) to areas defined as soft cape comprising of Red earth (including fertilizers such as neemcake, cocopeat, DAP, termite control etc.), FYM and compost in the ratio 3:1:1 (3 parts sweet earth: 1 parts FYM: 1 parts compost) as indicated in technical specifications, Placed over the free draining sub-soil, flood with water till saturation, filling more earth as necessary after settlement, watering and finally fine dressing, levelling etc. (Bed preparation paid separately in respective planting). |
| 2 | Supply and planting Shrubs of height, spread and growth as per specifications, for understorey planting (low hedge @ 50cm to boundary of planter) in 20cm container size and >30cm height, plants must be healthy showing multiple branches with consistent signs of growth and free from disease. Apply a slow release fertiliser at time of planting. (Barleria cristata, Hibiscus cannbinus, Phyllanthus nivosus, Sansevieria trifasciata) - (20 cm x 20 cm) |
| 3 | Supply and planting Shrubs of height, spread and growth as per specifications, for understorey planting (low hedge @ 50cm to boundary of planter) in 20cm container size and >30cm height, plants must be healthy showing multiple branches with consistent signs of growth and free from disease. Apply a slow release fertiliser at time of planting. (Bougainvillea glabra) (20 cm x 20 cm) |
| 4 | Supply and planting Shrubs of height, spread and growth as per specifications, for understorey planting (low hedge @ 50cm to boundary of planter) in 20cm container size and >30cm height, plants must be healthy showing multiple branches with consistent signs of growth and free from disease. Apply a slow release fertiliser at time of planting. (Ixora Coccinea) (20 cm x 20 cm) |
| 5 | Supply and planting Shrubs of height, spread and growth as per specifications, for understorey planting (low hedge @ 50cm to boundary of planter) in 20cm container size and >30cm height, plants must be healthy showing multiple branches with consistent signs of growth and free from disease. Apply a slow release fertiliser at time of planting. (Clerodendrum inerme) (20 cm x 20 cm) |
| 6 | Supply, bed preparation and planting of Ground Covers and seasonal in 15 cm container size (seedlings of hybrid varieties), planting inside hedgerow. plants must be healthy showings consistent signs of growth and free from disease. Apply a slow release fertiliser at time of planting. (Axonopus Compressus) (15 cm x 15 cm) |
| 7 | Supply and installation of Tree (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm calliper, straight trunk & balanced canopy), (Pongamia pinnata, Terminalia catappa) |
| 8 | Supply and installation of Tree (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm calliper, straight trunk & balanced canopy), (Thespesia populnea) |
| 9 | Supply and installation of Tree (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm calliper, straight trunk & balanced canopy) (Baaringtonia asiatica) |
| 10 | Supply and installation of Tree (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm calliper, straight trunk & balanced canopy) (Erythrina variegata) |
| 11 | Supply and installation of Tree (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm calliper, straight trunk & balanced canopy) (Lagerstromia speciosa) |

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| 12 | Supply and installation of Tree (3m height overall, clear trunk height 1.5m, 2.5m canopy width, 50-80mm calliper, straight trunk & balanced canopy) (Peltophorum Pterocarpum, Sapathodea Campanulata, Anthocephalus cadamba) |
| 13 | 160 to 180 gsm Non woven Geo textile separating membrane Supply and Laying of a geotextile filter between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching as per Tech Specifications in Section 700 & 2504 MORTH - (For Rain Water Harvesting) |
| 14 | Sub – Surface drains with Perforated Pipe Construction of subsurface drain with perforated pipe of 75 mm internal diameter of metal / asbestos cement / cement concrete / PVC, closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilized in roadway at site as per Specification 309 MORTH |
| 15 | Aggregate Filling - 5-10 pea gravel Filling in Ground Cover planting Area as per drawing and technical specification Clause 305.3.9 MORD & 304 MORTH |
| 16 | Small boulders particle size - 25-40mm dia Filling in Rain Water Harvesting pits as per drawing and technical specification Clause 305.3.9 MORD & 304 MORTH |
| 17 | Gravel particle size 5-15 mm dia Filling in Rain Water Harvesting pits as per drawing and technical specification Clause 305.3.9 MORD & 304 MORTH |
| 18 | Large boulders particle size - 50-65mm dia Filling in Rain Water Harvesting pits as per drawing and technical specification Clause 305.3.9 MORD & 304 MORTH |
| 19 | Filter Media (80% Loamy Soil, 10% Vermiculite & 10% Perlite) Providing and laying filter media with 80% Loamy Soil, 10% Vermiculite & 10% Perlite as per specification in foundation / trenches / pits as per drawing, compacted to firm condition complete as per drawing and technical specification (@ Rain water harvesting area) |
| 20 | Supply and Filling of well-decomposed Farmyard manure to planting site including the transport, loading unloading etc. complete. (@ Tree Pit) |
| F | MISCELLANEOUS |
| 1 | Supply and installation of SS Bollard 100 mm dia SS 316 grade of 600 mm exposed length with end caps . Cost to include all materials, labour, lift, lead, foundation with M20 concrete (measured separately) as required, screws, bolts, washers etc. to complete. Design to be as approved by M/s. GVSCCL prior to fabrication or procurement. All works to be to completed to the satisfaction of the Engineer in Charge |
| 2 | Supply and installation of Stainless steel Road side Pole mountable Bin 50 ltr. 2 container Bin size - 12 inch x 24 inch Pole stand Height - 63 inch (5.5 ft.) (SS 316) external free standing Rubbish Bins. Cost to include all fixings i.e. screws, bolts, washers etc. to complete. Design to be as approved by M/s. GVSCCL prior to fabrication or procurement. (All works to be to completed to the satisfaction of the Engineer in Charge |
| 3 | Supply and installation of Flat Top Monolithic Rock Bench Size 1500 (L) x 450(W) x 450(H). Cost to include all labour charges etc complete. Design to be as approved by M/s. GVSCCL prior to fabrication or procurement. All works to match specifications, any changes are to have the written approval of the Engineer-in-Charge. |

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| 4 | Manufacture as per BIS:12592 (Part 1&2) Supply & Delivery of manhole covers SFRC HD 35 with 560mm dia clear opening and frames with ISI marking anywhere in A.P., F.O.R. destination including, loading, un-loading & stacking at site but and including of positioning and install at location with concrete hunching. As directed by Engineer in charge. |
| 5 | Providing and Applying Dashes, Arrows, Letters, Bus stop, Cycle Mark, Kerb Stone etc. Marking in White Colour with Hot applied Thermoplastic Paint, up to 1500mm wide and applied in uniform interval . The paint shall be homogeneous dry mixed with binder resins, plasticizers, glass beads (or other optics), pigments, and fillers. The line size in 2.5 mm thick including reflectorizing glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 . The rate shall include all materials, labours, Tool & Plants and mode of application and other associated works etc. complete as per the drawing and as directed by Engineer in charge. |
| | Arrow (White Colour Paint) |
| | Cycle Mark (White Colour Paint) |
| | Cycle Track P3 Type (Red Colour Paint) |
| | All roads including zebra marking ,Stop marking & Arrow marking |
| 6 | Painting Two Coats on New Concrete Surfaces Painting two coats including primer coat after filling the surface with synthetic enamel paint in all shades on new, plastered / concrete surfaces as per drawing and Technical Specification Clause 1701MORD. |
| 7 | Supply and installation of Stainless Steel Tree Grate (SS 316)of size 1200 mm x 1200 mm and thickness, design as shown in the drawing. Cost to include all fixings i.e. L angles, screws, bolts, washers etc. to complete. Design to be as approved by M/s. GVSCCL prior to fabrication or procurement. All works to match specifications, any changes are to have the written approval of the Engineer-in-Charge. |
| 8 | Pre Cast Drain Cover Slab Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of reinforcement, including cantering, shuttering, finishing admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge."(Note :- Cement content considered in this item is @ 330 kg/cum. (For Cover Slab) |
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| G | ROAD & JUNCTION WORKS |
| 1 | Scarifying the existing bituminous road surface to a 100mm and disposal of scarified material with in all lifts and lead up to 10 Km. Demolition / cutting of existing Bituminous concrete road to max 150 mm thick with required plant and equipment's, tools and tackles including demolition of existing structures all complete including levelling and making the surface to required level and disposal of unserviceable material and stacking the serviceable material. Complete including all lead and lifts and as per the directions of Engineer In Charge.(Stacking of serviceable material for reuse) |
| 2 | Scarifying the existing bituminous road surface to a depth of 50mm and disposal of scarified material with in all lifts and lead up to 10 Km. Demolition / cutting of existing Bituminous concrete road to max 50mm thick with required plant and equipment's, tools and tackles including demolition of existing structures all complete including levelling and making the surface to required level and disposal of unserviceable material and stacking the serviceable material. Complete including all lead and lifts and as per the directions of Engineer In Charge.(Stacking of serviceable material for reuse) |

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| 3 | Providing and applying primer coat with bitumen emulsion (SS-1) on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.70-1.0 kg/sqm using mechanical means as per Technical Specification Clause 502 MORD (one before DBM and one before take coat) (Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 4 | Providing and laying 100 mm Pavement Correction Course (PCC)- dense graded bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with VG30, bituminous binder @ 4.0 to 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.(Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 5 | Providing and applying Tack coat with Bitumen emulsion (RS-1) using emulsion distributor at the rate of 0.25 to 0.30 kg per sqm on the prepared dry and hungry bituminous surface cleaned with Hydraulic broom as per Technical Specification Clause 503 MORD.(Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 6 | Providing and laying Bituminous concrete 30mm with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects. (Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 7 | Setting out Providing and Applying Solid Lines /Yellow Box Junction in White/Yellow Colour/ Broken Line with Hot applied Thermoplastic Paint, The paint shall be homogeneous dry mixed with binder resins, plasticizers, glass beads (or other optics), pigments, and fillers. The line size in 100 mm wide and 2.5 mm thick including reflectorizing glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 . The rate shall include all materials, labours, Tool & Plants and mode of application and other associated works etc. complete as per the drawing and as directed by Engineer in charge.(Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 8 | Demolishing in brick / Block work manually including stacking of serviceable material and disposal of unserviceable materials, The rate shall be including of all labour, machineries, lift, lead and other related works etc., to complete as per direction of Engineer-in-charge. (Center Island including plastering)(Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 9 | Demolishing Cast in situ CC kerb walls- cement concrete manually including stacking of serviceable material and disposal of unserviceable materials, The rate shall be including of all labour, machineries, lift, lead and other related works etc., to complete as per direction of Engineer-in-charge.(Including Island Kerbs and PCC base) (Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 10 | Scarifying the existing bituminous road surface to a depth of 150 mm and disposal of scarified material with in all lifts and lead up to 10 Km. Demolition / cutting of existing Bituminous concrete road to max 150 mm thick with required plant and equipment's, tools and tackles including demolition of existing structures all complete including levelling and making the surface to required level and disposal of unserviceable material and stacking the serviceable material. Complete including all lead and lifts and as per the directions of Engineer In Charge.(Stacking of serviceable material for reuse) (Excavation below Proposed Island on existing Carriage way)(Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 53) |

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| 11 | Providing and laying at or near ground level factory made Precast Cement Concrete kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for payment). on Channlizer Islands (Precast C.C. kerb stone size shall be 150mm x 150mm x 500mm taper). (Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 12 | Providing and laying at or near ground level factory made Precast Cement Concrete kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for payment). on Channlizer Islands (Precast C.C. kerb stone size shall be 150mm x 150mm x 300mm).(Refer Drawing - VSC-ACM-TRA-RFP-DWG-900-1 to 45) |
| 13 | Painting Two Coats on New Concrete Surfaces Painting two coats including primer coat after filling the surface with synthetic enamel paint in all shades on new, plastered / concrete surfaces as per drawing and Technical Specification Clause 1701MORD. |
| 14 | Table Top Pedestrian Crossing with 200mm thick Crushed Rock , 30mm send bed , with 80mm Paver Block including zebra Crossing with Flushed Kerb stone including kerb inlet PVC 200mm pipe to respective Box Drain and rest dimension as per Drawing. |
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| H | ROAD SIGNAGES & FURNITURE |
| 1 | Providing and lanstallation Solar Blinkers of 300mm Dia-Red / Amber blinker lamp 12V with Round Retrofit, Incl Clamps with solar Blinker Controller (With housing rack and provision for Battery) ,12V 26AH BATTERY , 45W Solar Panel ,45W SOLAR PANEL STAND , Standard pole & Construction,brick work & Plastering with necessary concrete foundation with Testing and installation work completed as directed by Engineer in charge. |
| 2 | Providing and lanstallation Rubber Speed Breaker Dimensions : 500 MM Length x 415 MM Width x 75 MM Height (1 Meter = 2 Pieces - One Black & One Yellow). , Load Bearing Capacity - 40 Tons i.e., it will take the load of 40 Tons of the Running ,Vehicle but not the Standing Vehicle.Weight per Meter : 25 Kgs.Material : Made from High Impact Resistant Rubber. |
| 3 | Butterfly Cantilever - Single Pole |
| 4 | Cantilever Signage - Single Pole |

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| 5 | <p>Shoulder Mounted Signs (Advance Direction / Way finding / Reassurance Sign) - Providing and fixing of Advance Direction / Way finding / Reassurance Sign board of size 1200 mm x 1500 mm made out of Type-XI retro reflective sheeting and confirming to IRC:67:2012 and ASTM D 4956-09. Base Sheetting shall be of White Color Type XI Retro Reflective Sheetting and background shall be of Blue color and fixed over 4 mm Aluminium Composite Material sheet having minimum 0.5 mm thick Aluminium skin on both sides with back side painted grey colour and fixed over back support frame of M.S. Angle 25 x 25 x 3 mm all round mounted on two 75 mm dia MS Pipe with clear height of not less than 2.1 m from the ground level to the bottom of the board as per the drawing. The sign post should be painted with one coat of red oxide paint and two coats of 1st quality synthetic enamel paint Black & white colour with bands of 30 cm height. The sign post shall be firmly fixed in to the ground by M20 concrete foundation of size 45 cm x 45 cm x 60 cm, including cost, conveyance of all materials, equipment, machinery and labor with all leads and lift, loading charges necessary for satisfactory completion of the work as directed by Engineer-in-Charge. 10 years pre-qualification warranty as per clause 6.9 of IRC 67-2012 for Type XI retro reflective sheeting from the manufacturer & a certified copy of test reports from an independent test laboratory conforming to clause 6.7 of IRC 67-2012 including 3 years outdoor weather exposure report for the retro reflective sheeting offered shall be submitted by the contractor for technical qualification in the tender. Corporation Logo / branding shall be done with Digital Printing Signage with 10 years warranty, refer detailed specification for Digital Printing</p> |
| 6 | <p>Chevron Signboard- Providing and fixing of Chevron Boards of size 500 mm x 600 mm made out of Type XI Retro Reflective Sheetting of Yellow Color confirming to IRC:67:2012 and ASTM D 4956-09. Screen printing in black colour as per IRC 67 and fixed over 4 mm Aluminium composite material sheet having minimum 0.5 mm thick Aluminium skin on both sides with back side painted with grey colour and fixed over back support frame of 25 mm x 25 mm x 3 mm all round and mounted on a 75 mm dia MS Pipe with clear height of not less than 2.1 m from the ground level to the bottom of the board. The sign post should be painted with one coat of red oxide paint and 2 coats of synthetic enamel paint Black and White colour with bands of 30 cm height. The sign post shall be firmly fixed in to the ground by means of properly designed foundation with M20 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing including cost and conveyance of all materials, equipment, machinery and labor with all leads and lift, loading charges necessary for satisfactory completion of the work as directed by the Engineer-in-Charge. 10 years pre-qualification warranty as per clause 6.9 of IRC 67-2012 for Type XI retro reflective sheeting from the manufacturer & a certified copy of test reports from an independent test laboratory conforming to clause 6.7 of IRC 67-2012 including 3 years outdoor weather exposure report for the retro reflective sheeting offered shall be submitted by the contractor for technical qualification in the tender. Corporation Logo / branding shall be done with Digital Printing Signage with 10 years warranty, refer detailed specification for Digital Printing</p> |

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| 7 | <p>Landmark Signage - Supply & fixing of Retro Reflective Landmark Sign Boards of Size 1220mm x 1800mm made out of retro reflective sheeting conforming to Type XI standards of ASTM D 4956 – 09 & as per IRC 67-2012 specifications fully covered over 2mm thick aluminium Sheet & back support frame of stainless steel of size 15mmx15mmx20mm, 1.2mm thick supported by 38mm OD Stainless steel pipe all around and 2 nos of vertical posts of 75mm OD pipe vertical post firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 450mmX450mmX600mm complete. The background shall be blue in color with letters and border in white, the item includes earthwork excavation, cost of all materials, loading, unloading, lead, lift, transportation etc., complete. 10 years pre-qualification warranty as per clause 6.9 of IRC 67-2012 for Type XI retro reflective sheeting from the manufacturer & a certified copy of test reports from an independent test laboratory conforming to clause 6.7 of IRC 67-2012 including 3 years outdoor weather exposure report for the retro reflective sheeting offered shall be submitted by the contractor for technical qualification in the tender. Corporation Logo / branding shall be done with Digital Printing Signage with 10 years warranty, refer detailed specification for Digital Printing</p> |
| 8 | <p>Street / Road Name Signage - Supply and fixing of Retro Reflective Single arrow road name sign board of size 1600 mm x 900 mm made out of retro reflective sheeting conforming to Type XI standards of ASTM D 4956 – 09 & as per IRC 67-2012 specifications fully covered over 2mm thick aluminium and back support frame SS angle of 15mm x 20mm x 1.2mm, supported by 38mm OD stainless steel pipe all round in 304 grade and 2 nos of vertical posts of 75 mm OD stainless steel pipe of 202 grade firmly fixed to the ground by means of properly designed foundation of size 300mm x 300mm x 450mm with M15 grade cement concrete and the item shall include earthwork excavation, cost of all materials, loading, unloading, lead, lift, transportation etc., complete. The sign board background shall be blue in color with letters and border in white. 10 years pre-qualification warranty as per clause 6.9 of IRC 67-2012 for Type XI retro reflective sheeting from the sheeting manufacturer & a certified copy of test reports from an independent test laboratory conforming to clause 6.7 of IRC 67-2012 including 3 years outdoor weather exposure report for the retro reflective sheeting offered shall be submitted by the contractor for technical qualification in the tender. Corporation Logo / branding shall be done with Digital Printing Signage with 10 years warranty, refer detailed specification for Digital Printing</p> |

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| 9 | <p>Tourism Signage - Providing and fixing of Tourism Signage board made out of Type-XI retro reflective sheeting and confirming to IRC:67:2012 and ASTM D 4956-09. Base Sheeting shall be of White Color Type XI Retro Reflective Sheeting and information and background shall be printed using traffic inks on Digital Printer and fixed over 4 mm Aluminium Composite Material sheet having minimum 0.5 mm thick Aluminium skin on both sides with back side painted grey colour and fixed over back support frame of M.S. Angle 25 x 25 x 3 mm all round mounted on two 75 mm dia MS Pipe with clear height of not less than 2.1 m from the ground level to the bottom of the board as per the drawing. The sign post should be painted with one coat of red oxide paint and two coats of 1st quality synthetic enamel paint Black & white colour with bands of 30 cm height. The sign post shall be firmly fixed in to the ground by M20 concrete foundation of size 45 cm x 45 cm x 60 cm, including cost, conveyance of all materials, equipment, machinery and labor with all leads and lift, loading charges necessary for satisfactory completion of the work as directed by Engineer-in-Charge. 10 years pre-qualification warranty as per clause 6.9 of IRC 67-2012 for Type XI retro reflective sheeting from the manufacturer & a certified copy of test reports from an independent test laboratory conforming to clause 6.7 of IRC 67-2012 including 3 years outdoor weather exposure report for the retro reflective sheeting offered shall be submitted by the contractor for technical qualification in the tender. Corporation Logo / branding shall be done with Digital Printing Signage with 10 years warranty, refer detailed specification for Digital Printing</p> |
| 10 | <p>School / Hospital Zone Signage - Providing and fixing of Tourism Signage board made out of Type-XI retro reflective sheeting and confirming to IRC:67:2012 and ASTM D 4956-09. Base Sheeting shall be of White Color Type XI Retro Reflective Sheeting and information and background shall be printed using traffic inks on Digital Printer and fixed over 4 mm Aluminium Composite Material sheet having minimum 0.5 mm thick Aluminium skin on both sides with back side painted grey colour and fixed over back support frame of M.S. Angle 25 x 25 x 3 mm all round mounted on two 75 mm dia MS Pipe with clear height of not less than 2.1 m from the ground level to the bottom of the board as per the drawing. The sign post should be painted with one coat of red oxide paint and two coats of 1st quality synthetic enamel paint Black & white colour with bands of 30 cm height. The sign post shall be firmly fixed in to the ground by M20 concrete foundation of size 45 cm x 45 cm x 60 cm, including cost, conveyance of all materials, equipment, machinery and labor with all leads and lift, loading charges necessary for satisfactory completion of the work as directed by Engineer-in-Charge. 10 years pre-qualification warranty as per clause 6.9 of IRC 67-2012 for Type XI retro reflective sheeting from the manufacturer & a certified copy of test reports from an independent test laboratory conforming to clause 6.7 of IRC 67-2012 including 3 years outdoor weather exposure report for the retro reflective sheeting offered shall be submitted by the contractor for technical qualification in the tender. Corporation Logo / branding shall be done with Digital Printing Signage with 10 years warranty, refer detailed specification for Digital Printing</p> |

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| 11 | <p>Government Scheme and Critical Zone Signage - Providing and fixing of Tourism Signage board made out of Type-XI retro reflective sheeting and confirming to IRC:67:2012 and ASTM D 4956-09. Base Sheeting shall be of White Color Type XI Retro Reflective Sheeting and information and background shall be printed using traffic inks on Digital Printer and fixed over 4 mm Aluminium Composite Material sheet having minimum 0.5 mm thick Aluminium skin on both sides with back side painted grey colour and fixed over back support frame of M.S. Angle 25 x 25 x 3 mm all round mounted on two 75 mm dia MS Pipe with clear height of not less than 2.1 m from the ground level to the bottom of the board as per the drawing. The sign post should be painted with one coat of red oxide paint and two coats of 1st quality synthetic enamel paint Black & white colour with bands of 30 cm height. The sign post shall be firmly fixed in to the ground by M20 concrete foundation of size 45 cm x 45 cm x 60 cm, including cost, conveyance of all materials, equipment, machinery and labor with all leads and lift, loading charges necessary for satisfactory completion of the work as directed by Engineer-in-Charge. 10 years pre-qualification warranty as per clause 6.9 of IRC 67-2012 for Type XI retro reflective sheeting from the manufacturer & a certified copy of test reports from an independent test laboratory conforming to clause 6.7 of IRC 67-2012 including 3 years outdoor weather exposure report for the retro reflective sheeting offered shall be submitted by the contractor for technical qualification in the tender. Corporation Logo / branding shall be done with Digital Printing Signage with 10 years warranty, refer detailed specification for Digital Printing</p> |
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| 12 | <p>Cautionary / Mandatory / Facility Information / Other Useful Signage - Providing and fixing of cautionary/ Mandatory / Facility Info / Other Useful Information board of size 1000 mm x 1200 mm made out of Type XI Retro Reflective Sheeting confirming to IRC:67:2012 and ASTM D 4956-09. Base Sheeting shall be of White Color Type XI Retro Reflective Sheeting and background shall be of Blue color and letters / logos done by screen printing in black colour ,borders by screen printing in red colour as per IRC 67 and fixed over 4 mm Aluminium composite material sheet having minimum 0.5 mm thick Aluminium skin on both sides with back side painted with grey colour and fixed over back support frame of 35 mm x 35 mm x 5 mm all round and mounted on 2 vertical post of 75 mm dia MS Pipe with clear height of not less than 2.1 m from the ground level to the bottom of the board. The sign post should be painted with one coat of red oxide paint and 2 coats of synthetic enamel paint Black and White colour with bands of 30 cm height. The sign post shall be firmly fixed in to the ground by means of properly designed foundation with M20 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing including cost and conveyance of all materials, equipment, machinery and labor with all leads and lift, loading charges necessary for satisfactory completion of the work as directed by the Engineer-in-Charge. 10 years pre-qualification warranty as per clause 6.9 of IRC 67-2012 for Type XI retro reflective sheeting from the manufacturer & a certified copy of test reports from an independent test laboratory conforming to clause 6.7 of IRC 67-2012 including 3 years outdoor weather exposure report for the retro reflective sheeting offered shall be submitted by the contractor for technical qualification in the tender. Corporation Logo / branding shall be done with Digital Printing Signage with 10 years warranty, refer detailed specification for Digital Printing</p> |
| 13 | <p>Raised Pavement Marker (RPM / Road Stud) - Supply and fixing of Road Stud / Raised Pavement Markers (RPM) made of polycarbonate and ABS molded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 – DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 100 mm and with minimum reflective area of 13 Sq.cm on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kgf. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer. 2 years Pre-qualification warranty for field performance shall be submitted by the contractor for technical qualification in the tender</p> |

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| 14 | <p>Solar Raised Pavement Marker (Solar RPM / Road Stud) - Supplying of Solar Raised Pavement Markers made of polycarbonate molded body, solar powered, LED selfillumination in active mode, 360 degree illumination and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face in passive mode. The product shall support a load of 13635 kg tested in accordance to MORTH and ASTM D 4280 Type H. The product should be resistant to water ingress according to IP 65 standards with IS 12063:1987 Category 2 and should withstand temperatures in the range of -7 C to 70 C. Flashing rate and color of lighting is to be provided as per requirement. There should be minimum current losses of less than 20 micro-amperes in sleep-charging mode to enhance product life and single charge should provide for a minimum autonomy of 50 hours. The height, width and length shall not be less than 10 mm x 100 mm x 100 mm. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer. Warranty Certificate and test reports confirming to compressive strength as per MORTH circular shall be obtained from the manufacturer and submitted to the engineer-in-charge. Two Years Warranty Certificate for Solar RPM for the quantity installed and a certified copy of test reports from an independent test laboratory conforming to water ingress shall be obtained from the Manufacturer by the contractor and submitted to the engineer-in-charge.</p> |
| 15 | <p>Median Marker - 2 Sided - Providing fixing of Median marker double sided made of polycarbonate for impact resistance and good weather ability. Polycarbonate used for molding the median marker shall have a minimum Izod impact strength value of 600 J/m at room temperature. The impact strength of the poly carbonate should not decrease to less than 70% of its initial value on being subjected to UV weathering as per ASTM G 155 for 1000 hours or exposure to 2 years of natural weathering. The body of the median marker shall be in the form of an isosceles trapezoidal structure of length 15 cm height and width of 10 x 10 cm. The median marker shall have fluorescent yellow retro - reflective sheeting confirming to Tpe XI specifications as per ASTM D 4956. Area of reflective sheeting should not be less than 70 cm². Edge of retro reflective shall be concealed using a grill/mesh/similar mechanism to prevent vandalism and sheeting pilferage. The logo of the manufacturer shall be embossed and painted in contrasting colour on both side of median marker for distinct identification(even from moving vehicles). 2 years Pre-qualification</p> |

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| 16 | <p>Delineator - 2 Sided - Providing and fixing of Vertical Delineator(Double Sided) consisting of top retro reflective unit exposed area of 125 cm² white color & bottom retro reflective unit exposed area of 35 cm² red color wide angle cube corner micro prismatic nonmetallic retro reflective sheeting confirming with IRC 67 2012 and meeting the coefficient of retro reflection values as per ASTM D 4956-09 Type XI table specification. The tubular delineator shall have a core and shell construction, shell shall be made of tough, high impact resistant, injection-molded, thermoplastic outer body & the inner core shall consist of powder coated or painted Mild steel of minimum thickness 1.0mm on which retro reflective sheeting is pasted on one side such that at least 60% of exposed area is a flat surface & core-shell structure shall be of height not less than 800 mm above the ground and width not less than 80 mm. The metallic core of the delineator shall extend 300mm beyond the shell length from bottom for installing in the ground. The logo of the manufacturer shall be embossed on either side of the body in the injection molding process. The engineering thermoplastic used for making the delineator body shall have minimum initial mechanical properties of 600J/m tested in accordance with ASTM D256 and shall retain at least 70% of these minimum initial values when subjected to accelerated weathering for 1000hrs as per ASTM G155 or UL 746C and as per IRC 79 specification and the product offered shall have IRC Accreditation. Two Years Warranty Certificate for vertical Delineator for the quantity installed and a certified copy of test reports from an independent test laboratory conforming to mechanical properties shall be obtained from the Manufacturer by the contractor and submitted to the engineer-in-charge</p> |
| 17 | <p>AFP - Sheeting (Hazard Marking Application) - Supply and fixing of AFP Sheeting flexible prismatic sheeting shall be of 1ft width and laminated at the back with a 50 micron thick Aluminium (Al) foil with pressure sensitive adhesive and liner ,further this flexible prismatic sheeting shall have screen printed arrow /slant line pattern in black colour on top in continuous roll format. Neither AFP sheeting nor the flexible prismatic sheeting used shall crack when slowly bent in second time around a 1/8th inch mandrel after being conditioned for 24 hrs at 0 degrees and tested as per section s2.2.2 of ASTM, D 4956-09. The AFP sheeting with the liner removed shall be applied with a neoprene contact adhesive with polychloroprene as base viscosity of 200-450 cps and solid content of 20-30 % once applied the edges of the product shall be extremely resistant to peel off . A test report from institutes like ARAI/CRR/ conforming to above mentioned flexibility and ASTM D 4956-09 type -vi retro reflectivity performance of the flexible prismatic sheeting used in AFP shall be submitted by the tenderer during pre-qualification and supply of material.2 years Pre-qualification warranty for field performance shall be submitted by the contractor for technical qualification in the tender</p> |

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| 18 | <p>Citizen Information System 80 cm Touch Screen - Providing of 80 cm (~32") Touchscreen Systems with Projected capacitive touchscreen capable of sensing 80 simultaneous touches using bare fingers or thin gloves, with palm and elbow rejection, touch response time of less than 10 milliseconds with an accuracy greater than 99%, anti-reflective coating, non-active cover glass with no wear mechanism, LCD-LED display resolution 1920x1080, 170/170 viewing angle, 450 cd/m2 brightness, fast processor (i3 or higher), 8GB RAM, 120GB SSD, Windows 8. Capable of operation with Windows or Linux operating system. System should be fully sealed, with opening only for AC power cable and for LAN cable from bottom. System should not be affected by dust, grease, moisture, liquids, paan stains, resistant to corrosives as per ASTM D1308-07 and ASTM F-1598-107. System should be sealed equivalent to IP65. Systems should have a full glass front (no bezel), and be capable of use in either portrait or landscape positions. Without application software. Mechanical and software integration will be done by user</p> |
| 19 | <p>SMART Variable Message Signs Butterfly Structure for VMS - The cost shall include a suitable Butterfly Structure for SMART VMS board of size 4.8 m x 1.92 m Full color (RGB) DIP Smart VMS with 10mm Pitch with Media Player, Installation and commissioning of Smart Variable Message (VMS) SignBoards including Server Hardware, Supply and Installation ,Testing and Commissioning of Smart VMS software and all necessary Integration with the VMS boards and AMC for 1 year and refer detailed specification for Smart VMS etc as complete.</p> |
| 20 | Supply of single sided 4.8 m x 1.92 m Full color (RGB) DIP Smart VMS with 10mm Pitch with Media Player |
| 21 | Installation and commissioning of Smart Variable Message (VMS) SignBoards without structure |
| 22 | Server Hardware |
| 23 | Supply and Installation ,Testing and Commissioning of Smart VMS software and all necessary Integration with the VMS boards |

Specifications for Electrical Works

| S.No | Description |
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| | Proposed Pedestrian Lights |
| | Design, Manufacture, supply, Installation, testing and commissioning of external light fixture (45W) height 4.5 MT. Height as per Specifications for Cycle Track. 207 Nos |
| | <p>1. Works shall be executed as per IS</p> <p>2. Total Pole height shall be 4.5 Mtrs</p> <p>3. Single Arms</p> <p>5. Pole top fixture 1 No of Supply of 40/45 W LED Pedestrian light luminaire integral with pressure die cast aluminum housing having pot optics with IP66 protection with all standard accessories etc. (Single Head)</p> <p>6. Cable junction box weather proof construction made from 16 gauge CRCA sheet duly painted, having latch lock arrangement with following accessories:</p> <p>a. 15mm x 2.5mm tinned copper bus bars with epoxy insulators. - 1 No., b. 10 Amps. DP MCB.</p> <p>7. Internal wiring from junction box to fixture with 2x2.5 sq.mm copper wires. The box shall be installed minimum at 1000 mm from ground level.</p> <p>8. 2 Nos. 40 mm die GI pipe shall be installed from junction box upto minimum 750 mm below the ground level for cables. (Excluding Civil Works)</p> |
| 14.a | Supply and transportation of following glass reinforced polymer (GRP) composite type Conical pole with single arm bracket of length 1Mtr and internal junction box including labour charges etc., complete set . 4.00 Mtrs height, Bottom dia 143mm, Top 76mm, AV thickness 6mm and to withstand maximum wind velocity 155Km/Hr . Makes: Bajaj / Kemrock / Sumip/Helipole |
| 14.b | Supply and transportation of 40/45 W LED Street light Luminaire made of pressure diecast aluminum body with powder coated, having protective toughened glass, Supply Input voltage 120 - 270 V AC, P.F > 0.90, high power LED's having efficacy >120 lumens/watt, System efficacy >95lm/W and junction temperature < 70°C, with Ingrees protection IP65, Luminaire performance complies to IS 10322 (Part 5 / Sec-3), Driver surge protection 4KV, external Surge protection ≥ 5KV with optics distribution , THD<10% at 110 Volts AC, driver efficiency >90%, CCT: 3000K - 5700K, minimum CRI>70, etc., complete a) LUMINAIRE MAKE :PHILIPS (GREEN LINE) / OSRAM / SCHREDER (BRIKA) / GE / VIN (STO) / CROMPTON (LEXUS+) / BAJAJ (EDGE+) / HALONIX (LUMOS - SUPER) / HAVELLS (ENDURA CITYLINER NEO) b) LED MAKE : PHILIPS LUMILEDS / CREE / NICHIA / OSRAM / SAMSUNG / LG LEDs. |

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| 14.c | Supply of Automatic Street Light Control System with Optical Sensor, Low voltage / High voltage trip and reset, operating voltage 150 - 280V AC per Phase, 50 HZ with suitable SMC enclosure of IP 54 protection, MCBs and contactor suitable to control the load of 12 KW of Three phase load with necessary clamping arrangements. Make: Sandeep Nature Switch or its equivalent. |
| 14.d | ERECTION OF POLES Foundation and erection charges for 4 mtrs to 10 Mtrs long Octagonal / Conical pole duly erecting on base plate 290mm x 290mm x 16mm thick duly providing 4 Nos. foundation bolts with nuts with providing of M20 c.c work vibrated concreting mixing with necessary steel (15kgs) reinforcement as directed by the field engineers during execution including all labour charges and cost and conveyance of materials etc. complete. |
| 14.e | ERECTION OF Light Luminaire / Automatic light Control System 40 /45 W LED Street light Luminaire and Automatic control System |
| 14.f | Supply and Transportation of Outer dia 63mm and Inner dia 51mm double walled corrugated HDPE duct made as per specification BSEN - 500 86/IS 14930 Part-II. (Cycle Track Light Pole) Makes:DURA LINE (Dura Guard) or its equivalent make. |
| 14.g | Labour charges for laying, joining, welding, fixing and commissioning the pipes including all specials such as couplers/ bends/ tees etc including fixing necessary fittings like bends, plugs, couplers, junctions, tees, etc with welding the joint as per standard practice - above 40 mm dia (Cycle Track) |
| 14.h | Supply of 16 Sqmm 4 Core XLPE insulated, 1100V grade armoured aluminum cable as per specification confirming to IS:7098 (Part - I) (Cycle Track Light Pole Area) Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab |
| 14.i | Laying of 16 Sqmm 4 Core XLPE insulated, 1100V grade armoured aluminum cable as per specification (Cycle Track Light Pole Area) |
| 14.j | Supply and Fixing of single compression brass cable glands for 4 core XLPE armoured cable up to 16.0 Sq.mm with brass washers complete. (Cycle Track Light Pole Area) |
| 14.k | Supply and fixing of crimping type copper lugs confirming to I.S specifications for cable upto 16 Sq.mm including nuts and bolts with connections. (Cycle Track Light Pole Area) |
| 14.l | Supply of 25 Sqmm 3.5 Core XLPE insulated, 1100V grade armoured aluminum cable as per specification confirming to IS:7098 (Part - I) (Cycle Track Light Pole) Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab |
| 14.m | Laying of 25 Sqmm 4 Core XLPE insulated, 1100V grade armoured aluminum cable as per specification (Cycle Track Light Pole) |

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| 14.n | Supply and Fixing of single compression brass cable glands for 3.5 core XLPE armoured cable from 25 Sqmm to 50.0 Sq.mm with brass washers complete. (Cycle Track Light Pole) |
| 14.o | Supply and fixing of crimping type copper lugs confirming to I.S specifications for cable of 25 Sq.mm including nuts and bolts with connections. (Cycle Track Light Pole) |
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| | EXISTING LIGHTS SHIFTED / RELOCATION |
| 21 | Removing ,transporting ,storage, reinstallation ,testing and commissioning of external pole and existing Street light luminaire with all standard accessories etc. |
| | |
| 22 | ERECTION OF POLES Foundation and erection charges for 4 mtrs to 10 Mtrs long Octagonal / Conical pole duly erecting on base plate 290mm x 290mm x 16mm thick duly providing 4 Nos. foundation bolts with nuts with providing of M20 c.c work vibrated concreting mixing with necessary steel (15kgs) reinforcement as directed by the field engineers during execution including all labour charges and cost and conveyance of materials etc. complete. |
| 22.a | ERECTION OF Light Luminaire / Automatic light Control System 40/45 W LED Street light Luminaire and Automatic control System |
| 22.b | Supply of 16 Sqmm 4 Core XLPE insulated, 1100V grade armoured aluminum cable as per specification confirming to IS:7098 (Part - I) (Cycle Track Light Pole Area) Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab |
| 22.c | Laying of 16 Sqmm 4 Core XLPE insulated, 1100V grade armoured aluminum cable as per specification (Cycle Track Light Pole Area) |
| 22.d | Supply of 25 Sqmm 3.5 Core XLPE insulated, 1100V grade armoured aluminum cable as per specification confirming to IS:7098 (Part - I) (Cycle Track Light Pole) Makes: Torent / Universal / Unicab / Havells / KEI / Gloster / Polycab |
| 22.e | Laying of 25 Sqmm 4 Core XLPE insulated, 1100V grade armoured aluminum cable as per specification (Cycle Track Light Pole) |
| 22.f | Supply and Fixing of single compression brass cable glands for 3.5 core XLPE armoured cable from 25 Sqmm to 50.0 Sq.mm with brass washers complete. (Cycle Track Light Pole) |
| 22.g | Supply and fixing of crimping type copper lugs confirming to I.S specifications for cable of 25 Sq.mm including nuts and bolts with connections. (Cycle Track Light Pole) |
| 22.h | Supply and Fixing of single compression brass cable glands for 4 core XLPE armoured cable up to 16.0 Sq.mm with brass washers complete. |
| 22.i | Supply and fixing of crimping type copper lugs confirming to I.S specifications for cable upto 16 Sq.mm including nuts and bolts with connections. |

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| 22.k | Supply and Transportation of Outer dia 63mm and Inner dia 51mm double walled corrugated HDPE duct made as per specification BSEN - 500 86/IS 14930 Part-II. (Cycle Track Light Pole) Makes: DURA LINE (Dura Guard) or its equivalent make. |
| 22.l | Labour charges for laying, joining, welding, fixing and commissioning the pipes including all specials such as couplers/ bends/ tees etc including fixing necessary fittings like bends, plugs, couplers, junctions, tees, etc with welding the joint as per standard practice - above 40 mm dia |
| | |

SCHEDULE – E: MAINTENANCE REQUIREMENTS

1. Maintenance Requirements

- 1.1 The Contractor shall, at all times maintain the Project in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.
- 1.2 The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.
- 1.3 All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2. Repair/rectification of Defects and deficiencies

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annex - I of this Schedule-E within the time limit set forth therein.

3. Other Defects and deficiencies

In respect of any Defect or deficiency not specified in Annex - I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4. Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

5. Emergency repairs/restoration

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

6. Daily inspection by the Contractor

The Contractor shall, through its engineer, undertake a daily visual inspection of the Project and maintain a record thereof in a register to be kept in such form and manner as the Authority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

7. Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [15th October] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

All damages occurring to the Project on account of a Force Majeure Event or default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

Annex – I (Schedule-E)

Repair/rectification of Defects and deficiencies

The Contractor shall repair and rectify the Defects and deficiencies specified in this Annex-I of Schedule-E within the time limit set forth in the table below.

| Nature of Defect or deficiency | | Time limit for repair/rectification |
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| ROADS | | |
| (a) | Carriageway and paved shoulders | |
| (i) | Breach or blockade | Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days |
| (ii) | Roughness value exceeding 2,000 mm in a stretch of 1 km (as measured by a calibrated bump integrator) | 120 (one hundred and twenty) days |
| (iii) | Pot holes | 24 hours |
| (iv) | Any cracks in road surface | 15 (fifteen) days |
| (v) | Any depressions, rutting exceeding 10 mm in road surface | 30 (thirty) days |
| (vi) | Bleeding/skidding | 7 (seven) days |
| (vii) | Any other defect/distress on the road | 15 (fifteen) days |
| (viii) | Damage to pavement edges | 15 (fifteen) days |
| (ix) | Removal of debris, dead animals | 6 hours |
| (b) | Granular earth shoulders, side slopes, drains and culverts | |
| (i) | Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway) | 7 (seven) days |
| (ii) | Edge drop at shoulders exceeding 40 mm | 7 (seven) days |
| (iii) | Variation by more than 15% in the prescribed side (embankment) slopes | 30 (thirty) days |
| (iv) | Rain cuts/gullies in slope | 7 (seven) days |
| (v) | Damage to or silting of culverts and side drains | 7 (seven) days |
| (vi) | Desilting of drains urban areas | 24 hours |
| (vii) | Railing, parapets, crash barriers | 7 (seven) days (Restore |

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| | | immediately if causing safety hazard) |
| (c) | Road side furniture including road sign and pavement marking | |
| (i) | Damage to shape or position, poor visibility or loss of retro-reflectivity | As and when required/Once every year |
| (ii) | Painting of km stone, railing, parapets, crash barriers | 7 (seven) days |
| (iii) | Damaged/missing road signs requiring replacement | 7 (seven) days |
| (iv) | Damage to road mark ups | 24 hours |
| (d) | Road lighting | |
| | Any major failure of the system | 24 hours |
| | Faults and minor failures | 8 hours |
| (e) | Trees and plantation | |
| (i) | Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs | 24 hours |
| (ii) | Removal of fallen trees from carriageway | 4 hours |
| (iii) | Trees and bushes requiring replacement | 30 (thirty) days |
| (iv) | Removal of vegetation affecting sight line and road structures | 15 (fifteen) days |
| (e) | Rest area | |
| (i) | Cleaning of toilets | Every 4 hours |
| (ii) | Defects in electrical, water and sanitary installations | 24 hours |
| (g) | [Toll Plaza] | |
| (h) | Other Project Facilities and Approach roads | |
| | Damage in approach roads, pedestrian facilities, truck lay-byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads | 15 (fifteen) days |
| | Damaged vehicles or debris on the road | 4 (four) hours |
| | Malfunctioning of the mobile crane | 4 (four) hours |

[Note: Where necessary, the Authority may modify the time limit for repair/rectification, or add to the nature of Defect or deficiency before issuing the bidding document, with the approval of the competent authority.]

SCHEDULE – F: APPLICABLE PERMITS

1. Applicable Permits

1.1 The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

- a) Clearance of GVSCCL and Andhra Pradesh Pollution Control Board for setting up asphalt plant;
- b) Permission for cutting of trees if required from the Environmental Clearance Application, Ministry of Environment and Forest , Central Govt. (MoEF)
- c) Permission of Borrow Area Owner and GVSCCL for borrow earth;
- d) Approval of existing crushers for using the materials for current work, if required
- e) Any other permits or clearances required under Applicable Laws.

1.2 Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

1.3 The Contractor shall be solely responsible for obtaining the above permits and the Authority will not be liable for payment of compensation on any account for failure in the part of the Contractor to obtain any such permits.

SCHEDULE-G: FORM OF BANK GUARANTEE

Annex-I

Performance Security

**Managing Director,
Greater Visakhapatnam Smart City Corporation Limited(GVSCCL),
Room No 306, TennetiBhavan, Asilmetta,
Visakhapatnam,AndhraPradesh,India, Pin – 530003**

WHEREAS:

- A. _____[name and address of contractor] (hereinafter called the **"Contractor"**) has executed an agreement (hereinafter called the **"Agreement"**) with the Managing Director, Greater Visakhapatnam Smart City Corporation Limited (GVSCCL), (hereinafter called the **"Authority"**) for the Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam's Area Based Development (ABD) under Smart Cities Mission on Engineering, Procurement and Construction (the **"EPC"**) basis, subject to and in accordance with the provisions of the Agreement
- B. The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period}{as defined in the Agreement) in a sum of Rs..... cr. (Rupees crore) (the **"Guarantee Amount"**).
- C. We, through our branch at (the **"Bank"**) have agreed to furnish this bank guarantee (hereinafter called the **"Guarantee"**) by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of Chief Executive Officer/Managing Director/Director that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.
3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect on ****\$. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement

Signed and sealed this day of, 20..... at

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

\$Insert date being 2 (two) years from the date of issuance of this Guarantee (in accordance with Clause 7.2 of the Agreement).

- i. The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- ii. The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex – II (Schedule - G)

- Deleted -

Annex-III (Schedule - G)

Managing Director,

Greater Visakhapatnam Smart City Corporation Limited(GVSCCL),

Room No 306, TannetiBhavan, Asilmetta,

Visakhapatnam, AndhraPradesh,India, Pin – 530003

WHEREAS:

- A. [name and address of contractor] (hereinafter called the “**Contractor**”) has executed an agreement (hereinafter called the “**Agreement**”) with the Managing Director, Greater Visakhapatnam Smart City Corporation Limited(GVSCCL), (hereinafter called the “**Authority**”) for the **Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam’s Area Based Development (ABD) under Smart Cities Mission on Engineering, Procurement and Construction** (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement.
- B. In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest bearing advance payment @10% per Annum (herein after called “**Advance Payment**”) equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in four installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a Nationalised Bank, counter guaranteed by its branch at Visakhapatnam for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second/third/fourth} installment of the Advance Payment is Rs. ----- cr. (Rupees -- --- crore) andthe amount of this Guarantee is Rs. ----- cr. (Rupees ----- crore)(the“**Guarantee Amount**”)\$.
-

\$ The Guarantee Amount should be equivalent to 110% of the value of the applicable installment.

- C. (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (*hereinafter called the “**Guarantee**”*) for the Guarantee Amount.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid installment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of Chief Executive Officer, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the instalment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the

Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****. Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

Signed and sealed this day of, 20..... at

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

- i. The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- ii. The address, telephone number and other details of the head office of the Bank as well as of issuing.

\$ Insert a date being 90 (ninety) days after the end of one year from the date of payment of the Advance payment to the Contractor (in accordance with Clause 19.2 of the Agreement).

SCHEDULE-H

- 1.1. The Contract Price for this Agreement is Rs.
- 1.2. Proportions of the Contract Price for Construction of different chainages of the Project shall be as specified below:

| Identification of Roads | Weightage % |
|-------------------------------|--------------|
| R1 (Chainage 0.00 to 2+236) | 17.0 |
| R2 (Chainage 0.00 to 2+715) | 16.9 |
| R3 (Chainage 0.00 to 0+330) | 1.5 |
| R4 (Chainage 0.00 to 1+756) | 11.3 |
| R5 (Chainage 0.00 to 1+060) | 5.8 |
| R6 (Chainage 0.00 to 0+443) | 1.6 |
| R7 (Chainage 0.00 to 0+916) | 2.8 |
| R8 (Chainage 0.00 to 0+575) | 2.2 |
| R9 (Chainage 0.00 to 0+372) | 1.1 |
| R10 (Chainage 0.00 to 1+366) | 6.5 |
| R11 (Chainage 0.00 to 0+811) | 3.6 |
| R12 (Chainage 0.00 to 0+460) | 1.3 |
| R13 (Chainage 0.00 to 0+703) | 3.5 |
| R14 (Chainage 0.00 to 1+267) | 4.9 |
| R15 (Chainage 0.00 to 1+188) | 6.4 |
| R16 (Chainage 0.00 to 0+339) | 1.2 |
| R17 (Chainage 0.00 to 0+460) | 1.5 |
| R18 (Chainage 0.00 to 1+109) | 6.5 |
| R19 (Chainage 0.00 to 0+360) | 1.5 |
| R20 (Chainage 0.00 to 0+947) | 3.0 |
| Total | 100.0 |

- 1.3. Proportions of the Contract Price for different stages of Construction of the Project shall be as specified below:

| Road Identification | Item | Percentage Weightage (%) |
|---|--|--------------------------|
| R1,R2,R3,R4.R5.R6, R7,R8,R9,R10.R11.R12,R13,R14,R15,R16 .R17.R18,R19,R20 | 1.DISMANTLING, DEMOLITION AND DISPOSAL OF EXISTING STRUCTURE | 10.06 |
| | 2.EXCAVATION | 1.08 |
| | 3.CEMENT CONCRETE WORKS | 5.35 |
| | 4.CYCLE TRACK, PEDESTRIAN PLATFORM | 30.56 |

| | |
|--|------------|
| 5.PLANTING AND RAIN WATER HARVESTING | 5.05 |
| 6.MISCELLANEOUS - CIVIL | 13.49 |
| 7.PROPOSED PEDESTRIAN LIGHTS | 6.19 |
| 8.EXISTING LIGHTS SHIFTED / RELOCATION | 0.06 |
| 9.ROAD SIGNAGES & FURNITURE | 8.47 |
| 10.ROAD AND JUNCTION WORKS | 19.68 |
| Total | 100 |

1.4. Procedure of estimating the value of work done

1.4.1. Road works (surface signage and markings).

Procedure for estimating the value of road work done shall be as follows:

| Stage of Payment | Percentage -weightage | Payment Procedure |
|--|-----------------------|--|
| Dismantling, demolition and disposal of existing structure | 10.06 % | Unit of measurement is area. Payment of each stage shall be made on pro rata basis on completion of a stage in an area of not less than 20 (twenty) percent of the total area. |
| Excavation | 1.08 % | Unit of measurement is Cubic volume. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 1 Km . |
| Cement concrete works | 5.35 % | Unit of measurement is cubic volume. Payment of each stage shall be made on pro rata basis on completion of a stage in a volume of not less than 25 (twenty five) percent of the total volume. |
| Cycle track, pedestrian platform | 30.56 % | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion |

| | | |
|---|---------|---|
| | | of a stage in a length of not less than 0.5 Km. |
| Planting and rain water harvesting | 5.05 % | Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 % (ten per cent) of the total length. |
| Miscellaneous - civil | 13.49 % | Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 15% (fifteen per cent) of the total length. |
| Proposed pedestrian lights | 6.19 % | Unit of measurement is numbers. Payment of each stage shall be made on pro rata basis on completion of each unit complete in all respects as per drawing and to the satisfaction of Authority Engineer. |
| Existing lights shifted / relocation | 0.06% | Unit of measurement is numbers. Payment of each stage shall be made on pro rata basis on completion of each unit complete in all respects as per drawing and to the satisfaction of Authority Engineer. |
| Road Signage and Protection Works - Miscellaneous | 8.47 % | Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 % (ten per cent) of the total length. |
| Road works | 19.68 % | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 1 Km. |

| | | |
|-----------------------|--|--|
| Junction Improvements | | Unit of measurement is numbers. Payment of each stage shall be made on pro rata basis on completion of each unit (Junction). |
|-----------------------|--|--|

SCHEDULE-I: DRAWINGS

1. Drawings

In compliance of the obligations set forth in Clause 10.2 of this Agreement, the Contractor shall furnish to the Authority's Engineer, free of cost, all Drawings listed in Annex-I of this Schedule-I.

2. Additional Drawings

If the Authority's Engineer determines that for discharging its duties and functions under this Agreement, it requires any drawings other than those listed in Annex-I, it may by notice require the Contractor to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Contractor shall promptly prepare and furnish such drawings to the Authority's Engineer, as if such drawings formed part of Annex-I of this Schedule-I.

Annex-I (Schedule-I)

On Award of work the Contractor shall submit the design and Drawing to the Authority Engineer free of cost under clause 10.2. Drawings mentioned in the list are indicative and for Information. Contractor shall not limit himself to the same but it is in scope of Contractor to submit all required design and drawings for review and approval as per Instruction from Authority Engineer.

Documents:

| Sr. No. | Documents |
|---------|--|
| 1 | Geotechnical Investigation Report |
| 2 | Topography Survey Layout |
| 3 | Civil / Structural Design Basis Report |
| 4 | Structural Design (Calculations) Report |
| 5 | Proposed Layout for shifting of utilities |
| 6 | Good for Construction Drawings as per Drawing List below |

Drawings:

| A | Utility Drawings |
|----------|---|
| 1 | General Arrangement Drawing for underground utilities including storm water drainage channels, sewage, water, gas, and OFC pipes. |
| 2 | Structural Layout and Details of Utility Trenches and Manholes |
| 3 | Typical Joinery Details |
| 4 | Typical Construction, Fabrication and Formwork Details |

| B | Road Drawings |
|----------|--|
| 5 | General Arrangement Drawings showing all elements as per concept designs and technical specifications |
| 6 | Streetscape (Public Realm) Plan drawings from edge of carriageway to property edge for both sides at 1:200 scale |
| 7 | Road Levels |
| 8 | Typical ROW cross sections at every 50-100m depending on variability |
| 9 | Typical sections at zebra crossings, raised pedestrian crossings, junctions, property entry/exits |
| 10 | Detailed section for Re-carpeting works for roads |

| | |
|----|--|
| 11 | Typical details for Streetscape Paving designs, including raised crossing pavers, raised service lane paving, and pervious pavers. |
| 12 | Special Paving designs for plazas. |
| 13 | Typical details for Medians and Kerb conditions |
| 14 | Typical details for Raised Pavement Markers, Road Markings, Road Delineators |
| 15 | Pedestrian Bridge Details |
| 16 | Typical details of painting of kerbs, medians, pedestrian refuge, flyover edge condition etc. |
| 17 | Typical details of ramps and tactile paving markers |

| C | Typical Details / Shop Drawings |
|----------|---|
| 18 | Seating Bench Details – Types 1-4 – shop drawing |
| 19 | Concrete Bollard Details – shop drawing |
| 20 | Tree Grates Details – shop drawing |
| 21 | Traffic Signage Details – shop drawing |
| 22 | Pedestrian Signage Details – Types 1-4 – shop drawing |
| 23 | Garbage Bin Details – shop drawing |
| 24 | Bus Shelter Details – shop drawing |
| 25 | Vendor Kiosk Details – shop drawing |
| 26 | Cycle Stand Details – shop drawing |
| 27 | Lighting Pole Details – shop drawing |
| 28 | Landscaping Details including plantation of trees, transplantation of trees, bio-swale construction, planting shrubs and grass – plan, details and sections |
| 29 | Details of special furniture in plazas – shop drawings |
| 30 | Floor Lighting Details for plazas – shop drawing |
| 31 | Sculpture Details – shop drawings |
| 32 | Architectural Working Drawings for vending structures in Haat plaza – plans, sections, construction details, fixture details, roofing details |
| 33 | Civil construction details for special conditions in plazas |

SCHEDULE – J: PROJECT COMPLETION SCHEDULE

1. Project Completion Schedule

During Construction period, the Contractor shall comply with the requirements set forth in this Schedule-J for each of the Project Milestones and the Scheduled Completion Date. Within 15 (fifteen) days of the date of each Project Milestone, the Contractor shall notify the Authority of such compliance along with necessary particulars thereof.

2. Project Milestone-I

Project Milestone-I shall occur on the date falling on the 180th* (one hundred and eightieth) day from the Appointed Date (the "Project Milestone-I").

Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 15% (fifteen per cent) of the Contract Price.

3. Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the 360th* (three hundred and sixtieth) day from the Appointed Date (the "Project Milestone-II").

3.2 Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 45% (Forty five per cent) of the Contract Price.

4. Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the 540th* (five hundred and fortieth) day from the Appointed Date (the "Project Milestone-III").

4.2 Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 75% (Seventy five per cent) of the Contract Price.

5. Project Milestone-IV

5.1 Project Milestone-IV shall occur on the date falling on the 720th (Seven hundred and twentieth) day from the Appointed Date (the "Project Milestone-IV").

5.2 Prior to the occurrence of Project Milestone-IV, the Contractor shall have continued with construction of the Project and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 95% (Ninety five per cent) of the Contract Price.

5.3 Remaining 5% of the Total contract price will be released after the two years defect liability period from the actual date of completion of the project.

6. Scheduled Completion Date

6.1 The Scheduled Completion Date shall occur on the 720th (Seven hundred and twentieth) day from the Appointed Date.

6.2 On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

7. Extension of time

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.

SCHEDULE-K: TESTS ON COMPLETION

1. Schedule for Tests

- 1.1 The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.
- 1.2 The Contractor shall notify the Authority's Engineer of its readiness to subject the Project to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2. Tests

- 2.1 Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall be decided by the Authority Engineer in accordance with relevant Codes.
- 2.2 Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometer.
- 2.3 Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) meters or more shall also be subjected to load testing.
- 2.4 Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project with Specifications and Standards.
- 2.5 Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project with the environmental requirements set forth in Applicable Laws and Applicable Permits.
- 2.6 Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project with the safety requirements and Good Industry Practice.

3. Agency for conducting Tests

All Tests set forth in this Schedule-K shall be conducted by the Authority's Engineer or such other agency or person as it may specify in consultation with the Authority.

4. Completion Certificate

Upon successful completion of Tests, the Authority's Engineer shall issue the Completion Certificate in accordance with the provisions of Article 12.

SCHEDULE-L: PROVISIONAL CERTIFICATE

1. I, (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated (the "Agreement"), for **Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam's Area Based Development (ABD) area under Smart Cities Mission** (the "**Project**") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been undertaken to determine compliance of the Project with the provisions of the Agreement.
2. Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the Users of the Project or affect their safety. The Contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30 (thirty) days hereof. These minor works have also been specified in the aforesaid Punch List.
3. In view of the foregoing, I am satisfied that the Project from km ** to km ** can be safely and reliably placed in service of the Users thereof, and in terms of the Agreement, the Project is hereby provisionally declared fit for entry into operation on this the day of 20.....

ACCEPTED, SIGNED, SEALED
AND DELIVERED

For and on behalf of

CONTRACTOR by:
(Signature)
(Name and Designation)
(Address)

SIGNED, SEALED AND
DELIVERED

For and on behalf of

AUTHORITY'S ENGINEER by:
(Signature)
(Name and Designation)
(Address)

COMPLETION CERTIFICATE

1. I, (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated (the "Agreement"), for **Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam's Area Based Development (ABD) area under Smart Cities Mission (the "Project")** on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project with the provisions of the Agreement, and I am satisfied that the Project can be safely and reliably placed in service of the Users thereof.
2. It is certified that, in terms of the aforesaid Agreement, all works forming part of Project have been completed, and the Project is hereby declared fit for entry into operation on this the day of 20.....

SIGNED, SEALED AND DELIVERED

For and on behalf of the Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

SCHEDULE-M: PAYMENT REDUCTION FOR NON-COMPLIANCE

1. Payment reduction for non-compliance with the Maintenance Requirements

- 1.1 Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.
- 1.2 Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.
- 1.3 The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2. Percentage reductions in lump sum payments

- 2.1 The following percentages shall govern the payment reduction:

| S. No. | Item/Defect/Deficiency | Percentage |
|---------------|--|-------------------|
| (a) | Carriageway/Pavement | |
| | Potholes, cracks, other surface defects | 5% |
| | Repairs of Edges, Rutting | 5% |
| (b) | Road, Embankment, Cuttings, Shoulders | |
| | Edge drop, inadequate cross fall, undulations, settlement, potholes, ponding, obstructions | 5% |
| | Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees | 5% |
| | Road Side Multi Utility Corridor | |
| | cycle track, pedestrian pathway, tiling works, kerbs etc. | 10% |
| | bus shelter, bus stops, vending kiosks | 10% |
| | Street lights, pedestrian lights, accent lights | 5% |
| | Signages, bollards, tree pits and grates, dustbins | 5% |
| | Benches and other road furniture | 10% |
| (c) | Bridges and Culverts | |
| | Desilting, cleaning, vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations | 5% |
| | Any Defects in superstructures, bearings and sub-structures | 5% |
| | Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers | 5% |
| (d) | Roadside Drains | |

| | | |
|------------|--|----|
| | Cleaning and repair of drains | 5% |
| (e) | Road Furniture | |
| | Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5th km stones | 5% |
| (f) | Miscellaneous Items | |
| | Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane | 5% |
| | Any other Defects in accordance with paragraph 1. | 5% |
| (g) | Defects in Other Project Facilities | 5% |

2.2 The amount to be deducted from monthly lump-sum payment for non-compliance of particular item shall be calculated as under:

$$R = P/100 \times M \times L1/L$$

Where P = Percentage of particular item/Defect/deficiency for deduction

M = Monthly lump-sum payment in accordance with the Bid

L1 = Non-complying length

L = Total length of the road,

R = Reduction (the amount to be deducted for noncompliance for a particular item/Defect/deficiency)

The total amount of reduction shall be arrived at by summation of reductions for such items/Defects/deficiency or noncompliance.

For any Defect in a part of one kilometer, the non-conforming length shall be taken as one kilometer.

SCHEDULE – N: SELECTION OF AUTHORITY'S ENGINEER

1. Selection of Authority's Engineer

- 1.1 In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2. Terms of Reference

The Terms of Reference for the Authority's Engineer (the "TOR") shall substantially conform with Annex 1 to this Schedule N.

3. Appointment of Government entity as Authority's Engineer

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity/Government officer as the Authority's Engineer.

Annex – I (Schedule - N)

TERMS OF REFERENCE FOR AUTHORITY'S ENGINEER

1. Scope

- 1.1 These Terms of Reference (the "TOR") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated (the "Agreement"), which has been entered into between the [name and address of the Authority] (the "Authority") and (the "Contractor") for Beautification of Streets including Streetscape Design, Landscaping, and Intersection Redesign, in Visakhapatnam's Area Based Development (ABD) area under Smart Cities Mission on Engineering, Procurement and Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.
- 1.2 The TOR shall apply to construction and maintenance of the Project.

2. Definitions and interpretation

- 2.1 The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.
- 2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.
- 2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, mutatis mutandis, to this TOR.

3. General

- 3.1 The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.
- 3.2 The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:
 - (a) any Time Extension;
 - (b) any additional cost to be paid by the Authority to the Contractor;
 - (c) the Termination Payment; or
 - (d) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs.5,000,000 (Rs. fifty lakh).

- 3.3 The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.
- 3.4 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.
- 3.5 The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.
- 3.6 In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4. 4 Construction Period

- 4.1 During the Construction Period, the Authority's Engineer shall review the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.6. The Authority's Engineer shall complete such review and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.
- 4.2 The Authority's Engineer shall review any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.
- 4.3 The Authority's Engineer shall review the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty-one) days stating the modifications, if any, required thereto.
- 4.4 The Authority's Engineer shall complete the review of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.
- 4.5 The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of

the Project for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

- 4.6 The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.
- 4.7 The Authority's Engineer shall inspect the Construction Works and the Project and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.
- 4.8 The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.
- 4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4.9, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.
- 4.10 The Authority's Engineer shall test check at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.
- 4.11 The timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.
- 4.12 In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.
- 4.13 The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.
- 4.14 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project is not feasible within the time specified in the Agreement, it

shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

- 4.15 The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.4.
- 4.16 Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.
- 4.17 In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.
- 4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 4.18 and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance during the Defects liability period.

- 5.1 The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.
- 5.2 The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.
- 5.3 The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.
- 5.4 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.
- 5.5 The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project for undertaking maintenance/repair thereof, and shall grant

permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6. Determination of costs and time

- 6.1 The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.
- 6.2 The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.
- 6.3 The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

7. Payments

- 7.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2.4 (d).
- 7.2 Authority's Engineer shall -
 - (a) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and
 - (b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.
- 7.3 The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.
- 7.4 The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

8. Other duties and functions

The Authority's Engineer shall perform all other duties and functions as specified in the Agreement.

9. Miscellaneous

- 9.1 A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.
- 9.2 The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.
- 9.3 Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hardcopies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.
- 9.4 The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.
- 9.5 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

SCHEDULE-O: FORMS OF PAYMENT STATEMENTS

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

- (a) the estimated amount for the Works executed in accordance with Clause 19.3.1 subsequent to the last claim;
- (b) amounts reflecting adjustments in price for the aforesaid claim;
- (c) the estimated amount of each Change of Scope Order executed subsequent to the last claim;
- (d) amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2.3 (a);
- (e) total of (a), (b), (c) and (d) above;
- (f) Deductions:
 - (i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;
 - (ii) Any amount towards deduction of taxes; and
 - (iii) Total of (i) and (ii) above.
- (g) Net claim: (e) – (f) (iii);
- (h) The amounts received by the Contractor upto the last claim:
 - (i) For the Works executed (excluding Change of Scope orders);
 - (ii) For Change of Scope Orders, and
 - (iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

- (a) the monthly payment admissible in accordance with the provisions of the Agreement;
- (b) the deductions for maintenance work not done;
- (c) net payment for maintenance due, (a) minus (b);
- (d) amounts reflecting adjustments in price under Clause 19.12; and
- (e) amount towards deduction of taxes

3. Contractor's claim for Damages

Note: The Contractor shall submit its claims in a form acceptable to the Authority.

SCHEDULE-P: INSURANCE

1. Insurance during Construction Period

1.1 The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:

- (a) insurance of Works, Plant and Materials and an additional sum of 15 (fifteen) per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and
- (b) Insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

3.1 The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences. The insurance cover shall be not less than Rs. 100 lakh.

3.2 The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor's performance of this Agreement excluding:

- (a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and
- (b) Damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4. Insurance to be in joint names

The insurance under paragraphs 1 to 3 above shall be in the joint names of the Contractor and the Authority.

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